



Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

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Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with New Acland Coal Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



Executive Summary

New Acland Coal Pty Ltd (NAC) commissioned SLR Consulting Australia Pty Ltd (SLR) to complete a Groundwater Monitoring Event (GME) in Third Quarter (Q3) 2023 as part of the quarterly compliance monitoring for NAC Mine.

Groundwater monitoring was conducted in accordance with the conditions stipulated in EA EPML00335713, which outlines the requirements for compliance, monitoring, and management of groundwater at NAC Mine. This Groundwater Monitoring Report details the factual results of the GME undertaken for Q3 2023, across the following days:

- Between 28 August – 1 September 2023; and
- Between 4 - 7 September 2023.

Results of the GME works undertaken for Q3 2023 identified exceedances to the EA EPML00335713 trigger levels in the following groundwater monitoring bores:

Basalt monitoring bores

- 10PBR – NO₂ (as N) exceedance of 52.8 milligrams per litre (mg/L) (sixth consecutive exceedance).

Acland Coal Sequence monitoring bores

- 4518WB:
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 74 mg/L (sixth consecutive exceedance); and
 - Iron exceedance of 2,430 µg/L (fourth consecutive exceedance).
- 3316WB:
 - Manganese exceedance of 242 micrograms per litre (µg/L) (first exceedance).
- 82PcR:
 - EC exceedance of 8,940 µS/cm (second consecutive exceedance);
 - TDS exceedance of 5,470 mg/L (second consecutive exceedance);
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 428 mg/L (third consecutive exceedance);
 - Iron exceedance of 21,90 µg/L (third consecutive exceedance); and
 - Manganese exceedance of 109 µg/L (third consecutive exceedance).
- 111PgC Lower_ R:
 - EC exceedance of 7,960 µS/cm (second consecutive exceedance);
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 320 mg/L (Third consecutive exceedance); and
 - Iron exceedance of 5150 µg/L (Second exceedance).

The next monitoring round will occur in Quarter Four 2023.

This Groundwater Monitoring Report must not be reproduced except in full and must be read in conjunction with the Limitations outlined in Section 6.0 of this report.



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1.0 Introduction

New Acland Coal Pty Ltd (NAC) commissioned SLR Consulting Australia Pty Ltd (SLR) to complete a Groundwater Monitoring Event (GME) in Third Quarter (Q3) 2023 as part of the quarterly compliance monitoring for NAC Mine.

Groundwater monitoring was conducted in accordance with the conditions stipulated in Environmental Authority (EA) EPML00335713, which outlines the requirements for compliance, monitoring, and management of groundwater at NAC Mine. This Groundwater Monitoring Report details the factual results of the GME undertaken for Q3 2023, across the following days:

- Between 28 August – 1 September 2023; and
- Between 4 – 7 September 2023.

The current bore locations within the compliance and interpretation monitoring bore network are shown in **Appendix A**.

1.1 Objective

SLR understands the objective of the Q3 2023 GME was to comply with the requirements stipulated within EA EPML00335713.

1.2 Scope of Work

The following scope of works were undertaken to achieve the objective.

- Measurement of groundwater levels of all monitoring bores prior to sampling. The groundwater level data is provided as part of **Appendix B**.
- Purging of groundwater and collection of samples from all bores (i.e. with sufficient water column) in accordance with recognised standards and SLR Standard Operating Procedures (SOPs).
- Submission of collected samples to a National Association of Testing Authorities (NATA) accredited laboratory for analysis of Contaminants of Potential Concern (COPC) specified within EA EPML00335713.
- Summarisation of the GME results within this report, including Quality Assurance (QA) and Quality Control (QC) procedures to assess validity of obtained results.
- Collation and compilation of historical field measurement and analytical results into an online environmental database.
- Tabulation of the analytical results and comparison to the groundwater quality trigger limits detailed in EA EPML00335713 for each monitoring bore to assess compliance status, undertake statistical assessment as well as interpretation bore comparisons, and to determine significance of the results.
- Preparation of a Groundwater Monitoring Report detailing the findings of the Q3 2023 GME routine monitoring round. Note this report is also suitable for submission to the Queensland Department of Environment and Science (DES).



2.0 Groundwater Monitoring Program

2.1 Methodology

Groundwater monitoring undertaken as part of the Q3 2023 GME was completed in general accordance with the following guidelines and standards.

- National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) (NEPC, 2013).
- AS 4482.1-2005, Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 1: Non-volatile and semi-volatile compounds (Standards Australia, 2005) [WITHDRAWN]¹.
- AS/NZS 5667.1:1998, Water Quality-Sampling Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (Standards Australia, 1998).
- Department of Environment and Science (DES) Monitoring and Sampling Manual, Environmental Protection (Water) Policy 2009 (DES, 2009).

In addition, SLR SOPs will be followed to maintain integrity and ensure all sampling procedures are completed in accordance with the relevant guidelines and standards.

2.2 Sample Locations

Table 1 below provides a summary of groundwater bores sampled as part of the Q3 2023 GME. Appendix C contains the Photography Log of the GME, Appendix D presents the calibration certificates for the water quality meter, and Appendix B presents the groundwater field sheets.

Table 1 Summary of NAC Mine EA Monitoring Bore Network

Bore Name	Bore Type ⁽¹⁾	Aquifer Monitored ⁽²⁾
27PcR	Interpretation	Balgowan Coal Sequence
28PcR	Interpretation	Balgowan Coal Sequence
84PbR	Compliance	Main Range Volcanics
CSMH1Rb ⁽³⁾	Compliance	Balgowan Coal Sequence
10PbR	Compliance	Main Range Volcanics
4517WB	Compliance	Acland Coal Sequence
4518WB	Compliance	Acland Coal Sequence
25PcR	Interpretation	Balgowan Coal Sequence
26PcR	Interpretation	Balgowan Coal Sequence
3316_WB	Compliance	Acland Coal Sequence
2289PcR Lower	Interpretation	Balgowan Coal Sequence
BMH1	Compliance	Main Range Volcanics

¹ AS 4482.1-2005, Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 1: Non-volatile and semi-volatile compounds (Standards Australia, 2005) has been withdrawn pending revision and therefore will not specifically be relied upon as part of this assessment. It should be noted however that much of the information contained within AS448.1-2005 remains consistent with industry standards (i.e. information pertaining to the Site Investigation Process, Preliminary and Detailed Site Investigation, Data Quality Objectives, Design of The Soil Sampling Strategy, etc.). The exception to this is Appendix J, which details Chemical Contaminants Listed by Industry Type (with the notable exception of Per- and Polyfluoroalkyl Substances (PFAS), which was not a known contaminant of concern during development of AS 4482.1-2005).



Bore Name	Bore Type ⁽¹⁾	Aquifer Monitored ⁽²⁾
2291Pc	Interpretation	Balgowan Coal Sequence
81P ⁽⁴⁾	Interpretation	Acland Coal Sequence
109PR	Interpretation	Main Range Volcanics
GW05A	Interpretation	Main Range Volcanics
GW16A	Interpretation	Main Range Volcanics
GW15A	Interpretation	Main Range Volcanics
GW13B	Interpretation	Waipanna Coal Sequence
114P	Interpretation	Acland Coal Sequence
116P	Interpretation	Acland Coal Sequence
119P	Interpretation	Acland Coal Sequence
118P (120WB)	Interpretation	Acland Coal Sequence
113Pgcb	Interpretation	Acland Coal Sequence
GW05B	Interpretation	Acland Coal Sequence
GW06B	Interpretation	Acland Coal Sequence
GW10	Interpretation	Acland Coal Sequence
GW08C	Interpretation	Marburg Sandstone
GW09C	Interpretation	Marburg Sandstone
GW09A	Interpretation	Oakey Creek Alluvium
GW09B	Interpretation	Acland Coal Sequence
GW11B	Interpretation	Marburg Sandstone
18PcR2	Compliance	Balgowan Coal Sequence
18PbR2	Compliance	Main Range Volcanics
82PcR ⁽⁶⁾	Compliance	Acland Coal Sequence
132WBR	Interpretation	Balgowan Coal Sequence
133WBR	Interpretation	Balgowan Coal Sequence
BCS3	Compliance	Balgowan Coal Sequence
BCS4	Compliance	Balgowan Coal Sequence
LCA1	Compliance	Lagoon Creek Alluvium
LCA2	Compliance	Lagoon Creek Alluvium
GW14A	Additional Bore	Lagoon Creek Alluvium/Weathered Walloon Coal Measures
GW08B	Additional Bore	Acland Coal Sequence
GW12B	Additional Bore	Acland Coal Sequence
GW17A	Additional Bore	Acland Coal Sequence
GW19A	Additional Bore	Acland Coal Sequence
GW19B	Additional Bore	Balgowan Coal Sequence
GW22A	Additional Bore	Waipanna Coal Sequence
GW22B	Additional Bore	Acland Coal Sequence
GW22C	Additional Bore	Balgowan Coal Sequence



Bore Name	Bore Type ⁽¹⁾	Aquifer Monitored ⁽²⁾
21P	Additional Bore	Marburg Sandstone
41P	Additional Bore	Marburg Sandstone
48P	Additional Bore	Marburg Sandstone
111PgC Lower_R	Compliance	Acland Coal Sequence
112PgC_R	Interpretation	Acland Coal Sequence
GW11A_R	Interpretation	Main Range Volcanics
3307WB_R	Interpretation	Mine Pit Backfill
GW07B_R	Interpretation	Acland Coal Sequence
WCS2	Early-warning Compliance Bore (FED GMMP)	Waipanna Coal Sequence
M4	UWIR	Marburg Sandstone
A1	Compliance	Lagoon Creek Alluvium
A2	Control	Lagoon Creek Alluvium
B1	Early Warning	Main Range Volcanics
B3	Compliance	Main Range Volcanics
ACS1	Compliance	Acland Coal Sequence
ACS2	Compliance	Acland Coal Sequence
BCS1	Compliance	Balgowan Coal Sequence
BCS2	Compliance	Balgowan Coal Sequence

(1) Interpretation and compliance bore type refers to the application of groundwater quality trigger limits i.e. compliance bores have trigger limits designated as per Schedule D, Tables D2 and D5 of the EA and interpretation bores do not have trigger limits assigned.

(2) Note that the Main Range Volcanics aquifer is referred to as basalt aquifer in this report.

(3) Bore CSMH1Ra historically has been dry.

(4) Known as 81P or 81Pc in EA

(5) Known as 119PGC in the EA

2.3 Sample Methodology

Table 2 below provides a summary of the methodology implemented to undertake the Q3 2023 GME.

Table 2 Field programme methodology

Activity	Detail
Well Gauging	Monitoring bores were gauged using an oil/water Interface Probe (IP). The IP was decontaminated between each monitoring well measurement.
Water quality parameters measurement	The following water quality parameters were measured using a calibrated water quality meter: <ul style="list-style-type: none"> • Dissolved Oxygen (DO); • Electrical Conductivity (EC); • Oxidation-reduction (redox) potential (E_h); • Temperature; and • pH.



Activity	Detail
Sample Collection	Groundwater monitoring and sampling was conducted using low flow purging methodologies utilising a Bennett Pump. Prior to sample collection, each monitoring bore was purged to ensure collected groundwater was representative of the local aquifer. Purging of each monitoring bore was undertaken until water quality parameters stabilised over three consecutive measurements.
Sample Preservation	Groundwater samples collected as part of this assessment were placed in laboratory supplied containers and stored in insulated chilled containers as close to 4°C as practicable, while on Site and in transit to the laboratory.
Sample Submission	All samples requiring laboratory analysis were submitted to NATA accredited laboratories. Chain of Custody (COC) documentation was completed at the time of sample collection and accompanied the samples to the laboratory. Australian Laboratory Services Pty Ltd (ALS) were used as the primary laboratory whilst Eurofins Environment Testing Australia Pty Ltd (Eurofins) was the nominated secondary laboratory.
Surveying	The location of each monitoring bore was recorded using a handheld GPS. Each sampling location was also logged on a field sketch for quality purposes.
Sample Analysis	EA EPML00335713 defines the following water quality parameters for field measurements and laboratory analysis: <ul style="list-style-type: none"> • Standing water level (SWL); • pH and EC; • Total Dissolved Solids (TDS), laboratory determined; • Major ions: bicarbonate (HCO_3^-), sulphate (SO_4^{2-}), sodium (Na^+), potassium (K^+), magnesium (Mg^{2+}), calcium (Ca^{2+}); • Minor ions: fluoride (F^-); • Dissolved metals; aluminium (Al), arsenic (As), copper (Cu), iron (Fe), manganese (Mn), and selenium (Se); and • Nitrate (NO_2), Nitrate (NO_3), and total nitrogen (N)

2.4 Quality Assurance and Quality Control

For QA and QC purposes, duplicate and split groundwater samples were collected and analysed at a rate exceeding 1 in 20 as per AS4482.1-2005. The duplicate samples were used to assess the reproducibility of the sampling and analytical methods used. The split samples were submitted to a secondary laboratory to assess the analytical proficiency of the primary laboratory. QC samples were labelled with no reference to the parent sample (i.e., “blind” duplicate) on the sample container or COC to ensure analytical results were not biased by either laboratory.



3.0 Results

3.1 Bore Condition Report

Table 3 below provides a summary of observations and potential issues associated with the condition of groundwater bores monitored as part of the Q3 2023 GME. Refer to **Appendix B** for fieldnotes detailing the observations and potential issues.

Table 3 Summary of bore conditions

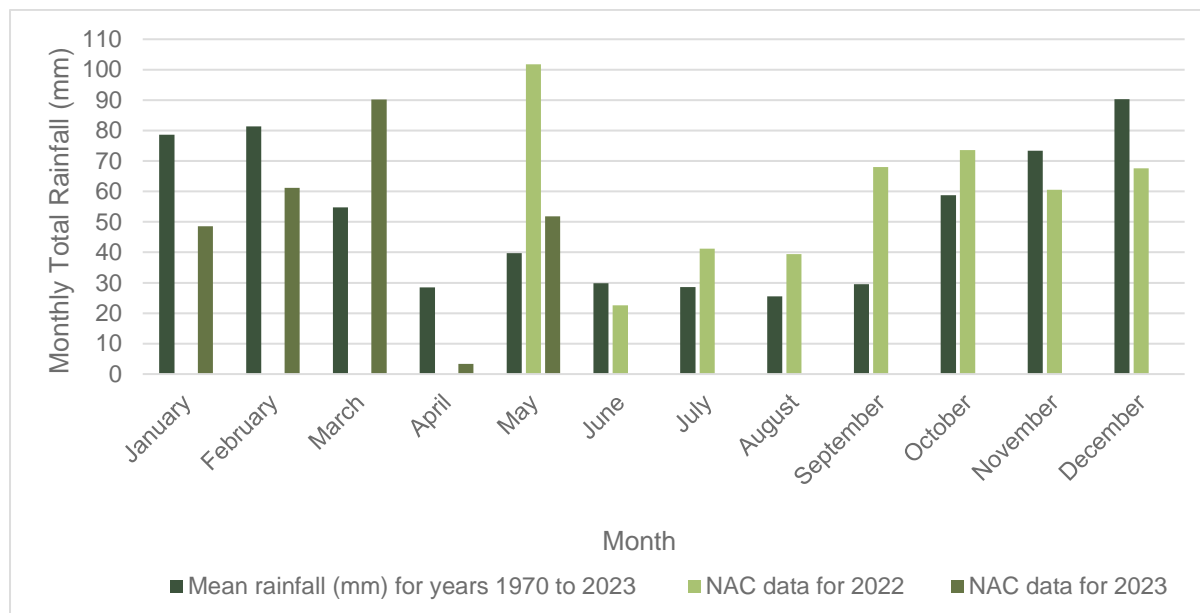
Bore ID	Detail
BCS3	Bennett pump unable to pass 79 m BTOC, pump intake depth at 78 m BTOC.
BCS4	Bennett pump unable to pass 107 m BTOC, pump intake depth at 107 m BTOC.
GW08B	Bennet pump unable to pass 58 m BTOC, pump intake depth at 58 m BTOC.
GW19B	Bennet pump unable to pass 69 m BTOC, pump intake depth at 69 m BTOC.
GW22B	Bennet pump unable to pass 70 m BTOC, pump intake depth at 70 m BTOC.
GW22C	Bennet pump unable to pass 125 m BTOC, pump intake depth at 125 m BTOC.
21P	Bennet pump unable to pass 132 m BTOC, pump intake depth 130 m BTOC.
41P	Bennet pump unable to pass 74 m BTOC, pump intake depth at 74 m BTOC.
GW09C	Bennet pump unable to pass 10 m BTOC, Hurricane pump used to depth.

3.2 Rainfall

Rainfall data was obtained from an on-site weather station at NAC Mine and the Oakey Aerodrome Site 041359 (BOM, 2023) located approximately 15 kilometres (km) south-southeast of NAC Mine. **Graph 1** below displays the mean total monthly rainfall at Oakey Aerodrome since 1970 and the total monthly rainfall at NAC for the twelve months prior to and including the Q3 2023 monitoring round.

The on-site weather station recorded a rainfall total of 580 millimetres (mm) in the twelve months leading up to Q3 2023, indicating that NAC Mine experienced below average rainfall when compared to the long-term total average annual rainfall for the area of 618.9 mm (BOM, 2023). In the three months prior to the Q2 2023 monitoring event (end April 2023 to end July 2023 inclusive), rainfall was below the historical mean (126.6 mm; BOM, 2023), with 71.4 mm recorded.





Graph 1 Mean historical monthly rainfall at the Oakey Aerodrome (BOM, 2023) and the total monthly rainfall from NAC for the previous 12 months.

3.3 Groundwater Quality

Groundwater quality parameters and analytical results from each monitoring bore, split by their respective aquifer, are represented in **Tables 3–20**. Refer to **Appendix B** for the groundwater quality parameters. **Appendix E** provides the full analytical results of the groundwater samples collected as part of the Q3 2023 GME. Refer to **Appendix A** for the groundwater bore locations and **Appendix F** for the Certified laboratory reports. A full summary table of historical chemical results with a comparison to the EA trigger limits is shown in **Appendix G**.

The EA groundwater quality trigger limits are outlined in Schedule D, Tables D2 (for compliance bores listed under Table D1 for ML60232) and Table D5 (for compliance bores listed under Table D4 for ML50170 and ML 50216).

3.3.1 Basalt Monitoring Bore Groundwater Quality

A total of ten (10) groundwater bores were sampled within the Basalt. A summary of both groundwater quality parameters and analytical results are provided in **Table 4** and **Table 5** respectively.

There were no exceedances of EA (EPML00335713) Table D2 (ML50232) trigger limits for the Basalt compliance monitoring bores. Exceedances of EA (EPML00335713) Table D5 (ML50170 and ML50216) trigger limits during this GME were noted for the following.

- 10PBR – NO₂ (as N) exceedance of 52.8 milligrams per litre (mg/L) (sixth consecutive exceedance).



Table 4 Basalt monitoring bores – groundwater quality parameters

Parameter	Units	84PbR	10PbR	BMH1	109PR	GW05A	GW16A	GW15A	18PbR2	GW11A_ R	B1	B3
Date Sampled	-	29/8/23	1/9/23	29/8/23	28/8/23	30/8/23	30/8/23	5/9/23	29/8/23	28/9/23	30/8/23	5/9/23
Time Sampled	-	12:32	09:05	13:24	16:22	08:55	10:22	09:59	10:47	14:32	08:06	07:36
SWL*	m BTOC	10.05	12.61	15.49	24.55	4.70	15.74	29.27	17.95	10.74	35.06	20.14
pH (Field)	pH units	6.95	6.78	6.66	9.36	6.79	6.73	7.25	7.67	6.91	9.15	7.87
EC (Field)	µS/cm	1621	3261	1421	399.0	1294	1848	1963	731	1638	307.1	583
DO	mg/L	0.06	2.22	0.97	2.47	3.64	0.46	0.03	0.42	3.10	0.38	0.07
Redox Potential	mV	-4.2	9.1	32.2	-69.1	63.7	72.2	-49.4	-27.8	50.2	39.8	31.0
Temperature	°C	21.2	22.2	22.1	23.6	20.8	23.5	23.1	17.9	23.1	19.8	22.4
Comments	-	NVO	Slight green tinge	H ₂ S odour, Slight yellow tinge	Slight H ₂ S odour, Slight yellow tinge	Slight green tinge	Slight yellow tinge	NVO	NVO	Red tinge	NVO	NVO

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = mill-volts

°C = degrees Celsius



Table 5 Basalt monitoring bores – groundwater analytical results

Parameter	Units	84PbR	10PbR	BMH1	109PR	GW05A	GW16A	GW15A	18PbR2	GW11A_ R	B1	B3
EC (Lab)	µS/cm	1,560	3,150	1,390	373	1,240	1,710	1,880	727	1,580	318	557
TDS (Lab)	mg/L	1,060	2,210	807	248	774	993	1,050	396	881	223	310
TDS (calc)	mg/L	1,010	2,050	904	242	806	1,110	1,220	472	1,030	207	362
pH (Lab)	pH Unit	8.20	8.11	7.63	7.80	8.10	8.12	8.17	7.46	7.70	7.93	7.99
Major Ions (filtered)												
Calcium	mg/L	103	226	90	4	87	111	103	7	79	2	9
Magnesium	mg/L	78	174	90	2	59	86	70	3	59	<1	1
Sodium	mg/L	115	183	85	70	132	162	187	127	177	71	107
Potassium	mg/L	2	2	1	1	1	10	14	1	2	<1	2
Chloride	mg/L	245	690	79	71	71	321	429	190	195	55	116
Sulfate as SO₄ - Turbidimetric (filtered)	mg/L	173	51	10	13	15	16	27	29	33	12	19
Minor Ions												
Fluoride	mg/L	0.2	0.5	0.3	0.4	0.9	0.4	0.3	0.3	1.3	0.5	0.2
Total N as N	mg/L	<0.1	58.0	11.3	0.2	12.8	1.1	0.1	<0.1	10.2	0.1	0.1
NO₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
NO₃ as N	mg/L	0.06	52.8 (50.7)	10.6	0.03	10.9	0.91	<0.01	0.01	8.15	<0.01	0.10
Dissolved Metals												
Al	µg/L	<10	20.0	<10	240.0	<10	<10	<10	20.0	<10	240.0	30.0
As	µg/L	2.0	<1	<1	6.0	<1	<1	<1	4.0	<1	6.0	3.0



Parameter	Units	84PbR	10PbR	BMH1	109PR	GW05A	GW16A	GW15A	18PbR2	GW11A_ R	B1	B3
Cu	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	3.0	2.0	1.0
Fe	µg/L	<50	<50	<50	220.0	<50	<50	1,300.0	<50	80.0	190.0	<50
Mn	µg/L	14.0	<1	<1	8.0	<1	1.0	172.0	<1	52.0	10.0	17.0
Se	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre



3.3.2 Acland Coal Sequence Monitoring Bore Groundwater Quality

A total of 24 groundwater bores were sampled within the Acland Coal Sequence. A summary of both groundwater quality parameters and analytical results are provided in **Table 6** to **Table 9**.

Exceedances of the EA (EPML00335713) Table D2 (ML50232) and Table D5 (ML50170 and ML50216) trigger limits during this GME were noted for the following.

- 4518WB:
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 74 mg/L (sixth consecutive exceedance); and
 - Iron exceedance of 2,430 µg/L (fourth consecutive exceedance).
- 3316WB:
 - Manganese exceedance of 242 µg/L (first exceedance).
- 82PcR:
 - EC exceedance of 8,940 µS/cm (second consecutive exceedance);
 - TDS exceedance of 5,470 mg/L (second consecutive exceedance);
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 428 mg/L (third consecutive exceedance);
 - Iron exceedance of 2,190 µg/L (third consecutive exceedance); and
 - Manganese exceedance of 109 µg/L (third consecutive exceedance).
- 111PgC Lower_ R:
 - EC exceedance of 7,960 µS/cm (second consecutive exceedance);
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 320 mg/L (Third consecutive exceedance); and
 - Iron exceedance of 5,150 µg/L (Second exceedance).



Table 6 Acland Coal Sequence monitoring bores – groundwater quality parameters

Parameter	Units	4517W B	4518W B	3316_ WB	81P	114P	116P	119P	118P (120W B)	113Pgc b	GW05B	GW06B	GW10
Date Sampled	-	1/9/23	1/9/23	6/9/23	6/9/23	6/9/23	7/9/23	6/9/23	31/8/23	7/9/23	30/8/23	30/8/23	5/9/23
Time Sampled	-	08:32	09:52	09:10	10:45	14:45	09:20	14:05	14:57	07:33	09:30	14:04	13:18
SWL*	m BTOC	29.75	12.67	23.34	29.02	53.81	35.80	16.18	14.22	7.43	49.50	27.10	43.35
pH (Field)	pH units	7.40	7.00	7.24	6.47	6.95	7.25	7.33	6.48	7.04	7.68	8.37	7.50
EC (Field)	µS/cm	13.2	3,693	5,499	6,222	6,312	2,948	2,733	21,041	6,092	1,073	1,093	2,833
DO	mg/L	0.29	0.01	0.14	0.11	0.77	0.07	0.00	0.00	0.12	0.15	0.03	0.01
Redox Potential	mV	-29.2	-55.5	20.5	14.4	70.9	-56.3	48.6	-27.6	-0.9	72.6	66.8	14.9
Temperature	°C	21.2	21.4	24.1	25.9	26.1	22.9	24.1	22.5	21.0	22.3	23.1	24.6
Comments	-	Slight yellow tinge	NVO	NVO	Slight NH ₃ odour	NVO	NVO	NVO	Slight yellow tinge	NVO	NVO	Slight H ₂ S odour	NVO

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = mill-volts

°C = degrees Celsius



Table 7 Acland Coal Sequence monitoring bores – groundwater quality parameters (continued)

Parameter	Units	7	82PcR	GW08B	GW12B	GW17A	GW19A	GW22B	111PgC Lower_R	112Pg C_R	GW07B _R	ACS1	ACS2
Date Sampled	-	7/9/23	6/9/23	5/9/23	31/8/23	5/9/23	31/8/23	31/8/23	6/9/23	1/9/23	6/9/23	31/8/23	30/8/23
Time Sampled	-	10:40	10:02	09:10	09:35	12:10	11:13	12:27	07:38	10:43	13:12	07:20	15:10
SWL*	m BTOC	14.92	19.90	8.72	55.22	88.79	15.13	17.72	28.08	51.04	55.62	22.48	8.53
pH (Field)	pH units	7.11	6.90	8.58	8.43	8.20	6.75	7.60	6.82	7.57	7.87	7.75	7.49
EC (Field)	µS/cm	2,566	8,789	1,264	1,036	2,331	4,239	6,160	7,967	3,559	1,315	1,126	1,856
DO	mg/L	0.01	0.09	0.06	0.14	0.01	0.13	0.01	0.06	0.05	0.01	0.27	0.09
Redox Potential	mV	-6.8	-4.1	-44.8	-19.4	3.1	-41.9	-60.1	-13.0	-7.3	46.3	36.2	-148
Temperature	°C	22.0	24.4	22.6	23.4	24.8	25.4	23.7	21.4	24.3	25.3	21.4	22.7
Comments	-	NVO	NVO	NVO	H ₂ S odour	Slight grey tinge	Slight grey/ brown tinge	NVO	NVO	NVO	NVO	NVO	H ₂ S odour, slight grey tinge

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = mill-volts

°C = degrees Celsius



Table 8 Acland Coal Sequence monitoring bores – groundwater analytical results

Parameter	Units	4517WB	4518WB	3316_W B	81P	114P	116P	119P	118P (120WB)	113Pgcb	GW05B	GW06B	GW10
EC (Lab)	µS/cm	1,540	3,620	5,570	6,240	6,420	2,890	2,640	20,800	5,990	1,050	1,050	2,730
TDS (Lab)	mg/L	858	2,150	3,070	3,500	3,680	1,590	1,440	15,300	3,670	610	593	1,460
TDS (calc)	mg/L	1,000	2,350	3,620	4,060	4,170	1,880	1,720	13,500	3,890	682	682	1,770
pH (Lab)	pH Unit	8.32	8.16	7.65	7.71	8.02	7.93	8.16	7.73	7.82	8.43	8.55	8.29
Major Ions (filtered)													
Calcium	mg/L	26	148	194	229	118	58	40	743	168	22	1	46
Magnesium	mg/L	7	104	36	120	42	24	25	518	180	4	<1	12
Sodium	mg/L	292	467	794	816	1,090	453	461	3,200	818	228	257	485
Potassium	mg/L	3	4	7	8	8	5	4	13	5	3	<1	4
Chloride	mg/L	332	897	1,710	1,670	1,710	670	738	7,440	1,510	135	184	802
Sulfate as SO₄ - Turbidimetric (filtered)	mg/L	21	74 (48)	2	196	223	51	66	915	300	21	<1	16
Minor Ions													
Fluoride	mg/L	0.1	0.4	0.1	0.1	<0.1	<0.1	0.1	<0.1	0.5	0.2	0.5	<0.1
Total N as N	mg/L	0.4	0.4	1.1	0.4	1.4	0.8	0.5	2.6	0.3	0.3	0.3	0.7
NO₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO₃ as N	mg/L	<0.01	<0.01	<0.01	0.21	0.69	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals													
Al	µg/L	20.0	<10	<10	<10	<10	<10	<10	20.0	<10	<10	<10	<10
As	µg/L	6.0	<1	2.0	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	310.0	2,430.0	580.0	660.0	280.0	<50	100.0	7,750.0	<50	<50	<50	310.0



Parameter	Units	4517WB	4518WB	3316_W B	81P	114P	116P	119P	118P (120WB)	113Pgcb	GW05B	GW06B	GW10
			(1,600)										
Mn	µg/L	19.0	52.0	242.0 (230)	960.0	9.0	<1	35.0	325.0	<1	10.0	5.0	8.0
Se	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre



Table 9 Acland Coal Sequence monitoring bores – groundwater analytical results (continued)

Parameter	Units	GW09B	82PcR	GW08B	GW12B	GW17A	GW19A	GW22B	111PgC Lower_R	112Pg C_R	GW07B _R	ACS1	ACS2
EC (Lab)	µS/cm	2,520	8,940 (7,460)	1,200	991	2,240	7,970	6,030	7,960 (6,937)	3,570	1,230	1,360	
TDS (Lab)	mg/L	1,390	5,470 (5,000)	710	564	1,210	5,110	3,520	4,630	2,030	678	781	
TDS (calc)	mg/L	1,640	5,810	780	644	1,460	5,180	3,920	5,170	2,320	800	884	1,890
pH (Lab)	pH Unit	8.17	7.99	8.74	8.54	8.25	7.96	7.89	7.86	7.99	8.37	8.42	1,040
Major Ions (filtered)													
Calcium	mg/L	61	342	2	2	8	249	116	311	62	9	7	8.13
Magnesium	mg/L	61	201	<1	<1	1	178	23	220	9	1	2	
Sodium	mg/L	374	1,110	311	241	473	1,200	1,120	971	644	259	319	44
Potassium	mg/L	3	12	1	2	2	9	7	11	5	2	2	12
Chloride	mg/L	557	2,810	88	164	697	2,430	1,850	2,430	1,000	261	307	344
Sulfate as SO₄ - Turbidimetric (filtered)	mg/L	25	428 (134)	<1	2	<1	506	39	320 (309)	26	31	14	5
Minor Ions													
Fluoride	mg/L	0.5	<0.1	0.7	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	11
Total N as N	mg/L	0.3	1.2	0.2	0.3	0.3	1.4	2.6	1.1	1.1	0.2	0.3	
NO₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2
NO₃ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.5
Dissolved Metals													
Al	µg/L	-	<10	10.0	10.0	<10	<10	<10	<10	<10	<10	20.0	<0.01
As	µg/L	<1	<1	<1	<1	<1	1.0	<1	<1	<1	1.0	4.0	



Parameter	Units	GW09B	82PcR	GW08B	GW12B	GW17A	GW19A	GW22B	111PgC Lower_R	112Pg C_R	GW07B _R	ACS1	ACS2
Cu	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
Fe	µg/L	-	2,190.0 (100)	<50	<50	<50	<50	400.0	5,150.0 (4,900)	<50	<50	<50	<1
Mn	µg/L	-	109.0 (87)	3.0	4.0	9.0	62.0	52.0	42.0	95.0	13.0	16.0	<1
Se	µg/L	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	320.0

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre



3.3.3 Balgowan Coal Sequence Monitoring Bore Groundwater Quality

A total of 16 groundwater bores were sampled within the within the Balgowan Coal Sequence. A summary of both groundwater quality parameters and analytical results are provided in **Table 10** to **Table 13**.

There were no exceedances of EA (EPML00335713) Table D2 (ML50232) or Table D5 (ML50170 and ML50216) trigger limits for the Balgowan Coal Sequence compliance monitoring bores. Note that CSMH1Rb is the only bore with trigger limits set within this Sequence.

Table 10 Balgowan Coal Sequence monitoring bores – groundwater quality parameters

Parameter	Units	27PcR	28PcR	CSMH1Rb	25PcR	26PcR	2289PcR Lower	2291Pc	18PcR2
Date Sampled	-	4/9/23	29/8/23	6/9/23	4/9/23	4/9/23	29/8/23	4/9/23	29/8/23
Time Sampled	-	12:02	08:20	11:48	13:42	12:52	15:30	14:27	11:47
SWL*	m BTOC	47.38	25.91	93.90	72.21	62.70	14.22	39.49	43.78
pH (Field)	pH units	6.87	7.14	7.74	6.86	6.93	7.29	6.81	8.45
EC (Field)	µS/cm	12430	10098	1638	10108	12429	4121	8250	781
DO	mg/L	0.14	0.18	0.16	0.08	0.05	0.11	0.03	0.04
Redox Potential	mV	-22.1	-20.1	22.5	-33.6	-33.0	15.2	-28.9	-38.2
Temperature	°C	22.2	20.5	25.3	22.8	22.9	21.7	23.1	22.6
Comments	-	NVO	H2S odour	NH ₃ odour	NVO	Slight yellow tinge	Slight yellow tinge	NVO	Slight H2S odour, slight yellow tinge

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = mill-volts

°C = degrees Celsius

Table 11 Balgowan Coal Sequence monitoring bores – groundwater quality parameters (continued)

Parameter	Units	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C	BCS1	BCS2
Date Sampled	-	29/8/23	29/8/23	1/9/23	6/9/23	31/8/23	31/8/23	31/8/23	7/9/23
Time Sampled	-	14:10	14:48	07:58	08:18	10:38	13:12	08:13	08:45
SWL*	m BTOC	4.44	17.52	34.49	37.60	18.60	18.56	22.63	36.89
pH (Field)	pH units	6.42	7.60	8.85	7.47	8.14	7.82	7.98	7.41



Parameter	Units	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C	BCS1	BCS2
EC (Field)	µS/cm	7291	397.9	891	3684	2469	1747	1900	1411
DO	mg/L	0.03	0.31	0.12	0.10	0.08	0.08	0.20	0.01
Redox Potential	mV	71.4	-7.9	-72.7	-5.1	-1.1	-35.8	-32.1	-92.1
Temperature	°C	21.8	23.1	22.5	23.4	24.4	25.2	22.0	22.3
Comments	-	H2S odour	NVO	Slight H2S odour	NVO	NVO	H2S odour	Slight H2S odour	H2S odour, slight grey tinge

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = mill-volts

°C = degrees Celsius

Table 12 Balgowan Coal Sequence monitoring bores – groundwater analytical results

Parameter	Units	27PcR	28PcR	CSMH1Rb	25PcR	26PcR	2289PcR Lower	2291Pc	18PcR2
EC (Lab)	µS/cm	12,300	10,200	1,570	10,400	12,500	4,170	7,930	775
TDS (Lab)	mg/L	8,780	7,780	879	6,980	8,680	2,680	5,340	435
TDS (calc)	mg/L	8,000	6,630	1,020	6,760	8,120	2,710	5,150	504
pH (Lab)	pH Unit	7.65	7.44	7.86	7.71	7.91	7.65	7.97	7.96
Major Ions (filtered)									
Calcium	mg/L	688	518	31	553	586	161	282	11
Magnesium	mg/L	279	217	5	194	269	62	152	3
Sodium	mg/L	1,490	1,140	288	1,200	1,660	561	1,260	142
Potassium	mg/L	25	24	4	23	28	13	15	3
Chloride	mg/L	3,970	3,440	438	3,310	3,840	1,160	2,480	164
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	768	580	60	368	885	210	321	48



Parameter	Units	27PcR	28PcR	CSMH1Rb	25PcR	26PcR	2289PcR Lower	2291Pc	18PcR2
Minor Ions									
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
Total N as N	mg/L	0.5	<0.5#1	0.3	<0.5#1	<0.5#1	0.4	0.6	<0.1
NO ₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₃ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals									
Al	µg/L	<10	<10	20.0	<10	<10	<10	<10	<10
As	µg/L	3.0	<1	4.0	<1	<1	<1	<1	3.0
Cu	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	2,400.0	2,140.0	<50	3,550.0	4,240.0	750.0	2,740.0	<50
Mn	µg/L	291.0	320.0	36.0	110.0	22.0	46.0	58.0	34.0
Se	µg/L	<10	<10	<10	<10	<10	<10	<10	<10

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre

Table 13 Balgowan Coal Sequence monitoring bores – groundwater analytical results (continued)

Parameter	Units	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C	BCS1	BCS2
EC (Lab)	µS/cm	7,300	388	872	3,570	7,970	3,210	2,300	1,380
TDS (Lab)	mg/L	4,450	237	522	1,970	5,110	1,780	1,260	762
TDS (calc)	mg/L	4,740	252	567	2,320	5,180	2,090	1,500	897
pH (Lab)	pH Unit	7.63	8.01	8.69	7.89	7.96	8.12	8.36	7.77
Major Ions (filtered)									
Calcium	mg/L	237	5	5	44	249	23	12	17



Parameter	Units	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C	BCS1	BCS2
Magnesium	mg/L	197	1	<1	5	178	2	2	4
Sodium	mg/L	1,120	79	200	659	1,200	681	496	271
Potassium	mg/L	11	1	2	4	9	4	4	3
Chloride	mg/L	1,410	53	93	1,060	2,430	998	662	356
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	955	6	5	140	506	56	30	4
Minor Ions									
Fluoride	mg/L	<0.1	0.2	0.1	<0.1	<0.1	<0.1	0.2	0.2
Total N as N	mg/L	0.2	<0.1	0.3	0.7	1.4	0.6	0.4	0.1
NO₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO₃ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals									
Al	µg/L	<10	<10	10.0	<10	<10	20.0	<10	-
As	µg/L	1.0	1.0	1.0	<1	1.0	3.0	<1	2.0
Cu	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	1,250.0	<50	<50	<50	<50	110.0	90.0	-
Mn	µg/L	577.0	16.0	6.0	76.0	62.0	42.0	27.0	-
Se	µg/L	<10	<10	<10	<10	<10	<10	<10	-

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre



3.3.4 Marburg Sandstone Oakey Creek Alluvium and Waipanna Coal Sequence Monitoring Bore Groundwater Quality

A total of 11 groundwater bores were sampled within the within the Marburg Sandstone Oakey Creek Alluvium and Waipanna Coal Sequence. A summary of both groundwater quality parameters and analytical results are provided in **Table 14** to **Table 17**.

Note that no monitoring bores in this group have trigger limits set per EA (EPML00335713) Table D2 (ML50232) and Table D5 (ML50170 and ML50216), as these are not compliance bores.

Table 14 Marburg Sandstone Oakey Creek Alluvium, and Waipanna Coal Sequence monitoring bores – groundwater quality parameters

Parameter	Units	GW08C	GW09C	GW11B	21P	41P	48P
Date Sampled	-	5/9/23	7/9/23	28/8/23	5/9/23	29/8/23	5/9/23
Time Sampled	-	08:38	11:15	15:30	14:19	09:00	15:22
SWL*	m BTOC	81.19	14.93	54.17	82.13	27.07	65.47
pH (Field)	pH units	8.21	7.48	6.98	6.56	6.42	6.33
EC (Field)	µS/cm	2636	1986	3297	1664	9394	9923
DO	mg/L	0.02	0.00	6.49	0.03	0.09	0.01
Redox Potential	mV	-69.1	-183.2	-56.2	35.5	-22.4	81.8
Temperature	°C	23.5	22.0	22.4	24.3	21.9	23.6
Comments	-	Slight H2S odour	Slight H2S odour	H2S odour	NVO	H2S odour	NVO

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = millivolts

°C = degrees Celsius

Table 15 Marburg Sandstone Oakey Creek Alluvium, and Waipanna Coal Sequence monitoring bores – groundwater quality parameters (continued)

Parameter	Units	GW09A	GW13B	GW22A	WCS2	M4
Date Sampled	-	7/9/23	5/9/23	31/8/23	30/8/23	31/8/23
Time Sampled	-	09:58	10:38	11:57	14:35	13:50
SWL*	m BTOC	16.0	29.46	17.35	29.22	11.26
pH (Field)	pH units	6.96	8.10	7.02	8.59	7.23
EC (Field)	µS/cm	3005	757	8890	854	3382
DO	mg/L	3.05	0.00	0.05	0.45	0.03
Redox Potential	mV	-0.1	-37.2	-51.2	57.6	-162.1



Parameter	Units	GW09A	GW13B	GW22A	WCS2	M4
Temperature	°C	22.2	23.2	23.5	23.5	24.4
Comments	-	NVO	Slight Hydrocarbon Odour	Slight grey tinge	NVO	Strong H2S odour, slight brown tinge

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = millivolts

°C = degrees Celsius

Table 16 Marburg Sandstone Oakey Creek Alluvium, and Waipanna Coal Sequence monitoring bores – groundwater analytical results

Parameter	Units	GW08C	GW09C	GW11B	21P	41P	48P
EC (Lab)	µS/cm	2,590	1,950	3,210	1,640	9,320	10,200
TDS (Lab)	mg/L	1,380	1,070	1,960	871	6,330	6,530
TDS (calc)	mg/L	1,680	1,270	2,090	1,070	6,060	6,630
pH (Lab)	pH Unit	8.39	7.97	7.70	7.74	7.70	7.75
Major Ions (filtered)							
Calcium	mg/L	8	47	107	30	305	400
Magnesium	mg/L	<1	5	65	33	200	413
Sodium	mg/L	521	336	431	286	1,290	1,150
Potassium	mg/L	2	8	31	15	18	19
Chloride	mg/L	733	486	819	456	2,880	2,600
Sulfate as SO ₄ - Turbidimetric (filtered)	mg/L	14	33	126	19	531	794
Minor Ions							
Fluoride	mg/L	0.2	<0.1	0.2	0.4	<0.1	0.4
Total N as N	mg/L	0.4	0.5	0.2	<0.1	0.8	171
NO ₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.04



Parameter	Units	GW08C	GW09C	GW11B	21P	41P	48P
NO₃ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	162
Dissolved Metals							
Al	µg/L	40.0	-	<10	<10	<10	<10
As	µg/L	8.0	<1	15.0	<1	<1	<1
Cu	µg/L	<1	<1	<1	<1	<1	3.0
Fe	µg/L	50.0	-	1,120.0	300.0	6,680.0	<50
Mn	µg/L	16.0	-	167.0	50.0	358.0	421.0
Se	µg/L	<10	-	<10	<10	<10	10.0

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre

Table 17 Marburg Sandstone Oakey Creek Alluvium, and Waipanna Coal Sequence monitoring bores – groundwater analytical results (continued)

Parameter	Units	GW09A	GW13B	GW22A	WCS2	M4
EC (Lab)	µS/cm	2,980	705	9,010	823	3,260
TDS (Lab)	mg/L	1,740	412	5,780	465	1,800
TDS (calc)	mg/L	1,940	458	5,860	535	2,120
pH (Lab)	pH Unit	7.75	8.46	8.07	8.45	8.02
Major Ions (filtered)						
Calcium	mg/L	90	8	222	2	61
Magnesium	mg/L	98	3	135	<1	6
Sodium	mg/L	342	166	1,480	198	636
Potassium	mg/L	2	2	8	1	9
Chloride	mg/L	742	68	3,020	146	873



Parameter	Units	GW09A	GW13B	GW22A	WCS2	M4
Sulfate as SO₄ - Turbidimetric (filtered)	mg/L	18	<1	217	10	110
Minor Ions						
Fluoride	mg/L	0.3	0.6	<0.1	0.3	0.1
Total N as N	mg/L	2.2	<0.1	2.1	0.2	0.7
NO₂ as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
NO₃ as N	mg/L	2.05	<0.01	<0.01	<0.01	<0.01
Dissolved Metals						
Al	µg/L	-	<10	<10	<10	<10
As	µg/L	<1	<1	1.0	<1	<1
Cu	µg/L	<1	<1	<1	<1	<1
Fe	µg/L	-	<50	<50	<50	310.0
Mn	µg/L	-	9.0	39.0	2.0	45.0
Se	µg/L	-	<10	<10	<10	<10

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre



3.3.5 Lagoon Creek Alluvium / Weathered Walloon Coal Measured/ Mine pit Backfill Groundwater Monitoring Bores Chemical Analysis Results

A total of six (6) groundwater bores were sampled within the Lagoon Creek Alluvium, Weathered Walloon Coal Measures, and Mine Pit Backfill. A summary of both groundwater quality parameters and analytical results are provided in **Table 18** and **Table 19** respectively.

Note that no monitoring bores in this group have trigger limits set per EA (EPML00335713) Table D2 (ML50232) and Table D5 (ML50170 and ML50216), as these are not compliance bores. Further, groundwaters bores LCA1, LCA2, and GW14A were all recorded as dry when sampling was completed.



Table 18 Lagoon Creek Alluvium / Weathered Walloon Coal Measures/ Mine Pit Backfill monitoring bores – groundwater quality parameters

Parameter	Units	LCA1	LCA2	GW14A	3307WB_R	A1	A2
Date Sampled	-	6/9/23	6/9/23	6/9/23	4/9/23	29/8/23	6/9/23
Time Sampled	-	-	-	-	15:17	09:44	-
SWL*	m BTOC	Dry	Dry	Dry	57.72	3.62	Dry
pH (Field)	pH units	-	-	-	6.20	7.35	-
EC (Field)	µS/cm	-	-	-	10018	24320	-
DO	mg/L	-	-	-	0.03	1.78	-
Redox Potential	mV	-	-	-	44.1	20.8	-
Temperature	°C	-	-	-	23.6	16.4	-
Comments		Bore Dry	Bore Dry	Bore Dry	NVO	Slight brown tinge	Bore Dry

*Prior to pump installation

NVO = no visual or olfactory indicators of contamination

m BTOC = metres below top of casing

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

mV = mill-volts

°C = degrees Celsius

Table 19 Lagoon Creek Alluvium / Weathered Walloon Coal Measures/ Mine Pit Backfill monitoring bores – groundwater analytical results

Parameter	Units	LCA1	LCA2	GW14A	3307WB_R	A1	A2
EC (Lab)	µS/cm	-	-	-	10,100	24,500	-
TDS (Lab)	mg/L	-	-	-	9,420	16,900	-
TDS (calc)	mg/L	-	-	-	6,560	15,900	-
pH (Lab)	pH Unit	-	-	-	7.60	8.08	-
Major Ions (filtered)							
Calcium	mg/L	-	-	-	635	227	-
Magnesium	mg/L	-	-	-	412	482	-
Sodium	mg/L	-	-	-	1,020	4,650	-



Parameter	Units	LCA1	LCA2	GW14A	3307WB_R	A1	A2
Potassium	mg/L	-	-	-	21	4	-
Chloride	mg/L	-	-	-	2,580	7,770	-
Sulfate as SO ₄ - Turbidimetric (filtered)	mg/L	-	-	-	1,570	2,240	-
Minor Ions							
Fluoride	mg/L	-	-	-	0.5	0.9	-
Total N as N	mg/L	-	-	-	1.3	2.3	-
NO ₂ as N	mg/L	-	-	-	<0.01	<0.01	-
NO ₃ as N	mg/L	-	-	-	<0.01	2.32	-
Dissolved Metals							
Al	µg/L	-	-	-	<10	<10	-
As	µg/L	-	-	-	<1	<1	-
Cu	µg/L	-	-	-	<1	<1	-
Fe	µg/L	-	-	-	610.0	70.0	-
Mn	µg/L	-	-	-	2,500.0	86.0	-
Se	µg/L	-	-	-	<10	40.0	-

Exceedances are represented highlighted in Orange with applicable EA trigger limit provided in parentheses.

µS/cm = micro-Siemens per centimetre

mg/L = milligrams per litre

µg/L = micrograms per litre



3.4 Quality Assurance and Quality Control Results

Three (3) duplicates and three (3) split sample was collected as part of the Q3 2023 GME and submitted for laboratory analysis. A summary of the QA/QC combinations is provided in **Table 20**.

Table 20 QA/QC combinations

Primary Sample	Duplicate	Split
41P	QAQC01	QAQC02
26 PCR	QAQC03	QAQC04
3316WB	QAQC05	QAQC06

With the exception of the analytes listed below in **Table 21**, the remaining Relative Percentile Difference (RPD) were considered acceptable for the primary and duplicate/split samples. Per the ASC NEPM and for the purpose of this GME, a 30 % RPD acceptance criteria has been adopted. Refer to **Appendix H** for the full RPD Tables.

Table 21 RPD Exceedances

Parent Sample	Sample Date	Duplicate/ Split	Analyte	RPD%
41P	29/08/23	QAQC02	Electrical Conductivity (Lab)	55
			Total Dissolved Solids (Calc.)	62
			Nitrite + Nitrate as N	171
			Nitrate (as N)	171
26PCR	04/09/23	QAQC03	Chromium (III+VI)	67
			Nickel (filtered)	67
		QAQC04	Chromium (III+VI)	100
			Nickel	169
			Electrical Conductivity (Lab)	111
			TDS	92
			Total Dissolved Solids (Calc.)	115
			Nitrogen (Total)	161
Kjeldahl Nitrogen Total	161			
3316WB	06/09/23	QAQC05	Arsenic	67
			Arsenic (filtered)	67
			Ionic Balance	97
			Nitrogen (Total)	58
			Kjeldahl Nitrogen Total	58
		QAQC06	Arsenic	67
			Arsenic (filtered)	67
			Zinc	100
			Alkalinity (total) as CaCO ₃	31



Parent Sample	Sample Date	Duplicate/ Split	Analyte	RPD%
			Alkalinity (carbonate as CaCO ₃)	31

RPD exceedances identified were identified within QAQC02, QAQC03, QAQC04, QAQC05 and QAQC06 identifying exceedances above the 30 % criteria adopted for the investigation, listed above in **Table 21**. Given the concentrations of the analytes exceeding RPDs, the RPD exceedances were considered negligible in association with the purpose and intent of this project.



4.0 Summary and Conclusion

NAC commissioned SLR to complete a Groundwater Monitoring Event in Q3 2023 as part of the quarterly compliance monitoring for NAC Mine.

Groundwater monitoring was conducted in accordance with the conditions stipulated in EA EPML00335713, which outlines the requirements for compliance, monitoring, and management of groundwater at NAC Mine. This Groundwater Monitoring Report details the factual results of the GME undertaken for Q3 2023, across the following days:

- Between 28 August – 1 September 2023; and
- Between 4 - 7 September 2023.

Results of the GME works undertaken for Q3 2023 identified exceedances to the EA EPML00335713 trigger levels in the following groundwater monitoring bores:

Basalt monitoring bores

- 10PBR – NO₂ (as N) exceedance of 52.8 milligrams per litre (mg/L) (sixth consecutive exceedance).

Acland Coal Sequence monitoring bores

- 4518WB:
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 74 mg/L (sixth consecutive exceedance); and
 - Iron exceedance of 2430 µg/L (fourth consecutive exceedance).
- 3316WB:
 - Manganese exceedance of 242 micrograms per litre (µg/L) (first exceedance).
- 82PcR:
 - EC exceedance of 8,940 µS/cm (second consecutive exceedance);
 - TDS exceedance of 5,470 mg/L (second consecutive exceedance);
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 428 mg/L (third consecutive exceedance);
 - Iron exceedance of 2190 µg/L (third consecutive exceedance); and
 - Manganese exceedance of 109 µg/L (third consecutive exceedance).
- 111PgC Lower_ R:
 - EC exceedance of 7,960 µS/cm (second consecutive exceedance);
 - Sulfate as SO₄ - Turbidimetric (filtered) exceedance of 320 mg/L (Third consecutive exceedance); and
 - Iron exceedance of 5150 µg/L (Second exceedance).

The next monitoring round will occur in Quarter Four 2023.

This Groundwater Monitoring Report must not be reproduced except in full and must be read in conjunction with the Limitations outlined in Section 6.0 of this report.



5.0 References

BOM (2023) Bureau of Meteorology, Australian Government. Available at [Australia's official weather forecasts & weather radar - Bureau of Meteorology \(bom.gov.au\)](https://www.bom.gov.au/forecasts/)

DES (2009) Department of Environment and Science (DES) Monitoring and Sampling Manual, Environmental Protection (Water) Policy 2009. Water Quality and Investigation, Department of Environment and Science (DES).

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended in 2013. National Environment Protection Council. Available at <https://www.legislation.gov.au/Details/F2013C00288>.

Standards Australia (2005) Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 1: Non-volatile and semi-volatile compounds. AS 4482.1-2005. Standards Australia, Homebush NSW. [WITHDRAWN]

Standards Australia (1998) Water Quality-Sampling Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples. AS/NZS 5667.1:1998. Standards Australia, Homebush NSW.



6.0 Limitations

The following information will assist in understanding the uncertainties relating to the interpretation of the data obtained during this investigation and the recommendations presented in the report and help with assessment and interpretation of the report.

SLR assumes no responsibility for the quality or accuracy of data obtained from external sources, or for occurrences outside the scope of works defined in this report.

All work conducted, and reports produced by SLR are prepared for a particular Client's objective and are based on a specific scope, conditions, and limitations, as agreed upon between SLR and the Client. Information and/or report(s) prepared by SLR may therefore not be suitable for any use other than the intended objective.

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It is the responsibility of third parties to investigate fully to their satisfaction if any information and/or report(s) prepared by SLR, is suitable for a specific objective. Services were conducted in a conscientious and professional manner. The nature of the task, however, and the likely disproportion between any damage or loss which might arise from the work and any report prepared as a result and the cost of our services is such that SLR cannot guarantee that all issues of concern/contamination have been identified.

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7.0 Feedback

At SLR, we are committed to delivering professional quality service to our clients. We are constantly looking for ways to improve the quality of our deliverables and our service to our clients.

Client feedback is a valuable tool in helping us prioritise services and resources according to our client needs.

To achieve this, your feedback on the team's performance, deliverables and service are valuable and SLR welcome all feedback via <https://www.slrconsulting.com/en/feedback>. We recognise the value of your time and we will make a \$10 donation to our 2023 Charity Partner - Lifeline, for every completed form.





