NEW ACLAND COAL MINE

Groundwater Monitoring Report - Second Quarter 2023

Prepared for:

New Acland Coal Pty Ltd

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (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.

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
620.31500.00000-R01-v1.0	30 June 2023	Hailey Martin	Ned Connolly	Ned Connolly

EXECUTIVE SUMMARY

New Acland Coal Pty Ltd (NAC) commissioned SLR Consulting Australia Pty Ltd (SLR) to complete a Groundwater Monitoring Event (GME) in Second Quarter (Q2) 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 Q2 2023, across the following days:

- Between 8–12 May 2023;
- Between 15–19 May 2023; and
- Between 22–24 May 2023.

Results of the GME works undertaken for Q2 2023 identified exceedances to the EA EPML00335713 trigger levels in the following groundwater monitoring bores:

Basalt monitoring bores

- 10PBR – NO_2 (as N) exceedance of 59.5 milligrams per litre (mg/L) (fifth consecutive exceedance).

Acland Coal Sequence monitoring bores

- 4518WB:
  - Sulfate as SO_4 - Turbidimetric (filtered) exceedance of 89 mg/L (fifth consecutive exceedance); and
  - Iron exceedance of 2.65 mg/L (third consecutive exceedance).
- 3316WB:
  - Iron exceedance of 0.64 mg/L (first exceedance).
- 82PcR:
  - EC exceedance of 8,330 µS/cm (first exceedance);
  - TDS exceedance of 5,540 mg/L (first exceedance);
  - Sulfate as SO4 - Turbidimetric (filtered) exceedance of 498 mg/L (second consecutive exceedance);
  - Iron exceedance of 2.38 mg/L (second consecutive exceedance); and
  - Manganese exceedance of 0.125 mg/L (second consecutive exceedance).
- 111PgC Lower_ R:
  - EC exceedance of 8,130 µS/cm (second consecutive exceedance);
  - Sulfate as SO4 - Turbidimetric (filtered) exceedance of 324 mg/L (Second consecutive exceedance); and
  - Iron exceedance of 4.92 mg/L (first exceedance).

The next monitoring round will occur in Quarter Three 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 of this report.

CONTENTS

DOCUMENT REFERENCES

TABLES

CONTENTS

FIGURES

APPENDICES

1 Introduction

New Acland Coal Pty Ltd (NAC) commissioned SLR Consulting Australia Pty Ltd (SLR) to complete a Groundwater Monitoring Event (GME) in Second Quarter (Q2) 2023 as part of the quarterly compliance monitoring for NAC Mine. NAC Mine currently operates as an open cut coal mine on Mining Lease (ML) 50170 and ML 50216, with ML 50232 and ML 7000002 subject to a Stage 3 Environmental Authority (EA) EPML00335713 as of 26 August 2022.

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 Q2 2023, across the following days:

- Between 8–12 May 2023;
- Between 15–19 May 2023; and
- Between 22–24 May 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 Q2 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 Q2 2023 GME routine monitoring round. Note this report is also suitable for submission to the Queensland Department of Environment and Science (DES).

2 Groundwater Monitoring Program

2.1 Methodology

Groundwater monitoring undertaken as part of the Q2 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 Q2 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

[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]
BMH1	Compliance	Main Range Volcanics
2291Pc	Interpretation	Balgowan Coal Sequence
81P [4]	Interpretation	Acland Coal Sequence
109P	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

Bore Name	Bore Type [1]	Aquifer Monitored [2]
GW22C	Additional Bore	Balgowan Coal Sequence
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* No need to sample

(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 Q2 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: • Dissolved Oxygen (DO); • Electrical Conductivity (EC); • Oxidation-reduction (redox) potential (E_h); • Temperature; and • pH.
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.

Activity	Detail
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: • 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 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 Q2 2023 GME. Refer to **Appendix B** for fieldnotes detailing the observations and potential issues.

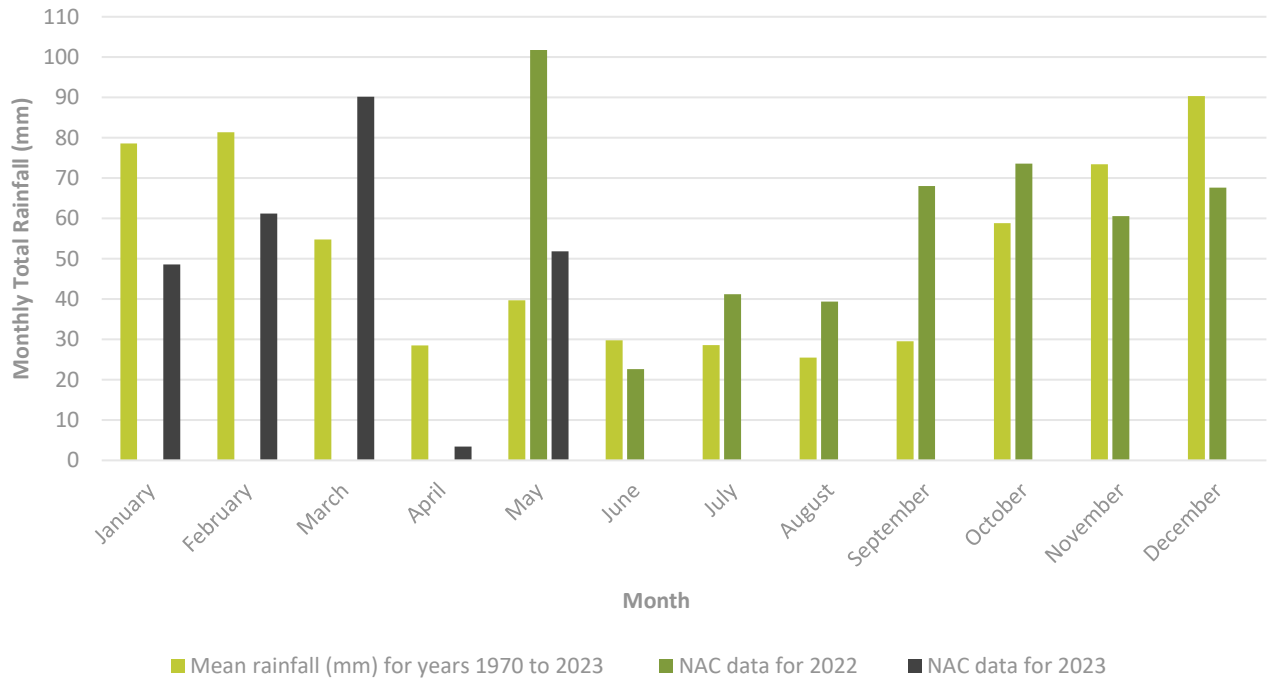
Table 3 Summary of bore conditions

Bore ID	Detail
109P	Obstruction noted at 60.82 metres below top of casing (BTOC), well depth unable to be taken. Pump intake depth at 55 m BTOC, no impact to sampling.
GW09B	Obstruction which could not pass Bennett or Hurricane pump at approximately 23 m BTOC. Sample was taken with Hydro sleeve.
BCS3	Bennett pump unable to pass 79 m BTOC, pump intake depth at 77 m BTOC.
BCS4	Bennett pump unable to pass 107 m BTOC, pump intake depth at 107 m BTOC.
GW08B	Bennet pump unable to pass 60 m BTOC, pump intake depth at 60 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 147 m BTOC, pump intake depth 147 m BTOC.
41P	Bennet pump unable to pass 74 m BTOC, pump intake depth at 74 m BTOC.

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 Q2 2023 monitoring round.

The on-site weather station recorded a rainfall total of 678.2 millimetres (mm) in the twelve months leading up to Q2 2023, indicating that NAC Mine experienced above 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 January 2023 to end April 2023 inclusive), rainfall was below the historical mean (164.7 mm; BOM, 2023), with 154.8 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 Q2 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 nine (9) 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 – NO_2 (as N) exceedance of 59.5 milligrams per litre (mg/L) (fifth consecutive exceedance).

Table 4 Basalt monitoring bores – groundwater quality parameters

Parameter	Units	84PbR	10PbR	BMH1	109P	GW05A	GW16A	GW15A	18PbR2	GW11A_R
Date Sampled	-	17/05/23	17/05/23	12/05/23	12/05/23	12/05/23	15/05/23	11/05/23	15/05/23	19/05/23
Time Sampled	-	13:25	08:10	11:00	09:50	07:54	15:30	08:25	11:23	08:25
SWL*	m BTOC	9.68	11.52	14.64	18.38	4.02	15.72	29.36	14.09	10.17
pH (Field)	pH units	7.07	6.77	6.71	7.75	6.77	6.84	7.35	7.62	7.00
EC (Field)	µS/cm	1,573	2,921	1,330	499.5	1,140	1,554	1,764	636	1,407
DO	mg/L	0.00	2.44	1.23	0.01	4.00	0.64	0.00	0.43	5.67
Redox Potential	mV	77.6	121.0	122.4	127.5	124.1	45.4	-133.6	78.1	60.4
Temperature	˚C	20.7	20.2	20.7	21.0	19.5	20.0	20.3	19.7	19.5
Comments	-	NVO	NVO	NVO	NVO	NVO	NVO	NVO	NVO	Minor sediment

*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	109P	GW05A	GW16A	GW15A	18PbR2	GW11A_R
EC (Lab)	µS/cm	1,660	3,100	1,200	528	1,190	1,590	1,810	698	1,550
TDS (Lab)	mg/L	1,160	2,130	819	331	746	963	1,110	393	879
TDS (calc)	mg/L	1,080	2,020	780	343	774	1,030	1,180	454	1,010
pH (Lab)	pH Unit	8.29	7.99	8.17	8.45	8.09	8.11	8.19	7.77	8.16
Major Ions (filtered)										
Calcium	mg/L	100	187	84	12	78	91	87	9	81
Magnesium	mg/L	87	164	91	<1	56	80	69	2	61
Sodium	mg/L	124	175	81	112	118	142	170	139	186
Potassium	mg/L	2	2	1	1	1	8	13	1	2
Chloride	mg/L	290	740	77	22	69	268	436	184	220

Parameter	Units	84PbR	10PbR	BMH1	109P	GW05A	GW16A	GW15A	18PbR2	GW11A_R
Sulfate as SO_4 - Turbidimetric (filtered)	mg/L	211	51	13	6	15	14	27	33	34
Minor Ions										
Fluoride	mg/L	0.2	0.4	0.2	0.3	0.8	0.3	0.3	0.3	1.2
Total N as N	mg/L	0.27	59.5	11.9	<0.01	11.5	1.34	<0.01	<0.01	8.42
NO_2 as N	mg/L	0.27	59.5 (50.7)	11.9	<0.01	11.5	1.34	<0.01	<0.01	8.42
NO_3 as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals										
Al	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01
As	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001
Cu	mg/L	<0.001	<0.001	<0.001	0.008	<0.001	<0.001	<0.001	<0.001	<0.001
Fe	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.28	<0.05	<0.05
Mn	mg/L	0.004	<0.001	<0.001	0.002	<0.001	0.002	0.165	0.004	0.008
Se	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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

3.3.2 Acland Coal Sequence Monitoring Bore Groundwater Quality

A total of 22 groundwater bores were sampled within the Acland Coal Sequence. A summary of both groundwater quality parameters and analytical results are provided in **Table 6** and **Table 7** respectively.

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 SO_4 - Turbidimetric (filtered) exceedance of 89 mg/L (fifth consecutive exceedance); and
  - Iron exceedance of 2.65 mg/L (third consecutive exceedance).
- 3316WB:
  - Iron exceedance of 0.64 mg/L (first exceedance).
- 82PcR:
  - EC exceedance of 8,330 µS/cm (first exceedance);
  - TDS exceedance of 5,540 mg/L (first exceedance);
  - Sulfate as SO4 - Turbidimetric (filtered) exceedance of 498 mg/L (second consecutive exceedance);
  - Iron exceedance of 2.38 mg/L (second consecutive exceedance); and
  - Manganese exceedance of 0.125 mg/L (second consecutive exceedance).
- 111PgC Lower_ R:
  - EC exceedance of 8,130 µS/cm (second consecutive exceedance);
  - Sulfate as SO4 - Turbidimetric (filtered) exceedance of 324 mg/L (Second consecutive exceedance); and
  - Iron exceedance of 4.92 mg/L (first exceedance).

Table 6 Acland Coal Sequence monitoring bores – groundwater quality parameters

Parameter	Units	4517WB	4518WB	3316_WB	81P	114P	116P	119P	118P (120WB)	113Pgcb	GW05B	GW06B	GW10	GW09B	82PcR	GW08B	GW12B	GW17A	GW19A	GW22B	111PgC Lower_R	112PgC_R	GW07B_R
Date Sampled	-	19/05/23	10/05/23	18/05/23	18/05/23	16/05/23	8/05/23	19/05/23	10/05/23	10/05/23	12/05/23	11/05/23	8/05/23	09/05/23	18/05/23	24/05/23	15/05/23	24/05/23	11/05/23	11/05/23	18/05/23	17/05/23	17/05/23
Time Sampled	-	11:37	07:50	13:08	15:12	13:22	13:43	10:27	15:07	13:05	08:40	15:47	15:30	11:05	12:03	08:40	14:35	11:48	10:00	12:45	14:05	09:27	11:15
SWL*	m BTOC	29.58	15.85	23.28	35.34	53.76	35.75	16.16	14.13	7.26	49.54	27.12	43.57	15.09	19.53	8.62	55.45	94.49	15.10	17.67	26.56	50.98	55.17
pH (Field)	pH units	7.35	6.96	7.57	7.12	7.45	7.15	7.62	6.68	7.25	7.69	8.44	7.49	6.87	7.07	8.71	8.61	8.66	6.95	7.84	7.04	7.71	7.86
EC (Field)	µS/cm	1,334	3,412	5,040	5,543	5,835	2,619	2,406	18,706	5,512	968	996	2,428	2,244	7,508	1132	952	1,387	7,342	5,787	7,712	3,410	1,755
DO	mg/L	0.00	1.70	0.08	0.08	0.06	0.08	0.00	0.00	0.06	0.00	0.09	0.03	3.27	0.05	0.00	0.00	0.11	0.00	0.07	0.05	0.00	0.00
Redox Potential	mV	-95.4	-68.1	-125.3	-21.4	-120.7	-88.9	-100.3	-36.9	-98.2	-102.0	-200.8	-111.2	-14.8	-65.6	-195.3	-182.0	-73.7	-70.2	-166.4	-81.9	-86.9	-148.3
Temperature	˚C	20.7	19.9	21.6	20.6	22.6	20.6	21.6	20.8	21.0	20.9	21.6	18.1	18.9	20.7	21.0	21.2	23.4	21.2	22.1	21.4	22.5	23.9
Comments	-	NVO	NVO	NVO	NVO	NVO	NVO	NVO	NVO	NVO	NVO	H_2S odour	NVO	HydraSleeve sampled	NVO	H_2S odour	H_2S odour	NVO	NVO	NVO	NVO	NVO	H_2S odour

*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 analytical results

Parameter	Units	4517WB	4518WB	3316_WB	81P	114P	116P	119P	118P (120WB)	113Pgcb	GW05B	GW06B	GW10	GW09B	82PcR	GW08B	GW12B	GW17A	GW19A	GW22B	111PgC Lower_R	112PgC_R	GW07B_R
EC (Lab)	µS/cm	1,480	2,790	3,960	4,340	6,210	2,500	2,330	20,700	4,070	1,190	1,040	2,550	2,150	8,330 (7,460)	1,250	1,000	1,470	8,100	6,140	8,130 (6,937)	3,610	1,820
TDS (Lab)	mg/L	844	2,320	3,270	3,720	3,490	1,650	1,380	15,500	3,750	746	609	1,530	1,360	5,540 (5,000)	768	606	792	4,940	3,440	5,650	2,010	962
TDS (calc)	mg/L	962	1,810	2,570	2,820	4,040	1,620	1,510	13,400	2,640	774	676	1,660	1,400	5,410	812	650	956	5,260	3,990	5,280	2,350	1,180
pH (Lab)	pH Unit	8.15	8.14	7.80	8.01	8.13	8.08	8.38	7.86	8.07	8.09	8.58	8.25	8.23	7.88	8.87	8.59	8.46	7.94	7.93	8.14	8.03	8.26
Major Ions (filtered)																							
Calcium	mg/L	30	120	181	172	96	57	39	673	141	78	2	52	66	296	2	2	5	229	106	306	54	14
Magnesium	mg/L	9	99	39	93	40	28	20	524	168	56	<1	13	65	207	<1	<1	<1	179	22	249	9	3
Sodium	mg/L	290	436	859	945	1,090	531	512	3,260	752	118	232	550	405	1,170	324	217	311	1,080	1,020	1,080	640	354
Potassium	mg/L	3	4	8	13	7	5	4	13	5	1	<1	5	4	11	1	2	2	8	6	11	4	3
Chloride	mg/L	336	987	1,680	1,670	1,710	717	680	6,880	1,560	69	174	793	606	2,400	78	158	362	2,290	1,890	2,500	1,110	479
Sulfate as SO_4 - Turbidimetric (filtered)	mg/L	24	89 (48)	3	260	211	75	62	872	308	15	<1	16	25	498 (134)	<1	3	<1	517	43	324 (309)	24	22
Minor Ions																							
Fluoride	mg/L	<0.1	0.4	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	0.8	0.4	<0.1	0.5	<0.1	0.6	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Total N as N	mg/L	<0.01	0.02	0.06	0.01	0.22	<0.01	<0.01	<0.01	<0.01	11.5	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
NO_2 as N	mg/L	<0.01	0.02	0.06	0.01	0.22	<0.01	<0.01	<0.01	<0.01	11.5	<0.01	0.03	<0.01	<0.01	<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	<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
Dissolved Metals																							
Al	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	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
As	mg/L	<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	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Cu	mg/L	<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	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fe	mg/L	0.35	2.65	0.64	0.34	1.21	0.65	0.09	7.78	2.36	<0.05	<0.05	0.34	0.78	2.38	<0.05	<0.05	<0.05	4.39	0.42	4.92	<0.05	0.05

Parameter	Units	4517WB	4518WB	3316_WB	81P	114P	116P	119P	118P (120WB)	113Pgcb	GW05B	GW06B	GW10	GW09B	82PcR	GW08B	GW12B	GW17A	GW19A	GW22B	111PgC Lower_R	112PgC_R	GW07B_R
			(1.60)	(0.6)											(0.1)						(4.9)		
Mn	mg/L	0.020	0.054	0.227	0.095	0.050	0.015	0.026	0.342	0.037	<0.001	0.009	0.008	0.009	0.125 (0.087)	0.002	0.004	0.008	0.054	0.059	0.041	0.108	0.053
Se	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	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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

3.3.3 Balgowan Coal Sequence Monitoring Bore Groundwater Quality

A total of 14 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 8** and **Table 9** respectively.

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 8 Balgowan Coal Sequence monitoring bores – groundwater quality parameters

Parameter	Units	27PcR	28PcR	CSMH1Rb	25PcR	26PcR	2289PcR Lower	2291Pc	18PcR2	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C
Date Sampled	-	9/05/23	15/05/23	23/05/23	16/05/23	16/05/23	16/05/23	18/05/23	15/05/23	18/05/23	18/05/23	10/05/23	23/05/23	11/05/23	23/05/23
Time Sampled	-	15:47	13:30	10:20	09:10	10:41	12:01	09:39	12:10	07:35	08:42	11:17	14:55	10:50	16:15
SWL*	m BTOC	47.6	26.06	94.08	72.12	63.09	15.04	39.55	42.74	4.27	17.44	34.99	37.49	18.63	18.49
pH (Field)	pH units	7.00	7.37	8.12	6.98	7.13	7.47	6.88	8.07	6.54	7.86	8.90	7.75	8.35	8.10
EC (Field)	µS/cm	11,152	9,033	1,564	9,063	11,269	4,079	7,292	755	6,426	373.5	893	3,629	2,659	3,070
DO	mg/L	0.00	0.00	0.19	0.02	0.00	0.07	0.00	0.01	0.00	0.04	0.00	0.14	0.00	0.01
Redox Potential	mV	-83.3	-136.4	-123.1	-75.3	-94.6	-22.1	-65.4	-168.1	-63.3	-103.8	-211.5	-119.3	-195.8	-191.2
Temperature	˚C	20.6	20.2	22.4	20.6	20.9	19.9	19.8	21.6	19.8	19.9	22.0	22.9	22.1	22.3
Comments	-	NVO	H_2S odour	NVO	NVO	Slight yellow tinge	NVO	NVO	NVO	H_2S odour	Slight cloudy white colour	H_2S odour	NVO	H_2S odour	H_2S odour

*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 9 Balgowan Coal Sequence monitoring bores – groundwater analytical results

Parameter	Units	27PcR	28PcR	CSMH1Rb	25PcR	26PcR	2289PcR Lower	2291Pc	18PcR2	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C
EC (Lab)	µS/cm	11,800	9,840	1,640	10,200	12,200	4,520	7,980	796	7,030	432	879	3,720	2,760	3,280
TDS (Lab)	mg/L	9,310	6,190	900	6,720	8,530	2,920	5,000	457	4,710	259	539	2,060	1,530	1,720
TDS (calc)	mg/L	7,670	6,400	1,070	6,630	7,930	2,940	5,190	517	4,570	281	571	2,420	1,790	2,130
pH (Lab)	pH Unit	7.64	7.60	8.10	7.66	8.02	7.96	8.03	8.02	7.99	8.25	8.86	8.10	8.07	8.32
Major Ions (filtered)															
Calcium	mg/L	612	492	35	460	475	177	245	14	236	7	4	57	13	25
Magnesium	mg/L	290	205	5	190	259	71	139	4	187	1	1	6	2	2
Sodium	mg/L	1,590	1,080	304	1,200	1,640	594	1,150	154	1,150	90	187	727	526	665
Potassium	mg/L	25	22	4	22	26	13	15	2	10	2	3	4	3	4
Chloride	mg/L	4,080	3,270	450	3,210	4,020	1,300	2,450	170	1,440	60	95	1,040	895	926
Sulfate as SO_4 - Turbidimetric (filtered)	mg/L	777	576	70	372	898	256	322	73	1,050	7	7	160	1	60
Minor Ions															
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.2	0.1	<0.1	<0.1	<0.1
Total N as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
NO_2 as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<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	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals															
Al	mg/L	<0.01	<0.01	0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	0.05	0.08	<0.01	0.01	0.01
As	mg/L	0.004	<0.001	0.005	<0.001	<0.001	<0.001	<0.001	0.004	0.003	0.001	0.002	<0.001	0.002	0.004
Cu	mg/L	<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
Fe	mg/L	2.70	2.10	<0.05	2.99	3.78	0.95	2.71	0.06	1.35	0.13	0.11	0.07	<0.05	0.10
Mn	mg/L	0.295	0.299	0.039	0.111	0.021	0.058	0.055	0.028	0.465	0.024	0.013	0.100	0.027	0.045

Parameter	Units	27PcR	28PcR	CSMH1Rb	25PcR	26PcR	2289PcR Lower	2291Pc	18PcR2	132WBR	133WBR	BCS3	BCS4	GW19B	GW22C
Se	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	<0.01	<0.01

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

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

A total of ten (10) 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 10** and **Table 11** 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.