Appendix A Figures

Groundwater Monitoring – Third Quarter 2023


New Acland Coal Mine

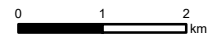
New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

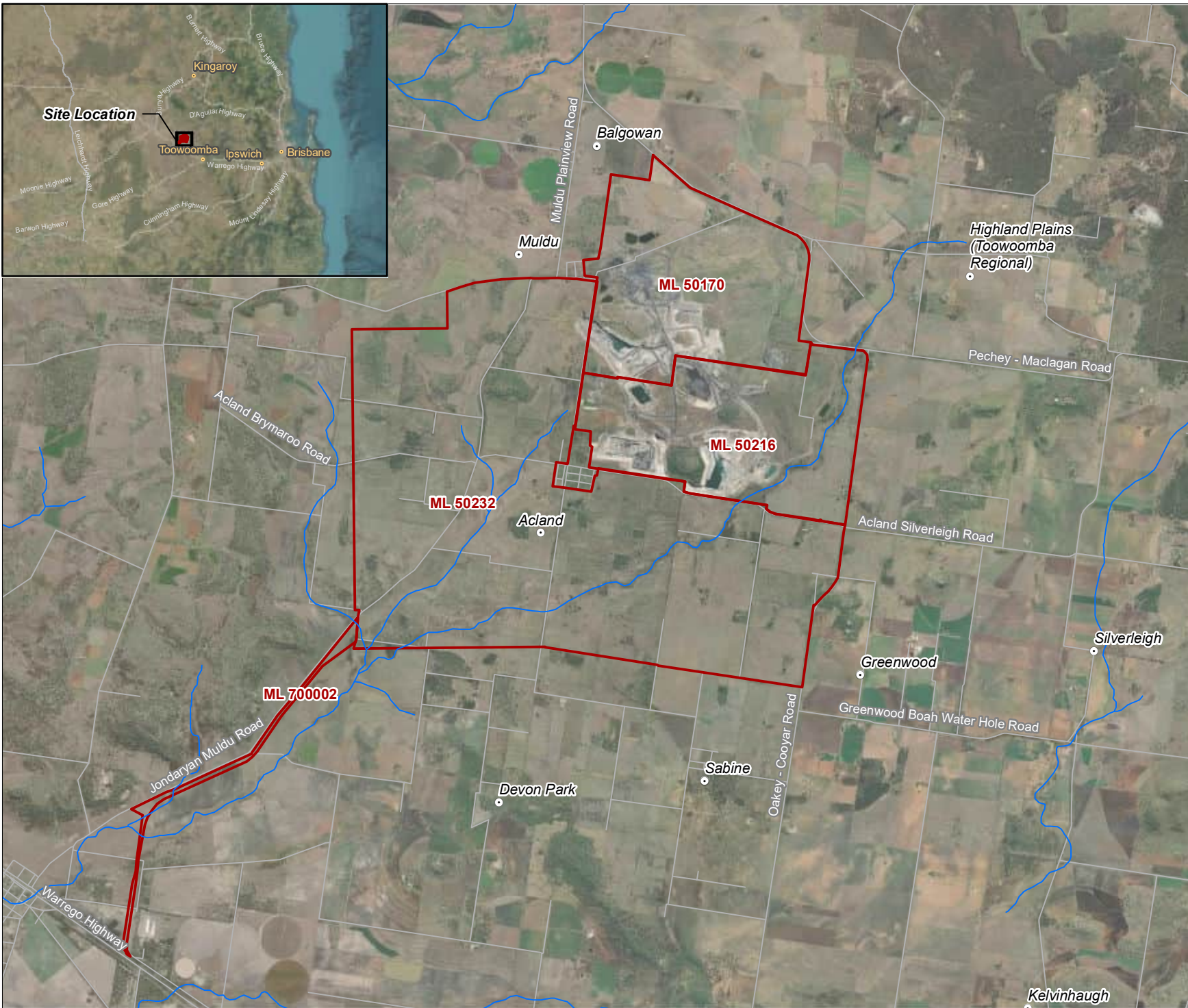
23 October 2023

FIGURE 1

-  Locality
-  Road
-  Watercourse
-  Mining Lease



Coordinate System:	GDA2020 MGA Zone 56
Scale:	1:90,000 at A4
Project Number:	620.31500.00000
Date:	10-May-2023
Drawn by:	RB





Appendix B Groundwater Monitoring Field Documentation

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023

Groundwater Monitoring Event - Water Quality Parameters

1



PROJECT NAME:	NAC GWM August 2023	PROJECT NUMBER:	620.040262.00001
PROJECT SITE ADDRESS:	NAC	PROJECT MANAGER:	NC / HM
PROJECT FIELD WORK DATE:	4/9/23	PROJECT FIELD STAFF:	HM

WELL ID	27pcp	DIAMETER (tick one):	38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	63.7	STICK UP (mm)	540
---------	-------	----------------------	-------------------------------	-------------------------------	--------------------------------	-------------------	------	---------------	-----

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	\$47.38 46.41 58			—
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	

Well Purge & Stabilisation Acceptance Criteria ±10% ±3% ±0.1 ±10% ±10%

11:22	2.5/1.5 ^{0.5}	8L	48.73	1.34	10652	6.70	6.9	22.9				X		No Colour
11:27	1.0 ^{0.5}	13L	49.05	0.74	6110 ^{10/50}	6.71	-2.4	23.2				X		slight sheen
11:32	0.5	15.5L	49.02	0.39	11609	6.73	-6.0	22.9				X		None
11:37	0.5	18	49.14	0.22	12378	6.81	-9.4	22.7				X		None
11:42	0.5	20.5	49.58	0.31	12147	6.81	-1.4	22.8				X		None
11:47	0.5	23	48.89	0.30	11956	6.78	-10.2	22.6				X		None
11:52	0.5	23	48.96	0.30	11956	6.78	-10.2	22.6				X		None
11:57	0.75	26	49.15	0.33	12246	6.83	-13.7	22.1				X		None
12:02	0.75	28.5	49.28	0.22	12570	6.88	-17.2	22.3				X		None
Duplicate Sample ID:				Split Sample ID:						Metals Sample Field Filtered:			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
12:02	0.75	31.5	44.31	0.14	12430	6.87	-22.1	22.2				X		Sampled

Groundwater Monitoring Event - Water Quality Parameters

2



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		29-8-23			PROJECT FIELD STAFF:		HM							
WELL ID	28PCR	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	63.7	STICK UP (mm)	620			
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install					
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>		25.91		24.24					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>				43					
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
8:08	2.5	5L	24.96	0.62	10065	7.16	76.8	19.0				X		Gas above, slight yellow turbidity
8:12	2	13L	24.93	0.31	10680	7.14	15.0	19.7				X		" "
8:16	2	21L	25.02	0.20	10090	7.14	-18.0	20.2				X		" clean
8:20	2	29L	25.04	0.18	10098	7.14	-20.1	20.5				X		" " sample taken
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														

Groundwater Monitoring Event - Water Quality Parameters

3



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		29			PROJECT FIELD STAFF:		HM								
WELL ID	84PBR	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	19.67	STICK UP (mm)	520 570				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)							
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>		Before Pump Install	After Pump Install	-						
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>		10.05	10.07	18						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>										
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
12:20	9.5	6	10.09	0.37	1658	6.98	-11.4	21.2						X	No odour no cbs
12:23	1.5	10.5	10.09	0.12	1640	6.96	-8.1	21.2						X	ll n
12:26	1.5	14	10.11	0.08	1629	6.96	-5.3	21.2						X	
12:28	1.5	17	10.12	0.08	1623	6.95	-4.8	21.2						X	sample
12:32	1.5	23	10.12	0.06	1621	6.95	-4.2	21.2							sample
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

4



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001									
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM									
PROJECT FIELD WORK DATE:		6/19			PROJECT FIELD STAFF:		HM									
WELL ID	CSWH1 RD		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		136.42	STICK UP (mm)		560			
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install		95 cm 15 Drip				
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>			93.90		93.86		110				
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>							-				
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)		
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear			
Well Purge & Stabilisation Acceptance Criteria				+10%	+3%	+0.1	+10%	+10%								
11:28	1	11L	94.17	15.10	6058	6.66	45.6	25.5						X	Amo on in odour, No other	
11:32	1	6L	94.17	0.53	1637	7.68	21.8	24.5						X	" "	
11:38	1	16L	94.19	0.35	1643	7.71	22.8	24.1						X	" "	
11:40	1	21L	94.23	0.14	1637	7.74	23.3	23.7						X	" "	
11:45	1	26L	94.25	0.15	1636	7.74	22.9	24.8						X	" "	
11:48	1	29L	94.28	0.16	1638	7.74	22.5	25.3						X	sampled	
Duplicate Sample ID: _____													Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Groundwater Monitoring Event - Water Quality Parameters

5



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		1/9/23			PROJECT FIELD STAFF:		HM								
WELL ID	10PBR		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		23.98	STICK UP (mm)		630		
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>		MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install							
IP ID: _____		BAILER (S/S) <input type="checkbox"/>		PERISTALTIC <input type="checkbox"/>		12.61		12.63		22					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>		WATERRA <input type="checkbox"/>											
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
8:55	1.5	6	12.78	2.63	3165	6.77	-5.1	21.0				X		Slight green tinge	No Odour
9:00	1.5	13.5	12.64	2.14	3257	6.78	2.5	22.0					X	ll	ll
9:05	2.0	23.5	12.68	2.22	3261	6.78	4.1	22.2					X	Sampled	
Duplicate Sample ID:		_____			Split Sample ID:		_____			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

Groundwater Monitoring Event - Water Quality Parameters

6



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001									
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM									
PROJECT FIELD WORK DATE:		1/9/23			PROJECT FIELD STAFF:		HM									
WELL ID	4517WB		DIAMETER (tick one):			WELL DEPTH (mBTC)		45.54	STICK UP (mm)	580						
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)							
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install									
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			29.75		29.45		40							
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>														
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)		
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear			
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%								
8:18	1.5	6	30.45	0.29	371	8.86	-28.5	21.0						X	No odour	Slight silver sheen
8:23	1.5	13.5	29.97	0.32	11.0	7.44	-35.0	21.1					X		Slight yellow	No odour
8:28	1.5	20	29.97	0.27	12.6	7.41	-31.2	21.3					X		"	"
8:30	1.5	23	29.97	0.31	13.0	7.40	-24.0	21.2					X		"	"
8:32	1.5	26	29.96	0.29	13.2	7.40	-29.2	21.2					X		"	"
Sample 12																
Duplicate Sample ID:					Split Sample ID:					Metals Sample Field Filtered:					Yes <input type="checkbox"/>	No <input type="checkbox"/>

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		1/9			PROJECT FIELD STAFF:		HM								
WELL ID	4518wB		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	60.53	STICK UP (mm)	500				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)							
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install								
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			12.67		12.67		30						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
9:27	2L	10L	12.76	0.82	2679	7.00	46.2	21.8						X	No odour no colour
9:32	2L	20L		0.14	3461	7.01	4.9	21.6						X	"
9:37	2L	30L	12.76	0.08	3677	7.01	-23.9	21.5						X	"
9:42	2.5L	45L	12.78	0.04	3682	7.01	-40.1	21.4						X	"
9:47	2.5	57L	12.78	0.03	3694	7.01	-49.1	21.4						X	
9:52	2.5	70L	12.79	0.01	3693	7.00	-55.5	21.4						X	sampled
Duplicate Sample ID:		_____			Split Sample ID:		_____			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

Groundwater Monitoring Event - Water Quality Parameters

8



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 4/9/23		PROJECT FIELD STAFF: HM	
WELL ID: 25PCR	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>		WELL DEPTH (mBTC): 102.15
		STICK UP (mm): 760	

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install	86	-
IP ID: _____		BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	72.21	72.04		
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
1:25	1.5	6L	72.52	1.07	10114	6.88	-3.5	22.8						X	
1:30	1.5	13L	72.61	1.09	10119	6.83	-17.5	23.0						X	No odor no color
1:35	1.5	20L	72.62	0.10	10113	6.85	-25.7	23.0						X	" "
1:40	1.5	27L	72.64	0.09	10113	6.85	-32.0	22.9						X	" "
1:42	1.5	34L	72.64	0.08	10108	6.86	-33.6	22.8						X	Sampled

Duplicate Sample ID: _____ **Split Sample ID:** _____ **Metals Sample Field Filtered:** Yes No

Groundwater Monitoring Event - Water Quality Parameters

9



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 4/9/23		PROJECT FIELD STAFF: HM
WELL ID: 26 PCR	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC): 93.60
		STICK UP (mm): 480

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	62.70	62.54	85	-
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or μS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria															
				±10%	±3%	±0.1	±10%	±10%							
12:35	1.5	7.0	62.90	3.82	12218	6.82	20.2	21.9					X	Slight yellow	
12:40	1.5	14.0	62.94	0.20	12414	6.93	-6.7	22.4					X	No odor.	
12:45	2	27	63.13	0.14	12411	6.93	-23.0	22.5					X	" "	
12:50	2	37		0.06	12412	6.93	-31.0	22.9					X	" "	
12:52	2	37.1	63.18	0.05	12424	6.93	-33.0	22.9					X	" "	
														✓	sampled

Duplicate Sample ID: QAQC03 Split Sample ID: QAQC04 Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

V6



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		6/9			PROJECT FIELD STAFF:		HM								
WELL ID	3316WB		DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	49.48	STICK UP (mm)	770			
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>			Before Pump Install	After Pump Install						
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>			23.34	23.34		45				
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>			23.34			-				
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
8:50	0.5	5L	23.40	3.1	3641	7.41	29.7	23.4						X	No colour - no odor
8:55	0.5	7.5L	24.05	0.29	5484	7.24	34.1	23.6						X	" "
9:05	0.5	10L	24.09	0.23	5499	7.24	27.1	24.4						X	" "
9:10	0.5	12.5L	24.76	0.14	5499	7.24	20.5	24.1						X	Sampled
Duplicate Sample ID: <u>QAQC05</u> Split Sample ID: <u>QAQC06</u> Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

VV



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: <i>PCB Lower 29/8/23</i>		PROJECT FIELD STAFF: HM
WELL ID: <i>2289R Lower</i>	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC): <i>61.30</i>
		STICK UP (mm): <i>580</i>

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	<i>42</i>	
IP ID: _____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	After Pump Install		
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>			

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
<i>15:17</i>	<i>1.5</i>	<i>5L</i>	<i>15.59</i>	<i>0.66</i>	<i>4092</i>	<i>7.24</i>	<i>67.7</i>	<i>21.7</i>					<i>X</i>	<i>Slight yellow no odor</i>
<i>15:22</i>	<i>1</i>	<i>6L</i>	<i>16.07</i>	<i>0.14</i>	<i>4096</i>	<i>7.30</i>	<i>39.1</i>	<i>22.9</i>					<i>X</i>	<i>" "</i>
<i>15:27</i>	<i>1</i>	<i>15L</i>	<i>16.25</i>	<i>0.12</i>	<i>4123</i>	<i>7.29</i>	<i>21.2</i>	<i>21.7</i>					<i>X</i>	<i>" "</i>
<i>15:30</i>	<i>0.75</i>	<i>18L</i>	<i>16.37</i>	<i>0.11</i>	<i>4121</i>	<i>7.29</i>	<i>15.2</i>	<i>21.7</i>					<i>X</i>	<i>sampled</i>

Duplicate Sample ID: _____ **Split Sample ID:** _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

12



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 29/8/23		PROJECT FIELD STAFF: HM
WELL ID: BMH1	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): 110.42
		STICK UP (mm): 670

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	15.49	15.45	45	—
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (mBTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
1:10	2L	8	15.70	1.66	1428	6.66	27.3	21.0				X			Subsane " yellow
1:15	2L	18	15.72	1.22	1427	6.66	27.8	21.9				X			" "
1:20	2L	28	15.78	1.02	1426	6.66	29.6	22.0					X		slight less yellow
1:22	2L	32	15.73	0.96	1422	6.66	32.0	22.1					X		
1:24	2L	36	15.74	0.97	1421	6.66	32.2	22.1					X		sample failed

Duplicate Sample ID: _____ **Split Sample ID:** _____ **Metals Sample Field Filtered:** Yes No

Groundwater Monitoring Event - Water Quality Parameters

13



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 4/9/23		PROJECT FIELD STAFF: HM

WELL ID: 2291Pc DIAMETER (tick one): 38mm 50mm 100mm WELL DEPTH (mBTC) 52 STICK UP (mm) 1160

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	39.49	39.45	45	-
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (mBTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
14:16	1.2	1.26	39.63	2.41	8219	6.98	-2.6	23.5					X	No odour No odour
14:15	1.2	1.2	39.62	0.15	8112	6.97	-8.4	23.0					X	" "
14:20	1.2	1.8	39.63	0.06	8092	6.82	-18.8	22.8					X	" "
14:25	1.2	2.4	39.62	0.04	8261	6.81	-26.2	22.9					X	" "
14:27	1.2	26.4	39.62	0.03	8250	6.81	-28.9	23.1					X	Sampled

Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

14



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 6/19/23		PROJECT FIELD STAFF: HM

WELL ID: 81PCR DIAMETER (tick one): 38mm 50mm 100mm WELL DEPTH (mBTC) 37 STICK UP (mm) 870 *No Maximum Base yet*

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID:	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install			
IP ID:	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	29.02	28.37		34	
PID ID:	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>					

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria															
				±10%	±3%	±0.1	±10%	±10%							
10:20	1.5	6L	29.78	1.45	8696	6.89	15.5	25.3					X		Slight Brown / Slight odour
10:25	1	11L	30.89	0.14	6207	6.39	8.3	24.5						X	Yellow / Smell
10:35 <i>off for 5 min</i>	0.5	13.5	30.85	0.14	6219	6.45	12.7	25.5						X	" "
10:40	0.5	16L	30.91	0.13	6214	6.46	13.5	25.8						X	" "
10:45	0.5	18.5	30.98	0.11	6222	6.47	14.4	25.9						X	No colour "

Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

15



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 28/8/23		PROJECT FIELD STAFF: HM													
WELL ID: 109PR	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTCO): 112	STICK UP (mm): 952 - <i>normal out</i>												
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)													
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>													
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>													
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
		DEPTH TO WATER (mBTCO)													
		Before Pump Install: 24.55 After Pump Install: 23.27													
		PUMP INTAKE DEPTH (mBTCO): 68 → tube stopped at 60, force it to 68													
		WELL HEADSPACE PID (ppm): 952													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTCO)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
16 10	2	4L	25.14	0.41	406.2	9.42	-49.0	22.5				X		No odor, slight yellow	
16 12	1.5	7L	25.69	23.12	410.5	9.36	-55.0	22.5				X		" "	
16 14	0.5	7.5	25.27	2.57	407.1	9.34	-61.2	23.4				X		" "	
16 18	0.5	9.5	25.12	2.58	406.3	9.35	-64.1	23.5				X		slight odor	
16 22	0.5	11.5	25.05	2.47	399.0	9.36	-64.1	23.6				X		Sample	
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

16



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 30/8		PROJECT FIELD STAFF: HM	
WELL ID: Gw05A	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC): 17.8	STICK UP (mm): 600

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install			
IP ID: _____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	4.70	4.67		16	-
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>					

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				+10%	+3%	+0.1	+10%	+10%							
8:45	2L	8L	4.78	3.8	1289	6.79	61.5	19.9						X	slight green tinge no odor
8:50	2L	18L	4.88	3.67	1291	6.79	62.1	20.6						X	
8:55	2L	28L	4.89	3.64	1294	6.79	63.7	20.8						X	gutter

Duplicate Sample ID: _____ **Split Sample ID:** _____ **Metals Sample Field Filtered:** Yes No

Groundwater Monitoring Event - Water Quality Parameters

17



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001												
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM												
PROJECT FIELD WORK DATE: 30/8		PROJECT FIELD STAFF: HM												
WELL ID: Gw16A	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): 23.8	STICK UP (mm): 550											
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)												
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>												
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>												
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>												
		DEPTH TO WATER (mBTC)												
		Before Pump Install After Pump Install												
		15.74 15.50												
		PUMP INTAKE DEPTH (mBTC): 21												
		WELL HEADSPACE PID (ppm): -												
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:08	1.5	5L	15.91	1.65	1754	6.73	69.0	22.7					X	slight yellow no dsm
10:13	1.5	12.5L	16.38	0.86	1785	6.75	70.4	22.4					X	" "
10:18	1.25	18L	16.30	0.47	1849	6.76	71.9	23.3					X	" "
10:22	1.25	23L	16.28	0.46	1848	6.76	72.2	23.5					X	Sampled
Duplicate Sample ID: _____		Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										

Groundwater Monitoring Event - Water Quality Parameters

14



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 5/9		PROJECT FIELD STAFF: HM	
WELL ID GW15A	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC) 46	STICK UP (mm) 600

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	29.27	29.28	41	-
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
9:44	1L	5L	29.34	0.67	1263	8.54	-0.4	23					X	No Odour No Colour
9:49	1L	10L	29.38	0.23	1934	7.25	-10.6	23					X	" "
9:54	1L	15L	29.32	0.07	1942	7.26	-29.5	23					X	" "
9:59	1L	20L	29.33	0.03	1963	7.25	-49.4	23.1					X	Slumped

Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

19



PROJECT NAME:		NAC GWM August 2023		PROJECT NUMBER:	620.040262.00001		
PROJECT SITE ADDRESS:		NAC		PROJECT MANAGER:	NC / HM		
PROJECT FIELD WORK DATE:		5/9		PROJECT FIELD STAFF:	HM		
WELL ID	Gw13B		DIAMETER (tick one):	38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	
				WELL DEPTH (mBTOC)	111.82	STICK UP (mm)	565

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID:	_____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID:	_____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	29.46	29.37	41	
PID ID:	_____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
10:25	2L	10L	29.72	0.21	765	8.08	-23.3	23.6					X	Slight yellow
10:30	2L	20L	29.79	0.01	757	8.09	-29.5	23.1					X	Slight H ₂ O ₂ color Switch?
10:35	2L	30L	29.81	0.00	757	8.10	-34.4	23.1					X	
10:38	2	36L	29	0.00	757	8.10	-37.2	23.2					X	No color
													X	Sampled

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

20



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 6/9/23		PROJECT FIELD STAFF: HM													
WELL ID: 114P	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC): 84.24	STICK UP (mm): 1220												
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)													
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>													
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>													
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
		DEPTH TO WATER (mBTOC)													
		Before Pump Install After Pump Install													
		53.81 53.36													
		PUMP INTAKE DEPTH (mBTOC): 70													
		WELL HEADSPACE PID (ppm): -													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
14:30	1L	10L	54.30	1.02	6251	6.93	76.5	26.7					X	No odor no color	
14:35	1L	15L	54.22	1.01	6268	6.94	74.1	26.4					X		
14:40	1L	20L	54.24	1.09	6296	6.95	73.0	26.7					X		
14:45	1L	25L	54.15	0.77	6312	6.95	70.9	26.1					X	Sampled	
Duplicate Sample ID: _____		Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											

Groundwater Monitoring Event - Water Quality Parameters

21



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		7/9			PROJECT FIELD STAFF:		HM							
WELL ID	116P	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTOC)	60.95	STICK UP (mm)	1200			
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>		Before Pump Install	After Pump Install	-					
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>		35.80	35.45	48					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>									
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
9:05	0.7	5L	36.19	0.12	2941	7.35	-63.5	22.5					X	Slight grey Slight sulfur
9:10	0.7	8.5L	36.27	0.32	2953	7.24	-47.7	22.6					X	No odour no color
9:15	0.3	4.10L	36.17	0.11	2943	7.25	-53.5	23.0					X	ll ll
9:20	0.7	13.5L	36.30	0.07	2948	7.25	-56.3	22.9					X	Sample d
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														

Groundwater Monitoring Event - Water Quality Parameters

22



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		6/9			PROJECT FIELD STAFF:		HM								
WELL ID	119P	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>			WELL DEPTH (mBTC)		49.58	STICK UP (mm)		1200					
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install								
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			16.18		16.18		30						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>							-						
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				+10%	+3%	+0.1	+10%	+10%							
1:42	2L	5L	16.32	0.31	3690	6.90	68.3	25.2					X	No odor No alk	
1:47	2L	15L	16.33	0.04	2884	7.21	63.0	24.3					X	No odor "	
1:52	2L	25L	16.30	0.02	2774	7.31	59.0	24.5					X	" "	
1:57	2L	35L	16.32	0.02	2740	7.33	53.8	24.4					X	" "	
2:02	2L	45L	16.32	0.01	2731	7.33	51.8	24.1					X	" "	
2:05	2L	51L	16.37	0.00	2733	7.33	48.6	24.1					X	gentle	
Duplicate Sample ID: _____		Split Sample ID: _____			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>						

Groundwater Monitoring Event - Water Quality Parameters

23



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 31/8/27		PROJECT FIELD STAFF: HM	
WELL ID: 118P	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>		WELL DEPTH (mBTCO): 62.1
FIELD EQUIPMENT (serial number)		STICK UP (mm): 1002	

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTCO)		PUMP INTAKE DEPTH (mBTCO)	WELL HEADSPACE PID (ppm)
WQM ID:	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install			
IP ID:	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	13 14.22	14.22	32		
PID ID:	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>	14.22				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTCO)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria															
				±10%	±3%	+0.1	±10%	±10%							
2:40	2L	10L	14.22	0.16	23617	6.41	-20.3	23.0					X	No odour slight yellow	
2:44	2L	18L	14.24	0.06	23372	6.43	-22.1	22.7						X	" "
2:48	2L	26L	14.24	0.03	22310	6.45	-24	22.9						X	" "
2:52	2L	34L	14.22	0.02	21270	6.47	-26.6	22.9						X	" "
2:55	3L	50L	14.22	0.00	21064	6.48	-27.3	22.5						X	" "
2:57	3L	50L	14.23	0.00	21041	6.48	-27.6	22.5						X	" "
															Samples

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

24



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 7/9		PROJECT FIELD STAFF: HM	
WELL ID: 113PgcB	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>		WELL DEPTH (mBTOC): 57.4
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)	
WQM ID: _____		DEPTH TO WATER (mBTOC)	
IP ID: _____		Before Pump Install: 7.43	
PID ID: _____		After Pump Install: 7.41	
BAILER (ECO) <input type="checkbox"/>		PUMP INTAKE DEPTH (mBTOC): 45	
BAILER (S/S) <input type="checkbox"/>		WELL HEADSPACE PID (ppm): -	
BAILER (TEFLON) <input type="checkbox"/>		STICK UP (mm): 1100	
MICRO-PURGE <input type="checkbox"/>			
PERISTALTIC <input type="checkbox"/>			
WATERRA <input type="checkbox"/>			

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria															
				±10%	±3%	±0.1	±10%	±10%							
7:20	2	6L	7.53	1.01	6079	7.02	63.5	19.7							
7:25	2	16L	7.57	0.14	6089	7.04	25.3	20.8						X	No color no dirt
7:30	2	26L	7.56	0.11	6093	7.04	7.9	21.0						X	ll ll
7:33	2	32L		0.12	6092	7.04	7.9	21.0						X	ll ll
														X	Sample

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

25



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 30/8		PROJECT FIELD STAFF: HM	

WELL ID: Gw05 B	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): 80.7	STICK UP (mm): 650
FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)	
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install: 49.50	After Pump Install: 49.50
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	PUMP INTAKE DEPTH (mBTC): 65	
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>	WELL HEADSPACE PID (ppm): -	

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or μS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
9:10	1.5	5L	49.55	8.08	1295	6.79	66.4	21.3					X	No odour no colour
9:15	1.5	12L	49.50	4.36	1293	6.80	67.1	21.4					X	ll ll
9:20	1.5	20L	49.51	0.54	1065	7.63	78.2	21.2					X	ll ll
9:24	2L	28L	49.52	0.14	1071	7.68	75.3	22.0					X	ll ll
9:30	2L	40L	49.62	0.15	1073	7.68	72.6	22.3					X	Sampled

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

26



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 30/8		PROJECT FIELD STAFF: HM	

WELL ID: Gw06B DIAMETER (tick one): 38mm 50mm 100mm

WELL DEPTH (mBTOC): 134.20 STICK UP (mm): 748

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	<u>27.10</u>	<u>27.19</u>	<u>42</u>	-
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
1:53	2L	6L	27.30	0.35	1100	8.28	78.3	24.9						
1:56	2L	12L	27.35	0.10	1096	8.34	75.3	23.6					X Slight Sulfer Odour	
2:00	2L	22L	27.38	0.04	1094	8.38	70.6	23.1						
2:02	2L	26L	27.38	0.03	1094	8.38	68.2	23.0						
2:04	2L	30L	27.40	0.03	1093	8.37	66.8	23.1					X Sample	

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 5/9		PROJECT FIELD STAFF: HM

WELL ID: **GW10** DIAMETER (tick one): 38mm 50mm 100mm

WELL DEPTH (mBTC) **71.4** STICK UP (mm) **920**

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)	PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install: H3-35	After Pump Install: 43.78	52
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>			

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
13:00	1.5	6	44.09	0.58	2693	7.48	40-8	25.4					X		No odour <i>slight grey</i>
13:05	1	11	44.60	0.01	2702	7.49	35	24.9						X	No odour <i>NO color</i>
13:10	1	16	44.71	0.02	2775	7.50	28.0	24.7						X	
13:15	1	21	44.89	0.00	2830	7.50	2517.1	24.6						X	
13:18	1	24	44.97	0.01	2833	7.50	14.9	24.6						X	Sampled

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023
PROJECT SITE ADDRESS: NAC
PROJECT NUMBER: 620.040262.00001
PROJECT FIELD WORK DATE: 5/19
PROJECT MANAGER: NC / HM
PROJECT FIELD STAFF: HM
WELL ID: GW08C
DIAMETER (tick one): 38mm 50mm 100mm

FIELD EQUIPMENT (serial number) _____
SAMPLING EQUIPMENT (tick applicable)
 BAILER (ECO) MICRO-PURGE
 BAILER (S/S) PERISTALTIC
 BAILER (TEFLON) WATERRA
DEPTH TO WATER (mBTOC)
 Before Pump Install: 81.19 After Pump Install: 81.14
WELL DEPTH (mBTOC): >150
PUMP INTAKE DEPTH (mBTOC): 85
STICK UP (mm): 540
WELL HEADSPACE PID (ppm): -

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
8:25	1.5	6L	81.49	0.22	2631	8.17	26.8	22.9						
8:30	1.5	12L	81.52	0.09	2635	8.20	-18.3	23.2					X	Slight silver sheen
8:35	1.5	18L	81.52	0.05	2635	8.20	-43.7	23.4				X		slight grey
8:38	1.5	22.5	81.52	0.02	2636	8.21	-69.1	23.5				X		no odor
												X		Sample 4

Duplicate Sample ID: _____
Split Sample ID: _____
Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001									
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM									
PROJECT FIELD WORK DATE:		7/9			PROJECT FIELD STAFF:		HM									
WELL ID	Gw09C	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>			WELL DEPTH (mBTC)		>150		STICK UP (mm)	530						
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)							
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install									
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			14.93		14.83		30							
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>							-							
<i>Handwritten note: HWT case</i>																
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear			
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%								
10:55	1L	6L	15.23	0.48	1986	7.49	-90.5	21.8						X	No colour	slight odour / Acid odour
11:00	1L	11L	15.38	0.02	1988	7.48	-133.5	22.0						X		
11:05	1L	16L	15.43	0.0	1987	7.48	-166.3	22.0						X		
11:10	1L	21L	15.47	0.0	1986	7.48	-183.2	22.0						V	surphed	
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023

PROJECT SITE ADDRESS: NAC

PROJECT FIELD WORK DATE: 7/9/23

PROJECT NUMBER: 620.040262.00001

PROJECT MANAGER: NC / HM

PROJECT FIELD STAFF: HM

WELL ID: Gwo 9A

DIAMETER (tick one): 38mm 50mm 100mm

WELL DEPTH (mBTC): 25.85

STICK UP (mm): 590

FIELD EQUIPMENT (serial number)

SAMPLING EQUIPMENT (tick applicable):
 BAILER (ECO) MICRO-PURGE
 BAILER (S/S) PERISTALTIC
 BAILER (TEFLON) WATERRA

DEPTH TO WATER (mBTC)
 Before Pump Install: 16.0
 After Pump Install: 15.98

PUMP INTAKE DEPTH (mBTC): 23

WELL HEADSPACE PID (ppm): -

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				+10%	+3%	+0.1	+10%	+10%						
09:43	1.5	6L	16.04	0.14	2941	7.24	-9.8	23.2					X	No colour no odour
09:48	1.5	13.5	16.05	1.89	3004	6.96	-12.8	22.5					X	No colour no odour
09:53	1.5	21	16.08	3.06	3005	6.96	-4.2	22.3					X	
09:58	1.5	28.5	16.08	3.05	3005	6.96	-0.1	22.2					X	Sampled

Duplicate Sample ID: _____

Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		7/9			PROJECT FIELD STAFF:		HM								
WELL ID	Gwo9B		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		40.3	STICK UP (mm)		590		
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>		MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install		-					
IP ID: _____		BAILER (S/S) <input type="checkbox"/>		PERISTALTIC <input type="checkbox"/>		14.92		14.95		32					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>		WATERRA <input type="checkbox"/>											
				<i>Hurricane ID</i>											
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
10:25	1L	5	14.95	1.02	2561	7.11	26.9	21.8						X	No odor No color
10:30	1L	15	14.97	0.10	2562	7.11	15.2	22.0						X	" "
10:35	1L	20	14.97	0.03	2567	7.11	2.3	21.9						✓	" "
10:40	1L	25	14.97	0.01	2566	7.11	-6.8	22.0						X	Sampled
Duplicate Sample ID:		_____		Split Sample ID:		_____		Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>				

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023		PROJECT NUMBER:	620.040262.00001
PROJECT SITE ADDRESS:		NAC		PROJECT MANAGER:	NC / HM
PROJECT FIELD WORK DATE:		28/8/23		PROJECT FIELD STAFF:	HM
WELL ID	Gw11 B	DIAMETER (tick one):		WELL DEPTH (mBTOC)	> 150
		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>		
			100mm <input type="checkbox"/>		

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID:		BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID:		BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	54.17	54.91	70	
PID ID:		BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria															
				±10%	±3%	±0.1	±10%	±10%							
15:05	1.5	3L	54.91	3.52	3298	7.34	67.4	22.5					X	Slight H ₂ S odour	
15:07	1	25L	55.06	3.00	3307	7.07	18.4	22.5					X	"	
15:15	0.75	9L	55.13	7.29	3297	7.08	-30.4	22.5					X	H ₂ S odour	
15:20	0.75	12.5L	54.55	6.47	3301	7.02	-47.4	22.4					X	" No Sed	
15:25	0.75	16L	54.52	6.50	3299	6.98	-53.6	22.4					X	" "	
15:30	0.75	19.5L	54.52	6.44	3297	6.98	-76.2	22.4					X	" "	
														Sample taken	

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		29			PROJECT FIELD STAFF:		HM								
WELL ID	18PCR	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	98.89 42.40	STICK UP (mm)	720				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>			Before Pump Install	After Pump Install						
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>			43.78	42.90						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>			43.78	47.78						
								66	-						
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
11:25	2L	4L	43.10	0.33	780	8.31	7.4	21.2					X	Slight yellow	Slight Sulphur
11:30	2L	14L	43.26	0.13	782	8.37	-1.9	21.9					X	"	"
11:34	2L	22L	43.29	0.06	782	8.40	-11.2	22.1					X	"	"
11:38	2L	30L	43.33	0.05	782	8.43	-19.9	22.3					X	"	"
11:45	2L	44L	43.37	0.04	781	8.45	-33.1	22.5					X	"	"
11:47	2L	48L	43.39	0.04	781	8.45	-38.2	22.6						Sampled	
Duplicate Sample ID:					Split Sample ID:					Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		29			PROJECT FIELD STAFF:		HM							
WELL ID	18PBR2		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	72.86	STICK UP (mm)	690			
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install		—					
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			17.95		16.45		40					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>												
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:25	2L	5	18.64	0.78	698	7.86	-43.2	18.7				X		Slight Brown, no odour
10:30	1L	10L	18.92	1.12	676	7.77	-39.2	18.8					X	" "
10:37	0.25	12L	19.64	2.82	023	7.72	-32.4	18.1					X	clear "
10:43	0.25	15L	19.90	5.31	726	7.69	-28.4	18.0					X	" "
10:45	0.25	15.5	19.46	0.42	729	7.67	-27.4	17.8					X	" "
10:47	0.25	16	19.42	0.42	731	7.67	-27.8	17.9						Sample 3
Duplicate Sample ID:		Split Sample ID:			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>							

Groundwater Monitoring Event - Water Quality Parameters 35



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 6/9		PROJECT FIELD STAFF: HM
WELL ID: 82PCR	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	WELL DEPTH (mBTOC) 41.40	STICK UP (mm) 710
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	DEPTH TO WATER (mBTOC)	
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	Before Pump Install	After Pump Install
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>	19.90	19.72
		PUMP INTAKE DEPTH (mBTOC) 33	WELL HEADSPACE PID (ppm) -

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or μS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
9:40	1	5L	20.0	0.98	5500	7.20	37.1	24.6						
9:45	1	10L	20.01	0.49	5503	7.21	29.4	24.8						No odour noted
9:56	1	15L	20.02	0.67	86899	6.90	26.1	24.7						" "
9:55	1	20L	20.05	0.15	8838	6.90	21.4	24.3						" "
9:58	1	25L	20.04	0.09	8805	6.90	-0.6	24.3						" "
10:02	1	30L	20.05	0.09	8789	6.90	-4.1	24.4						" "
														Supplied

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		29/8/23			PROJECT FIELD STAFF:		HM								
WELL ID	132WR	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	47.55	STICK UP (mm)	560				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			Before Pump Install		After Pump Install		-						
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			4.44		4.50		23						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>													
			MICRO-PURGE <input type="checkbox"/>												
			PERISTALTIC <input type="checkbox"/>												
			WATERRA <input type="checkbox"/>												
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
15:58	2L	8L	4.50	0.22	58184	6.68	102.1	22.1				X		super	Wicker
14:00	2L	12L	4.80	0.13	7121	6.51	98.8	22.0				X		"	"
14:04	2L	20L	4.91	0.06	7238	6.43	80.1	22.0					X	"	"
14:08	2L	28L	4.54	0.04	7289	6.42	878.1	21.8					X	"	"
14:10	2L	32L	4.4	0.03	7291	6.42	71.4	21.8					X	Sampled	
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

37



PROJECT NAME: NAC GWM August 2023
 PROJECT SITE ADDRESS: NAC
 PROJECT FIELD WORK DATE: 29/8/23
 PROJECT NUMBER: 620.040262.00001
 PROJECT MANAGER: NC / HM
 PROJECT FIELD STAFF: HM
 WELL ID: 133WB2
 DIAMETER (tick one): 38mm 50mm 100mm

FIELD EQUIPMENT (serial number) _____
 SAMPLING EQUIPMENT (tick applicable):
 BAILER (ECO) MICRO-PURGE
 BAILER (S/S) PERISTALTIC
 BAILER (TEFLON) WATERRA
 WQM ID: _____
 IP ID: _____
 PID ID: _____
 WELL DEPTH (mBTOC) 84.30
 STICK UP (mm) _____
 DEPTH TO WATER (mBTOC):
 Before Pump Install: 17.52
 After Pump Install: 15.24
 PUMP INTAKE DEPTH (mBTOC): 48
 WELL HEADSPACE PID (ppm) _____

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or μS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
Pumping began at 2L/min. Sampling brought back to 0.5L. Dropped to 18V. quickly														
14:35	0.5L	5L	18.64	0.78	400.2	7.5	-15.6	22.6						
14:40	0.5	7.5L	19.38	0.13	399.8	7.62	-14.1	22.7					X	No odor No color
14:45	breakin	pumping	18.44	0.24	399.7	7.58	-8.1	23.2					X	" "
14:48	-	-	18.82	0.31	397.9	7.60	-7.9	23.1					X	" "
													X	sampled

Duplicate Sample ID: _____ Split Sample ID: _____
 Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

38



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 19/23		PROJECT FIELD STAFF: HM
WELL ID: BCS3	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC) 111.93
FIELD EQUIPMENT (serial number)		STICK UP (mm) 800

SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	78 <i>- could not get pos + 79 up</i>	-
IP ID: _____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	After Pump Install		
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>			

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
7:23	2.2	8.8	34.85	1.83	1073	10.23	-62.9	21.0		X				Dark grey silty odour
7:28	2.2	19.8	35.02	0.23	905	9.48	-82.1	21.6			X			" "
7:33	2.0	29.8	34.92	0.16	885	9.16	-82.1	21.6					X	No colour slight silty odour
7:38	2.0	39.8	34.85	0.16	867	8.97	-79.1	21.8					X	" "
7:43	2.0	49.8	34.87	0.15	884	8.90	-76.1	22.0					X	
7:48	2.0	59.8	34.97	0.13	891	8.92	-75.4	22.0					X	
7:50	2.0	62	34.98	0.10	891	8.86	-74.5	22.5					X	
7:55	2.0	72	35.00	0.14	892	8.85	-73.2	22.5					X	
Duplicate Sample ID:				Split Sample ID:										
7:58	2.0	79	35.02	0.12	891	8.85	-72.7	22.5					X	Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

X Sampled

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		6/9			PROJECT FIELD STAFF:		HM							
WELL ID	BCS4		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		133.74	STICK UP (mm)		810	
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)				DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)				
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>		MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install		-				
IP ID: _____		BAILER (S/S) <input type="checkbox"/>		PERISTALTIC <input type="checkbox"/>		37.60 30.60 107								
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>		WATERRA <input type="checkbox"/>										
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
07:55	2L	6L	37.47	2.10	7999	6.82	-5.2	21.9					X	No colour no odor
08:00	2L	16L	37.67	1.12	3730	7.25	-10.2	22.8					X	" "
08:05	1.5L	23.5	38.24	0.20	3712	7.43	-9.0	23.1					X	" "
08:10	1L	28.5	38.33	0.20	3678	7.47	-7.6	23.4					X	" "
08:15	1L	33.5	38.49	0.09	3686	7.48	-6.1	23.3					X	" "
08:18	1L	38.5	38.	0.10	3684	7.47	-5.1	23.4					X	sampled
Duplicate Sample ID:		_____		Split Sample ID:		_____		Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:					PROJECT FIELD STAFF:		HM								
WELL ID	LCA1		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTOC)	5.44	STICK UP (mm)	740				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install						
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>		_____		_____						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>		_____		_____						
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
			Dy												
Duplicate Sample ID:		_____			Split Sample ID:		_____			Metals Sample Field Filtered:		Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		6/9/23			PROJECT FIELD STAFF:		HM							
WELL ID	LCA2	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTOC)	7.24	STICK UP (mm)	680			
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install					
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>		_____		_____					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>		_____		_____					
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
					Dry									
Duplicate Sample ID:		_____			Split Sample ID:		_____			Metals Sample Field Filtered:		Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:					PROJECT FIELD STAFF:		HM								
WELL ID	Gw14A		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		5.54	STICK UP (mm)		600		
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install					
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>										
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>										
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
			Dry												
Duplicate Sample ID:		_____			Split Sample ID:		_____			Metals Sample Field Filtered:		Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 5/9		PROJECT FIELD STAFF: HM													
WELL ID: GW08B	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): >170	STICK UP (mm): 590												
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)													
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>													
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>													
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
		DEPTH TO WATER (mBTC)													
		Before Pump Install After Pump Install													
		8.72 8.68													
		PUMP INTAKE DEPTH (mBTC)													
		65 58 ^{Pump} _{unable to go further -}													
		WELL HEADSPACE PID (ppm)													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
9:00	1.5	10L	8.89	0.67	1262	8.57	-52.4	22.4					X	No odour slight grey	
9:05	1.5	16L	8.94	0.09	1263	8.58	-47.2	22.5					X	No colour	
9:10	1.5	22L	8.92	0.06	1264	8.58	-44.8	22.6					X	Sampled	
Duplicate Sample ID: _____		Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 8/18/23		PROJECT FIELD STAFF: HM													
WELL ID: GW12B	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTCO): >150	STICK UP (mm): 510												
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)													
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>													
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>													
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
		DEPTH TO WATER (mBTCO)													
		Before Pump Install After Pump Install													
		55.22 55.57													
		75													
		PUMP INTAKE DEPTH (mBTCO)													
		75													
		WELL HEADSPACE PID (ppm)													
		-													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTCO)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria			±10%	±3%	±0.1	±10%	±10%								
9:20	1.5	6L	55.62	3.47	2338	7.94	3.4	23.3					X	Sulfur No clear	
9:25	1.5	13.5	55.83	0.92	1038	8.42	-8.6	23.3					X	" "	
9:30	1.5	21	55.91	0.16	1037	8.42	-19.6	23.5					X	" "	
9:35	1.5	28.5	55.89	0.14	1036	8.43	-19.4	23.4					X	sampled	
Duplicate Sample ID: _____		Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:	NAC GWM August 2023	PROJECT NUMBER:	620.040262.00001
PROJECT SITE ADDRESS:	NAC	PROJECT MANAGER:	NC / HM
PROJECT FIELD WORK DATE:	5/9	PROJECT FIELD STAFF:	HM

WELL ID	GW17AR	DIAMETER (tick one):	38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTOC)	150	STICK UP (mm)	1090
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FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	88.79	88.75	130	36 Dropt 9.5 Pump
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:45	2L	2L	89.19	0.31	726	7.74	-2.7	24.7					X	Slight orange
11:50	2L	18L	89.21	0.07	1846	8.04	-5.4	24.6					X	No odor
11:55	2L	28L	89.22	0.03	2214	8.15	-0.7	24.6					X	"
12:00	2L	38L	89.25	0.02	2300	8.18	1.0	24.7					X	"
12:05	2L	48L	89.28	0.01	2324	8.19	2.3	24.8					X	"
12:10	2L	58L	89.31	0.01	2331	8.20	3.1	24.8					X	Surfed

Duplicate Sample ID: _____	Split Sample ID: _____	Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		31/8			PROJECT FIELD STAFF:		HM								
WELL ID	Gw19A	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>			WELL DEPTH (mBTC)		66.55	STICK UP (mm)		580					
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install		-						
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			15.13		15.09		47						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
10:55	1	5L	15.18	0.83	1578	8.12	0.1	25.1						X	Slight sheen No odour
11:00	1	10L	15.23	0.53	4628	6.74	-4.8	24.7						X	grey / Brown
11:05	1	15L	15.23	0.31	4290	6.75	-27.8	25.0					X	X	grey / Brown No odour
11:10	1	20L	15.16	0.12	4217	6.75	-37.2	25.3					X		
11:13	1	23L	15.17	0.13	4239	6.75	-41.9	25.4					X		Samples

Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		31/8/23			PROJECT FIELD STAFF:		HM								
WELL ID	Gw19 B		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		134.7	STICK UP (mm)		600		
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)			PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install			After Pump Install		69 - Pump intake		75 - top of hole			
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			18.60			19.10							
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
10:24	1	5L	18.93	0.47	1834	8.09	32.0	24.3						X	No obs
10:29	1.5	12.5L	19.01	0.14	2272	8.11	20.4	24.2						X	"
10:34	1.5	20L	19.03	0.11	2462	8.12	11.2	24.4						X	"
10:36	1.5	23	19.05	0.09	2458	8.13	-4.2	24.4						X	"
10:38	1.5	26	19.02	0.08	2469	8.14	-1.1	24.4						X	Sampled
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 31/8		PROJECT FIELD STAFF: HM	

WELL ID: Gw22A **DIAMETER (tick one):** 38mm 50mm 100mm

WELL DEPTH (mBTC): 28.2 **STICK UP (mm):** 400

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install	17.35 17.34	27	-
IP ID: _____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>					
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>					

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
11:40	1L	10L	17.48	3.94	4712	6.94	-31.2	25.3				X		no odour slightly grey
11:45	1L	15L	17.47	0.13	4608	7.00	-42.1	25.1				X		grey
11:50	1.5	23L	17.54	0.09	8898	7.02	-51.2	24.1				X		
11:55	1.5L	30L	17.54	0.06	8884	7.02	-57.1	23.4				X		
11:57	1.5L	37.5	17.54	0.05	8890	7.02	-51.2	23.5				X		sampled

Duplicate Sample ID: _____ **Split Sample ID:** _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001									
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM									
PROJECT FIELD WORK DATE:		31/8			PROJECT FIELD STAFF:		HM									
WELL ID	GW22B		DIAMETER (tick one):			WELL DEPTH (mBTOC)		STICK UP (mm)								
			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	11.8		700								
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)		WELL HEADSPACE PID (ppm)							
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install									
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			17.72		1780		70							
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>							-							
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)		
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear			
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%								
12:12	2L	8L	17.82	0.70	5052	7.52	-38.9	23.5					X	No color No odor		
12:16	2L	16L	17.82	0.05	4409	7.51	-46.9	23.4					X	" "		
12:20	2L	24L	17.82	0.52	6008	7.54	-55.8	23.7					X			
12:25	2.5	34L	17.82	0.01	6125	7.60	-54.8	23.7					X			
12:27	2.5	44L	17.91	0.01	6160	7.60	-60.1	23.7					X	sample		
Duplicate Sample ID: _____													Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		31/8			PROJECT FIELD STAFF:		HM							
WELL ID	DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTOC)		>150	STICK UP (mm)					
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)						
WQM ID:	BAILER (ECO) <input type="checkbox"/>		MICRO-PURGE <input type="checkbox"/>		Before Pump Install	After Pump Install								
IP ID:	BAILER (S/S) <input type="checkbox"/>		PERISTALTIC <input type="checkbox"/>		18.56	1873								
PID ID:	BAILER (TEFLON) <input type="checkbox"/>		WATERRA <input type="checkbox"/>				125	Depth to tube 35 Over unable to get to depth						
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	±0.1	±10%	±10%						
13:00	2.5	15	12	19.91	0.8	1761	7.81	-11.4	24.9					
13:05	1.5	20		19.68	0.17	1741	7.81	-31.2	24.4					Sol odour No color
13:10	2L	30		19.81	0.11	1750	7.82	-33.1	25.1					" "
13:12	2L	34		19.76	0.08	1747	7.82	-35.8	25.2					" "
														Surfaced

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 5/9/23		PROJECT FIELD STAFF: HM													
WELL ID: 21P	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): >150	STICK UP (mm): 820												
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)													
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>													
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>													
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
		DEPTH TO WATER (mBTC)													
		Before Pump Install	After Pump Install												
		82.13	82.05												
		PUMP INTAKE DEPTH (mBTC): 130													
		WELL HEADSPACE PID (ppm): —													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
2:04	1.5	10L	83.05	0.76	1677	6.57	35.1	24.8					X		Slight Brown No odour
2:09	1.5	17.5	82.92	0.13	1670	6.56	36.9	24.4					X		" "
2:14	1.5	25	82.87	0.07	1663	6.56	36.7	24.2						X	No colour "
2:19	1.5	32.5	82.82	6.03	1664	6.56	35.5	24.3						X	Sampled
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 29/8/23		PROJECT FIELD STAFF: HM													
WELL ID: 41P	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): 93.3	STICK UP (mm): 960												
FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)										
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install												
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	27.07	27.05	85 74	—										
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>														
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
8:52	3	6L	27.27	0.24	9245	6.44	-20.6	21.8				X		Sulphur, slight turbid	
8:53	2	12L	27.28	0.13	9382	6.43	-22.4	21.9					X	" clear	
8:56	2	18L	27.29	0.11	9390	6.43	-22.8	21.9					X	" "	
9:00	2	26L	27.28	0.09	9394	6.42	-22.4	21.9					X	" sampled "	
Duplicate Sample ID: QAQC01		Split Sample ID: QAQC02		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		5/9			PROJECT FIELD STAFF:		HM								
WELL ID	48P	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>			WELL DEPTH (mBTC)		117.74		STICK UP (mm)	1190					
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install								
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			65.47		65.40		852						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>							-						
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria					±10%	±3%	±0.1	±10%	±10%						
15:05	2.5	10L	65.82	1.64	5197	6.51	79.1	24.4					X		slight grey No odour
15:10	2.5	22.5	65.82	0.11	9780	6.34	88.3	23.6					X		" "
15:15	2.7	35	65.87	0.04	9872	6.34	86.2	23.4					X		" "
15:20	2.5	47.5	65.84	0.01	9915	6.34	85.1	23.7					X		" "
15:22	2.5	52.5	65.91	0.01	9923	6.33	81.8	23.6					X		Sampled
Duplicate Sample ID: _____		Split Sample ID: _____			Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		6/9			PROJECT FIELD STAFF:		HM								
WELL ID	III Pcg - Lower - B			DIAMETER (tick one):	38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	61.86	STICK UP (mm)	810				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install		_____						
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			28.08		28.10		42						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
7:20	1.5	4.5	28.18	3.37	9891	6.45	80.8	19.2						X	No odour No color
7:25	1.5	12	28.19	0.16	7931	6.83	40.8	20.0						X	
7:30	1.5	19.5	28.20	0.10	7954	6.83	16.8	20.6						X	
7:35	1.5	17	28.22	0.07	7960	6.82	-1.6	21.1						X	
7:38	1.5	21.5	28.	0.06	7967	6.82	-13.0	21.4						X	sampled
Duplicate Sample ID: _____		Split Sample ID: _____			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>						

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001																	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM																	
PROJECT FIELD WORK DATE: 1/9/18		PROJECT FIELD STAFF: HM																	
WELL ID: 112PR 112Pgc.R	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC): 80.4	STICK UP (mm): 980																
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)																	
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>																	
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>																	
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>																	
		DEPTH TO WATER (mBTC)																	
		Before Pump Install	After Pump Install																
		51.04	50.29																
		PUMP INTAKE DEPTH (mBTC): 67																	
		WELL HEADSPACE PID (ppm): -																	
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)					
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear						
Well Purge & Stabilisation Acceptance Criteria										±10%		±3%		±0.1		±10%		±10%	
10:23	1 L	5	51.53	0.61	3552	7.38	-5.8	24.1					X	yellow	No odor				
10:28	1 L	10L	51.77	0.16	3539	7.52	-7.5	24.3					X	No color	"				
10:33	1 L	15L	51.88	0.08	3544	7.54	-7.6	24.4					X	"	"				
10:38	1 L	20L	51.92	0.07	3547	7.56	-7.4	24.3					X	"	"				
10:43	1 L	25L	51.96	0.05	3554	7.57	-7.3	24.3					X	Sample 1	"				
te:																			
Duplicate Sample ID: _____		Split Sample ID: _____		Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>															

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001																	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM																	
PROJECT FIELD WORK DATE: 28/11/23		PROJECT FIELD STAFF: HM																	
WELL ID: GW11A.R	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC): 25.35	STICK UP (mm): 950																
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)																	
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>																	
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>																	
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>																	
		DEPTH TO WATER (mBTOC)																	
		Before Pump Install	After Pump Install																
		10.74	10.60																
		PUMP INTAKE DEPTH (mBTOC) 23.0																	
		WELL HEADSPACE PID (ppm) -																	
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)					
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear						
Well Purge & Stabilisation Acceptance Criteria										±10%	±3%	±0.1	±10%	±10%					
14:24	1/min	2L	10.85	7.25	1356	7.13	62.6	25.4					X	No odour					
14:26	1/min	4L	10.87	2.21	1677	6.94	31.0	24.6					X	"					
14:28	1/min	6L	10.90	1.57	1670	6.93	60.1	23.4			X			Red/orange tinge					
14:30	1/min	8L	10.92	2.42	1640	6.90	57.3	23.0		X				Red No odour					
14:32	1/min	12L	10.90	3.10	1638	6.91	50.2	23.1		X				" Sample take					
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																			

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		4/9/23			PROJECT FIELD STAFF:		HM								
WELL ID	3307uBR		DIAMETER (tick one):		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)		81.74	STICK UP (mm)				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>		MICRO-PURGE <input type="checkbox"/>		Before Pump Install		After Pump Install							
IP ID: _____		BAILER (S/S) <input type="checkbox"/>		PERISTALTIC <input type="checkbox"/>		57.72		57.73		73					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>		WATERRA <input type="checkbox"/>						-					
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
15:02	2L	6L	57.75	1.67	9536	6.28	23.6	24.8			X			No odour	Brown/grey colour
15:07	2L	16L	57.74	0.14	9941	6.20	34.7	23.7					X	No odour	slight grey
15:12	2L	26	57.78	0.06	10005	6.20	39.9	23.6			X		X	HM 1	1
15:17	2L	36		0.03	10018	6.20	44.1	23.6			X		X	11	No odour
														Sample for	
Duplicate Sample ID:					Split Sample ID:					Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

Groundwater Monitoring Event - Water Quality Parameters

58



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 6/9		PROJECT FIELD STAFF: HM	
WELL ID: Gw07B-R	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC) 137	STICK UP (mm) 830

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install			
IP ID: _____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	55.62	54.47	85		
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>					

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
12:55	2	6L	55.11	1.09	1397	7.82	51.0	25.7					X	No odor	No color
13:00	2	6L	55.17	0.08	1359	7.85	49.2	25.3					X	"	"
13:05	2	26L	55.18	0.04	1327	7.88	47.9	25.1					X	"	"
13:10	2	36L	55.19	0.02	1350	7.86	47.1	25.3					X	"	"
13:12	2	40L	55.	0.01	1315	7.87	46.3	25.3					X	"	"
													X	Sampled	

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

501



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM
PROJECT FIELD WORK DATE: 30/8		PROJECT FIELD STAFF: HM

WELL ID: WCS2	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTC) 66.12	STICK UP (mm) 810
FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)	
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	PUMP INTAKE DEPTH (mBTC)
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	29.22	29.18
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>		49
			WELL HEADSPACE PID (ppm) -

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria														
				±10%	±3%	+0.1	±10%	±10%						
2:20	2L	6L	29.31	5.33	906	8.59	58.2	23.1					X	No colour
2:25	2L	16L	29.35	2.63	849	8.64	58.4	22.3					X	" "
2:30	2L	26L	29.34	1.45	859	8.60	58.3	23.2					X	" "
2:33	2L	32L	27.37	0.58	861	8.58	58.0	23.5					X	" "
2:35	2L	36L	27.37	0.45	854	8.59	57.6	23.5					X	" "
														Sampled

Duplicate Sample ID: _____ Split Sample ID: _____

Metals Sample Field Filtered: Yes No

Groundwater Monitoring Event - Water Quality Parameters

59.2



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		3118			PROJECT FIELD STAFF:		HM							
WELL ID	M4	DIAMETER (tick one):			38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTOC)	196	STICK UP (mm)				
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/>			MICRO-PURGE <input type="checkbox"/>		Before Pump Install	After Pump Install						
IP ID: _____		BAILER (S/S) <input type="checkbox"/>			PERISTALTIC <input type="checkbox"/>		11.26	11.34						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/>			WATERRA <input type="checkbox"/>		26.11	62+35 Drop 97 Depth total						
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:21	1.5	16L	11.61	0.42	3387	7.23	-90.1	24.4				X		Slight Brown Strong Sulfur odor
12:47	1.5	13.5	11.63	0.08	3384	7.23	-142.2	24.4				X		"
13:50	1.5	19	11.65	0.03	3382	7.23	-162.1	24.4				X		" sample
Duplicate Sample ID:		_____			Split Sample ID:		_____			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Groundwater Monitoring Event - Water Quality Parameters

60



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001													
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM													
PROJECT FIELD WORK DATE: 24		PROJECT FIELD STAFF: HM													
WELL ID: A1	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC): 9.6	STICK UP (mm):												
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)													
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>													
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>													
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
		DEPTH TO WATER (mBTOC)													
		Before Pump Install	After Pump Install												
		3.62	3.70												
		PUMP INTAKE DEPTH (mBTOC) 7.5													
		WELL HEADSPACE PID (ppm)													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
9:30	0.5	2L	3.80	1.70	9382	6.43	-3.0	18.6					X	No odor slight brown	
9:32	0.5	3L	3.92	1.61	9388	6.44	-4.2	18.1					X	" "	
9:36	0.5	5L	3.87	6.0 6.43	24298	7.23	22.8	18.1					X	" "	
9:40	0.5	7L	3.98	0.57	24332	7.36	20.6	16.6					X	" "	
9:42	0.5	8L	3.98	1.91	24341	7.34	20.9	16.5					X	" "	
9:44	0.5	9L	3.98	1.78	24320	7.35	20.8	16.4					X	" sampled "	
Duplicate Sample ID: _____		Split Sample ID: _____		Metals Sample Field Filtered: Yes <input type="checkbox"/> No <input type="checkbox"/>											

Groundwater Monitoring Event - Water Quality Parameters

61



PROJECT NAME: NAC GWM August 2023		PROJECT NUMBER: 620.040262.00001	
PROJECT SITE ADDRESS: NAC		PROJECT MANAGER: NC / HM	
PROJECT FIELD WORK DATE: 6/9/23		PROJECT FIELD STAFF: HM	

WELL ID A2	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>	WELL DEPTH (mBTOC) 14	STICK UP (mm)
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FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>				
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>				

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						

Dry

Duplicate Sample ID: _____	Split Sample ID: _____	Metals Sample Field Filtered: Yes <input type="checkbox"/> No <input type="checkbox"/>
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Groundwater Monitoring Event - Water Quality Parameters

62



PROJECT:		NAC GWM August 2023		PROJECT NUMBER:		620.040262.00001								
ADDRESS:		NAC		PROJECT MANAGER:		NC / HM								
FIELD WORK DATE:		30/8		PROJECT FIELD STAFF:		HM								
WELL ID:	B1	DIAMETER (tick one): 38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>			WELL DEPTH (mBTC):		100	STICK UP (mm):	1080					
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install							
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			85.06		34.22		80					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>							80					
							85		80					
									60					
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
7:40	1.5	5L	35.66	5.30	466	7.04	107.3	16.1					X	No odour
7:45	1.5	12.5L	35.82	6.38	358	7.14	92.4	18.7					X	No odour
7:50	1.5	20L	35.88	0.89	361.4	9.24	46.1	19.1					X	1.
7:53	1.5	24.5	35.93	0.60	315.0	9.07	44.2	19.3					X	
7:56	1.5	29		0.44	302.0	9.03	43.1	19.5					X	
7:59	1.5	33.5	35.98	0.41	319.1	9.05	41.3	19.5					X	
8:03	1.5	39.5	36.01	0.39	308.1	9.16	40.1	19.8						
8:06	1.5	43		0.38	307.1	9.15	39.8							Sampled
Duplicate Sample ID: _____		Split Sample ID: _____			Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									

Groundwater Monitoring Event - Water Quality Parameters

63



PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		5/11			PROJECT FIELD STAFF:		HM							
WELL ID	34PR B3		DIAMETER (tick one):			WELL DEPTH (mBTC)		STICK UP (mm)						
		38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>			82									
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install							
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			20.14		20.09		50					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>												
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
7:20	1.5	6	20.29	0.91	774	7.59	27.0	20.2				X		No odour slight grey
7:25	1.5	12	20.31	0.20	584	7.83	29.4	21.6					X	11 No odour
7:30	1.5	18	20.30	0.11	582	7.86	30.1	22.0					X	11 "
7:33	1.5	24	20.31	0.07	583	7.87	30.0	22.3					X	
7:36	1.5	24	20.30	0.07	583	7.87	31.0	22.4					X	Sampled
Duplicate Sample ID: _____ Split Sample ID: _____ Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														