Table 10 Marburg Sandstone Oakey Creek Alluvium, and Waipanna Coal Sequence monitoring bores – groundwater quality parameters

Parameter	Units	GW08C	GW09C	GW11B	21P	41P	48P	GW09A	GW13B	GW22A	WCS2
Date Sampled	-	11/05/23	09/05/23	19/05/23	23/05/23	18/05/23	17/05/23	09/05/23	24/05/23	11/05/23	17/05/23
Time Sampled	-	14:35	11:30	07:33	12:57	10:50	2:59	09:53	07:45	11:50	12:35
SWL*	m BTOC	80.65	15.00	54.60	82.18	27.06	65.39	15.93	29.37	17.32	29.51
pH (Field)	pH units	8.45	7.72	6.99	7.41	6.66	6.57	6.92	8.12	7.23	8.71
EC (Field)	µS/cm	2,442	1,714	2,986	2,047	8,676	9,100	2,561	653	8,177	757
DO	mg/L	0.07	2.08	0.00	7.29	0.05	0.05	4.20	0.00	0.00	0.00
Redox Potential	mV	-251.1	-215.0	-116.3	139.4	-62.9	175.6	134.1	-163.8	-104.1	-52.4
Temperature	˚C	22.1	19.4	21.0	30.8	21.6	21.8	19.1	19.2	21.8	21.0
Comments	-	H_2S odour	Hydrasleeve H_2S odour	H_2S odour	Light brown sediment	H_2S odour	NVO	NVO	NVO	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 11 Marburg Sandstone Oakey Creek Alluvium, and Waipanna Coal Sequence monitoring bores – groundwater analytical results

Parameter	Units	GW08C	GW09C	GW11B	21P	41P	48P	GW09A	GW13B	GW22A	WCS2
EC (Lab)	µS/cm	2,550	1,800	2,790	1,800	9,180	9,800	2,360	745	9,070	799
TDS (Lab)	mg/L	1,410	1,060	1,950	970	6,280	6,710	1,720	431	5,460	456
TDS (calc)	mg/L	1,660	1,170	1,810	1,170	5,970	6,370	1,530	484	5,900	519
pH (Lab)	pH Unit	8.44	8.17	7.92	8.33	7.85	8.00	8.07	8.61	8.13	8.52
Major Ions (filtered)											
Calcium	mg/L	8	50	112	35	315	328	88	9	197	2
Magnesium	mg/L	<1	6	64	34	210	408	102	4	128	<1
Sodium	mg/L	498	357	464	295	1,430	1,120	376	170	1,310	184

Parameter	Units	GW08C	GW09C	GW11B	21P	41P	48P	GW09A	GW13B	GW22A	WCS2
Potassium	mg/L	3	8	28	14	17	17	3	2	7	1
Chloride	mg/L	735	520	900	454	2,820	2,600	738	62	2,830	130
Sulfate as SO_4 - Turbidimetric (filtered)	mg/L	16	26	92	24	551	764	20	<1	208	6
Minor Ions											
Fluoride	mg/L	0.2	<0.1	0.2	0.4	<0.1	0.4	0.3	0.5	<0.1	0.2
Total N as N	mg/L	<0.01	<0.01	<0.01	0.02	0.02	153	2.13	<0.01	<0.01	0.04
NO_2 as N	mg/L	<0.01	<0.01	<0.01	0.02	0.02	153	2.13	<0.01	<0.01	0.04
NO_3 as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Dissolved Metals											
Al	mg/L	0.04	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01
As	mg/L	0.008	<0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Cu	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
Fe	mg/L	<0.05	<0.05	1.16	<0.05	5.66	<0.05	<0.05	<0.05	2.16	<0.05
Mn	mg/L	0.017	0.022	0.167	0.194	0.337	0.635	<0.001	0.009	0.043	0.002
Se	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01

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

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

A total of four (4) 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 12** and **Table 13** 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 12 Lagoon Creek Alluvium / Weathered Walloon Coal Measures/ Mine Pit Backfill monitoring bores – groundwater quality parameters

Parameter	Units	LCA1	LCA2	GW14A	3307WB_R
Date Sampled	-	10/05/23	18/05/23	10/05/23	22/05/23
Time Sampled	-	-	-	14:00	13:12
SWL*	m BTOC	Dry	Dry	4.36	57.67
pH (Field)	pH units	-	-	-	6.40
EC (Field)	µS/cm	-	-	-	9050
DO	mg/L	-	-	-	0.10
Redox Potential	mV	-	-	-	88.7
Temperature	˚C	-	-	-	21.5
Comments		Bore Dry	Bore Dry	< 1 m of water in bore - no sample was taken	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 13 Lagoon Creek Alluvium / Weathered Walloon Coal Measures/ Mine Pit Backfill monitoring bores – groundwater analytical results

Parameter	Units	LCA1	LCA2	GW14A	3307WB_R
EC (Lab)	µS/cm	-	-	-	9,890
TDS (Lab)	mg/L	-	-	-	7,610
TDS (calc)	mg/L	-	-	-	6,430
pH (Lab)	pH Unit	-	-	-	7.53
Major Ions (filtered)					
Calcium	mg/L	-	-	-	601
Magnesium	mg/L	-	-	-	414
Sodium	mg/L	-	-	-	1,070

Parameter	Units	LCA1	LCA2	GW14A	3307WB_R
Potassium	mg/L	-	-	-	19
Chloride	mg/L	-	-	-	2,580
Sulfate as SO_4 - Turbidimetric (filtered)	mg/L	-	-	-	1,520
Minor Ions					
Fluoride	mg/L	-	-	-	0.4
Total N as N	mg/L	-	-	-	0.03
NO_2 as N	mg/L	-	-	-	0.03
NO_3 as N	mg/L	-	-	-	<0.01
Dissolved Metals					
Al	mg/L	-	-	-	<0.01
As	mg/L	-	-	-	<0.001
Cu	mg/L	-	-	-	<0.001
Fe	mg/L	-	-	-	0.16
Mn	mg/L	-	-	-	2.67
Se	mg/L	-	-	-	<0.01

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

3.4 Quality Assurance and Quality Control Results

Three (3) duplicates and three (3) split sample was collected as part of the Q2 2023 GME and submitted for laboratory analysis. A summary of the QA/QC combinations is provided in **Table 14**.

Table 14 QA/QC combinations

Primary Sample	Duplicate	Split
GW10	QAQC01	QAQC02
18PBR	QAQC03	QAQC04
3307WB_R	QAQC05	QAQC06

With the exception of the analytes listed below in **Table 15**, 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.

Table 15 RPD Exceedances

Parent Sample	Sample Date	Duplicate/ Split	Analyte	RPD%
GW10	09/05/2023	QAQC01	Nitrite + Nitrate as N Nitrate (as N)	100 100
	09/05/2023	QAQC02	Nitrate (as N)	40
18PbR2	15/05/2023	QAQC04	Ammonia as N Nitrogen (Total)	67 120
3307WB_R	22/05/2023	QAQC06	Ferrous Iron TDS Nitrogen (Total) Nitrite +Nitrate Nitrate (as N) Fluoride	77 58 51 80 50 120

RPD exceedances identified were not identified within the metals analysis and were confined to minor Ions, and inorganics analytes, with QAQC01, QAQC02, QAQC04, and QAQC06 identifying exceedances above the 30 % criteria adopted for the investigation, listed above in **Table 15**. 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 Summary and Conclusion

NAC commissioned SLR to complete a GME in Q2 2023 as part of the quarterly compliance monitoring for NAC Mine. NAC Mine currently operates as an open cut coal mine on ML 50170 and ML 50216, with ML 50232 and ML 7000002 subject to a Stage 3 EA (EPML00335713) as of 26 August 2022.

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 Q2 2023, across the following days:

- Between 8–12 May 2023;
- Between 15–19 May 2023; and
- Between 22–24 May 2023.

Results of the GME works undertaken for Q2 2023 identified exceedances to the EA EPML00335713 trigger levels in the following groundwater monitoring bores:

Basalt monitoring bores

- 10PBR – NO_2 (as N) exceedance of 59.5 milligrams per litre (mg/L) (fifth consecutive exceedance).

Acland Coal Sequence monitoring bores

- 4518WB:
  - Sulfate as SO_4 - Turbidimetric (filtered) exceedance of 89 mg/L (fifth consecutive exceedance); and
  - Iron exceedance of 2.65 mg/L (third consecutive exceedance).
- 3316WB:
  - Iron exceedance of 0.64 mg/L (first exceedance).
- 82PcR:
  - EC exceedance of 8,330 µS/cm (first exceedance);
  - TDS exceedance of 5,540 mg/L (first exceedance);
  - Sulfate as SO4 - Turbidimetric (filtered) exceedance of 498 mg/L (second consecutive exceedance);
  - Iron exceedance of 2.38 mg/L (second consecutive exceedance); and
  - Manganese exceedance of 0.125 mg/L (second consecutive exceedance).
- 111PgC Lower_ R:
  - EC exceedance of 8,130 µS/cm (second consecutive exceedance);
  - Sulfate as SO4 - Turbidimetric (filtered) exceedance of 324 mg/L (Second consecutive exceedance); and
  - Iron exceedance of 4.92 mg/L (first exceedance).

The next monitoring round will occur in Quarter Three 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 of this report.

5 References

BOM (2023) Bureau of Meteorology, Australian Government. Available at Australia's official weather forecasts & weather radar - Bureau of Meteorology (bom.gov.au)

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 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.

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7 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

NEW ACLAND COAL MINE

SITE LOCATION

FIGURE 1

- Locality
- Road
- Watercourse
- Mining Lease

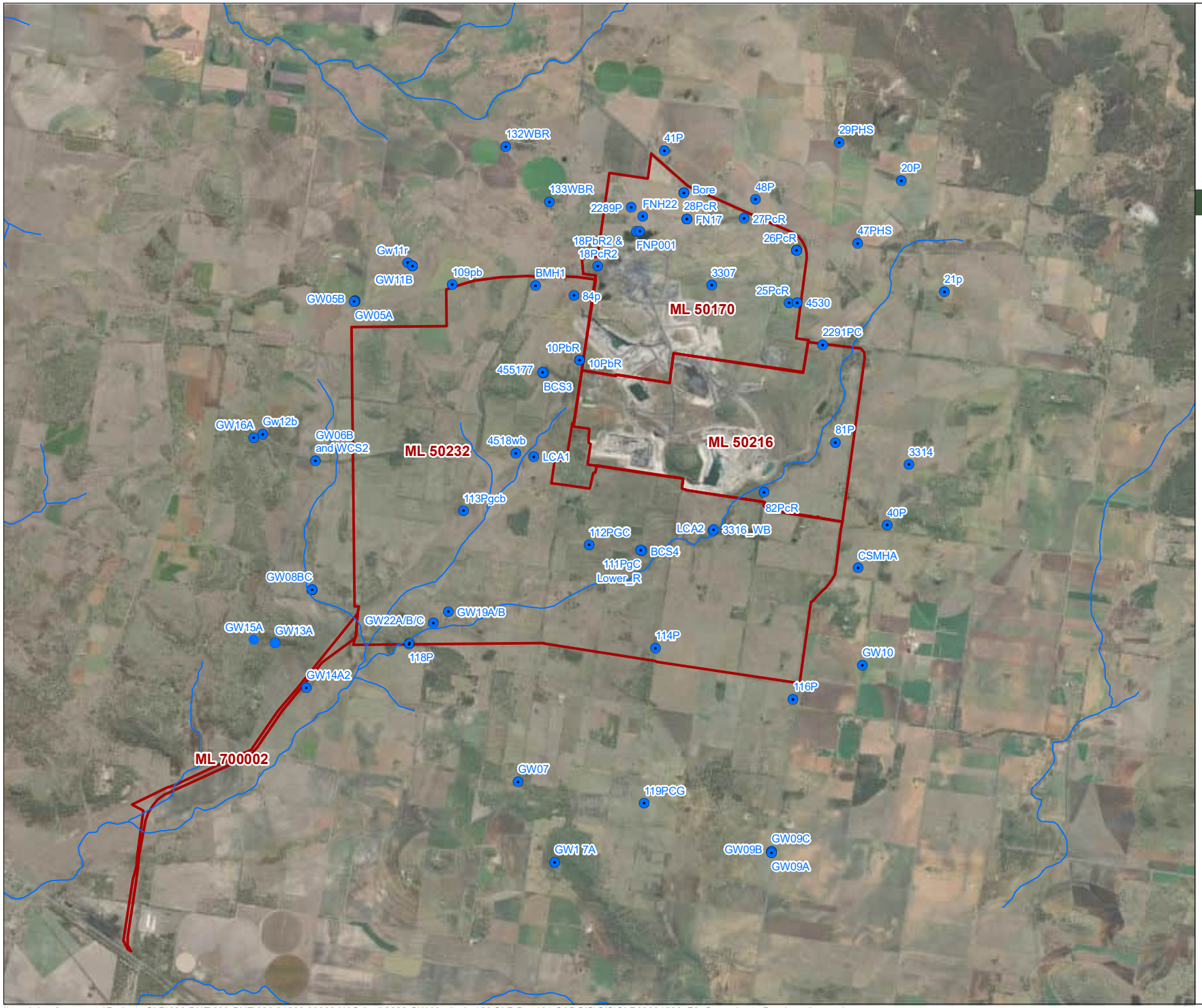
Balgowan
Muldu
Muldu Plainview Road
Highland Plains (Toowoomba Regional)
ML 50170
ML 50216
ML 50232
ML 700002
Pechey - Maclagan Road
Acland Brymaroo Road
Acland
Acland Silverleigh Road
Silverleigh
Greenwood
Greenwood Boah Water Hole Road
Oakey - Cooyar Road
Sabine
Devon Park
Jondaryan Muldu Road
Warrego Highway
Kelvinhaugh

0 1 2 km

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

SLR

\\au.slr.local\corporate\Projects-SLR\620-BNE\620-BNE\620.31500.00000 NAC April 2023 GW Monitoring\06 SLR Data\01 CADGIS\GIS\SLR62031500_F1_SiteLocation.mxd



NEW ACLAND COAL MINE

GROUNDWATER BORE LOCATION

FIGURE 2

- Groundwater Bore Location
- Watercourse
- Mining Lease

0 1 2 km

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

SLR

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Appendix B:
Field Data Sheets

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	**PROJECT NUMBER:**	620.31500.00000
PROJECT SITE ADDRESS:		**PROJECT MANAGER:**	NC
PROJECT FIELD WORK DATE:	9.5.23	**PROJECT FIELD STAFF:**	AW & HM

WELL ID 27 PcR **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 63.7 **STICK UP (mm)** 540

FIELD EQUIPMENT *(serial number)*		**SAMPLING EQUIPMENT** *(tick applicable)*			
WQM ID:	15J101500	BAILER (ECO) ☐	MICRO-PURGE ☐		
IP ID:	N/A	BAILER (S/S) ☐	PERISTALTIC ☐		
PID ID:	N/A	BAILER (TEFLON) ☐	WATERRA ☐ BENNETT ☒		

DEPTH TO WATER (mBTOC) Before Pump Install	**DEPTH TO WATER (mBTOC)** After Pump Install	**PUMP INTAKE DEPTH (mBTOC)**	**WELL HEADSPACE PID (ppm)**
47.6	47.4/5	58	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	**COMMENTS** (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
1521	2.5	10	47.22	0.68	10164	6.74	-53.2	20.5					X	colourless, no odour, sed
1526	2.5	20	47.54	0.13	10380	6.87	-71.8	20.0					X	" "
1531	2.5	30	47.93	0.06	10522	6.89	-80.6	20.5					X	" "
1536	2.5	40	47.97	0.04	10727	6.91	-80.4	20.6					X	" "
1541	2.5	50	47.91	0.01	11007	6.96	-81.6	20.6					X	
1547	2.5	60	47.89	0.00	11152	7.00	-83.3	20.6					X	

Duplicate Sample ID: N/A **Split Sample ID:** N/A **Metals Sample Field Filtered:** Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 15.5.23
PROJECT FIELD STAFF: ~~NC~~ HM

WELL ID 28PCR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 63.97 STICK UP (mm) 620

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC): Before Pump Install 26.06; After Pump Install 25.79
PUMP INTAKE DEPTH (mBTOC): 43
WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
13:15	4	~~10~~ 15	30.25	0.00	9081	7.17	-110.4	20.2					X	colourless, no odour, no sed.
13:20	4	35	31.33	0.00	9107	7.39	-129.3	20.3					X	" "
13:25	2	45	31.42	0.00	9070	7.49	-135.1	20.2					X	H_2S odour noted.
13:30	4	65	32.08	0.00	9053	7.37	-136.4	20.2					X	sample taken "

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Note: drawdown > 1m unavoidable, bore not pumping at less < 90 psi

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 17.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 84PbR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 19.67 STICK UP (mm) 520

FIELD EQUIPMENT (serial number)
WQM ID: 15J01500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
9.68	9.26	18	/

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
13:10	5	15	9.32	0.09	1628	7.42	94.2	20.9					X	colourless, no sed., no odour
13:15	5	40	9.30	0.00	1589	7.13	84.9	20.7					X	" "
13:20	5	65	9.32	0.00	1576	7.08	80.0	20.7					X	" "
13:25	5	90	9.30	0.00	1573	7.07	77.6	20.7					X	" Sample taken "

Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 23.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID CSMH1Rb DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 136.42 STICK UP (mm) 560

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC): Before Pump Install: 94.08 | After Pump Install: unable to get SWL as top of pump set at 89m
PUMP INTAKE DEPTH (mBTOC): ~~89~~ 110
WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
09:55	1.5	10	N/A	0.82	1522	7.71	66.6	20.7					X	colourless, odourless, no sed.
1000	1.5	17.5	"	0.43	1546	8.00	21.3	21.8					X	" "
1005	1.5	25	"	0.35	1557	8.07	-69.8	22.2					X	" "
1010	1.5	32.5	"	0.22	1561	8.09	-104.9	22.3					X	" "
1015	1.5	35	"	0.21	1565	8.11	-122.3	22.4					X	" "
1020	1.5	42.5	"	0.19	1564	8.12	-123.1	22.4					X	Sample for lab

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.0000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 17.5.23
PROJECT FIELD STAFF: AW + HM

WELL ID 10P6R DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 23.98 STICK UP (mm) 630

FIELD EQUIPMENT *(serial number)*
WQM ID: 1STT01500
IP ID: N/A
PID ID: N/A

SAMPLING EQUIPMENT *(tick applicable)*
BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐
BENNETT ☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
11.52	11.57	22	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
07:55	3	15	11.57	2.46	2487	6.39	-93.4	18.5					X	colourless, no sed., no odour
0800	3	30	11.57	2.46	2872	6.70	109.7	19.2					X	" "
0805	4	50	11.60	2.41	2912	6.72	115.6	19.9					X	" "
0810	4	70	11.58	2.44	2921	6.77	121.0	20.2					X	" sample taken "

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 19.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 4517WB DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 45.54 STICK UP (mm) 580

FIELD EQUIPMENT (serial number)
WQM ID: ISJ101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
29.58	29.34	40	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:22	2.5	~~20~~ 10	30.23	0.21	1554	7.53	-105.2	20.5					X	Slight sat odour, No Sed, No colour
11:27	2.5	27.5	30.42	0.03	1405	7.44	-98.3	20.4					X	"
11:32	2.5	40	30.51	0.01	1384	7.37	-95.2	20.4					X	No odour, clear
11:37	2.7	~~57.5~~	30.57	0.00	1334	7.35	-95.4	20.7					X	" Sample taken "

Duplicate Sample ID: —/—
Split Sample ID: —/—
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	**PROJECT NUMBER:**	620.31500.00000
PROJECT SITE ADDRESS:		**PROJECT MANAGER:**	NC
PROJECT FIELD WORK DATE:	10.5.23	**PROJECT FIELD STAFF:**	AW & HM

WELL ID 4518 WB **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 60.53 **STICK UP (mm)** 500

FIELD EQUIPMENT *(serial number)*

WQM ID: 15J101500
IP ID: /
PID ID: /

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐
12V ~~MONSOON~~ HURRICANE ☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
15.85	unable to read /	30	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
0742	5	10		2.14	3366	6.59	-60.6	19.7					X	colourless, no sed., no odour
0744	5	20		1.79	3366	6.81	-66.8	19.6					X	colourless, no sed. no odour sc.
0746	5	30		1.50	3399	6.87	-65.3	19.8					X	" "
0748	5	40		0.92	3406	6.91	-68.9	19.8					X	" "
0750	5	50		1.70	3412	6.96	-68.1	19.9					X	" "

Duplicate Sample ID: N/A **Split Sample ID:** N/A **Metals Sample Field Filtered:** Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

8

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.0000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 16.5.25
PROJECT FIELD STAFF: AW + MM

WELL ID 25PCR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 102.15 STICK UP (mm) 700

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
					Before Pump Install	After Pump Install		
WQM ID:	15J101500	BAILER (ECO)	☐	MICRO-PURGE ☐				
IP ID:	/	BAILER (S/S)	☐	PERISTALTIC ☐				
PID ID:	/	BAILER (TEFLON)	☐	WATERRA ☐ BENNETT ☒	72.12	72.03	86	/

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%						
0850	3	10	72.50	0.64	8825	6.74	-44.4	19.0				X		colourless, no sed., no odour
0855	3	25	72.52	0.13	9070	6.82	-61.2	20.4					X	" "
0900	3	40	72.90	0.06	9057	6.95	-70.5	20.5					X	" "
0905	3	55	73.24	0.03	9083	6.95	-72.8	20.7					X	" "
0910	3	70	73.25	0.02	9063	6.98	-75.3	20.6					X	" " sample taken

Duplicate Sample ID: / Split Sample ID: / Metals Sample Field Filtered: Yes ☐ / No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31005
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 16.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 26PeR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 93.60 STICK UP (mm) 480

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:	15J101500	BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	/	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:		BAILER (TEFLON)	☐	WATERRA	☐
				BENNETT	☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
63.09	AM 62.90 ~~93.60~~	85	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:17	3	10	63.72	0.14	11146	6.87	-78.5	20.5					X	slight yellow tinge. no sed. or odour
*10:25	~3*	20	63.71	0.12	11155	7.08	-91.2	20.6					X	colourless " "
*10:31	~3*	30	63.93	0.04	11299	7.07	-95.3	21.1					X	" "
10:36	~~3~~4	~~4~~50	63.94	0.00	11287	7.12	-95.0	21.0					X	" "
10:41	4	70	63.04	0.00	11269	7.13	-94.6	20.9					X	" sample taken "

Duplicate Sample ID: / Split Sample ID: / Metals Sample Field Filtered: Yes ☑ No ☐

* pump stopped pumping for a few mins → increase in pressure required. Pump required >100 psi to pump → unable to pressurise tank frequently

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC Gum
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW&HM

WELL ID 3316-WB DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 4948 STICK UP (mm) 770

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
23.28	29.92	45	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
12:53	3	10	~~28.35~~ ~~22.90~~ AW	0.18	5014	7.56	-96.1	21.3					X	colourless, odourless, no. sed
12:58	3	25	28.30	0.05	5022	7.57	-124.0	21.4					X	" "
13:03	1.5	32.5	28.58	0.09	5040	7.55	-126.9	21.6					X	" "
13:08	1.5	40	31.02	0.08	5040	7.57	-125.3	21.6					X	"sample taken"

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

NOTE: Slow recharge. Drawdown > 1m ... pumping at minimum able (40psi) without pumping action ceasing.

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 62e.31500
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 16/5/23
PROJECT FIELD STAFF: AW HM

WELL ID 2289 PCR Lower DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 61.30 STICK UP (mm) 580

FIELD EQUIPMENT (serial number)
WQM ID: 2 15T101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
15.04	13.85	42	/

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:46	3	12	18.58	0.17	4021	7.16	-91.5	19.1				X	X	Slight yellow tinge No odour no sed
11:51	3	27	18.48	-0.01	4079	7.44	-110.9	19.6					X	colourless " "
11:56	4	39	18.65	-0.05	4077	7.46	-118.6	19.8					X	
12:01	4	67		-0.07	4079	7.47	-22.1	19.9					X	Sampled

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

unable to pump less than 3L/min, even w/ drawdown
had to move to 4L/min

SLR

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 12.5.23
PROJECT FIELD STAFF: KW & HM

WELL ID: BMH1 DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC): 110.42 STICK UP (mm): 610

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC)
Before Pump Install: 14.64
After Pump Install: 14.63

PUMP INTAKE DEPTH (mBTOC): 45

WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:40	4	32	14.92	~~1.41~~ 1.41	1339	6.59	147.7	21.0			X			yellow tinge, NO odor brown sediment
10:45	4	52	14.98	1.37	1340	6.70	143.2	20.8			X			yellow tinge Cloudy
10:50	4	72	15.03	1.27	1316	6.71	138.2	20.9				X		no sediment
10:55	4	92	15.04	1.24	1328	6.67	111.8	20.8				X		slight cloudy NO yellow tinge
11:00	4	112	15:04	1.23	1330	6.71	122.4	20.7				X		odour less no sediment

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 2291 PC DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 52 STICK UP (mm) 1160

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
39.55	39.55	45	/

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
09:24	2	10L	39.78	0.43	7027	6.86	-50.2	18.7					X	colourless, no odour, no sed.
09:29	2	20	39.82	0.02	7221	6.82	-66.2	19.4					X	" "
09:34	2	30	39.80	0.00	7278	6.85	-66.3	19.7					X	" "
09:39	2	40	39.82	0.00	7292	6.88	-65.4	19.8					X	" " Sample taken

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

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW + HM

WELL ID: 81P
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC): 49.90
STICK UP (mm): 1350

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
35.34	35.25	46	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
1448	3	10	35.80	0.32	5574	7.40	-7.6	21.0					X	colourless, odourless, no sediment
1452	3	25	35.88	0.03	5556	7.21	12.3	20.8					X	" "
1458	3	40	35.89	-0.03	5518	7.15	0.1	20.4					X	" "
1502	3	55	35.92	-0.05	5544	7.12	-8.7	20.6					X	" "
1508	3	70	35.95	-0.07	5539	7.12	-16.4	20.6					X	" "
1512	3	85	35.94	-0.08	5543	7.12	-21.4	20.6					X	" " sample taken

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 12.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 109P* DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 60.82* STICK UP (mm) 13885

*dipper unable to go past due to destruction dipper stopped at 60.82

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:	1SJ101500	BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	—	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:	—	BAILER (TEFLON)	☐	WATERRA	☐
				BENNETT	☒

DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
Before Pump Install	After Pump Install		
18.38	15.40	55m	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
0940	4	10	22.90	0.03	499.9	7.72	119.8	21.0					X	clear, colourless, no sed. or odour
0945	4	30	23.10	0.00	499.0	7.76	126.6	20.9					X	" "
0950	4	50	23.41	0.01	499.5	7.75	127.5	21.0					X	" sample taken "
														will not pump at less than
														4L/min (100psi). Flow
														will cease @ <4L/min

Duplicate Sample ID: — Split Sample ID: — Metals Sample Field Filtered: Yes ☒ No ☐

*map says "109pb"

note: no logger attached to end of line in bore.

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	PROJECT NUMBER:	620.31500.00000
PROJECT SITE ADDRESS:		PROJECT MANAGER:	NC
PROJECT FIELD WORK DATE:	12.5.23	PROJECT FIELD STAFF:	AW & HM

WELL ID: GW05A DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ 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:	15J101500	BAILER (ECO)	☐	MICRO-PURGE	☐	Before Pump Install	After Pump Install		
IP ID:	/	BAILER (S/S)	☐	PERISTALTIC	☐	4.02	4.02	16	N/A
PID ID:	/	BAILER (TEFLON)	☐	WATERRA / BENNETT	☐				

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%						
0742	4	5	4.29	4.10	1116	8251	115.6	18.6					X	colourless, no odour, no sed.
0745	4	17	4.24	4.04	1125	6.74	119.2	19.0					X	" "
0748	4	29	4.07	4.02	1128	6.77	120.7	19.1					X	" "
0751	4	AW 41	4.35	4.00	1132	6.78	123.0	19.2					X	" "
0754	5	56	4.32	4.00	1140	6.77	124.1	19.5					X	" sample taken "

Duplicate Sample ID: / Split Sample ID: / Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM | PROJECT NUMBER: 620.31500.00000

PROJECT SITE ADDRESS: | PROJECT MANAGER: NC

PROJECT FIELD WORK DATE: 15.5.23 | PROJECT FIELD STAFF: AW & HM

WELL ID GW16A | DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ | WELL DEPTH (mBTOC) 23.8 | STICK UP (mm) 550

FIELD EQUIPMENT *(serial number)*

WQM ID: 15J101500

IP ID: —

PID ID: —

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO) ☐ | MICRO-PURGE ☐

BAILER (S/S) ☐ | PERISTALTIC ☐

BAILER (TEFLON) ☐ | WATERRA ☐

BENNETT ☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
15.72	15.89	21	—

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
15:15	3	10	~~17~~ 17.01 AW	1.28	1466	6.59	25.3	19.2					X	colourless, no sed, no odour
15:20	~~4~~ 3 AW	25	15.94	0.67	1540	6.83	31.0	19.9					X	" "
15:25	3	40	16.90	0.59	1555	6.86	38.2	19.9					X	" "
15:30	2	50	17.56	0.64	1554	6.84	45.4	20.0					X	" sample taken "

Duplicate Sample ID: — | Split Sample ID: — | Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	GWM NAC	PROJECT NUMBER:	620.31500.00000
PROJECT SITE ADDRESS:		PROJECT MANAGER:	NC
PROJECT FIELD WORK DATE:	11.5.23	PROJECT FIELD STAFF:	AW & HM

WELL ID: GW15A DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC): 46 STICK UP (mm): 600

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:	15J101500	BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	✓	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:	✓	BAILER (TEFLON)	☐	WATERRA	☐
				BENNETT	☒

DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
Before Pump Install	After Pump Install		
29.36	28.86	41	✓

TIME (hh:mm) AM	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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
8:10	2.5	12	29.42	0.21	1714	7.17	-113.1	19.7					✓	slight sulfur odour colourless
8:15	2	22	29.43	0.06	1744	7.34	-128.3	20.1					X	" "
8:20	2	32	29.44	0.02	1763	7.34	-132.4	20.5					X	No odour
8:25	2	42	29.43	0.00	1764	7.35	-133.6	20.6					X	sampled here

Duplicate Sample ID: ✓ Split Sample ID: ✓ Metals Sample Field Filtered: Yes ☒ ✓ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 24.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: GW13B
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC): 111.682
STICK UP (mm): 565

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC): Before Pump Install: 29.37; After Pump Install: 29.29
PUMP INTAKE DEPTH (mBTOC): 41
WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
7:25	2	10	29.61	0.66	547	7.72	-83.8	12.6					X	colourless, no sed. H_2S odour
07:30	2	20	29.67	0.11	618	7.90	-128.5	17.0					X	" "
0735	2	30	29.74	0.02	638	8.05	-146.8	18.1					X	" "
0740	2	40	29.74	0.00	~~644~~ 649	8.11	-158.0	18.9					X	" "
0745	2	50	29.78	0.00	653	8.12	-163.8	19.2					X	Sample taken "

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 16.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 114 P NOTE: Logger not attached to end of wire
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC) 84.24 STICK UP (mm) 1220

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID:
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
53.76	53.49	70	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
12:53	4	AW 420	54.44	0.34	5895	7.02	-57.6	22.1					X	Slight yellow tinge no sed. no odour
*1307	4	30	55.13	0.02	5979	7.32	-105.7	22.0					X	colourless " "
1312	4	50	55.87	0.05	5920	7.39	-112.9	22.3					X	" "
1317	4	70	56.13	0.06	5889	7.42	-117.8	22.5					X	
1322	4	90	56.19	0.06	5835	7.45	-120.7	22.6					X	" sample taken "

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

* pump ceased working → ran out of fuel, resumed after a few mins (and refueling)

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	**PROJECT NUMBER:**	620.31500
PROJECT SITE ADDRESS:		**PROJECT MANAGER:**	NC
PROJECT FIELD WORK DATE:	8.5.23	**PROJECT FIELD STAFF:**	AW & HM

WELL ID ~~116~~ AW8P **DIAMETER** (tick one): 38mm ☐ (55mm) 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 60.95 **STICK UP (mm)** 1200

FIELD EQUIPMENT *(serial number)*

WQM ID: 15J101500

IP ID: —

PID ID: —

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO)	☐	MICRO-PURGE	☐
BAILER (S/S)	☐	PERISTALTIC	☐
BAILER (TEFLON)	☐	WATERRA	☐
		BENNETT	☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
35.75	35.65	48.0	

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
13:24	2	2	37.1	0.16	2631	7.20	-76.6	20.8			X			grey - sediment
13:33	1	15	36.5	0.16	2621	7.25	-82.6	20.7				X		grey - clear, sediment ~~lessened~~ reduced
13:38	1	20	36.45	0.13	2615	7.25	-85.1	20.5					X	clear, no sediment
13:43	1	25	36.42	0.08	2619	7.15	-88.9	20.6					X	" " samples taken
														36.57 mTOC final SWL

Duplicate Sample ID: N/A **Split Sample ID:** N/A **Metals Sample Field Filtered:** Yes ☒ No ☐

Logger installed

Groundwater Monitoring Event - Water Quality Parameters

22

PROJECT NAME: NAC GWM

PROJECT NUMBER: 620.31500.00000

PROJECT SITE ADDRESS:

PROJECT MANAGER: NC

PROJECT FIELD WORK DATE: 19.5.23

PROJECT FIELD STAFF: AW & HM

WELL ID 119Pag AW DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 49.58 STICK UP (mm) 1200

FIELD EQUIPMENT *(serial number)*

WQM ID: 15J101500

IP ID: N/A

PID ID: N/A

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO) ☐ MICRO-PURGE ☐

BAILER (S/S) ☐ PERISTALTIC ☐

BAILER (TEFLON) ☐ WATERRA ☐

BENNETT ☒

DEPTH TO WATER (mBTOC)

Before Pump Install: 16.16

After Pump Install: 16.18 ~~49.58~~ AW

PUMP INTAKE DEPTH (mBTOC): 36.0

WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:12	4	10	16.38	0.24	2428	7.24	-49.1	20.5					X	colourless, no odour, no sed.
10:17	4	30	16.41	0.07	2402	7.56	-91.0	21.2					X	" "
10:22	4	50	16.44	0.01	2407	7.61	-98.4	21.5					X	" "
10:27	4	70	16.44	0.00	2406	7.62	-100.3	21.6					X	" sample taken "

Duplicate Sample ID: ✓

Split Sample ID: ✓

Metals Sample Field Filtered: Yes ☒ No ☐

SLR

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 10.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 118P DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 62.1 STICK UP (mm) 1002

FIELD EQUIPMENT *(serial number)*
WQM ID: 15J101500
IP ID: /
PID ID: /

SAMPLING EQUIPMENT *(tick applicable)*
BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐
BENNETT ☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
14.13	14:17	32m	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
14:57	2	10	14.22	0.02	18818	6.71	-32.5	21.0					X	colourless, slightly foamy? no sed or odour
1502	2	20	14.22	0.00	18749	6.69	-35.1	20.9					X	" "
1507	2	30	14.22	0.00	18706	6.68	-36.9	20.8					X	samples taken after this reading.

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 10.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 113PgcB DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 57.4 STICK UP (mm) 1100

FIELD EQUIPMENT (serial number)
WQM ID: 155101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
7.26	7.25	45m	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
12:50	2	10L	7.37	0.17	5569	7.16	-94.3	21.4					X	No odour, colourless
12:55	3	25L	7.43	0.08	5530	7.36	-99.2	21.1					X	" "
~~12:58~~ 13:00	3	40L	7.41	0.06	5524	7.26	-98.2	21.0					X	No odour "
13:05	3	55L	7.41	0.06	5512	7.25	-98.2	21.0					X	Sample

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	**PROJECT NUMBER:**	620.31500.00000
PROJECT SITE ADDRESS:		**PROJECT MANAGER:**	NC
PROJECT FIELD WORK DATE:	12.5.23	**PROJECT FIELD STAFF:**	AW + HM

WELL ID GW05B **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 80.7 **STICK UP (mm)** 650

FIELD EQUIPMENT (serial number)		**SAMPLING EQUIPMENT** (tick applicable)				**DEPTH TO WATER (mBTOC)**		**PUMP INTAKE DEPTH (mBTOC)**	**WELL HEADSPACE PID (ppm)**
WQM ID:	15J101500	BAILER (ECO)	☐	MICRO-PURGE	☐	Before Pump Install	After Pump Install		
IP ID:	/	BAILER (S/S)	☐	PERISTALTIC	☐	AW 49.54 ~~49.54~~	49.57	65	N/A
PID ID:	/	BAILER (TEFLON)	☐	WATERRA	☒ BENNETT				

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%						
0820	3	5	49.80	0.26	956	7.59	-36.1	20.5					X	very light brown, some sediment no odour
0825	4	30	49.88	0.16	963	7.68	-62.9	20.6					X	colourless, minimal sed.
0830	4	50	49.65	0.04	965	7.72	AW ~~89~~ -89.6	20.8					X	" , no sed.
0835	4	70	49.72	0.00	967	7.72	-97.1	20.8					X	" "
0840	4	90	49.88	0.00	968	7.69	-102.0	20.9					X	" sample taken

Duplicate Sample ID: / **Split Sample ID:** / **Metals Sample Field Filtered:** Yes ☒ ✓ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 11.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID GW06B DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 134.20 STICK UP (mm) 748

FIELD EQUIPMENT *(serial number)*
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

SAMPLING EQUIPMENT *(tick applicable)*
BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐
BENNETT ☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
27.12	27.08	42	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
			27.53											
Well Purge & Stabilisation Acceptance Criteria ↓				±10%	±3%	±0.1	±10%	±10%						
15:27	3	5	~~27.72~~	0.06	975	8.46	-158.3	20.6					X	colourless, H_2S odour, no sed.
15:32	3	20	27.54	0.00	980	8.22	-171.7	20.8					X	" "
15:37	3	35	27.61	-0.07	988	8.41	-185.3	21.2					X	" "
15:42	~~3~~ 4	~~50~~ 55	27.67	-0.09	992	8.41	-193.9	21.4					X	" "
15:47	~~3~~ 4	~~65~~ 75	27.69	-0.09	996	8.44	-200.8	21.6					X	" Sample taken

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

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 8.5.23
PROJECT FIELD STAFF: AW/HM

WELL ID GW10 DIAMETER (tick one): 38mm ☐ 50mm ☐ 100mm ☐ WELL DEPTH (mBTOC) 71.4 STICK UP (mm) 0.92

FIELD EQUIPMENT (serial number)
WQM ID: 19J101500
IP ID:
PID ID:

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

DEPTH TO WATER (mBTOC): Before Pump Install 43.57; After Pump Install 43.27
PUMP INTAKE DEPTH (mBTOC): 52m
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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
15:10	4L/min	4L	46.04	0.06	~~2752~~ 2745	7.49	-108.6	19.4					X	No odour Clear
15:15	3L/min	19L	46.05	0.09	2429	7.53	-107.7	18.8					X	"
15:20	3L/min	34L	46.05	0.08	2437	7.51	-108.1	18.5					X	"
15:25	3L/min	49L	46.14	0.05	2436	7.50	-110.0	18.3					X	"
15:30	3L/min	64L	46.16	0.03	2428	7.49	-111.2	18.1					X	"

Duplicate Sample ID: QAQC01 Split Sample ID: QAQC02 Metals Sample Field Filtered: Yes ☒ No ☐

Logger in Bore

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 11.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: GW08C
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC): >150* (* well > dip tape length.)
STICK UP (mm): 540

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: ✓
PID ID: ✓

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
80.65	79.74	85	✓

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
14:15	2	5	80.85	0.03	2434	8.40	-199.8	22.0					X	slight H_2S odour, colourless, no sed.
14:20	2	15	81.05	-0.01	2430	8.43	-228.1	22.0					X	" "
14:25	2	25	81.25	-0.04	2439	8.47	-243.1	22.1					X	" "
14:30	2	35	81.43	-0.06	2440	8.48	-248.1	22.1					X	" "
14:35	2	45	81.61	-0.07	2442	8.45	-251.1	22.1					X	" " + sample taken

Duplicate Sample ID: ✓
Split Sample ID: ✓
Metals Sample Field Filtered: Yes ☑ No ☐

SLR

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM **PROJECT NUMBER:** 620.31500.00000

PROJECT SITE ADDRESS: **PROJECT MANAGER:** NC

PROJECT FIELD WORK DATE: 9.5.23 **PROJECT FIELD STAFF:** AW & HM

WELL ID GW09C **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** >150* **STICK UP (mm)** 530

* (unable to measure full depth due to WLM length of 150m)

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		~~PUMP~~ HYDRASLEEVE INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID:	15J101500	BAILER (ECO) ☐	MICRO-PURGE ☐	Before Pump Install	After Pump Install		
IP ID:	N/A	BAILER (S/S) ☐	PERISTALTIC ☐				
PID ID:	N/A	BAILER (TEFLON) ☐ HYDRASLEEVE ☐	WATERRA ☐	15.00	N/A	30	N/A

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%						
11:30	–	2	–	2.08	1714	7.72	-215.0	19.4					X	colourless, no sediment, H_2S odour sample taken.