Groundwater Monitoring Event - Water Quality Parameters

64 SLR

PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001							
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM							
PROJECT FIELD WORK DATE:		31/8/23			PROJECT FIELD STAFF:		HM							
WELL ID	ACS1	DIAMETER (tick one):			WELL DEPTH (mBTC)			STICK UP (mm)						
		38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	70			950						
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)					
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install							
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			22.48		22.06		55					
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>							—					
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
7:06	1.5	6L	22.92	4.01	1453	7.58	44.9	16.1					X	No odour
7:12	1.5	15L	22.90	6.27	1162	7.73	39.9	20.6					X	u
7:16	1.5	21L	22.90	6.26	1103	7.75	37.4	21.0					X	u
7:20	1.5	27L	22.40	6.27	1126	7.75	36.2	21.4					X	Sample
Duplicate Sample ID:		Split Sample ID:			Metals Sample Field Filtered:			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						

Groundwater Monitoring Event - Water Quality Parameters

65



PROJECT NAME:	NAC GWM August 2023	PROJECT NUMBER:	620.040262.00001
PROJECT SITE ADDRESS:	NAC	PROJECT MANAGER:	NC / HM
PROJECT FIELD WORK DATE:	30/8/23	PROJECT FIELD STAFF:	HM

WELL ID	ACS2	DIAMETER (tick one):	38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	82	STICK UP (mm)	
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FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install		
IP ID: _____	BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>	8.53	8.13	65 55	1020
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>			Depth - no movement water to be Base gotten slower and slower	

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)						COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		

Well Purge & Stabilisation Acceptance Criteria ±10% ±3% ±0.1 ±10% ±10%

3:00	1.5	6L	8:43	0.29	1916	7.48	-30.4	23.4						X	No odour / No color
3:05	1.5	12L	8:47	0.11	1845	7.49	-92.1	23.3						X	Sulfur strong sign grey
3:10	1.5	18L	8:46	0.09	1856	7.49	-148	22.5						X	11 sulfur sample taken

Duplicate Sample ID: _____	Split Sample ID: _____	Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Groundwater Monitoring Event - Water Quality Parameters

66



PROJECT NAME:	NAC GWM August 2023	PROJECT NUMBER:	620.040262.00001
PROJECT SITE ADDRESS:	NAC	PROJECT MANAGER:	NC / HM
PROJECT FIELD WORK DATE:	31/8	PROJECT FIELD STAFF:	HM

WELL ID	BCS1	DIAMETER (tick one):	38mm <input type="checkbox"/>	50mm <input type="checkbox"/>	100mm <input type="checkbox"/>	WELL DEPTH (mBTC)	148	STICK UP (mm)	
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FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)	DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)	WELL HEADSPACE PID (ppm)
WQM ID: _____	BAILER (ECO) <input type="checkbox"/>	MICRO-PURGE <input type="checkbox"/>	Before Pump Install	After Pump Install	
IP ID: _____	BAILER (S/S) <input type="checkbox"/>	PERISTALTIC <input type="checkbox"/>	22.63	21.48	
PID ID: _____	BAILER (TEFLON) <input type="checkbox"/>	WATERRA <input type="checkbox"/>			

~~105~~ Pump unstable together
 35m of Drop 950 of normal

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
8:00	2L	6L	23.28	1.03	1967	7.96	20.2	22.5					X	Sulfur Smell No Colour
8:05	1L	11L	23.91	0.29	1979	7.98	-6.6	22.5					X	less sulfur smell
8:10	1L	16L	24.14	0.20	1926	7.99	-30.8	22.4					X	" "
8:13	1L	19L	24.21	0.20	1900	7.98	-32.1	22					X	Sample

Duplicate Sample ID: _____	Split Sample ID: _____	Metals Sample Field Filtered: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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pumping at lowest rate possible, still have draw down

Groundwater Monitoring Event - Water Quality Parameters

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PROJECT NAME:		NAC GWM August 2023			PROJECT NUMBER:		620.040262.00001								
PROJECT SITE ADDRESS:		NAC			PROJECT MANAGER:		NC / HM								
PROJECT FIELD WORK DATE:		7/9			PROJECT FIELD STAFF:		HM								
WELL ID	BCS2		DIAMETER (tick one):			38mm <input type="checkbox"/> 50mm <input type="checkbox"/> 100mm <input type="checkbox"/>		WELL DEPTH (mBTC)	130	STICK UP (mm)					
FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTC)		PUMP INTAKE DEPTH (mBTC)		WELL HEADSPACE PID (ppm)						
WQM ID: _____		BAILER (ECO) <input type="checkbox"/> MICRO-PURGE <input type="checkbox"/>			Before Pump Install		After Pump Install								
IP ID: _____		BAILER (S/S) <input type="checkbox"/> PERISTALTIC <input type="checkbox"/>			36.84		33.73		78 - deep as we could						
PID ID: _____		BAILER (TEFLON) <input type="checkbox"/> WATERRA <input type="checkbox"/>													
TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTC)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY (mS/cm or µS/cm (circle one))	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one)					COMMENTS (colour, sediment, odour, sheen, NAPL thickness)	
									Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear		
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%							
8.15	0.5	5L	37.14	1.00	4321	7.14	-10.3	21.8						X	Subtle odour no colour
8.20	0.3	6.5L	37.60	0.63	1623	7.39	-38.2	22.6						X	" "
8.25	0.3	8L	37.86	0.13	1473	7.41	-50.4	22.5						X	" "
8.30	0.3	9.5L	38.29	0.06	1415	7.42	-68.9	22.3						X	Subtle odour slight gas
8.35	0.5	12L	37.89	0.02	1415	7.41	-40.2	22.1						X	" "
8.45	0.5	14.5L	38.24	0.01	1411	7.41	-92.1	22.2						X	" "
Duplicate Sample ID:		Split Sample ID:			Metals Sample Field Filtered:		Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>						



Appendix C Photographic Log

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023

Photographic Log

Photo 1: GW12B, Sampled 31/08/2023



Photo 2: 118P, Sampled 31/08/2023



Photo 3: 112PgCR Sampled 01/09/2023



Photo 4: GW13B, Sampled 05/09/2023



Photo 5: GW10, Sampled 05/09/2023



Photo 6: BCS4, Sampled 06/09/2023



Photo 7: 81PcR, Sampled 06/09/2023



Photo 8: GW09B, Sampled with Hurricane Pump 07/09/2023





Appendix D Calibration Certificates

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023

Multi Parameter Water Meter



airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument **YSI Quatro Pro Plus**
Serial No. **16E103115**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:



Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.0		399304	pH 7.0
2. pH 4.00		pH 4.0		399527	pH 4.0
3. ORP		234.28mV		401308/395763	229.15mV
4. EC		2760uS		396172	2760uS
5. D.O		100%		Fresh Air	99.4% - 758.4mmHg
6. Temp		22.6°C		MultiTherm 09000528	23.2°C

Calibrated by: _____ **Andrew Kneen**

Calibration date: 24-Aug-23

Next calibration due: 20-Feb-24



Appendix E Analytical Tables

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023



Groundwater Analytical Results

	Metals																			
	Arsenic	Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper	Copper (filtered)	Lithium (filtered)	Antimony (filtered)	Thallium (filtered)	Molybdenum (filtered)	Tin (filtered)	Aluminium (filtered)	Iron (filtered)	
EQL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	0.001	0.001	0.001	0.001	0.05	0.0001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.01	0.05	

Date	Field ID	Lab Report Number	Arsenic	Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper	Copper (filtered)	Lithium (filtered)	Antimony (filtered)	Thallium (filtered)	Molybdenum (filtered)	Tin (filtered)	Aluminium (filtered)	Iron (filtered)
28 Aug 2023	109PR	EB2326735	0.006	0.006	0.005	<0.001	<0.05	<0.0001	<0.0001	0.004	<0.001	<0.001	0.003	<0.001	0.003	<0.001	<0.001	0.037	-	0.24	0.22
28 Aug 2023	GW11AR	EB2326735	0.004	<0.001	0.024	<0.001	0.09	0.0002	<0.0001	6.21	0.007	0.004	0.300	0.003	0.005	<0.001	<0.001	0.009	-	<0.01	0.08
28 Aug 2023	GW11B	EB2326735	0.016	0.015	0.119	<0.001	0.07	<0.0001	<0.0001	0.002	<0.001	0.020	<0.001	<0.001	0.133	<0.001	<0.001	0.002	-	<0.01	1.12
29 Aug 2023	18PBR-2	EB2326735	0.004	0.004	0.007	<0.001	0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.009	-	0.02	<0.05
29 Aug 2023	18PCR	EB2326735	0.003	0.003	0.016	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.020	-	<0.01	<0.05
29 Aug 2023	28PCR	EB2326735	<0.001	<0.001	0.042	<0.001	<0.05	<0.0001	<0.0001	<0.001	0.001	<0.001	<0.001	<0.001	0.072	<0.001	<0.001	<0.001	-	<0.01	2.14
29 Aug 2023	41P	EB2326735	<0.001	<0.001	0.043	<0.001	0.07	<0.0001	<0.0001	<0.001	<0.001	0.001	<0.001	<0.001	0.066	<0.001	<0.001	<0.001	-	<0.01	6.68
29 Aug 2023	84PBR	EB2326735	0.002	0.002	0.004	<0.001	0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	-	<0.01	<0.05
29 Aug 2023	132WBR	EB2326735	0.001	0.001	0.038	<0.001	0.12	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.058	<0.001	<0.001	0.001	-	<0.01	1.25
29 Aug 2023	133WBR	EB2326735	0.001	0.001	0.010	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.004	-	<0.01	<0.05
29 Aug 2023	2289PCR_Lower	EB2326735	<0.001	<0.001	0.046	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.037	<0.001	<0.001	<0.001	-	<0.01	0.75
29 Aug 2023	A1	EB2326735	0.001	<0.001	0.094	<0.001	0.58	<0.0001	<0.0001	0.044	0.004	0.002	0.003	<0.001	0.010	<0.001	<0.001	0.011	-	<0.01	0.07
29 Aug 2023	BMH1	EB2326735	<0.001	<0.001	0.010	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	-	<0.01	<0.05
30 Aug 2023	ACS2	EB2327111	<0.001	<0.001	0.473	<0.001	0.09	<0.0001	<0.0001	0.004	<0.001	<0.001	<0.001	<0.001	0.024	<0.001	<0.001	<0.001	<0.001	<0.01	0.32
30 Aug 2023	B1	EB2327111	0.007	0.006	0.011	<0.001	0.05	<0.0001	<0.0001	0.002	<0.001	<0.001	0.005	0.002	<0.001	<0.001	<0.001	0.052	<0.001	0.24	0.19
30 Aug 2023	GW05A	EB2327111	<0.001	<0.001	0.047	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.01	<0.05
30 Aug 2023	GW05B	EB2327111	<0.001	<0.001	0.192	<0.001	0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	<0.001	<0.001	0.004	<0.001	<0.01	<0.05
30 Aug 2023	GW06B	EB2327111	<0.001	<0.001	0.045	<0.001	0.10	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	<0.001	<0.001	0.003	<0.001	<0.01	<0.05
30 Aug 2023	GW16A	EB2327111	<0.001	<0.001	0.120	<0.001	0.08	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.038	<0.001	<0.001	<0.001	<0.001	<0.01	<0.05
30 Aug 2023	WCS2	EB2327111	<0.001	<0.001	0.026	<0.001	0.08	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.009	<0.001	<0.001	0.001	<0.001	<0.01	<0.05
31 Aug 2023	118P	EB2327111	<0.001	<0.001	0.072	<0.001	0.14	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.149	<0.001	<0.001	<0.001	<0.001	0.02	7.75
31 Aug 2023	ACS1	EB2327111	0.004	0.004	0.032	<0.001	0.05	<0.0001	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	0.006	<0.001	0.02	<0.05
31 Aug 2023	BCS1	EB2327111	<0.001	<0.001	0.170	<0.001	<0.05	<0.0001	<0.0001	0.006	<0.001	<0.001	<0.001	<0.001	0.031	<0.001	<0.001	0.010	<0.001	<0.01	0.09
31 Aug 2023	GW12B	EB2327111	<0.001	<0.001	0.081	<0.001	0.11	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	<0.001	<0.001	0.003	<0.001	0.01	<0.05
31 Aug 2023	GW19A	EB2327111	0.003	0.001	0.112	<0.001	0.07	<0.0001	<0.0001	0.003	<0.001	<0.001	0.006	<0.001	0.059	<0.001	<0.001	<0.001	<0.001	<0.01	3.98
31 Aug 2023	GW19B	EB2327111	0.001	0.001	0.055	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.024	<0.001	<0.001	<0.001	<0.001	0.01	<0.05
31 Aug 2023	GW22A	EB2327111	0.001	0.001	0.066	<0.001	0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	0.003	<0.001	0.071	<0.001	<0.001	<0.001	<0.001	<0.01	2.15
31 Aug 2023	GW22B	EB2327111	<0.001	<0.001	0.723	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.054	<0.001	<0.001	<0.001	<0.001	<0.01	0.40
31 Aug 2023	GW22C	EB2327111	0.004	0.003	0.164	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.029	<0.001	<0.001	<0.001	<0.001	0.02	0.11
31 Aug 2023	M4	EB2327111	<0.001	<0.001	0.076	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.037	<0.001	<0.001	0.002	<0.001	<0.01	0.31
01 Sep 2023	10PBR	EB2327411	<0.001	<0.001	0.015	<0.001	0.10	<0.0001	<0.0001	<0.001	<0.001	<0.001	0.002	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	0.02	<0.05
01 Sep 2023	112PgCR	EB2327411	<0.001	<0.001	0.908	<0.001	<0.05	<0.0001	<0.0001	0.001	0.002	<0.001	<0.001	<0.001	0.022	<0.001	<0.001	<0.001	<0.001	<0.01	<0.05
01 Sep 2023	4517WB	EB2327411	0.007	0.006	0.602	<0.001	<0.05	<0.0001	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	0.013	<0.001	<0.001	0.003	<0.001	0.02	0.31
01 Sep 2023	4518WB	EB2327411	<0.001	<0.001	0.276	<0.001	0.08	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.020	<0.001	<0.001	<0.001	<0.001	<0.01	2.43
01 Sep 2023	BCS3	EB2327411	0.001	0.001	0.040	<0.001	<0.05	<0.0001	<0.0001	0.001	<0.001	<0.001	0.001	<0.001	0.020	<0.001	<0.001	0.005	<0.001	0.01	<0.05
04 Sep 2023	25PCR	EB2327411	<0.001	<0.001	0.052	<0.001	<0.05	<0.0001	<0.0001	0.002	<0.001	<0.001	0.001	<0.001	0.090	<0.001	<0.001	<0.001	<0.001	<0.01	3.55
04 Sep 2023	26PCR	EB2327411	<0.001	<0.001	0.030	<0.001	<0.05	<0.0001	<0.0001	0.002	<0.001	<0.001	<0.001	<0.001	0.106	<0.001	<0.001	<0.001	<0.001	<0.01	4.24
04 Sep 2023	27PCR	EB2327411	0.004	0.003	0.045	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	0.001	<0.001	<0.001	0.080	<0.001	<0.001	0.001	<0.001	<0.01	2.40
04 Sep 2023	2291PC	EB2327411	<0.001	<0.001	0.047	<0.001	0.07	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.053	<0.001	<0.001	<0.001	<0.001	<0.01	2.74
04 Sep 2023	3307WB_R	EB2327411	<0.001	<0.001	0.094	<0.001	0.32	0.0002	0.0002	0.012	<0.001	0.138	<0.001	<0.001	0.049	<0.001	<0.001	0.007	<0.001	<0.01	0.61
05 Sep 2023	21P	EB2327707	<0.001	<0.001	0.278	<0.001	0.08	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.039	<0.001	<0.001	<0.001	<0.001	<0.01	0.30
05 Sep 2023	48P	EB2327707	<0.001	<0.001	0.149	<0.001	0.36	0.0003	0.0003	<0.001	<0.001	<0.001	0.003	0.003	0.056	<0.001	<0.001	0.001	<0.001	<0.01	<0.05
05 Sep 2023	B3	EB2327707	0.003	0.003	0.011	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	0.019	<0.001	0.03	<0.05
05 Sep 2023	GW08B	EB2327707	<0.001	<0.001	0.075	<0.001	0.07	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.014	<0.001	<0.001	0.009	<0.001	0.01	<0.05
05 Sep 2023	GW08C	EB2327707	0.008	0.008	0.212	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.020	<0.001					

			Metals																			
			Arsenic	Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper	Copper (filtered)	Lithium (filtered)	Antimony (filtered)	Thallium (filtered)	Molybdenum (filtered)	Tin (filtered)	Aluminium (filtered)	Iron (filtered)	
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
06 Sep 2023	119P	EB2327707	<0.001	<0.001	0.181	<0.001	0.06	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.025	<0.001	<0.001	0.001	<0.001	<0.01	<0.01	0.10
06 Sep 2023	3316WB	EB2327707	0.001	0.002	3.83	<0.001	0.08	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.036	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	0.58
06 Sep 2023	BCS4	EB2327707	<0.001	<0.001	0.082	<0.001	<0.05	<0.0001	<0.0001	0.002	<0.001	<0.001	0.001	<0.001	0.027	<0.001	<0.001	0.002	<0.001	<0.01	<0.01	<0.05
06 Sep 2023	CSMH1Rb	EB2327707	0.004	0.004	0.082	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.015	<0.001	<0.001	<0.001	<0.001	0.02	<0.01	<0.05
06 Sep 2023	GW07B_R	EB2327707	0.001	0.001	0.053	<0.001	<0.05	<0.0001	<0.0001	<0.001	<0.001	<0.001	0.001	<0.001	0.010	<0.001	<0.001	0.006	<0.001	<0.01	<0.01	<0.05
07 Sep 2023	113PgcB	EB2327936	<0.001	<0.001	-	-	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-
07 Sep 2023	116P	EB2327936	<0.001	<0.001	-	-	-	<0.0001	<0.0001	0.002	<0.001	-	0.003	<0.001	-	-	-	-	-	-	-	-
07 Sep 2023	BCS2	EB2327936	0.002	0.002	-	-	-	<0.0001	<0.0001	0.003	<0.001	-	0.006	<0.001	-	-	-	-	-	-	-	-
07 Sep 2023	GW09A	EB2327936	<0.001	<0.001	-	-	-	<0.0001	<0.0001	0.001	0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-
07 Sep 2023	GW09B	EB2327936	<0.001	<0.001	-	-	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-
07 Sep 2023	GW09C	EB2327936	<0.001	<0.001	-	-	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR



Groundwater Analytical Results

	Lead	Lead (filtered)	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Selenium (filtered)	Zinc	Zinc (filtered)	Vanadium (filtered)	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Hardness as CaCO3 (filtered)	Anions Total	Cations Total	Ionic Balance
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%
EQL	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001	0.01	0.005	0.005	0.01	1	1	1	1	1	0.01	0.01	0.01

Date	Field ID	Lab Report Number	Lead	Lead (filtered)	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Selenium (filtered)	Zinc	Zinc (filtered)	Vanadium (filtered)	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Hardness as CaCO3 (filtered)	Anions Total	Cations Total	Ionic Balance
28 Aug 2023	109PR	EB2326735	<0.001	<0.001	0.008	<0.0001	<0.0001	0.007	0.002	<0.01	0.013	<0.005	<0.01	57	57	<1	<1	18	3.41	3.43	0.32
28 Aug 2023	GW11AR	EB2326735	<0.001	<0.001	0.052	<0.0001	<0.0001	0.981	0.217	<0.01	0.011	<0.005	<0.01	475	475	<1	<1	440	15.7	16.5	2.70
28 Aug 2023	GW11B	EB2326735	<0.001	<0.001	0.167	<0.0001	<0.0001	0.010	0.008	<0.01	<0.005	<0.005	<0.01	249	249	<1	<1	535	30.7	30.2	0.77
29 Aug 2023	18PBR-2	EB2326735	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001	<0.001	<0.01	<0.005	<0.005	<0.01	41	41	<1	<1	30	6.78	6.14	4.92
29 Aug 2023	18PCR	EB2326735	<0.001	<0.001	0.034	<0.0001	<0.0001	0.001	<0.001	<0.01	<0.005	<0.005	<0.01	94	94	<1	<1	40	7.50	7.05	3.12
29 Aug 2023	28PCR	EB2326735	<0.001	<0.001	0.320	<0.0001	<0.0001	0.001	0.001	<0.01	<0.005	0.006	<0.01	58	58	<1	<1	2,190	110	93.9	8.01
29 Aug 2023	41P	EB2326735	<0.001	<0.001	0.358	<0.0001	<0.0001	0.001	0.001	<0.01	<0.005	<0.005	<0.01	484	484	<1	<1	1,580	102	88.2	7.21
29 Aug 2023	84PBR	EB2326735	<0.001	<0.001	0.014	<0.0001	<0.0001	0.003	0.002	<0.01	<0.005	0.022	<0.01	341	341	<1	<1	578	17.3	16.6	2.10
29 Aug 2023	132WBR	EB2326735	<0.001	<0.001	0.577	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	867	867	<1	<1	1,400	77.0	77.0	0.04
29 Aug 2023	133WBR	EB2326735	<0.001	<0.001	0.016	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	110	110	<1	<1	17	3.82	3.79	0.32
29 Aug 2023	2289PCR_Lower	EB2326735	<0.001	<0.001	0.046	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	110	110	<1	<1	657	39.3	37.9	1.84
29 Aug 2023	A1	EB2326735	<0.001	<0.001	0.086	<0.0001	<0.0001	0.086	0.075	0.04	<0.005	<0.005	<0.01	324	324	<1	<1	2,550	272	253	3.60
29 Aug 2023	BMH1	EB2326735	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.002	<0.001	<0.01	<0.005	0.005	<0.01	619	619	<1	<1	595	14.8	15.6	2.68
30 Aug 2023	ACS2	EB2327111	<0.001	<0.001	0.047	<0.0001	<0.0001	0.002	<0.001	<0.01	<0.005	<0.005	<0.01	273	273	<1	<1	159	19.8	18.3	3.90
30 Aug 2023	B1	EB2327111	<0.001	<0.001	0.010	<0.0001	<0.0001	0.006	0.003	<0.01	0.005	<0.005	<0.01	72	72	<1	<1	5	3.24	3.19	0.80
30 Aug 2023	GW05A	EB2327111	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	568	568	<1	<1	460	13.7	15.0	4.54
30 Aug 2023	GW05B	EB2327111	<0.001	<0.001	0.010	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	374	356	18	<1	71	11.7	11.4	1.28
30 Aug 2023	GW06B	EB2327111	<0.001	<0.001	0.005	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	322	296	26	<1	2	11.6	11.2	1.73
30 Aug 2023	GW16A	EB2327111	<0.001	<0.001	0.001	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	543	543	<1	<1	631	20.2	19.9	0.79
30 Aug 2023	WCS2	EB2327111	<0.001	<0.001	0.002	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	233	209	24	<1	5	8.98	8.74	1.38
31 Aug 2023	118P	EB2327111	<0.001	<0.001	0.325	<0.0001	<0.0001	0.001	0.001	<0.01	<0.005	<0.005	<0.01	282	282	<1	<1	3,990	234	219	3.38
31 Aug 2023	ACS1	EB2327111	<0.001	<0.001	0.016	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	313	290	23	<1	26	15.2	14.4	2.58
31 Aug 2023	BCS1	EB2327111	<0.001	<0.001	0.027	<0.0001	<0.0001	0.004	<0.001	<0.01	0.011	0.007	<0.01	242	213	29	<1	38	24.1	22.4	3.64
31 Aug 2023	GW12B	EB2327111	<0.001	<0.001	0.004	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	313	285	28	<1	5	10.9	10.6	1.34
31 Aug 2023	GW19A	EB2327111	0.002	<0.001	0.062	<0.0001	<0.0001	0.002	0.001	<0.01	0.010	<0.005	<0.01	355	355	<1	<1	1,350	86.2	79.5	4.03
31 Aug 2023	GW19B	EB2327111	<0.001	<0.001	0.026	<0.0001	<0.0001	0.003	<0.001	<0.01	<0.005	<0.005	<0.01	133	133	<1	<1	43	28.3	26.3	3.63
31 Aug 2023	GW22A	EB2327111	<0.001	<0.001	0.039	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	214	214	<1	<1	1,110	94.0	86.8	3.99
31 Aug 2023	GW22B	EB2327111	<0.001	<0.001	0.052	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	104	104	<1	<1	384	55.1	56.6	1.34
31 Aug 2023	GW22C	EB2327111	<0.001	<0.001	0.042	<0.0001	<0.0001	0.002	0.001	<0.01	0.010	0.005	<0.01	164	164	<1	<1	66	32.6	31.0	2.45
31 Aug 2023	M4	EB2327111	<0.001	<0.001	0.045	<0.0001	<0.0001	0.001	0.001	<0.01	<0.005	<0.005	<0.01	216	216	<1	<1	177	31.2	31.4	0.32
01 Sep 2023	10PBR	EB2327411	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001	<0.001	<0.01	<0.005	<0.005	<0.01	403	403	<1	<1	1,280	28.6	33.6	8.09
01 Sep 2023	112PgCR	EB2327411	<0.001	<0.001	0.095	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	116	116	<1	<1	192	31.1	32.0	1.44
01 Sep 2023	4517WB	EB2327411	<0.001	<0.001	0.019	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	275	266	9	<1	94	15.3	14.6	2.16
01 Sep 2023	4518WB	EB2327411	<0.001	<0.001	0.052	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	458	458	<1	<1	798	36.0	36.4	0.50
01 Sep 2023	BCS3	EB2327411	<0.001	<0.001	0.006	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	308	280	28	<1	12	8.88	9.00	0.66
04 Sep 2023	25PCR	EB2327411	<0.001	<0.001	0.110	<0.0001	<0.0001	0.002	0.001	<0.01	<0.005	<0.005	<0.01	107	107	<1	<1	2,180	103	96.3	3.42
04 Sep 2023	26PCR	EB2327411	<0.001	<0.001	0.022	<0.0001	<0.0001	0.001	<0.001	<0.01	<0.005	<0.005	<0.01	178	178	<1	<1	2,570	130	124	2.36
04 Sep 2023	27PCR	EB2327411	<0.001	<0.001	0.291	<0.0001	<0.0001	<0.001	0.001	<0.01	<0.005	<0.005	<0.01	112	112	<1	<1	2,870	130	123	2.95
04 Sep 2023	2291PC	EB2327411	<0.001	<0.001	0.058	<0.0001	<0.0001	<0.001	<0.001	<0.01	0.058	<0.005	<0.01	312	312	<1	<1	1,330	82.9	81.8	0.67
04 Sep 2023	3307WB_R	EB2327411	<0.001	<0.001	2.50	<0.0001	<0.0001	0.068	0.068	<0.01	0.160	0.153	<0.01	366	366	<1	<1	3,280	113	110	1.02
05 Sep 2023	21P	EB2327707	<0.001	<0.001	0.050	<0.0001	<0.0001	<0.001	<0.001	<0.01	0.027	0.033	<0.01	226	226	<1	<1	211	17.8	17.0	2.12
05 Sep 2023	48P	EB2327707	0.001	<0.001	0.421	<0.0001	<0.0001	0.013	0.015	0.01	0.028	0.036	<0.01	496	496	<1	<1	2,700	99.8	104	2.29
05 Sep 2023	B3	EB2327707	<0.001	<0.001	0.017	<0.0001	<0.0001	0.004	0.004	<0.01	<0.005	<0.005	<0.01	103	103	<1	<1	26	5.72	5.24	4.46
05 Sep 2023	GW08B	EB2327707	<0.001	<0.001	0.003	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	529	483	47	<1	5	13.0	13.6	2.25
05 Sep 2023	GW08C	EB2327707	<0.001	<0.001	0.016	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	249	232	17	<1	20	25.9	23.1	5.77
05 Sep 2023	GW10	EB2327707	<0.001	<0.001	0.008	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	245	236	9	<1	164	27.8	24.5	6.44
05 Sep 2023	GW13B	EB2327707	<0.001	<0.001	0.009	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	285	263	22	<1	32	7.61	7.92	1.96
05 Sep 2023	GW15A	EB2327707	<0.001	<0.001	0.172	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	388	388	<1	<1	545	20.4	19.4	2.57
05 Sep 2023	GW17A_R	EB2327707	<0.001	<0.001	0.009	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005										

			Lead	Lead (filtered)	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Selenium (filtered)	Zinc	Zinc (filtered)	Vanadium (filtered)	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Hardness as CaCO3 (filtered)	Anions Total	Cations Total	Ionic Balance
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%
06 Sep 2023	119P	EB2327707	<0.001	<0.001	0.035	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	251	251	<1	<1	203	27.2	24.2	5.83
06 Sep 2023	3316WB	EB2327707	<0.001	<0.001	0.242	<0.0001	<0.0001	<0.001	<0.001	<0.01	0.018	0.013	<0.01	63	63	<1	<1	633	49.5	47.4	2.25
06 Sep 2023	BCS4	EB2327707	<0.001	<0.001	0.076	<0.0001	<0.0001	0.001	<0.001	<0.01	0.195	0.042	<0.01	90	90	<1	<1	130	34.6	31.4	4.91
06 Sep 2023	CSMH1Rb	EB2327707	<0.001	<0.001	0.036	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	91	91	<1	<1	98	15.4	14.6	2.78
06 Sep 2023	GW07B_R	EB2327707	<0.001	<0.001	0.013	<0.0001	<0.0001	0.003	0.003	<0.01	<0.005	<0.005	<0.01	227	212	15	<1	26	12.5	11.8	2.85
07 Sep 2023	113PgcB	EB2327936	<0.001	<0.001	-	<0.0001	<0.0001	0.002	<0.001	-	<0.005	<0.005	-	420	420	<1	<1	1,160	57.2	58.9	1.44
07 Sep 2023	116P	EB2327936	0.001	<0.001	-	<0.0001	<0.0001	0.004	<0.001	-	0.009	<0.005	-	429	429	<1	<1	244	28.5	24.7	7.20
07 Sep 2023	BCS2	EB2327936	<0.001	<0.001	-	<0.0001	<0.0001	0.003	<0.001	-	<0.005	<0.005	-	164	164	<1	<1	59	13.4	13.0	1.36
07 Sep 2023	GW09A	EB2327936	<0.001	<0.001	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.005	<0.005	-	393	393	<1	<1	628	29.2	27.5	2.95
07 Sep 2023	GW09B	EB2327936	<0.001	<0.001	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.005	<0.005	-	464	464	<1	<1	404	25.5	24.4	2.19
07 Sep 2023	GW09C	EB2327936	<0.001	<0.001	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.005	<0.005	-	225	225	<1	<1	138	18.9	17.6	3.61

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

EQL	Inorganics										Major/minor ions						NA	
	Electrical Conductivity (Lab)	TDS	Total Dissolved Solids (Calc.)	pH (Lab)	Ammonia as N	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrite + Nitrate as N	Nitrate (as N)	Nitrite (as N)	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Chloride	Fluoride	Boron (calculated as H3BO3) (filtered)	Sulfate as SO4 - Turbidimetric (filtered)
	uS/cm	mg/L	mg/L	pH Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	1	1	0.01	0.01	0.1	0.1	0.01	0.01	0.01	1	1	1	1	1	0.1	0.3	1	

Date	Field ID	Lab Report Number	373	248	242	7.80	0.12	0.2	0.2	0.03	0.03	<0.01	4	2	1	70	71	0.4	<0.30	13
28 Aug 2023	109PR	EB2326735	373	248	242	7.80	0.12	0.2	0.2	0.03	0.03	<0.01	4	2	1	70	71	0.4	<0.30	13
28 Aug 2023	GW11AR	EB2326735	1,580	881	1,030	7.70	0.04	10.2	2.0	8.17	8.15	0.02	79	59	2	177	195	1.3	0.51	33
28 Aug 2023	GW11B	EB2326735	3,210	1,960	2,090	7.70	0.16	0.2	0.2	<0.01	<0.01	<0.01	107	65	31	431	819	0.2	0.42	126
29 Aug 2023	18PBR-2	EB2326735	727	396	472	7.46	<0.01	<0.1	<0.1	0.01	0.01	<0.01	7	3	1	127	190	0.3	<0.30	29
29 Aug 2023	18PCR	EB2326735	775	435	504	7.96	0.03	<0.1	<0.1	<0.01	<0.01	<0.01	11	3	3	142	164	0.3	<0.30	48
29 Aug 2023	28PCR	EB2326735	10,200	7,780	6,630	7.44	0.42	<0.5 ^{#1}	<0.5 ^{#1}	<0.01	<0.01	<0.01	518	217	24	1,140	3,440	<0.1	<0.30	580
29 Aug 2023	41P	EB2326735	9,320	6,330	6,060	7.70	0.50	0.8	0.8	<0.01	<0.01	<0.01	305	200	18	1,290	2,880	<0.1	0.38	531
29 Aug 2023	84PBR	EB2326735	1,560	1,060	1,010	8.20	0.01	<0.1	<0.1	0.06	0.06	<0.01	103	78	2	115	245	0.2	<0.30	173
29 Aug 2023	132WBR	EB2326735	7,300	4,450	4,740	7.63	0.16	0.2	0.2	<0.01	<0.01	<0.01	237	197	11	1,120	1,410	<0.1	0.68	955
29 Aug 2023	133WBR	EB2326735	388	237	252	8.01	0.04	<0.1	<0.1	<0.01	<0.01	<0.01	5	1	1	79	53	0.2	<0.30	6
29 Aug 2023	2289PCR_Lower	EB2326735	4,170	2,680	2,710	7.65	0.53	0.4	0.4	<0.01	<0.01	<0.01	161	62	13	561	1,160	<0.1	<0.30	210
29 Aug 2023	A1	EB2326735	24,500	16,900	15,900	8.08	0.02	2.3	<0.5 ^{#1}	2.32	2.32	<0.01	227	482	4	4,650	7,770	0.9	3.33	2,240
29 Aug 2023	BMH1	EB2326735	1,390	807	904	7.63	<0.01	11.3	0.7	10.6	10.6	<0.01	90	90	1	85	79	0.3	<0.30	10
30 Aug 2023	ACS2	EB2327111	1,890	1,040	1,230	8.13	0.34	0.5	0.5	<0.01	<0.01	<0.01	44	12	5	344	499	0.2	0.49	11
30 Aug 2023	B1	EB2327111	318	223	207	7.93	<0.01	0.1	0.1	<0.01	<0.01	<0.01	2	<1	<1	71	55	0.5	0.31	12
30 Aug 2023	GW05A	EB2327111	1,240	774	806	8.10	<0.01	12.8	1.9	10.9	10.9	<0.01	87	59	1	132	71	0.9	<0.30	15
30 Aug 2023	GW05B	EB2327111	1,050	610	682	8.43	0.13	0.3	0.3	<0.01	<0.01	<0.01	22	4	3	228	135	0.2	0.30	21
30 Aug 2023	GW06B	EB2327111	1,050	593	682	8.55	0.28	0.3	0.3	<0.01	<0.01	<0.01	1	<1	<1	257	184	0.5	0.58	<1
30 Aug 2023	GW16A	EB2327111	1,710	993	1,110	8.12	<0.01	1.1	0.2	0.91	0.91	<0.01	111	86	10	162	321	0.4	0.44	16
30 Aug 2023	WCS2	EB2327111	823	465	535	8.45	0.18	0.2	0.2	<0.01	<0.01	<0.01	2	<1	1	198	146	0.3	0.49	10
31 Aug 2023	118P	EB2327111	20,800	15,300	13,500	7.73	2.12	2.6	2.6	<0.01	<0.01	<0.01	743	518	13	3,200	7,440	<0.1	0.79	915
31 Aug 2023	ACS1	EB2327111	1,360	781	884	8.42	0.21	0.3	0.3	<0.01	<0.01	<0.01	7	2	2	319	307	0.4	<0.30	14
31 Aug 2023	BCS1	EB2327111	2,300	1,260	1,500	8.36	0.33	0.4	0.4	<0.01	<0.01	<0.01	12	2	4	496	662	0.2	<0.30	30
31 Aug 2023	GW12B	EB2327111	991	564	644	8.54	0.25	0.3	0.3	<0.01	<0.01	<0.01	2	<1	2	241	164	0.4	0.63	2
31 Aug 2023	GW19A	EB2327111	7,970	5,110	5,180	7.96	1.19	1.4	1.4	<0.01	<0.01	<0.01	249	178	9	1,200	2,430	<0.1	0.38	506
31 Aug 2023	GW19B	EB2327111	2,840	1,480	1,850	8.20	0.85	0.8	0.8	<0.01	<0.01	<0.01	14	2	3	584	910	<0.1	<0.30	<1
31 Aug 2023	GW22A	EB2327111	9,010	5,780	5,860	8.07	1.84	2.1	2.1	<0.01	<0.01	<0.01	222	135	8	1,480	3,020	<0.1	0.31	217
31 Aug 2023	GW22B	EB2327111	6,030	3,520	3,920	7.89	2.54	2.6	2.6	<0.01	<0.01	<0.01	116	23	7	1,120	1,850	<0.1	<0.30	39
31 Aug 2023	GW22C	EB2327111	3,210	1,780	2,090	8.12	0.64	0.6	0.6	<0.01	<0.01	<0.01	23	2	4	681	998	<0.1	<0.30	56
31 Aug 2023	M4	EB2327111	3,260	1,800	2,120	8.02	0.75	0.7	0.7	<0.01	<0.01	<0.01	61	6	9	636	873	0.1	<0.30	110
01 Sep 2023	10PBR	EB2327411	3,150	2,210	2,050	8.11	<0.10 ^{#1}	58.0	5.2	52.8	52.8	<0.01	226	174	2	183	690	0.5	0.55	51
01 Sep 2023	112PgCR	EB2327411	3,570	2,030	2,320	7.99	1.00	1.1	1.1	<0.01	<0.01	<0.01	62	9	5	644	1,000	<0.1	<0.30	26
01 Sep 2023	4517WB	EB2327411	1,540	858	1,000	8.32	0.37	0.4	0.4	<0.01	<0.01	<0.01	26	7	3	292	332	0.1	<0.30	21
01 Sep 2023	4518WB	EB2327411	3,620	2,150	2,350	8.16	0.34	0.4	0.4	<0.01	<0.01	<0.01	148	104	4	467	897	0.4	0.46	74
01 Sep 2023	BCS3	EB2327411	872	522	567	8.69	0.30	0.3	0.3	<0.01	<0.01	<0.01	5	<1	2	200	93	0.1	<0.30	5
04 Sep 2023	25PCR	EB2327411	10,400	6,980	6,760	7.71	0.59	<0.5 ^{#1}	<0.5 ^{#1}	<0.01	<0.01	<0.01	553	194	23	1,200	3,310	<0.1	<0.30	368
04 Sep 2023	26PCR	EB2327411	12,500	8,680	8,120	7.91	0.42	<0.5 ^{#1}	<0.5 ^{#1}	<0.01	<0.01	<0.01	586	269	28	1,660	3,840	<0.1	<0.30	885
04 Sep 2023	27PCR	EB2327411	12,300	8,780	8,000	7.65	0.55	0.5	0.5	<0.01	<0.01	<0.01	688	279	25	1,490	3,970	<0.1	<0.30	768
04 Sep 2023	2291PC	EB2327411	7,930	5,340	5,150	7.97	0.64	0.6	0.6	<0.01	<0.01	<0.01	282	152	15	1,260	2,480	<0.1	0.42	321
04 Sep 2023	3307WB_R	EB2327411	10,100	9,420	6,560	7.60	1.10	1.3	1.3	<0.01	<0.01	<0.01	635	412	21	1,020	2,580	0.5	1.80	1,570
05 Sep 2023	21P	EB2327707	1,640	871	1,070	7.74	0.02	<0.1	<0.1	<0.01	<0.01	<0.01	30	33	15	286	456	0.4	0.47	19
05 Sep 2023	48P	EB2327707	10,200	6,530	6,630	7.75	0.02	171	9.4	162	162	0.04	400	413	19	1,150	2,600	0.4	2.06	794
05 Sep 2023	B3	EB2327707	557	310	362	7.99	0.04	0.1	<0.1	0.10	0.10	<0.01	9	1	2	107	116	0.2	<0.30	19
05 Sep 2023	GW08B	EB2327707	1,200	710	780	8.74	0.32	0.2	0.2	<0.01	<0.01	<0.01	2	<1	1	311	88	0.7	0.42	<1
05 Sep 2023	GW08C	EB2327707	2,590	1,380	1,680	8.39	0.53	0.4	0.4	<0.01	<0.01	<0.01	8	<1	2	521	733	0.2	<0.30	14
05 Sep 2023	GW10	EB2327707	2,730	1,460	1,770	8.29	0.87	0.7	0.7	<0.01	<0.01	<0.01	46	12	4	485	802	<0.1	<0.30	16
05 Sep 2023	GW13B	EB2327707	705	412	458	8.46	0.17	<0.1	<0.1	<0.01	<0.01	<0.01	8	3	2	166	68	0.6	1.05	<1
05 Sep 2023	GW15A	EB2327707	1,880	1,050	1,220	8.17	0.20	0.1	0.1	<0.01	<0.01	<0.01	103	70	14	187	429	0.3	<0.30	27
05 Sep 2023	GW17A_R	EB2327707	2,240	1,210	1,460	8.25	0.47	0.3	0.3	<0.01	<0.01	<0.01	8	1	2	473	697	<0.1	<0.30	<1
06 Sep 2023	81PCR	EB2327707	6,240	3,500	4,060	7.71	0.06	0.4	0.2	0.21	0.21	<0.01	229	120	8	816	1,670	0.1	<0.30	196
06 Sep 2023	82PCR	EB2327707	8,940	5,470	5,810	7.99	1.24	1.2	1.2	<0.01	<0.01	<0.01	342	201	12	1,110	2,810	<0.1	0.70	428
06 Sep 2023	111Pcg_Lower_R	EB2327707	7,960	4,630	5,170	7.86	1.52	1.1	1.1	<0.01	<0.01	<0.01	311	220	11	971	2,430	<0.1	0.79	320
06 Sep 2023	114P	EB2327707	6,420	3,680	4,170	8.02	0.34	1.4	0.7	0.69	0.69	<0.01	118	42	8	1,090	1,710	<0.1	<0.30	223



Groundwater Analytical Results

			Inorganics										Major/minor ions						NA		
			Electrical Conductivity (Lab)	TDS	Total Dissolved Solids (Calc.)	pH (Lab)	Ammonia as N	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrite + Nitrate as N	Nitrate (as N)	Nitrite (as N)	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Chloride	Fluoride	Boron (calculated as H3BO3) (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	
			uS/cm	mg/L	mg/L	pH Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
06 Sep 2023	119P	EB2327707	2,640	1,440	1,720	8.16	0.59	0.5	0.5	<0.01	<0.01	<0.01	40	25	4	461	738	0.1	0.35	66	
06 Sep 2023	3316WB	EB2327707	5,570	3,070	3,620	7.65	1.59	1.1	1.1	<0.01	<0.01	<0.01	194	36	7	794	1,710	0.1	0.45	2	
06 Sep 2023	BCS4	EB2327707	3,570	1,970	2,320	7.89	0.75	0.7	0.7	<0.01	<0.01	<0.01	44	5	4	659	1,060	<0.1	<0.30	140	
06 Sep 2023	CSMH1Rb	EB2327707	1,570	879	1,020	7.86	0.36	0.3	0.3	<0.01	<0.01	<0.01	31	5	4	288	438	<0.1	<0.30	60	
06 Sep 2023	GW07B_R	EB2327707	1,230	678	800	8.37	0.11	0.2	0.2	<0.01	<0.01	<0.01	9	1	2	259	261	0.1	<0.30	31	
07 Sep 2023	113PgcB	EB2327936	5,990	3,670	3,890	7.82	0.33	0.3	0.3	<0.01	<0.01	<0.01	168	180	5	818	1,510	0.5	-	300	
07 Sep 2023	116P	EB2327936	2,890	1,590	1,880	7.93	0.80	0.8	0.8	<0.01	<0.01	<0.01	58	24	5	453	670	<0.1	-	51	
07 Sep 2023	BCS2	EB2327936	1,380	762	897	7.77	0.07	0.1	0.1	<0.01	<0.01	<0.01	17	4	3	271	356	0.2	-	4	
07 Sep 2023	GW09A	EB2327936	2,980	1,740	1,940	7.75	<0.01	2.2	0.2	2.05	2.05	<0.01	90	98	2	342	742	0.3	-	18	
07 Sep 2023	GW09B	EB2327936	2,520	1,390	1,640	8.17	0.40	0.3	0.3	<0.01	<0.01	<0.01	61	61	3	374	557	0.5	-	25	
07 Sep 2023	GW09C	EB2327936	1,950	1,070	1,270	7.97	0.54	0.5	0.5	<0.01	<0.01	<0.01	47	5	8	336	486	<0.1	-	33	

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR



Appendix F Certified Laboratory Reports

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch
35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290

Sample Receipt Advice

Company name:	SLR Consulting (Qld)
Contact name:	Ned Connolly
Project name:	620.31500.00000
Project ID:	Not provided
Turnaround time:	5 Day
Date/Time received	May 12, 2023 3:50 PM
Eurofins reference	990429

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✗ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✗ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Minimal volume provided, testing will proceed.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Peter Brand on phone : 0436 360 123 or by email: PeterBrand@eurofins.com

Results will be delivered electronically via email to Ned Connolly - nconnolly@slrconsulting.com.

Note: A copy of these results will also be delivered to the general SLR Consulting (Qld) email address.

SLR CONSULTING
Level 2 15 Astor Terrace
Spring Hill
QLD 4000



NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: **Ned Connolly**

Report **990429-W**
 Project name **620.31500.00000**
 Received Date **May 12, 2023**

Client Sample ID			QAQC02
Sample Matrix			Water
Eurofins Sample No.			B23-My0042422
Date Sampled			May 08, 2023
Test/Reference	LOR	Unit	
Ammonia (as N)	0.01	mg/L	0.86
Chloride	1	mg/L	760
Conductivity (at 25 °C)	10	uS/cm	3100
Ferrous Iron - Fe ²⁺	0.05	mg/L	< 0.05
Fluoride	0.5	mg/L	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)*	0.2	mg/L	< 0.2
pH (at 25 °C)	0.1	pH Units	8.3
Sulphate (as SO ₄)	5	mg/L	< 5
Total Dissolved Solids (calculated from EC)*	10	mg/L	1860
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	1400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9
Total Nitrogen (as N)*	0.2	mg/L	0.9
Hardness mg equivalent CaCO ₃ /L	5	mg/L	170
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	250
Carbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20
Hydroxide Alkalinity (as CaCO ₃)	20	mg/L	< 20
Total Alkalinity (as CaCO ₃)	20	mg/L	250
Heavy Metals			
Aluminium	0.05	mg/L	< 0.05
Arsenic	0.001	mg/L	< 0.001
Barium	0.005	mg/L	0.47
Copper	0.001	mg/L	< 0.001
Iron	0.05	mg/L	0.37
Manganese	0.005	mg/L	0.008
Selenium	0.001	mg/L	< 0.001
Eurofins Suite B11C: Na/K/Ca/Mg			
Calcium	0.5	mg/L	48
Magnesium	0.5	mg/L	12
Potassium	0.5	mg/L	4.2
Sodium	0.5	mg/L	520

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

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) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	May 18, 2023	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA	Melbourne	May 18, 2023	28 Days
Nitrate (as N) - Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA	Melbourne	May 18, 2023	28 Days
Nitrite (as N) - Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA	Melbourne	May 18, 2023	2 Days
Organic Nitrogen (as N)* - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 17, 2023	7 Days
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA	Melbourne	May 18, 2023	28 Days
Eurofins Suite B11F: Cl/SO4/Alkalinity/Total F			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Brisbane	May 22, 2023	28 Day
Fluoride - Method: in-house method LTM-INO-4390 Fluoride by Discrete Analyser	Melbourne	May 18, 2023	28 Days
Sulphate (as SO4) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Brisbane	May 22, 2023	28 Day
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Brisbane	May 30, 2023	14 Day
Conductivity (at 25 °C) - Method: APHA 2510B	Brisbane	May 23, 2023	28 Days
Ferrous Iron - Fe2+ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	May 18, 2023	7 Days
pH (at 25 °C) - Method: APHA 4500-H+ B. Electrometric Method	Brisbane	May 30, 2023	0 Days
Total Dissolved Solids (calculated from EC)* - Method: LTM-INO-4030 Conductivity	Brisbane	May 22, 2023	0 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Brisbane	May 22, 2023	28 Days
Eurofins Suite B11C: Na/K/Ca/Mg - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Brisbane	May 22, 2023	180 Day
Total Dissolved Solids Dried at 180 °C ± 2 °C - Method: APHA 2540 C	Brisbane	May 22, 2023	7 Days
Hardness Set			
Hardness mg equivalent CaCO3/L - Method: APHA 2340B Hardness by Calculation	Brisbane	May 22, 2023	28 Days

Company Name:	SLR Consulting (Qld)	Order No.:	N/A	Received:	May 12, 2023 3:50 PM
Address:	Level 2 15 Astor Terrace Spring Hill QLD 4000	Report #:	990429	Due:	May 19, 2023
		Phone:	07 3858 4800	Priority:	5 Day
		Fax:		Contact Name:	Ned Connolly
Project Name:	620.31500.00000				

Eurofins Analytical Services Manager : Peter Brand

Sample Detail						Aluminium	Arsenic	Barium	Conductivity (at 25 °C)	Copper	Ferrous Iron - Fe2+	Iron	Manganese	pH (at 25 °C)	Selenium	Total Dissolved Solids (calculated from EC)*	Hardness Set	Nitrogens (speciated)	Eurofins Suite B11F: Cl/SO4/Alkalinity/Total F	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C	
Melbourne Laboratory - NATA # 1261 Site # 1254											X							X	X			
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
External Laboratory																						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																	
1	QAQC02	May 08, 2023		Water	B23-My0042422	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 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 SRA.

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.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
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.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- 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.
- 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.
- 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.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 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	
Ferrous Iron - Fe ²⁺	mg/L	< 0.05			0.05	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	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Method Blank							
Eurofins Suite B11C: Na/K/Ca/Mg							
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							
Ammonia (as N)	%	97			70-130	Pass	
Chloride	%	99			70-130	Pass	
Ferrous Iron - Fe ²⁺	%	118			70-130	Pass	
Fluoride	%	94			70-130	Pass	
Nitrate & Nitrite (as N)	%	117			70-130	Pass	
Nitrate (as N)	%	117			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Sulphate (as SO ₄)	%	102			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	93			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	111			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	109			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	99			80-120	Pass	
Arsenic	%	105			80-120	Pass	
Barium	%	115			80-120	Pass	
Copper	%	88			80-120	Pass	
Iron	%	98			80-120	Pass	
Manganese	%	100			80-120	Pass	
LCS - % Recovery							
Eurofins Suite B11C: Na/K/Ca/Mg							
Calcium	%	103			80-120	Pass	
Magnesium	%	98			80-120	Pass	
Potassium	%	105			80-120	Pass	
Sodium	%	101			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M23-My0007066	NCP	%	96			70-130	Pass	
Chloride	B23-My0032729	NCP	%	101			70-130	Pass	
Nitrate & Nitrite (as N)	M23-My0007066	NCP	%	119			70-130	Pass	
Nitrate (as N)	M23-My0007066	NCP	%	119			70-130	Pass	
Sulphate (as SO4)	B23-My0061886	NCP	%	101			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	R23-My0041094	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Heavy Metals									
				Result 1					
Aluminium	B23-My0036878	NCP	%	91			75-125	Pass	
Arsenic	B23-My0036878	NCP	%	91			75-125	Pass	
Barium	B23-My0036878	NCP	%	95			75-125	Pass	
Copper	B23-My0036878	NCP	%	98			75-125	Pass	
Iron	B23-My0036878	NCP	%	103			75-125	Pass	
Manganese	B23-My0036878	NCP	%	96			75-125	Pass	
Selenium	B23-My0036878	NCP	%	95			75-125	Pass	
Spike - % Recovery									
Eurofins Suite B11C: Na/K/Ca/Mg									
				Result 1					
Calcium	B23-My0036878	NCP	%	96			75-125	Pass	
Magnesium	B23-My0036878	NCP	%	97			75-125	Pass	
Potassium	B23-My0036878	NCP	%	96			75-125	Pass	
Sodium	B23-My0036878	NCP	%	104			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M23-My0042897	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	B23-My0032729	NCP	mg/L	340	350	2.1	30%	Pass	
Conductivity (at 25 °C)	B23-My0046007	NCP	uS/cm	57000	57000	<1	30%	Pass	
Ferrous Iron - Fe2+	M23-My0043861	NCP	mg/L	0.10	0.10	4.5	30%	Pass	
Fluoride	M23-My0047146	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate & Nitrite (as N)	M23-My0042897	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M23-My0042897	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M23-My0042897	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH (at 25 °C)	B23-My0060854	NCP	pH Units	6.2	6.2	1.3	30%	Pass	
Sulphate (as SO4)	B23-My0061886	NCP	mg/L	23	23	<1	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	B23-My0036760	NCP	mg/L	34000	34000	1.2	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	B23-My0060854	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	B23-My0060854	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	B23-My0060854	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	B23-My0060854	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	B23-My0036877	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	B23-My0036877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Barium	B23-My0036877	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Copper	B23-My0036877	NCP	mg/L	0.014	0.015	5.6	30%	Pass	
Iron	B23-My0036877	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Manganese	B23-My0036877	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate									
Eurofins Suite B11C: Na/K/Ca/Mg				Result 1	Result 2	RPD			
Calcium	B23-My0036877	NCP	mg/L	17	19	9.3	30%	Pass	
Magnesium	B23-My0036877	NCP	mg/L	8.8	9.3	5.3	30%	Pass	
Potassium	B23-My0036877	NCP	mg/L	2.3	2.5	6.0	30%	Pass	
Sodium	B23-My0036877	NCP	mg/L	32	34	4.9	30%	Pass	

Comments
Sample Integrity

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

Authorised by:

Paige Howarth	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Jonathon Angell	Senior Analyst-Inorganic
Jonathon Angell	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic



Glenn Jackson
Managing Director

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](#).

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Sample Receipt Advice

Company name:	SLR Consulting (Qld)
Contact name:	Ned Connolly
Project name:	Not provided
Project ID:	620.31500.00000
Turnaround time:	5 Day
Date/Time received	May 17, 2023 1:20 PM
Eurofins reference	991571

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Peter Brand on phone : 0436 360 123 or by email: PeterBrand@eurofins.com

Results will be delivered electronically via email to Ned Connolly - nconnolly@slrconsulting.com.

Note: A copy of these results will also be delivered to the general SLR Consulting (Qld) email address.

SLR CONSULTING
 Level 2 15 Astor Terrace
 Spring Hill
 QLD 4000



NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: **Ned Connolly**

Report **991571-W**
 Project name
 Project ID **620.31500.00000**
 Received Date **May 17, 2023**

Client Sample ID			QAQC04
Sample Matrix			Water
Eurofins Sample No.			B23-My0052994
Date Sampled			May 15, 2023
Test/Reference	LOR	Unit	
Ammonia (as N)	0.01	mg/L	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)*	0.2	mg/L	0.38
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4
Total Nitrogen (as N)*	0.2	mg/L	0.4
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	0.003
Barium (filtered)	0.005	mg/L	0.010
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Manganese (filtered)	0.005	mg/L	< 0.005
Selenium (filtered)	0.001	mg/L	< 0.001
Eurofins Suite B11C: Na/K/Ca/Mg			
Calcium	0.5	mg/L	9.0
Magnesium	0.5	mg/L	2.3
Potassium	0.5	mg/L	1.2
Sodium	0.5	mg/L	140

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

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) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 23, 2023	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 23, 2023	28 Days
Nitrate (as N) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 23, 2023	28 Days
Nitrite (as N) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 23, 2023	2 Days
Organic Nitrogen (as N)* - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 22, 2023	7 Days
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA	Melbourne	May 23, 2023	28 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Brisbane	May 26, 2023	180 Days
Eurofins Suite B11C: Na/K/Ca/Mg - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Brisbane	May 26, 2023	180 Day

Company Name: SLR Consulting (Qld)
Address: Level 2 15 Astor Terrace
 Spring Hill
 QLD 4000

Project Name:
Project ID: 620.31500.00000

Order No.:
Report #: 991571
Phone: 07 3858 4800
Fax:

Received: May 17, 2023 1:20 PM
Due: May 24, 2023
Priority: 5 Day
Contact Name: Ned Connolly

Eurofins Analytical Services Manager : Peter Brand

Sample Detail						Aluminium (filtered)	Arsenic (filtered)	Barium (filtered)	Conductivity (at 25 °C)	Copper (filtered)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Selenium (filtered)	Total Dissolved Solids (calculated from EC)*	Hardness Set	Nitrogens (speciated)	Eurofins Suite B11F: Cl/SO4/Alkalinity/Total F	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254																	X	X		
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X	X	X	X	X	X	X		X	X	X
External Laboratory																				
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID															
1	QAQC04	May 15, 2023	11:00AM	Water	B23-My0052994	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts						1	1	1	1	1	1	1	1	1	1	1	1	1	1	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 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 SRA.

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.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
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.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- 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.
- 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.
- 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.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 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	
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	
Total Kjeldahl Nitrogen (as N)		mg/L	< 0.2			0.2	Pass	
Method Blank								
Heavy Metals								
Aluminium (filtered)		mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)		mg/L	< 0.001			0.001	Pass	
Barium (filtered)		mg/L	< 0.005			0.005	Pass	
Copper (filtered)		mg/L	< 0.001			0.001	Pass	
Iron (filtered)		mg/L	< 0.05			0.05	Pass	
Manganese (filtered)		mg/L	< 0.005			0.005	Pass	
Selenium (filtered)		mg/L	< 0.001			0.001	Pass	
Method Blank								
Eurofins Suite B11C: Na/K/Ca/Mg								
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								
Ammonia (as N)		%	118			70-130	Pass	
Nitrate & Nitrite (as N)		%	113			70-130	Pass	
Nitrite (as N)		%	112			70-130	Pass	
Total Kjeldahl Nitrogen (as N)		%	100			70-130	Pass	
LCS - % Recovery								
Heavy Metals								
Aluminium (filtered)		%	87			80-120	Pass	
Arsenic (filtered)		%	90			80-120	Pass	
Copper (filtered)		%	86			80-120	Pass	
Iron (filtered)		%	94			80-120	Pass	
Manganese (filtered)		%	88			80-120	Pass	
Selenium (filtered)		%	88			80-120	Pass	
LCS - % Recovery								
Eurofins Suite B11C: Na/K/Ca/Mg								
Calcium		%	97			80-120	Pass	
Magnesium		%	101			80-120	Pass	
Potassium		%	98			80-120	Pass	
Sodium		%	111			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Nitrate & Nitrite (as N)	M23-My0053918	NCP	%	109		70-130	Pass	
Nitrite (as N)	M23-My0053930	NCP	%	97		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M23-My0054188	NCP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Aluminium (filtered)	B23-My0058416	NCP	%	112		75-125	Pass	
Arsenic (filtered)	B23-My0056294	NCP	%	107		75-125	Pass	
Barium (filtered)	B23-My0056294	NCP	%	93		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper (filtered)	B23-My0056294	NCP	%	82			75-125	Pass	
Iron (filtered)	B23-My0058416	NCP	%	108			75-125	Pass	
Manganese (filtered)	B23-My0056294	NCP	%	89			75-125	Pass	
Selenium (filtered)	B23-My0056294	NCP	%	111			75-125	Pass	
Spike - % Recovery									
Eurofins Suite B11C: Na/K/Ca/Mg				Result 1					
Calcium	B23-My0054767	NCP	%	85			75-125	Pass	
Magnesium	B23-My0054767	NCP	%	93			75-125	Pass	
Potassium	B23-My0054767	NCP	%	85			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	B23-My0055680	NCP	mg/L	0.22	0.22	<1	30%	Pass	
Nitrate & Nitrite (as N)	B23-My0055680	NCP	mg/L	0.25	0.25	<1	30%	Pass	
Nitrite (as N)	B23-My0055680	NCP	mg/L	0.04	0.04	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	B23-My0052994	CP	mg/L	0.4	0.3	27	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	B23-My0058415	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	B23-My0056293	NCP	mg/L	0.002	0.002	1.8	30%	Pass	
Barium (filtered)	B23-My0056293	NCP	mg/L	0.42	0.43	<1	30%	Pass	
Copper (filtered)	B23-My0058415	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	B23-My0058415	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Manganese (filtered)	B23-My0056293	NCP	mg/L	0.61	0.60	1.4	30%	Pass	
Selenium (filtered)	B23-My0056293	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Eurofins Suite B11C: Na/K/Ca/Mg				Result 1	Result 2	RPD			
Calcium	B23-My0054766	NCP	mg/L	110	98	12	30%	Pass	
Magnesium	B23-My0054766	NCP	mg/L	170	170	<1	30%	Pass	
Potassium	B23-My0054766	NCP	mg/L	60	60	1.2	30%	Pass	
Sodium	B23-My0055700	NCP	mg/L	14	17	19	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	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Paige Howarth	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Jonathon Angell	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic



Glenn Jackson
Managing Director

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](#).