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

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM **PROJECT NUMBER:** 620.31500.00000

PROJECT SITE ADDRESS: **PROJECT MANAGER:** NC

PROJECT FIELD WORK DATE: 9.5.23 **PROJECT FIELD STAFF:** AW & HM

WELL ID GW09A **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 25.85 **STICK UP (mm)** 590

FIELD EQUIPMENT *(serial number)*

WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐ 12V/ HURRICANE ☒

DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
Before Pump Install	After Pump Install		
15.93	unable to measure	23	N/A

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%						
0923	3	10		5.20	2371	6.41	127.6	16.0					X	clear, no sediment
0928	3	25		4.29	2571	6.66	131.3	19.2					X	" "
0933	2	35		4.15	2595	6.87	133.2	19.0					X	" "
0938	2	45		3.92	2607	6.90	135.0	19.7					X	" "
0943	2	55		4.23	2616	6.97	127.5	19.9					X	" "
0948	2	65		4.17	2603	7.01	131.1	19.7					X	" "
0953	2	75		4.20	2561	6.92	134.1	19.1					X	sample taken here

Duplicate Sample ID: N/A **Split Sample ID:** N/A **Metals Sample Field Filtered:** Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM **PROJECT NUMBER:** 620.31500.00000

PROJECT SITE ADDRESS: **PROJECT MANAGER:** NC

PROJECT FIELD WORK DATE: 9.5.23 **PROJECT FIELD STAFF:** AW & HM

WELL ID GW09B **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 40.3 **STICK UP (mm)** ~~0~~ AW 590

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			DEPTH TO WATER (mBTOC)		HYDRASLEEVE PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID:	15J 101500	BAILER (ECO) ☐	MICRO-PURGE ☐		Before Pump Install	After Pump Install		
IP ID:	—	BAILER (S/S) ☐	PERISTALTIC ☐					
PID ID:	—	BAILER (TEFLON) ☐	WATERRA ☐		15.09	N/A	~~N~~ AW 32	N/A
		HYDRASLEEVE ☒						

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%						
11:05	/	2		3.27	2244	6.87	-14.8	18.9					X	clear, no sediments, no odour sample taken

Duplicate Sample ID: N/A **Split Sample ID:** N/A **Metals Sample Field Filtered:** Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 19.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: GW11B
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC): >150* Water level meter only to 150m
STICK UP (mm):

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
54.60	54.20	70	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
07:13	2.5	10	55.50	0.73	2755	7.29	-124.0	17.0				X		colourless, H_2S odour, rose
07:18	2.5	17.5	55.75	0.13	2912	6.98	-111.3	19.6				X		" "
07:23	2.5	25	55.98	0.07	2944	7.04	-115.0	20.2					X	" "
07:28	2.5	32.5	56.08	0.02	2968	7.01	-114.7	20.7					X	" "
07:33	2.5	40	56.14	0.00	2986	6.99	-116.3	21.0					X	" " Sample taken

Duplicate Sample ID: ✓
Split Sample ID: ✓
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM | PROJECT NUMBER: 620.31500.00000

PROJECT SITE ADDRESS: | PROJECT MANAGER: NC

PROJECT FIELD WORK DATE: 15.5.23 | PROJECT FIELD STAFF: AW & HM

WELL ID 19PCR2 | DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ | WELL DEPTH (mBTOC) 98.89 | STICK UP (mm) 720

FIELD EQUIPMENT (serial number)	SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
			Before Pump Install	After Pump Install		
WQM ID: 15J101500	BAILER (ECO) ☐	MICRO-PURGE ☐	42.74	42.14	66	N/A
IP ID: —	BAILER (S/S) ☐	PERISTALTIC ☐				
PID ID: —	BAILER (TEFLON) ☐	WATERRA RENNETT ☒				

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%						
11:50	2	~~20~~	43.34	0.18	745	7.92	-81.4	20.9					X	colourless, no sed., no odour
11:55	2	20	42.92	0.12	744	8.09	-143.1	20.9					X	"
~~11:54~~ 12:00	2	30	42.85	0.02	752	8.07	-165.3	21.4					X	"
12:05	2	40	42.63	0.00	754	8.09	-172.3	21.5					X	"
12:10	AW2 3	50	43.36	0.01	755	8.07	-168.1	21.6					X	sample " taken

Duplicate Sample ID: ✓ | Split Sample ID: ✓ | Metals Sample Field Filtered: Yes ☐ ✓ No ☐

SLR

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 15.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 18PbR2 DIAMETER (tick one): 38mm ☐ 50mm ☑ 100mm ☐ WELL DEPTH (mBTOC) 72.86 STICK UP (mm) 690

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
WQM ID: 15J101500		BAILER (ECO) ☐	MICRO-PURGE ☐	Before Pump Install	After Pump Install		
IP ID: /		BAILER (S/S) ☐	PERISTALTIC ☐	14.09	13.33	40	N/A
PID ID: /		BAILER (TEFLON) ☐	WATERRA ☐ BENNETT ☒				

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:43	1	10	14.23	0.67	655	7.54	109.7	20.0					X	No odour, hose, colourless
10:48	1.5	17.5	14.54	0.38	~~7~~ 647	7.64	103.9	20.2					X	" "
10:53	1.5	25	22.64	0.28	645	7.62	83.1	20.2					X	" "
10:58	1	~~32.5~~ 30	22.54	0.25	645	7.69	84.1	20.1					X	" "
11:08	0	30	21.52	-	-	-	-	-						pumping ceased, let bore recover. Cannot pump <1L/min
11:13 11:18	0.75	33	~~18.02~~ 18.04 18.95	0.48	633	7.61	77.1	19.8					X	(won't bring up water)
11:23	0.75	36	20.33	0.43	6.36	7.62	78.1	19.7					X	Sampled

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

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW + HM

WELL ID 82PCR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC) 41.40 m40 STICK UP (mm) 710

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
19.53	19.53 ~~41.40~~ mw	3.3	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:48	3	10	20.04	0.42	7634	7.28	-54.6	20.2				X		light brown, ~~some~~ tinge, some sediment, no odour
11:53	3	25	20.02	0.02	7523	7.13	-61.6	20.6					X	colourless, no sed., no odour
11:58	3	40	20.04	-0.03	7615	7.07	-60.3	20.7					X	" "
12:03	3	55	20.06	-0.05	7508	7.07	-65.6	20.7					X	" sample taken "

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 132WBR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 47.55 STICK UP (mm) 560

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:	15J101500	BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	/	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:	/	BAILER (TEFLON)	☐	WATERRA	☐
				BENNETT	☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
4.27	4.23	23	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
07:15	4	10	4.42	0.57	5771	6.10	-3.4	16.8					X	slight yellow tinge, no sed., no odour
07:20	4	30	4.43	0.06	6258	6.47	-47.8	18.9					X	colourless, no sed slight H_2S odour
07:25	4	50	4.41	0.00	6356	6.55	-56.6	19.4					X	colourless, odourless, no sed.
07:30	4	70	4.42	0.00	6408	6.47	-62.0	19.7					X	" "
07:35	4	90	4.42	0.00	6426	6.54	-63.3	19.8					X	sample taken, slight H_2S odour

Duplicate Sample ID: / Split Sample ID: / Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 133WBR DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 84.42 STICK UP (mm)

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
17.44	15.41	48	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						White
8:27	2.5	20	20.19	0.09	355.5	7.54	-76.1	19.3				X		No odour slight cloudy, No sed
8:32	2.5	32.5	22.08	-0.03	359.7	7.84	-100.6	19.9					X	
8:37	2.5	45	22.31	-0.03	370.5	7.87	-103.7	19.9					X	
8:42	2	55	22.39	-0.04	373.5	7.86	-103.8	19.9					X	Sample

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

: Water depth drop sign, dropped pump rate to lowest possible (2.5)/(2)
: Slow recharge

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	**PROJECT NUMBER:**	620.31500
PROJECT SITE ADDRESS:		**PROJECT MANAGER:**	NC
PROJECT FIELD WORK DATE:	10.5.23	**PROJECT FIELD STAFF:**	AW HM

WELL ID BCS3 **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 111.93 **STICK UP (mm)** 800

FIELD EQUIPMENT *(serial number)*		**SAMPLING EQUIPMENT** *(tick applicable)*				**DEPTH TO WATER (mBTOC)**		**PUMP INTAKE DEPTH (mBTOC)**	**WELL HEADSPACE PID (ppm)**
WQM ID:	15J101500	BAILER (ECO)	☐	MICRO-PURGE	☐	Before Pump Install	After Pump Install	77m Stuck @ 79m Pump not Push Past	—
IP ID:	✓	BAILER (S/S)	☐	PERISTALTIC	☐	34.99	34.93		
PID ID:	✓	BAILER (TEFLON)	☐	WATERRA BENNETT	☐				

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%						
10:52	3	10	35.44	0.21	1029	10.20	-262.8	21.6					X	H_2So Sed Some
10:57	3	35	35.52	0.09	878	9.46	-252.6	21.8					X	
11:02	3	50	35.55	0.04	943	9.04	-225.5	21.9					X	
11:07	3	65	35.59	0.01	840	8.93	-213.4	22.0					X	
11:12	3	80	35.59	0.00	893	8.84	-195.4	22.0					X	H_2So odour
11:17	3	95	35.60	0.00	893	8.90	-211.5	22.0					X	

Duplicate Sample ID: ✓ **Split Sample ID:** ✓ **Metals Sample Field Filtered:** Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: ~~24th~~ 23.3.23
PROJECT FIELD STAFF: AW & HM

WELL ID BCS4 DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 133.74 STICK UP (mm) 310

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC)
Before Pump Install: 37.49
After Pump Install: MW ~~35.67~~ 36.43

PUMP INTAKE DEPTH (mBTOC): *obstruction ~~44~~ 107

WELL HEADSPACE PID (ppm): pump not able to push through: N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
14:35	2	10	38.74	0.94	3742	7.70	-114.1	23.1					X	colourless. no sed. H_2S odour
14:40	1.5	17.5	38.73	0.28	3727	7.72	-144.1	23.2					X	" "
14:45	1.5	25	~~38.81~~ 38.08	0.18	36.32	7.75	-137.7	22.9					X	" "
14:50	1	~~30.5~~ 30.0	38.97	0.15	3633	7.73	-121.5	23					X	Colourless, No Sed No odour
14:55	1	35	38.92	0.14	3629	7.75	-119.3	22.0					X	" Sample taken

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 10.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: LCA1 DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC): 5.44 STICK UP (mm): 740

FIELD EQUIPMENT *(serial number)*

WQM ID: N/A
IP ID: ✓
PID ID: ✓

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
DRY	–	–	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
														bore dry

Duplicate Sample ID: ✓ Split Sample ID: ✓ Metals Sample Field Filtered: Yes ☐ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW+HM

WELL ID LCA2 DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 7.20 STICK UP (mm) 680

FIELD EQUIPMENT *(serial number)*
WQM ID: 15J101500
IP ID: /
PID ID:

SAMPLING EQUIPMENT *(tick applicable)*
BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☒ BENNETT

DEPTH TO WATER (mBTOC)
Before Pump Install: / DRY
After Pump Install: /

PUMP INTAKE DEPTH (mBTOC): /

WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
—	—	—	—	—	—	—	—	—						bore was dry

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME:	NAC GWM	**PROJECT NUMBER:**	620.31500.00000
PROJECT SITE ADDRESS:		**PROJECT MANAGER:**	NC
PROJECT FIELD WORK DATE:	10.5.23	**PROJECT FIELD STAFF:**	AW & HM

WELL ID GW14A2 **DIAMETER** (tick one): 38mm ☐ 50mm ☒ 100mm ☐ **WELL DEPTH (mBTOC)** 5.54 **STICK UP (mm)** 600

FIELD EQUIPMENT *(serial number)*

WQM ID: 6 N/A

IP ID: /

PID ID: /

SAMPLING EQUIPMENT *(tick applicable)*

BAILER (ECO) ☐ MICRO-PURGE ☐

BAILER (S/S) ☐ PERISTALTIC ☐

BAILER (TEFLON) ☐ WATERRA ☐

DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
Before Pump Install	After Pump Install		
4.36	N/A	N/A	/

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%						
14:00														unable to sample due to insufficient water level → water within screened interval
														NOT SAMPLED

Duplicate Sample ID: / **Split Sample ID:** / **Metals Sample Field Filtered:** Yes ☐ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 24.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID GW 08B DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) unable tagline not long enough STICK UP (mm) 590

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC): Before Pump Install 8.62; After Pump Install 8.54
PUMP INTAKE DEPTH (mBTOC): ~~12~~ 60
WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
08:20	4	20	9.07	0.03	1110	8.64	-142.2	20.1					X	colourless, no sed., slight H_2S odour
08:25	4	40	9.07	0.00	1119	8.69	-167.7	20.4					X	" "
08:30	4	60	9.09	0.00	1127	8.70	-183.4	20.8					X	" "
08:35	4	80	9.10	0.00	1132	8.69	-190.6	20.9					X	" "
08:40	4	100	9.	0.00	1132	8.71	-195.3	21.0					X	" "

Duplicate Sample ID: —
Split Sample ID: — —
Metals Sample Field Filtered: Yes ☑ No ☐

* at 40m Began w/ Bennett Pump, Refused to stick firm, forfeit Pushing get Pump to 60mbgl Resistance to pump going down

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.315[illegible]
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 15.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID GW12B DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) >150m * unable to measure due to insufficient WLM length STICK UP (mm)

FIELD EQUIPMENT (serial number)
WQM ID: 15J101506
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
55.45	55.36	78.5	/

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
14:20	2.5	10	56.~~70~~ 17	0.08	937	8.57	+31.8	20.9					X	no sed., colourless, H_2S odour
14:25	2.5	22.5	56.42	0.01	942	8.63	-170.0	21.2					X	" "
14:30	2.5	35	56.07	0.00	948	8.64	-178.0	21.3					X	" "
14:35	2.5	47.5	56.06	0.00	952	8.61	-182.0	21.2					X	" " sample taken

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 24.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID GW17A DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) >150 STICK UP (mm) 1090 *

→ WLM measuretape only to 150m

note: no ~~motion~~ formation

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:	15J101506	BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	N/A	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:	N/A	BAILER (TEFLON)	☐	WATERRA	☐
				BENNETT	☒

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
94.49	unable to measure, top of pump installed at 80m	137	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:23	2	10	N/A	~~2~~ 1.85	584	8.81	-102.3	21.9				X		light yellow-brown, sediment, slight H_2S odour
11:28	2	20	"	0.49	1386	8.63	-90.8	23.1				X		light yellow-brown, sediment, no odour
11:33	2	30	"	0.30	1439	8.65	-81.8	23.3				X		colourless, no odour, min sed.
11:38	2	40	"	0.20	1409	8.65	-79.2	23.3				X		" "
11:43	2	50	"	0.14	1391	8.66	-75.2	23.4				X		" "
11:48	2	60	"	0.11	1387	8.66	-73.7	23.4				X		" sample taken. "

Duplicate Sample ID: ✓ Split Sample ID: ✓ Metals Sample Field Filtered: Yes ☒ No ☐

NOTE: Not pumping at 137mBTOC. Pump installed at 137 mBTOC with less drop tube attached for second attempt (pump attached within SWL at 96m)

* unable to get SWL due to pump equipment in way.

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 11.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: GW19A
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC): 66.55
STICK UP (mm): 580

FIELD EQUIPMENT *(serial number)*
WQM ID: 15J101500
IP ID: /
PID ID: /

SAMPLING EQUIPMENT *(tick applicable)*
BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐
BENNETT ☒

DEPTH TO WATER (mBTOC)
Before Pump Install: 15.10
After Pump Install: 15.10

PUMP INTAKE DEPTH (mBTOC): 47

WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
0945	3	10	15.15	0.08	7417	6.90	-62.0	21.6			X			light brown, sediment, no odour
0950	2	20	15.17	0.04	7288	6.97	-67.7	21.4				X		colourless, no sediment or odour
0955	2	30	15.17	0.01	7315	6.97	-69.1	21.2					X	clear, colourless
1000	2	40	15.17	0.00	7342	6.95	-70.2	21.2					X	"sample ~~taken~~ taken"

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.0000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 11.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: GW19B
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC): 13.47
STICK UP (mm): 600

FIELD EQUIPMENT *(serial number)*
WQM ID: 15J101500
IP ID: ✓
PID ID: ✓

SAMPLING EQUIPMENT *(tick applicable)*
BAILER (ECO) ☐ MICRO-PURGE ☐
BAILER (S/S) ☐ PERISTALTIC ☐
BAILER (TEFLON) ☐ WATERRA ☐
BENNETT ☒

DEPTH TO WATER (mBTOC)
Before Pump Install: 18.63
After Pump Install: 18.62

PUMP INTAKE DEPTH (mBTOC)
69* 94
* unable to get pump past 69m, pumped from 69m due to obstruction

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:35	2.5	10	19.12	0.00	2663	8.19	-158.9	22.2					X	colourless, slight H_2S odour
10:40	2.5	22.5	19.37	0.00	2673	8.34	-184.9	22.4					X	colourless, H_2S odour
10:45	2.5	35	19.10	0.00	2671	8.34	-192.7	22.3					X	H_2S odour, colourless
10:50	2	45	19.12	0.00	2659	8.35	-195.8	22.1					X	sample taken

Duplicate Sample ID: ✓
Split Sample ID: ✓
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 11.5.23
PROJECT FIELD STAFF: AW+HM

WELL ID GW22A DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 28.2 STICK UP (mm) 400

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
17.32	17.27	27	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:35	2	20	17.45	0.12	8091	7.13	-98.6	21.6					X	No odour
11:40	2	30	17.50	0.02	8133	7.25	-102.7	21.6					X	colourless no odour or sed.
11:45	2	40	17.48	0.00	8129	7.26	-104.3	21.5					X	" "
11:50	2	50	17.53	0.00	8177	7.23	-104.1	21.8					X	Sampled "

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 11.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID: GW22B
DIAMETER (tick one): 38mm ☐ 50mm ☑ 100mm ☐
WELL DEPTH (mBTOC): 111.80
STICK UP (mm): 700

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC): Before Pump Install: 17.67; After Pump Install: 17.65
PUMP INTAKE DEPTH (mBTOC): 70*
WELL HEADSPACE PID (ppm): N/A

* pump would not move past 70m (obstruction). pumped at 70m

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
12:20	2	16	17.75	0.02	5587	7.61	-130.6	22.2					X	No odour, no sed. colourless
12:25	3	31	17.93	0.04	5590	7.89	-145.2	21.5					X	" "
12:30	3	46	17.87	-0.07	5775	7.83	-160.7	22.1					X	" "
12:35	3	61	17.88	-0.08	5783	7.70	-167.7	22.1					X	" "
12:40	3	76	17.85	-0.07	5774	7.84	-166.4	22.0					X	" "
12:45	3	91	17.83	-0.07	5787	7.84	-166.4	22.1					X	Sampled

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 23.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID GW22C DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) _____ STICK UP (mm) _____

FIELD EQUIPMENT (serial number)
WQM ID:
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC): Before Pump Install 18.49; After Pump Install 17.49
PUMP INTAKE DEPTH (mBTOC): ~~135~~ 125
WELL HEADSPACE PID (ppm): (75 on tube) N/A 57 Drafe

TIME (hh:mm) pm	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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
4:00	3.5	10L	21.10	0.10	3082	7.86	-141.8	22.4					X	No colour, No sed, H_2S odour
4:05	2	15L	21.28	0.05	3068	8.10	-178.3	22.3					X	〃 〃
4:10	2	25	21.37	0.02	3067	8.09	-185.8	22.2					X	〃 〃
4:15	2	85	21.47	0.01	3070	8.10	-191.2	22.3					X	Sample taken

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

Pumping at 125 due to Pump no going down longer

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 23.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 21P DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) >150 ↗ GWM only to 150m length STICK UP (mm) 820

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:		BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	N/A	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:	N/A	BAILER (TEFLON)	☐	WATERRA	☐
				BENNETT	☒

DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
Before Pump Install	After Pump Install		
82.18	82.17	update: 142 (see note) 147 * pump would not push past 147m	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
11:47	0.5	0.5	Na	6.37	1722	8.14	45.6	27.1					X	No Oder, No Sed, No clear Lots of bubbles for 20 min
11:57	~~0.5~~	~~0.5~~	11	7.78	1745	8.13	76.5	27.7					X	11
12:07	0.5	~~10.5~~ 10.5	11	8.01	1782	8.05	74.1	28.6					X	11
12:17	0.5	15.5	11	7.98	1824	7.95	102.9	29.3					X	
~~12:27~~ 12:22	0.5	18	11	7.89	1884	7.61	90.6	30.1		X				odour no odour, No Sed
12:27	0.5	20.5	11	7.68	1932	7.61	119.2	30.2	X					light brown, sed. no odour
12:~~32~~ 37	0.5	~~30.5~~ 25.5	11	7.39	2015	7.42	138.0	30.8	X					11 11

NOTE: no water pumping up at 147m pump depth. Brought pump up 5m and began pumping (very slowly)

Duplicate Sample ID: / Split Sample ID: / Metals Sample Field Filtered: Yes ☑ No ☐

12:52 0.5 33 11 7.36 2026 7.42 139.0 30.9 X

12:57 0.5 35.5 11 7.29 2047 7.41 139.4 31.2 X

Sample Taken

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 41P
DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐
WELL DEPTH (mBTOC) 98.30
STICK UP (mm)

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
27.06	27.04	~~87~~* 74	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
10:35	3.5	10	27.29	0.21	8386	6.75	-70.1	20.9					X	colourless, no sed. H2S odour
10:40	3.5	~~26.5~~ 25	27.30	0.01	8634	6.66	-60.5	21.4					X	11
10:45	3.5	45	27.31	-0.03	8662	6.65	-51.2	21.4					X	11
10:50	3.5	62.5	27.31	-0.05	8676	6.66	-62.9	21.6					X	1L sample taken 1L

Duplicate Sample ID: /
Split Sample ID: /
Metals Sample Field Filtered: Yes ☒ No ☐

* NOTE: Obstruction encountered at 75 mBTOC, pump could not go past. Pumped at 74 mBTOC

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 17.5.23
PROJECT FIELD STAFF: AW + HM

WELL ID 48P DIAMETER (tick one): 38mm ☐ 50mm ☐ 100mm ☐ WELL DEPTH (mBTOC) 117.74 STICK UP (mm) 1190

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: /
PID ID: /

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
65.39	65.85	85	/

TIME (hh:mm)	PUMP RATE (L/min)	VOLUME (L)	DEPTH TO WATER (m BTOC) *(NOTE)	DISSOLVED OXYGEN (mg/L)	ELECTRICAL CONDUCTIVITY mS/cm or µS/cm (circle one)	pH (pH units)	REDOX POTENTIAL (mV)	TEMPERATURE (°C)	TURBIDITY (tick one) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
2:25	3L	15	65.91*	0.8	4415	6.57	135.1	21.5					X	No odour
2:30	3L	30	60.21*	0.8	4417	6.75	179.2	21.5					X	No odour no sed
2:35	3L	45		0.71	4450	6.77	182.4	21.7					X	"
2:40	3L	60		0.15	6269	6.68	183.9	21.6					X	" "
2:45	3	75		0.00	8551	6.56	175.5	21.8					X	" "
2:50	3	90		0.00	~~8745~~ 8983	6.56	175.3	21.9					X	
2:53	3	99		-0.03	9015	6.57	175.6	21.8					X	
2:56	3	108		-0.05	9100	6.57	175.6	21.8					X	

Duplicate Sample ID: /
Split Sample ID:
Metals Sample Field Filtered: Yes ☑ No ☐

*NOTE: SWL hard to obtain during sampling → probe frequently caught on something

*Unsure of SWL dump, 5m, while pumping, checked multiple times

27 November 2020

2:59 3 117

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.0000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 18.5.23
PROJECT FIELD STAFF: AW&HM