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35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290

Sample Receipt Advice

Company name:	SLR Consulting (Qld)
Contact name:	Ned Connolly
Project name:	Not provided
Project ID:	620.31500.00000
Turnaround time:	5 Day
Date/Time received	May 24, 2023 2:28 PM
Eurofins reference	994030

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Peter Brand on phone : 0436 360 123 or by email: PeterBrand@eurofins.com

Results will be delivered electronically via email to Ned Connolly - nconnolly@slrconsulting.com.

Note: A copy of these results will also be delivered to the general SLR Consulting (Qld) email address.

SLR CONSULTING
Level 2 15 Astor Terrace
Spring Hill
QLD 4000



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: **Ned Connolly**

Report **994030-W**
 Project name
 Project ID **620.31500.00000**
 Received Date **May 24, 2023**

Client Sample ID			QAQC06
Sample Matrix			Water
Eurofins Sample No.			B23-My0073710
Date Sampled			May 15, 2023
Test/Reference	LOR	Unit	
Ammonia (as N)	0.01	mg/L	R09 1.1
Chloride	1	mg/L	2600
Conductivity (at 25 °C)	10	uS/cm	9000
Ferrous Iron - Fe2+	0.05	mg/L	0.18
Fluoride	0.5	mg/L	1.6
Nitrate & Nitrite (as N)	0.05	mg/L	0.07
Nitrate (as N)	0.02	mg/L	0.05
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)*	0.2	mg/L	< 0.2
pH (at 25 °C)	0.1	pH Units	8.3
Sulphate (as SO4)	5	mg/L	1700
Total Dissolved Solids (calculated from EC)*	10	mg/L	5000
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	4200
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	R09 1.0
Total Nitrogen (as N)*	0.2	mg/L	1.07
Hardness mg equivalent CaCO3/L	5	mg/L	3400
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	360
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20
Total Alkalinity (as CaCO3)	20	mg/L	360
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Barium (filtered)	0.02	mg/L	0.13
Copper (filtered)	0.001	mg/L	0.001
Iron (filtered)	0.05	mg/L	0.17
Manganese (filtered)	0.005	mg/L	2.4
Selenium (filtered)	0.001	mg/L	< 0.001
Eurofins Suite B11C: Na/K/Ca/Mg			
Calcium	0.5	mg/L	660
Magnesium	0.5	mg/L	430
Potassium	0.5	mg/L	21
Sodium	0.5	mg/L	1000

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

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) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 31, 2023	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 31, 2023	28 Days
Nitrate (as N) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 31, 2023	28 Days
Nitrite (as N) - Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser	Melbourne	May 31, 2023	2 Days
Organic Nitrogen (as N)* - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 30, 2023	7 Days
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA	Melbourne	May 31, 2023	28 Days
Eurofins Suite B11F: Cl/SO4/Alkalinity/Total F			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	May 31, 2023	28 Days
Fluoride - Method: Ion selective electrode (ISE) by APHA 4500-F B, C and in-house method LTM-INO-4150	Melbourne	May 31, 2023	28 Days
Sulphate (as SO4) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	May 31, 2023	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	May 31, 2023	14 Days
Conductivity (at 25 °C) - Method: LTM-INO-4030 Conductivity	Melbourne	May 31, 2023	28 Days
Ferrous Iron - Fe2+ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	May 31, 2023	7 Days
pH (at 25 °C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 31, 2023	0 Hours
Total Dissolved Solids (calculated from EC)* - Method: LTM-INO-4030 Conductivity	Melbourne	May 31, 2023	28 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	May 31, 2023	180 Days
Eurofins Suite B11C: Na/K/Ca/Mg - Method: LTM-MET-3010 Alkali Metals by ICP-AES	Melbourne	May 31, 2023	180 Days
Total Dissolved Solids Dried at 180 °C ± 2 °C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	May 31, 2023	28 Days
Hardness Set			
Hardness mg equivalent CaCO3/L - Method: APHA 2340B Hardness by Calculation	Melbourne	May 31, 2023	28 Days

Company Name:	SLR Consulting (Qld)	Order No.:		Received:	May 24, 2023 2:28 PM
Address:	Level 2 15 Astor Terrace Spring Hill QLD 4000	Report #:	994030	Due:	May 31, 2023
Project Name:		Phone:	07 3858 4800	Priority:	5 Day
Project ID:	620.31500.00000	Fax:		Contact Name:	Ned Connolly

Eurofins Analytical Services Manager : Peter Brand

Sample Detail						Aluminium (filtered)	Arsenic (filtered)	Barium (filtered)	Conductivity (at 25 °C)	Copper (filtered)	Ferrous Iron - Fe2+	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Selenium (filtered)	Total Dissolved Solids (calculated from EC)*	Hardness Set	Nitrogens (speciated)	Eurofins Suite B11F: Cl/SO4/Alkalinity/Total F	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
External Laboratory																					
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																
1	QAQC06	May 15, 2023	11:00AM	Water	B23-My0073710	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 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 SRA.

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.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
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.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- 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.
- 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.
- 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.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 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	
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	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	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	< 20			20	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Barium (filtered)	mg/L	< 0.02			0.02	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Eurofins Suite B11C: Na/K/Ca/Mg							
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							
Ammonia (as N)	%	115			70-130	Pass	
Chloride	%	116			70-130	Pass	
Conductivity (at 25 °C)	%	109			70-130	Pass	
Ferrous Iron - Fe2+	%	119			70-130	Pass	
Fluoride	%	109			70-130	Pass	
Nitrate & Nitrite (as N)	%	127			70-130	Pass	
Nitrite (as N)	%	108			70-130	Pass	
Sulphate (as SO4)	%	107			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	81			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	116			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	83			70-130	Pass	
Total Alkalinity (as CaCO3)	%	86			70-130	Pass	
LCS - % Recovery							
Eurofins Suite B11C: Na/K/Ca/Mg							
Calcium	%	102			80-120	Pass	
Magnesium	%	109			80-120	Pass	
Potassium	%	107			80-120	Pass	
Sodium	%	105			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ferrous Iron - Fe2+	M23-My0079699	NCP	%	115			70-130	Pass	
Nitrite (as N)	S23-My0018313	NCP	%	97			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M23-My0075144	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Eurofins Suite B11C: Na/K/Ca/Mg				Result 1					
Calcium	B23-My0073710	CP	%	101			75-125	Pass	
Magnesium	B23-My0073710	CP	%	102			75-125	Pass	
Potassium	B23-My0073710	CP	%	104			75-125	Pass	
Sodium	B23-My0073710	CP	%	97			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	B23-My0073292	NCP	mg/L	0.02	0.02	<1	30%	Pass	
Chloride	M23-My0075122	NCP	mg/L	3.3	3.5	7.7	30%	Pass	
Conductivity (at 25 °C)	M23-My0078460	NCP	uS/cm	< 10	< 10	<1	30%	Pass	
Ferrous Iron - Fe2+	M23-My0079700	NCP	mg/L	0.14	0.13	3.4	30%	Pass	
Fluoride	M23-My0070027	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate & Nitrite (as N)	B23-My0073292	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	B23-My0073292	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	B23-My0073292	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH (at 25 °C)	M23-My0078460	NCP	pH Units	6.2	6.2	pass	30%	Pass	
Sulphate (as SO4)	M23-My0075122	NCP	mg/L	700	710	2.3	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	M23-My0072240	NCP	mg/L	2800	2800	1.1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	B23-My0072493	NCP	mg/L	87	84	2.8	30%	Pass	
Hardness mg equivalent CaCO3/L	B23-My0073710	CP	mg/L	3400	3300	2.8	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M23-My0070673	NCP	mg/L	130	120	7.9	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M23-My0078460	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M23-My0078460	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M23-My0070673	NCP	mg/L	130	120	7.9	30%	Pass	
Duplicate									
Eurofins Suite B11C: Na/K/Ca/Mg				Result 1	Result 2	RPD			
Calcium	B23-My0073710	CP	mg/L	660	630	3.5	30%	Pass	
Magnesium	B23-My0073710	CP	mg/L	430	420	2.1	30%	Pass	
Potassium	B23-My0073710	CP	mg/L	21	20	2.4	30%	Pass	
Sodium	B23-My0073710	CP	mg/L	1000	1000	2.4	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	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
R09	Theoretically the TKN result should be greater or equal to the ammonia concentration. However the difference reported is within the measurement uncertainty of the individual tests

Authorised by:

Paige Howarth	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal



Glenn Jackson
Managing Director

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](#).

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CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd
 ABN 29 001 584 612



PROJECT OFFICE (Tick one)

BRISBANE
 GOLD COAST
 CAIREN
 ACT 2000
 DARWIN
 NEWCASTLE
 PERTH
 TOWNSVILLE
 AUCLAND

CLIENT: 620 31500 0000
PROJECT ID: 620 31500 0000
PROJECT MANAGER: Ned Connolly
PIV CONTACT NO.:

LABORATORY: ALS Brisbane
LABORATORY ADDRESS: 2 Eyth St
SAMPLER: Ashley Welch / Holly Martin
SAMPLER CONTACT NO.: 0858 134 273

COMMENTS OR ADDITIONAL DIRECTIONS:
 Email Reports to: nconnolly@slrconsulting.com
 Email Invoices to: nconnolly@slrconsulting.com

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	REQUESTED ANALYSIS		Additional Information (Comment on any gross contamination or specific requirements)
					NT-12	NT-7	
12	4517WB	14.5.23 11:40	Water	1P + 2N + 1SP	X	X	
13	3307WB_R	22.5.23 13:15	Water		X	X	
14	0AQC05	22.5.23			X	X	
15	0AQC06	22.5.23			X	X	send to Eurofins
	0AQC05	22.5.23 AM			X	X	Date/Time: 24/sep 2:28pm Chilled Temp: 5.8 -1.5 4.3 DF
	0AQC06	22.5.23			X	X	send to Eurofins

Relinquished By Sampler: [Signature]

Relinquished By: [Signature] 23.5.23

Relinquished By: [Signature] 24/sep

Temperature Received:

Sample Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/CD Preserved; S = Sodium Hydroxide/CD Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vol HCl Preserved; VB = VOA Vol Sulphuric Preserved; VS = VOA Vol Sulphuric Preserved; AV = Airfreight Unpreserved Amber Glass; SG = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Plastic; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; S = Sterile Bottle; AS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; U = Lugol's Iodine Preserved

I attest that the proper field sampling procedures were used during the collection of these samples.

996072



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2314152**

Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nconnolly@slrconsulting.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: ----	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 620.31500.00000	Page	: 1 of 3
Order number	: ----	Quote number	: EB2017HEGAUS0005 (EN/032/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	: ASHLEY WELCH, HAILEY MARTIN		

Dates

Date Samples Received	: 11-May-2023 16:13	Issue Date	: 11-May-2023
Client Requested Due Date	: 19-May-2023	Scheduled Reporting Date	: 19-May-2023

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.4°C - Ice present
Receipt Detail	: HARD ESKY	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please be advised that sample "QAQC02" has been forwarded to Eurofins for analysis as per the Chain of Custody request. Please note that this will incur a freight forwarding fee.**
- **Please be advised that the requested "Ferrous Iron" analysis has been removed from this submission, as no suitable container was received for this test. If you wish to discuss this further, please contact Client Services at ALSEnviro.Brisbane@alsglobal.com.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - NT-07 Total Nitrogen + NO ₂ + NO ₃ + NH ₃	WATER - NT-12 General Water Suite
EB2314152-001	08-May-2023 13:43	116P	✓	✓	✓	✓
EB2314152-002	09-May-2023 09:53	GW10	✓	✓	✓	✓
EB2314152-003	09-May-2023 00:00	GW09A	✓	✓	✓	✓
EB2314152-004	09-May-2023 00:00	GW09B	✓	✓	✓	✓
EB2314152-005	09-May-2023 00:00	GW09C	✓	✓	✓	✓
EB2314152-006	09-May-2023 00:00	27PCR	✓	✓	✓	✓
EB2314152-007	10-May-2023 07:50	4518WB	✓	✓	✓	✓
EB2314152-008	10-May-2023 11:00	BCS3	✓	✓	✓	✓
EB2314152-009	10-May-2023 13:05	113Pgcb	✓	✓	✓	✓
EB2314152-010	10-May-2023 15:10	118P	✓	✓	✓	✓
EB2314152-011	08-May-2023 00:00	QAQC01	✓	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: WATER

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA005-P: pH by Auto Titrator								
113Pgcb		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
116P		Clear Plastic Bottle - Natural	----	08-May-2023	11-May-2023	✗	----	----
118P		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
27PCR		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
4518WB		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
BCS3		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
GW09A		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
GW09B		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
GW09C		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
GW10		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
QAQC01		Clear Plastic Bottle - Natural	----	08-May-2023	11-May-2023	✗	----	----
EK055G: Ammonia as N by Discrete analyser								
116P		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
27PCR		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
GW09A		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
GW09B		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
GW09C		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
GW10		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----
QAQC01		Clear Plastic Bottle - Natural	----	09-May-2023	11-May-2023	✗	----	----
EK057G: Nitrite as N by Discrete Analyser								
116P		Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✗	----	----



CERTIFICATE OF ANALYSIS

Work Order : **EB2314152**
Client : **SLR CONSULTING AUSTRALIA PTY LTD**
Contact : **NED CONNOLLY**
Address : **LEVEL 16 175 EAGLE STREET**
BRISBANE 4000
Telephone : **----**
Project : **620.31500.00000**
Order number : **4537604**
C-O-C number : **----**
Sampler : **ASHLEY WELCH, HAILEY MARTIN**
Site :
Quote number : **EN/032/17**
No. of samples received : **11**
No. of samples analysed : **11**

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61 7 3243 7222
Date Samples Received : 11-May-2023 16:13
Date Analysis Commenced : 11-May-2023
Issue Date : 19-May-2023 22:08



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Vincent Muller		Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- TDS by method EA-015 may bias high for some samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	116P	GW10	GW09A	GW09B	GW09C
Sampling date / time				08-May-2023 13:43	09-May-2023 09:53	09-May-2023 00:00	09-May-2023 00:00	09-May-2023 00:00	
Compound	CAS Number	LOR	Unit	EB2314152-001	EB2314152-002	EB2314152-003	EB2314152-004	EB2314152-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.08	8.25	8.07	8.23	8.17	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2500	2550	2360	2150	1800	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1650	1530	1720	1360	1060	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	1620	1660	1530	1400	1170	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	258	183	640	432	150	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	404	252	375	439	210	
Total Alkalinity as CaCO3	----	1	mg/L	404	252	375	439	210	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	75	16	20	25	26	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	717	793	738	606	520	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	57	52	88	66	50	
Magnesium	7439-95-4	1	mg/L	28	13	102	65	6	
Sodium	7440-23-5	1	mg/L	531	550	376	405	357	
Potassium	7440-09-7	1	mg/L	5	5	3	4	8	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Barium	7440-39-3	0.001	mg/L	0.165	0.491	0.404	0.214	0.104	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.015	0.008	<0.001	0.009	0.022	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	0.65	0.34	<0.05	0.78	<0.05	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.3	0.5	<0.1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	116P	GW10	GW09A	GW09B	GW09C
Sampling date / time					08-May-2023 13:43	09-May-2023 09:53	09-May-2023 00:00	09-May-2023 00:00	09-May-2023 00:00
Compound	CAS Number	LOR	Unit	EB2314152-001	EB2314152-002	EB2314152-003	EB2314152-004	EB2314152-005	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.72	0.76	<0.01	0.34	0.35	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.03	2.13	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.03	2.13	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.1	0.3	0.6	0.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	1.1	2.4	0.6	0.6	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	29.8	27.7	28.7	26.4	19.4	
∅ Total Cations	----	0.01	meq/L	28.4	27.7	29.2	26.4	18.7	
∅ Ionic Balance	----	0.01	%	2.55	0.04	0.85	0.05	1.79	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	27PCR	4518WB	BCS3	113Ppcb	118P
Sampling date / time				09-May-2023 00:00	10-May-2023 07:50	10-May-2023 11:00	10-May-2023 13:05	10-May-2023 15:10	
Compound	CAS Number	LOR	Unit	EB2314152-006	EB2314152-007	EB2314152-008	EB2314152-009	EB2314152-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.64	8.14	8.86	8.07	7.86	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	11800	2790	879	4070	20700	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	9310	2320	539	3750	15500	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	7670	1810	571	2640	13400	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	2720	707	14	1040	3840	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	32	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	104	440	272	398	265	
Total Alkalinity as CaCO3	----	1	mg/L	104	440	305	398	265	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	777	89	7	308	872	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	4080	987	95	1560	6880	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	612	120	4	141	673	
Magnesium	7439-95-4	1	mg/L	290	99	1	168	524	
Sodium	7440-23-5	1	mg/L	1590	436	187	752	3260	
Potassium	7440-09-7	1	mg/L	25	4	3	5	13	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.08	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.004	<0.001	0.002	<0.001	<0.001	
Barium	7440-39-3	0.001	mg/L	0.045	0.278	0.350	0.100	0.073	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.295	0.054	0.013	0.037	0.342	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	2.70	2.65	0.11	2.36	7.78	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	0.4	0.1	0.5	<0.1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	27PCR	4518WB	BCS3	113Ppcb	118P
Sampling date / time				09-May-2023 00:00	10-May-2023 07:50	10-May-2023 11:00	10-May-2023 13:05	10-May-2023 15:10	
Compound	CAS Number	LOR	Unit	EB2314152-006	EB2314152-007	EB2314152-008	EB2314152-009	EB2314152-010	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.51	0.32	0.28	0.30	2.03	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.4	0.4	0.4	2.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.6	0.4	0.4	0.4	2.6	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	133	38.5	8.92	58.4	218	
∅ Total Cations	----	0.01	meq/L	124	33.2	8.49	53.7	219	
∅ Ionic Balance	----	0.01	%	3.55	7.37	2.45	4.17	0.30	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		QAQC01	----	----	----	----
		Sampling date / time		08-May-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2314152-011	-----	-----	-----	-----
				Result	---	---	---	---
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.22	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2630	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1540	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	1710	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	187	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	253	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	253	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	15	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	818	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	52	----	----	----	----
Magnesium	7439-95-4	1	mg/L	14	----	----	----	----
Sodium	7440-23-5	1	mg/L	555	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.495	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.008	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.36	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC01	----	----	----	----
Sampling date / time				08-May-2023 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2314152-011	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.76	----	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	28.4	----	----	----	----	----
∅ Total Cations	----	0.01	meq/L	28.0	----	----	----	----	----
∅ Ionic Balance	----	0.01	%	0.75	----	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: EB2314152	Page	: 1 of 7
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 11-May-2023
Order number	: 4537604	Date Analysis Commenced	: 11-May-2023
C-O-C number	: ----	Issue Date	: 19-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	:		
Quote number	: EN/032/17		
No. of samples received	: 11		
No. of samples analysed	: 11		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Vincent Muller		Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5048603)									
EB2314049-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.27	7.37	1.4	0% - 20%
EB2314092-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.38	7.34	0.5	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 5048606)									
EB2314152-011	QAQC01	EA005-P: pH Value	----	0.01	pH Unit	8.22	8.32	1.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5048604)									
EB2314092-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2760	2730	1.2	0% - 20%
EB2314152-011	QAQC01	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2630	2600	1.2	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5044216)									
EB2314152-001	116P	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1650	1630	0.8	0% - 20%
EB2314152-010	118P	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	15500	15800	2.1	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5048601)									
EB2314092-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	612	611	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	612	611	0.0	0% - 20%
EB2314024-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	86	86	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	86	86	0.0	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5048605)									
EB2314152-011	QAQC01	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	253	253	0.0	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 5048605) - continued									
EB2314152-011	QAQC01	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	253	253	0.0	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5043938)									
EB2314152-003	GW09A	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	20	20	0.0	0% - 20%
EB2314152-010	118P	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	872	882	1.1	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5043934)									
EB2313797-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	15600	15800	0.7	0% - 20%
EB2313482-005	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1100	1100	0.3	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5043939)									
EB2314152-010	118P	ED045G: Chloride	16887-00-6	1	mg/L	6880	7130	3.6	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 5047492)									
EB2314245-025	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	3	3	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	1390	1400	0.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	15	15	0.0	0% - 50%
EB2314152-002	GW10	ED093F: Calcium	7440-70-2	1	mg/L	52	51	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	13	13	0.0	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	550	546	0.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 5047493)									
EB2314152-005	GW09C	ED093F: Calcium	7440-70-2	1	mg/L	50	48	2.7	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	357	346	3.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	8	8	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5047494)									
EB2314245-025	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.671	0.685	2.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.018	0.019	0.0	0% - 50%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.11	0.12	0.0	No Limit
		EB2314152-002	GW10	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001
EB2314152-002	GW10	EG020A-F: Barium	7440-39-3	0.001	mg/L	0.491	0.492	0.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.008	0.008	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.34	0.34	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5047495)									

Page : 4 of 7
 Work Order : EB2314152
 Client : SLR CONSULTING AUSTRALIA PTY LTD
 Project : 620.31500.00000



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5047495) - continued									
EB2314152-005	GW09C	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.104	0.103	0.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.022	0.021	5.1	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5048602)									
EB2314024-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.0	No Limit
EB2314152-011	QAQC01	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5044052)									
EB2314152-011	QAQC01	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.76	0.76	0.0	0% - 20%
EB2314152-009	113Pgcb	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.30	0.31	0.0	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5043935)									
EB2314152-003	GW09A	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2314152-010	118P	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5044051)									
EB2314108-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.18	1.12	5.4	0% - 20%
EB2314108-011	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.40	0.41	0.0	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5044053)									
EB2314152-009	113Pgcb	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5047424)									
EB2314152-005	GW09C	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.7	22.4	No Limit
EB2314107-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.7	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
EA005P: pH by PC Titrator (QCLot: 5048603)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.0	102
				----	7 pH Unit	100	98.0	102
EA005P: pH by PC Titrator (QCLot: 5048606)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98.0	102
				----	7 pH Unit	99.7	98.0	102
EA010P: Conductivity by PC Titrator (QCLot: 5048604)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	97.2	90.0	106
				<1	12890 µS/cm	92.0	90.0	106
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5044216)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	105	88.0	112
				<10	2000 mg/L	96.1	80.9	118
				<10	2410 mg/L	106	81.3	119
ED037P: Alkalinity by PC Titrator (QCLot: 5048601)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	50 mg/L	99.5	80.0	120
ED037P: Alkalinity by PC Titrator (QCLot: 5048605)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	95.4	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5043938)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	109	85.0	118
				<1	100 mg/L	98.3	85.0	118
ED045G: Chloride by Discrete Analyser (QCLot: 5043934)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	106	90.0	115
				<1	1000 mg/L	102	90.0	115
ED045G: Chloride by Discrete Analyser (QCLot: 5043939)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	107	90.0	115
				<1	1000 mg/L	101	90.0	115
ED093F: Dissolved Major Cations (QCLot: 5047492)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	116	70.0	130
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	105	70.0	130
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	106	70.0	130
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	70.0	130
ED093F: Dissolved Major Cations (QCLot: 5047493)								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
ED093F: Dissolved Major Cations (QCLot: 5047493) - continued								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	114	70.0	130
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	105	70.0	130
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	105	70.0	130
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5047494)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	79.0	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	106	88.0	116
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	105	70.0	130
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	103	88.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	89.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	100	83.0	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	82.0	114
EG020F: Dissolved Metals by ICP-MS (QCLot: 5047495)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	103	79.0	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	106	88.0	116
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	102	70.0	130
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	104	88.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	89.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	107	83.0	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	82.0	114
EK040P: Fluoride by PC Titrator (QCLot: 5048602)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	10 mg/L	94.8	80.0	117
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5044052)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	93.1	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5043935)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.3	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5044051)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	97.6	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5044053)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.8	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5047424)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	90.9	70.1	108

Matrix Spike (MS) Report



The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5043938)							
EB2314152-003	GW09A	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	95.4	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5043934)							
EB2313555-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	100	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5043939)							
EB2314152-003	GW09A	ED045G: Chloride	16887-00-6	400 mg/L	78.3	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5047494)							
EB2314119-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	99.5	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	101	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	94.5	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	96.5	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5047495)							
EB2314163-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	104	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	100	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	106	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	103	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5048602)							
EB2314025-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	90.7	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5044052)							
EB2314152-010	118P	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5043935)							
EB2314152-003	GW09A	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	93.9	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5044051)							
EB2314108-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	79.4	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5044053)							
EB2314152-010	118P	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	94.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5047424)							
EB2314107-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	87.1	70.0	130

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612



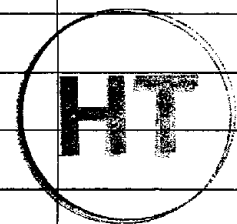
PROJECT OFFICE	<input checked="" type="checkbox"/> BRISBANE: Level 16, 175 Eagle Street, Brisbane	<input type="checkbox"/> GOLD COAST: 194 Varney Parade, Varney Lakes, QLD 4227	<input type="checkbox"/> NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305	<input type="checkbox"/> SYDNEY: 2 Lincoln Street, Lane Cove, Sydney NSW 2066	<input type="checkbox"/> MELBOURNE: 6/A Lambidge Street, Richmond Park Nelson, 7020 NZ
	<input type="checkbox"/> CANBERRA: GPO Box 410, Canberra, ACT 2600	<input type="checkbox"/> MACKAY: 21 River Street, Mackay, QLD 4710	<input type="checkbox"/> PERTH: 503 Murray Street, Perth, WA 6000	<input type="checkbox"/> TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810	<input type="checkbox"/> NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ
(Tick one)	<input type="checkbox"/> DARWIN: 21 Porap Rd, Darwin, NT 0820	<input type="checkbox"/> MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002	<input type="checkbox"/> ROCKHAMPTON: rockhampton@slrconsulting.com	<input type="checkbox"/> AUCKLAND: 68 Beach Road, Auckland 1010 NZ	<input type="checkbox"/>

CLIENT:	LABORATORY: ALS	Turnaround Time (TAT):	COQ Number: 1 of 2
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St	<input checked="" type="checkbox"/> Standard TAT	
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin	<input type="checkbox"/> Non Standard or Urgent TAT	
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0438 134 273	Required TAT: Standard	
Email Reports to: esdat+slr_au@esdatlabsync.net	Email Invoices to: nconnolly@slrconsulting.com		

COMMENTS OR ADDITIONAL DIRECTIONS					REQUESTED ANALYSIS					
No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives						
1	116P	8.5.23 13:43	Water	1P + 2N	X	X	X	X	X	
2	GW18	9.5.23 09:53			X	X	X	X	X	
3	GW29A	9.5.23			X	X	X	X	X	
4	GW09B	9.5.23			X	X	X	X	X	
5	GW09C	9.5.23			X	X	X	X	X	
6	27PCR	9.5.23			X	X	X	X	X	
7	4518WB	10.5.23 07:50		1P + 2N	X	X	X	X	X	
8	BCS3	10.5.23 11:00		1P + 2N	X	X	X	X	X	
9	113Pgcb	10.5.23 13:05			X	X	X	X	X	
10	118P	10.5.23 15:10			X	X	X	X	X	
11	QAQCO1	8.5.23			X	X	X	X	X	

Environmental Division
Brisbane
Work Order Reference
EB2314152

Telephone : + 61-7-3243 7222



Sample Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; 2 = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles; G = unpreserved glass soil jar;

I attest that the proper field sampling procedures were used during the collection of these samples.

Relinquished By Sampler	Sig: <i>A. Welch</i>	Date / Time: 11.5.23	Received by	Sig: <i>Crystil</i>	Date / Time: 11-5-23 16:13	Temperature Received:
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:	
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:	



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2314679**

Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nconnolly@slrconsulting.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: ----	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 620.31500.00000	Page	: 1 of 4
Order number	: ----	Quote number	: EB2017HEGAUS0005 (EN/032/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	: ASHLEY WELCH, HAILEY MARTIN		

Dates

Date Samples Received	: 16-May-2023 15:12	Issue Date	: 16-May-2023
Client Requested Due Date	: 24-May-2023	Scheduled Reporting Date	: 24-May-2023

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 0.9°C, -0.4°C - Ice present
Receipt Detail	: Medium Hard Esky	No. of samples received / analysed	: 17 / 17

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Please be advised that the requested "Ferrous Iron" analysis has been removed from this submission, as no suitable container was received for this test. If you wish to discuss this further, please contact Client Services at ALSEnviro.Brisbane@alsglobal.com.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Please be advised that sample "QAQC04" has been forwarded to Eurofins for analysis as per the Chain of Custody request. Please note that this will incur a freight forwarding fee.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - NT-07 Total Nitrogen + NO ₂ + NO ₃ + NH ₃	WATER - NT-12 General Water Suite
EB2314679-001	11-May-2023 08:25	GW15A	✓	✓	✓	✓
EB2314679-002	11-May-2023 10:00	GW19A	✓	✓	✓	✓
EB2314679-003	11-May-2023 10:50	GW19B	✓	✓	✓	✓
EB2314679-004	11-May-2023 11:30	GW22A	✓	✓	✓	✓
EB2314679-005	11-May-2023 12:35	GW22B	✓	✓	✓	✓
EB2314679-006	11-May-2023 14:35	GW08C	✓	✓	✓	✓
EB2314679-007	11-May-2023 15:45	GW06B	✓	✓	✓	✓
EB2314679-008	12-May-2023 07:50	GW05A	✓	✓	✓	✓
EB2314679-009	12-May-2023 08:40	GW05B	✓	✓	✓	✓
EB2314679-010	12-May-2023 10:00	109P	✓	✓	✓	✓
EB2314679-011	12-May-2023 10:50	BMH1	✓	✓	✓	✓
EB2314679-012	15-May-2023 11:00	18PbR2	✓	✓	✓	✓
EB2314679-013	15-May-2023 12:00	18PcR2	✓	✓	✓	✓
EB2314679-014	15-May-2023 11:00	QAQC03	✓	✓	✓	✓
EB2314679-015	15-May-2023 13:00	28PcR	✓	✓	✓	✓
EB2314679-016	15-May-2023 14:35	GW12B	✓	✓	✓	✓
EB2314679-017	15-May-2023 15:00	GW16A	✓	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by Auto Titrator							
109P	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✗	----	----
18PbR2	Clear Plastic Bottle - Natural	----	15-May-2023	16-May-2023	✗	----	----
18PcR2	Clear Plastic Bottle - Natural	----	15-May-2023	16-May-2023	✗	----	----
28PcR	Clear Plastic Bottle - Natural	----	15-May-2023	16-May-2023	✗	----	----
BMH1	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✗	----	----
GW05A	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✗	----	----
GW05B	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✗	----	----
GW06B	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✗	----	----
GW08C	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✗	----	----
GW12B	Clear Plastic Bottle - Natural	----	15-May-2023	16-May-2023	✗	----	----
GW15A	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✗	----	----
GW16A	Clear Plastic Bottle - Natural	----	15-May-2023	16-May-2023	✗	----	----
GW19A	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✗	----	----



GW19B	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✘	----	----
GW22A	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✘	----	----
GW22B	Clear Plastic Bottle - Natural	----	11-May-2023	16-May-2023	✘	----	----
QAQC03	Clear Plastic Bottle - Natural	----	15-May-2023	16-May-2023	✘	----	----
EK055G: Ammonia as N by Discrete analyser							
109P	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
BMH1	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW05A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW05B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW06B	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
GW08C	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
GW15A	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
GW19A	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
GW19B	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
GW22A	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
GW22B	Clear Plastic Bottle - Natural	----	12-May-2023	16-May-2023	✘	----	----
EK057G: Nitrite as N by Discrete Analyser							
109P	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
BMH1	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
GW05A	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
GW05B	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
GW06B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW08C	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW15A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW19A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW19B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW22A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW22B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser							
109P	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
BMH1	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
GW05A	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
GW05B	Clear Plastic Bottle - Natural	----	14-May-2023	16-May-2023	✘	----	----
GW06B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW08C	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW15A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW19A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW19B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW22A	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
GW22B	Clear Plastic Bottle - Natural	----	13-May-2023	16-May-2023	✘	----	----
EK061G: Total Kjeldahl Nitrogen as N By Discrete Analyser							
109P	Clear Plastic Bottle - Natural	13-May-2023	10-Jun-2023	16-May-2023	✘	----	----
BMH1	Clear Plastic Bottle - Natural	13-May-2023	10-Jun-2023	16-May-2023	✘	----	----
GW05A	Clear Plastic Bottle - Natural	13-May-2023	10-Jun-2023	16-May-2023	✘	----	----
GW05B	Clear Plastic Bottle - Natural	13-May-2023	10-Jun-2023	16-May-2023	✘	----	----
GW06B	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----
GW08C	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----
GW15A	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----
GW19A	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----
GW19B	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----
GW22A	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----
GW22B	Clear Plastic Bottle - Natural	12-May-2023	09-Jun-2023	16-May-2023	✘	----	----



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2314679	Page	: 1 of 12
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 16-May-2023
Site	:	Issue Date	: 24-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN	No. of samples received	: 17
Order number	: 4537604	No. of samples analysed	: 17

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED045G: Chloride by Discrete Analyser	EB2314591--010	Anonymous	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural GW22A		----	----	----	22-May-2023	11-May-2023	11
Clear Plastic Bottle - Natural GW15A, GW19B, GW08C,	GW19A, GW22B, GW06B	----	----	----	23-May-2023	11-May-2023	12
Clear Plastic Bottle - Natural GW05A, 109P,	GW05B, BMH1	----	----	----	23-May-2023	12-May-2023	11
Clear Plastic Bottle - Natural 18PbR2, QAQC03, GW12B,	18PcR2, 28PcR, GW16A	----	----	----	23-May-2023	15-May-2023	8
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	----	----	----	19-May-2023	18-May-2023	1
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	----	----	----	18-May-2023	12-May-2023	6
Clear Plastic Bottle - Natural GW05A, 109P,	GW05B, BMH1	----	----	----	18-May-2023	13-May-2023	5
EK057G: Nitrite as N by Discrete Analyser							



Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural GW15A, GW19B, GW22B, GW06B GW19A, GW22A, GW08C,	----	----	----	16-May-2023	13-May-2023	3
Clear Plastic Bottle - Natural GW05A, 109P, GW05B, BMH1	----	----	----	16-May-2023	14-May-2023	2
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser						
Clear Plastic Bottle - Natural GW15A, GW19B, GW22B, GW06B GW19A, GW22A, GW08C,	----	----	----	18-May-2023	13-May-2023	5
Clear Plastic Bottle - Natural GW05A, 109P, GW05B, BMH1	----	----	----	18-May-2023	14-May-2023	4
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser						
Clear Plastic Bottle - Natural GW15A, GW19B, GW22B, GW06B GW19A, GW22A, GW08C,	17-May-2023	12-May-2023	5	----	----	----
Clear Plastic Bottle - Natural GW05A, 109P, GW05B, BMH1	17-May-2023	13-May-2023	4	----	----	----

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) GW22A	11-May-2023	----	----	----	22-May-2023	11-May-2023	*
Clear Plastic Bottle - Natural (EA005-P) GW15A, GW19B, GW08C, GW19A, GW22B, GW08B	11-May-2023	----	----	----	23-May-2023	11-May-2023	*
Clear Plastic Bottle - Natural (EA005-P) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	23-May-2023	12-May-2023	*
Clear Plastic Bottle - Natural (EA005-P) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	23-May-2023	15-May-2023	*
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) GW22A	11-May-2023	----	----	----	22-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) GW15A, GW19B, GW08C, GW19A, GW22B, GW08B	11-May-2023	----	----	----	23-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	23-May-2023	09-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	23-May-2023	12-Jun-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) GW15A, GW19B, GW22B, GW06B, GW19A, GW22A, GW08C,	11-May-2023	----	----	----	19-May-2023	18-May-2023	*
Clear Plastic Bottle - Natural (EA015H) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	19-May-2023	19-May-2023	✓
Clear Plastic Bottle - Natural (EA015H) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	19-May-2023	22-May-2023	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW15A, GW19B, GW22B, GW06B GW19A, GW22A, GW08C	11-May-2023	----	----	----	19-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	19-May-2023	09-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	19-May-2023	12-Jun-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) GW22A	11-May-2023	----	----	----	22-May-2023	25-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW15A, GW19B, GW08C, GW19A, GW22B, GW06B	11-May-2023	----	----	----	23-May-2023	25-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	23-May-2023	26-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	23-May-2023	29-May-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) GW15A, GW19B, GW22B, GW06B GW19A, GW22A, GW08C	11-May-2023	----	----	----	16-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	16-May-2023	09-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	16-May-2023	12-Jun-2023	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	11-May-2023	----	----	----	16-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW05A, 109P,	GW05B, BMH1	12-May-2023	----	----	----	16-May-2023	09-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 18PbR2, QAQC03, GW12B,	18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	16-May-2023	12-Jun-2023	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	11-May-2023	----	----	----	19-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW05A, 109P,	GW05B, BMH1	12-May-2023	----	----	----	19-May-2023	09-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 18PbR2, QAQC03, GW12B,	18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	19-May-2023	12-Jun-2023	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	11-May-2023	----	----	----	19-May-2023	07-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW05A, 109P,	GW05B, BMH1	12-May-2023	----	----	----	19-May-2023	08-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 18PbR2, QAQC03, GW12B,	18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	19-May-2023	11-Nov-2023	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) GW22A	11-May-2023	----	----	----	22-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) GW15A, GW19B, GW08C, GW19A, GW22B, GW08B	11-May-2023	----	----	----	23-May-2023	08-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	23-May-2023	09-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	23-May-2023	12-Jun-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK055G) GW15A, GW19B, GW22B, GW06B, GW19A, GW22A, GW08C,	11-May-2023	----	----	----	18-May-2023	12-May-2023	*
Clear Plastic Bottle - Natural (EK055G) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	18-May-2023	13-May-2023	*
Clear Plastic Bottle - Sulfuric Acid (EK055G) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	19-May-2023	12-Jun-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) GW15A, GW19B, GW22B, GW06B, GW19A, GW22A, GW08C,	11-May-2023	----	----	----	16-May-2023	13-May-2023	*
Clear Plastic Bottle - Natural (EK057G) GW05A, 109P, GW05B, BMH1	12-May-2023	----	----	----	16-May-2023	14-May-2023	*
Clear Plastic Bottle - Natural (EK057G) 18PbR2, QAQC03, GW12B, 18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	16-May-2023	17-May-2023	✓



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Natural (EK059G) GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	11-May-2023	----	----	----	18-May-2023	13-May-2023	✘
Clear Plastic Bottle - Natural (EK059G) GW05A, 109P,	GW05B, BMH1	12-May-2023	----	----	----	18-May-2023	14-May-2023	✘
Clear Plastic Bottle - Sulfuric Acid (EK059G) 18PbR2, QAQC03, GW12B,	18PcR2, 28PcR, GW16A	15-May-2023	----	----	----	19-May-2023	12-Jun-2023	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Natural (EK061G) GW15A, GW19B, GW22B, GW06B	GW19A, GW22A, GW08C,	11-May-2023	17-May-2023	12-May-2023	✘	17-May-2023	14-Jun-2023	✔
Clear Plastic Bottle - Natural (EK061G) GW05A, 109P,	GW05B, BMH1	12-May-2023	17-May-2023	13-May-2023	✘	17-May-2023	14-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK061G) 18PbR2, QAQC03, GW12B,	18PcR2, 28PcR, GW16A	15-May-2023	18-May-2023	12-Jun-2023	✔	18-May-2023	12-Jun-2023	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	6	46	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	17	17.65	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	6	44	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	3	46	6.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	17	23.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	44	6.82	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	22	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	40	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	3	46	6.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	44	6.82	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	22	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	3	46	6.52	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	44	6.82	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	22	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	22	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Calculated TDS (from Electrical Conductivity)	EA016	WATER	In house: Calculation from Electrical Conductivity (APHA 2510 B) using a conversion factor specified in the analytical report. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Fluoride by Auto Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

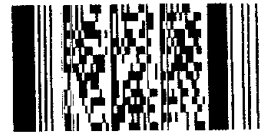
SLR

<input checked="" type="checkbox"/> BRISBANE: Level 16, 175 Eagle Street, Brisbane	<input type="checkbox"/> GOLD COAST: 184 Varsity Parade, Varsity Lakes, QLD 4227	<input checked="" type="checkbox"/> NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305	<input type="checkbox"/> SYDNEY: 7 Lincoln Street, Lane Cove, Sydney NSW 2066	<input type="checkbox"/> WELLSON: 6/A Cambridge Street, Richmond Port Nelson, 7020 NZ
<input type="checkbox"/> CANBERRA: GPO Box 410, Canberra, ACT 2600	<input type="checkbox"/> MACKAY: 21 River Street, Mackay, QLD 4740	<input type="checkbox"/> PERTH: 503 Murray Street, Perth, WA 6000	<input type="checkbox"/> TOWNSVILLE: 12 Cannon St, South Townsville, QLD 4810	<input type="checkbox"/> NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ
<input type="checkbox"/> DARWIN: 21 Parap Rd, Darwin, NT 0820	<input type="checkbox"/> MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002	<input type="checkbox"/> ROCKHAMPTON: rockhampton@slrconsulting.com	<input type="checkbox"/> AUCKLAND: 68 Beach Road, Auckland 1010 NZ	

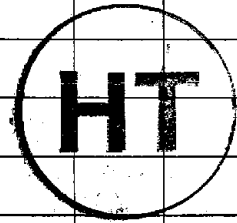
CLIENT:	LABORATORY: ALS	Turnaround Time (TAT):	COC Number: 1 of 2
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St	<input checked="" type="checkbox"/> Standard TAT	
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin (HM)	<input type="checkbox"/> Non Standard or Urgent TAT	
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0438 134 273		
Email Reports to: esdat@slr.au@esdatlabsync.net; nconnolly@slrconsulting; awelch@slrconsulting; hmartin@slrconsulting	Email Invoices to: nconnolly@slrconsulting.com		

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	REQUESTED ANALYSIS				
					NF-12	TDS (total dissolved solids)	Dissolved Metals (Al, As, Se, Cu, Fe, Mn, Ba)	NF-7	Ferrous Fe
1	GW15A	11.5.23 08:25	Water	1P + 2N + 1SP	X	X	X	X	X
2	GW19A	11.5.23 10:00			X	X	X	X	X
3	GW19B	11.5.23 10:50			X	X	X	X	X
4	GW22A	11.5.23 11:30			X	X	X	X	X
5	GW22B	11.5.23 12:35			X	X	X	X	X
6	GW08C	11.5.23 14:35			X	X	X	X	X
7	GW06B	11.5.23 15:45			X	X	X	X	X
8	GW05A	12.5.23 07:50			X	X	X	X	X
9	GW05B	12.5.23 08:40			X	X	X	X	X
10	109P	12.5.23 10:00			X	X	X	X	X
11	BMH1	12.5.23 10:50			X	X	X	X	X

Environmental Division
Brisbane
Work Order Reference
EB2314679



Telephone: + 61-7-3243 7222



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

I attest that the proper field sampling procedures were used during the collection of these samples.

Relinquished By Sampler	<i>[Signature]</i>	Date	16.5.23	Received by		Date		Temperature Received:
Relinquished By		Date		Received by		Date		
Relinquished By	LT	Date	16/5/23	Received by		Date		

1512

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

PROJECT <input checked="" type="checkbox"/> BRISBANE: Level 16, 175 Eagle Street, Brisbane	<input type="checkbox"/> GOLD COAST: 194 Varley Parade, Varley Lakes, QLD 4227	<input type="checkbox"/> NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305	<input type="checkbox"/> SYDNEY: 2 Ericton Street, Lane Cove, Sydney NSW 2056	<input type="checkbox"/> RICHMOND: 6/A Cambridge Street, Richmond, Port Nelson, 7020 NZ
OFFICE <input type="checkbox"/> CANBERRA: GPO Box 410, Canberra, ACT 2600	<input type="checkbox"/> MACKAY: 21 River Street, Mackay, QLD 4740	<input type="checkbox"/> PERTH: 503 Murray Street, Perth, WA 6000	<input type="checkbox"/> TOWNSVILLE: 12 Cannon St, South Townsville QLD 4810	<input type="checkbox"/> NEW PLYMOUTH: Level 2, 10 Down Street East, New Plymouth, 4310 NZ
(Tick one) <input type="checkbox"/> DARWIN: 21 Parap Rd, Darwin, NT 0820	<input type="checkbox"/> MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002	<input type="checkbox"/> ROCKHAMPTON: rockhampton@slrconsulting.com	<input type="checkbox"/> AUCKLAND: 68 Beach Road, Auckland 1010 NZ	<input type="checkbox"/>

CLIENT:	LABORATORY: ALS	Turnaround Time (TAT): COC Number 2 of 2
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St	<input checked="" type="checkbox"/> Standard TAT
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin	<input type="checkbox"/> Non Standard or Urgent TAT
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0488 134 273	Required TAT: Standard
Email Reports to: esdat+slr_au@esdatlabsync.net	Email Invoices to: nconnolly@slrconsulting.com	

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	REQUESTED ANALYSIS					Additional Information (Comment on any gross contamination or specific requirements)
					NT-12	TDS	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Pb	NT-7	Ferrous Fe	
12	18PbR2	15.5.23 11:00	Water	1P + 2N + 1SP	X	X	X	X	X	
13	18PcR2	15.5.23 12:00			X	X	X	X	X	
14	QAQC03	15.5.23 11:00			X	X	X	X	X	
15	QAQC04	15.5.23 11:00			X	X	X	X	X	Send to Eurofins
16	28PcR	15.5.23 13:00			X	X	X	X	X	
17	GW12B	15.5.23 14:35			X	X	X	X	X	
18	GW16A	15.5.23 15:00			X	X	X	X	X	

Sample Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Spedation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STI = Sterile Sodium Thiosulfate Preserved Bottles; G = unpreserved glass soil jar;

I attest that the proper field sampling procedures were used during the collection of these samples.

Relinquished By Sampler	<i>A. Welch</i>	Date / Time	16.5.23	Received by		Date / Time		Temperature Received:
Relinquished By		Date / Time		Received by		Date / Time		
Relinquished By		Date / Time		Received by		Date / Time		



CERTIFICATE OF ANALYSIS

Work Order : **EB2314679**
Client : **SLR CONSULTING AUSTRALIA PTY LTD**
Contact : **NED CONNOLLY**
Address : **LEVEL 16 175 EAGLE STREET**
BRISBANE 4000
Telephone : **----**
Project : **620.31500.00000**
Order number : **4537604**
C-O-C number : **----**
Sampler : **ASHLEY WELCH, HAILEY MARTIN**
Site :
Quote number : **EN/032/17**
No. of samples received : **17**
No. of samples analysed : **17**

Page : 1 of 10
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61 7 3243 7222
Date Samples Received : 16-May-2023 15:12
Date Analysis Commenced : 16-May-2023
Issue Date : 24-May-2023 19:23



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Vincent Muller		Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- It is recognised that EK061G (Total Kjeldahl Nitrogen) is less than EK055G (Ammonia) for sample GW19B (EB2314679-003). However, the difference is within experimental variation of the methods.
- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		GW15A	GW19A	GW19B	GW22A	GW22B	
Sampling date / time		11-May-2023 08:25		11-May-2023 10:00		11-May-2023 10:50		11-May-2023 11:30	
Compound	CAS Number	LOR	Unit	EB2314679-001	EB2314679-002	EB2314679-003	EB2314679-004	EB2314679-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.19	7.94	8.07	8.13	7.93	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	1810	8100	2760	9070	6140	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1110	4940	1530	5460	3440	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	1180	5260	1790	5900	3990	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	501	1310	41	1020	355	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	367	329	123	210	96	
Total Alkalinity as CaCO3	----	1	mg/L	367	329	123	210	96	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	27	517	1	208	43	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	436	2290	895	2830	1890	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	87	229	13	197	106	
Magnesium	7439-95-4	1	mg/L	69	179	2	128	22	
Sodium	7440-23-5	1	mg/L	170	1080	526	1310	1020	
Potassium	7440-09-7	1	mg/L	13	8	3	7	6	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	0.001	<0.001	
Barium	7440-39-3	0.001	mg/L	0.461	0.074	0.055	0.066	0.802	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.165	0.054	0.027	0.043	0.059	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	1.28	4.39	<0.05	2.16	0.42	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.3	<0.1	<0.1	<0.1	<0.1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW15A	GW19A	GW19B	GW22A	GW22B
Sampling date / time					11-May-2023 08:25	11-May-2023 10:00	11-May-2023 10:50	11-May-2023 11:30	11-May-2023 12:35
Compound	CAS Number	LOR	Unit	EB2314679-001	EB2314679-002	EB2314679-003	EB2314679-004	EB2314679-005	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.15	0.70	0.81	1.52	2.09	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.2	0.8	2.1	3.1	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	1.2	0.8	2.1	3.1	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	20.2	81.9	27.7	88.4	56.1	
∅ Total Cations	----	0.01	meq/L	17.7	73.3	23.8	77.5	51.6	
∅ Ionic Balance	----	0.01	%	6.45	5.53	7.68	6.53	4.18	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW08C	GW06B	GW05A	GW05B	109P
Sampling date / time				11-May-2023 14:35	11-May-2023 15:45	12-May-2023 07:50	12-May-2023 08:40	12-May-2023 10:00	
Compound	CAS Number	LOR	Unit	EB2314679-006	EB2314679-007	EB2314679-008	EB2314679-009	EB2314679-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.44	8.58	8.09	8.55	8.45	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2550	1040	1190	1020	528	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1410	609	746	582	331	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	1660	676	774	663	343	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	20	5	425	60	30	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	15	21	<1	23	15	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	235	285	505	326	231	
Total Alkalinity as CaCO3	----	1	mg/L	251	305	505	349	246	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	16	<1	15	22	6	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	735	174	69	124	22	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	8	2	78	19	12	
Magnesium	7439-95-4	1	mg/L	<1	<1	56	3	<1	
Sodium	7440-23-5	1	mg/L	498	232	118	202	112	
Potassium	7440-09-7	1	mg/L	3	<1	1	3	1	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.04	<0.01	<0.01	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.008	<0.001	<0.001	<0.001	<0.001	
Barium	7440-39-3	0.001	mg/L	0.231	0.052	0.048	0.203	0.002	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.008	
Manganese	7439-96-5	0.001	mg/L	0.017	0.009	<0.001	0.010	0.002	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.2	0.4	0.8	0.1	0.3	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW08C	GW06B	GW05A	GW05B	109P
Sampling date / time					11-May-2023 14:35	11-May-2023 15:45	12-May-2023 07:50	12-May-2023 08:40	12-May-2023 10:00
Compound	CAS Number	LOR	Unit	EB2314679-006	EB2314679-007	EB2314679-008	EB2314679-009	EB2314679-010	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.47	0.24	<0.01	0.12	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	11.5	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	11.5	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.3	1.1	0.2	0.1	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	0.3	12.6	0.2	0.1	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	26.1	11.0	12.3	10.9	5.66	
∅ Total Cations	----	0.01	meq/L	22.1	10.2	13.6	10.0	5.50	
∅ Ionic Balance	----	0.01	%	8.18	3.83	5.04	4.15	1.47	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BMH1	18PbR2	18PcR2	QAQC03	28PcR
Sampling date / time				12-May-2023 10:50	15-May-2023 11:00	15-May-2023 12:00	15-May-2023 11:00	15-May-2023 13:00	
Compound	CAS Number	LOR	Unit	EB2314679-011	EB2314679-012	EB2314679-013	EB2314679-014	EB2314679-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.17	7.77	8.02	7.79	7.60	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	1200	698	796	699	9840	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	819	393	457	395	6190	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	780	454	517	454	6400	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	584	31	51	31	2070	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	651	49	75	50	59	
Total Alkalinity as CaCO3	----	1	mg/L	651	49	75	50	59	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	13	33	73	34	576	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	77	184	170	183	3270	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	84	9	14	9	492	
Magnesium	7439-95-4	1	mg/L	91	2	4	2	205	
Sodium	7440-23-5	1	mg/L	81	139	154	125	1080	
Potassium	7440-09-7	1	mg/L	1	1	2	1	22	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.02	<0.01	0.02	<0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	0.004	0.003	<0.001	
Barium	7440-39-3	0.001	mg/L	0.011	0.012	0.027	0.013	0.041	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	<0.001	0.004	0.028	0.004	0.299	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.06	<0.05	2.10	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.2	0.3	0.4	0.3	<0.1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BMH1	18PbR2	18PcR2	QAQC03	28PcR
Sampling date / time				12-May-2023 10:50	15-May-2023 11:00	15-May-2023 12:00	15-May-2023 11:00	15-May-2023 13:00	
Compound	CAS Number	LOR	Unit	EB2314679-011	EB2314679-012	EB2314679-013	EB2314679-014	EB2314679-015	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.43	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	11.9	<0.01	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	11.9	<0.01	<0.01	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	0.1	0.2	0.1	0.8	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	13.0	0.1	0.2	0.1	0.8	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	15.4	6.86	7.81	6.87	105	
∅ Total Cations	----	0.01	meq/L	15.2	6.68	7.78	6.08	89.0	
∅ Ionic Balance	----	0.01	%	0.72	1.26	0.23	6.12	8.46	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		GW12B	GW16A	----	----	----
Sampling date / time		15-May-2023 14:35		15-May-2023 15:00		----	----	----
Compound	CAS Number	LOR	Unit	EB2314679-016	EB2314679-017	-----	-----	-----
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.59	8.11	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1000	1590	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	606	963	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	650	1030	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	5	557	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	21	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	281	502	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	303	502	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	3	14	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	158	268	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	91	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	80	----	----	----
Sodium	7440-23-5	1	mg/L	217	142	----	----	----
Potassium	7440-09-7	1	mg/L	2	8	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L	0.093	0.122	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.004	0.002	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	0.3	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW12B	GW16A	----	----	----
Sampling date / time				15-May-2023 14:35	15-May-2023 15:00	----	----	----	
Compound	CAS Number	LOR	Unit	EB2314679-016	EB2314679-017	-----	-----	-----	
				Result	Result	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.24	0.03	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	1.34	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	1.34	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.2	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	1.5	----	----	----	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	10.6	17.9	----	----	----	
∅ Total Cations	----	0.01	meq/L	9.59	17.5	----	----	----	
∅ Ionic Balance	----	0.01	%	4.88	1.06	----	----	----	



QUALITY CONTROL REPORT

Work Order	: EB2314679	Page	: 1 of 9
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 16-May-2023
Order number	: 4537604	Date Analysis Commenced	: 16-May-2023
C-O-C number	: ----	Issue Date	: 24-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	:		
Quote number	: EN/032/17		
No. of samples received	: 17		
No. of samples analysed	: 17		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Vincent Muller		Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5053148)									
EB2314679-002	GW19A	EA005-P: pH Value	----	0.01	pH Unit	7.94	7.99	0.6	0% - 20%
EB2314679-013	18PcR2	EA005-P: pH Value	----	0.01	pH Unit	8.02	7.99	0.4	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 5053154)									
EB2314591-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.78	7.73	0.6	0% - 20%
EB2314617-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.72	7.74	0.3	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5053147)									
EB2314679-002	GW19A	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	8100	8050	0.6	0% - 20%
EB2314679-013	18PcR2	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	796	781	1.9	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5053152)									
EB2314591-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	8520	8660	1.7	0% - 20%
EB2314617-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	42600	43300	1.5	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5057749)									
EB2305387-013	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5480	5530	1.0	0% - 20%
EB2314529-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5170	5040	2.6	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5057750)									
EB2314679-002	GW19A	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4940	4800	3.0	0% - 20%
EB2314679-011	BMH1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	819	845	3.1	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5053150)									
EB2314679-002	GW19A	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	329	330	0.5	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	329	330	0.5	0% - 20%
EB2314679-013	18PcR2	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 5053150) - continued									
EB2314679-013	18PcR2	ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	75	74	1.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	75	74	1.6	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5053153)									
EB2314591-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	818	866	5.7	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	818	866	5.7	0% - 20%
EB2314617-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	109	110	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	109	110	0.0	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5053215)									
EB2314591-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	4	4	0.0	No Limit
EB2314679-008	GW05A	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	15	15	0.0	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5053216)									
EB2314679-016	GW12B	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	3	4	0.0	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 5053219)									
EB2314591-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	6020	6200	2.9	0% - 20%
EB2314679-008	GW05A	ED045G: Chloride	16887-00-6	1	mg/L	69	69	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5053220)									
EB2314679-016	GW12B	ED045G: Chloride	16887-00-6	1	mg/L	158	160	1.7	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 5057117)									
EB2314679-001	GW15A	ED093F: Calcium	7440-70-2	1	mg/L	87	90	3.6	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	69	70	1.6	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	170	170	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	13	12	0.0	0% - 50%
EB2314679-010	109P	ED093F: Calcium	7440-70-2	1	mg/L	12	12	0.0	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	112	111	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5057116)									
EB2314679-001	GW15A	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.461	0.456	1.2	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.165	0.165	0.0	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.28	1.28	0.0	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5057116) - continued									
EB2314679-010	109P	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.008	0.009	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5053149)									
EB2314679-002	GW19A	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EB2314679-013	18PcR2	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5053151)									
EB2314591-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	500 µg/L	0.5	0.0	No Limit
EB2314617-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1000 µg/L	1.0	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5057317)									
EB2314539-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.05	<0.05	0.0	No Limit
EB2314709-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	9.30	9.04	2.9	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5057780)									
EB2314711-010	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.0	No Limit
EB2314679-008	GW05A	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5061625)									
EB2314630-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.17	0.16	0.0	0% - 50%
EB2314607-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.06	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5053217)									
EB2314591-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<10 µg/L	<0.01	0.0	No Limit
EB2314679-008	GW05A	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5053218)									
EB2314679-016	GW12B	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5057316)									
EB2314297-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.03	0.0	No Limit
EB2314709-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.03	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5057781)									
EB2314679-008	GW05A	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	11.5	11.4	0.7	0% - 20%
EB2314811-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5061622)									
EB2314630-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	2.41	2.43	1.0	0% - 20%
EB2314607-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5054942)									
EB2314679-001	GW15A	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit

Page : 5 of 9
 Work Order : EB2314679
 Client : SLR CONSULTING AUSTRALIA PTY LTD
 Project : 620.31500.00000



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5054942) - continued									
EB2314684-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.3	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5056222)									
EB2314679-017	GW16A	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.3	0.0	No Limit
EB2314671-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	1.6	6.6	0% - 50%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 5053148)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.5	98.0	102	
				----	7 pH Unit	99.6	98.0	102	
EA005P: pH by PC Titrator (QCLot: 5053154)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.5	98.0	102	
				----	7 pH Unit	99.6	98.0	102	
EA010P: Conductivity by PC Titrator (QCLot: 5053147)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	96.1	90.0	106	
				<1	12890 µS/cm	102	90.0	106	
EA010P: Conductivity by PC Titrator (QCLot: 5053152)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	97.5	90.0	106	
				<1	12890 µS/cm	94.0	90.0	106	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5057749)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	108	88.0	112	
				<10	2000 mg/L	97.2	80.9	118	
				<10	2410 mg/L	108	81.3	119	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5057750)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	102	88.0	112	
				<10	2000 mg/L	96.9	80.9	118	
				<10	2410 mg/L	106	81.3	119	
ED037P: Alkalinity by PC Titrator (QCLot: 5053150)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	94.7	80.0	120	
ED037P: Alkalinity by PC Titrator (QCLot: 5053153)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.1	80.0	120	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5053215)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.8	85.0	118	
				<1	100 mg/L	110	85.0	118	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5053216)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	104	85.0	118	
				<1	100 mg/L	93.9	85.0	118	
ED045G: Chloride by Discrete Analyser (QCLot: 5053219)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
ED045G: Chloride by Discrete Analyser (QCLot: 5053219) - continued									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	101	90.0	115	
				<1	1000 mg/L	107	90.0	115	
ED045G: Chloride by Discrete Analyser (QCLot: 5053220)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	101	90.0	115	
				<1	1000 mg/L	106	90.0	115	
ED093F: Dissolved Major Cations (QCLot: 5057117)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.1	70.0	130	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.1	70.0	130	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.2	70.0	130	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.4	70.0	130	
EG020F: Dissolved Metals by ICP-MS (QCLot: 5057116)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	79.0	118	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	88.0	116	
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	106	70.0	130	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	88.0	114	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	89.0	120	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	106	83.0	112	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	82.0	114	
EK040P: Fluoride by PC Titrator (QCLot: 5053149)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.5 mg/L	93.8	80.0	117	
EK040P: Fluoride by PC Titrator (QCLot: 5053151)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.5 mg/L	100	80.0	117	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5057317)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	90.4	83.5	114	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5057780)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	109	83.5	114	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5061625)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	92.6	83.5	114	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5053217)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.45 mg/L	97.7	90.0	110	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5053218)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.45 mg/L	97.6	90.0	110	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5057316)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	94.7	85.7	111	



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5057781)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.1	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5061622)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	94.0	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5054942)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	91.9	70.1	108
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5056222)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	97.6	70.1	108

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High		
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5053215)								
EB2314591-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	86.5	70.0	130	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5053216)								
EB2314679-014	QAQC03	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	91.8	70.0	130	
ED045G: Chloride by Discrete Analyser (QCLot: 5053219)								
EB2314591-010	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	130	
ED045G: Chloride by Discrete Analyser (QCLot: 5053220)								
EB2314679-014	QAQC03	ED045G: Chloride	16887-00-6	400 mg/L	112	70.0	130	
EG020F: Dissolved Metals by ICP-MS (QCLot: 5057116)								
EB2314679-002	GW19A	EG020A-F: Arsenic	7440-38-2	1 mg/L	108	70.0	130	
		EG020A-F: Barium	7440-39-3	1 mg/L	107	70.0	130	
		EG020A-F: Copper	7440-50-8	1 mg/L	98.4	70.0	130	
		EG020A-F: Manganese	7439-96-5	1 mg/L	103	70.0	130	
EK040P: Fluoride by PC Titrator (QCLot: 5053149)								
EB2314679-003	GW19B	EK040P: Fluoride	16984-48-8	5 mg/L	94.2	70.0	130	
EK040P: Fluoride by PC Titrator (QCLot: 5053151)								
EB2314591-006	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	93.6	70.0	130	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5057317)								
EB2314539-002	Anonymous	EK055G: Ammonia as N	7664-41-7	2 mg/L	94.7	70.0	130	



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5057780)							
EB2314679-009	GW05B	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	99.3	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5061625)							
EB2314679-012	18PbR2	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	115	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5053217)							
EB2314591-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	97.8	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5053218)							
EB2314679-014	QAQC03	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	98.9	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5057316)							
EB2314297-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	2 mg/L	96.6	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5057781)							
EB2314679-009	GW05B	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	105	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5061622)							
EB2314679-012	18PbR2	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	110	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5054942)							
EB2314684-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	50 mg/L	84.1	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5056222)							
EB2314671-006	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	84.8	70.0	130



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2315057**

Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nconnolly@slrconsulting.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: ----	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 620.31500.00000	Page	: 1 of 3
Order number	: ----	Quote number	: EB2017HEGAUS0005 (EN/032/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	: ASHLEY WELCH, HAILEY MARTIN		

Dates

Date Samples Received	: 18-May-2023 16:41	Issue Date	: 18-May-2023
Client Requested Due Date	: 25-May-2023	Scheduled Reporting Date	: 25-May-2023

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 0.9°C - Ice present
Receipt Detail	: HARD ESKY	No. of samples received / analysed	: 10 / 10

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please be advised; "Ferrous Iron" analysis could not be assigned as the appropriate container was not provided. If you wish to discuss this please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - NT-07 Total Nitrogen + NO ₂ + NO ₃ + NH ₃	WATER - NT-12 General Water Suite
EB2315057-001	16-May-2023 09:10	25PcR	✓	✓	✓	✓
EB2315057-002	16-May-2023 10:40	26PcR	✓	✓	✓	✓
EB2315057-003	16-May-2023 12:00	2289PcR Lower	✓	✓	✓	✓
EB2315057-004	16-May-2023 13:25	1114P	✓	✓	✓	✓
EB2315057-005	17-May-2023 08:10	10PbR	✓	✓	✓	✓
EB2315057-006	17-May-2023 09:30	112PgC	✓	✓	✓	✓
EB2315057-007	17-May-2023 11:15	GW07_R	✓	✓	✓	✓
EB2315057-008	17-May-2023 12:25	WCS2	✓	✓	✓	✓
EB2315057-009	17-May-2023 13:25	84PbR	✓	✓	✓	✓
EB2315057-010	17-May-2023 14:56	48P	✓	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by Auto Titrator							
10PbR	Clear Plastic Bottle - Natural	----	17-May-2023	18-May-2023	✗	----	----
1114P	Clear Plastic Bottle - Natural	----	16-May-2023	18-May-2023	✗	----	----
112PgC	Clear Plastic Bottle - Natural	----	17-May-2023	18-May-2023	✗	----	----
2289PcR Lower	Clear Plastic Bottle - Natural	----	16-May-2023	18-May-2023	✗	----	----
25PcR	Clear Plastic Bottle - Natural	----	16-May-2023	18-May-2023	✗	----	----
26PcR	Clear Plastic Bottle - Natural	----	16-May-2023	18-May-2023	✗	----	----
48P	Clear Plastic Bottle - Natural	----	17-May-2023	18-May-2023	✗	----	----
84PbR	Clear Plastic Bottle - Natural	----	17-May-2023	18-May-2023	✗	----	----
GW07_R	Clear Plastic Bottle - Natural	----	17-May-2023	18-May-2023	✗	----	----
WCS2	Clear Plastic Bottle - Natural	----	17-May-2023	18-May-2023	✗	----	----



QUALITY CONTROL REPORT

Work Order	: EB2315057	Page	: 1 of 8
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 18-May-2023
Order number	: 4537604	Date Analysis Commenced	: 18-May-2023
C-O-C number	: ----	Issue Date	: 25-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	:		
Quote number	: EN/032/17		
No. of samples received	: 10		
No. of samples analysed	: 10		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	Position	Accreditation Category
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5058681)									
EB2315057-001	25PcR	EA005-P: pH Value	----	0.01	pH Unit	7.66	7.74	1.0	0% - 20%
EB2315056-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.31	4.34	0.7	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 5069833)									
EB2315056-014	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.17	4.20	0.7	0% - 20%
EB2314950-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.09	8.09	0.0	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5058679)									
EB2315057-001	25PcR	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10200	9860	3.0	0% - 20%
EB2315056-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1510	1540	2.1	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5069832)									
EB2314950-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1940	1930	0.3	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5065683)									
EB2314951-008	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	252	253	0.0	0% - 20%
EB2315057-007	GW07_R	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	962	977	1.6	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5058685)									
EB2315057-001	25PcR	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	96	95	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	96	95	0.0	0% - 20%
EB2315056-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.0	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 5069835)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 5069835) - continued									
EB2314950-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	322	325	1.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	322	325	1.0	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5058661)									
EB2314834-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7	7	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5058665)									
EB2315057-005	10PbR	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	51	54	4.0	0% - 20%
EB2314470-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7	7	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5061177)									
EB2315053-007	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	40	0.0	0% - 20%
EB2314950-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	15	15	0.0	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 5058660)									
EB2314834-010	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	38	39	3.4	0% - 20%
EB2313305-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	<1	<1	0.0	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 5058663)									
EB2315057-005	10PbR	ED045G: Chloride	16887-00-6	1	mg/L	740	749	1.2	0% - 20%
EB2314470-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	59	59	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5061178)									
EB2315053-007	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	263	263	0.0	0% - 20%
EB2314950-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	477	478	0.3	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 5063664)									
EB2315042-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	56	55	3.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	35	34	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	9	9	0.0	No Limit
EB2315057-006	112PgC	ED093F: Calcium	7440-70-2	1	mg/L	54	54	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	9	8	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	640	638	0.2	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5063662)									
EB2315042-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.056	0.056	0.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.018	0.018	0.0	0% - 50%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.04	0.04	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5063662) - continued									
EB2315057-006	112PgC	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.848	0.845	0.3	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.108	0.108	0.0	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5058683)									
EB2315057-001	25PcR	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EB2315056-005	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5069836)									
EB2314950-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5064968)									
EB2315218-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.24	0.24	0.0	0% - 20%
EB2314669-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5064969)									
EB2315007-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	<0.01	0.0	No Limit
EB2315057-004	1114P	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.30	1.37	5.1	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5058658)									
EB2314834-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5058662)									
EB2315057-005	10PbR	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5061176)									
EB2315053-007	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2314950-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5064964)									
EB2315218-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2314669-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.06	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5064965)									
EB2315007-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.94	0.95	1.4	0% - 20%
EB2315057-004	1114P	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.22	0.22	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5064278)									
EB2315057-001	25PcR	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	0.9	49.4	No Limit
EB2315007-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Acceptable Limits (%)	
					Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 5058681)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.0	102
				----	7 pH Unit	99.8	98.0	102
EA005P: pH by PC Titrator (QCLot: 5069833)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.2	98.0	102
				----	7 pH Unit	99.7	98.0	102
EA010P: Conductivity by PC Titrator (QCLot: 5058679)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	95.4	90.0	106
				<1	24800 µS/cm	101	90.0	106
EA010P: Conductivity by PC Titrator (QCLot: 5069832)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	100	90.0	106
				<1	12890 µS/cm	100	90.0	106
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5065683)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	100	88.0	112
				<10	2000 mg/L	95.6	80.9	118
				<10	2410 mg/L	102	81.3	119
ED037P: Alkalinity by PC Titrator (QCLot: 5058685)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	97.7	80.0	120
ED037P: Alkalinity by PC Titrator (QCLot: 5069835)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	106	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5058661)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	98.3	85.0	118
				<1	100 mg/L	95.6	85.0	118
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5058665)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	86.6	85.0	118
				<1	100 mg/L	95.6	85.0	118
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5061177)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.1	85.0	118
				<1	100 mg/L	93.7	85.0	118
ED045G: Chloride by Discrete Analyser (QCLot: 5058660)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	95.0	90.0	115
				<1	1000 mg/L	103	90.0	115



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
ED045G: Chloride by Discrete Analyser (QCLot: 5058663)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	90.0	115	
				<1	1000 mg/L	106	90.0	115	
ED045G: Chloride by Discrete Analyser (QCLot: 5061178)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	98.6	90.0	115	
				<1	1000 mg/L	103	90.0	115	
ED093F: Dissolved Major Cations (QCLot: 5063664)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.8	70.0	130	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	97.2	70.0	130	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.9	70.0	130	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.0	70.0	130	
EG020F: Dissolved Metals by ICP-MS (QCLot: 5063662)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	97.5	79.0	118	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	88.0	116	
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	102	70.0	130	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	100	88.0	114	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.2	89.0	120	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	103	83.0	112	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.4	82.0	114	
EK040P: Fluoride by PC Titrator (QCLot: 5058683)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	10 mg/L	95.7	80.0	117	
EK040P: Fluoride by PC Titrator (QCLot: 5069836)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	10 mg/L	101	80.0	117	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5064968)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.8	83.5	114	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5064969)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	95.4	83.5	114	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5058658)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	94.6	90.0	110	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5058662)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	96.4	90.0	110	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5061176)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.0	90.0	110	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5064964)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	94.4	85.7	111	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5064965)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.5	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5064278)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.2	70.1	108

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5058661)							
EB2314834-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	76.2	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5058665)							
EB2315057-006	112PgC	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	93.1	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5061177)							
EB2314833-011	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	126	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5058660)							
EB2314834-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	116	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5058663)							
EB2315057-006	112PgC	ED045G: Chloride	16887-00-6	400 mg/L	79.8	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5061178)							
EB2314833-011	Anonymous	ED045G: Chloride	16887-00-6	2000 mg/L	88.0	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5063662)							
EB2315042-003	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	99.7	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	96.1	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	100	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	99.4	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5058683)							
EB2315057-005	10PbR	EK040P: Fluoride	16984-48-8	5 mg/L	92.3	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5069836)							
EB2314950-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	102	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5064968)							
EB2315248-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	118	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5064969)							



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
Laboratory sample ID		Sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5064969) - continued							
EB2315006-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	102	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5058658)							
EB2315059-001	Anonymous	EK057G: Nitrite as N	14797-65-0	----		70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5058662)							
EB2315057-006	112PgC	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	101	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5061176)							
EB2314833-011	Anonymous	EK057G: Nitrite as N	14797-65-0	2 mg/L	89.6	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5064964)							
EB2315248-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	105	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5064965)							
EB2315006-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	107	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5064278)							
EB2315018-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	75.5	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2315057	Page	: 1 of 9
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 18-May-2023
Site	:	Issue Date	: 25-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN	No. of samples received	: 10
Order number	: 4537604	No. of samples analysed	: 10

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural 25PcR, 2289PcR Lower, 26PcR, 1114P	----	----	----	24-May-2023	16-May-2023	8
Clear Plastic Bottle - Natural 10PbR, GW07_R, 84PbR, 112Pgc, WCS2, 48P	----	----	----	24-May-2023	17-May-2023	7
EA015: Total Dissolved Solids dried at 180 ± 5 °C						
Clear Plastic Bottle - Natural 25PcR, 2289PcR Lower, 26PcR, 1114P	----	----	----	24-May-2023	23-May-2023	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	24-May-2023	16-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) 10PbR, GW07_R, 84PbR, 112Pgc, WCS2, 48P	17-May-2023	----	----	----	24-May-2023	17-May-2023	✖



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	24-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	24-May-2023	14-Jun-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	24-May-2023	23-May-2023	*
Clear Plastic Bottle - Natural (EA015H) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	24-May-2023	24-May-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	23-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	23-May-2023	14-Jun-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	24-May-2023	30-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	24-May-2023	31-May-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	18-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 10PbR, WCS2, 48P, 112PgC, 84PbR,	17-May-2023	----	----	----	18-May-2023	14-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW07_R	17-May-2023	----	----	----	19-May-2023	14-Jun-2023	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	18-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 10PbR, WCS2, 48P, 112PgC, 84PbR,	17-May-2023	----	----	----	18-May-2023	14-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW07_R	17-May-2023	----	----	----	19-May-2023	14-Jun-2023	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	23-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	23-May-2023	14-Jun-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	23-May-2023	12-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	23-May-2023	13-Nov-2023	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	24-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	24-May-2023	14-Jun-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) 25PcR, 2289PcR Lower, 26PcR, 1114P	16-May-2023	----	----	----	22-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) 10PbR, GW07_R, 84PbR, 112PgC, WCS2, 48P	17-May-2023	----	----	----	22-May-2023	14-Jun-2023	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) 25PcR, 2289PcR Lower,	26PcR, 1114P	16-May-2023	----	----	----	18-May-2023	18-May-2023	✓
Clear Plastic Bottle - Natural (EK057G) 10PbR, WCS2, 48P	112PgC, 84PbR,	17-May-2023	----	----	----	18-May-2023	19-May-2023	✓
Clear Plastic Bottle - Natural (EK057G) GW07_R		17-May-2023	----	----	----	19-May-2023	19-May-2023	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) 25PcR, 2289PcR Lower,	26PcR, 1114P	16-May-2023	----	----	----	22-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) 10PbR, GW07_R, 84PbR,	112PgC, WCS2, 48P	17-May-2023	----	----	----	22-May-2023	14-Jun-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) 25PcR, 2289PcR Lower,	26PcR, 1114P	16-May-2023	22-May-2023	13-Jun-2023	✓	22-May-2023	13-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) 10PbR, GW07_R, 84PbR,	112PgC, WCS2, 48P	17-May-2023	22-May-2023	14-Jun-2023	✓	22-May-2023	14-Jun-2023	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	50	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	5	40	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	50	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	25	16.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	38	7.89	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	40	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	14	21.43	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	38	7.89	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	38	7.89	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Calculated TDS (from Electrical Conductivity)	EA016	WATER	In house: Calculation from Electrical Conductivity (APHA 2510 B) using a conversion factor specified in the analytical report. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Fluoride by Auto Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)

<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CERTIFICATE OF ANALYSIS

Work Order : **EB2315057**
Client : **SLR CONSULTING AUSTRALIA PTY LTD**
Contact : **NED CONNOLLY**
Address : **LEVEL 16 175 EAGLE STREET**
BRISBANE 4000
Telephone : **----**
Project : **620.31500.00000**
Order number : **4537604**
C-O-C number : **----**
Sampler : **ASHLEY WELCH, HAILEY MARTIN**
Site :
Quote number : **EN/032/17**
No. of samples received : **10**
No. of samples analysed : **10**

Page : 1 of 6
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61 7 3243 7222
Date Samples Received : 18-May-2023 16:41
Date Analysis Commenced : 18-May-2023
Issue Date : 25-May-2023 20:04



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EK061G (Total Kjeldahl Nitrogen) is less than EK055G (Ammonia) for some samples. However, the difference is within experimental variation of the methods.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	25PcR	26PcR	2289PcR Lower	1114P	10PbR
Sampling date / time				16-May-2023 09:10	16-May-2023 10:40	16-May-2023 12:00	16-May-2023 13:25	17-May-2023 08:10	
Compound	CAS Number	LOR	Unit	EB2315057-001	EB2315057-002	EB2315057-003	EB2315057-004	EB2315057-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.66	8.02	7.96	8.13	7.99	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	10200	12200	4520	6210	3100	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	6720	8530	2920	3490	2130	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	6630	7930	2940	4040	2020	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	1930	2250	734	404	1140	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	96	179	100	268	340	
Total Alkalinity as CaCO3	----	1	mg/L	96	179	100	268	340	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	372	898	256	211	51	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	3210	4020	1300	1710	740	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	460	475	177	96	187	
Magnesium	7439-95-4	1	mg/L	190	259	71	40	164	
Sodium	7440-23-5	1	mg/L	1200	1640	594	1090	175	
Potassium	7440-09-7	1	mg/L	22	26	13	7	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.03	<0.01	0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Barium	7440-39-3	0.001	mg/L	0.053	0.030	0.049	0.161	0.012	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.111	0.021	0.058	0.050	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	2.99	3.78	0.95	1.21	<0.05	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	0.4	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	25PcR	26PcR	2289PcR Lower	1114P	10PbR
Sampling date / time				16-May-2023 09:10	16-May-2023 10:40	16-May-2023 12:00	16-May-2023 13:25	17-May-2023 08:10	
Compound	CAS Number	LOR	Unit	EB2315057-001	EB2315057-002	EB2315057-003	EB2315057-004	EB2315057-005	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.55	0.41	0.52	1.30	0.03	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	0.22	59.5	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	0.22	59.5	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	0.8	0.5	1.3	6.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.6	0.8	0.5	1.5	66.1	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	100	136	44.0	58.0	28.7	
∅ Total Cations	----	0.01	meq/L	91.4	117	40.8	55.7	30.5	
∅ Ionic Balance	----	0.01	%	4.63	7.38	3.72	2.03	2.98	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	112PgC	GW07_R	WCS2	84PbR	48P
Sampling date / time				17-May-2023 09:30	17-May-2023 11:15	17-May-2023 12:25	17-May-2023 13:25	17-May-2023 14:56	
Compound	CAS Number	LOR	Unit	EB2315057-006	EB2315057-007	EB2315057-008	EB2315057-009	EB2315057-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.03	8.26	8.52	8.29	8.00	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	3610	1820	799	1660	9800	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2010	962	456	1160	6710	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	2350	1180	519	1080	6370	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	172	47	5	608	2500	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	14	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	108	205	210	316	499	
Total Alkalinity as CaCO3	----	1	mg/L	108	205	224	316	499	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	22	6	211	764	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1110	479	130	290	2600	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	54	14	2	100	328	
Magnesium	7439-95-4	1	mg/L	9	3	<1	87	408	
Sodium	7440-23-5	1	mg/L	640	354	184	124	1120	
Potassium	7440-09-7	1	mg/L	4	3	1	2	17	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Barium	7440-39-3	0.001	mg/L	0.848	0.064	0.014	0.003	0.154	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Manganese	7439-96-5	0.001	mg/L	0.108	0.053	0.002	0.004	0.635	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	
Iron	7439-89-6	0.05	mg/L	<0.05	0.05	<0.05	<0.05	<0.05	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	0.1	0.2	0.2	0.4	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	112PgC	GW07_R	WCS2	84PbR	48P
Sampling date / time				17-May-2023 09:30	17-May-2023 11:15	17-May-2023 12:25	17-May-2023 13:25	17-May-2023 14:56	
Compound	CAS Number	LOR	Unit	EB2315057-006	EB2315057-007	EB2315057-008	EB2315057-009	EB2315057-010	
				Result	Result	Result	Result	Result	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	1.02	0.24	0.14	<0.01	0.04	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.02	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	<0.01	0.04	0.27	153	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	<0.01	0.04	0.27	153	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.2	0.1	<0.1	22.7	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	0.2	0.1	0.3	176	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	34.0	18.1	8.27	18.9	99.2	
∅ Total Cations	----	0.01	meq/L	31.4	16.4	8.13	17.6	99.1	
∅ Ionic Balance	----	0.01	%	3.97	4.77	0.85	3.54	0.06	

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

<input checked="" type="checkbox"/> BRISBANE: Level 16, 175 Eagle Street, Brisbane	<input type="checkbox"/> GOLD COAST: 184 Yarraby Parade, Varsity Lakes, QLD 4227	<input checked="" type="checkbox"/> NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305	<input type="checkbox"/> SYDNEY: 2 Incekin Street, Lane Cove, Sydney NSW 2066	<input type="checkbox"/> NELSON: 6/A Larned Street, Richmond, Port Nelson, 7020 NZ
<input type="checkbox"/> CANBERRA: GPO Box 410, Canberra, ACT 2600	<input type="checkbox"/> MACKAY: 21 River Street, Mackay, QLD 4740	<input type="checkbox"/> PERTH: 503 Murray Street, Perth, WA 6000	<input type="checkbox"/> TOWNSVILLE: 12 Cannon St, South Townsville, QLD 4810	<input type="checkbox"/> NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ
<input type="checkbox"/> DARWIN: 21 Parap Rd, Darwin, NT 0820	<input type="checkbox"/> MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002	<input type="checkbox"/> ROCKHAMPTON: rockhampton@slrconsulting.com	<input type="checkbox"/> AUCKLAND: 68 Beach Road, Auckland 1010 NZ	

CLIENT:	LABORATORY: ALS	Turnaround Time (TAT):	COC Number: 1 of 1
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St	<input checked="" type="checkbox"/> Standard TAT	
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin	<input type="checkbox"/> Non Standard or Urgent TAT	
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0431 134 273	Required TAT: Standard	
Email Reports to: nconnolly@slrconsulting.com; awelch@slrconsulting.com; hmartin@slrconsulting.com		Email Invoices to: nconnolly@slrconsulting.com	

No.	Sample ID	Date & Time	Matrix <small>(Soil, water, ACM, etc)</small>	Containers and Preservatives	REQUESTED ANALYSIS							Additional Information <small>(Comment on any gross contamination or specific requirements)</small>
					NF-12	TDS <small>(total diss. solids)</small>	Disolved Metals <small>Al, As, Sb, Cr, Fe, Mn, Ba</small>	NT-7	Femours Fe			
1	25PCR	16.5.23 09:00	Water	1P + 2N + 1SP	X	X	X	X	X			
2	26PCR	16.5.23 10:40			X	X	X	X	X			
3	2289PCR Leman	16.5.23 12:00			X	X	X	X	X			
4	1114P	16.5.23 13:25			X	X	X	X	X			
5	10PbR	17.5.23 08:10			X	X	X	X	X			
6	112PbC	17.5.23 09:30			X	X	X	X	X			
7	GW07-R	17.5.23 11:15			X	X	X	X	X			
8	WCS2	17.5.23 12:35			X	X	X	X	X			
9	84PbR	17.5.23 13:25			X	X	X	X	X			
10	48P	17.5.23 14:56			X	X	X	X	X			

Environmental Division
Brisbane
Work Order Reference
EB2315057



Telephone: +61-7-3243 7222

Sample Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bis. Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; SIT = Sterile Sodium Thiosulfate Preserved Bottles; G = unpreserved glass soil jar;

I attest that the proper field sampling procedures were used during the collection of these samples.							
Relinquished By Sampler	Signature: <i>Allele</i>	Date/Time: 18.5.23	Received by	Signature: <i>Crystal</i>	Date/Time: 18-5-23 16:41	Temperature Received:	
Relinquished By			Received by				
Relinquished By			Received by				



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2315513**

Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: nconnolly@slrconsulting.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: ----	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 620.31500.00000	Page	: 1 of 3
Order number	: 620.31500.00000	Quote number	: ----
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ASHLEY WELCH, HAILEY MARTIN		

Dates

Date Samples Received	: 23-May-2023 17:18	Issue Date	: 23-May-2023
Client Requested Due Date	: 30-May-2023	Scheduled Reporting Date	: 30-May-2023

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 0.1°C, 1.1°C - Ice present
Receipt Detail	: Medium esky	No. of samples received / analysed	: 14 / 14

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Sample QAQC06 has been forwarded to Eurofins, as requested. Please note that this will incur a freight forwarding fee.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Ferrous Iron by Discrete Analyser : EG051G		
132WBR	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
133WBR	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
2291Pc	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
41P	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
82PcR	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
3316_WB	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
111PgC_Lower	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
81P	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
GW11B	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
GW11A_R	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
119P	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
4517WB	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
3307WB_R	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered
QAQC05	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - HCl - Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EG051G Ferrous Iron	WATER - NT-07 Total Nitrogen + NO2 + NO3 + NH3	WATER - NT-12 General Water Suite
EB2315513-001	18-May-2023 07:35	132WBR	✓	✓	✓	✓	✓
EB2315513-002	18-May-2023 08:30	133WBR	✓	✓	✓	✓	✓
EB2315513-003	18-May-2023 09:39	2291Pc	✓	✓	✓	✓	✓
EB2315513-004	18-May-2023 10:50	41P	✓	✓	✓	✓	✓
EB2315513-005	18-May-2023 12:03	82PcR	✓	✓	✓	✓	✓
EB2315513-006	18-May-2023 13:08	3316_WB	✓	✓	✓	✓	✓
EB2315513-007	18-May-2023 14:05	111PgC_Lower	✓	✓	✓	✓	✓
EB2315513-008	18-May-2023 15:10	81P	✓	✓	✓	✓	✓
EB2315513-009	19-May-2023 07:35	GW11B	✓	✓	✓	✓	✓
EB2315513-010	19-May-2023 08:25	GW11A_R	✓	✓	✓	✓	✓
EB2315513-011	19-May-2023 10:27	119P	✓	✓	✓	✓	✓
EB2315513-012	19-May-2023 11:40	4517WB	✓	✓	✓	✓	✓
EB2315513-013	22-May-2023 13:13	3307WB_R	✓	✓	✓	✓	✓
EB2315513-014	22-May-2023 00:00	QAQC05	✓	✓	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by Auto Titrator							
111PgC_Lower	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✖	----	----



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2315513	Page	: 1 of 13
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN	No. of samples received	: 14
Order number	: 4537604	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED045G: Chloride by Discrete Analyser	EB2315513--006	3316_WB	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG020F: Dissolved Metals by ICP-MS	EB2315562--005	Anonymous	Arsenic	7440-38-2	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EB2315513--010	GW11A_R	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural 82PcR,	81P	----	----	----	25-May-2023	18-May-2023	7
Clear Plastic Bottle - Natural 3316_WB		----	----	----	26-May-2023	18-May-2023	8
Clear Plastic Bottle - Natural 132WBR, 2291Pc, 111PgC_Lower	133WBR, 41P,	----	----	----	27-May-2023	18-May-2023	9
Clear Plastic Bottle - Natural GW11B,	4517WB	----	----	----	25-May-2023	19-May-2023	6
Clear Plastic Bottle - Natural 119P		----	----	----	26-May-2023	19-May-2023	7
Clear Plastic Bottle - Natural GW11A_R		----	----	----	27-May-2023	19-May-2023	8
Clear Plastic Bottle - Natural 3307WB_R,	QAQC05	----	----	----	25-May-2023	22-May-2023	3
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	----	----	----	27-May-2023	25-May-2023	2



Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA015: Total Dissolved Solids dried at 180 ± 5 °C - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural GW11B, GW11A_R, 119P, 4517WB	----	----	----	27-May-2023	26-May-2023	1
EG051G: Ferrous Iron by Discrete Analyser						
Clear Plastic Bottle - Natural 132WBR, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	----	----	----	23-May-2023	19-May-2023	4
Clear Plastic Bottle - Natural GW11B, GW11A_R, 119P, 4517WB	----	----	----	23-May-2023	20-May-2023	3
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural 82PcR, 3316_WB, 81P	----	----	----	24-May-2023	20-May-2023	4
Clear Plastic Bottle - Natural 41P, 111PgC_Lower	----	----	----	28-May-2023	20-May-2023	8
Clear Plastic Bottle - Natural 132WBR, 133WBR, 2291Pc	----	----	----	29-May-2023	20-May-2023	9
Clear Plastic Bottle - Natural GW11B, 119P, 4517WB	----	----	----	24-May-2023	21-May-2023	3
Clear Plastic Bottle - Natural GW11A_R	----	----	----	28-May-2023	21-May-2023	7

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) 82PcR, 81P	18-May-2023	----	----	----	25-May-2023	18-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) 3316_WB	18-May-2023	----	----	----	26-May-2023	18-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) 132WBR, 2291Pc, 111PgC_Lower, 133WBR, 41P,	18-May-2023	----	----	----	27-May-2023	18-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) GW11B, 4517WB	19-May-2023	----	----	----	25-May-2023	19-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) 119P	19-May-2023	----	----	----	26-May-2023	19-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) GW11A_R	19-May-2023	----	----	----	27-May-2023	19-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) 3307WB_R, QAQC05	22-May-2023	----	----	----	25-May-2023	22-May-2023	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) 82PcR, 81P	18-May-2023	----	----	----	25-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Natural (EA010-P) 3316_WB	18-May-2023	----	----	----	26-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Natural (EA010-P) 132WBR, 2291Pc, 111PgC_Lower, 133WBR, 41P,	18-May-2023	----	----	----	27-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Natural (EA010-P) GW11B, 4517WB	19-May-2023	----	----	----	25-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Natural (EA010-P) 119P	19-May-2023	----	----	----	26-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Natural (EA010-P) GW11A_R	19-May-2023	----	----	----	27-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Natural (EA010-P) 3307WB_R, QAQC05	22-May-2023	----	----	----	25-May-2023	19-Jun-2023	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	27-May-2023	25-May-2023	*
Clear Plastic Bottle - Natural (EA015H) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	27-May-2023	26-May-2023	*
Clear Plastic Bottle - Natural (EA015H) 3307WB_R,	QAQC05	22-May-2023	----	----	----	27-May-2023	29-May-2023	✓
EA065: Total Hardness as CaCO3								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	26-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	26-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 3307WB_R,	QAQC05	22-May-2023	----	----	----	26-May-2023	19-Jun-2023	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) 82PcR,	81P	18-May-2023	----	----	----	25-May-2023	01-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 3316_WB		18-May-2023	----	----	----	26-May-2023	01-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 132WBR, 2291Pc, 111PgC_Lower	133WBR, 41P,	18-May-2023	----	----	----	27-May-2023	01-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW11B,	4517WB	19-May-2023	----	----	----	25-May-2023	02-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 119P		19-May-2023	----	----	----	26-May-2023	02-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW11A_R		19-May-2023	----	----	----	27-May-2023	02-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 3307WB_R,	QAQC05	22-May-2023	----	----	----	25-May-2023	05-Jun-2023	✓



Matrix: WATER

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) 82PcR, 81P	3316_WB,	18-May-2023	----	----	----	24-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 41P,	111PgC_Lower	18-May-2023	----	----	----	28-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 132WBR, 2291Pc	133WBR,	18-May-2023	----	----	----	29-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW11B, 4517WB	119P,	19-May-2023	----	----	----	24-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW11A_R		19-May-2023	----	----	----	28-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 3307WB_R,	QAQC05	22-May-2023	----	----	----	24-May-2023	19-Jun-2023	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) 82PcR, 81P	3316_WB,	18-May-2023	----	----	----	24-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 41P,	111PgC_Lower	18-May-2023	----	----	----	28-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 132WBR, 2291Pc	133WBR,	18-May-2023	----	----	----	29-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW11B, 4517WB	119P,	19-May-2023	----	----	----	24-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW11A_R		19-May-2023	----	----	----	28-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 3307WB_R,	QAQC05	22-May-2023	----	----	----	24-May-2023	19-Jun-2023	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	26-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	26-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 3307WB_R,	QAQC05	22-May-2023	----	----	----	26-May-2023	19-Jun-2023	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	26-May-2023	14-Nov-2023	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	26-May-2023	15-Nov-2023	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 3307WB_R,	QAQC05	22-May-2023	----	----	----	26-May-2023	18-Nov-2023	✔
EG051G: Ferrous Iron by Discrete Analyser								
Clear Plastic Bottle - Natural (EG051G) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	23-May-2023	19-May-2023	✖
Clear Plastic Bottle - Natural (EG051G) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	23-May-2023	20-May-2023	✖
Clear Plastic Bottle - Natural (EG051G) 3307WB_R,	QAQC05	22-May-2023	----	----	----	23-May-2023	23-May-2023	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) 82PcR,	81P	18-May-2023	----	----	----	25-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Natural (EK040P) 3316_WB		18-May-2023	----	----	----	26-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Natural (EK040P) 132WBR, 2291Pc, 111PgC_Lower	133WBR, 41P,	18-May-2023	----	----	----	27-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Natural (EK040P) GW11B,	4517WB	19-May-2023	----	----	----	25-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Natural (EK040P) 119P		19-May-2023	----	----	----	26-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Natural (EK040P) GW11A_R		19-May-2023	----	----	----	27-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Natural (EK040P) 3307WB_R,	QAQC05	22-May-2023	----	----	----	25-May-2023	19-Jun-2023	✔



Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	27-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	27-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK055G) 3307WB_R,	QAQC05	22-May-2023	----	----	----	27-May-2023	19-Jun-2023	✔
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) 82PcR, 81P	3316_WB,	18-May-2023	----	----	----	24-May-2023	20-May-2023	✘
Clear Plastic Bottle - Natural (EK057G) 41P,	111PgC_Lower	18-May-2023	----	----	----	28-May-2023	20-May-2023	✘
Clear Plastic Bottle - Natural (EK057G) 132WBR, 2291Pc	133WBR,	18-May-2023	----	----	----	29-May-2023	20-May-2023	✘
Clear Plastic Bottle - Natural (EK057G) GW11B, 4517WB	119P,	19-May-2023	----	----	----	24-May-2023	21-May-2023	✘
Clear Plastic Bottle - Natural (EK057G) GW11A_R		19-May-2023	----	----	----	28-May-2023	21-May-2023	✘
Clear Plastic Bottle - Natural (EK057G) 3307WB_R,	QAQC05	22-May-2023	----	----	----	24-May-2023	24-May-2023	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	----	----	----	27-May-2023	15-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	----	----	----	27-May-2023	16-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK059G) 3307WB_R,	QAQC05	22-May-2023	----	----	----	27-May-2023	19-Jun-2023	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) 132WBR, 2291Pc, 82PcR, 111PgC_Lower,	133WBR, 41P, 3316_WB, 81P	18-May-2023	25-May-2023	15-Jun-2023	✓	25-May-2023	15-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) GW11B, 119P,	GW11A_R, 4517WB	19-May-2023	25-May-2023	16-Jun-2023	✓	25-May-2023	16-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) 3307WB_R,	QAQC05	22-May-2023	25-May-2023	19-Jun-2023	✓	25-May-2023	19-Jun-2023	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	5	50	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	49	12.24	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	5	50	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	5	42	11.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	5	37	13.51	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	27	14.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	5	36	13.89	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	5	49	10.20	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	46	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	49	12.24	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	6	50	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	42	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	3	37	8.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	27	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	36	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	6	49	12.24	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	46	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	42	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	3	37	8.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
Major Cations - Dissolved	ED093F	3	27	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	36	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	46	6.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	42	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	3	37	8.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	36	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	46	6.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Calculated TDS (from Electrical Conductivity)	EA016	WATER	In house: Calculation from Electrical Conductivity (APHA 2510 B) using a conversion factor specified in the analytical report. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Ferrous Iron by Discrete Analyser	EG051G	WATER	In house: Referenced to APHA 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Fluoride by Auto Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CERTIFICATE OF ANALYSIS

Work Order : **EB2315513**
Client : **SLR CONSULTING AUSTRALIA PTY LTD**
Contact : NED CONNOLLY
Address : LEVEL 16 175 EAGLE STREET
BRISBANE 4000
Telephone : ----
Project : 620.31500.00000
Order number : 4537604
C-O-C number : ----
Sampler : ASHLEY WELCH, HAILEY MARTIN
Site : ----
Quote number : EN/032/17
No. of samples received : 14
No. of samples analysed : 14

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61 7 3243 7222
Date Samples Received : 23-May-2023 17:18
Date Analysis Commenced : 23-May-2023
Issue Date : 30-May-2023 17:52



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- The presence of high SO₄ may bias the EC low on samples EB2315513-013 & -014.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter on some samples, which may pass through the prescribed GF/C paper.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		132WBR	133WBR	2291Pc	41P	82PcR			
Sampling date / time		18-May-2023 07:35		18-May-2023 08:30		18-May-2023 09:39		18-May-2023 10:50		18-May-2023 12:03	
Compound	CAS Number	LOR	Unit	EB2315513-001	EB2315513-002	EB2315513-003	EB2315513-004	EB2315513-005			
				Result	Result	Result	Result	Result			
EA005P: pH by PC Titrator											
pH Value	----	0.01	pH Unit	7.99	8.25	8.03	7.85	7.88			
EA010P: Conductivity by PC Titrator											
Electrical Conductivity @ 25°C	----	1	µS/cm	7030	432	7980	9180	8330			
EA015: Total Dissolved Solids dried at 180 ± 5 °C											
Total Dissolved Solids @180°C	----	10	mg/L	4710	259	5000	6280	5540			
EA016: Calculated TDS (from Electrical Conductivity)											
Total Dissolved Solids (Calc.)	----	1	mg/L	4570	281	5190	5970	5410			
EA065: Total Hardness as CaCO3											
Total Hardness as CaCO3	----	1	mg/L	1360	22	1180	1650	1590			
ED037P: Alkalinity by PC Titrator											
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1			
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1			
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	868	133	360	502	343			
Total Alkalinity as CaCO3	----	1	mg/L	868	133	360	502	343			
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA											
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1050	7	322	551	498			
ED045G: Chloride by Discrete Analyser											
Chloride	16887-00-6	1	mg/L	1440	60	2450	2820	2400			
ED093F: Dissolved Major Cations											
Calcium	7440-70-2	1	mg/L	236	7	245	315	296			
Magnesium	7439-95-4	1	mg/L	187	1	139	210	207			
Sodium	7440-23-5	1	mg/L	1150	90	1150	1430	1170			
Potassium	7440-09-7	1	mg/L	10	2	15	17	11			
EG020F: Dissolved Metals by ICP-MS											
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.05	<0.01	<0.01	<0.01			
Arsenic	7440-38-2	0.001	mg/L	0.003	0.001	<0.001	<0.001	<0.001			
Barium	7440-39-3	0.001	mg/L	0.034	0.020	0.051	0.040	0.086			
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001			
Manganese	7439-96-5	0.001	mg/L	0.465	0.024	0.055	0.337	0.125			
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01			
Iron	7439-89-6	0.05	mg/L	1.35	0.13	2.71	5.66	2.38			
EG051G: Ferrous Iron by Discrete Analyser											
Ferrous Iron	----	0.05	mg/L	0.05	<0.05	<0.05	<0.05	<0.05			



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	132WBR	133WBR	2291Pc	41P	82PcR
Sampling date / time					18-May-2023 07:35	18-May-2023 08:30	18-May-2023 09:39	18-May-2023 10:50	18-May-2023 12:03
Compound	CAS Number	LOR	Unit	EB2315513-001	EB2315513-002	EB2315513-003	EB2315513-004	EB2315513-005	
				Result	Result	Result	Result	Result	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	0.2	<0.1	<0.1	<0.1	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.22	<0.01	0.68	0.56	1.16	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.03	<0.01	<0.01	0.02	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	<0.01	<0.01	0.02	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.2	1.4	1.5	1.8	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.2	1.4	1.5	1.8	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	79.8	4.50	83.0	101	84.9	
∅ Total Cations	----	0.01	meq/L	77.4	4.40	74.1	95.6	83.0	
∅ Ionic Balance	----	0.01	%	1.51	1.10	5.69	2.75	1.16	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		3316_WB	111PgC_Lower	81P	GW11B	GW11A_R	
Sampling date / time		18-May-2023 13:08		18-May-2023 14:05		18-May-2023 15:10		19-May-2023 07:35	
Compound	CAS Number	LOR	Unit	EB2315513-006	EB2315513-007	EB2315513-008	EB2315513-009	EB2315513-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.80	8.14	8.01	7.92	8.16	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	3960	8130	4340	2790	1550	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	3270	5650	3720	1950	879	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	2570	5280	2820	1810	1010	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	612	1790	812	543	453	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	67	467	262	250	492	
Total Alkalinity as CaCO3	----	1	mg/L	67	467	262	250	492	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	3	324	260	92	34	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1680	2500	1670	900	220	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	181	306	172	112	81	
Magnesium	7439-95-4	1	mg/L	39	249	93	64	61	
Sodium	7440-23-5	1	mg/L	859	1080	945	464	186	
Potassium	7440-09-7	1	mg/L	8	11	13	28	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	0.013	<0.001	
Barium	7440-39-3	0.001	mg/L	3.78	0.072	0.048	0.124	0.019	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.227	0.041	0.095	0.167	0.008	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	0.64	4.92	0.34	1.16	<0.05	
EG051G: Ferrous Iron by Discrete Analyser									
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	3316_WB	111PgC_Lower	81P	GW11B	GW11A_R
Sampling date / time				18-May-2023 13:08	18-May-2023 14:05	18-May-2023 15:10	19-May-2023 07:35	19-May-2023 08:25	
Compound	CAS Number	LOR	Unit	EB2315513-006	EB2315513-007	EB2315513-008	EB2315513-009	EB2315513-010	
				Result	Result	Result	Result	Result	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.1	<0.1	<0.1	0.2	1.2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	1.21	1.27	0.43	0.17	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.06	<0.01	0.01	<0.01	8.42	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.06	<0.01	0.01	<0.01	8.42	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.3	2.5	0.6	0.3	1.5	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.4	2.5	0.6	0.3	9.9	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	48.8	86.6	57.8	32.3	16.7	
∅ Total Cations	----	0.01	meq/L	49.8	83.0	57.7	31.8	17.2	
∅ Ionic Balance	----	0.01	%	1.03	2.11	0.07	0.85	1.36	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		119P	4517WB	3307WB_R	QAQC05	----
Sampling date / time				19-May-2023 10:27	19-May-2023 11:40	22-May-2023 13:13	22-May-2023 00:00	----
Compound	CAS Number	LOR	Unit	EB2315513-011	EB2315513-012	EB2315513-013	EB2315513-014	-----
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.38	8.15	7.53	7.58	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2330	1480	9890	9530	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1380	844	7610	7600	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	1510	962	6430	6190	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	180	112	3200	3090	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	10	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	254	255	392	389	----
Total Alkalinity as CaCO3	----	1	mg/L	264	255	392	389	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	62	24	1520	1540	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	680	336	2580	2540	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	39	30	601	583	----
Magnesium	7439-95-4	1	mg/L	20	9	414	398	----
Sodium	7440-23-5	1	mg/L	512	290	1070	1030	----
Potassium	7440-09-7	1	mg/L	4	3	19	18	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.184	0.569	0.149	0.145	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.026	0.020	2.67	2.60	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Iron	7439-89-6	0.05	mg/L	0.09	0.35	0.16	0.14	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.08	0.07	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	119P	4517WB	3307WB_R	QAQC05	----
Sampling date / time				19-May-2023 10:27	19-May-2023 11:40	22-May-2023 13:13	22-May-2023 00:00	----	
Compound	CAS Number	LOR	Unit	EB2315513-011	EB2315513-012	EB2315513-013	EB2315513-014	-----	
				Result	Result	Result	Result	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.4	0.4	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.58	0.33	0.88	0.89	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.03	0.03	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.03	0.03	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.4	1.8	1.7	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.7	0.4	1.8	1.7	----	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	25.7	15.1	112	111	----	
∅ Total Cations	----	0.01	meq/L	26.0	14.9	111	107	----	
∅ Ionic Balance	----	0.01	%	0.42	0.48	0.52	2.00	----	



QUALITY CONTROL REPORT

Work Order	: EB2315513	Page	: 1 of 12
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 23-May-2023
Order number	: 4537604	Date Analysis Commenced	: 23-May-2023
C-O-C number	: ----	Issue Date	: 30-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	: ----		
Quote number	: EN/032/17		
No. of samples received	: 14		
No. of samples analysed	: 14		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5067751)									
EB2315513-005	82PcR	EA005-P: pH Value	----	0.01	pH Unit	7.88	7.90	0.3	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 5067754)									
EB2315478-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.07	8.17	1.2	0% - 20%
EB2315506-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.98	7.97	0.1	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 5076547)									
EB2315518-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.75	7.78	0.4	0% - 20%
EB2315513-004	41P	EA005-P: pH Value	----	0.01	pH Unit	7.85	7.85	0.0	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5067750)									
EB2315513-005	82PcR	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	8330	8310	0.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5067755)									
EB2315478-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	632	624	1.3	0% - 20%
EB2315506-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	14500	13900	4.4	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5076546)									
EB2315518-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1500	1500	0.1	0% - 20%
EB2315513-004	41P	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	9180	9180	0.0	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5072598)									
EB2315513-001	132WBR	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4710	5040	6.8	0% - 20%
EB2315513-010	GW11A_R	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	879	883	0.4	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5067753)									
EB2315513-005	82PcR	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	343	343	0.0	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 5067753) - continued									
EB2315513-005	82PcR	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	343	343	0.0	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5067756)									
EB2315478-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	153	153	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	153	153	0.0	0% - 20%
EB2315506-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	214	211	1.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	214	211	1.6	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5076545)									
EB2315518-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	54	56	4.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	54	56	4.9	0% - 20%
EB2315513-004	41P	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	502	494	1.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	502	494	1.6	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5068800)									
EB2315513-011	119P	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	62	63	2.3	0% - 20%
EB2315515-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	9	9	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5077252)									
EB2315671-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	32	33	0.0	0% - 20%
EB2315513-007	111PgC_Lower	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	324	332	2.3	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5078202)									
EB2315513-001	132WBR	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1050	1010	4.6	0% - 20%
EB2315950-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1	1	0.0	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 5068799)									
EB2315513-011	119P	ED045G: Chloride	16887-00-6	1	mg/L	680	696	2.2	0% - 20%
EB2315515-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	14	14	0.0	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 5077250)									
EB2315671-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	200	199	0.0	0% - 20%
EB2315513-007	111PgC_Lower	ED045G: Chloride	16887-00-6	1	mg/L	2500	2530	1.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5078203)									
EB2315513-001	132WBR	ED045G: Chloride	16887-00-6	1	mg/L	1440	1450	0.3	0% - 20%
EB2315950-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	<1	<1	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 5070563)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED093F: Dissolved Major Cations (QC Lot: 5070563) - continued									
EB2315562-004	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	20	20	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	5	5	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	9	10	0.0	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.0	No Limit
EB2315647-013	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	99	102	3.2	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	36	38	3.3	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	209	210	0.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 5070564)									
EB2315513-012	4517WB	ED093F: Calcium	7440-70-2	1	mg/L	30	28	4.8	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	9	9	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	290	280	3.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	3	3	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 5074375)									
EB2314913-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	26	26	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	10	10	0.0	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	36	35	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5070560)									
EB2315562-004	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	23.5	23.5	0.3	0% - 20%
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.361	0.364	0.7	0% - 20%
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.394	0.395	0.3	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	4.42	4.47	1.1	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	13.5	13.6	0.7	0% - 20%
EB2315647-013	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.009	0.008	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.082	0.083	1.4	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.655	0.691	5.4	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.51	1.54	1.7	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5070561)									
EB2315513-012	4517WB	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.569	0.550	3.4	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.020	0.019	0.0	0% - 50%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5070561) - continued									
EB2315513-012	4517WB	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.35	0.33	5.8	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5074373)									
EB2315638-008	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.047	0.046	2.4	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.018	0.017	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	1.80	1.82	1.3	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	2.74	2.74	0.0	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.05	<0.05	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	136	136	0.7	0% - 20%
EB2314913-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.020	0.020	0.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.290	0.286	1.4	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.64	0.62	3.1	0% - 50%
EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 5067745)									
EB2315513-001	132WBR	EG051G: Ferrous Iron	----	0.05	mg/L	0.05	<0.05	0.0	No Limit
EB2315513-011	119P	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5067752)									
EB2315513-005	82PcR	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5067757)									
EB2315478-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.0	No Limit
EB2315506-005	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5076544)									
EB2315518-004	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.0	No Limit
EB2315513-004	41P	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5076526)									
EB2315285-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2315506-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.83	1.81	0.9	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5076528)									
EB2315513-009	GW11B	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.17	0.17	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5068798)									
EB2315513-011	119P	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2315515-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5077253)									
EB2315671-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit

Page : 6 of 12
 Work Order : EB2315513
 Client : SLR CONSULTING AUSTRALIA PTY LTD
 Project : 620.31500.00000



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5077253) - continued									
EB2315513-007	111PgC_Lower	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5078205)									
EB2315513-001	132WBR	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5076527)									
EB2315285-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.18	0.19	0.0	0% - 50%
EB2315506-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5076529)									
EB2315513-009	GW11B	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5072655)									
EB2315513-006	3316_WB	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.3	2.2	0.0	No Limit
EB2314907-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.9	1.7	10.4	0% - 50%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Acceptable Limits (%)	
					Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 5067751)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.0	102
				----	7 pH Unit	99.6	98.0	102
EA005P: pH by PC Titrator (QCLot: 5067754)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98.0	102
				----	7 pH Unit	99.8	98.0	102
EA005P: pH by PC Titrator (QCLot: 5076547)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.5	98.0	102
				----	7 pH Unit	99.8	98.0	102
EA010P: Conductivity by PC Titrator (QCLot: 5067750)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	100	90.0	106
				<1	12890 µS/cm	103	90.0	106
EA010P: Conductivity by PC Titrator (QCLot: 5067755)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	2100 µS/cm	98.3	90.0	106
				<1	24800 µS/cm	101	90.0	106
EA010P: Conductivity by PC Titrator (QCLot: 5076546)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	101	90.0	106
				<1	12890 µS/cm	98.5	90.0	106
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5072598)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	97.2	88.0	112
				<10	2000 mg/L	95.6	80.9	118
				<10	2410 mg/L	105	81.3	119
ED037P: Alkalinity by PC Titrator (QCLot: 5067753)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.2	80.0	120
ED037P: Alkalinity by PC Titrator (QCLot: 5067756)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	50 mg/L	105	80.0	120
ED037P: Alkalinity by PC Titrator (QCLot: 5076545)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	108	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5068800)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	85.0	118
				<1	100 mg/L	109	85.0	118
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5077252)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5077252) - continued									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	109	85.0	118	
				<1	100 mg/L	89.9	85.0	118	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5078202)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	109	85.0	118	
				<1	100 mg/L	111	85.0	118	
ED045G: Chloride by Discrete Analyser (QCLot: 5068799)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	101	90.0	115	
				<1	1000 mg/L	106	90.0	115	
ED045G: Chloride by Discrete Analyser (QCLot: 5077250)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	102	90.0	115	
				<1	1000 mg/L	97.9	90.0	115	
ED045G: Chloride by Discrete Analyser (QCLot: 5078203)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	99.5	90.0	115	
				<1	1000 mg/L	104	90.0	115	
ED093F: Dissolved Major Cations (QCLot: 5070563)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	107	70.0	130	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	103	70.0	130	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	104	70.0	130	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.3	70.0	130	
ED093F: Dissolved Major Cations (QCLot: 5070564)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	112	70.0	130	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	103	70.0	130	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	104	70.0	130	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.1	70.0	130	
ED093F: Dissolved Major Cations (QCLot: 5074375)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	116	70.0	130	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	102	70.0	130	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	101	70.0	130	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	70.0	130	
EG020F: Dissolved Metals by ICP-MS (QCLot: 5070560)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	101	79.0	118	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	88.0	116	
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	102	70.0	130	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	88.0	114	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 5070560) - continued								
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	89.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.6	83.0	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	82.0	114
EG020F: Dissolved Metals by ICP-MS (QCLot: 5070561)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	96.0	79.0	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.5	88.0	116
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	96.0	70.0	130
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.3	88.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.2	89.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.9	83.0	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	82.0	114
EG020F: Dissolved Metals by ICP-MS (QCLot: 5074373)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	79.0	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	88.0	116
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	106	70.0	130
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.4	88.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	105	89.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.3	83.0	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	106	82.0	114
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5067745)								
EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	2 mg/L	102	85.0	120
EK040P: Fluoride by PC Titrator (QCLot: 5067752)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.5 mg/L	95.8	80.0	117
EK040P: Fluoride by PC Titrator (QCLot: 5067757)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	99.4	80.0	117
EK040P: Fluoride by PC Titrator (QCLot: 5076544)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.5 mg/L	92.0	80.0	117
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5076526)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.6	83.5	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5076528)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	95.5	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5068798)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	93.2	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5077253)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					Low
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5077253) - continued								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5078205)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5076527)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5076529)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.9	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5072655)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	98.9	70.1	108

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5068800)							
EB2315513-006	3316_WB	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	104	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5077252)							
EB2315513-010	GW11A_R	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	98.9	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5078202)							
EB2315950-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	99.6	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5068799)							
EB2315513-006	3316_WB	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5077250)							
EB2315513-010	GW11A_R	ED045G: Chloride	16887-00-6	400 mg/L	102	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 5078203)							
EB2315950-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	114	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5070560)							
EB2315562-005	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	# Not Determined	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	98.5	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	98.1	70.0	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5070560) - continued							
EB2315562-005	Anonymous	EG020A-F: Manganese	7439-96-5	1 mg/L	101	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5070561)							
EB2315513-013	3307WB_R	EG020A-F: Arsenic	7440-38-2	1 mg/L	109	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	97.6	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	101	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	107	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5074373)							
EB2315513-003	2291Pc	EG020A-F: Arsenic	7440-38-2	1 mg/L	126	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	128	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	113	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	124	70.0	130
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5067745)							
EB2315513-002	133WBR	EG051G: Ferrous Iron	----	2 mg/L	89.2	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5067752)							
EB2315513-009	GW11B	EK040P: Fluoride	16984-48-8	5 mg/L	93.4	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5067757)							
EB2315478-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	93.7	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5076544)							
EB2315513-001	132WBR	EK040P: Fluoride	16984-48-8	5 mg/L	98.6	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5076526)							
EB2315298-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	104	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5076528)							
EB2315513-010	GW11A_R	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	105	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5068798)							
EB2315513-006	3316_WB	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	110	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5077253)							
EB2315513-010	GW11A_R	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	116	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5078205)							
EB2315950-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	110	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5076527)							
EB2315298-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	101	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5076529)							
EB2315513-010	GW11A_R	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	# Not Determined	70.0	130

Page : 12 of 12
 Work Order : EB2315513
 Client : SLR CONSULTING AUSTRALIA PTY LTD
 Project : 620.31500.00000



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5072655)							
EB2314908-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	96.8	70.0	130

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

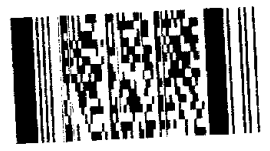
ABN 29 001 584 612

<input checked="" type="checkbox"/> BRISBANE: Level 16, 175 Eagle Street, Brisbane	<input type="checkbox"/> GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227	<input type="checkbox"/> NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305	<input type="checkbox"/> SYDNEY: 2 Lincoln Street, Lane Cove, Sydney NSW 2066	<input type="checkbox"/> NELSON: 6/A Cambridge Street, Richmond Port Nelson, 7020 NZ
<input type="checkbox"/> CANBERRA: GPO Box 410, Canberra, ACT 2600	<input type="checkbox"/> MACKAY: 21 River Street, Mackay, QLD 4740	<input type="checkbox"/> PERTH: 503 Murray Street, Perth, WA 6000	<input type="checkbox"/> TOWNSVILLE: 12 Cannon St, South Townsville, QLD 4810	<input type="checkbox"/> NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ
<input type="checkbox"/> DARWIN: 21 Parap Rd, Darwin, NT 0820	<input type="checkbox"/> MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002	<input type="checkbox"/> ROCKHAMPTON: rockhampton@slrconsulting.com	<input type="checkbox"/> AUCKLAND: 68 Beach Road, Auckland 1010 NZ	<input type="checkbox"/>

CLIENT:	LABORATORY: ALS	Turnaround Time (TAT):	COC Number: 1 of 2
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Buth St	<input checked="" type="checkbox"/> Standard TAT	
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Weldon / Hailey Martin	<input type="checkbox"/> Non Standard or Urgent TAT	
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0438 134 273	Required TAT: Standard	
Email Reports to: ned@slr_au@ceddatelabsync.net	Email Invoices to: nconnolly@slrconsulting.com		

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc.)	Containers and Preservatives	REQUESTED ANALYSIS					Additional Information (Comment on any gross contamination or specific requirements)
					NT-12	Heavy dissolved solids	Dissolved Metals AL, AS, SE, CU, FE, MANG.	NT-7	Ferrous Fe	
1	132 WBR	18.5.23 07:35	Water	1P + 2N + 1SP	X	X	X	X	X	HT
2	133 WBR	18.5.23 08:30	↑	11	X	X	X	X	X	
3	2291 Pc	18.5.23 09:39	↓		X	X	X	X	X	
4	41P	18.5.23 10:50	↓		X	X	X	X	X	
5	82PcR	18.5.23 12:03	↓		X	X	X	X	X	
6	3316-WB	18.5.23 13:08	↓		X	X	X	X	X	
7	111PgC-Lower	18.5.23 14:05	↓		X	X	X	X	X	
8	81P	18.5.23 15:10	↓		X	X	X	X	X	
9	GW11A GW11B	19.5.23 07:35	↓		X	X	X	X	X	
10	GW11A-R	19.5.23 08:25	↓		X	X	X	X	X	
11	119P	19.5.23 10:27	↓		X	X	X	X	X	

Environmental Division
Brisbane
Work Order Reference
EB2315513



Telephone: +61-7-3243 7222

Sample Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Bottles; STT = Sterile Sodium Thiopulfate Preserved Bottles; G = unpreserved glass soil jar;

I attest that the proper field sampling procedures were used during the collection of these samples.