WELL ID 111PggLower_R DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 61.86 STICK UP (mm)

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)			
WQM ID:	15S101500	BAILER (ECO)	☐	MICRO-PURGE	☐
IP ID:	/	BAILER (S/S)	☐	PERISTALTIC	☐
PID ID:	/	BAILER (TEFLON)	☐	WATERRA BENNETT	☒

DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
Before Pump Install	After Pump Install		
26.56	26.37	42	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
1:50	3L	10	26.74	0.52	7542	7.15	-62.8	21.9					X	No odour, No Sed, No Colour
1:55	3L	25	26.80	0.02	7621	7.03	-79.2	21.4					X	" "
2:00	3L	40	26.87	-0.03	7661	7.04	-81.2	21.4					X	" "
2:05	3L	55	26.82	-0.05	7712	7.04	-81.9	21.4						Sample
~~2:10~~	~~3L~~	~~70~~												

Duplicate Sample ID: / Split Sample ID: / Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00003
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 17.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 112 PG GC DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 80.9 STICK UP (mm) 980

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: —
PID ID: —

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

DEPTH TO WATER (mBTOC): Before Pump Install 50.98; After Pump Install 50.30
PUMP INTAKE DEPTH (mBTOC): 67
WELL HEADSPACE PID (ppm): N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
08:55	4	10	52.30	0.20	3291	7.19	14.6	21.8					X	colourless. no sed. slight H_2S odour
*09:07	-Paused	20	52.15	0.01	3390	7.57	-58.1	22.3				X	X	Slight brown Sed.
0912	5	45	54.03	0.00	3425	7.58	-69.1	22.5				X		brown, sediment, H_2S odour
0917	5	70	54.60	0.00	3427	7.68	-76.9	22.5				X		" "
0922	5	95	54.31	0.00	3432	7.72	-86.2	22.5				X		" "
0927	5	120	54.45	0.00	3410	7.71	-86.9	22.5				X		slight brown colour, minimal sed, no odour
														sample taken

Duplicate Sample ID: —
Split Sample ID: —
Metals Sample Field Filtered: Yes ☑ No ☐

*Stopped pumping due to too much drawdown. Once SWL recovered, pumping recommenced. Would not pump < 100 psi

NOTE: pump got stuck reeling up @ ~66m

Groundwater Monitoring Event - Water Quality Parameters

56

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 19.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID GW11A_R DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 25.35 STICK UP (mm) 950

FIELD EQUIPMENT (serial number)
WQM ID: 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
10.17	10.10	24	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
0800	2	10	10.37	5.40	1424	6.85	-10.3	19.3			X			sediment, brown, no odour
0805	2	20	10.45	4.96	1421	6.95	5.6	19.4	X					orange, no odour, sediment
0810	2	30	10.41	4.91	1401	7.01	15.1	19.3	X		~~X~~			~~light orange, no sed/min sed.~~
0815	2	40	10.43	5.47	1409	7.00	38.7	19.3			X			light orange, no sed, ~~light~~ no odour
0820	2	50	10.40	5.61	1408	6.99	57.4	19.5				X		"
0825	2	60	10.41	5.67	1407	7.00	60.4	19.5				X		colourless, min sed, no odour sample taken

Duplicate Sample ID: —/— Split Sample ID: —/— Metals Sample Field Filtered: Yes ☒ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM
PROJECT NUMBER: 620.31500.00000
PROJECT SITE ADDRESS:
PROJECT MANAGER: NC
PROJECT FIELD WORK DATE: 22.5.23
PROJECT FIELD STAFF: AW & HM

WELL ID 330TWB-R DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ WELL DEPTH (mBTOC) 84.74 STICK UP (mm)

FIELD EQUIPMENT (serial number)
WQM ID: ~~330~~ 15J101500
IP ID: N/A
PID ID: N/A

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

DEPTH TO WATER (mBTOC) Before Pump Install	DEPTH TO WATER (mBTOC) After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
57.69	57.72	73	N/A

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
12:52	2	10	57.75	1.59	8891	6.21	81.2	21.5	X					light brown, sediment, no odour
12:57	2	20	57.80	0.33	9077	6.38	80.5	21.6	X					" "
13:02	2	30	57.77	0.21	9040	6.40	82.0	21.5				X		Slight brown, NOSed, No odour
13:07	2	40	57.77	0.15	9068	6.39	83.8	21.6					X	No colour, No Sed No odour
13:12	2	50	57.79	0.10	9050	6.40	88.7	21.5					X	↓ sampled

Duplicate Sample ID: QAQC05 Split Sample ID: QAQC06 Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

58

PROJECT NAME: NAC GW/M | PROJECT NUMBER: 620.31500.00000

PROJECT SITE ADDRESS: | PROJECT MANAGER: NC

PROJECT FIELD WORK DATE: 17.5.23 | PROJECT FIELD STAFF: AW + HM

WELL ID GW07_R | DIAMETER (tick one): 38mm ☐ 50mm ☒ 100mm ☐ | WELL DEPTH (mBTOC) ~~GW~~ 137.0 | STICK UP (mm) 830

FIELD EQUIPMENT (serial number)		SAMPLING EQUIPMENT (tick applicable)		DEPTH TO WATER (mBTOC)		PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
				Before Pump Install	After Pump Install		
WQM ID:	15J101500	BAILER (ECO) ☐	MICRO-PURGE ☐	55.17	55.51	85	N/A
IP ID:	/	BAILER (S/S) ☐	PERISTALTIC ☐				
PID ID:	/	BAILER (TEFLON) ☐	WATERRA BENNETT ☒				

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%						
10:45	4	10	56.21	0.12	1370	7.86	38.9	22.9			X	X		sediment, light brown, slight H_2S odour
10:50	4	30	~~56.24~~ 56.06	0.03	1386	7.96	-120.6	23.3				X		colourless, no sed. slight H_2S odour
10:55	4	50	56.43	0.00	1402	8.06	-175.3	23.6			X			" "
11:00	4	~~70~~ 70	56.55	0.00	1488	8.00	-184.5	23.7				X		" "
11:05	4	90	56.55	0.00	1828	7.85	-164.9	23.8				X		" "
11:10	4	110	56.60	0.00	1792	7.84	-154.7	23.8				X		" "
11:15	4	130	56.62	0.00	1755	7.86	-148.3	23.9					X	" " sample taken

Duplicate Sample ID: / | Split Sample ID: / | Metals Sample Field Filtered: Yes ☑ No ☐

Groundwater Monitoring Event - Water Quality Parameters

PROJECT NAME: NAC GWM

PROJECT SITE ADDRESS:

PROJECT NUMBER: 620.31500.00000

PROJECT FIELD WORK DATE: 17.5.23

PROJECT MANAGER: NC

WELL ID: WC52

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

PROJECT FIELD STAFF: AW + HM

FIELD EQUIPMENT (serial number)

WQM ID: 15J101500

IP ID: /

PID ID: /

SAMPLING EQUIPMENT (tick applicable)

BAILER (ECO) ☐ MICRO-PURGE ☐

BAILER (S/S) ☐ PERISTALTIC ☐

BAILER (TEFLON) ☐ WATERRA ☐ BENNETT ☒

WELL DEPTH (mBTOC): 66.12 STICK UP (mm): 810

DEPTH TO WATER (mBTOC)

Before Pump Install	After Pump Install	PUMP INTAKE DEPTH (mBTOC)	WELL HEADSPACE PID (ppm)
29.51	29.48	49	/

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) Turbid	Very Cloudy	Cloudy	Slightly Cloudy	Clear	COMMENTS (colour, sediment, odour, sheen, NAPL thickness)
Well Purge & Stabilisation Acceptance Criteria				±10%	±3%	±0.1	±10%	±10%						
12:10	5	10	29.92	5.71	758	8.72	26.2	21.0					X	colourless, no sed. no odour
12:15	5	35	29.96	0.15	760	8.76	24.8	20.9					X	" "
12:20	5	60	29.96	0.03	759	8.73	2.0	21.0					X	" "
12:25	5	85	29.98	0.00	758	8.73	-20.5	20.9					X	" "
12:30	5	110	30.00	0.00	758	8.72	-36.7	21.0					X	" "
12:35	5	135	30.01	0.00	757	8.71	-52.4	21.0					X	" sample taken "

Duplicate Sample ID: /

Split Sample ID: /

Metals Sample Field Filtered: Yes ☑ No ☐

Appendix C:
Photography Log

Photographic Log

Photograph 01: WSC2 sampled on 17/5/2023 with Bennett Pump.

Photograph 02: 81P sampled on 18/05/2023 with Bennett Pump

Photographic Log

Photograph 03: GW22A and GW22B sampled on 11/05/2023 with Bennett Pump

Photograph 04: 116P sampled on 08/05/2023 with Bennett Pump

Photographic Log

Photograph 05: GW10 sampled on 08/05/2023 with Bennett Pump

Appendix D:

Calibration Certificates

Multi Parameter Water Meter

Instrument YSI ProDSS
Serial No. 15J101500

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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	✓	
	6. Turbidity	✓	
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		393774	pH 7.0
2. pH 4.00		pH 4.0		399527	pH 4.0
3. ORP		236.7 mV		401308/395763	236.7 mV
4. EC		2760uS		396172	2760uS
5. D.O		100%		Fresh Air	100.4% - 764.4mmHg
6. Temp		21.5 oC		MultiTherm 09000528	21.5 oC
7. Turbidity		124NTU		22K22440060	124NTU

Calibrated by: Gidyea Venner

Calibration date: 24-Apr-23

Next calibration due: 21-Oct-23

Appendix E:
Analytical Tables

				Metals							Inorganics													
				Arsenic (filtered)	Barium (filtered)	Copper (filtered)	Aluminium (filtered)	Iron (filtered)	Manganese (filtered)	Selenium (filtered)	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Ferrous Iron	Hardness as CaCO3 (filtered)	Anions Total	Cations Total	Ionic Balance	Electrical Conductivity (Lab)	TDS	Total Dissolved Solids (Calc.)	pH (Lab)	Ammonia as N
				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	%	uS/cm	mg/L	mg/L	pH Unit	mg/L
EQL				0.001	0.001	0.001	0.01	0.05	0.001	0.01	1	1	1	1	0.05	1	0.01	0.01	0.01	1	10	1	0.01	0.01
Date	Sample Type	Field ID	Lab Report Number																					
08 May 2023	Normal	116P	EB2314152	<0.001	0.165	<0.001	<0.01	0.65	0.015	<0.01	404	404	<1	<1	-	258	29.8	28.4	2.55	2,500	1,650	1,620	8.08	0.72
09 May 2023	Normal	27PCR	EB2314152	0.004	0.045	<0.001	<0.01	2.70	0.295	<0.01	104	104	<1	<1	-	2,720	133	124	3.55	11,800	9,310	7,670	7.64	0.51
		GW09A	EB2314152	<0.001	0.404	<0.001	0.01	<0.05	<0.001	<0.01	375	375	<1	<1	-	640	28.7	29.2	0.85	2,360	1,720	1,530	8.07	<0.01
		GW09B	EB2314152	<0.001	0.214	<0.001	<0.01	0.78	0.009	<0.01	439	439	<1	<1	-	432	26.4	26.4	0.05	2,150	1,360	1,400	8.23	0.34
		GW09C	EB2314152	<0.001	0.104	<0.001	<0.01	<0.05	0.022	<0.01	210	210	<1	<1	-	150	19.4	18.7	1.79	1,800	1,060	1,170	8.17	0.35
		GW10	EB2314152	<0.001	0.491	<0.001	<0.01	0.34	0.008	<0.01	252	252	<1	<1	-	183	27.7	27.7	0.04	2,550	1,530	1,660	8.25	0.76
10 May 2023	Normal	113Pgcb	EB2314152	<0.001	0.100	<0.001	<0.01	2.36	0.037	<0.01	398	398	<1	<1	-	1,040	58.4	53.7	4.17	4,070	3,750	2,640	8.07	0.30
		118P	EB2314152	<0.001	0.073	<0.001	<0.01	7.78	0.342	<0.01	265	265	<1	<1	-	3,840	218	219	0.30	20,700	15,500	13,400	7.86	2.03
		4518WB	EB2314152	<0.001	0.278	<0.001	<0.01	2.65	0.054	<0.01	440	440	<1	<1	-	707	38.5	33.2	7.37	2,790	2,320	1,810	8.14	0.32
		BCS3	EB2314152	0.002	0.350	<0.001	0.08	0.11	0.013	<0.01	305	272	32	<1	-	14	8.92	8.49	2.45	879	539	571	8.86	0.28
11 May 2023	Normal	GW06B	EB2314679	<0.001	0.052	<0.001	<0.01	<0.05	0.009	<0.01	305	285	21	<1	-	5	11.0	10.2	3.83	1,040	609	676	8.58	0.24
		GW08C	EB2314679	0.008	0.231	<0.001	0.04	<0.05	0.017	<0.01	251	235	15	<1	-	20	26.1	22.1	8.18	2,550	1,410	1,660	8.44	0.47
		GW15A	EB2314679	<0.001	0.461	<0.001	<0.01	1.28	0.165	<0.01	367	367	<1	<1	-	501	20.2	17.7	6.45	1,810	1,110	1,180	8.19	0.15
		GW19A	EB2314679	<0.001	0.074	<0.001	<0.01	4.39	0.054	<0.01	329	329	<1	<1	-	1,310	81.9	73.3	5.53	8,100	4,940	5,260	7.94	0.70
		GW19B	EB2314679	0.002	0.055	<0.001	0.01	<0.05	0.027	<0.01	123	123	<1	<1	-	41	27.7	23.8	7.68	2,760	1,530	1,790	8.07	0.81
		GW22A	EB2314679	0.001	0.066	<0.001	<0.01	2.16	0.043	<0.01	210	210	<1	<1	-	1,020	88.4	77.5	6.53	9,070	5,460	5,900	8.13	1.52
		GW22B	EB2314679	<0.001	0.802	<0.001	<0.01	0.42	0.059	<0.01	96	96	<1	<1	-	355	56.1	51.6	4.18	6,140	3,440	3,990	7.93	2.09
12 May 2023	Normal	109P	EB2314679	<0.001	0.002	0.008	<0.01	<0.05	0.002	<0.01	246	231	15	<1	-	30	5.66	5.50	1.47	528	331	343	8.45	<0.01
		BMH1	EB2314679	<0.001	0.011	<0.001	<0.01	<0.05	<0.001	<0.01	651	651	<1	<1	-	584	15.4	15.2	0.72	1,200	819	780	8.17	<0.01
		GW05A	EB2314679	<0.001	0.048	<0.001	<0.01	<0.05	<0.001	<0.01	505	505	<1	<1	-	425	12.3	13.6	5.04	1,190	746	774	8.09	<0.01
		GW05B	EB2314679	<0.001	0.203	<0.001	<0.01	<0.05	0.010	<0.01	349	326	23	<1	-	60	10.9	10.0	4.15	1,020	582	663	8.55	0.12
15 May 2023	Normal	18PbR2	EB2314679	0.003	0.012	<0.001	0.02	<0.05	0.004	<0.01	49	49	<1	<1	-	31	6.86	6.68	1.26	698	393	454	7.77	<0.01
		18PcR2	EB2314679	0.004	0.027	<0.001	<0.01	0.06	0.028	<0.01	75	75	<1	<1	-	51	7.81	7.78	0.23	796	457	517	8.02	<0.01
		28PcR	EB2314679	<0.001	0.041	<0.001	<0.01	2.10	0.299	<0.01	59	59	<1	<1	-	2,070	105	89.0	8.46	9,840	6,190	6,400	7.60	0.43
		GW12B	EB2314679	<0.001	0.093	<0.001	<0.01	<0.05	0.004	<0.01	303	281	21	<1	-	5	10.6	9.59	4.88	1,000	606	650	8.59	0.24
		GW16A	EB2314679	<0.001	0.122	<0.001	<0.01	<0.05	0.002	<0.01	502	502	<1	<1	-	557	17.9	17.5	1.06	1,590	963	1,030	8.11	0.03
16 May 2023	Normal	25PcR	EB2315057	<0.001	0.053	<0.001	<0.01	2.99	0.111	<0.01	96	96	<1	<1	-	1,930	100	91.4	4.63	10,200	6,720	6,630	7.66	0.55
		26PcR	EB2315057	<0.001	0.030	<0.001	0.03	3.78	0.021	<0.01	179	179	<1	<1	-	2,250	136	117	7.38	12,200	8,530	7,930	8.02	0.41
		1114P	EB2315057	<0.001	0.161	<0.001	0.01	1.21	0.050	<0.01	268	268	<1	<1	-	404	58.0	55.7	2.03	6,210	3,490	4,040	8.13	1.30
		2289PcR Lower	EB2315057	<0.001	0.049	<0.001	<0.01	0.95	0.058	<0.01	100	100	<1	<1	-	734	44.0	40.8	3.72	4,520	2,920	2,940	7.96	0.52
17 May 2023	Normal	10PbR	EB2315057	<0.001	0.012	<0.001	<0.01	<0.05	<0.001	<0.01	340	340	<1	<1	-	1,140	28.7	30.5	2.98	3,100	2,130	2,020	7.99	0.03
		48P	EB2315057	<0.001	0.154	0.002	<0.01	<0.05	0.635	0.01	499	499	<1	<1	-	2,500	99.2	99.1	0.06	9,800	6,710	6,370	8.00	0.04
		84PbR	EB2315057	<0.001	0.003	<0.001	<0.01	<0.05	0.004	<0.01	316	316	<1	<1	-	608	18.9	17.6	3.54	1,660	1,160	1,080	8.29	<0.01
		112PgC	EB2315057	<0.001	0.848	<0.001	<0.01	<0.05	0.108	<0.01	108	108	<1	<1	-	172	34.0	31.4	3.97	3,610	2,010	2,350	8.03	1.02
		GW07_R	EB2315057	0.001	0.064	<0.001	<0.01	0.05	0.053	<0.01	205	205	<1	<1	-	47	18.1	16.4	4.77	1,820	962	1,180	8.26	0.24
		WCS2	EB2315057	<0.001	0.014	<0.001	0.01	<0.05	0.002	<0.01	224	210	14	<1	-	5	8.27	8.13	0.85	799	456	519	8.52	0.14
18 May 2023	Normal	41P	EB2315513	<0.001	0.040	<0.001	<0.01	5.66	0.337	<0.01	502	502	<1	<1	<0.05	1,650	101	95.6	2.75	9,180	6,280	5,970	7.85	0.56
		81P	EB2315513	<0.001	0.048	<0.001	<0.01	0.34	0.095	<0.01	262	262	<1	<1	<0.05	812	57.8	57.7	0.07	4,340	3,720	2,820	8.01	0.43
		82PcR	EB2315513	<0.001	0.086	<0.001	<0.01	2.38	0.125	<0.01	343	343	<1	<1	<0.05	1,590	84.9	83.0	1.16	8,330	5,540	5,410	7.88	1.16
		111PgC_Lower	EB2315513	<0.001	0.072	<0.001	<0.01	4.92	0.041	<0.01	467	467	<1	<1	<0.05	1,790	86.6	83.0	2.11	8,130	5,650	5,280	8.14	1.27
		132WBR	EB2315513	0.003	0.034	<0.001	<0.01	1.35	0.465	<0.01	868	868	<1	<1	0.05	1,360	79.8	77.4	1.51	7,030	4,710	4,570	7.99	0.22
		133WBR	EB2315513	0.001	0.020	<0.001	0.05	0.13	0.024	<0.01	133	133	<1	<1	<0.05	22	4.50	4.40	1.10	432	259	281	8.25	<0.01
		2291Pc	EB2315513	<0.001	0.051	<0.001	<0.01	2.71	0.055	<0.01	360	360	<1	<1	<0.05	1,180	83.0	74.1	5.69	7,980	5,000	5,190	8.03	0.68
		3316_WB	EB2315513	0.001	3.78	<0.001	<0.01	0.64	0.227	<0.01	67	67	<1	<1	<0.05	612	48.8	49.8	1.03	3,960	3,270	2,570	7.80	1.21
19 May 2023	Normal	119P	EB2315513	<0.001	0.184	<0.001	<0.01	0.09	0.026	<0.01	264	254	10	<1	<0.05	180	25.7	26.0	0.42	2,330	1,380	1,510	8.38	0.58
		4517WB	EB2315513	<0.001	0.569	<0.001	<0.01	0.35	0.020	<0.01	255	255	<1	<1	<0.05	112	15.1	14.9	0.48	1,480	844	962	8.15	0.33
		GW11A_R	EB2315513	<0.001	0.019	<0.001	<0.01	<0.05	0.008	<0.01	492	492	<1	<1	<0.05	453	16.7	17.2	1.36	1,550	879	1,010	8.16	<0.01
		GW11B	EB2315513	0.013	0.124	<0.001	<0.01	1.16	0.167	<0.01	250	250	<1	<1	<0.05	543	32.3	31.8	0.85	2,790	1,950	1,810	7.92	0.17
22 May 2023	Normal	3307WB_R	EB2315513	<0.001	0.149	<0.001	<0.01	0.16	2.67	<0.01	392	392	<1	<1	0.08	3,200	112	111	0.52	9,890	7,610	6,430	7.53	0.88
23 May 2023	Normal	21P	EB2315837	<0.001	0.290	<0.001	0.01	<0.05	0.194	<0.01	251	244	7	<1	0.28	227	18.3	17.7	1.63	1,800	970	1,170	8.33	0.02
		BCS4	EB2315837	<0.001	0.101	<0.001	<0.01	0.07	0.100	<0.01	104	104	<1	<1	<0.05	167	34.7	35.1	0.45	3,720	2,060	2,420	8.10	0.79
		CSMH1Rb	EB2315837	0.005	0.092	<0.001	0.01	<0.05	0.039	<0.01	97	97	<1	<1	<0.05	108	16.1	15.5	1.92	1,640	900	1,070	8.10	0.46
		GW22C	EB2315837	0.004	0.160	<0.001	0.01	0.10	0.045	<0.01	172	168	4	<1	<0.05	71	30.8	30.4	0.60	3,280	1,720	2,130	8.32	0.67
24 May 2023	Normal	GW08B	EB2315837	<0.001	0.081	<0.001	<0.01	<0.05	0.002	<0.01	587	511	76	<1	<0.05	5	13.9	14.2	1.03	1,250	768	812	8.87	0.33
		GW13B	EB2315837	<0.001	0.138	<0.001	<0.01	<0.05	0.009	<0.01	318	287	30	<1	<0.05	39	8.10	8.22	0.74	745	431	484	8.61	0.16
		GW17A	EB2315837	<0.001	0.046	<0.001	0.01	<0.05	0.008	<0.01	216	205	11	<1	<0.05	12	14.5	13.8	2.46	1,470	792	956	8.46	0.30

												Major/minor ions						NA
				Arsenic (filtered)	Barium (filtered)	Copper (filtered)	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	Sulfate as SO4 - Turbidimetric (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
EQL				0.001	0.001	0.001	0.1	0.1	0.01	0.01	0.01	1	1	1	1	1	0.1	1
Date	Sample Type	Field ID	Lab Report Number															
08 May 2023	Normal	116P	EB2314152	<0.001	0.165	<0.001	0.9	0.9	<0.01	<0.01	<0.01	57	28	5	531	717	<0.1	75
09 May 2023	Normal	27PCR	EB2314152	0.004	0.045	<0.001	0.6	0.6	<0.01	<0.01	<0.01	612	290	25	1,590	4,080	<0.1	777
		GW09A	EB2314152	<0.001	0.404	<0.001	2.4	0.3	2.13	2.13	<0.01	88	102	3	376	738	0.3	20
		GW09B	EB2314152	<0.001	0.214	<0.001	0.6	0.6	<0.01	<0.01	<0.01	66	65	4	405	606	0.5	25
		GW09C	EB2314152	<0.001	0.104	<0.001	0.6	0.6	<0.01	<0.01	<0.01	50	6	8	357	520	<0.1	26
		GW10	EB2314152	<0.001	0.491	<0.001	1.1	1.1	0.03	0.03	<0.01	52	13	5	550	793	<0.1	16
10 May 2023	Normal	113Pgcb	EB2314152	<0.001	0.100	<0.001	0.4	0.4	<0.01	<0.01	<0.01	141	168	5	752	1,560	0.5	308
		118P	EB2314152	<0.001	0.073	<0.001	2.6	2.6	<0.01	<0.01	<0.01	673	524	13	3,260	6,880	<0.1	872
		4518WB	EB2314152	<0.001	0.278	<0.001	0.4	0.4	0.02	0.02	<0.01	120	99	4	436	987	0.4	89
		BCS3	EB2314152	0.002	0.350	<0.001	0.4	0.4	<0.01	<0.01	<0.01	4	1	3	187	95	0.1	7
11 May 2023	Normal	GW06B	EB2314679	<0.001	0.052	<0.001	0.3	0.3	<0.01	<0.01	<0.01	2	<1	<1	232	174	0.4	<1
		GW08C	EB2314679	0.008	0.231	<0.001	0.5	0.5	<0.01	<0.01	<0.01	8	<1	3	498	735	0.2	16
		GW15A	EB2314679	<0.001	0.461	<0.001	0.2	0.2	<0.01	<0.01	<0.01	87	69	13	170	436	0.3	27
		GW19A	EB2314679	<0.001	0.074	<0.001	1.2	1.2	<0.01	<0.01	<0.01	229	179	8	1,080	2,290	<0.1	517
		GW19B	EB2314679	0.002	0.055	<0.001	0.8	0.8	<0.01	<0.01	<0.01	13	2	3	526	895	<0.1	1
		GW22A	EB2314679	0.001	0.066	<0.001	2.1	2.1	<0.01	<0.01	<0.01	197	128	7	1,310	2,830	<0.1	208
		GW22B	EB2314679	<0.001	0.802	<0.001	3.1	3.1	<0.01	<0.01	<0.01	106	22	6	1,020	1,890	<0.1	43
12 May 2023	Normal	109P	EB2314679	<0.001	0.002	0.008	0.1	0.1	<0.01	<0.01	<0.01	12	<1	1	112	22	0.3	6
		BMH1	EB2314679	<0.001	0.011	<0.001	13.0	1.1	11.9	11.9	<0.01	84	91	1	81	77	0.2	13
		GW05A	EB2314679	<0.001	0.048	<0.001	12.6	1.1	11.5	11.5	<0.01	78	56	1	118	69	0.8	15
		GW05B	EB2314679	<0.001	0.203	<0.001	0.2	0.2	<0.01	<0.01	<0.01	19	3	3	202	124	0.1	22
15 May 2023	Normal	18PbR2	EB2314679	0.003	0.012	<0.001	0.1	0.1	<0.01	<0.01	<0.01	9	2	1	139	184	0.3	33
		18PcR2	EB2314679	0.004	0.027	<0.001	0.2	0.2	<0.01	<0.01	<0.01	14	4	2	154	170	0.4	73
		28PcR	EB2314679	<0.001	0.041	<0.001	0.8	0.8	<0.01	<0.01	<0.01	492	205	22	1,080	3,270	<0.1	576
		GW12B	EB2314679	<0.001	0.093	<0.001	0.3	0.3	<0.01	<0.01	<0.01	2	<1	2	217	158	0.4	3
		GW16A	EB2314679	<0.001	0.122	<0.001	1.5	0.2	1.34	1.34	<0.01	91	80	8	142	268	0.3	14
16 May 2023	Normal	25PcR	EB2315057	<0.001	0.053	<0.001	1.6	1.6	<0.01	<0.01	<0.01	460	190	22	1,200	3,210	<0.1	372
		26PcR	EB2315057	<0.001	0.030	<0.001	0.8	0.8	<0.01	<0.01	<0.01	475	259	26	1,640	4,020	<0.1	898
		1114P	EB2315057	<0.001	0.161	<0.001	1.5	1.3	0.22	0.22	<0.01	96	40	7	1,090	1,710	<0.1	211
		2289PcR Lower	EB2315057	<0.001	0.049	<0.001	0.5	0.5	<0.01	<0.01	<0.01	177	71	13	594	1,300	<0.1	256
17 May 2023	Normal	10PbR	EB2315057	<0.001	0.012	<0.001	66.1	6.6	59.5	59.5	<0.01	187	164	2	175	740	0.4	51
		48P	EB2315057	<0.001	0.154	0.002	176	22.7	153	153	0.02	328	408	17	1,120	2,600	0.4	764
		84PbR	EB2315057	<0.001	0.003	<0.001	0.3	<0.1	0.27	0.27	<0.01	100	87	2	124	290	0.2	211
		112PgC	EB2315057	<0.001	0.848	<0.001	0.9	0.9	0.01	0.01	<0.01	54	9	4	640	1,110	<0.1	24
		GW07_R	EB2315057	0.001	0.064	<0.001	0.2	0.2	<0.01	<0.01	<0.01	14	3	3	354	479	0.1	22
		WCS2	EB2315057	<0.001	0.014	<0.001	0.1	0.1	0.04	0.04	<0.01	2	<1	1	184	130	0.2	6
18 May 2023	Normal	41P	EB2315513	<0.001	0.040	<0.001	1.5	1.5	0.02	0.02	<0.01	315	210	17	1,430	2,820	<0.1	551
		81P	EB2315513	<0.001	0.048	<0.001	0.6	0.6	0.01	0.01	<0.01	172	93	13	945	1,670	<0.1	260
		82PcR	EB2315513	<0.001	0.086	<0.001	1.8	1.8	<0.01	<0.01	<0.01	296	207	11	1,170	2,400	<0.1	498
		111PgC_Lower	EB2315513	<0.001	0.072	<0.001	2.5	2.5	<0.01	<0.01	<0.01	306	249	11	1,080	2,500	<0.1	324
		132WBR	EB2315513	0.003	0.034	<0.001	0.4	0.4	0.03	0.03	<0.01	236	187	10	1,150	1,440	<0.1	1,050
		133WBR	EB2315513	0.001	0.020	<0.001	0.2	0.2	<0.01	<0.01	<0.01	7	1	2	90	60	0.2	7
		2291Pc	EB2315513	<0.001	0.051	<0.001	1.4	1.4	<0.01	<0.01	<0.01	245	139	15	1,150	2,450	<0.1	322
		3316_WB	EB2315513	0.001	3.78	<0.001	2.4	2.3	0.06	0.06	<0.01	181	39	8	859	1,680	0.1	3
19 May 2023	Normal	119P	EB2315513	<0.001	0.184	<0.001	0.7	0.7	<0.01	<0.01	<0.01	39	20	4	512	680	<0.1	62
		4517WB	EB2315513	<0.001	0.569	<0.001	0.4	0.4	<0.01	<0.01	<0.01	30	9	3	290	336	<0.1	24
		GW11A_R	EB2315513	<0.001	0.019	<0.001	9.9	1.5	8.42	8.42	<0.01	81	61	2	186	220	1.2	34
		GW11B	EB2315513	0.013	0.124	<0.001	0.3	0.3	<0.01	<0.01	<0.01	112	64	28	464	900	0.2	92
22 May 2023	Normal	3307WB_R	EB2315513	<0.001	0.149	<0.001	1.8	1.8	0.03	0.03	<0.01	601	414	19	1,070	2,580	0.4	1,520
23 May 2023	Normal	21P	EB2315837	<0.001	0.290	<0.001	1.4	1.4	0.02	0.02	<0.01	35	34	14	295	454	0.4	24
		BCS4	EB2315837	<0.001	0.101	<0.001	1.2	1.2	<0.01	<0.01	<0.01	57	6	4	727	1,040	<0.1	160
		CSMH1Rb	EB2315837	0.005	0.092	<0.001	0.8	0.8	<0.01	<0.01	<0.01	35	5	4	304	450	<0.1	70
		GW22C	EB2315837	0.004	0.160	<0.001	1.0	1.0	<0.01	<0.01	<0.01	25	2	4	665	926	<0.1	60
24 May 2023	Normal	GW08B	EB2315837	<0.001	0.081	<0.001	0.3	0.3	<0.01	<0.01	<0.01	2	<1	1	324	78	0.6	<1
		GW13B	EB2315837	<0.001	0.138	<0.001	0.3	0.3	<0.01	<0.01	<0.01	9	4	2	170	62	0.5	<1
		GW17A	EB2315837	<0.001	0.046	<0.001	0.4	0.4	<0.01	<0.01	<0.01	5	<1	2	311	362	<0.1	<1

Appendix F:

Certified Lab Reports

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 / 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						
GW22A	----	----	----	22-May-2023	11-May-2023	**11**
Clear Plastic Bottle - Natural						
GW15A, GW19A, GW19B, GW22B, GW08C, GW06B	----	----	----	23-May-2023	11-May-2023	**12**
Clear Plastic Bottle - Natural						
GW05A, GW05B, 109P, BMH1	----	----	----	23-May-2023	12-May-2023	**11**
Clear Plastic Bottle - Natural						
18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, GW16A	----	----	----	23-May-2023	15-May-2023	**8**
EA015: Total Dissolved Solids dried at 180 ± 5 °C						
Clear Plastic Bottle - Natural						
GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	----	----	----	19-May-2023	18-May-2023	**1**
EK055G: Ammonia as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	----	----	----	18-May-2023	12-May-2023	**6**
Clear Plastic Bottle - Natural						
GW05A, GW05B, 109P, 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: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	----	----	----	16-May-2023	13-May-2023	**3**
Clear Plastic Bottle - Natural GW05A, GW05B, 109P, BMH1	----	----	----	16-May-2023	14-May-2023	**2**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser						
Clear Plastic Bottle - Natural GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	----	----	----	18-May-2023	13-May-2023	**5**
Clear Plastic Bottle - Natural GW05A, GW05B, 109P, BMH1	----	----	----	18-May-2023	14-May-2023	**4**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser						
Clear Plastic Bottle - Natural GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	17-May-2023	12-May-2023	**5**	----	----	----
Clear Plastic Bottle - Natural GW05A, GW05B, 109P, 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: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	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, GW19A, GW19B, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**23-May-2023**	11-May-2023	×
Clear Plastic Bottle - Natural (EA005-P) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**23-May-2023**	12-May-2023	×
Clear Plastic Bottle - Natural (EA005-P) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**23-May-2023**	08-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**23-May-2023**	09-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**19-May-2023**	18-May-2023	×
Clear Plastic Bottle - Natural (EA015H) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**19-May-2023**	19-May-2023	✓
Clear Plastic Bottle - Natural (EA015H) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**19-May-2023**	08-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**19-May-2023**	09-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**23-May-2023**	25-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**23-May-2023**	26-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, GW16A	**15-May-2023**	**----**	----	----	**23-May-2023**	29-May-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**16-May-2023**	08-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**16-May-2023**	09-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**16-May-2023**	08-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**16-May-2023**	09-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, GW16A	**15-May-2023**	**----**	----	----	**16-May-2023**	12-Jun-2023	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**19-May-2023**	08-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**19-May-2023**	09-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**19-May-2023**	07-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**19-May-2023**	08-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**23-May-2023**	08-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**23-May-2023**	09-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, GW16A	**15-May-2023**	**----**	----	----	**23-May-2023**	12-Jun-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK055G) GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**18-May-2023**	12-May-2023	×
Clear Plastic Bottle - Natural (EK055G) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**18-May-2023**	13-May-2023	×
Clear Plastic Bottle - Sulfuric Acid (EK055G) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, GW16A	**15-May-2023**	**----**	----	----	**19-May-2023**	12-Jun-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**16-May-2023**	13-May-2023	×
Clear Plastic Bottle - Natural (EK057G) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**16-May-2023**	14-May-2023	×
Clear Plastic Bottle - Natural (EK057G) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**----**	----	----	**18-May-2023**	13-May-2023	×
Clear Plastic Bottle - Natural (EK059G) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**----**	----	----	**18-May-2023**	14-May-2023	×
Clear Plastic Bottle - Sulfuric Acid (EK059G) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, GW16A	**15-May-2023**	**----**	----	----	**19-May-2023**	12-Jun-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Natural (EK061G) GW15A, GW19A, GW19B, GW22A, GW22B, GW08C, GW06B	**11-May-2023**	**17-May-2023**	12-May-2023	×	**17-May-2023**	14-Jun-2023	✓
Clear Plastic Bottle - Natural (EK061G) GW05A, GW05B, 109P, BMH1	**12-May-2023**	**17-May-2023**	13-May-2023	×	**17-May-2023**	14-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) 18PbR2, 18PcR2, QAQC03, 28PcR, GW12B, 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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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 thiocynate forms highly-coloured ferric thiocynate 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)

Analytical Methods	Method	Matrix	Method Descriptions
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 seperately 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)

Preparation Methods	Method	Matrix	Method Descriptions
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)

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 + NO2 + NO3 + NH3	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 / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received Date	Samples Received Evaluation	Instructions Received Date	Instructions Received 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	✘	----	----

Requested Deliverables

ACCOUNTS PAYABLE AU

- A4 - AU Tax Invoice (INV)	Email	accountspayableau@slrconsulting.com

ASHLEY WELCH

- *AU Certificate of Analysis - NATA (COA)	Email	awelch@slrconsulting.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	awelch@slrconsulting.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	awelch@slrconsulting.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	awelch@slrconsulting.com
- Chain of Custody (CoC) (COC)	Email	awelch@slrconsulting.com
- EDI Format - ESDAT (ESDAT)	Email	awelch@slrconsulting.com
- EDI Format - XTab (XTAB)	Email	awelch@slrconsulting.com

HAILEY MARTIN

- *AU Certificate of Analysis - NATA (COA)	Email	HMARTIN@SLRCONSULTING.COM
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	HMARTIN@SLRCONSULTING.COM
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	HMARTIN@SLRCONSULTING.COM
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	HMARTIN@SLRCONSULTING.COM
- Chain of Custody (CoC) (COC)	Email	HMARTIN@SLRCONSULTING.COM
- EDI Format - ESDAT (ESDAT)	Email	HMARTIN@SLRCONSULTING.COM
- EDI Format - XTab (XTAB)	Email	HMARTIN@SLRCONSULTING.COM

NED CONNOLLY

- *AU Certificate of Analysis - NATA (COA)	Email	nconnolly@slrconsulting.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	nconnolly@slrconsulting.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	nconnolly@slrconsulting.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	nconnolly@slrconsulting.com
- A4 - AU Tax Invoice (INV)	Email	nconnolly@slrconsulting.com
- Chain of Custody (CoC) (COC)	Email	nconnolly@slrconsulting.com
- EDI Format - ESDAT (ESDAT)	Email	nconnolly@slrconsulting.com
- EDI Format - XTab (XTAB)	Email	nconnolly@slrconsulting.com

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT OFFICE (Tick one)

- [x] BRISBANE: Level 16, 175 Eagle Street, Brisbane
- [ ] CANBERRA: GPO Box 410, Canberra, ACT 2600
- [ ] DARWIN: 21 Parap Rd, Darwin, NT 0820
- [ ] GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- [ ] MACKAY: 21 River Street, Mackay, QLD 4740
- [ ] MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
- [ ] 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 2066
- [ ] TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- [ ] AUCKLAND: 68 Beach Road, Auckland 1010 NZ
- [ ] NELSON: 6/A Cambridge Street, Richmond, Port Nelson, 7020 NZ
- [ ] NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ

CLIENT:	LABORATORY: ALS
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin (HM)
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0458 134 273
Email Reports to: esdat+slr_au@esdatlabsync.net ; nconnolly@slrconsulting ; awelch@slrconsulting ; hmartin@slrconsulting	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT)

- [x] Standard TAT
- [ ] Non Standard or Urgent TAT

COC Number: 1 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

Environmental Division Brisbane

Work Order Reference EB2314679

Telephone : +61-7-3243 7222

HT

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS (total dissolved solids)	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ba	NT-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		

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	AW	16.5.23	Received by		Temperature Received:
Relinquished By			Received by		
Relinquished By	LT	16/5/23	Received by		

1512

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT OFFICE (Tick one)

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

CLIENT:	LABORATORY: ALS
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0488 134 273
Email Reports to: esdat+slr_au@esdatlabsync.net	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT): [x] Standard TAT; [ ] Non Standard or Urgent TAT; Required TAT: Standard

COC Number: 2 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ba	NT-7	Ferrous Fe				Additional Information (Comment on any gross contamination or specific requirements)
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
15 ~~16~~	28PcR	15.5.23 13:00			X	X	X	X	X				
16 ~~17~~	GW12B	15.5.23 14:35			X	X	X	X	X				
17 ~~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/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.

						Temperature Received:
Relinquished By Sampler	Sig:	Date / Time: 16.5.23	Received by	Sig:	Date / Time:	
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:	
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:	

CERTIFICATE OF ANALYSIS

Work Order	: **EB2314679**	Page	: 1 of 10
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 15:12
Order number	: 4537604	Date Analysis Commenced	: 16-May-2023
C-O-C number	: ----	Issue Date	: 24-May-2023 19:23
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	:		
Quote number	: EN/032/17		
No. of samples received	: 17		
No. of samples analysed	: 17		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

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.

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	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
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								
ø Total Anions	----	0.01	meq/L	**20.2**	**81.9**	**27.7**	**88.4**	**56.1**
ø Total Cations	----	0.01	meq/L	**17.7**	**73.3**	**23.8**	**77.5**	**51.6**
ø 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								
ø Total Anions	----	0.01	meq/L	**26.1**	**11.0**	**12.3**	**10.9**	**5.66**
ø Total Cations	----	0.01	meq/L	**22.1**	**10.2**	**13.6**	**10.0**	**5.50**
ø 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								
ø Total Anions	----	0.01	meq/L	**15.4**	**6.86**	**7.81**	**6.87**	**105**
ø Total Cations	----	0.01	meq/L	**15.2**	**6.68**	**7.78**	**6.08**	**89.0**
ø 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								
ø Total Anions	----	0.01	meq/L	**10.6**	**17.9**	**----**	**----**	**----**
ø Total Cations	----	0.01	meq/L	**9.59**	**17.5**	**----**	**----**	**----**
ø 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		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	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 (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): 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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): 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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): 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	SpikeRecovery(%)	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

CERTIFICATE OF ANALYSIS

Work Order	: **EB2314152**	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	: 11-May-2023 16:13
Order number	: 4537604	Date Analysis Commenced	: 11-May-2023
C-O-C number	: ----	Issue Date	: 19-May-2023 22:08
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	:		
Quote number	: EN/032/17		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

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.