Relinquished By Sampler	<i>Atlelth</i>	Date / Time	23.5.23 / 05:30	Received by	<i>LT</i>	Date / Time	23/5/23 / 1718	Temperature Received:
Relinquished By		Date / Time		Received by		Date / Time		
Relinquished By		Date / Time		Received by		Date / Time		

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT BRISBANE: Level 26, 175 Eagle Street, Brisbane
 OFFICE CANBERRA: GPU Box 10, Canberra, ACT 2600
 (Tick one) DARWIN: 21 Parap Rd, Darwin, NT 0820
 GOLD COAST: 194 Wassy Parade, Yoolby Lakes, QLD 4227
 MACKAY: 21 River Street, Mackay, QLD 4740
 MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3007
 NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305
 PERTH: 503 Murray Street, Perth, WA 6000
 ROCKHAMPTON: rockhampton@slrconsulting.com
 SYDNEY: 2 Lincoln Street, Lane Cove, Sydney, NSW 2065
 TOWNSVILLE: 12 Cairnham St, South Townsville, QLD 4810
 AUCKLAND: 68 Beach Road, Auckland 1010 NZ
 NI 150M: 6/A Cammerage Street, Strickland Park, Nelson, 7020 NZ
 NEW PLYMOUTH: Level 2, 10 Devon Street - East, New Plymouth, 4310 NZ

CLIENT: PROJECT ID: 620.31500.00000 PROJECT MANAGER: Ned Connolly PM CONTACT No: [blank]
 LABORATORY: ALS Brisbane LABORATORY ADDRESS: 2 Byth St SAMPLER: Ashley Welch / Hailey Martin SAMPLER CONTACT No: 0438 134 273
 Turnaround Time (TAT): Standard TAT COC Number: 2 of 2
 Email Reports to: [blank] Email Invoices to: nconnolly@slrconsulting.com
 Required TAT: Standard

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	REQUESTED ANALYSIS					Additional Information (Comment on any gross contamination or specific requirements)
					NT-12	TDS (total dissolved solids)	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ba	NT-7	Ferrous Fe	
12	4517WB	19.5.23 11:40	Water	1P + 2N + 1SP	X	X	X	X	X	
13	3307WB_R	22.5.23 13:15	Water		X	X	X	X	X	
14	QAQC05	22.5.23	↓	↓	X	X	X	X	X	
15	QAQC06	22.5.23	↓	↓	X	X	X	X	X	send to Eurofins
	QAQC05	22.5.23	AW	↓						
	QAQC06	22.5.23	↓	↓						send to Eurofins new

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

I attest that the proper field sampling procedures were used during the collection of these samples.

Relinquished By Sampler	Signature: <i>Aluelin</i>	Date/Time: 23.5.23/08:30	Received by	Signature: [blank]	Date/Time	Temperature Received:
Relinquished By	Signature: [blank]	Date/Time	Received by	Signature: [blank]	Date/Time	
Relinquished By	Signature: [blank]	Date/Time	Received by	Signature: [blank]	Date/Time	



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2315837	Page	: 1 of 9
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 25-May-2023
Site	: ----	Issue Date	: 02-Jun-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN	No. of samples received	: 7
Order number	: 4537604	No. of samples analysed	: 7

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- Duplicate outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
ED037P: Alkalinity by PC Titrator	EB2315842--008	Anonymous	Carbonate Alkalinity as CaCO3	3812-32-6	21.2 %	0% - 20%	RPD exceeds LOR based limits

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural CSMH1Rb, BCS4, 21P, GW22C	----	----	----	26-May-2023	23-May-2023	3
Clear Plastic Bottle - Natural GW13B, GW17A, GW08B,	----	----	----	26-May-2023	24-May-2023	2
EG051G: Ferrous Iron by Discrete Analyser						
Clear Plastic Bottle - Natural CSMH1Rb, BCS4, 21P, GW22C	----	----	----	25-May-2023	24-May-2023	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	26-May-2023	23-May-2023	✖
Clear Plastic Bottle - Natural (EA005-P) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	26-May-2023	24-May-2023	✖



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	26-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	26-May-2023	21-Jun-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	30-May-2023	30-May-2023	✓
Clear Plastic Bottle - Natural (EA015H) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	30-May-2023	31-May-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	29-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	29-May-2023	21-Jun-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	26-May-2023	06-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	26-May-2023	07-Jun-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	25-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	25-May-2023	21-Jun-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	25-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	25-May-2023	21-Jun-2023	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	29-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	29-May-2023	21-Jun-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	29-May-2023	19-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	29-May-2023	20-Nov-2023	✓
EG051G: Ferrous Iron by Discrete Analyser							
Clear Plastic Bottle - Natural (EG051G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	25-May-2023	24-May-2023	*
Clear Plastic Bottle - Natural (EG051G) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	25-May-2023	25-May-2023	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	26-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	26-May-2023	21-Jun-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	29-May-2023	20-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	29-May-2023	21-Jun-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	25-May-2023	25-May-2023	✓
Clear Plastic Bottle - Natural (EK057G) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	25-May-2023	26-May-2023	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	----	----	----	29-May-2023	20-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW13B, GW17A, GW08B,	24-May-2023	----	----	----	29-May-2023	21-Jun-2023	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) CSMH1Rb, BCS4, 21P, GW22C	23-May-2023	30-May-2023	20-Jun-2023	✔	30-May-2023	20-Jun-2023	✔
Clear Plastic Bottle - Sulfuric Acid (EK061G) GW13B, GW17A, GW08B,	24-May-2023	30-May-2023	21-Jun-2023	✔	30-May-2023	21-Jun-2023	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	4	23	17.39	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	17	17.65	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification .

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Method Blanks (MB) - Continued							
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Calculated TDS (from Electrical Conductivity)	EA016	WATER	In house: Calculation from Electrical Conductivity (APHA 2510 B) using a conversion factor specified in the analytical report. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Ferrous Iron by Discrete Analyser	EG051G	WATER	In house: Referenced to APHA 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Fluoride by Auto Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CERTIFICATE OF ANALYSIS

Work Order : **EB2315837**
Client : **SLR CONSULTING AUSTRALIA PTY LTD**
Contact : **NED CONNOLLY**
Address : **LEVEL 16 175 EAGLE STREET**
BRISBANE 4000
Telephone : **----**
Project : **620.31500.00000**
Order number : **4537604**
C-O-C number : **----**
Sampler : **ASHLEY WELCH, HAILEY MARTIN**
Site : **----**
Quote number : **EN/032/17**
No. of samples received : **7**
No. of samples analysed : **7**

Page : 1 of 6
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61 7 3243 7222
Date Samples Received : 25-May-2023 16:27
Date Analysis Commenced : 25-May-2023
Issue Date : 02-Jun-2023 10:08



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- It is recognised that EG020-F (Dissolved Metals by ICP-MS) is less than EG051G (Ferrous Iron by Discrete Analyser) for sample '21P' (EB2315837-002). However, the difference is within experimental variation of the methods.
- It is recognised that EK061G (Total Kjeldahl Nitrogen) is less than EK055G (Ammonia) for sample EB2315837-006 (GW08B). However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	CSMH1Rb	21P	BCS4	GW22C	GW13B
Sampling date / time				23-May-2023 01:02	23-May-2023 12:57	23-May-2023 15:44	23-May-2023 16:15	24-May-2023 07:45	
Compound	CAS Number	LOR	Unit	EB2315837-001	EB2315837-002	EB2315837-003	EB2315837-004	EB2315837-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.10	8.33	8.10	8.32	8.61	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	1640	1800	3720	3280	745	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	900	970	2060	1720	431	
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L	1070	1170	2420	2130	484	
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L	108	227	167	71	39	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	7	<1	4	30	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	97	244	104	168	287	
Total Alkalinity as CaCO3	----	1	mg/L	97	251	104	172	318	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	70	24	160	60	<1	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	450	454	1040	926	62	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	35	35	57	25	9	
Magnesium	7439-95-4	1	mg/L	5	34	6	2	4	
Sodium	7440-23-5	1	mg/L	304	295	727	665	170	
Potassium	7440-09-7	1	mg/L	4	14	4	4	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	<0.01	0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.005	<0.001	<0.001	0.004	<0.001	
Barium	7440-39-3	0.001	mg/L	0.092	0.290	0.101	0.160	0.138	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.039	0.194	0.100	0.045	0.009	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.07	0.10	<0.05	
EG051G: Ferrous Iron by Discrete Analyser									
Ferrous Iron	----	0.05	mg/L	<0.05	0.28	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	CSMH1Rb	21P	BCS4	GW22C	GW13B
Sampling date / time				23-May-2023 01:02	23-May-2023 12:57	23-May-2023 15:44	23-May-2023 16:15	24-May-2023 07:45	
Compound	CAS Number	LOR	Unit	EB2315837-001	EB2315837-002	EB2315837-003	EB2315837-004	EB2315837-005	
				Result	Result	Result	Result	Result	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	0.4	<0.1	<0.1	0.5	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.46	0.02	0.79	0.67	0.16	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	1.4	1.2	1.0	0.3	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	1.4	1.2	1.0	0.3	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	16.1	18.3	34.7	30.8	8.10	
∅ Total Cations	----	0.01	meq/L	15.5	17.7	35.1	30.4	8.22	
∅ Ionic Balance	----	0.01	%	1.92	1.63	0.45	0.60	0.74	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		GW08B	GW17A	----	----	----
		Sampling date / time		24-May-2023 08:33	24-May-2023 11:48	----	----	----
Compound	CAS Number	LOR	Unit	EB2315837-006	EB2315837-007	-----	-----	-----
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.87	8.46	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1250	1470	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	768	792	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	812	956	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	5	12	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	76	11	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	511	205	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	587	216	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	78	362	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	5	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	<1	----	----	----
Sodium	7440-23-5	1	mg/L	324	311	----	----	----
Potassium	7440-09-7	1	mg/L	1	2	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L	0.081	0.046	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.002	0.008	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW08B	GW17A	----	----	----
Sampling date / time				24-May-2023 08:33	24-May-2023 11:48	----	----	----	
Compound	CAS Number	LOR	Unit	EB2315837-006	EB2315837-007	-----	-----	-----	
				Result	Result	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.6	<0.1	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.33	0.30	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.4	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	0.4	----	----	----	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	13.9	14.5	----	----	----	
∅ Total Cations	----	0.01	meq/L	14.2	13.8	----	----	----	
∅ Ionic Balance	----	0.01	%	1.03	2.46	----	----	----	



QUALITY CONTROL REPORT

Work Order	: EB2315837	Page	: 1 of 7
Client	: SLR CONSULTING AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: NED CONNOLLY	Contact	: Customer Services EB
Address	: LEVEL 16 175 EAGLE STREET BRISBANE 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3243 7222
Project	: 620.31500.00000	Date Samples Received	: 25-May-2023
Order number	: 4537604	Date Analysis Commenced	: 25-May-2023
C-O-C number	: ----	Issue Date	: 02-Jun-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	: ----		
Quote number	: EN/032/17		
No. of samples received	: 7		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5075790)									
EB2315842-008	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.52	8.55	0.4	0% - 20%
EB2315491-014	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.14	9.16	0.2	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 5075959)									
EB2315837-001	CSMH1Rb	EA005-P: pH Value	----	0.01	pH Unit	8.10	8.12	0.2	0% - 20%
EB2315867-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.95	7.02	1.0	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5075792)									
EB2315842-008	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	998	991	0.7	0% - 20%
EB2315491-014	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	4830	4840	0.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5075957)									
EB2315837-001	CSMH1Rb	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1640	1630	0.7	0% - 20%
EB2315867-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	282	283	0.4	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5075368)									
EB2315781-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	9650	9310	3.5	0% - 20%
EB2315789-007	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5070	4850	4.3	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5075795)									
EB2315842-008	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	18	# 22	21.2	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	223	221	0.8	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	241	244	1.0	0% - 20%
EB2315491-014	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	210	212	0.9	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	705	699	0.8	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	915	911	0.4	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 5075962)									
EB2315837-001	CSMH1Rb	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	97	96	1.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	97	96	1.6	0% - 20%
EB2315867-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	12	10	23.9	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	12	10	23.9	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5073565)									
EB2315837-001	CSMH1Rb	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	70	70	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5073566)									
EB2315837-001	CSMH1Rb	ED045G: Chloride	16887-00-6	1	mg/L	450	449	0.0	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 5075712)									
EB2315837-002	21P	ED093F: Calcium	7440-70-2	1	mg/L	35	35	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	34	34	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	295	291	1.5	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	14	14	0.0	0% - 50%
EB2315837-001	CSMH1Rb	ED093F: Calcium	7440-70-2	1	mg/L	35	34	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	5	5	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	304	300	1.3	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5075714)									
EB2315837-002	21P	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.290	0.283	2.4	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.194	0.191	1.4	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EB2315837-001	CSMH1Rb	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.092	0.093	0.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.039	0.038	0.0	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 5073554)									
EB2315837-001	CSMH1Rb	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 5075794)									

Page : 4 of 7
 Work Order : EB2315837
 Client : SLR CONSULTING AUSTRALIA PTY LTD
 Project : 620.31500.00000



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK040P: Fluoride by PC Titrator (QC Lot: 5075794) - continued									
EB2315842-008	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.5	0.5	0.0	No Limit
EB2315491-014	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.5	1.5	0.0	0% - 50%
EK040P: Fluoride by PC Titrator (QC Lot: 5075961)									
EB2315837-001	CSMH1Rb	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5079072)									
EB2315911-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.0	No Limit
EB2315879-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	43.8	42.5	3.0	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5079073)									
EB2315837-005	GW13B	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.16	0.0	0% - 50%
EB2315790-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.14	0.14	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5073567)									
EB2315837-001	CSMH1Rb	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5079069)									
EB2315911-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.49	0.50	0.0	0% - 20%
EB2315879-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	29.6	29.4	0.4	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5079070)									
EB2315837-005	GW13B	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2315790-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.36	0.36	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5079995)									
EB2315624-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.6	2.7	0.0	No Limit
EB2315822-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	57.7	63.4	9.4	0% - 20%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
EA005P: pH by PC Titrator (QCLot: 5075790)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.5	98.0	102
				----	7 pH Unit	99.8	98.0	102
EA005P: pH by PC Titrator (QCLot: 5075959)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.0	102
				----	7 pH Unit	100	98.0	102
EA010P: Conductivity by PC Titrator (QCLot: 5075792)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	98.4	90.0	106
				<1	12890 µS/cm	98.9	90.0	106
EA010P: Conductivity by PC Titrator (QCLot: 5075957)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	2100 µS/cm	92.4	90.0	106
				<1	12890 µS/cm	97.0	90.0	106
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5075368)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	97.2	88.0	112
				<10	2000 mg/L	96.9	80.9	118
				<10	2410 mg/L	106	81.3	119
ED037P: Alkalinity by PC Titrator (QCLot: 5075795)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	50 mg/L	106	80.0	120
ED037P: Alkalinity by PC Titrator (QCLot: 5075962)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	50 mg/L	114	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5073565)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	85.0	118
				<1	100 mg/L	106	85.0	118
ED045G: Chloride by Discrete Analyser (QCLot: 5073566)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	90.0	115
				<1	1000 mg/L	101	90.0	115
ED093F: Dissolved Major Cations (QCLot: 5075712)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	112	70.0	130
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	103	70.0	130
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	102	70.0	130
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.2	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5075714)								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5075714) - continued								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	79.0	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	88.0	116
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	101	70.0	130
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	88.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	100	89.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	83.0	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.7	82.0	114
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5073554)								
EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	2 mg/L	102	85.0	120
EK040P: Fluoride by PC Titrator (QCLot: 5075794)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.5 mg/L	94.0	80.0	117
EK040P: Fluoride by PC Titrator (QCLot: 5075961)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	97.6	80.0	117
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5079072)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	104	83.5	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5079073)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.5	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5073567)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5079069)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.9	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5079070)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.5	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5079995)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	83.2	70.1	108

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5073565)							
EB2315837-002	21P	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	95.0	70.0	130



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 5073566)							
EB2315837-002	21P	ED045G: Chloride	16887-00-6	400 mg/L	88.6	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5075714)							
EB2315837-003	BCS4	EG020A-F: Arsenic	7440-38-2	1 mg/L	109	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	108	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	104	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	105	70.0	130
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5073554)							
EB2315837-002	21P	EG051G: Ferrous Iron	----	10 mg/L	96.2	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5075794)							
EB2315491-014	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	103	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 5075961)							
EB2315615-004	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	94.8	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5079072)							
EB2315815-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	105	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5079073)							
EB2315837-006	GW08B	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	112	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5073567)							
EB2315837-002	21P	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	112	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5079069)							
EB2315815-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	114	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5079070)							
EB2315837-006	GW08B	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	108	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5079995)							
EB2315789-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	95.7	70.0	130

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd
 ABN 29 001 584 612

PROJECT Brisbane - see 18.12.18 page three
 Gold Coast - 10 Kingsford Drive
 Mackay - 21 King Street, Mackay, QLD
 Perth - 503 Kingsford Drive, Perth, WA
 Townsville - 12 Campbell St, South
 Townsville QLD 4810
 AUCKLAND - 64 South Road, Auckland 1010

OFFICE Cairns - 2nd floor, Cairns, QLD
 Mackay - 21 King Street, Mackay, QLD
 Perth - 503 Kingsford Drive, Perth, WA
 Townsville - 12 Campbell St, South
 Townsville QLD 4810
 AUCKLAND - 64 South Road, Auckland 1010

LABORATORY: ALS Brisbane
 Perth - 503 Kingsford Drive, Perth, WA
 Townsville - 12 Campbell St, South
 Townsville QLD 4810
 AUCKLAND - 64 South Road, Auckland 1010

CLIENT: 620.315 00.0000
PROJECT ID: 620.315 00.0000
PROJECT MANAGER: Ned Comdly
PM CONTACT NO: _____

LABORATORY ADDRESS: 2 Blyn St
SAMPLER: Asley Welton / Hailes Martin
SAMPLER CONTACT NO: 0438 134 273

Email Reports to: asdale@slrconsulting.com.au / ned@slrconsulting.com.au / hailes@slrconsulting.com.au
Email Invoices to: mconnolly@slrconsulting.com.au

COMMENTS OR ADDITIONAL DIRECTIONS

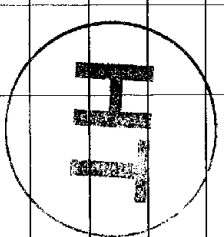
REQUESTED ANALYSIS

NT-12
 TDS
 Dissolved metals
 Al, AS, Se, Cu, Fe, Mn, Ba
 NT-7
 Ferrous Fe

No.	Sample ID	Date & Time	Matrix	Containers and Preservatives	Requested Analysis	Received by	Received by	Turnaround Time (TAT)	COC Number
1	GMW1RB	23.5.23 10:20	Water	1P+M, 1SP	X	X	X	X	
2	21P	23.5.23 12:57	W	"	X	X	X		
3	BCS4	23.5.23 14:55	W	"	X	X	X		
4	GMW22C	23.5.23 16:15	W	"	X	X	X		
5	GMW3B	24.5.23 02:45	W	"	X	X	X		
6	GMW8B	24.5.23 08:35	W	"	X	X	X		
7	GMW17A	24.5.23 11:48	W	"	X	X	X		

Environmental Division
 Work Order Reference
EB2315837

Telephone: - 61-7-3243 7222



Simple Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; DNC = Nitric Preserved DNC; SI = Sodium Hydroxide Preserved Plastic; S = Sodium Hydroxide Preserved Plastic; AS = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HQ Preserved; VB = VOA Vial Sodium Sulphate Preserved; VS = VOA Vial Sulphur Preserved; AV = Airtight Unpreserved Vial SG = Sulphur Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Plastic; S = Sulfuric Preserved Plastic; P = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; AS5 = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag; U = Lungs (Lungs Preserved Bottles); STT = Sterile Sodium Thiosulfate Preserved Bottles; G = unpreserved glass soil jar

Attest that the proper field sampling procedures were used during the collection of these samples.

Relinquished By Sampler: [Signature] Date: 24.5.23

Relinquished By: _____ Date: _____

Received by: [Signature] Date: 25.5.23

Received by: _____ Date: _____

Temperature Received: _____



Appendix G EA Compliance Monitoring Bore Results

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 18PbR2 (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	26/01/2023	15-05-2023	29-08-2023					
			8:36 AM	11:23 AM	10:47 AM					
pH (Field)	pH units	NA	7.77	7.62	7.67					
EC (Field)	mS/cm	-	841	636	731					
pH (Lab)	pH units	-	7.98	7.77	7.46					
EC (Lab)	mS/cm	NA	819	698	727					
TDS (Lab)	mg/L	NA	490	393	396					
Major Ions										
Ca	mg/L	NA	15	9	7					
Mg	mg/L	NA	4	2	3					
Na	mg/L	NA	148	139	127					
K	mg/L	NA	2	1	1					
Cl	mg/L	NA	203	184	190					
HCO ₃	mg/L	NA	88							
SO ₄	mg/L	NA	45	33	29					
Minor Ions										
F	mg/L	NA	0.2	0.3	0.3					
Total N	mg/L	NA	0.4	<0.01	<0.1					
NO ₃	mg/L	NA	0.06	<0.01	<0.01					
NO ₂	mg/L	NA	0.19	<0.01	0.01					
Dissolved Metals										
Al	µg/L	NA	20	20	20					
As	µg/L	NA	2	3	4					
Cu	µg/L	NA	<1	<1	<1					
Fe	µg/L	NA	<50	<50	<50					
Mn	µg/L	NA	4	4	<1					
Se	µg/L	NA	<10	<10	<10					

Groundwater Bore No. 27PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2020	13/02/2021	14/04/2021	6/07/2021	13/10/2021	1/02/2022	1/06/2022	19/07/2022	13/10/2022
			Time sampled	-	-	-	-	-	1:12 PM	2:21 PM	9:45 AM
pH (Field)	pH units	NA	6.95	6.81	6.82	6.86	6.99	6.96	6.9	6.49	6.98
EC (Field)	µS/cm	-	9113	9908	10804	10490	11570	12339	11195	11838	9996
pH (Lab)	pH units	-	7.88	7.28	7.84	7.7	7.71	7.18	7.52	7.38	7.5
EC (Lab)	µS/cm	NA	8970	10200	11200	11700	11500	11200	11600	12300	12400
TDS (Lab)	mg/L	NA	5830	7550	7760	8730	8190	9610	8940	9040	9240
Major Ions											
Ca	mg/L	NA	461	497	583	648	627	716	708	649	685
Mg	mg/L	NA	212	210	258	269	291	283	288	288	292
Na	mg/L	NA	1150	1210	1410	1490	1560	1420	1570	1500	1560
K	mg/L	NA	27	22	24	25	26	25	26	26	26
Cl	mg/L	NA	3060	3290	3720	3860	3980	4290	3920	4110	4190
HCO ₃	mg/L	NA	150	126	166	100	135	104	151	134	141
SO ₄	mg/L	NA	590	627	744	784	743	730	780	765	813
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.8	0.6	0.7	0.7	1	0.6	0.5	0.5	0.5
NO ₃	mg/L	NA	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₂	mg/L	NA	0.33	0.24	0.19	0.18	<0.01	<0.01	0.02	0.02	0.02
Dissolved Metals											
Al	µg/L	NA	10	40	20	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	1	1	1	1	3	3	4	3
Cu	µg/L	NA	<1	<1	2	2	<1	<1	<1	<1	4
Fe	µg/L	NA	640	370	1030	1480	1690	1950	2230	1690	2100
Mn	µg/L	NA	141	174	210	221	287	353	318	354	296
Se	µg/L	NA	<10	<10	<10	62	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 28PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2020	13/02/2021	14/04/2021	7/07/2021	15/12/2021	1/02/2022	1/06/2022	18/07/2022	13/10/2022
			Time sampled	-	-	-	-	-	-	2:22 PM	4:15 PM
pH (Field)	pH units	NA	6.28	7.08	7.04	7.11	6.8	7.89	7.38	6.69	7.1
EC (Field)	□S/cm	-	9932	9873	9526	9494	9607	9716	9283	9675	8304
pH (Lab)	pH units	-	7.59	6.74	7.65	7.43	7.26	6.87	7.29	7.26	7.44
EC (Lab)	□S/cm	NA	9860	10000	9970	10000	9890	9250	9660	10000	9810
TDS (Lab)	mg/L	NA	6410	7430	6810	6650	7850	7710	7480	7330	7710
Major Ions											
Ca	mg/L	NA	555	506	538	562	506	544	573	551	574
Mg	mg/L	NA	242	201	225	221	207	212	223	230	226
Na	mg/L	NA	1210	1100	1200	1250	1160	1140	1260	1220	1240
K	mg/L	NA	30	22	23	24	23	22	24	25	24
Cl	mg/L	NA	3440	3280	3270	3370	3430	3360	3180	3400	3470
HCO ₃	mg/L	NA	117	67	90	55	72	94	77	69	72
SO ₄	mg/L	NA	614	570	593	610	582	557	602	590	622
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.5
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	3	2	1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	1	2	<1	<1	<1
Fe	µg/L	NA	2340	2180	1980	2060	1890	2020	2160	2060	2100
Mn	µg/L	NA	313	320	322	328	312	283	302	311	317
Se	µg/L	NA	<10	<10	<10	44	<10	<10	<10	<10	<10

Groundwater Bore No. 84PbR (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	11/11/2020	11/02/2021	15/04/2021	6/07/2021	14/12/2021	1/02/2022	2/06/2022	20/07/2022	13/10/2022
			Time sampled	-	-	-	-	-	-	9:05 AM	3:43 PM
pH (Field)	pH units	6.5-7.5	6.74	6.91	6.78	6.91	7.23	7.15	6.96	7.07	6.99
EC (Field)	□S/cm	-	2204	2195	2087	1947	1916	2385	1818	1880	1841
pH (Lab)	pH units	-	7.59	7.41	7.94	7.88	7.75	7.75	7.79	7.7	7.89
EC (Lab)	□S/cm	7460, 2568	2160	2200	2210	2160	2040	1960	2020	2030	1900
TDS (Lab)	mg/L	5000	1400	1630	1590	1620	1450	1540	1500	1380	1530
Major Ions											
Ca	mg/L	1000	144	137	162	161	137	131	140	130	135
Mg	mg/L	NA	116	103	120	116	99	101	106	105	103
Na	mg/L	NA	152	130	150	150	137	132	142	136	139
K	mg/L	NA	2	2	2	2	2	2	2	2	2
Cl	mg/L	NA	304	440	436	446	393	366	390	398	370
HCO ₃	mg/L	NA	354	262	352	227	402	368	378	396	435
SO ₄	mg/L	1000, 338	328	336	336	338	280	267	263	239	239
Minor Ions											
F	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total N	mg/L	NA	1.4	1.4	1	0.8	0.9	0.8	1.4	1.6	1.5
NO ₃	mg/L	30	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₂	mg/L	400, 16.9	1.24	0.95	0.78	0.57	0.66	0.75	1.24	1.31	1.27
Dissolved Metals											
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	50	<50	60	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	20	2	9	4	25	8	4	4	3	6
Se	µg/L	20, 11	<10	<10	<10	6	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

6/02/2023	15-05-2023	29-08-2023
2:45 PM	13:30	8:20
6.36	7.37	7.14
9541	9063	10098
7.53	7.60	7.44
10000	9,840	10,200
7830	6,190	7,780
582	492	518
219	205	217
1220	1,080	1,140
23	22	24
3290	3,270	3,440
71		
589	576	580
<0.1	<0.1	<0.1
0.9	<0.01	<0.5#1
<0.01	<0.01	<0.01
0.03	<0.01	<0.01
20	<10	<10
<1	<1	<1
<1	<1	<1
1800	2100	2140
308	299	320
<10	<10	<10

18/01/2023	17-05-2023	05-09-2023
3:26 PM	13:25	15:22
6.63	7.07	6.95
1870	1573	1621
8.16	8.29	8.20
1560	1,660	1,560
1270	1,160	1,060
131	100	103
97	87	78
124	124	115
2	2	2
303	290	245
406		
228	211	173
0.2	0.2	0.2
0.9	0.27	<0.1
0.03	<0.01	<0.01
0.77	0.27	0.06
<10	<10	<10
<1	<1	2
2	<1	<1
<50	<50	<50
13	4	14
<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. CSMH1Rb (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	4/11/2020	13/02/2021	13/04/2021	7/07/2021	14/12/2021	1/02/2022	3/06/2022	19/07/2022	13/10/2022
			Time sampled	-	-	-	-	-	-	11:15 AM	9:40 AM
pH (Field)	pH units	6.0-8.5	7.27	7.7	7.5	8.09	7.12	7.62	8.12	7.48	8.03
EC (Field)	µS/cm	-	1733	1733	1644	1553	1670	2217	1613	1655	1587
pH (Lab)	pH units	-	8.29	7.05	7.92	7.96	7.91	7.91	7.87	7.88	7.95
EC (Lab)	µS/cm	1703	1710	1640	1600	1640	1640	1630	1650	1670	1550
TDS (Lab)	mg/L	NA	1110	904	885	898	894	904	920	909	882
Major Ions											
Ca	mg/L	NA	38	27	32	31	29	33	29	29	31
Mg	mg/L	NA	6	4	5	5	5	5	5	5	5
Na	mg/L	NA	292	261	285	300	292	285	305	292	308
K	mg/L	NA	5	4	4	4	4	4	4	4	4
Cl	mg/L	NA	465	468	471	480	484	467	468	489	497
HCO ₃	mg/L	NA	167	91	118	77	117	118	106	111	113
SO ₄	mg/L	134	64	66	66	68	62	65	64	62	66
Minor Ions											
F	mg/L	0.8	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₂	mg/L	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals											
Al	µg/L	55	30	120	30	30	30	20	20	10	10
As	µg/L	13	7	5	5	4	3	4	5	4	4
Cu	µg/L	1.4	<1	<1	2	<1	<1	<1	<1	<1	<1
Fe	µg/L	200	80	200	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	87	32	25	29	29	32	33	35	38	38
Se	µg/L	11	<10	<10	<10	76	<10	<10	<10	<10	<10

Groundwater Bore No. 10PbR (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	11/11/2020	11/02/2021	15/04/2021	6/07/2021	14/12/2021	1/02/2022	2/06/2022	20/07/2022	13/10/2022
			Time sampled	-	-	-	-	-	-	10:14 AM	1:26 PM
pH (Field)	pH units	6.5-7.5	6.84	6.85	6.99	6.79	7.5	7.78	6.85	7	6.91
EC (Field)	µS/cm	-	3339	3359	3172	2997	3155	3184	3037	3146	2966
pH (Lab)	pH units	-	7.63	7.47	7.92	7.84	7.65	7.73	7.73	7.62	7.72
EC (Lab)	µS/cm	7460, 3346	3230	3350	3310	3320	3200	3150	3230	3300	3010
TDS (Lab)	mg/L	5000	2100	2400	2120	2520	2420	2520	2280	2300	2560
Major Ions											
Ca	mg/L	1000	208	246	231	232	199	211	220	206	210
Mg	mg/L	NA	170	196	178	175	159	166	173	174	166
Na	mg/L	NA	188	184	184	190	176	176	191	181	179
K	mg/L	NA	2	2	2	2	2	2	2	2	2
Cl	mg/L	NA	762	816	788	813	817	770	782	797	796
HCO ₃	mg/L	NA	446	334	480	304	506	458	438	457	479
SO ₄	mg/L	1000, 57.7	54	55	58	56	51	58	56	54	54
Minor Ions											
F	mg/L	0.5	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.5
Total N	mg/L	NA	55.8	52.4	53.1	51.8	56.3	68.7	56.5	66.6	71.5
NO ₃	mg/L	30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₂	mg/L	400, 50.7	50.6	49	50.7	50.1	52.6	68.7	53.2	56.1	64.7
Dissolved Metals											
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	<1	<1	<1	<1	<1	2	<1	<1	<1
Fe	µg/L	50	<50	60	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	20	3	2	<1	1	<1	1	<1	<1	<1
Se	µg/L	20, 11	<10	<10	<10	13	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

19/01/2023	23-05-2023	06-09-2023
10:15 AM	10:20	11:48
7.69	8.12	7.74
1653	1564	1638
8.05	8.10	7.86
1630	1,640	1,570
888	900	879
32	35	31
5	5	5
272	304	288
4	4	4
485	450	438
111		
68	70	60
<0.1	<0.1	<0.1
0.4	<0.01	0.3
<0.01	<0.01	<0.01
<0.01	<0.01	<0.01
10	10	20
2	5	4
<1	<1	<1
<50	<50	<50
36	39	36
<10	<10	<10

23/01/2023	17-05-2023	01-09-2023
12:47 PM	8:10	9:05
6.78	6.77	6.78
3249	2921	3261
7.59	7.99	8.11
2990	3,100	3,150
2230	2,130	2,210
204	187	226
167	164	174
184	175	183
2	2	2
781	740	690
501		
54	51	51
0.5	0.4	0.5
59.3	59.5	58.0
<0.01	<0.01	<0.01
53.3	59.5	52.8
<10	<10	20
<1	<1	<1
<1	<1	<1
<50	<50	<50
1	<1	<1
<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 4517WB (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	5/04/2018	4/10/2018	10/04/2019	22/10/2019	27/04/2020	6/07/2020	9/11/2020	10/02/2021	13/04/2021
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	6.5-7.5	-	6.64	6.59	6.74	7.19	6.91	6.99	6.97	6.86
EC (Field)	µS/cm	-	-	3416	2652	2296	1785	1855	1878	1915	1736
pH (Lab)	pH units	-	7.32	7.57	7.27	7.07	7.49	7.34	7.53	7.38	7.98
EC (Lab)	µS/cm	7460, 3084	4150	3360	2570	2050	1910	1880	1830	1890	1760
TDS (Lab)	mg/L	5000	2300	1990	1460	1130	1240	1050	1190	1040	1000
Major Ions											
Ca	mg/L	1000	184	141	78	60	38	39	38	43	38
Mg	mg/L	NA	133	76	34	20	14	13	10	14	11
Na	mg/L	NA	471	450	387	372	327	323	294	348	322
K	mg/L	NA	3	4	4	4	3	3	3	3	3
Cl	mg/L	NA	976	884	663	501	488	455	478	486	455
HCO ₃	mg/L	NA	807	563	438	361	337	225	323	244	349
SO ₄	mg/L	1000, 35	79	43	20	17	17	17	17	18	17
Minor Ions											
F	mg/L	0.33	0.4	0.2	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Total N	mg/L	NA	0.4	0.5	0.6	0.5	0.5	0.6	0.4	0.5	0.5
NO ₃	mg/L	30	-	-	-	-	-	-	<0.01	<0.01	<0.01
NO ₂	mg/L	400, 5	-	-	-	-	-	-	0.02	<0.01	<0.01
Dissolved Metals											
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	<1	1	<1	<1	1	1	2	2
Cu	µg/L	1000, 1.4	<1	<1	4	<1	12	<1	<1	<1	2
Fe	µg/L	800	140	430	850	730	640	440	580	600	550
Mn	µg/L	87	39	51	45	39	31	30	27	26	37
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 4518WB (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	3/11/2017	5/04/2018	3/10/2018	9/04/2019	22/10/2019	27/04/2020	7/07/2020	9/11/2020	9/02/2021
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	6.5-7.5	7.12	7.28	7.53	7.12	7.17	7.36	7.17	7.13	7.12
EC (Field)	µS/cm	-	4140	4066	3833	3445	3372	2786	3113	3053	3124
pH (Lab)	pH units	-	7.93	7.74	7.75	7.77	7.45	7.73	7.67	7.73	7.87
EC (Lab)	µS/cm	7460, 4065	4110	3910	4010	3370	3080	3050	3150	3020	3090
TDS (Lab)	mg/L	5000	2980	2340	2420	2120	1750	1980	1740	1960	1890
Major Ions											
Ca	mg/L	1000	281	276	235	181	155	113	129	114	127
Mg	mg/L	NA	98	89	104	82	82	78	82	71	82
Na	mg/L	NA	450	434	407	423	373	382	380	363	412
K	mg/L	NA	6	6	5	4	4	4	4	3	4
Cl	mg/L	NA	1200	1100	1090	921	776	784	774	790	825
HCO ₃	mg/L	NA	386	334	458	525	525	550	361	529	365
SO ₄	mg/L	1000, 48	28	16	42	44	44	46	48	45	48
Minor Ions											
F	mg/L	0.4	0.2	0.1	0.2	0.3	0.4	0.4	0.4	0.4	0.4
Total N	mg/L	NA	0.8	0.9	0.8	0.2	0.5	0.3	0.3	0.4	0.3
NO ₃	mg/L	30	-	-	-	-	-	-	-	<0.01	<0.01
NO ₂	mg/L	400, 5	-	-	-	-	-	-	-	0.01	<0.01
Dissolved Metals											
Al	µg/L	5000, 55	<10	<10	<10	10	10	<10	<10	<10	<10
As	µg/L	50, 13	<1	1	2	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 33	<1	<1	26	6	<1	5	<1	14	<1
Fe	µg/L	1600	840	1420	1420	1080	1270	1360	1370	1440	1630
Mn	µg/L	87	88	50	97	353	71	60	73	59	69
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

7/07/2021	14/12/2021	2/06/2022	20/07/2022	13/10/2022	23/01/2023	19-05-2023	01-09-2023
-	-	11:01 AM	2:03 PM	11:45 AM	1:32 PM	11:37	8:32
6.89	7.72	7.1	7.27	7.23	6.98	7.35	7.4
1643	1702	1565	1612	1480	1519	1334	1326
7.69	7.73	7.48	7.8	7.94	7.63	8.15	8.32
1720	1750	1690	1680	1570	1460	1,480	1,540
950	989	963	945	897	884	844	858
34	40	38	33	36	31	30	26
10	14	13	12	12	9	9	7
321	312	327	298	301	274	290	292
3	3	3	3	3	3	3	3
434	457	412	421	406	359	336	332
230	368	305	312	329	341		
17	15	21	20	24	25	24	21
<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1
0.4	0.5	0.4	0.5	0.4	0.4	<0.01	0.4
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	0.03	0.06	<0.01	0.02	<0.01	<0.01
<10	<10	<10	<10	<10	<10	<10	20
2	2	2	2	1	2	<1	6
<1	<1	<1	<1	<1	<1	<1	<1
590	600	1000	490	440	470	350	310
27	28	28	25	24	21	20	19
770	<10	<10	<10	<10	<10	<10	<10

13/04/2021	7/07/2021	14/12/2021	2/06/2022	20/07/2022	18/10/2022	23/01/2023	10-05-2023	01-09-2023
-	-	-	12:10 PM	12:16 PM	1:50 PM	12:03 PM	7:50	9:52
7	7.01	7.78	7.07	7.3	6.98	7.01	6.96	7
3031	2990	3078	3278	3465	4013	3803	3412	3693
7.99	7.79	7.9	7.89	7.81	8.2	7.7	8.14	8.16
3110	3110	3260	3540	3700	3980	3500	2,790	3,620
1850	1790	1960	2190	2240	2590	2480	2,320	2,150
129	109	111	127	128	143	131	120	148
83	76	83	101	101	102	101	99	104
406	395	444	532	505	504	495	436	467
4	3	3	4	4	4	4	4	4
839	826	862	922	999	982	1030	987	897
555	378	606	532	552	444	595		
47	48	59	81	88	95	99	89	74
0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4
0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.02	0.4
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01
<10	<10	<10	<10	<10	<10	<10	<10	<10
<1	<1	<1	<1	<1	<1	<1	<1	<1
3	<1	<1	<1	<1	<1	<1	<1	<1
1560	1570	1700	2400	90	2090	2470	2650	2430
67	58	53	100	42	52	55	54	52
<10	330	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 25PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	30/09/2015	5/04/2016	13/10/2016	4/04/2017	26/10/2017	9/04/2018	25/09/2018	2/04/2019	15/10/2019
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	7.76	7.1	7.67	7.93	6.94	6.82	7.05	6.93	6.91
EC (Field)	µS/cm	-	9301	9728	10747	10014	10033	10046	9762	9969	9074
pH (Lab)	pH units	-	7.37	7.35	8.08	7.62	7.78	7.81	7.43	7.35	7.9
EC (Lab)	µS/cm	NA	11000	10400	10400	9920	9010	9840	8650	9590	9540
TDS (Lab)	mg/L	NA	9340	8760	7350	5830	5860	6700	7140	7060	7490
Major Ions											
Ca	mg/L	NA	730	669	705	620	513	477	578	566	474
Mg	mg/L	NA	196	218	212	203	180	179	201	183	178
Na	mg/L	NA	1140	1280	1310	1260	1180	1120	1270	1170	1150
K	mg/L	NA	20	24	24	23	21	20	22	22	21
Cl	mg/L	NA	3820	3820	3430	3300	3170	3070	3150	3390	3170
HCO ₃	mg/L	NA	137	128	127	229	291	198	232	177	180
SO ₄	mg/L	NA	411	406	408	377	359	368	384	380	380
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	<0.5	0.5	0.8	0.5	0.6	0.6	0.6	0.5	0.6
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	<1	<1	2	<1	3	1	<1	<1
Fe	µg/L	NA	2740	3000	3930	3470	3570	3350	3140	3400	3030
Mn	µg/L	NA	126	130	129	91	77	86	88	103	94
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 26PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	20/04/2015	30/09/2015	6/04/2016	13/10/2016	4/04/2017	27/10/2017	9/04/2018	25/09/2018	3/04/2019
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	7.2	7.8	7.28	7.87	8.3	7.02	7.03	7.04	7.04
EC (Field)	µS/cm	-	11400	11502	9863	12332	12334	13320	12999	12430	12433
pH (Lab)	pH units	-	7.33	7.49	7.49	8.21	7.69	7.89	8.18	7.44	7.43
EC (Lab)	µS/cm	NA	12300	12500	11800	12100	12300	12000	12700	11000	12200
TDS (Lab)	mg/L	NA	9310	10600	9010	8230	7450	7800	8340	9830	9180
Major Ions											
Ca	mg/L	NA	685	687	652	693	679	638	584	669	822
Mg	mg/L	NA	253	239	279	268	280	264	256	284	285
Na	mg/L	NA	1620	1490	1700	1730	1730	1690	1570	1780	1780
K	mg/L	NA	26	24	29	28	30	29	28	29	31
Cl	mg/L	NA	3340	4100	4120	3500	4060	4150	3960	3990	3940
HCO ₃	mg/L	NA	246	242	244	232	257	271	224	243	233
SO ₄	mg/L	NA	1130	955	975	400	904	854	874	922	873
Minor Ions											
F	mg/L	NA	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.7	0.4	<0.1	0.9	0.4	<0.5	0.6	0.5	<0.5
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	2	<1	<1
Fe	µg/L	NA	690	3050	3870	4340	3900	3880	3940	3720	4040
Mn	µg/L	NA	25	23	24	24	19	20	19	19	20
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

24/04/2020	3/11/2020	14/04/2021	13/10/2021	1/06/2022	19/07/2022	11/10/2022	17/01/2023	16-05-2023	04-09-2023
-	-	-	-	11:06 AM	12:32 PM	3:15 PM	1:31 PM	9:10	13:42
7.21	6.54	6.85	7.26	7.02	6.59	5.76	6.83	6.98	6.86
6260	9192	9651	9598	9537	9903	8750	9957	9063	10108
7.81	7.4	7.7	7.71	7.43	7.34	7.69	7.72	7.66	7.71
9740	9410	9940	9550	9700	10000	9510	9400	10,200	10,400
6330	6120	6820	6530	7420	7350	7810	7810	6,720	6,980
580	537	529	498	572	516	552	523	460	553
198	198	198	200	201	196	197	200	190	194
1260	1160	1220	1300	1300	1210	1250	1180	1,200	1,200
22	29	22	24	24	23	23	23	22	23
3420	3310	3370	3330	3360	3370	3480	3390	3,210	3,310
123	146	134	143	119	123	129	121		
384	381	386	384	385	380	386	368	372	368
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
0.8	0.6	0.5	0.5	0.5	0.5	0.6	0.5	<0.01	<0.5#1
-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	1	<1	<1	<1	<1	<1	<1	<1
3360	3040	3120	3010	3430	3320	3340	2970	2990	3550
109	105	117	113	121	118	122	106	111	110
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

18/10/2019	23/04/2020	3/11/2020	14/04/2021	13/10/2021	1/06/2022	19/07/2022	13/10/2022
-	-	-	-	-	12:16 PM	1:32 PM	8:50 AM
6.96	7.2	6.46	7.28	7.17	7.1	6.65	7.11
11530	10603	12103	11846	11822	11728	12143	10273
7.37	7.94	7.5	7.83	7.84	7.7	7.54	7.68
11800	11800	11800	12300	11700	11800	12300	12000
8830	7670	7670	8500	8310	9150	9050	9270
725	594	587	559	547	544	547	569
254	267	285	270	287	260	272	271
1600	1700	1620	1660	1850	1710	1700	1720
29	27	37	28	30	28	29	29
3880	3950	4000	3930	3920	3870	4030	4140
226	223	215	229	238	217	223	246
849	916	895	926	898	929	915	971
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.5	1.1	0.5	0.4	0.8	0.4	0.5	0.6
-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<10	<10	<10	<10	<10	<10	<10	<10
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	1	<1	<1	<1	<1
3720	4010	3730	3820	3910	3980	4070	4190
22	22	21	22	22	21	22	22
<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 26PcR (Balgowan Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	17/01/2023	16-05-2023	04-09-2023					
			2:34 PM	10:41	12:52					
pH (Field)	pH units	NA	6.92	7.13	6.93					
EC (Field)	□S/cm	-	12241	11269	12429					
pH (Lab)	pH units	-	7.97	8.02	7.91					
EC (Lab)	□S/cm	NA	12200	12,200	12,500					
TDS (Lab)	mg/L	NA	9310	8,530	8,680					
Major Ions										
Ca	mg/L	NA	554	475	586					
Mg	mg/L	NA	278	259	269					
Na	mg/L	NA	1600	1,640	1,660					
K	mg/L	NA	28	26	28					
Cl	mg/L	NA	4010	4,020	3,840					
HCO ₃	mg/L	NA	223							
SO ₄	mg/L	NA	829	898	885					
Minor Ions										
F	mg/L	NA	<0.1	<0.1	<0.1					
Total N	mg/L	NA	<0.5	<0.01	<0.5#1					
NO ₃	mg/L	NA	<0.01	<0.01	<0.01					
NO ₂	mg/L	NA	<0.01	<0.01	<0.01					
Dissolved Metals										
Al	µg/L	NA	<10	30	<10					
As	µg/L	NA	<1	<1	<1					
Cu	µg/L	NA	<1	<1	<1					
Fe	µg/L	NA	4000	3780	4240					
Mn	µg/L	NA	20	21	22					
Se	µg/L	NA	<10	<10	<10					

Groundwater Bore No. 111PgC Lower (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	4/10/2007	5/11/2013	5/05/2014	7/10/2014	20/04/2015	6/10/2015	1/04/2016	28/09/2016	10/04/2017
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	6.5-7.5	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	NA	7.93	7.89	7.53	7.76	7.89	7.5	7.87	7.49
EC (Lab)	□S/cm	6937	NA	6570	6800	6970	6780	6740	6610	6910	6660
TDS (Lab)	mg/L	NA	NA	4500	4580	4670	4020	4530	4470	4390	4440
Major Ions											
Ca	mg/L	NA	147	203	263	281	346	284	284	310	321
Mg	mg/L	NA	50	172	168	194	172	168	172	168	179
Na	mg/L	NA	791	902	862	975	834	820	902	832	876
K	mg/L	NA	10	12	10	14	10	10	10	10	10
Cl	mg/L	NA	1250	1610	1620	1830	1900	1520	2000	1800	1850
HCO ₃	mg/L	NA	501	478	462	493	529	492	612	609	628
SO ₄	mg/L	309	129	299	307	305	361	306	302	300	310
Minor Ions											
F	mg/L	0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	NA	1.1	1.6	2	2	2.6	1.9	1.5	1.5
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₂	mg/L	5	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	55	NA	30	<10	<10	<10	<10	<10	<10	<10
As	µg/L	13	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	2.4	<1	2	2	2	2	3	<1	<1	<1
Fe	µg/L	4900	NA	<50	<50	<50	<50	<50	4200	4220	4300
Mn	µg/L	87	NA	36	42	16	17	33	22	23	22
Se	µg/L	11	NA	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 3316 WB (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	3/05/2014	9/10/2014	16/04/2015	2/10/2015	1/04/2016	5/10/2016	4/04/2017	2/11/2017	17/04/2018
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	6.5-7.5	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.96	6.77	7.97	7.98	7.67	7.95	7.8	7.81	7.56
EC (Lab)	µS/cm	7460, 5629	5570	5700	5530	5570	5190	5410	5440	5450	5420
TDS (Lab)	mg/L	5000	3630	3270	3120	3200	3630	3160	3320	3610	3660
Major Ions											
Ca	mg/L	1000	178	185	274	217	205	232	246	276	212
Mg	mg/L	NA	34	35	37	37	35	36	41	39	38
Na	mg/L	NA	917	940	765	759	800	782	823	812	760
K	mg/L	NA	34	26	7	7	7	7	8	7	7
Cl	mg/L	NA	1640	1780	1540	1420	1720	1660	1730	1730	1540
HCO ₃	mg/L	NA	76	65	120	118	107	106	133	99	107
SO ₄	mg/L	1000, 31	28	27	35	19	7	5	8	3	3
Minor Ions											
F	mg/L	0.2	0.1	<0.1	0.1	0.1	0.1	0.2	<1.0	0.1	0.2
Total N	mg/L	NA	2	1.6	1.8	1.8	1.8	1.7	1.3	1.6	1.7
NO ₂	mg/L	30	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	400, 5	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	1	2	3	3	3	3	3	4	3
Cu	µg/L	1000, 1.4	1	1	<1	1	1	<1	<1	<1	<1
Fe	µg/L	600	<50	<50	<50	440	560	640	70	440	280
Mn	µg/L	230	61	67	174	223	223	219	181	235	216
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	10

Groundwater Bore No. 3316 WB (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	19/07/2022		18/10/2022	19/01/2023	18-05-2023	06-09-2023			
			8:30 AM	3:40							
pH (Field)	pH units	6.5-7.5	7		7.34	7.11	7.57	7.24			
EC (Field)	µS/cm	-	5156		5805	5410	5040	5499			
pH (Lab)	pH units	-	7.52		7.82	7.67	7.80	7.65			
EC (Lab)	µS/cm	7460, 5629	5450		5510	5280	3,960	5,570			
TDS (Lab)	mg/L	5000	3450		3580	3840	3,270	3,070			
Major Ions											
Ca	mg/L	1000	191		220	186	181	194			
Mg	mg/L	NA	40		33	36	39	36			
Na	mg/L	NA	824		794	758	859	794			
K	mg/L	NA	8		8	7	8	7			
Cl	mg/L	NA	1770		1660	1730	1,680	1,710			
HCO ₃	mg/L	NA	77		73	72					
SO ₄	mg/L	1000, 31	3		<1	2	3	2			
Minor Ions											
F	mg/L	0.2	0.1		0.1	0.1	0.1	0.1			
Total N	mg/L	NA	1.6		1.8	1.9	0.06	1.1			
NO ₂	mg/L	30	<0.01		<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	400, 5	0.16		0.02	<0.01	0.06	<0.01			
Dissolved Metals											
Al	µg/L	5000, 55	<10		<10	<10	<10	<10			
As	µg/L	50, 13	2		<1	1	1	2			
Cu	µg/L	1000, 1.4	<1		<1	<1	<1	<1			
Fe	µg/L	600	300		130	600	640	580			
Mn	µg/L	230	182		226	216	227	242			
Se	µg/L	20, 11	<10		<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 2289PcR Lower (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	29/04/2014	1/10/2014	15/04/2015	29/09/2015	29/03/2016	27/09/2016	29/03/2017	1/11/2017	16/04/2018
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	7.14	7.65	7.69	7.63	7.09	8.21	7.53	7.28	7.22
EC (Field)	□S/cm	-	5489	5542	3582	4380	4606	4690	4693	4340	5093
pH (Lab)	pH units	-	7.73	7.69	7.86	7.59	7.91	7.78	7.88	7.79	7.46
EC (Lab)	□S/cm	NA	4800	4730	4310	4780	4710	4770	4640	4620	4570
TDS (Lab)	mg/L	NA	3400	2590	2640	3330	3000	2880	3190	3250	3100
Major Ions											
Ca	mg/L	NA	228	194	197	254	252	243	212	230	213
Mg	mg/L	NA	78	76	54	64	75	77	76	74	73
Na	mg/L	NA	629	642	487	548	602	586	605	558	561
K	mg/L	NA	20	29	14	11	13	13	12	13	13
Cl	mg/L	NA	1430	1210	1120	1230	1330	1290	1320	1360	1190
HCO ₃	mg/L	NA	144	131	143	137	137	139	142	137	133
SO ₄	mg/L	NA	293	274	245	245	256	263	250	235	242
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.8	0.7	1	0.4	0.6	0.4	0.5	0.7	0.6
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	<10	20	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	<50	<50	220	840	1060	1010	1000	900	1000
Mn	µg/L	NA	77	48	40	64	60	58	62	59	58
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 2289PcR Lower (Balgowan Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	21/07/2022	19/10/2022	26/01/2023	16-05-2023	29-08-2023			
			8:29 AM	10:08 AM	2:25 PM	12:01	9:44			
pH (Field)	pH units	NA	7.49	7.32	7.04	7.47	7.35			
EC (Field)	□S/cm	-	4320	4909	4549	4079	24320			
pH (Lab)	pH units	-	7.69	8.07	7.85	7.96	8.08			
EC (Lab)	□S/cm	NA	4580	4770	4220	4,520	24,500			
TDS (Lab)	mg/L	NA	3150	3100	3390	2,920	16,900			
Major Ions										
Ca	mg/L	NA	198	233	189	177	227			
Mg	mg/L	NA	73	67	72	71	482			
Na	mg/L	NA	597	579	602	594	4,650			
K	mg/L	NA	13	14	13	13	4			
Cl	mg/L	NA	1350	1340	1400	1,300	7,770			
HCO ₃	mg/L	NA	126	141	133					
SO ₄	mg/L	NA	253	259	264	256	2,240			
Minor Ions										
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	0.9			
Total N	mg/L	NA	0.6	0.6	0.7	<0.01	2.3			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	2.32			
Dissolved Metals										
Al	µg/L	NA	<10	<10	<10	<10	<10			
As	µg/L	NA	<1	<1	<1	<1	<1			
Cu	µg/L	NA	<1	<1	<1	<1	<1			
Fe	µg/L	NA	1030	1030	1030	950	750			
Mn	µg/L	NA	62	65	64	58	46			
Se	µg/L	NA	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. BMH1 (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	16/04/2008 Time sampled	22/06/2011	14/12/2011	17/04/2012	17/10/2012	16/04/2013	31/10/2013	30/04/2014	2/10/2014
pH (Field)	pH units	6.0-8.5	-	8.04	7.57	6.81	7.58	7.4	7.05	7.4	7.81
EC (Field)	□S/cm	-	-	1445	1363	1458	1366	955	1313	1506	1405
pH (Lab)	pH units	-	8	8.02	8.05	7.73	7.84	7.9	7.94	7.94	7.26
EC (Lab)	□S/cm	7460, 1440	1400	1520	1250	1420	1440	1380	1440	1350	1380
TDS (Lab)	mg/L	5000	1300	871	774	923 ⁽¹⁾	881	797	782	749	723
Major Ions											
Ca	mg/L	1000	88	105	93	90	70	81	86	83	85
Mg	mg/L	NA	55	92	85	86	91	79	91	76	81
Na	mg/L	NA	220	92	84	93	109	88	93	91	98
K	mg/L	NA	2.4	1	1	1	2	1	2	1	2
Cl	mg/L	NA	85	91	97	87	113	97	105	100	95
HCO ₃	mg/L	NA	840	791	675	751	716	682	695	691	688
SO ₄	mg/L	1000, 18	11	13	11	24	20	17	16	17	18
Minor Ions											
F	mg/L	0.4	0.1	0.3	0.2	0.2	<0.1	0.3	0.3	0.3	0.2
Total N	mg/L	NA	18	14.7	7.8	14.3	13.3	13.2	13.9	13	14.7
NO ₂	mg/L	30	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	400, 16.9	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	5000, 55	40	<10	10	<10	20	20	<10	30	10
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	1	2	<1	<1	2	2	2	1	1
Fe	µg/L	220	340	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	20	98	7	10	3	14	7	9	10	6
Se	µg/L	20, 11	<5	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. BMH1 (Basalt, Main Range Volcanics) (continued)

Parameter	Units	Groundwater Limits	9/04/2019 Time sampled	22/10/2019	27/04/2020	9/11/2020	13/04/2021	15/12/2021	1/06/2022 3:33 PM	20/07/2022 3:07 PM	13/10/2022 4:10 PM
pH (Field)	pH units	6.0-8.5	6.65	6.74	6.99	6.66	6.48	7.19	6.76	6.81	6.77
EC (Field)	□S/cm	-	1137	1462	1288	1434	1336	682	1347	1402	1451
pH (Lab)	pH units	-	7.42	7.1	7.32	7.33	7.77	7.96	7.61	7.5	7.81
EC (Lab)	□S/cm	7460, 1440	1150	1330	1360	1420	1370	723	1440	1480	1480
TDS (Lab)	mg/L	5000	678	795	884	923	852	435	934	916	901
Major Ions											
Ca	mg/L	1000	84	91	92	97	101	30	107	100	107
Mg	mg/L	NA	72	85	87	84	88	22	98	99	105
Na	mg/L	NA	95	87	82	74	81	95	91	88	93
K	mg/L	NA	1	1	1	<1	1	<1	1	1	1
Cl	mg/L	NA	79	78	84	81	78	80	75	79	77
HCO ₃	mg/L	NA	580	735	706	741	783	335	733	792	861
SO ₄	mg/L	1000, 18	12	12	12	12	11	8	14	13	14
Minor Ions											
F	mg/L	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3
Total N	mg/L	NA	10	16	16.5	15.9	15.8	0.9	14.2	15.3	12.8
NO ₂	mg/L	30	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	400, 16.9	-	-	-	14.1	14.1	0.9	13.7	12.6	12.8
Dissolved Metals											
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	2	<1	4	<1	6	<1	<1	<1	4
Fe	µg/L	220	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	20	2	4	1	<1	4	4	<1	<1	<1
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