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								
ø Total Anions	----	0.01	meq/L	**29.8**	**27.7**	**28.7**	**26.4**	**19.4**
ø Total Cations	----	0.01	meq/L	**28.4**	**27.7**	**29.2**	**26.4**	**18.7**
ø Ionic Balance	----	0.01	%	**2.55**	**0.04**	**0.85**	**0.05**	**1.79**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	27PCR	4518WB	BCS3	113Pgcb	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
					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	113Pgcb	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								
ø Total Anions	----	0.01	meq/L	**133**	**38.5**	**8.92**	**58.4**	**218**
ø Total Cations	----	0.01	meq/L	**124**	**33.2**	**8.49**	**53.7**	**219**
ø 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								
ø **Total Anions**	----	0.01	meq/L	**28.4**	----	----	----	----
ø **Total Cations**	----	0.01	meq/L	**28.0**	----	----	----	----
ø **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		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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	0.0	No Limit
		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)									

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	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: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): 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**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2314152**	Page	: 1 of 10
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	: 11-May-2023
Site	:	Issue Date	: 19-May-2023
Sampler	: ASHLEY WELCH, HAILEY MARTIN	No. of samples received	: 11
Order number	: 4537604	No. of samples analysed	: 11

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							
EK055G: Ammonia as N by Discrete Analyser	EB2314152--010	118P	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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 116P, QAQC01	----	----	----	16-May-2023	08-May-2023	**8**
Clear Plastic Bottle - Natural GW10, GW09A, GW09B, GW09C, 27PCR	----	----	----	16-May-2023	09-May-2023	**7**
Clear Plastic Bottle - Natural 4518WB, BCS3, 113Pgcb, 118P	----	----	----	16-May-2023	10-May-2023	**6**
EA015: Total Dissolved Solids dried at 180 ± 5 °C						
Clear Plastic Bottle - Natural 116P, QAQC01	----	----	----	16-May-2023	15-May-2023	**1**
EK055G: Ammonia as N by Discrete Analyser						
Clear Plastic Bottle - Natural 116P, QAQC01	----	----	----	11-May-2023	09-May-2023	**2**
Clear Plastic Bottle - Natural GW10, GW09A, GW09B, GW09C, 27PCR	----	----	----	11-May-2023	10-May-2023	**1**
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural 116P, QAQC01	----	----	----	11-May-2023	10-May-2023	**1**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser						
Clear Plastic Bottle - Natural 116P, QAQC01	----	----	----	11-May-2023	10-May-2023	**1**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser						
Clear Plastic Bottle - Natural 116P, QAQC01	15-May-2023	09-May-2023	**6**	----	----	----

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural GW10, GW09A, GW09B, GW09C, 27PCR	15-May-2023	10-May-2023	**5**	----	----	----
Clear Plastic Bottle - Natural 4518WB, BCS3, 113Pgcb, 118P	15-May-2023	11-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: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) 116P, QAQC01	**08-May-2023**	**----**	----	----	**16-May-2023**	08-May-2023	×
Clear Plastic Bottle - Natural (EA005-P) GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**16-May-2023**	09-May-2023	×
Clear Plastic Bottle - Natural (EA005-P) 4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**16-May-2023**	10-May-2023	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) 116P, QAQC01	**08-May-2023**	**----**	----	----	**16-May-2023**	05-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**16-May-2023**	06-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) 4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**16-May-2023**	07-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)								
116P,	QAQC01	**08-May-2023**	----	----	----	**16-May-2023**	15-May-2023	×
Clear Plastic Bottle - Natural (EA015H)								
GW10,	GW09A,	**09-May-2023**	----	----	----	**16-May-2023**	16-May-2023	✓
GW09B,	GW09C,							
27PCR								
Clear Plastic Bottle - Natural (EA015H)								
4518WB,	BCS3,	**10-May-2023**	----	----	----	**16-May-2023**	17-May-2023	✓
113Pgcb,	118P							
EA065: Total Hardness as CaCO3								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)								
116P,	QAQC01	**08-May-2023**	----	----	----	**17-May-2023**	05-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)								
GW10,	GW09A,	**09-May-2023**	----	----	----	**17-May-2023**	06-Jun-2023	✓
GW09B,	GW09C,							
27PCR								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)								
4518WB,	BCS3,	**10-May-2023**	----	----	----	**17-May-2023**	07-Jun-2023	✓
113Pgcb,	118P							
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
116P,	QAQC01	**08-May-2023**	----	----	----	**16-May-2023**	22-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P)								
GW10,	GW09A,	**09-May-2023**	----	----	----	**16-May-2023**	23-May-2023	✓
GW09B,	GW09C,							
27PCR								
Clear Plastic Bottle - Natural (ED037-P)								
4518WB,	BCS3,	**10-May-2023**	----	----	----	**16-May-2023**	24-May-2023	✓
113Pgcb,	118P							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
116P,	QAQC01	**08-May-2023**	----	----	----	**11-May-2023**	05-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G)								
GW10,	GW09A,	**09-May-2023**	----	----	----	**11-May-2023**	06-Jun-2023	✓
GW09B,	GW09C,							
27PCR								
Clear Plastic Bottle - Natural (ED041G)								
4518WB,	BCS3,	**10-May-2023**	----	----	----	**11-May-2023**	07-Jun-2023	✓
113Pgcb,	118P							

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)							
116P, QAQC01	**08-May-2023**	**----**	----	----	**11-May-2023**	05-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G)							
GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**11-May-2023**	06-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G)							
4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**11-May-2023**	07-Jun-2023	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
116P, QAQC01	**08-May-2023**	**----**	----	----	**17-May-2023**	05-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**17-May-2023**	06-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**17-May-2023**	07-Jun-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
116P, QAQC01	**08-May-2023**	**----**	----	----	**17-May-2023**	04-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**17-May-2023**	05-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**17-May-2023**	06-Nov-2023	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P)							
116P, QAQC01	**08-May-2023**	**----**	----	----	**16-May-2023**	05-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P)							
GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**16-May-2023**	06-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P)							
4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**16-May-2023**	07-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 - Natural (EK055G) 116P, QAQC01	**08-May-2023**	**----**	----	----	**11-May-2023**	09-May-2023	×
Clear Plastic Bottle - Natural (EK055G) GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**11-May-2023**	10-May-2023	×
Clear Plastic Bottle - Natural (EK055G) 4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**11-May-2023**	11-May-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) 116P, QAQC01	**08-May-2023**	**----**	----	----	**11-May-2023**	10-May-2023	×
Clear Plastic Bottle - Natural (EK057G) GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**11-May-2023**	11-May-2023	✓
Clear Plastic Bottle - Natural (EK057G) 4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**11-May-2023**	12-May-2023	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural (EK059G) 116P, QAQC01	**08-May-2023**	**----**	----	----	**11-May-2023**	10-May-2023	×
Clear Plastic Bottle - Natural (EK059G) GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**----**	----	----	**11-May-2023**	11-May-2023	✓
Clear Plastic Bottle - Natural (EK059G) 4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**----**	----	----	**11-May-2023**	12-May-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Natural (EK061G) 116P, QAQC01	**08-May-2023**	**15-May-2023**	09-May-2023	×	**15-May-2023**	12-Jun-2023	✓
Clear Plastic Bottle - Natural (EK061G) GW10, GW09A, GW09B, GW09C, 27PCR	**09-May-2023**	**15-May-2023**	10-May-2023	×	**15-May-2023**	12-Jun-2023	✓
Clear Plastic Bottle - Natural (EK061G) 4518WB, BCS3, 113Pgcb, 118P	**10-May-2023**	**15-May-2023**	11-May-2023	×	**15-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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	30	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	19	**15.79**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	3	19	**15.79**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	11	**18.18**	**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	17	**11.76**	**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	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	30	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	**10.53**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	19	**21.05**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	11	**18.18**	**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	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	**10.53**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	11	**9.09**	**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	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	**10.53**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	**5.88**	**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 thiocynate forms highly-coloured ferric thiocynate 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)

Analytical Methods	Method	Matrix	Method Descriptions
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 seperately 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)

Preparation Methods	Method	Matrix	Method Descriptions
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)

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 + NO2 + NO3 + NH3	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 Date	Samples Received Evaluation	Instructions Received Date	Instructions Received 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	×	----	----

QAQC01	Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✘	----	----
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser							
116P	Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✘	----	----
QAQC01	Clear Plastic Bottle - Natural	----	10-May-2023	11-May-2023	✘	----	----
EK061G: Total Kjeldahl Nitrogen as N By Discrete Analyser							
116P	Clear Plastic Bottle - Natural	09-May-2023	06-Jun-2023	11-May-2023	✘	----	----
27PCR	Clear Plastic Bottle - Natural	10-May-2023	07-Jun-2023	11-May-2023	✘	----	----
GW09A	Clear Plastic Bottle - Natural	10-May-2023	07-Jun-2023	11-May-2023	✘	----	----
GW09B	Clear Plastic Bottle - Natural	10-May-2023	07-Jun-2023	11-May-2023	✘	----	----
GW09C	Clear Plastic Bottle - Natural	10-May-2023	07-Jun-2023	11-May-2023	✘	----	----
GW10	Clear Plastic Bottle - Natural	10-May-2023	07-Jun-2023	11-May-2023	✘	----	----
QAQC01	Clear Plastic Bottle - Natural	09-May-2023	06-Jun-2023	11-May-2023	✘	----	----

Requested Deliverables

ACCOUNTS PAYABLE AU

- A4 - AU Tax Invoice (INV)	Email	accountspayableau@slrconsulting.com

NED CONNOLLY

- *AU Certificate of Analysis - NATA (COA)	Email	nconnolly@slrconsulting.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	nconnolly@slrconsulting.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	nconnolly@slrconsulting.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	nconnolly@slrconsulting.com
- Chain of Custody (CoC) (COC)	Email	nconnolly@slrconsulting.com
- EDI Format - ESDAT (ESDAT)	Email	nconnolly@slrconsulting.com
- EDI Format - XTab (XTAB)	Email	nconnolly@slrconsulting.com

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT OFFICE (Tick one)

- [X] BRISBANE: Level 16, 175 Eagle Street, Brisbane
- [ ] CANBERRA: GPO Box 410, Canberra, ACT 2600
- [ ] DARWIN: 21 Parap Rd, Darwin, NT 0820
- [ ] GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- [ ] MACKAY: 21 River Street, Mackay, QLD 4740
- [ ] MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
- [ ] 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 2066
- [ ] TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- [ ] AUCKLAND: 68 Beach Road, Auckland 1010 NZ
- [ ] NELSON: 6/A Lambridge Street, Richmond, Port Nelson, 7020 NZ
- [ ] NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ

CLIENT:	LABORATORY: ALS
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0438 134 273
Email Reports to: esdat+slr_au@esdatlabsync.net	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT)

- [X] Standard TAT
- [ ] Non Standard or Urgent TAT

Required TAT: Standard

COC Number: 1 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS	Dissolved Metals (Al, As, Se, W, Fe, Mn, B)	NT-7	Ferrous Iron
1	116P	8.5.23 13:43	water	1P + 2N	X	X	X	X	X
2	GW10	9.5.23 09:53			X	X	X	X	X
3	GW09A	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 1510			X	X	X	X	X
11	QAQC01	8.5.23			X	X	X	X	X

Environmental Division Brisbane

Work Order Reference EB2314152

Telephone : +61-7-3243 7222

HT

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	Name:	Date / Time: 11.5.23	Received by	Name: Crystil	Date / Time: 11-5-23 16:13	Temperature Received:
Relinquished By	Name:	Date / Time:	Received by	Name:	Date / Time:	
Relinquished By	Name:	Date / Time:	Received by	Name:	Date / Time:	

eurofins

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Tel: +64 3 343 5201
IANZ# 1290

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 #: 994030
Phone: 07 3858 4800
Fax:

Received: May 24, 2023 2:28 PM
Due: May 31, 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)	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

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

eurofins

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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 #: 994030
Phone: 07 3858 4800
Fax:

Received: May 24, 2023 2:28 PM
Due: May 31, 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)	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

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Internal Quality Control Review and Glossary

General

1. 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.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. 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 (*bis*-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

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. 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.

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

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- ☐ DARWIN: 21 Parap Rd, Darwin, NT 0820
- ☐ GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- ☐ MACKAY: 21 River Street, Mackay, QLD 4740
- ☐ MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
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- ☐ PERTH: 503 Murray Street, Perth, WA 6000
- ☐ ROCKHAMPTON: rockhampton@slrconsulting.com
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- ☐ NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ

SLR

CLIENT:

PROJECT ID: 620.31500.00000

PROJECT MANAGER: Ned Connolly

PM CONTACT No:

Email Reports to: ~~esdat.eqlr_au@esdatlabsynt.net~~ nconnolly@slrconsulting.com; awelch@slrconsulting.com; hmartin@slrconsulting.com

COMMENTS OR ADDITIONAL DIRECTIONS

LABORATORY: ALS Brisbane

LABORATORY ADDRESS: 2 Byth St

SAMPLER: Ashley Welch / Hailey Martin

SAMPLER CONTACT No: 0438 134 273

Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT)
- ☒ Standard TAT
- ☐ Non Standard or Urgent TAT

Required TAT: Standard

COC Number: 2 of 2

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	REQUESTED ANALYSIS: NT-12	TDS (total dissolved solids)	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ag	NT-7	Ferrous Fe	Additional Information (Comment on any gross contamination or specific requirements)
12	4517WB	14.5.23 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~~

Date/Time: 24/5/23 2:28pm

Chilled: ☐

Temp: 5.8 -1.5 4.3 DF

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; U = 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		23.5.23	15:30	Received by	Temperature Received:
Relinquished By	SP	24/5/23		Received by	
Relinquished By				Received by	

24/5/23

eurofins | Environment Testing

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

eurofins

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IANZ# 1290

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	X
Test Counts						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Date Reported:May 31, 2023

eurofins | Environment Testing

Internal Quality Control Review and Glossary

General

1. 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.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. 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 (*bis*-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

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. 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									
Heavy Metals				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.

CHAIN OF CUSTODY DOCUMENTATION

SLR

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

PROJECT OFFICE (Tick one)

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- ☐ DARWIN: 21 Parap Rd, Darwin, NT 0820
- ☐ GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- ☐ MACKAY: 21 River Street, Mackay, QLD 4740
- ☐ MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
- ☐ 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 2066
- ☐ TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- ☐ AUCKLAND: 68 Beach Road, Auckland 1010 NZ
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- ☐ NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ
- ☐

CLIENT:	**LABORATORY:** ALS
PROJECT ID: 620.31500.00000	**LABORATORY ADDRESS:** 2 Byth St
PROJECT MANAGER: Ned Connolly	**SAMPLER:** AW Ashley Welch / Hailey Martin
PM CONTACT No: 0431 652 757	**SAMPLER CONTACT No:** 0488 134 273
Email Reports to: esdat+slr_au@esdatlabsync.net	**Email Invoices to:** nconnolly@slrconsulting.com

Turnaround Time (TAT)

☒ Standard TAT

[ ] Non Standard or Urgent TAT

Required TAT: Standard

COC Number 2 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ba	NT-7	Ferrous Fe			Additional Information (Comment on any gross contamination or specific requirements)
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
15 ~~16~~	28PcR	15.5.23 13:00			X	X	X	X	X			
16 ~~17~~	GW12B	15.5.23 14:35			X	X	X	X	X			
17 ~~18~~	GW16A	15.5.23 15:00			X	X	X	X	X			

13.20 17/05/23

(Y)

13.4
−1.5
11.9

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	Name:	Date / Time: 16.5.23	**Received by**	Name:	Date / Time:	**Temperature Received:**
Relinquished By	Name:	Date / Time:	**Received by**	Name:	Date / Time:	
Relinquished By	Name:	Date / Time:	**Received by**	Name:	Date / Time:	

991571

eurofins | Environment Testing

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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.
X	Split sample sent to requested external lab.
X	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.

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Address: Level 2 15 Astor Terrace
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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	X
Test Counts						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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 - Fe2+	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 SO4)	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 CaCO3/L	5	mg/L	170
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	250
Carbonate Alkalinity (as CaCO3)	20	mg/L	< 20
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20
Total Alkalinity (as CaCO3)	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)	Melbourne	May 18, 2023	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	May 18, 2023	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	May 18, 2023	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	May 18, 2023	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Organic Nitrogen (as N)*	Melbourne	May 17, 2023	7 Days
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 18, 2023	28 Days
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			
Eurofins Suite B11F: Cl/SO4/Alkalinity/Total F			
Chloride	Brisbane	May 22, 2023	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Fluoride	Melbourne	May 18, 2023	28 Days
- Method: in-house method LTM-INO-4390 Fluoride by Discrete Analyser			
Sulphate (as SO4)	Brisbane	May 22, 2023	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Brisbane	May 30, 2023	14 Day
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Conductivity (at 25 °C)	Brisbane	May 23, 2023	28 Days
- Method: APHA 2510B			
Ferrous Iron - Fe2+	Melbourne	May 18, 2023	7 Days
- Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser			
pH (at 25 °C)	Brisbane	May 30, 2023	0 Days
- Method: APHA 4500-H+ B. Electrometric Method			
Total Dissolved Solids (calculated from EC)*	Brisbane	May 22, 2023	0 Day
- Method: LTM-INO-4030 Conductivity			
Heavy Metals	Brisbane	May 22, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11C: Na/K/Ca/Mg	Brisbane	May 22, 2023	180 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Brisbane	May 22, 2023	7 Days
- Method: APHA 2540 C			
Hardness Set			
Hardness mg equivalent CaCO3/L	Brisbane	May 22, 2023	28 Days
- Method: APHA 2340B Hardness by Calculation			

eurofins

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

Project Name: 620.31500.00000

Order No.: N/A
Report #: 990429
Phone: 07 3858 4800
Fax:

Received: May 12, 2023 3:50 PM
Due: May 19, 2023
Priority: 5 Day
Contact Name: Ned Connolly

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
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

eurofins | Environment Testing

Internal Quality Control Review and Glossary

General

1. 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.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. 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 (*bis*-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

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. 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 - Fe2+	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 CaCO3)	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 - Fe2+	%	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 SO4)	%	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 CaCO3)	%	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.

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

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- [ ] GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- [ ] MACKAY: 21 River Street, Mackay, QLD 4740
- [ ] MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
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- [ ] SYDNEY: 2 Lincoln Street, Lane Cove, Sydney NSW 2066
- [ ] TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- [ ] AUCKLAND: 68 Beach Road, Auckland 1010 NZ
- [ ] NELSON: t/A Cambridge Street, Richmond, Port Nelson, 7020 NZ
- [ ] NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ

CLIENT:	LABORATORY: ALS
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0486 134 273
Email Reports to: esdat+slr_au@esdatlabsync.net	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT): [x] Standard TAT; [ ] Non Standard or Urgent TAT; Required TAT: Standard

COC Number: 2 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS	Dissolved Metals Al, As, Se, Cu Fe, Mn, Ba	NT-7	Ferrous Iron				Additional Information (Comment on any gross contamination or specific requirements)
~~12~~	QAQC02	8.5.23	water	HP + 2N	X	X	X	X	X				Forward to ALS Euroflins

Date/Time: 12/5/23 3:50pm
Chilled:
Temp: 6.0 -1.5
Correction: 4.5
Final Temp:

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.

						Temperature Received:
Relinquished By Sampler	Name:	Date / Time: 11.5.23	Received by	Name: Crystil	Date / Time: 11-5-23 16:13	
Relinquished By	Name:	Date / Time:	Received by	Name:	Date / Time:	
Relinquished By	Name:	Date / Time:	Received by	Name:	Date / Time:	

42949

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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.

eurofins

web: www.eurofins.com.au
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Company Name: SLR Consulting (Qld)
Address: Level 2 15 Astor Terrace
Spring Hill
QLD 4000

Project Name: 620.31500.00000

Order No.: N/A
Report #: 990429
Phone: 07 3858 4800
Fax:

Received: May 12, 2023 3:50 PM
Due: May 19, 2023
Priority: 5 Day
Contact Name: Ned Connolly

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
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

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: Date extracted	Due for extraction	Days overdue	Analysis: Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural CSMH1Rb, 21P, BCS4, GW22C	----	----	----	26-May-2023	23-May-2023	**3**
Clear Plastic Bottle - Natural GW13B, GW08B, GW17A	----	----	----	26-May-2023	24-May-2023	**2**
EG051G: Ferrous Iron by Discrete Analyser						
Clear Plastic Bottle - Natural CSMH1Rb, 21P, BCS4, 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: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**26-May-2023**	23-May-2023	✘
Clear Plastic Bottle - Natural (EA005-P) GW13B, GW08B, GW17A	**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, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**26-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**26-May-2023**	21-Jun-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**30-May-2023**	30-May-2023	✓
Clear Plastic Bottle - Natural (EA015H) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**30-May-2023**	31-May-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**29-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**29-May-2023**	21-Jun-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**26-May-2023**	06-Jun-2023	✓
Clear Plastic Bottle - Natural (ED037-P) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**26-May-2023**	07-Jun-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**25-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**25-May-2023**	21-Jun-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**25-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) GW13B, GW08B, GW17A	**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, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**29-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**29-May-2023**	21-Jun-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**29-May-2023**	19-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**29-May-2023**	20-Nov-2023	✓
EG051G: Ferrous Iron by Discrete Analyser							
Clear Plastic Bottle - Natural (EG051G) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**25-May-2023**	24-May-2023	×
Clear Plastic Bottle - Natural (EG051G) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**25-May-2023**	25-May-2023	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**26-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**26-May-2023**	21-Jun-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**29-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**29-May-2023**	21-Jun-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**25-May-2023**	25-May-2023	✓
Clear Plastic Bottle - Natural (EK057G) GW13B, GW08B, GW17A	**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, 21P, BCS4, GW22C	**23-May-2023**	**----**	----	----	**29-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW13B, GW08B, GW17A	**24-May-2023**	**----**	----	----	**29-May-2023**	21-Jun-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) CSMH1Rb, 21P, BCS4, GW22C	**23-May-2023**	**30-May-2023**	20-Jun-2023	✓	**30-May-2023**	20-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) GW13B, GW08B, GW17A	**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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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 thiocynate forms highly-coloured ferric thiocynate 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)

Analytical Methods	Method	Matrix	Method Descriptions
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 seperately 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)

Preparation Methods	Method	Matrix	Method Descriptions
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

PROJECT OFFICE (Tick one)

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CLIENT:	LABORATORY: ALS Brisbane
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: Ashley Welch / Hailey Martin
PM CONTACT No:	SAMPLER CONTACT No: 0438 134 273
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Turnaround Time (TAT)

- [x] Standard TAT
- [ ] Non Standard or Urgent TAT

Required TAT: Standard

COC Number: 1 of 1

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

Environmental Division Brisbane

Work Order Reference

EB2315837

Telephone : +61-7-3243 7222

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS	Dissolved metals Al, As, Se, Cu Fe, Mn, Ba	NT-7	Ferrous Fe	
1	~~CSMH1~~ MW CSMH1Rb	23.5.23 10:20	water	1P+2N, 1SP	X	X	X	X	X	
2	21P	23.5.23 12:57	W	"	X	X	X	X	X	
3	BCS4	23.5.23 14:55	W	"	X	X	X	X	X	
4	GW22C	23.5.23 16:15	W	"	X	X	X	X	X	
5	GW13B	24.5.23 07:45	↓	↓	X	X	X	X	X	
6	GW08B	24.5.23 08:35			X	X	X	X	X	
7	GW17A	24.5.23 11:48			X	X	X	X	X	

HT

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	Sign:	Date / Time: 24.5.23 /	**Received by**	Sign: CP	Date / Time: 25-5-23 16:27	**Temperature Received:**
Relinquished By	Sign:	Date / Time:	**Received by**	Sign:	Date / Time:	
Relinquished By	Sign:	Date / Time:	**Received by**	Sign:	Date / Time:	

CERTIFICATE OF ANALYSIS

Work Order	: **EB2315837**	Page	: 1 of 6
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 16:27
Order number	: 4537604	Date Analysis Commenced	: 25-May-2023
C-O-C number	: ----	Issue Date	: 02-Jun-2023 10:08
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	: ----		
Quote number	: EN/032/17		
No. of samples received	: 7		
No. of samples analysed	: 7		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

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.