16/04/2015	1/10/2015	30/03/2016	28/09/2016	5/04/2017	3/11/2017	18/04/2018	3/10/2018
-	-	-	-	-	-	-	-
7.62	7.08	6.4	7.15	6.71	6.64	6.54	6.69
1173	1198	1268	1252	1399	1305	1379	1249
8.05	7.41	8.12	7.95	7.7	7.82	7.7	7.5
1280	1360	1310	1320	1380	1310	1270	1280
708	850	754	727	866	762	725	741
69	83	86	81	95	85	80	82
61	68	75	78	86	79	71	76
80	89	96	94	98	87	89	88
1	1	1	1	1	<1	<1	1
92	83	84	81	78	77	78	80
668	709	694	693	792	695	645	673
14	15	12	14	12	13	11	12
0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
13.5	16	13.9	14.3	15.8	15.2	13.9	12.6
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
<10	<10	<10	<10	<10	<10	<10	80
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	2	<1
<50	<50	<50	<50	<50	<50	<50	230
5	2	2	2	2	<1	2	6
<10	<10	<10	<10	<10	<10	<10	<10

18/01/2023	12-05-2023	29-08-2023				
2:29 PM	11:00	13:24				
6.47	6.71	6.66				
1489	2921	1421				
7.48	8.17	7.63				
1260	1,200	1,390				
897	819	807				
102	84	90				
100	91	90				
82	81	85				
1	1	1				
69	77	79				
813						
14	13	10				
0.3	0.2	0.3				
12.3	11.9	11.3				
<0.01	<0.01	<0.01				
12.3	11.9	10.6				
<10	<10	<10				
<1	<1	<1				
8	<1	<1				
<50	<50	<50				
<1	<1	<1				
<10	<10	<10				

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 2291Pc (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	9/06/2009	17/12/2009	1/07/2010	23/06/2011	13/12/2011	17/04/2012	16/10/2012	17/04/2013	31/10/2013
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	7.21	7.18	7.15	7.06	6.89	6.63
EC (Field)	□S/cm	-	-	-	-	6660	6040	7410	7515	5711	7096
pH (Lab)	pH units	-	7.6	7.2	7.2	7.61	7.9	7.74	7.49	7.72	7.75
EC (Lab)	□S/cm	NA	7900	7400	7700	7780	7320	7630	7550	7530	8150
TDS (Lab)	mg/L	NA	4700	4900	4600	4250	4510	4900	4470	5160	4850
Major Ions											
Ca	mg/L	NA	220	240	250	256	247	240	228	218	262
Mg	mg/L	NA	140	150	130	136	137	140	139	133	146
Na	mg/L	NA	1400	1400	1100	1200	1160	1170	1190	1020	1300
K	mg/L	NA	15	14	12	17	16	17	16	14	17
Cl	mg/L	NA	2200	2200	2200	1930	2150	2180	1990	1610	2170
HCO ₃	mg/L	NA	510	540	550	508	530	549	552	546	551
SO ₄	mg/L	NA	330	350	340	346	251	408	327	357	347
Minor Ions											
F	mg/L	NA	<0.1	0.5	0.22	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Total N	mg/L	NA	9.4	0.9	1.2	1.5	1.8	3.1	1.8	1.6	1.4
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	100	110	9	<10	1150	10	20	<10	<10
As	µg/L	NA	<1	<1	1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	3.9	5	5	<1	5	<1	1	<1	3
Fe	µg/L	NA	3200	3300	4000	2340	6250	2530	2880	2970	2160
Mn	µg/L	NA	100	76	85	44	100	53	37	30	37
Se	µg/L	NA	43	65	54	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 2291Pc (Balgowan Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	18/04/2018	4/10/2018	11/04/2019	23/10/2019	24/04/2020	3/11/2020	14/04/2021	13/10/2021	1/06/2022
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	6.95	7.17	7.7	7	7.03	6.52	6.73	7.5	6.94
EC (Field)	□S/cm	-	8955	7970	8418	8379	7163	7900	7638	7707	7525
pH (Lab)	pH units	-	7.6	7.7	7.6	7.2	8	7.52	7.85	7.93	7.78
EC (Lab)	□S/cm	NA	8330	8100	7930	7880	7830	7760	8090	7870	7870
TDS (Lab)	mg/L	NA	4810	5650	5850	5170	5090	5040	5290	5000	5430
Major Ions											
Ca	mg/L	NA	292	304	284	318	277	267	263	242	261
Mg	mg/L	NA	148	142	141	147	149	153	151	150	144
Na	mg/L	NA	1220	1210	1210	1120	1260	1190	1250	1290	1260
K	mg/L	NA	15	15	16	15	15	20	15	15	15
Cl	mg/L	NA	1830	2620	2510	2360	2510	2520	2460	2470	2420
HCO ₃	mg/L	NA	533	456	408	460	443	432	458	467	421
SO ₄	mg/L	NA	337	343	317	322	338	338	345	349	353
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	1.8	1.1	2.3	1	0.9	0.8	0.7	0.7	0.7
NO ₂	mg/L	NA	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Dissolved Metals											
Al	µg/L	NA	10	<10	60	170	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	<1	4	<1	<1	<1	2	<1	<1
Fe	µg/L	NA	2870	2270	1520	3170	3090	2790	2870	2790	2710
Mn	µg/L	NA	43	61	99	42	38	42	44	41	47
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

1/05/2014	3/10/2014	14/04/2015	29/09/2015	30/03/2016	29/09/2016	4/04/2017	31/10/2017
-	-	-	-	-	-	-	-
6.9	7.19	7.17	8.1	6.87	-	8.3	6.89
9290	8835	8316	8097	8130	3250	8008	8053
7.46	7.64	7.62	7.47	7.9	7.85	7.69	7.9
7440	8060	7860	8130	8120	8210	7980	8030
4560	4910	4960	5290	4950	4960	4510	4780
254	255	314	270	307	296	312	299
136	138	135	160	144	151	151	150
1160	1240	1120	1360	1220	1190	1250	1180
15	17	13	20	15	14	16	15
2320	1960	1980	1990	2600	2340	2390	2370
578	581	488	540	519	531	554	529
336	360	372	345	341	356	348	345
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1.7	1.9	2.2	1.5	1.1	1.6	0.7	0.9
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
20	<10	<10	<10	<10	<10	<10	<10
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
2970	1940	2720	<50	3280	2730	3160	2960
28	41	25	<1	32	31	31	47
<10	<10	<10	<10	<10	<10	<10	<10

19/07/2022	11/10/2022	17/01/2023	18-05-2023	04-09-2023		
11:32 AM	2:40 PM	12:32 PM	9:39	14:27		
6.48	6.93	6.73	6.88	6.81		
7838	7065	8100	7292	8250		
7.59	8	8.01	8.03	7.97		
8120	7820	7710	7.980	7.930		
5530	5590	5530	5.000	5.340		
256	258	254	245	282		
151	147	151	139	152		
1250	1240	1210	1,150	1,260		
15	15	15	15	15		
2550	2620	2490	2,450	2,480		
426	452	401				
335	341	336	322	321		
<0.1	<0.1	<0.1	<0.1	<0.1		
0.8	0.8	0.8	<0.01	0.6		
<0.01	<0.01	<0.01	<0.01	<0.01		
0.01	<0.01	<0.01	<0.01	<0.01		
<10	<10	<10	<10	<10		
<1	<1	<1	<1	<1		
<1	<1	<1	<1	<1		
2860	2860	2450	2710	2740		
50	50	50	55	58		
<10	<10	<10	<10	<10		

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 81Pc (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	12/10/2005	28/04/2006	25/10/2006	18/04/2007	17/10/2007	15/04/2008	29/10/2008	14/05/2009	10/12/2009
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.2	7.9	7.4	7.3	7.5	7.4	7.5	8	7.9
EC (Lab)	□S/cm	NA	6400	6500	7100	6200	6100	6500	6500	6700	6400
TDS (Lab)	mg/L	NA	3129	3161	3400	3900	3600	3700	3700	3800	3800
Major Ions											
Ca	mg/L	NA	230	230	240	200	200	210	200	220	200
Mg	mg/L	NA	97	91	100	93	96	100	100	100	98
Na	mg/L	NA	750	1000	870	960	940	940	1000	1000	960
K	mg/L	NA	12	16	16	14	12	16	14	14	13
Cl	mg/L	NA	1800	1600	1600	1800	1700	1700	1700	1800	1800
HCO ₃	mg/L	NA	305	361	430	320	350	370	370	350	390
SO ₄	mg/L	NA	250	240	220	240	270	260	260	250	260
Minor Ions											
F	mg/L	NA	0.1	0.2	<0.1	<0.1	<0.1	<0.1	-	0.2	<0.1
Total N	mg/L	NA	1.5	1.7	1.7	2.1	0.84	1.8	0.54	0.98	0.81
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	20	21	<1	48	65	25	57	810	820
As	µg/L	NA	18	14	<1	15	8.4	<1	<1	<1	<1
Cu	µg/L	NA	3	4	<2	<2	1.9	2.5	<1	<1	5
Fe	µg/L	NA	1500	1400	<5	580	820	1300	2000	4100	2200
Mn	µg/L	NA	570	130	<1	250	180	160	110	120	140
Se	µg/L	NA	9	6	<5	<5	37	39	41	39	50

Groundwater Bore No. 81Pc (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	7/10/2014	14/04/2015	29/09/2015	30/03/2016	6/10/2016	28/03/2017	27/10/2017	17/04/2018	28/09/2018
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	7.22	7.32	7.57	7.03	7.76	7.32	6.91	7.12	7.2
EC (Field)	□S/cm	-	6061	6212	6287	6344	4881	6299	6620	6883	6023
pH (Lab)	pH units	-	7.14	7.75	7.59	8.07	8.1	8.02	7.77	7.54	7.57
EC (Lab)	□S/cm	NA	6290	6120	6270	6250	6080	6150	6100	6090	6060
TDS (Lab)	mg/L	NA	3930	3720	4030	3790	3490	3740	3560	4020	4070
Major Ions											
Ca	mg/L	NA	206	264	253	254	258	215	234	212	222
Mg	mg/L	NA	96	90	80	98	101	100	91	95	94
Na	mg/L	NA	991	872	833	930	931	947	909	885	938
K	mg/L	NA	16	12	11	14	13	13	13	14	13
Cl	mg/L	NA	1650	1550	1560	1710	1680	1740	1770	1540	1770
HCO ₃	mg/L	NA	335	362	346	379	354	388	368	366	357
SO ₄	mg/L	NA	232	245	246	266	269	263	256	268	244
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.7	0.8	0.5	0.5	1	0.4	0.1	0.9	0.4
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	40	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	3	<1	1	1	<1	<1	<1	3	247
Fe	µg/L	NA	<50	<50	<50	80	<50	<50	<50	<50	<50
Mn	µg/L	NA	16	45	20	40	14	17	26	33	47
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

1/07/2010	22/06/2011	13/12/2011	17/04/2012	17/10/2012	17/04/2013	31/10/2013	1/05/2014
-	-	-	-	-	-	-	-
-	7.17	7.2	7.32	7.51	8.03	6.8	7.02
-	5450	5030	5950	5528	8085	5709	7140
7.4	7.73	7.99	7.85	7.8	8.17	7.82	7.64
6300	6270	5880	6130	6100	5950	6420	5860
3800	3650	3840	3740	3480	3530	3620	3820

190	211	211	197	179	164	199	210
80	89	97	97	100	87	95	96
980	849	967	932	963	857	1030	992
12	16	14	15	15	13	15	15
1800	1380	1720	1690	1590	1350	1750	1760
400	354	368	378	390	265	312	340
270	268	198	303	259	268	244	236

0.26	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
0.92	1.1	0.9	1.2	1.8	9.6	0.2	0.6
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

13	50	<10	30	50	40	70	<10
1	<1	<1	<1	<1	<1	<1	<1
4	<1	<1	2	2	1	1	<1
2000	1100	880	710	110	90	<50	<50
160	70	53	47	25	50	20	23
49	<10	<10	<10	<10	<10	<10	<10

3/04/2019	18/10/2019	24/04/2020	5/11/2020	15/04/2021	12/10/2021	3/06/2022	19/07/2022
-	-	-	-	-	-	8:35 AM	10:44 AM
7.05	6.89	7.13	6.64	6.81	6.66	7.04	6.5
6158	5638	3907	6113	5730	5706	5581	5848
7.53	7.41	8.13	7.91	8.02	7.43	7.78	7.65
6020	5940	5920	5960	6070	5790	5780	6070
4090	4040	3850	3870	3890	4040	3930	3920

306	267	212	197	192	181	188	187
99	90	96	102	96	95	92	95
969	871	959	919	922	958	950	936
14	14	13	18	13	14	13	14
1690	1670	1700	1740	1660	1670	1650	1760
345	328	326	323	339	366	317	307
243	241	251	262	263	269	260	257

<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
0.4	0.3	0.5	0.4	0.4	0.5	0.6	0.6
-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01

<10	<10	<10	<10	<10	<10	<10	<10
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
200	220	300	200	290	120	210	140
48	60	56	66	70	83	85	98
<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 81Pc (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	11/10/2022	17/01/2023	18-05-2023	06-09-2023
			1:30 PM	11:25 AM	15:12	10:45
pH (Field)	pH units	NA	7.02	6.77	7.12	6.47
EC (Field)	□S/cm	-	5566	6041	5543	6222
pH (Lab)	pH units	-	8.05	7.52	8.01	7.71
EC (Lab)	□S/cm	NA	5940	5580	4,340	6,240
TDS (Lab)	mg/L	NA	3840	3950	3,720	3,500
Major Ions						
Ca	mg/L	NA	197	186	172	229
Mg	mg/L	NA	96	96	93	120
Na	mg/L	NA	956	890	945	816
K	mg/L	NA	14	13	13	8
Cl	mg/L	NA	1760	1690	1,670	1,670
HCO ₃	mg/L	NA	333	318		
SO ₄	mg/L	NA	269	259	260	196
Minor Ions						
F	mg/L	NA	<0.1	<0.1	<0.1	0.1
Total N	mg/L	NA	0.5	0.5	0.01	0.4
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	<0.01	<0.01	0.01	0.21
Dissolved Metals						
Al	µg/L	NA	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1
Fe	µg/L	NA	120	170	340	660
Mn	µg/L	NA	100	94	95	960
Se	µg/L	NA	<10	<10	<10	<10

Groundwater Bore No. 82PcR2 (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	31/01/2023	18-05-2023	06-09-2023
			9:05 AM		10:02
pH (Field)	pH units	6.5-7.5	7.05		6.9
EC (Field)	□S/cm	-	6252		8789
pH (Lab)	pH units	-	7.66	7.88	7.99
EC (Lab)	□S/cm	7460, 9015	6880	8,330	8,940
TDS (Lab)	mg/L	5000	4140	5,540	5,470
Major Ions					
Ca	mg/L	1000	243	296	342
Mg	mg/L	NA	167	207	201
Na	mg/L	NA	1040	1,170	1,110
K	mg/L	NA	10	11	12
Cl	mg/L	NA	1620	2,400	2,810
HCO ₃	mg/L	NA	645		
SO ₄	mg/L	1000, 134	672	498	428
Minor Ions					
F	mg/L	0.8	0.1	<0.1	<0.1
Total N	mg/L	NA	1	<0.01	1.2
NO ₂	mg/L	30	<0.01	<0.01	<0.01
NO ₃	mg/L	400, 5	<0.01	<0.01	<0.01
Dissolved Metals					
Al	µg/L	5000, 55	20	<10	<10
As	µg/L	50, 13	<1	<1	<1
Cu	µg/L	1000, 1.4	<1	<1	<1
Fe	µg/L	100	2460	2380	2190
Mn	µg/L	87	121	125	109
Se	µg/L	20, 11	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 109P (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	4/10/2007 Time sampled	4/11/2013	3/05/2014	8/10/2014	20/04/2015	5/10/2015	4/04/2016	10/10/2016	6/04/2017
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	NA	NA	8.5	8.61	7.8	8.54	8.47	8.36	8.15	8.34
EC (Lab)	□S/cm	NA	NA	567	568	641	509	502	484	523	484
TDS (Lab)	mg/L	NA	NA	365	338	360	353	293	305	329	331
Major Ions											
Ca	mg/L	NA	6	12	12	13	11	8	8	12	10
Mg	mg/L	NA	1	1	1	2	2	<1	<1	1	1
Na	mg/L	NA	88	121	116	130	103	104	111	118	106
K	mg/L	NA	2	2	1	2	2	<1	1	1	1
Cl	mg/L	NA	68	39	14	24	21	15	19	15	15
HCO ₃	mg/L	NA	132	263	281	299	267	257	268	304	281
SO ₄	mg/L	NA	15	12	9	12	10	10	8	7	7
Minor Ions											
F	mg/L	NA	NA	0.5	0.3	0.2	0.4	0.4	0.4	0.4	0.4
Total N	mg/L	NA	NA	0.9	1	1.7	1.3	1.2	1.7	1.1	1.1
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	100	40	40	40	10	30	10	10
As	µg/L	NA	3	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	4	<1	2	2	1	23	8	3
Fe	µg/L	NA	NA	70	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	5	3	4	2	<1	2	1	<1
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 109P (Basalt, Main Range Volcanics) (Continued)

Parameter	Units	Groundwater Limits	18/01/2023	12-05-2023	28-08-2023						
			12:28 PM	9:50	16:22						
pH (Field)	pH units	NA	7.53	7.75	9.36						
EC (Field)	□S/cm	-	549	499.5	399						
pH (Lab)	pH units	-	8.45	8.45	7.80						
EC (Lab)	□S/cm	NA	537	528	373						
TDS (Lab)	mg/L	NA	342	331	248						
Major Ions											
Ca	mg/L	NA	14	12	4						
Mg	mg/L	NA	1	<1	2						
Na	mg/L	NA	114	112	70						
K	mg/L	NA	1	1	1						
Cl	mg/L	NA	22	22	71						
HCO ₃	mg/L	NA	278								
SO ₄	mg/L	NA	6	6	13						
Minor Ions											
F	mg/L	NA	0.3	0.3	0.4						
Total N	mg/L	NA	<0.1	<0.01	0.2						
NO ₂	mg/L	NA	<0.01	<0.01	<0.01						
NO ₃	mg/L	NA	0.07	<0.01	0.03						
Dissolved Metals											
Al	µg/L	NA	10	<10	240						
As	µg/L	NA	<1	<1	6						
Cu	µg/L	NA	4	8	<1						
Fe	µg/L	NA	<50	<50	220						
Mn	µg/L	NA	3	2	8						
Se	µg/L	NA	<10	<10	<10						

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 113Pgcb (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	5/10/2007 Time sampled	5/11/2013	3/05/2014	8/10/2014	17/04/2015	5/10/2015	5/04/2016	29/09/2016	10/04/2017
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	NA	NA	8.46	8.23	7.73	7.84	8.16	7.67	7.97	7.51
EC (Lab)	□S/cm	NA	NA	2530	4670	6470	6480	6420	6280	6490	6260
TDS (Lab)	mg/L	NA	NA	1400	2730	3990	3720	3980	3990	3900	4050
Major Ions											
Ca	mg/L	NA	131	18	111	183	219	180	184	193	200
Mg	mg/L	NA	100	26	110	197	186	180	188	175	192
Na	mg/L	NA	748	484	714	948	856	821	900	823	856
K	mg/L	NA	8	3	4	6	5	5	5	5	5
Cl	mg/L	NA	1190	614	1110	1620	1750	1450	1830	1640	1700
HCO ₃	mg/L	NA	552	426	470	493	508	509	523	526	534
SO ₄	mg/L	NA	184	70	207	335	413	343	353	359	378
Minor Ions											
F	mg/L	NA	NA	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6
Total N	mg/L	NA	NA	0.6	0.7	0.2	0.4	0.3	0.7	0.4	0.4
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	30	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	310	<50	<50	2360	2340	2120	2380
Mn	µg/L	NA	NA	63	58	112	122	35	58	66	48
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 113Pgcb (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	8/02/2023 12:45 PM	10-05-2023 13:05	07-09-2023 7:33
pH (Field)	pH units	NA	6.87	7.25	7.04
EC (Field)	□S/cm	-	6029	5512	6092
pH (Lab)	pH units	NA	7.99	8.07	7.82
EC (Lab)	□S/cm	NA	6050	4,070	5,990
TDS (Lab)	mg/L	NA	4040	3,750	3,670
Major Ions					
Ca	mg/L	NA	180	141	168
Mg	mg/L	NA	180	168	180
Na	mg/L	NA	855	752	818
K	mg/L	NA	5	5	5
Cl	mg/L	NA	1600	1,560	1,510
HCO ₃	mg/L	NA	472		
SO ₄	mg/L	NA	320	308	300
Minor Ions					
F	mg/L	NA	0.4	0.5	0.5
Total N	mg/L	NA	0.8	<0.01	0.3
NO ₂	mg/L	NA	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	0.02	<0.01	<0.01
Dissolved Metals					
Al	µg/L	NA	<10	<10	<10
As	µg/L	NA	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1
Fe	µg/L	NA	2060	2360	<50
Mn	µg/L	NA	32	37	<1
Se	µg/L	NA	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 118P (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	4/10/2007 Time sampled	5/11/2013	3/05/2014	8/10/2014	17/04/2015	5/10/2015	6/04/2016	30/09/2016	12/04/2017
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	NA	NA	7.91	7.81	7.46	7.25	7.81	7.22	7.97	7.12
EC (Lab)	µS/cm	NA	NA	16300	17700	20000	20300	15800	16100	15500	15900
TDS (Lab)	mg/L	NA	NA	11200	12500	15000	13200	10500	10500	11000	13200
Major Ions											
Ca	mg/L	NA	319	629	644	780	928	584	556	593	621
Mg	mg/L	NA	164	365	376	495	507	338	352	341	377
Na	mg/L	NA	1620	2450	2690	2770	2840	2240	2440	2240	2400
K	mg/L	NA	14	21	15	19	12	10	11	10	11
Cl	mg/L	NA	3270	5630	5710	6540	7200	5300	5790	5400	5580
HCO ₃	mg/L	NA	238	283	270	337	357	293	327	318	345
SO ₄	mg/L	NA	317	705	700	802	1040	634	659	622	690
Minor Ions											
F	mg/L	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	NA	3.3	3.7	2.3	3	1.5	2.5	2.1	2.6
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	1	2	1	2	<1	2	<1	<1	<1
Fe	µg/L	NA	NA	<50	870	1750	1640	5160	5400	5120	5560
Mn	µg/L	NA	NA	202	190	220	239	270	278	256	262
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 118P (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	7/02/2023 1:40 PM	10-05-2023	31-08-2023
pH (Field)	pH units	NA	5.75	6.68	6.48
EC (Field)	µS/cm	-	20546	18706	21041
pH (Lab)	pH units	-	7.5	7.86	7.73
EC (Lab)	µS/cm	NA	21000	20,700	20,800
TDS (Lab)	mg/L	NA	16700	15,500	15,300
Major Ions					
Ca	mg/L	NA	805	673	743
Mg	mg/L	NA	539	524	518
Na	mg/L	NA	3140	3,260	3,200
K	mg/L	NA	13	13	13
Cl	mg/L	NA	7220	6,880	7,440
HCO ₃	mg/L	NA	338		
SO ₄	mg/L	NA	857	872	915
Minor Ions					
F	mg/L	NA	<1.0	<0.1	<0.1
Total N	mg/L	NA	2.8	<0.01	2.6
NO ₂	mg/L	NA	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	0.01	<0.01	<0.01
Dissolved Metals					
Al	µg/L	NA	<10	<10	20
As	µg/L	NA	<1	<1	<1
Cu	µg/L	NA	3	<1	<1
Fe	µg/L	NA	8500	7780	7750
Mn	µg/L	NA	391	342	325
Se	µg/L	NA	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 119P (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	5/10/2007 Time sampled	5/11/2013	5/05/2014	9/10/2014	21/04/2015	6/10/2015	6/04/2016	6/10/2016	11/04/2017
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	NA	NA	8.47	8.49	7.91	8.09	8.43	8.09	8.42	7.87
EC (Lab)	□S/cm	NA	NA	2270	2490	2740	2530	2360	2290	2310	2360
TDS (Lab)	mg/L	NA	NA	1290	1320	1310	1370	1280	1260	1300	1300
Major Ions											
Ca	mg/L	NA	38	20	27	35	41	32	31	34	33
Mg	mg/L	NA	40	16	11	12	11	13	13	13	13
Na	mg/L	NA	338	449	443	537	448	417	454	420	446
K	mg/L	NA	4	5	4	4	4	4	4	4	4
Cl	mg/L	NA	402	587	632	678	672	557	604	569	612
HCO ₃	mg/L	NA	499	338	271	294	303	327	356	344	354
SO ₄	mg/L	NA	43	41	35	36	31	40	44	46	47
Minor Ions											
F	mg/L	NA	NA	0.1	0.1	<0.1	0.1	0.1	0.1	0.1	0.1
Total N	mg/L	NA	NA	0.6	0.8	0.7	0.8	0.6	0.5	0.4	0.6
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	110	<10	<10	<10	30	<10	<10	<10
As	µg/L	NA	2	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	1	<1	<1	2	1	<1	<1	<1
Fe	µg/L	NA	NA	50	<50	<50	<50	70	80	90	80
Mn	µg/L	NA	NA	2	3	7	6	12	12	12	12
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 119P (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	19/01/2023	19-05-2023	06-09-2023						
			2:48 PM	10:27	14:05						
pH (Field)	pH units	NA	7.25	7.62	7.33						
EC (Field)	□S/cm	-	7648	2406	2733						
pH (Lab)	pH units	-	8.14	8.38	8.16						
EC (Lab)	□S/cm	NA	2600	2,330	2,640						
TDS (Lab)	mg/L	NA	1480	1,380	1,440						
Major Ions											
Ca	mg/L	NA	40	39	40						
Mg	mg/L	NA	22	20	25						
Na	mg/L	NA	441	512	461						
K	mg/L	NA	4	4	4						
Cl	mg/L	NA	728	680	738						
HCO ₃	mg/L	NA	310								
SO ₄	mg/L	NA	71	62	66						
Minor Ions											
F	mg/L	NA	<0.1	<0.1	0.1						
Total N	mg/L	NA	0.8	<0.01	0.5						
NO ₂	mg/L	NA	<0.01	<0.01	<0.01						
NO ₃	mg/L	NA	<0.01	<0.01	<0.01						
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10						
As	µg/L	NA	<1	<1	<1						
Cu	µg/L	NA	<1	<1	<1						
Fe	µg/L	NA	100	90	100						
Mn	µg/L	NA	33	26	35						
Se	µg/L	NA	<10	<10	<10						

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 112P (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2013	5/05/2014	8/10/2014	20/04/2015	6/10/2015	31/03/2016	28/09/2016	6/04/2017	2/11/2017
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.07	8.15	7.62	7.65	8.08	7.7	8.02	7.99	8.07
EC (Lab)	□S/cm	NA	3110	3110	3200	3200	3270	3260	3400	3340	3410
TDS (Lab)	mg/L	NA	2040	1800	1810	1830	1820	1870	1720	1920	1940
Major Ions											
Ca	mg/L	NA	79	85	101	124	109	109	119	121	125
Mg	mg/L	NA	44	37	47	40	42	44	42	46	47
Na	mg/L	NA	528	471	552	488	501	545	498	532	530
K	mg/L	NA	7	5	7	6	6	6	6	6	6
Cl	mg/L	NA	725	701	703	754	721	802	777	823	832
HCO ₃	mg/L	NA	508	461	531	518.5	500.2	539	498	421	497
SO ₄	mg/L	NA	167	150	159	154	154	160	160	154	143
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	6.6	3.7	1.7	2.4	3.1	1.7	4.5	3.9	1.3
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	4	2	3	3	3	3	3	13	<1
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	42	27	30	1860	125	145	81	76	147
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 114P (Coal, Acland)

Parameter	Units	Groundwater Limits	5/11/2013	5/05/2014	9/10/2014	21/04/2015	6/10/2015	4/04/2016	13/10/2016	7/04/2017	28/10/2017
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8	8.09	7.83	8.17	8.18	8.23	7.72	8.14	8.04
EC (Lab)	□S/cm	NA	6720	6440	6520	6330	6320	6260	6390	6220	6180
TDS (Lab)	mg/L	NA	4000	3500	3700	3380	3670	3600	3540	3650	3410
Major Ions											
Ca	mg/L	NA	125	126	116	149	123	127	152	144	147
Mg	mg/L	NA	51	43	44	36	40	44	46	44	43
Na	mg/L	NA	1210	1150	1120	1100	1070	1170	1140	1140	1120
K	mg/L	NA	10	8	9	8	8	8	8	7	7
Cl	mg/L	NA	1640	1650	1560	1760	1460	1890	1700	1730	1760
HCO ₃	mg/L	NA	380	346	310	300.12	276	349	361	364	390
SO ₄	mg/L	NA	274	214	236	249	216	234	226	211	196
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	1.5	1.6	1.5	2.2	3.7	2.6	1.4	1.2	1.4
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	10	<10	<10	<10	<10	10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	4	2	6	5	<1	<1	<1
Fe	µg/L	NA	920	1030	<50	<50	<50	<50	1260	1200	1210
Mn	µg/L	NA	85	58	31	20	18	24	48	46	46
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

8/10/2018	15/04/2019	29/10/2019	5/05/2020	17-05-2023	01-09-2023		
-	-	-	-	9:27	10:43		
-	-	-	-	7.71	7.57		
-	-	-	-	3410	3559		
7.97	7.63	7.82	7.84	8.03	7.99		
3470	3470	3500	3470	3,610	3,570		
1960	2020	1970	2260	2,010	2,030		
129	138	150	139	54	62		
48	52	51	59	9	9		
547	567	562	647	640	644		
6	7	7	8	4	5		
882	835	870	856	1,110	1,000		
480.3706413	499	368	436				
155	147	157	155	24	26		
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
1.2	2	2.4	2	0.01	1.1		
-	-	-	-	<0.01	<0.01		
-	-	-	-	0.01	<0.01		
<10	440	<10	170	<10	<10		
<1	<1	<1	<1	<1	<1		
<1	3	<1	3	<1	<1		
<50	620	<50	560	<50	<50		
133	147	170	134	108	95		
<10	<10	<10	<10	<10	<10		

10/04/2018	28/09/2018	2/04/2019	14/10/2019	21/04/2020	16/10/2020	11/10/2022	17/01/2023	16-05-2023	06-09-2023
-	-	-	-	-	-	11:00 AM	9:12 AM	13:22	14:45
-	-	-	-	-	7.36	7.33	7.17	7.45	6.95
-	-	-	-	-	5640	5649	6252	5835	6312
8.09	7.75	7.72	8.23	8.12	7.94	8.13	8.23	8.13	8.02
6160	6130	6030	6020	6230	6320	6130	5910	6,210	6,420
3120	3870	3610	3330	4050	4110	3420	3620	3,490	3,680
117	138	131	109	116	181	125	113	96	118
41	42	43	38	38	185	38	40	40	42
1060	1100	1080	1030	1110	852	1100	1130	1,090	1,090
7	7	7	7	7	5	8	7	7	8
1680	1490	1580	1670	1690	1630	2050	1740	1,710	1,710
319	397	386	290	306	596	367	354		
198	199	179	181	186	335	231	224	211	223
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1.5	1.5	1.6	1.5	1.6	1.4	1.6	1.6	0.22	1.4
-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
-	-	-	-	-	<0.01	<0.01	<0.01	0.22	0.69
<10	<10	<10	<10	<10	<10	<10	<10	10	<10
<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2	<1	<1	29	14	<1	<1	2	<1	<1
1160	1110	1260	1010	940	-	1060	1200	1210	280
47	47	46	41	53	49	49	58	50	9
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 116P (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2013	5/05/2014	9/10/2014	21/04/2015	6/10/2015	4/04/2016	13/10/2016	28/10/2017	10/04/2018
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.14	8.2	7.8	7.97	8.29	7.98	7.85	8.03	8.2
EC (Lab)	□S/cm	NA	2970	2940	2990	2960	2980	2900	3060	2910	2850
TDS (Lab)	mg/L	NA	1640	1600	1530	1580	1680	1600	1740	1600	1600
Major Ions											
Ca	mg/L	NA	57	69	62	90	69	67	83	82	66
Mg	mg/L	NA	31	29	29	26	26	27	30	28	27
Na	mg/L	NA	545	542	559	480	480	527	518	508	474
K	mg/L	NA	6	5	5	5	4	5	5	5	5
Cl	mg/L	NA	740	703	649	727	678	737	694	748	714
HCO ₃	mg/L	NA	501	462	484	516	500	525	494	519	439
SO ₄	mg/L	NA	52	50	52	56	52	54	57	53	52
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	1	1	0.8	0.9	1	0.9	0.8	0.8	0.9
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	80	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	2	2	2	<1	<1	<1	<1	<1
Fe	µg/L	NA	170	<50	<50	<50	660	90	630	500	510
Mn	µg/L	NA	42	11	12	6	5	7	12	27	26
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 3307 WB (Coal Backfill)

Parameter	Units	Groundwater Limits	30/04/2014	2/10/2014	15/04/2015	5/10/2015	31/03/2016	27/09/2016	4/04/2017	1/11/2017	13/04/2018
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.17	6.59	7.21	7.7	7.4	7.62	7.41	7.53	7.06
EC (Lab)	□S/cm	NA	7080	8400	8030	8060	8120	8910	8560	8710	8540
TDS (Lab)	mg/L	NA	4740	5890	5760	5270	6110	6560	5740	6110	6710
Major Ions											
Ca	mg/L	NA	404	498	505	469	553	552	541	541	558
Mg	mg/L	NA	226	319	283	287	402	385	456	476	438
Na	mg/L	NA	820	836	803	796	796	787	803	803	813
K	mg/L	NA	17	23	17	18	17	17	18	17	17
Cl	mg/L	NA	2120	1900	1820	1650	2360	2180	2280	2280	1920
HCO ₃	mg/L	NA	493	540	580	527	719	717	752	710	707
SO ₄	mg/L	NA	693	937	968	1050	1310	1310	1380	1440	1330
Minor Ions											
F	mg/L	NA	0.4	0.3	0.5	0.4	0.3	0.4	0.5	0.4	0.5
Total N	mg/L	NA	1.4	1.5	1.5	1.6	1.2	1	1.3	1	1.5
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	2	3	1
Cu	µg/L	NA	6	3	<1	<1	1	2	1	<1	<1
Fe	µg/L	NA	<50	1560	1890	2090	<50	<50	60	110	120
Mn	µg/L	NA	1230	1940	1680	1700	3830	3460	3820	4400	3710
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

26/09/2018	4/04/2019	15/10/2019	23/04/2020	4/11/2020	11/10/2022	17/01/2023	08-05-2023	07-09-2023
-	-	-	-	-	3:24 PM	10:25 AM	13:22	9:20
-	-	-	-	6.89	7.6	7.13	7.45	7.25
-	-	-	-	2989	4822	2880	5835	2948
7.8	7.9	8.25	8.21	7.92	7.82	8.17	8.08	7.93
2900	2850	2850	2800	2800	5330	2420	2,500	2,890
1680	1620	1570	1820	1820	3700	1650	1,650	1,590
77	100	62	60	68	196	63	57	58
28	30	26	23	30	40	28	28	24
502	521	514	452	483	820	489	531	453
5	5	5	5	7	8	5	5	5
682	728	710	719	734	2000	748	717	670
525	510	398	467	612	101	463		
51	53	58	54	53	3	47	75	51
<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
0.8	0.8	1.2	0.9	2.2	1.7	1	<0.01	0.8
-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
<10	<10	<10	<10	610	<10	<10	<10	*
<1	<1	<1	<1	<1	2	<1	<1	<1
<1	<1	31	<1	4	<1	<1	<1	<1
530	630	440	440	1750	80	520	650	*
23	14	38	26	36	204	31	15	*
<10	<10	<10	<10	<10	<10	<10	<10	*

10/10/2018	22-05-2023	04-09-2023					
-	13:12	15:17					
-	6.4	6.2					
-	9050	10018					
7.18	7.53	7.60					
8980	9,890	10,100					
7780	7,610	9,420					
494	601	635					
445	414	412					
758	1,070	1,020					
16	19	21					
2330	2,580	2,580					
730							
1480	1,520	1,570					
0.4	0.4	0.5					
1.7	0.03	1.3					
-	<0.01	<0.01					
-	0.03	<0.01					
<10	<10	<10					
2	<1	<1					
<1	<1	<1					
300	160	610					
3850	2670	2500					
<10	<10	<10					

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW05A (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	21/06/2016 Time sampled	30/09/2016	9/01/2017	7/04/2017	13/07/2017	25/10/2017	9/01/2018	6/04/2018	18/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.06	8.28	7.81	8.13	7.44	8.1	7.51	7.53	7.33
EC (Lab)	□S/cm	NA	1425	1300	1320	1310	1330	1300	1320	1300	1300
TDS (Lab)	mg/L	NA	760	725	750	844	783	845	727	756	771
Major Ions											
Ca	mg/L	NA	59	82	88	84	80	81	84	85	81
Mg	mg/L	NA	52	58	60	61	62	59	59	58	58
Na	mg/L	NA	120	125	136	135	135	132	127	125	127
K	mg/L	NA	1.1	1	1	1	1	1	1	1	1
Cl	mg/L	NA	69	61	63	64	67	71	68	63	65
HCO ₃	mg/L	NA	744	716	710	671	673	718	665	684	668
SO ₄	mg/L	NA	5.7	16	16	17	15	17	16	14	14
Minor Ions											
F	mg/L	NA	NA	0.9	0.9	0.9	0.9	0.9	0.9	1	0.9
Total N	mg/L	NA	NA	18.7	17.2	17.3	17.9	18.2	19	17.5	18.8
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	<1	1	<1	<1	<1	<1	<1	<1
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW05A (Basalt, Main Range Volcanics) (continued)

Parameter	Units	Groundwater Limits	14/10/2020 Time sampled	11/02/2021	12/10/2022	18/01/2023	12-05-2023	30-08-2023			
pH (Field)	pH units	NA	6.88	6.86	6.85	6.95	7.54	8.55			
EC (Field)	□S/cm	-	991	1245	1312	1282	1140	1294			
pH (Lab)	pH units	-	7.85	7.39	8.02	8.55	8.09	8.10			
EC (Lab)	□S/cm	NA	1310	1250	1260	1020	1,190	1,240			
TDS (Lab)	mg/L	NA	852	812	815	616	746	774			
Major Ions											
Ca	mg/L	NA	80	77	90	24	78	87			
Mg	mg/L	NA	56	54	62	4	56	59			
Na	mg/L	NA	129	116	136	211	118	132			
K	mg/L	NA	1	1	1	3	1	1			
Cl	mg/L	NA	64	62	70	125	69	71			
HCO ₃	mg/L	NA	816	548	716	405					
SO ₄	mg/L	NA	16	16	15	22	15	15			
Minor Ions											
F	mg/L	NA	0.8	0.9	0.9	0.1	0.8	0.9			
Total N	mg/L	NA	16.8	16.3	15.5	0.2	11.5	12.8			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	15.1	14.4	12.7	<0.01	11.5	10.9			
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10			
As	µg/L	NA	<1	<1	<1	<1	<1	<1			
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1			
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50			
Mn	µg/L	NA	<1	1	<1	<1	<1	<1			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW05B (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	21/06/2016	12/10/2016	9/01/2017	5/04/2017	11/07/2017	29/10/2017	13/01/2018	13/04/2018	18/07/2018
			Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.1	8.71	8.33	8.34	8.41	8.36	8.2	8.14	8.1
EC (Lab)	□S/cm	NA	1256	1060	1060	1060	1100	1070	1100	1050	1060
TDS (Lab)	mg/L	NA	600	652	618	584	674	614	628	615	617
Major Ions											
Ca	mg/L	NA	12	22	23	21	19	22	21	23	21
Mg	mg/L	NA	3.4	4	4	3	3	3	4	4	4
Na	mg/L	NA	190	233	230	229	214	224	220	225	221
K	mg/L	NA	2.5	3	3	3	2	3	3	3	3
Cl	mg/L	NA	82	85	87	89	94	101	93	91	97
HCO ₃	mg/L	NA	549	425	501	503	525	472	552	488	468
SO ₄	mg/L	NA	13	36	38	32	35	36	32	32	31
Minor Ions											
F	mg/L	NA	NA	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2
Total N	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	<0.1	0.2	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	1	<1	1
Cu	µg/L	NA	NA	<1	2	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	8	8	7	7	8	8	8	7
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW05B (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	13/10/2020	11/02/2021	12/10/2022	18/01/2023	12-05-2023	30-08-2023		
			Time sampled							
pH (Field)	pH units	NA	7.93	7.95	7.81	7.7	8.40	9.30		
EC (Field)	□S/cm	-	1030	1065	1082	1069	968	1073		
pH (Lab)	pH units	-	8.41	8.18	8.37	8.1	8.55	8.43		
EC (Lab)	□S/cm	NA	1060	1040	1080	1100	1,020	1,050		
TDS (Lab)	mg/L	NA	689	676	639	771	582	610		
Major Ions										
Ca	mg/L	NA	21	20	22	83	19	22		
Mg	mg/L	NA	4	3	4	61	3	4		
Na	mg/L	NA	225	214	236	123	202	228		
K	mg/L	NA	3	3	3	1	3	3		
Cl	mg/L	NA	103	108	129	69	124	135		
HCO ₃	mg/L	NA	549	383	447	662				
SO ₄	mg/L	NA	32	31	26	15	22	21		
Minor Ions										
F	mg/L	NA	0.2	0.2	0.2	0.8	0.1	0.2		
Total N	mg/L	NA	0.2	0.1	0.2	12.2	<0.01	0.3		
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	11.5	<0.01	<0.01		
Dissolved Metals										
Al	µg/L	NA	<10	<10	<10	<10	<10	<10		
As	µg/L	NA	<1	<1	<1	<1	<1	<1		
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1		
Fe	µg/L	NA	-	<50	<50	<50	<50	<50		
Mn	µg/L	NA	7	7	11	2	10	10		
Se	µg/L	NA	<10	<10	<10	<10	<10	<10		

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW06B (Acland Coal Sequence)

		Groundwater	23/06/2016	14/10/2016	12/01/2017	6/04/2017	12/07/2017	28/10/2017	12/01/2018	12/04/2018	19/07/2018
Parameter	Units	Limits	Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.78	8.73	8.71	8.73	8.79	8.76	8.73	8.7	8.58
EC (Lab)	□S/cm	NA	999	1080	1030	1030	1060	1040	1080	1020	1030
TDS (Lab)	mg/L	NA	560	625	609	596	627	573	431	581	567
Major Ions											
Ca	mg/L	NA	1.2	2	1	1	1	1	1	2	1
Mg	mg/L	NA	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	210	238	246	229	227	238	231	236	235
K	mg/L	NA	0.8	<1	<1	<1	<1	<1	<1	<1	<1
Cl	mg/L	NA	150	138	138	143	150	160	146	144	159
HCO ₃	mg/L	NA	427	344	354	362	389	354	329	350	356
SO ₄	mg/L	NA	<5	<1	<1	<1	<1	<1	<1	<1	<1
Minor Ions											
F	mg/L	NA	NA	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total N	mg/L	NA	NA	0.2	1	0.2	0.3	0.2	0.2	0.3	0.1
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	3	3	3	3	3	3	2	3
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW06B (Acland Coal Sequence) (continued)

		Groundwater	16/10/2020	9/02/2021	30/11/2022	8/02/2023	11-05-2023	30-08-2023			
Parameter	Units	Limits	Time sampled								
pH (Field)	pH units	NA	8.9	8.78	8.77	8.2	15.47	14.04			
EC (Field)	□S/cm	-	929	1092	1088	1076	996	1093			
pH (Lab)	pH units	-	8.83	8.79	7.78	8.64	8.58	8.55			
EC (Lab)	□S/cm	NA	1090	1040	1090	1070	1,040	1,050			
TDS (Lab)	mg/L	NA	708	676	617	656	609	593			
Major Ions											
Ca	mg/L	NA	1	1	2	2	2	1			
Mg	mg/L	NA	<1	<1	<1	<1	<1	<1			
Na	mg/L	NA	247	234	246	254	232	257			
K	mg/L	NA	<1	<1	1	<1	<1	<1			
Cl	mg/L	NA	159	164	156	172	174	184			
HCO ₃	mg/L	NA	419	276	361	339					
SO ₄	mg/L	NA	<1	<1	<1	<1	<1	<1			
Minor Ions											
F	mg/L	NA	0.3	0.5	0.5	0.4	0.4	0.5			
Total N	mg/L	NA	0.2	0.2	0.2	0.5	<0.01	0.3			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	0.01	<0.01	<0.01			
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	10	<10	<10			
As	µg/L	NA	<1	<1	<1	<1	<1	<1			
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1			
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50			
Mn	µg/L	NA	3	3	3	10	9	5			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW07B (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	28/06/2016 Time sampled	13/10/2016	10/01/2017	14/07/2017	28/10/2017	12/01/2018	12/04/2018	20/07/2018	27/09/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.09	8.2	8.19	8.17	8.36	8.18	8.07	8.04	8.23
EC (Lab)	µS/cm	NA	724	743	752	767	746	810	764	721	798
TDS (Lab)	mg/L	NA	410	412	443	565	412	470	439	397	487
Major Ions											
Ca	mg/L	NA	14	15	14	13	14	15	16	13	15
Mg	mg/L	NA	2.4	2	2	2	2	2	2	2	2
Na	mg/L	NA	140	149	153	157	150	155	154	146	156
K	mg/L	NA	2.1	2	2	2	2	2	2	2	2
Cl	mg/L	NA	100	90	93	98	102	100	96	95	114
HCO ₃	mg/L	NA	317	270	300	292	287	285	297	273	305
SO ₄	mg/L	NA	<5	5	5	6	7	6	5	5	6
Minor Ions											
F	mg/L	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	NA	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
NH ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	2	2
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	13	5	2	2	4	2	8	6
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW07B (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	11/02/2021 Time sampled	29/11/2022	17-05-2023 11:15	06-09-2023 13:12
pH (Field)	pH units	NA	8.04	-	7.86	7.87
EC (Field)	µS/cm	-	825	-	1755	1315
pH (Lab)	pH units	-	7.82	-	8.26	8.37
EC (Lab)	µS/cm	NA	796	-	1,820	1,230
TDS (Lab)	mg/L	NA	517	-	962	678
Major Ions						
Ca	mg/L	NA	16	18	14	9
Mg	mg/L	NA	2	3	3	1
Na	mg/L	NA	173	165	354	259
K	mg/L	NA	2	2	3	2
Cl	mg/L	NA	115	-	479	261
HCO ₃	mg/L	NA	268	-	-	-
SO ₄	mg/L	NA	7	-	22	31
Minor Ions						
F	mg/L	NA	<0.1	-	0.1	0.1
Total N	mg/L	NA	0.1	0.2	<0.01	0.2
NO ₂	mg/L	NA	<0.01	-	<0.01	<0.01
NO ₃	mg/L	NA	0.14	-	<0.01	<0.01
Dissolved Metals						
Al	µg/L	NA	<10	<10	<10	<10
As	µg/L	NA	<1	<1	1	1
Cu	µg/L	NA	<1	<1	<1	<1
Fe	µg/L	NA	<50	<0.05	50	<50
Mn	µg/L	NA	4	3	53	13
Se	µg/L	NA	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW08B (Coal, Acland) This is not an EA Bore

		Groundwater	23/06/2016	5/10/2016	11/01/2017	11/04/2017	11/07/2017	31/10/2017	11/01/2018	19/04/2018	19/07/2018
Parameter	Units	Limits	Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.71	8.86	8.64	8.74	8.8	8.78	8.71	8.81	8.67
EC (Lab)	□S/cm	NA	1236	1250	1190	1230	1300	1260	1320	1280	1280
TDS (Lab)	mg/L	NA	720	788	899	760	783	750	768	750	746
Major Ions											
Ca	mg/L	NA	0.9	2	2	2	2	2	2	2	2
Mg	mg/L	NA	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	270	304	298	307	300	306	302	300	314
K	mg/L	NA	0.9	<1	<1	<1	<1	<1	<1	<1	<1
Cl	mg/L	NA	90	74	79	78	82	82	82	80	82
HCO ₃	mg/L	NA	732	592	603	590	664	608	575	613	605
SO ₄	mg/L	NA	<5	2	2	1	<1	<1	<1	<1	1
Minor Ions											
F	mg/L	NA	NA	0.7	0.7	0.8	0.6	0.6	0.7	0.7	0.7
Total N	mg/L	NA	NA	0.2	0.3	0.4	0.3	0.3	0.2	0.3	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	10	<10	<10	<10	<10	120	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	60	<50
Mn	µg/L	NA	NA	2	2	2	2	2	2	3	2
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW08B (continued) This is not an EA Bore

		Groundwater	10/11/2020	9/02/2021	26/01/2023	24-05-2023	05-09-2023			
Parameter	Units	Limits	Time sampled							
pH (Field)	pH units	NA	8.79	8.7	8.44	8.40	8.58			
EC (Field)	□S/cm	-	1281	1270	1242	1132	1264			
pH (Lab)	pH units	-	8.77	8.83	8.76	8.87	8.74			
EC (Lab)	□S/cm	NA	1230	1220	1210	1,250	1,200			
TDS (Lab)	mg/L	NA	800	793	760	768	710			
Major Ions										
Ca	mg/L	NA	1	2	2	2	2			
Mg	mg/L	NA	<1	<1	<1	<1	<1			
Na	mg/L	NA	284	304	307	324	311			
K	mg/L	NA	<1	1	1	1	1			
Cl	mg/L	NA	78	75	79	78	88			
HCO ₃	mg/L	NA	705	493	605					
SO ₄	mg/L	NA	<1	<1	<1	<1	<1			
Minor Ions										
F	mg/L	NA	0.6	0.7	0.5	0.6	0.7			
Total N	mg/L	NA	0.3	0.2	0.4	<0.01	0.2			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01			
Dissolved Metals										
Al	µg/L	NA	<10	<10	<10	<10	10			
As	µg/L	NA	<1	<1	<1	<1	<1			
Cu	µg/L	NA	<1	<1	<1	<1	<1			
Fe	µg/L	NA	<50	<50	<50	<50	<50			
Mn	µg/L	NA	2	2	2	2	3			
Se	µg/L	NA	<10	<10	<10	<10	<10			

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW08C (Marburg Sandstone)

Parameter	Units	Groundwater Limits	25/06/2016 Time sampled	15/10/2016	11/01/2017	8/04/2017	11/07/2017	26/10/2017	12/01/2018	10/04/2018	17/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.54	8.51	8.53	8.65	8.63	8.62	8.45	8.71	8.75
EC (Lab)	□S/cm	NA	1533	1500	1520	1620	1810	1950	2140	2240	2210
TDS (Lab)	mg/L	NA	760	831	850	918	1010	1270	918	1290	1240
Major Ions											
Ca	mg/L	NA	2.4	3	3	3	4	4	5	6	5
Mg	mg/L	NA	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	290	341	352	366	382	435	426	442	462
K	mg/L	NA	1.4	2	2	2	1	2	2	2	2
Cl	mg/L	NA	170	182	213	271	333	447	472	557	478
HCO ₃	mg/L	NA	658	554	567	500	542	467	401	347	430
SO ₄	mg/L	NA	<5	2	3	5	8	14	15	20	13
Minor Ions											
F	mg/L	NA	NA	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.4
Total N	mg/L	NA	NA	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	20	20	20	20	20	20	20	60
As	µg/L	NA	NA	4	5	5	6	6	5	6	16
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	90	60	60	50	9	<50	<50	<50
Mn	µg/L	NA	NA	13	12	13	15	16	19	20	14
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW08C (Marburg Sandstone) (continued)

Parameter	Units	Groundwater Limits	13/10/2020	9/02/2021	29/11/2022	26/01/2023	11-05-2023	05-09-2023		
			Time sampled							
pH (Field)	pH units	NA	8.69	8.57	8.45	8.34	8.45	8.21		
EC (Field)	□S/cm	-	2296	2616	2528	2581	2442	2636		
pH (Lab)	pH units	-	8.71	8.72	8.58	8.48	8.44	8.39		
EC (Lab)	□S/cm	NA	2390	2410	2280	2460	2,550	2,590		
TDS (Lab)	mg/L	NA	1550	1570	1330	1370	1,410	1,380		
Major Ions										
Ca	mg/L	NA	7	8	7	8	8	8		
Mg	mg/L	NA	<1	<1	<1	<1	<1	<1		
Na	mg/L	NA	500	510	518	531	498	521		
K	mg/L	NA	2	2	3	3	3	2		
Cl	mg/L	NA	603	650	619	716	735	733		
HCO ₃	mg/L	NA	409	260	318	301				
SO ₄	mg/L	NA	18	18	12	17	16	14		
Minor Ions										
F	mg/L	NA	0.2	0.2	0.2	0.2	0.2	0.2		
Total N	mg/L	NA	0.4	0.4	0.3	0.5	<0.01	0.4		
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	0.01	<0.01	<0.01		
Dissolved Metals										
Al	µg/L	NA	70	50	50	40	40	40		
As	µg/L	NA	14	12	0.01	8	8	8		
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1		
Fe	µg/L	NA	-	<50	<50	<50	<50	50		
Mn	µg/L	NA	10	16	12	15	17	16		
Se	µg/L	NA	<10	<10	<10	<10	<10	<10		

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW09A (Oakey Creek Alluvium)

Parameter	Units	Groundwater Limits	26/06/2016 Time sampled	6/10/2016	10/01/2017	11/04/2017	13/07/2017	30/10/2017	9/01/2018	19/04/2018	20/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.1	8.29	7.99	7.48	7.58	7.87	7.75	7.86	7.45
EC (Lab)	□S/cm	NA	2427	2760	2770	2750	2810	2790	2830	2900	2780
TDS (Lab)	mg/L	NA	1500	1540	1540	1630	1600	1600	1560	1630	1760
Major Ions											
Ca	mg/L	NA	81	95	90	89	85	88	93	91	90
Mg	mg/L	NA	86	94	91	95	98	98	94	93	95
Na	mg/L	NA	310	352	341	341	359	339	325	339	339
K	mg/L	NA	2.3	2	2	2	2	2	2	2	2
Cl	mg/L	NA	680	685	690	706	708	715	708	725	743
HCO ₃	mg/L	NA	524	514	505	520	484	512	468	494	458
SO ₄	mg/L	NA	8.5	22	21	23	21	21	23	21	25
Minor Ions											
F	mg/L	NA	NA	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3
Total N	mg/L	NA	NA	2	1.9	2.1	2.1	2.2	2.1	2	2.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	90	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	3	1	1	<1	<1	<1	<1	1
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW09A (Oakey Creek Alluvium) (continued)

Parameter	Units	Groundwater Limits	10/11/2020 Time sampled	11/02/2021	30/11/2022	7/02/2023	09-05-2023	07-09-2023
pH (Field)	pH units	NA	7.08	7.11	7.06	5.83	9.53	9.58
EC (Field)	□S/cm	-	2801	2812	2911	2806	2561	3005
pH (Lab)	pH units	-	7.77	7.55	7.82	7.96	8.07	7.75
EC (Lab)	□S/cm	NA	2780	2790	2560	2890	2,360	2,980
TDS (Lab)	mg/L	NA	1810	1810	1720	1890	1,720	1,740
Major Ions								
Ca	mg/L	NA	83	81	97	93	88	90
Mg	mg/L	NA	85	90	98	99	102	98
Na	mg/L	NA	313	320	347	365	376	342
K	mg/L	NA	2	2	3	3	3	2
Cl	mg/L	NA	740	768	697	774	738	742
HCO ₃	mg/L	NA	556	396	445	434		
SO ₄	mg/L	NA	21	22	19	20	20	18
Minor Ions								
F	mg/L	NA	0.3	0.3	0.3	0.3	0.3	0.3
Total N	mg/L	NA	1.8	1.9	2.5	2.5	2.13	2.2
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	1.74	1.73	2.27	2.19	2.13	2.05
Dissolved Metals								
Al	µg/L	NA	<10	<10	<10	<10	10	*
As	µg/L	NA	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	<50	<50	<50	<50	<50	*
Mn	µg/L	NA	<1	<1	3	1	<1	*
Se	µg/L	NA	<10	<10	<10	<10	<10	*

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW09B (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	26/06/2016 Time sampled	6/10/2016	10/01/2017	11/04/2017	13/07/2017	31/10/2017	10/01/2018	19/04/2018	20/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.38	8.41	8.07	7.63	7.74	7.98	7.9	7.99	7.69
EC (Lab)	□S/cm	NA	1736	2000	2040	2070	2160	2380	2250	2330	2290
TDS (Lab)	mg/L	NA	1100	1100	1150	1140	1230	1320	1260	1170	1280
Major Ions											
Ca	mg/L	NA	40	48	49	48	50	60	59	57	58
Mg	mg/L	NA	40	43	44	48	50	57	52	52	54
Na	mg/L	NA	290	314	330	333	354	356	338	346	354
K	mg/L	NA	2.8	3	3	3	3	3	3	4	4
Cl	mg/L	NA	360	377	400	419	440	542	493	514	539
HCO ₃	mg/L	NA	671	615	630	632	581	566	551	578	557
SO ₄	mg/L	NA	8.4	21	21	22	24	22	23	23	21
Minor Ions											
F	mg/L	NA	NA	0.6	0.6	0.7	0.6	0.5	0.5	0.6	0.5
Total N	mg/L	NA	NA	0.3	0.4	0.4	0.4	0.5	0.3	1.2	0.3
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	3	<1
Fe	µg/L	NA	NA	370	400	500	480	670	590	670	620
Mn	µg/L	NA	NA	8	12	8	8	8	7	9	9
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW09B (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	11/11/2020 Time sampled	12/02/2021	7/02/2023 10:50 AM	09-05-2023 11:05	07-09-2023 10:40
pH (Field)	pH units	NA	7.33	7.32	5.95	6.87	7.11
EC (Field)	□S/cm	-	2607	2641	2601	2244	2566
pH (Lab)	pH units	-	8.07	7.77	8.08	8.23	8.17
EC (Lab)	□S/cm	NA	2450	2470	2500	2,150	2,520
TDS (Lab)	mg/L	NA	1590	1600	1400	1,360	1,390
Major Ions							
Ca	mg/L	NA	62	69	68	66	61
Mg	mg/L	NA	62	71	62	65	61
Na	mg/L	NA	396	388	392	405	374
K	mg/L	NA	4	4	4	4	3
Cl	mg/L	NA	597	630	608	606	557
HCO ₃	mg/L	NA	606	459	512		
SO ₄	mg/L	NA	26	28	27	25	25
Minor Ions							
F	mg/L	NA	0.5	0.5	0.4	0.5	0.5
Total N	mg/L	NA	0.4	0.4	0.5	<0.01	0.3
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	<0.01	0.01	<0.01	<0.01	<0.01
Dissolved Metals							
Al	µg/L	NA	20	<10	<10	<10	*
As	µg/L	NA	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	<1	<1	<1	<1
Fe	µg/L	NA	380	640	740	780	*
Mn	µg/L	NA	10	8	10	9	*
Se	µg/L	NA	<10	<10	<10	<10	*

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW09C (Margburg Sandstone)

Parameter	Units	Groundwater Limits	26/06/2016 Time sampled	6/10/2016	10/01/2017	11/04/2017	13/07/2017	30/10/2017	10/01/2018	18/04/2018	19/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.68	8.34	8.07	7.74	7.98	8.13	8.08	8.13	7.92
EC (Lab)	□S/cm	NA	1814	1910	1920	1900	1950	1940	1930	1970	1920
TDS (Lab)	mg/L	NA	960	1080	1070	1050	1090	890	1090	905	1060
Major Ions											
Ca	mg/L	NA	40	44	46	44	42	46	49	45	45
Mg	mg/L	NA	5	5	5	5	5	5	5	5	5
Na	mg/L	NA	310	329	337	334	346	333	319	330	338
K	mg/L	NA	7.5	8	8	8	8	8	8	8	8
Cl	mg/L	NA	460	486	494	497	498	518	505	510	523
HCO ₃	mg/L	NA	256	237	239	251	233	319	227	228	229
SO ₄	mg/L	NA	14	42	41	41	40	42	43	40	39
Minor Ions											
F	mg/L	NA	NA	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	NA	0.3	0.4	0.6	0.4	0.6	0.4	0.4	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	130	270	140	160	140	130	150	150
Mn	µg/L	NA	NA	23	18	16	17	16	16	17	16
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW09C (Margburg Sandstone) (continued)

Parameter	Units	Groundwater Limits	10/11/2020 Time sampled	11/02/2021	7/02/2023	09-05-2023	07-09-2023
pH (Field)	pH units	NA	7.58	7.62	6.13	7.72	7.48
EC (Field)	□S/cm	-	1998	2001	2033	1714	1986
pH (Lab)	pH units	-	8.02	7.55	8.17	8.17	7.97
EC (Lab)	□S/cm	NA	1910	1910	1930	1,800	1,950
TDS (Lab)	mg/L	NA	1240	1240	1100	1,060	1,070
Major Ions							
Ca	mg/L	NA	44	49	50	50	47
Mg	mg/L	NA	5	6	6	6	5
Na	mg/L	NA	303	349	363	357	336
K	mg/L	NA	8	9	8	8	8
Cl	mg/L	NA	517	531	514	520	486
HCO ₃	mg/L	NA	278	212	243		
SO ₄	mg/L	NA	41	42	38	26	33
Minor Ions							
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.4	0.4	0.7	<0.01	0.5
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	<0.01	<0.01	0.02	<0.01	<0.01
Dissolved Metals							
Al	µg/L	NA	<10	<10	40	<10	*
As	µg/L	NA	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1
Fe	µg/L	NA	140	150	<50	<50	*
Mn	µg/L	NA	16	17	18	22	*
Se	µg/L	NA	<10	<10	<10	<10	*

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW10 (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	23/06/2016 Time sampled	14/10/2016	10/01/2017	7/04/2017	13/07/2017	26/10/2017	10/01/2018	11/04/2018	20/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.53	7.96	8.06	8.23	7.95	8.22	8.07	7.84	7.94
EC (Lab)	□S/cm	NA	2847	3080	2970	2990	2980	2910	2950	2840	2710
TDS (Lab)	mg/L	NA	1600	1720	1680	1660	1740	1890	1630	1580	1380
Major Ions											
Ca	mg/L	NA	52	67	58	59	57	56	70	73	53
Mg	mg/L	NA	13	14	13	14	13	14	13	13	12
Na	mg/L	NA	480	543	525	535	538	537	509	516	492
K	mg/L	NA	4.4	5	5	5	4	5	5	4	4
Cl	mg/L	NA	830	815	802	846	810	863	817	754	782
HCO ₃	mg/L	NA	293	292	312	290	303	328	301	312	322
SO ₄	mg/L	NA	5.6	15	13	15	14	18	16	16	16
Minor Ions											
F	mg/L	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	NA	0.9	1	0.8	0.8	2.6	0.8	1	0.7
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	2	<1	<1	<1	<1	1
Fe	µg/L	NA	NA	330	310	310	350	230	290	350	220
Mn	µg/L	NA	NA	11	8	11	10	10	10	10	10
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW10 (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	14/10/2020	10/02/2021	12/10/2022	19/01/2023	09-05-2023	05-09-2023		
			Time sampled				15:30	13:18		
pH (Field)	pH units	NA	7.68	7.62	7.58	7.44	7.49	7.5		
EC (Field)	□S/cm	-	2158	2758	2543	2786	2428	2833		
pH (Lab)	pH units	-	8.22	8.1	8.29	8.1	8.25	8.29		
EC (Lab)	□S/cm	NA	2910	2780	2780	2750	2,550	2,730		
TDS (Lab)	mg/L	NA	1890	1810	1560	1550	1,530	1,460		
Major Ions										
Ca	mg/L	NA	52	47	51	54	52	46		
Mg	mg/L	NA	12	12	13	13	13	12		
Na	mg/L	NA	520	483	530	476	550	485		
K	mg/L	NA	5	4	5	4	5	4		
Cl	mg/L	NA	782	814	829	811	793	802		
HCO ₃	mg/L	NA	386	281	326	312				
SO ₄	mg/L	NA	19	16	16	18	16	16		
Minor Ions										
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Total N	mg/L	NA	0.8	0.8	0.9	0.8	0.03	0.7		
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	0.03	<0.01		
Dissolved Metals										
Al	µg/L	NA	<10	<10	<10	<10	<10	<10		
As	µg/L	NA	<1	<1	<1	<1	<1	<1		
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1		
Fe	µg/L	NA	350	280	310	310	340	310		
Mn	µg/L	NA	9	7	7	7	8	8		
Se	µg/L	NA	<10	<10	<10	<10	<10	<10		

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW11A (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	21/06/2016 Time sampled	29/09/2016	12/01/2017	10/04/2017	10/07/2017	29/10/2017	9/01/2018	18/04/2018	18/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.45	8.3	8.3	7.86	8.21	8.22	8.26	8.17	8.14
EC (Lab)	□S/cm	NA	1702	1230	1090	942	958	1010	974	950	1030
TDS (Lab)	mg/L	NA	890	695	633	564	533	577	540	540	588
Major Ions											
Ca	mg/L	NA	50	32	28	22	19	26	24	24	28
Mg	mg/L	NA	9	5	4	3	3	4	3	3	4
Na	mg/L	NA	240	214	196	166	177	174	159	161	173
K	mg/L	NA	2.8	2	2	2	2	2	2	2	2
Cl	mg/L	NA	270	224	210	208	211	228	206	213	231
HCO ₃	mg/L	NA	354	245	207	173	165	166	143	141	154
SO ₄	mg/L	NA	41	85	59	38	35	52	44	42	54
Minor Ions											
F	mg/L	NA	NA	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2
Total N	mg/L	NA	NA	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.3	<0.1
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	10	20
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	49	41	31	28	32	32	33	31
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW11A (Basalt, Main Range Volcanics) (continued)

Parameter	Units	Groundwater Limits	2/11/2020 Time sampled	10/02/2021	30/11/2022	18/01/2023	19-05-2023	28-09-2023			
pH (Field)	pH units	NA	8.42	8.05	7.19	7.26	8.25	14.32			
EC (Field)	□S/cm	-	974	1095	1354	1298	1407	1294			
pH (Lab)	pH units	-	8.26	7.25	8.04	8.15	8.16	7.70			
EC (Lab)	□S/cm	NA	989	1000	1330	1230	1,550	1,580			
TDS (Lab)	mg/L	NA	643	650	791	784	879	881			
Major Ions											
Ca	mg/L	NA	30	30	62	53	81	79			
Mg	mg/L	NA	4	4	14	12	61	59			
Na	mg/L	NA	157	162	188	196	186	177			
K	mg/L	NA	3	2	7	6	2	2			
Cl	mg/L	NA	256	264	284	320	220	195			
HCO ₃	mg/L	NA	177	149	171	174					
SO ₄	mg/L	NA	21	18	62	22	34	33			
Minor Ions											
F	mg/L	NA	0.2	0.2	0.2	0.3	1.2	1.3			
Total N	mg/L	NA	<0.1	<0.1	0.2	0.1	8.42	10.2			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	0.02			
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	8.42	8.15			
Dissolved Metals											
Al	µg/L	NA	20	10	<10	<10	<10	<10			
As	µg/L	NA	<1	3	<1	<1	<1	<1			
Cu	µg/L	NA	58	<1	<1	<1	<1	3			
Fe	µg/L	NA	60	<50	100	110	<50	80			
Mn	µg/L	NA	34	22	71	56	8	52			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW11B (Marburg Sandstone)

Parameter	Units	Groundwater Limits	21/06/2016 Time sampled	15/10/2016	12/01/2017	10/07/2017	29/10/2017	13/01/2018	13/04/2018	18/07/2018	28/09/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.37	7.34	7.64	7.48	7.44	7.08	7.17	6.95	7.05
EC (Lab)	µS/cm	NA	4024	3280	3200	3220	3170	3280	3090	3100	3150
TDS (Lab)	mg/L	NA	1800	1830	1890	1860	2010	1870	1890	2020	1810
Major Ions											
Ca	mg/L	NA	92	109	116	110	116	117	122	109	105
Mg	mg/L	NA	75	70	60	59	61	56	57	58	57
Na	mg/L	NA	390	427	432	422	428	415	415	417	419
K	mg/L	NA	25	20	18	18	18	17	18	18	17
Cl	mg/L	NA	800	856	863	828	921	874	808	914	850
HCO ₃	mg/L	NA	329	250	260	254	255	221	235	221	221
SO ₄	mg/L	NA	32	95	95	95	95	94	98	96	98
Minor Ions											
F	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total N	mg/L	NA	NA	0.1	<0.1	0.1	<0.1	<0.1	0.2	0.1	<0.1
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<0.01	<10	<10	<10	<10
As	µg/L	NA	NA	25	26	24	0.025	22	19	23	22
Cu	µg/L	NA	NA	2	1	1	<0.001	<1	19	<1	<1
Fe	µg/L	NA	NA	330	350	460	0	530	540	550	600
Mn	µg/L	NA	NA	159	175	148	0.169	158	151	153	150
Se	µg/L	NA	NA	<10	<10	<10	<0.01	<10	<10	<10	<10

Groundwater Bore No. GW11B (Marburg Sandstone) (continued)

Parameter	Units	Groundwater Limits	10/02/2021 Time sampled	12/10/2022	18/01/2023	19-05-2023	28-08-2023				
pH (Field)	pH units	NA	6.55 11:30 AM 11:40	6.48	6.71	7.33	15:30				
EC (Field)	µS/cm	-	3302	3058	3226	2986	3297				
pH (Lab)	pH units	-	6.69	7.77	7.99	7.92	7.70				
EC (Lab)	µS/cm	NA	3110	3150	2480	2,790	3,210				
TDS (Lab)	mg/L	NA	2020	2070	1960	1,950	1,960				
Major Ions											
Ca	mg/L	NA	95	104	109	112	107				
Mg	mg/L	NA	54	61	60	64	65				
Na	mg/L	NA	391	441	435	464	431				
K	mg/L	NA	18	19	22	28	31				
Cl	mg/L	NA	915	945	864	900	819				
HCO ₃	mg/L	NA	189	229	255						
SO ₄	mg/L	NA	99	93	92	92	126				
Minor Ions											
F	mg/L	NA	0.2	0.2	0.2	0.2	0.2				
Total N	mg/L	NA	<0.1	0.2	0.3	<0.01	0.2				
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01				
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01				
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10				
As	µg/L	NA	16	16	16	13	15				
Cu	µg/L	NA	<1	<1	<1	<1	<1				
Fe	µg/L	NA	870	1100	1110	1160	1120				
Mn	µg/L	NA	165	162	170	167	167				
Se	µg/L	NA	<10	<10	<10	<10	<10				

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW12B (Coal, Acland) This is not an EA Bore

Parameter	Units	Groundwater Limits	22/06/2016	14/10/2016	12/01/2017	6/04/2017	12/07/2017	25/10/2017	9/01/2018	12/04/2018	18/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	NA	8.84	8.6	8.59	8.67	8.68	8.76	8.75	8.58	8.59
EC (Lab)	µS/cm	NA	1458	1330	1270	1230	1300	1150	1080	1160	1170
TDS (Lab)	mg/L	NA	640	735	709	714	637	748	601	673	746
Major Ions											
Ca	mg/L	NA	2.8	4	3	2	3	2	2	3	3
Mg	mg/L	NA	0.7	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	260	292	288	279	275	274	246	270	266
K	mg/L	NA	1.4	2	2	1	1	1	1	1	2
Cl	mg/L	NA	180	206	202	180	199	159	110	154	168
HCO ₃	mg/L	NA	451	372	397	405	432	461	437	429	400
SO ₄	mg/L	NA	<5	15	14	6.1	14	8	4	9	9
Minor Ions											
F	mg/L	NA	NA	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.4
Total N	mg/L	NA	NA	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	7	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	3	3	3	3	3	2	3	3
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW12B (continued) This is not an EA Bore

Parameter	Units	Groundwater Limits	4/11/2020	9/02/2021	25/01/2023	15-05-2023	31-08-2023
pH (Field)	pH units	NA	8.04	8.5	8.4	8.61	8.43
EC (Field)	µS/cm	-	1160	1147	1036	952	1036
pH (Lab)	pH units	NA	8.64	8.68	8.59	8.59	8.54
EC (Lab)	µS/cm	NA	1120	1100	1050	1,000	991
TDS (Lab)	mg/L	NA	728	715	659	606	564
Major Ions							
Ca	mg/L	NA	3	3	2	2	2
Mg	mg/L	NA	<1	<1	<1	<1	<1
Na	mg/L	NA	242	255	243	217	241
K	mg/L	NA	2	2	2	2	2
Cl	mg/L	NA	180	175	174	158	164
HCO ₃	mg/L	NA	455	295	349		
SO ₄	mg/L	NA	8	7	5	3	2
Minor Ions							
F	mg/L	NA	0.4	0.4	0.4	0.4	0.4
Total N	mg/L	NA	0.3	0.2	0.4	<0.01	0.3
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals							
Al	µg/L	NA	<10	<10	<10	<10	10
As	µg/L	NA	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1
Fe	µg/L	NA	<50	<50	<50	<50	<50
Mn	µg/L	NA	3	4	4	4	4
Se	µg/L	NA	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW13B (Waipanna Coal Sequence)

		Groundwater	28/06/2016	14/10/2016	11/01/2017	7/04/2017	14/07/2017	25/10/2017	12/01/2018	11/04/2018	19/07/2018
Parameter	Units	Limits	Time sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.47	8.42	8.47	8.62	8.5	8.68	8.48	8.4	8.37
EC (Lab)	□S/cm	NA	848	895	859	868	872	883	922	857	860
TDS (Lab)	mg/L	NA	470	496	525	519	519	574	537	472	477
Major Ions											
Ca	mg/L	NA	4.2	6	5	5	5	5	5	6	5
Mg	mg/L	NA	1.6	2	2	2	2	2	2	2	2
Na	mg/L	NA	190	200	211	205	209	208	204	246	198
K	mg/L	NA	1.6	2	2	2	2	2	2	2	2
Cl	mg/L	NA	68	58	60	61	63	70	63	61	63
HCO ₃	mg/L	NA	488	410	448	417	427	446	427	357	434
SO ₄	mg/L	NA	<5	<1	<1	<1	<1	<1	<1	<1	<1
Minor Ions											
F	mg/L	NA	NA	0.8	0.9	0.9	0.9	0.9	1	1	0.9
Total N	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	5	4	4	5	4	4	4	4
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW13B (Waipanna Coal Sequence) (continued)

		Groundwater	14/10/2020	10/02/2021	12/10/2022	7/02/2023	24-05-2023	05-09-2023			
Parameter	Units	Limits	Time sampled								
pH (Field)	pH units	NA	8.33	8.35	8.18	8.51	7.45	10.38			
EC (Field)	□S/cm	-	631	856	861	723	653	757			
pH (Lab)	pH units	-	8.62	8.35	8.53	8.5	8.61	8.46			
EC (Lab)	□S/cm	NA	869	825	829	739	745	705			
TDS (Lab)	mg/L	NA	565	536	498	496	431	412			
Major Ions											
Ca	mg/L	NA	5	5	6	9	9	8			
Mg	mg/L	NA	2	2	2	3	4	3			
Na	mg/L	NA	198	181	200	168	170	166			
K	mg/L	NA	2	2	2	2	2	2			
Cl	mg/L	NA	69	64	71	65	62	68			
HCO ₃	mg/L	NA	486	348	400	323					
SO ₄	mg/L	NA	<1	<1	<1	<1	<1	<1			
Minor Ions											
F	mg/L	NA	0.7	0.9	0.8	0.5	0.5	0.6			
Total N	mg/L	NA	0.1	0.2	0.2	0.5	<0.01	<0.1			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	0.01	<0.01	<0.01			
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10			
As	µg/L	NA	<1	<1	<1	<1	<1	<1			
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1			
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50			
Mn	µg/L	NA	4	4	6	9	9	9			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW15A (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	28/06/2016 Time sampled	14/10/2016	11/01/2017	7/04/2017	14/07/2017	25/10/2017	11/01/2018	11/04/2018	19/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.39	7.8	8.04	8.26	7.75	8.18	7.94	7.75	7.69
EC (Lab)	□S/cm	NA	1771	2000	1890	1900	1920	1890	1900	1870	1920
TDS (Lab)	mg/L	NA	1000	1110	1040	1150	1100	1230	1060	1060	1220
Major Ions											
Ca	mg/L	NA	88	109	100	103	97	102	107	111	104
Mg	mg/L	NA	66	74	65	71	74	72	70	71	72
Na	mg/L	NA	160	188	182	183	193	187	174	179	187
K	mg/L	NA	11	14	13	13	13	13	13	13	14
Cl	mg/L	NA	370	399	386	409	398	427	400	370	436
HCO ₃	mg/L	NA	549	493	522	478	503	532	484	519	488
SO ₄	mg/L	NA	13	38	36	35	32	33	31	29	28
Minor Ions											
F	mg/L	NA	NA	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3
Total N	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	1290	1130	1270	1360	1240	1190	1340	1360
Mn	µg/L	NA	NA	164	157	146	166	150	148	149	166
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW15A (Basalt, Main Range Volcanics) (continued)

Parameter	Units	Groundwater Limits	14/10/2020 Time sampled	10/02/2021	12/10/2022	31/01/2023	11-05-2023	05-09-2023			
pH (Field)	pH units	NA	7.38	7.38	7.31	7.13	8.25	9.59			
EC (Field)	□S/cm	-	1420	1928	1889	1938	1764	1963			
pH (Lab)	pH units	-	8.11	7.76	8.24	7.84	8.19	8.17			
EC (Lab)	□S/cm	NA	1960	1890	1910	1620	1,810	1,880			
TDS (Lab)	mg/L	NA	1270	1230	1240	1170	1,110	1,050			
Major Ions											
Ca	mg/L	NA	100	96	104	107	87	103			
Mg	mg/L	NA	70	69	74	73	69	70			
Na	mg/L	NA	187	173	191	197	170	187			
K	mg/L	NA	14	13	14	14	13	14			
Cl	mg/L	NA	414	439	441	426	436	429			
HCO ₃	mg/L	NA	602	426	519	479					
SO ₄	mg/L	NA	29	30	28	28	27	27			
Minor Ions											
F	mg/L	NA	0.4	0.3	0.3	0.3	0.3	0.3			
Total N	mg/L	NA	0.1	0.2	0.2	0.2	<0.01	0.1			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10			
As	µg/L	NA	<1	<1	<1	<1	<1	<1			
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1			
Fe	µg/L	NA	1400	1260	1300	1360	1280	1300			
Mn	µg/L	NA	154	178	170	173	165	172			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW16A (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	22/06/2016 Time sampled	5/10/2016	13/01/2017	11/04/2017	12/07/2017	31/10/2017	9/01/2018	17/04/2018	18/07/2018
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.1	7.91	7.83	7.4	7.49	7.5	7.56	7.39	7.35
EC (Lab)	□S/cm	NA	2126	1970	1990	1960	2050	1960	2030	2100	2010
TDS (Lab)	mg/L	NA	1100	1120	1110	1130	1170	1200	1140	1380	1340
Major Ions											
Ca	mg/L	NA	89	119	122	116	119	120	129	121	122
Mg	mg/L	NA	80	87	88	92	92	92	90	93	91
Na	mg/L	NA	160	161	162	162	168	161	156	153	158
K	mg/L	NA	8.8	9	10	9	10	9	10	10	10
Cl	mg/L	NA	350	381	382	382	420	392	419	418	436
HCO ₃	mg/L	NA	732	642	653	669	567	634	566	563	584
SO ₄	mg/L	NA	9.1	24	18	20	18	16	18	18	17
Minor Ions											
F	mg/L	NA	NA	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total N	mg/L	NA	NA	0.4	0.3	0.5	0.2	0.3	0.2	0.1	0.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	-
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	-
Dissolved Metals											
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	3	<1	<1	<1
Fe	µg/L	NA	NA	<50	50	<50	120	<50	<50	160	70
Mn	µg/L	NA	NA	39	22	21	20	13	12	18	11
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW16A (Basalt, Main Range Volcanics) (continued)

Parameter	Units	Groundwater Limits	4/11/2020	9/02/2021	30/11/2022	8/02/2023	15-05-2023	30-08-2023			
			Time sampled				15:30	10:22			
pH (Field)	pH units	NA	6.58	6.95	6.63	6.61	6.84	6.73			
EC (Field)	□S/cm	-	1991	2028	1744	1789	1554	1848			
pH (Lab)	pH units	-	7.74	7.81	7.68	7.89	8.11	8.12			
EC (Lab)	□S/cm	NA	1950	2020	1360	1710	1,590	1,710			
TDS (Lab)	mg/L	NA	1270	1310	1000	1020	963	993			
Major Ions											
Ca	mg/L	NA	117	125	109	106	91	111			
Mg	mg/L	NA	89	83	89	89	80	86			
Na	mg/L	NA	150	160	155	156	142	162			
K	mg/L	NA	12	10	10	9	8	10			
Cl	mg/L	NA	448	472	179	208	268	321			
HCO ₃	mg/L	NA	657	420	896	769					
SO ₄	mg/L	NA	18	19	11	12	14	16			
Minor Ions											
F	mg/L	NA	0.3	0.4	0.4	0.3	0.3	0.4			
Total N	mg/L	NA	0.1	<0.1	2	2.2	1.34	1.1			
NO ₂	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
NO ₃	mg/L	NA	0.1	0.05	1.78	1.76	1.34	0.91			
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10			
As	µg/L	NA	<1	<1	<1	<1	<1	<1			
Cu	µg/L	NA	3	<1	<1	3	<1	<1			
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50			
Mn	µg/L	NA	10	14	5	2	2	1			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10			

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 132WBR (Balgowan Coal Sequence) **This is not an EA Bore**

Parameter	Units	Groundwater Limits	24/01/2023	18-05-2023	29-08-2023
			2:47 PM	7:35	14:10
pH (Field)	pH units	NA	6.49	6.54	6.42
EC (Field)	µS/cm	-	7128	6426	7291
pH (Lab)	pH units	-	7.27	7.99	7.63
EC (Lab)	µS/cm	NA	6380	7,030	7,300
TDS (Lab)	mg/L	NA	4790	4,710	4,450
Major Ions					
Ca	mg/L	NA	257	236	237
Mg	mg/L	NA	187	187	197
Na	mg/L	NA	1100	1,150	1,120
K	mg/L	NA	11	10	11
Cl	mg/L	NA	1510	1,440	1,410
HCO ₃	mg/L	NA	979		
SO ₄	mg/L	NA	941	1,050	955
Minor Ions					
F	mg/L	NA	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.3	0.03	0.2
NO ₂	mg/L	NA	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	<0.01	0.03	<0.01
Dissolved Metals					
Al	µg/L	NA	<10	<10	
As	µg/L	NA	2	3	1
Cu	µg/L	NA	<1	<1	<1
Fe	µg/L	NA	1140	1350	
Mn	µg/L	NA	498	465	
Se	µg/L	NA	<10	<10	

Groundwater Bore No. 133WBR (Balgowan Coal Sequence) **This is not an EA Bore**

Parameter	Units	Groundwater Limits	24/01/2023	18-05-2023	29-08-2023
			1:56 PM	8:42	14:48
pH (Field)	pH units	NA	7.61	7.86	7.6
EC (Field)	µS/cm	-	676	373	397.9
pH (Lab)	pH units	-	7.81	8.25	8.01
EC (Lab)	µS/cm	NA	606	432	388
TDS (Lab)	mg/L	NA	373	259	237
Major Ions					
Ca	mg/L	NA	14	7	5
Mg	mg/L	NA	4	1	1
Na	mg/L	NA	120	90	79
K	mg/L	NA	2	2	1
Cl	mg/L	NA	103	60	53
HCO ₃	mg/L	NA	191		
SO ₄	mg/L	NA	18	7	6
Minor Ions					
F	mg/L	NA	0.2	0.2	0.2
Total N	mg/L	NA	<0.1	<0.01	<0.1
NO ₂	mg/L	NA	<0.01	<0.01	<0.01
NO ₃	mg/L	NA	0.01	<0.01	<0.01
Dissolved Metals					
Al	µg/L	NA	<10	50	<10
As	µg/L	NA	1	1	1
Cu	µg/L	NA	<1	<1	<1
Fe	µg/L	NA	<50	130	<50
Mn	µg/L	NA	24	24	16
Se	µg/L	NA	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. BCS4 (Coal, Balgowan)

Parameter	Units	Groundwater Limits	26/01/2023	23-05-2023	06-09-2023
			10:09 AM	14:55	8:18
pH (Field)	pH units	NA	7	7.75	7.47
EC (Field)	µS/cm	-	5202	3629	3684
pH (Lab)	pH units	-	7.94	8.10	7.89
EC (Lab)	µS/cm	NA	4820	3,720	3,570
TDS (Lab)	mg/L	NA	3030	2,060	1,970
Major Ions					
Ca	mg/L	NA	100	57	44
Mg	mg/L	NA	21	6	5
Na	mg/L	NA	939	727	659
K	mg/L	NA	6	4	4
Cl	mg/L	NA	1500	1,040	1,060
HCO ₃	mg/L	NA	182		
SO ₄	mg/L	NA	207	160	140
Minor Ions					
F	mg/L	NA	<0.1	<0.1	<0.1
Total N	mg/L	NA	1.3	<0.01	0.7
NO ₃	mg/L	NA	<0.01	<0.01	<0.01
NO ₂	mg/L	NA	<0.01	<0.01	<0.01
Dissolved Metals					
Al	µg/L	NA	<10	<10	<10
As	µg/L	NA	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1
Fe	µg/L	NA	120	70	<50
Mn	µg/L	NA	244	100	76
Se	µg/L	NA	<10	<10	<10
Ba	µg/L	NA	193	-	-

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5.

Groundwater Bore No. 21P Note this is not an EA Bore

Parameter	Units	Groundwater Limits	13/10/2020	24/01/2023	23-05-2023	05-09-2023
			Date Sampled		12:57	14:19
pH (Field)	pH units	NA	6.67	6.61	7.41	6.56
EC (Field)	µS/cm	-	1602	1091	2047	1664
pH (Lab)	pH units	-	7.52	7.25	8.33	7.74
EC (Lab)	µS/cm	NA	1690	1630	1,800	1,640
TDS (Lab)	mg/L	NA	1100	921	970	871
Major Ions						
Ca	mg/L	NA	27	29	35	30
Mg	mg/L	NA	30	30	34	33
Na	mg/L	NA	268	274	295	286
K	mg/L	NA	14	13	14	15
Cl	mg/L	NA	403	444	454	456
HCO ₃	mg/L	NA	351	312		
SO ₄	mg/L	NA	18	18	24	19
Minor Ions						
F	mg/L	NA	0.4	0.4	0.4	0.4
Total N	mg/L	NA	<0.1	0.2	0.02	<0.1
NO ₃	mg/L	NA	<0.01	<0.01	<0.01	<0.01
NO ₂	mg/L	NA	<0.01	<0.01	0.02	<0.01
Dissolved Metals						
Al	µg/L	NA	<10	<10	10	<10
As	µg/L	NA	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1
Fe	µg/L	NA	-	200	<50	300
Mn	µg/L	NA	10	25	194	50
Se	µg/L	NA	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 41P **Note this is not an EA Bore**

		Groundwater	24/01/2023	18-05-2023	29-08-2023
Parameter	Units	Limits	9:10 AM	10:50	9:00
pH (Field)	pH units	NA	6.51	6.66	6.42
EC (Field)	µS/cm	-	9306	8676	9394
pH (Lab)	pH units	-	7.04	7.85	7.70
EC (Lab)	µS/cm	NA	8130	9,180	9,320
TDS (Lab)	mg/L	NA	6760	6,280	6,330
Major Ions					
Ca	mg/L	NA	329	315	305
Mg	mg/L	NA	200	210	200
Na	mg/L	NA	1370	1,430	1,290
K	mg/L	NA	17	17	18
Cl	mg/L	NA	2900	2,820	2,880
HCO ₃	mg/L	NA	604		
SO ₄	mg/L	NA	541	551	531
Minor Ions					
F	mg/L	NA	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.7	0.02	0.8
NO ₃	mg/L	NA	<0.01	<0.01	<0.01
NO ₂	mg/L	NA	<0.01	0.02	<0.01
Dissolved Metals					
Al	µg/L	NA	<10	<10	<10
As	µg/L	NA	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1
Fe	µg/L	NA	5930	5660	6680
Mn	µg/L	NA	325	337	358
Se	µg/L	NA	<10	<10	<10

Groundwater Bore No. 48P **Note this is not an EA Bore**

		Groundwater	24/01/2023	17-05-2023	05-09-2023
Parameter	Units	Limits	10:13 AM	14:59	15:22
pH (Field)	pH units	NA	6.58	6.57	6.33
EC (Field)	µS/cm	-	5113	9100	9923
pH (Lab)	pH units	-	7.28	8.00	7.75
EC (Lab)	µS/cm	NA	4610	9,800	10,200
TDS (Lab)	mg/L	NA	3450	6,710	6,530
Major Ions					
Ca	mg/L	NA	182	328	400
Mg	mg/L	NA	153	408	413
Na	mg/L	NA	662	1,120	1,150
K	mg/L	NA	13	17	19
Cl	mg/L	NA	1360	2,600	2,600
HCO ₃	mg/L	NA	593		
SO ₄	mg/L	NA	250	764	794
Minor Ions					
F	mg/L	NA	0.4	0.4	0.4
Total N	mg/L	NA	26.2	153	171
NO ₃	mg/L	NA	0.02	0.02	0.04
NO ₂	mg/L	NA	25.5	153	162
Dissolved Metals					
Al	µg/L	NA	<10	<10	<10
As	µg/L	NA	<1	<1	<1
Cu	µg/L	NA	<1	2	3
Fe	µg/L	NA	<50	<50	<50
Mn	µg/L	NA	457	635	421
Se	µg/L	NA	<10	10	10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, Light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW19A (Coal, Acland) **Note this is not an EA Bore**

Parameter	Units	Groundwater Limits	5/10/2018	23/01/2019	12/04/2019	9/07/2019	28/10/2019	28/02/2020	4/05/2020	10/07/2020	10/11/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	8215
pH (Lab)	pH units	-	8	7	7	7	7	7	7	7	8
EC (Lab)	µS/cm	NA	8060	8030	7980	7738	8130	8060	7840	8030	7880
TDS (Lab)	mg/L	NA	5660	4720	5670	4890	5250	5280	5100	5280	5120
Major Ions											
Ca	mg/L	NA	302	299	281	295	344	289	266	301	250
Mg	mg/L	NA	185	192	188	208	197	197	191	191	177
Na	mg/L	NA	1160	1170	1130	1240	1200	1160	1160	1180	1080
K	mg/L	NA	8	8	8	8	9	8	8	8	8
Cl	mg/L	NA	2540	2460	2490	2350	2360	2300	2310	2360	2380
HCO ₃	mg/L	NA	478	474	460	479	357	444	444	304	537
SO ₄	mg/L	NA	500	456	500	510	499	514	503	520	526
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	1.3	1.3	1.3	1.1	1.2	1.2	1.4	1.4	1.2
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	6	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	4310	4610	4700	4270	4060	4800	4720	4510	4270
Mn	µg/L	NA	42	45	48	46	45	46	47	50	45
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW19B (Coal, Balgowan) **Note this is not an EA Bore**

Parameter	Units	Groundwater Limits	5/10/2018	23/01/2019	12/04/2019	9/07/2019	18/10/2019	26/02/2020	4/05/2020	10/07/2020	15/10/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	8
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	2503
pH (Lab)	pH units	-	8	8	8	9	8	8	8	8	8
EC (Lab)	µS/cm	NA	2910	2820	2840	2895	2800	2830	2780	2770	2900
TDS (Lab)	mg/L	NA	1270	1470	1580	1440	1480	1590	1810	1440	1880
Major Ions											
Ca	mg/L	NA	16	17	15	16	20	14	14	16	13
Mg	mg/L	NA	2	2	2	2	2	2	2	2	2
Na	mg/L	NA	581	636	540	607	534	534	590	549	559
K	mg/L	NA	3	3	3	3	3	3	3	3	3
Cl	mg/L	NA	904	895	885	849	851	834	840	852	852
HCO ₃	mg/L	NA	157	168	171	157	124	148	152	104	186
SO ₄	mg/L	NA	6	4	4	3	2	1	1	<1	<1
Minor Ions											
F	mg/L	NA	<0.1	<0.1	0	0	<0.1	0	<0.1	<0.1	0
Total N	mg/L	NA	0.8	0.8	0.8	0.8	0.6	0.7	0.8	0.9	0.7
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	23	23	25	23	26	22	24	23	24
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

12/02/2021	25/01/2023	11-05-2023	31-08-2023
	10:47 AM	10:00	11:13
7.03	6.78	6.95	6.75
8185	7885	7342	4239
7.33	7.66	7.94	7.96
8100	7190	8,100	7,970
5260	5850	4,940	5,110
243	235	229	249
177	186	179	178
1060	1160	1,080	1,200
8	8	8	9
2460	2490	2,290	2,430
389	449		
534	501	517	506
<0.1	<0.1	<0.1	<0.1
1.1	1.2	<0.01	1.4
<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	<0.01	<0.01
<10	<10	<10	<10
<1	<1	<1	1
<1	<1	<1	<1
4570	4450	4390	<50
47	47	54	62
<10	<10	<10	<10

12/02/2021	25/01/2023	11-05-2023	31-08-2023
	11:40 AM	10:50	10:38
8.47	8.2	8.35	8.14
2978	2836	2659	2469
7.74	8.27	8.07	8.20
2800	2680	2,760	2,840
1820	1530	1,530	1,480
14	13	13	14
2	2	2	2
553	554	526	584
3	3	3	3
885	903	895	910
150	163		
<1	<1	1	<1
<0.1	<1.0	<0.1	<0.1
0.9	1	<0.01	0.8
<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	<0.01	<0.01
<10	<10	10	10
<1	<1	2	1
<1	<1	<1	<1
<50	<50	<50	<50
22	24	27	26
<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D. Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW22A (Coal, Waipanna) **Note this is not an EA Bore**

Parameter	Units	Groundwater Limits	5/10/2018	23/01/2019	16/04/2019	9/07/2019	29/10/2019	26/02/2020	4/05/2020	9/07/2020	15/10/2020
			Time Sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7.31
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	7174
pH (Lab)	pH units	-	7.78	7.48	7.69	7.43	7.59	7.53	7.56	7.46	7.91
EC (Lab)	µS/cm	NA	7710	8020	7170	6955	7890	7940	8120	8290	8790
TDS (Lab)	mg/L	NA	5040	4470	4400	4460	4820	4940	5280	5200	5710
Major Ions											
Ca	mg/L	NA	201	217	193	190	235	198	236	229	212
Mg	mg/L	NA	101	114	88	105	110	109	134	114	122
Na	mg/L	NA	1270	1300	1250	1310	1310	1240	1500	1340	1360
K	mg/L	NA	7	6	7	7	7	7	8	7	7
Cl	mg/L	NA	2610	2700	2260	2380	2520	2560	2650	2770	2940
HCO ₃	mg/L	NA	229	245	213	231	179	240	239	160	312
SO ₄	mg/L	NA	160	165	131	155	165	171	182	200	200
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	2	2	2	1.7	2.1	2	2.2	2.5	2
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
Dissolved Metals											
Al	µg/L	NA	<10	<10	<10	50	<10	<10	<10	<10	<10
As	µg/L	NA	5	4	8	7	6	4	4	5	4
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	1650	1970	1490	1560	1540	1820	2260	1890	2150
Mn	µg/L	NA	41	41	42	43	41	39	50	48	44
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW22B (Coal, Acland) **Note this is not an EA Bore**

Parameter	Units	Groundwater Limits	5/10/2018	23/01/2019	16/04/2019	11/07/2019	29/10/2019	26/02/2020	4/05/2020	9/07/2020	15/10/2020
			Time Sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7.8
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	4895
pH (Lab)	pH units	-	7.99	7.77	7.94	8.09	7.87	7.78	7.85	7.72	8.03
EC (Lab)	µS/cm	NA	4830	4790	4880	4735	5150	5220	5280	5520	5770
TDS (Lab)	mg/L	NA	2710	2640	2780	2870	2960	3120	3430	3160	3750
Major Ions											
Ca	mg/L	NA	75	76	89	105	106	82	94	106	100
Mg	mg/L	NA	14	14	15	17	17	17	19	18	19
Na	mg/L	NA	886	881	946	1050	959	918	1050	976	998
K	mg/L	NA	5	5	6	6	6	6	6	6	6
Cl	mg/L	NA	1520	1450	1440	1450	1580	1570	1600	1660	1680
HCO ₃	mg/L	NA	137	143	139	143	101	123	122	84	152
SO ₄	mg/L	NA	28	26	27	27	27	30	31	34	36
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	2	2.2	2.1	2.2	2.2	2.3	2.5	2.8	2.5
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
Dissolved Metals											
Al	µg/L	NA	20	<10	30	<10	<10	<10	<10	<10	<10
As	µg/L	NA	1	1	1	1	<1	<1	1	1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	200	210	210	220	240	280	290	310	370
Mn	µg/L	NA	34	35	35	34	38	39	46	43	46
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

12/02/2021	1/02/2023	11-05-2023	31-08-2023
-	9:25 AM	11:50	11:57
7.31	6.83	7.23	7.02
8582	8725	8177	8890
7.22	7.52	8.13	8.07
8650	8730	9,070	9,010
5620	5660	5,460	5,780
204	213	197	222
121	134	128	135
1300	1470	1,310	1,480
7	7	7	8
2830	2830	2,830	3,020
232	251		
207	204	208	217
<0.1	<0.1	<0.1	<0.1
2.2	2.2	<0.01	2.1
<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	<0.01	<0.01
<10	<10	<10	<10
3	<1	1	1
<1	<1	<1	<1
2140	2170	2160	<50
44	43	43	39
<10	<10	<10	<10

12/02/2021	1/02/2023	11-05-2023	31-08-2023
	10:28 AM	12:45	12:27
7.87	7.13	7.84	7.6
5942	5555	5787	6160
7.18	7.56	7.93	7.89
5770	5670	6,140	6,030
3750	3240	3,440	3,520
94	104	106	116
20	21	22	23
946	1120	1,020	1,120
6	6	6	7
1780	1720	1,890	1,850
130	122		
40	40	43	39
<0.1	<0.1	<0.1	<0.1
2.5	2.4	<0.01	2.6
<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	<0.01	<0.01
<10	<10	<10	<10
<1	<1	<1	<1
<1	<1	<1	<1
360	170	420	400
50	58	59	52
<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D. Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality Data T Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW22C (Coal, Balgowan) **Note this is not an EA Bore**

		Groundwater	26/09/2018	23/01/2019	4/04/2019	11/07/2019	29/10/2019	26/02/2020	29/04/2020	9/07/2020	15/10/2020
Parameter	Units	Limits	Time Sampled	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7.99
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	2480
pH (Lab)	pH units	-	8.15	8.05	8.15	8.34	8.11	8.02	8.1	7.97	8.27
EC (Lab)	µS/cm	NA	3310	3290	3260	3400	3320	3320	3290	3230	3350
TDS (Lab)	mg/L	NA	1830	1700	1840	1770	1760	1830	2140	1790	2180
Major Ions											
Ca	mg/L	NA	25	25	31	29	31	24	24	25	21
Mg	mg/L	NA	2	2	2	2	2	2	2	2	2
Na	mg/L	NA	644	642	681	755	666	632	611	640	641
K	mg/L	NA	3	3	3	4	4	3	3	4	3
Cl	mg/L	NA	894	979	972	890	955	939	938	941	938
HCO ₃	mg/L	NA	204	198	185	190	148	177	182	128	238
SO ₄	mg/L	NA	71	66	70	65	71	72	65	63	59
Minor Ions											
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.5
NO ₃	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
NO ₂	mg/L	NA	-	-	-	-	-	-	-	-	<0.01
Dissolved Metals											
Al	µg/L	NA	10	<10	20	10	<10	<10	10	20	10
As	µg/L	NA	3	3	3	3	4	3	4	6	6
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	90	90	90	80	80	80	90	120	170
Mn	µg/L	NA	45	44	46	42	45	43	43	39	39
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

12/02/2021	1/02/2023	23-05-2023	31-08-2023
-	12:39 PM	16:15	13:12
8.13	7.68	8.1	7.82
3504	3282	3070	1747
7.58	7.92	8.32	8.12
3260	3180	3,280	3,210
2120	1780	1,720	1,780
25	24	25	23
2	2	2	2
643	679	665	681
3	4	4	4
1030	963	926	998
186	185		
63	60	60	56
<0.1	<0.1	<0.1	<0.1
0.6	0.5	<0.01	0.6
<0.01	<0.01	<0.01	<0.01
<0.01	<0.01	<0.01	<0.01
<10	20	10	20
3	4	4	3
<1	<1	<1	<1
90	100	100	110
43	41	45	42
<10	<10	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality [Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. A1 (Compliance Alluvium)

Parameter	Units	Groundwater Limits	29-08-2023
pH (Field)	pH units	NA	9.44
EC (Field)	µS/cm	-	7.35
pH (Lab)	pH units	-	24320
EC (Lab)	µS/cm	NA	8.08
TDS (Lab)	mg/L	NA	24,500
Major Ions			
Ca	mg/L	NA	227
Mg	mg/L	NA	482
Na	mg/L	NA	4,650
K	mg/L	NA	4
Cl	mg/L	NA	7,770
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	2,240
Minor Ions			
F	mg/L	NA	0.9
Total N	mg/L	NA	2.3
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	2.32
Dissolved Metals			
Al	µg/L	NA	<10
As	µg/L	NA	<1
Cu	µg/L	NA	<1
Fe	µg/L	NA	70
Mn	µg/L	NA	86
Se	µg/L	NA	40

Groundwater Bore No. B1 (Early Warning, Main Range Volcanics)

Parameter	Units	Groundwater Limits	45168
pH (Field)	pH units	NA	8.06
EC (Field)	µS/cm	-	9.15
pH (Lab)	pH units	-	307.1
EC (Lab)	µS/cm	NA	7.93
TDS (Lab)	mg/L	NA	318
Major Ions			
Ca	mg/L	NA	2
Mg	mg/L	NA	<1
Na	mg/L	NA	71
K	mg/L	NA	<1
Cl	mg/L	NA	55
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	12
Minor Ions			
F	mg/L	NA	0.5
Total N	mg/L	NA	0.1
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	<0.01
Dissolved Metals			
Al	µg/L	NA	240
As	µg/L	NA	6
Cu	µg/L	NA	2
Fe	µg/L	NA	190
Mn	µg/L	NA	10
Se	µg/L	NA	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

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Water Quality [Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. B3 (Compliance, Main range Volcanics)

		Groundwater	45174
Parameter	Units	Limits	
pH (Field)	pH units	NA	7.36
EC (Field)	µS/cm	-	7.87
pH (Lab)	pH units	-	583
EC (Lab)	µS/cm	NA	7.99
TDS (Lab)	mg/L	NA	557
			310
Major Ions			
Ca	mg/L	NA	9
Mg	mg/L	NA	1
Na	mg/L	NA	107
K	mg/L	NA	2
Cl	mg/L	NA	116
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	19
Minor Ions			
F	mg/L	NA	0.2
Total N	mg/L	NA	0.1
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	0.10
Dissolved Metals			
Al	µg/L	NA	30
As	µg/L	NA	3
Cu	µg/L	NA	1
Fe	µg/L	NA	<50
Mn	µg/L	NA	17
Se	µg/L	NA	<10

Groundwater Bore No. ACS1 (Compliance, Main range Volcanics)

		Groundwater	45169
Parameter	Units	Limits	
pH (Field)	pH units	NA	7.20
EC (Field)	µS/cm	-	7.75
pH (Lab)	pH units	-	1126
EC (Lab)	µS/cm	NA	8.42
TDS (Lab)	mg/L	NA	1,360
			781
Major Ions			
Ca	mg/L	NA	7
Mg	mg/L	NA	2
Na	mg/L	NA	319
K	mg/L	NA	2
Cl	mg/L	NA	307
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	14
Minor Ions			
F	mg/L	NA	0.4
Total N	mg/L	NA	0.3
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	<0.01
Dissolved Metals			
Al	µg/L	NA	20
As	µg/L	NA	4
Cu	µg/L	NA	<1
Fe	µg/L	NA	<50
Mn	µg/L	NA	16
Se	µg/L	NA	<10

New Acland Coal Pty Ltd

Water Quality [Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. ACS2 (Compliance, Main range Volcanics)

		Groundwater	45168
Parameter	Units	Limits	15:10
pH (Field)	pH units	NA	7.49
EC (Field)	µS/cm	-	1856
pH (Lab)	pH units	-	8.13
EC (Lab)	µS/cm	NA	1,890
TDS (Lab)	mg/L	NA	1,040
Major Ions			
Ca	mg/L	NA	44
Mg	mg/L	NA	12
Na	mg/L	NA	344
K	mg/L	NA	5
Cl	mg/L	NA	499
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	11
Minor Ions			
F	mg/L	NA	0.2
Total N	mg/L	NA	0.5
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	<0.01
Dissolved Metals			
Al	µg/L	NA	<10
As	µg/L	NA	<1
Cu	µg/L	NA	<1
Fe	µg/L	NA	320
Mn	µg/L	NA	47
Se	µg/L	NA	<10

Groundwater Bore No.BSC1 (Compliance, Balgownie coal sequence)

		Groundwater	45169
Parameter	Units	Limits	8:13
pH (Field)	pH units	NA	7.98
EC (Field)	µS/cm	-	1900
pH (Lab)	pH units	-	8.36
EC (Lab)	µS/cm	NA	2,300
TDS (Lab)	mg/L	NA	1,260
Major Ions			
Ca	mg/L	NA	12
Mg	mg/L	NA	2
Na	mg/L	NA	496
K	mg/L	NA	4
Cl	mg/L	NA	662
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	30
Minor Ions			
F	mg/L	NA	0.2
Total N	mg/L	NA	0.4
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	<0.01
Dissolved Metals			
Al	µg/L	NA	<10
As	µg/L	NA	<1
Cu	µg/L	NA	<1
Fe	µg/L	NA	90
Mn	µg/L	NA	27
Se	µg/L	NA	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.

New Acland Coal Pty Ltd

Water Quality [Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. Bcs2 (Compliance, Balgownie coal sequence)

		Groundwater	45176
Parameter	Units	Limits	8:45
pH (Field)	pH units	NA	7.41
EC (Field)	µS/cm	-	1411
pH (Lab)	pH units	-	7.77
EC (Lab)	µS/cm	NA	1,380
TDS (Lab)	mg/L	NA	762
Major Ions			
Ca	mg/L	NA	17
Mg	mg/L	NA	4
Na	mg/L	NA	271
K	mg/L	NA	3
Cl	mg/L	NA	356
HCO ₃	mg/L	NA	
SO ₄	mg/L	NA	4
Minor Ions			
F	mg/L	NA	0.2
Total N	mg/L	NA	0.1
NO ₃	mg/L	NA	<0.01
NO ₂	mg/L	NA	<0.01
Dissolved Metals			
Al	µg/L	NA	<10
As	µg/L	NA	<1
Cu	µg/L	NA	<1
Fe	µg/L	NA	<50
Mn	µg/L	NA	<1
Se	µg/L	NA	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5. Exceedances of the Groundwater Limits as per Schedule D, Tables D2 and D5 have been highlighted in orange (applicable from May 2022 Onwards as per the EA). Dark Orange indicates Table D2 Trigger Level, light orange indicates Table D5 Trigger Level, where two numbers are indicated, the first is from Table D2, the second is from Table D5.



Appendix H RPD Tables

Groundwater Monitoring – Third Quarter 2023

New Acland Coal Mine

New Acland Coal Pty Ltd

SLR Project No.: 620.040262.00001

23 October 2023

				Metals																																						
	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Hardness as CaCO3																					
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L																				
EQL																						0.001	0.001	0.0001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001	0.005	0.005	1	1	1	1	1
Date	Sample Type	Field ID	Lab Report Number																																							
29 Aug 2023	Normal	41P	EB2326735	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
	Field_D	QAQC01	EB2326735	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
RPD																						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
29 Aug 2023	Normal	41P	EB2326735	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
	Interlab_D	QAQC02	1021920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
RPD																						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04 Sep 2023	Normal	26PCR	EB2327411	<0.001	<0.001	<0.0001	<0.0001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
	Field_D	QAQC03	EB2327411	<0.001	<0.001	<0.0001	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
RPD																						0	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04 Sep 2023	Normal	26PCR	EB2327411	<0.001	<0.001	<0.0001	<0.0001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
	Interlab_D	QAQC04	1023869	<0.001	<0.001	<0.0002	<0.0002	0.006	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
RPD																						0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06 Sep 2023	Normal	3316WB	EB2327707	0.001	0.002	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
	Field_D	QAQC05	EB2327707	0.002	0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
RPD																						67	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06 Sep 2023	Normal	3316WB	EB2327707	0.001	0.002	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
	Interlab_D	QAQC06	1024773	0.002	0.001	<0.0002	<0.0002	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001																					
RPD																						67	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

#2 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

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

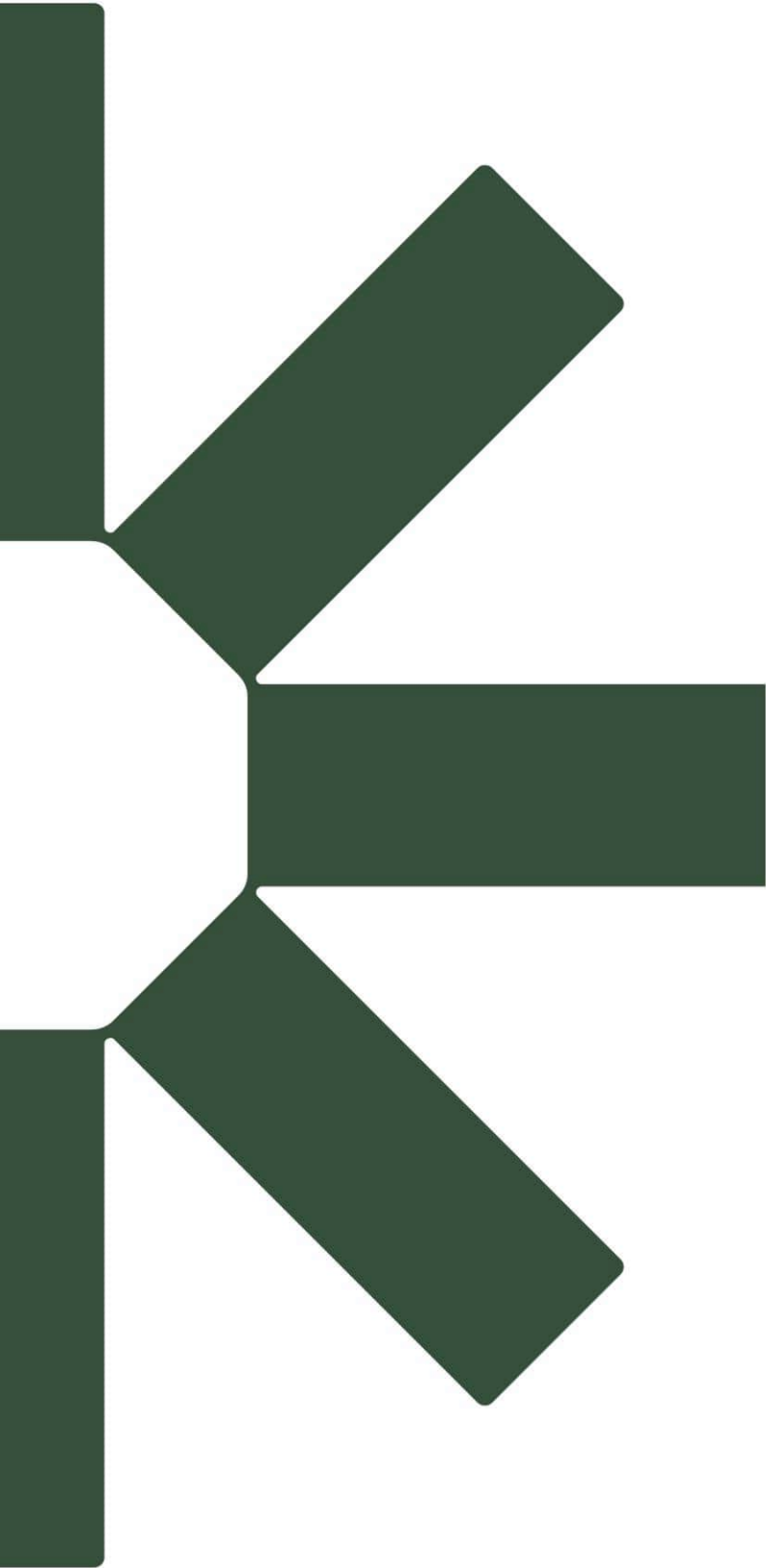
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 80 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

		Inorganics														Major/minor ion							
		Hardness as CaCO3 (filtered)	Anions Total	Cations Total	Ionic Balance	Electrical Conductivity (Lab)	TDS	Total Dissolved Solids (Calc.)	pH (Lab)	Ammonia as N	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrogen (Organic)	Nitrite + Nitrate as N	Nitrate (as N)	Nitrite (as N)	Calcium	Calcium (filtered)	Magnesium	Magnesium (filtered)	Potassium	Potassium (filtered)	
		mg/L	meq/L	meq/L	%	uS/cm	mg/L	mg/L	pH Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
EQL		1	0.01	0.01	0.01	1	1	1	0.01	0.01	0.1	0.1	0.2	0.01	0.01	0.01	0.5	0.5	0.5	0.5	0.5	0.5	
Date	Sample Type	Field ID	Lab Report Number																				
29 Aug 2023	Normal	41P	EB2326735																				
	Field_D	QAQC01	EB2326735																				
RPD			3	1	3	14	3	4	3	1	8	13	13	-	0	0	-	3	-	3	-	0	
29 Aug 2023	Normal	41P	EB2326735																				
	Interlab_D	QAQC02	1021920																				
RPD			-	-	-	-	55	4	62	8	6	0	13	-	171	171	0	-	-	-	-	-	
04 Sep 2023	Normal	26PCR	EB2327411																				
	Field_D	QAQC03	EB2327411																				
RPD			2,570	130	124	2.36	12,500	8,680	8,120	7.91	0.42	<0.5 ^{#1}	<0.5 ^{#2}	-	<0.01	<0.01	<0.01	-	586	-	269	-	28
			2,580	132	124	2.95	12,600	8,750	8,190	7.87	0.42	<0.5 ^{#1}	<0.5 ^{#2}	-	<0.01	<0.01	<0.01	-	594	-	266	-	28
RPD			0	2	0	22	1	1	1	1	0	0	0	-	0	0	0	-	1	-	1	-	0
04 Sep 2023	Normal	26PCR	EB2327411																				
	Interlab_D	QAQC04	1023869																				
RPD			-	-	-	-	111	92	115	3	2	161	161	-	0	0	0	-	-	-	-	-	
06 Sep 2023	Normal	3316WB	EB2327707																				
	Field_D	QAQC05	EB2327707																				
RPD			633	49.5	47.4	2.25	5,570	3,070	3,620	7.65	1.59	1.1	1.1	-	<0.01	<0.01	<0.01	-	194	-	36	-	7
			625	46.7	47.4	0.78	5,580	3,750	3,630	7.64	1.58	2.0	2.0	-	<0.01	<0.01	<0.01	-	191	-	36	-	7
RPD			1	6	0	97	0	20	0	0	1	58	58	-	0	0	0	-	2	-	0	-	0
06 Sep 2023	Normal	3316WB	EB2327707																				
	Interlab_D	QAQC06	1024773																				
RPD			-	-	-	-	5,600	4,100	-	7.6	-	-	-	-	-	-	-	220	-	39	-	7.6	-
			-	-	-	-	1	29	-	1	-	-	-	-	-	-	-	-	-	-	-	-	

	Sulphate	Sodium	Sodium (filtered)	Chloride	Fluoride	NA
	mg/L	mg/L	mg/L	mg/L	mg/L	Sulfate as SO ₄ - Turbidimetric (filtered)
EQL	5	0.5	0.5	1	0.1	1

Date	Sample Type	Field ID	Lab Report Number						
29 Aug 2023	Normal	41P	EB2326735	-	-	1,290	2,880	<0.1	531
	Field_D	QAQC01	EB2326735	-	-	1,330	2,910	<0.1	547
RPD				-	-	3	1	0	3
29 Aug 2023	Normal	41P	EB2326735	-	-	1,290	2,880	<0.1	531
	Interlab_D	QAQC02	1021920	530	1,600	-	3,100	-	-
RPD				-	-	-	7	-	-
04 Sep 2023	Normal	26PCR	EB2327411	-	-	1,660	3,840	<0.1	885
	Field_D	QAQC03	EB2327411	-	-	1,650	3,860	<0.1	918
RPD				-	-	1	1	0	4
04 Sep 2023	Normal	26PCR	EB2327411	-	-	1,660	3,840	<0.1	885
	Interlab_D	QAQC04	1023869	960	1,500	-	4,500	<0.5	-
RPD				-	-	-	16	0	-
06 Sep 2023	Normal	3316WB	EB2327707	-	-	794	1,710	0.1	2
	Field_D	QAQC05	EB2327707	-	-	799	1,610	0.1	2
RPD				-	-	1	6	0	0
06 Sep 2023	Normal	3316WB	EB2327707	-	-	794	1,710	0.1	2
	Interlab_D	QAQC06	1024773	<5	840	-	1,900	-	-
RPD				-	-	-	11	-	-



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