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								
ø Total Anions	----	0.01	meq/L	**16.1**	**18.3**	**34.7**	**30.8**	**8.10**
ø Total Cations	----	0.01	meq/L	**15.5**	**17.7**	**35.1**	**30.4**	**8.22**
ø 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								
ø **Total Anions**	----	0.01	meq/L	**13.9**	**14.5**	**----**	**----**	**----**
ø **Total Cations**	----	0.01	meq/L	**14.2**	**13.8**	**----**	**----**	**----**
ø **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		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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)									

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	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 (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): 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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): 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	SpikeRecovery(%)	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

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 / 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							
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: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	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: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	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, 133WBR, 2291Pc, 41P, 111PgC_Lower	**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, 133WBR, 2291Pc, 41P, 111PgC_Lower	**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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	**----**	----	----	**27-May-2023**	25-May-2023	×
Clear Plastic Bottle - Natural (EA015H) GW11B, GW11A_R, 119P, 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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	**----**	----	----	**26-May-2023**	15-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW11B, GW11A_R, 119P, 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, 133WBR, 2291Pc, 41P, 111PgC_Lower	**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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	----	----	----	**26-May-2023**	14-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW11B, GW11A_R, 119P, 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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	----	----	----	**23-May-2023**	19-May-2023	×
Clear Plastic Bottle - Natural (EG051G) GW11B, GW11A_R, 119P, 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, 133WBR, 2291Pc, 41P, 111PgC_Lower	**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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	**----**	----	----	**27-May-2023**	15-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW11B, GW11A_R, 119P, 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, 3316_WB, 81P	**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, 133WBR, 2291Pc	**18-May-2023**	**----**	----	----	**29-May-2023**	20-May-2023	×
Clear Plastic Bottle - Natural (EK057G) GW11B, 119P, 4517WB	**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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	**----**	----	----	**27-May-2023**	15-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW11B, GW11A_R, 119P, 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, 133WBR, 2291Pc, 41P, 82PcR, 3316_WB, 111PgC_Lower, 81P	**18-May-2023**	**25-May-2023**	15-Jun-2023	✓	**25-May-2023**	15-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
GW11B, GW11A_R, 119P, 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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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 thiocynate forms highly-coloured ferric thiocynate 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)

Analytical Methods	Method	Matrix	Method Descriptions
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 seperately 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)

Preparation Methods	Method	Matrix	Method Descriptions
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)

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 Date	Samples Received Evaluation	Instructions Received Date	Instructions Received Evaluation
EA005-P: pH by Auto Titrator							
111PgC_Lower	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	×	----	----

119P	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
132WBR	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
133WBR	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
2291Pc	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
3307WB_R	Clear Plastic Bottle - Natural	----	22-May-2023	23-May-2023	✘	----	----
3316_WB	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
41P	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
4517WB	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
81P	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
82PcR	Clear Plastic Bottle - Natural	----	18-May-2023	23-May-2023	✘	----	----
GW11A_R	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
GW11B	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
QAQC05	Clear Plastic Bottle - Natural	----	22-May-2023	23-May-2023	✘	----	----
EG051G: Ferrous Iron by Discrete Analyser							
111PgC_Lower	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
119P	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
132WBR	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
133WBR	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
2291Pc	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
3316_WB	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
41P	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
4517WB	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
81P	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
82PcR	Clear Plastic Bottle - Natural	----	19-May-2023	23-May-2023	✘	----	----
GW11A_R	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
GW11B	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
EK057G: Nitrite as N by Discrete Analyser							
111PgC_Lower	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
119P	Clear Plastic Bottle - Natural	----	21-May-2023	23-May-2023	✘	----	----
132WBR	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
133WBR	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
2291Pc	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
3316_WB	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
41P	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
4517WB	Clear Plastic Bottle - Natural	----	21-May-2023	23-May-2023	✘	----	----
81P	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
82PcR	Clear Plastic Bottle - Natural	----	20-May-2023	23-May-2023	✘	----	----
GW11A_R	Clear Plastic Bottle - Natural	----	21-May-2023	23-May-2023	✘	----	----
GW11B	Clear Plastic Bottle - Natural	----	21-May-2023	23-May-2023	✘	----	----

Requested Deliverables

ACCOUNTS PAYABLE AU

- A4 - AU Tax Invoice (INV)	Email	accountspayableau@slrconsulting.com

NED CONNOLLY

- *AU Certificate of Analysis - NATA (COA)	Email	nconnolly@slrconsulting.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	nconnolly@slrconsulting.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	nconnolly@slrconsulting.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	nconnolly@slrconsulting.com
- A4 - AU Tax Invoice (INV)	Email	nconnolly@slrconsulting.com
- Chain of Custody (CoC) (COC)	Email	nconnolly@slrconsulting.com
- EDI Format - ENMRG (ENMRG)	Email	nconnolly@slrconsulting.com
- EDI Format - XTab (XTAB)	Email	nconnolly@slrconsulting.com

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT OFFICE (Tick one)
- ☒ BRISBANE: Level 16, 175 Eagle Street, Brisbane
- ☐ CANBERRA: GPO Box 410, Canberra, ACT 2600
- ☐ DARWIN: 21 Parap Rd, Darwin, NT 0820
- ☐ GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- ☐ MACKAY: 21 River Street, Mackay, QLD 4740
- ☐ MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
- ☐ NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305
- ☐ PERTH: 503 Murray Street, Perth, WA 6000
- ☐ ROCKHAMPTON: rockhampton@slrconsulting.com
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- ☐ TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- ☐ AUCKLAND: 68 Beach Road, Auckland 1010 NZ
- ☐ NELSON: 6/A Cambridge Street, Richmond Port Nelson, 7020 NZ
- ☐ NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ

CLIENT:	LABORATORY: ALS
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin
PM CONTACT No: 0431 662 757	SAMPLER CONTACT No: 0488 134 273
Email Reports to: ~~esdat-rsh_au@esdatlabsync.net~~	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT): ☒ Standard TAT ☐ Non Standard or Urgent TAT — Required TAT: Standard

COC Number: 1 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS (total dissolved solids)	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ba	NT-7	Ferrous Fe	Additional Information (Comment on any gross contamination or specific requirements)
1	132 WBR	18.5.23 07:35	water	1P + 2N + 1SP	X	X	X	X	X	
2	133 WBR	18.5.23 08:30	"	"	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 16:10			X	X	X	X	X	
9	~~GW11B~~ 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	

HT

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 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: Ashleigh.	Date / Time: 23.5.23 / 08:30	Received by	Sig: LT	Date / Time: 23/5/23 1718	Temperature Received:
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:	
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:	

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT OFFICE (Tick one)

- ☒ BRISBANE: Level 16, 175 Eagle Street, Brisbane
- ☐ CANBERRA: GPO Box 410, Canberra, ACT 2600
- ☐ DARWIN: 21 Parap Rd, Darwin, NT 0820
- ☐ GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- ☐ MACKAY: 21 River Street, Mackay, QLD 4740
- ☐ MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
- ☐ NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305
- ☐ PERTH: 503 Murray Street, Perth, WA 6000
- ☐ ROCKHAMPTON: rockhampton@slrconsulting.com
- ☐ SYDNEY: 3 Lincoln Street, Lane Cove, Sydney, NSW 2065
- ☐ TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- ☐ AUCKLAND: 68 Beach Road, Auckland 1010 NZ
- ☐ NELSON: 6/A Cambridge Street, Richmond, Port Nelson, 7020 NZ
- ☐ NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ

CLIENT:	LABORATORY: ALS Brisbane
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: Ashley Welch / Hailey Martin
PM CONTACT No:	SAMPLER CONTACT No: 0438 134 273
Email Reports to: ~~esdat-slr-au@esdatlabsync.net~~ nconnolly@slrconsulting.com; awelch@slrconsulting.com; hmartin@slrconsulting.com	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT)

- ☒ Standard TAT
- ☐ Non Standard or Urgent TAT

Required TAT: Standard

COC Number: 2 of 2

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS (total dissolved solids)	Dissolved Metals Al, As, Se, Cu, Fe, Mn, Ba	NT-7	Ferrous Fe				Additional Information (Comment on any gross contamination or specific requirements)
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~~ AW

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	Sign: AWelch	Date / Time: 23.5.23/08:30	Received by	Sign:	Date / Time:	Temperature Received:
Relinquished By	Sign:	Date / Time:	Received by	Sign:	Date / Time:	
Relinquished By	Sign:	Date / Time:	Received by	Sign:	Date / Time:	

CERTIFICATE OF ANALYSIS

Work Order	: **EB2315513**	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	: 23-May-2023 17:18
Order number	: 4537604	Date Analysis Commenced	: 23-May-2023
C-O-C number	: ----	Issue Date	: 30-May-2023 17:52
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	: ----		
Quote number	: EN/032/17		
No. of samples received	: 14		
No. of samples analysed	: 14		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

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.

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								
ø **Total Anions**	----	0.01	meq/L	**79.8**	**4.50**	**83.0**	**101**	**84.9**
ø **Total Cations**	----	0.01	meq/L	**77.4**	**4.40**	**74.1**	**95.6**	**83.0**
ø **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	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
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								
ø Total Anions	----	0.01	meq/L	**48.8**	**86.6**	**57.8**	**32.3**	**16.7**
ø Total Cations	----	0.01	meq/L	**49.8**	**83.0**	**57.7**	**31.8**	**17.2**
ø 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								
ø Total Anions	----	0.01	meq/L	**25.7**	**15.1**	**112**	**111**	**----**
ø Total Cations	----	0.01	meq/L	**26.0**	**14.9**	**111**	**107**	**----**
ø 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		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
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			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): 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	SpikeRecovery(%)	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

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

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		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	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	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	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 (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): 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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): 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			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*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, 26PcR, 2289PcR Lower, 1114P	----	----	----	24-May-2023	16-May-2023	**8**
Clear Plastic Bottle - Natural						
10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	----	----	----	24-May-2023	17-May-2023	**7**
EA015: Total Dissolved Solids dried at 180 ± 5 °C						
Clear Plastic Bottle - Natural						
25PcR, 26PcR, 2289PcR Lower, 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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**24-May-2023**	16-May-2023	✘
Clear Plastic Bottle - Natural (EA005-P)							
10PbR, 112PgC, GW07_R, WCS2, 84PbR, 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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	----	----	----	**24-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Natural (EA010-P) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	----	----	----	**24-May-2023**	23-May-2023	×
Clear Plastic Bottle - Natural (EA015H) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	**17-May-2023**	----	----	----	**24-May-2023**	24-May-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 25PcR, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	----	----	----	**23-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	**17-May-2023**	----	----	----	**23-May-2023**	14-Jun-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) 25PcR, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	----	----	----	**24-May-2023**	30-May-2023	✓
Clear Plastic Bottle - Natural (ED037-P) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	**17-May-2023**	----	----	----	**24-May-2023**	31-May-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) 25PcR, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	----	----	----	**18-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Natural (ED041G) 10PbR, 112PgC, WCS2, 84PbR, 48P	**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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**18-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Natural (ED045G) 10PbR, 112PgC, WCS2, 84PbR, 48P	**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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**23-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**23-May-2023**	12-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	**17-May-2023**	**----**	----	----	**23-May-2023**	13-Nov-2023	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) 25PcR, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**24-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Natural (EK040P) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	**17-May-2023**	**----**	----	----	**24-May-2023**	14-Jun-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) 25PcR, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**22-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**18-May-2023**	18-May-2023	✓
Clear Plastic Bottle - Natural (EK057G) 10PbR, 112PgC, WCS2, 84PbR, 48P	**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, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**----**	----	----	**22-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 48P	**17-May-2023**	**----**	----	----	**22-May-2023**	14-Jun-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) 25PcR, 26PcR, 2289PcR Lower, 1114P	**16-May-2023**	**22-May-2023**	13-Jun-2023	✓	**22-May-2023**	13-Jun-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) 10PbR, 112PgC, GW07_R, WCS2, 84PbR, 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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
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 thiocynate forms highly-coloured ferric thiocynate 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)

Analytical Methods	Method	Matrix	Method Descriptions
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 seperately 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)

Preparation Methods	Method	Matrix	Method Descriptions
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)

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 + NO2 + NO3 + NH3	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 Date	Samples Received Evaluation	Instructions Received Date	Instructions Received 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	×	----	----

Requested Deliverables

ACCOUNTS PAYABLE AU

- A4 - AU Tax Invoice (INV)	Email	accountspayableau@slrconsulting.com

ASHLEY WELCH

- *AU Certificate of Analysis - NATA (COA)	Email	awelch@slrconsulting.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	awelch@slrconsulting.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	awelch@slrconsulting.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	awelch@slrconsulting.com
- Chain of Custody (CoC) (COC)	Email	awelch@slrconsulting.com
- EDI Format - ESDAT (ESDAT)	Email	awelch@slrconsulting.com
- EDI Format - XTab (XTAB)	Email	awelch@slrconsulting.com

HAILEY MARTIN

- *AU Certificate of Analysis - NATA (COA)	Email	HMARTIN@SLRCONSULTING.COM
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	HMARTIN@SLRCONSULTING.COM
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	HMARTIN@SLRCONSULTING.COM
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	HMARTIN@SLRCONSULTING.COM
- Chain of Custody (CoC) (COC)	Email	HMARTIN@SLRCONSULTING.COM
- EDI Format - ESDAT (ESDAT)	Email	HMARTIN@SLRCONSULTING.COM
- EDI Format - XTab (XTAB)	Email	HMARTIN@SLRCONSULTING.COM

NED CONNOLLY

- *AU Certificate of Analysis - NATA (COA)	Email	nconnolly@slrconsulting.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	nconnolly@slrconsulting.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	nconnolly@slrconsulting.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	nconnolly@slrconsulting.com
- A4 - AU Tax Invoice (INV)	Email	nconnolly@slrconsulting.com
- Chain of Custody (CoC) (COC)	Email	nconnolly@slrconsulting.com
- EDI Format - ESDAT (ESDAT)	Email	nconnolly@slrconsulting.com
- EDI Format - XTab (XTAB)	Email	nconnolly@slrconsulting.com

CHAIN OF CUSTODY DOCUMENTATION

SLR Consulting Australia Pty Ltd

ABN 29 001 584 612

SLR

PROJECT OFFICE (Tick one)
- [x] BRISBANE: Level 16, 175 Eagle Street, Brisbane
- [ ] GOLD COAST: 194 Varsity Parade, Varsity Lakes, QLD 4227
- [ ] NEWCASTLE: 10 Kings Road, New Lambton, NSW 2305
- [ ] SYDNEY: 2 Lincoln Street, Lane Cove, Sydney NSW 2066
- [ ] NELSON: 6/A Cambridge Street, Richmond, Port Nelson, 7020 NZ
- [ ] CANBERRA: GPO Box 410, Canberra, ACT 2600
- [ ] MACKAY: 23 River Street, Mackay, QLD 4740
- [ ] PERTH: 503 Murray Street, Perth, WA 6000
- [ ] TOWNSVILLE: 12 Cannan St, South Townsville QLD 4810
- [ ] NEW PLYMOUTH: Level 2, 10 Devon Street East, New Plymouth, 4310 NZ
- [ ] DARWIN: 21 Parap Rd, Darwin, NT 0820
- [ ] MELBOURNE: Lvl 11, 176 Wellington Parade, East Melbourne, VIC 3002
- [ ] ROCKHAMPTON: rockhampton@slrconsulting.com
- [ ] AUCKLAND: 68 Beach Road, Auckland 1010 NZ
- [ ]

CLIENT:	LABORATORY: ALS
PROJECT ID: 620.31500.00000	LABORATORY ADDRESS: 2 Byth St
PROJECT MANAGER: Ned Connolly	SAMPLER: AW Ashley Welch / Hailey Martin
PM CONTACT No: 0431 652 757	SAMPLER CONTACT No: 0488 134 273
Email Reports to: ~~esdat+slr_au@esdatlabsync.net~~ nconnolly@slrconsulting.com; awelch@slrconsulting.com; hmartin@slrconsulting.com	Email Invoices to: nconnolly@slrconsulting.com

Turnaround Time (TAT)
- [x] Standard TAT
- [ ] Non Standard or Urgent TAT

Required TAT: Standard

COC Number: 1 of 1

COMMENTS OR ADDITIONAL DIRECTIONS

REQUESTED ANALYSIS

No.	Sample ID	Date & Time	Matrix (Soil, water, ACM, etc)	Containers and Preservatives	NT-12	TDS (total diss. solids)	Dissolved Metals As, Sb, Cu, Fe, Mn, Ba	NT-7	Fe fractions			Additional Information (Comment on any gross contamination or specific requirements)
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 Lower	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	112PgC	17.5.23 0930			X	X	X	X	X			
7	GW07_R	17.5.23 1115			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 Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; ASG = Amber Glass 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	Sig: Allelch.	Date / Time: 18.5.23	Received by	Sig: Crystil	Date / Time: 18-5-23 16:41
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:
Relinquished By	Sig:	Date / Time:	Received by	Sig:	Date / Time:

Temperature Received:

CERTIFICATE OF ANALYSIS

Work Order	: **EB2315057**	Page	: 1 of 6
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 16:41
Order number	: 4537604	Date Analysis Commenced	: 18-May-2023
C-O-C number	: ----	Issue Date	: 25-May-2023 20:04
Sampler	: ASHLEY WELCH, HAILEY MARTIN		
Site	:		
Quote number	: EN/032/17		
No. of samples received	: 10		
No. of samples analysed	: 10		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

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.

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								
ø Total Anions	----	0.01	meq/L	**100**	**136**	**44.0**	**58.0**	**28.7**
ø Total Cations	----	0.01	meq/L	**91.4**	**117**	**40.8**	**55.7**	**30.5**
ø 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								
ø Total Anions	----	0.01	meq/L	34.0	18.1	8.27	18.9	99.2
ø Total Cations	----	0.01	meq/L	31.4	16.4	8.13	17.6	99.1
ø Ionic Balance	----	0.01	%	3.97	4.77	0.85	3.54	0.06

Appendix G:

EA Trigger Tables

Groundwater Bore No. 18PbR2 (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	26/01/2023 8:36 AM	15-05-2023 11:23 AM									
pH (Field)	pH units	NA	7.77	7.62									
EC (Field)	mS/cm	-	841	636									
pH (Lab)	pH units	-	7.98	7.77									
EC (Lab)	mS/cm	NA	819	698									
TDS (Lab)	mg/L	NA	490	393									
Major Ions													
Ca	mg/L	NA	15	9									
Mg	mg/L	NA	4	2									
Na	mg/L	NA	148	139									
K	mg/L	NA	2	1									
Cl	mg/L	NA	203	184									
HCO_3	mg/L	NA	88										
SO_4	mg/L	NA	45	33									
Minor Ions													
F	mg/L	NA	0.2	0.3									
Total N	mg/L	NA	0.4	<0.01									
NO_3	mg/L	NA	0.06	<0.01									
NO_2	mg/L	NA	0.19	<0.01									
Dissolved Metals													
Al	µg/L	NA	20	20									
As	µg/L	NA	2	3									
Cu	µg/L	NA	<1	<1									
Fe	µg/L	NA	<50	<50									
Mn	µg/L	NA	4	4									
Se	µg/L	NA	<10	<10									

Groundwater Bore No. 27PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2020 Time sampled	13/02/2021 -	14/04/2021 -	6/07/2021 -	13/10/2021 -	1/02/2022 -	1/06/2022 1:12 PM	19/07/2022 2:21 PM	13/10/2022 9:45 AM	23/01/2023 3:21 PM	09-05-2023 15:47
pH (Field)	pH units	NA	6.95	6.81	6.82	6.86	6.99	6.96	6.9	6.49	6.98	6.71	7
EC (Field)	µS/cm	-	9113	9908	10804	10490	11570	12339	11195	11838	9996	11642	11152
pH (Lab)	pH units	-	7.88	7.28	7.84	7.7	7.71	7.18	7.52	7.38	7.5	7.28	7.64
EC (Lab)	µS/cm	NA	8970	10200	11200	11700	11500	11200	11600	12300	12400	10100	11,800
TDS (Lab)	mg/L	NA	5830	7550	7760	8730	8190	9610	8940	9040	9240	9660	9,310
Major Ions													
Ca	mg/L	NA	461	497	583	648	627	716	708	649	685	612	612
Mg	mg/L	NA	212	210	258	269	291	283	288	288	292	267	290
Na	mg/L	NA	1150	1210	1410	1490	1560	1420	1570	1500	1560	1470	1,590
K	mg/L	NA	27	22	24	25	26	25	26	26	26	24	25
Cl	mg/L	NA	3060	3290	3720	3860	3980	4290	3920	4110	4190	4000	4,080
HCO_3	mg/L	NA	150	126	166	100	135	104	151	134	141	205	
SO_4	mg/L	NA	590	627	744	784	743	730	780	765	813	710	777
Minor Ions													
F	mg/L	NA	<0.1	<0.1	<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	0.5	<0.01
NO_3	mg/L	NA	0.03	<0.01	<0.01	<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	<0.01	<0.01
Dissolved Metals													
Al	µg/L	NA	10	40	20	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	1	1	1	1	3	3	4	3	4	4
Cu	µg/L	NA	<1	<1	2	2	<1	<1	<1	<1	4	<1	<1
Fe	µg/L	NA	640	370	1030	1480	1690	1950	2230	1690	2100	1900	2700
Mn	µg/L	NA	141	174	210	221	287	353	318	354	296	329	295
Se	µg/L	NA	<10	<10	<10	62	<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.

Groundwater Bore No. 18PbR2 (Basalt, Main Range Volcanics)

Parameter	Units	Groundwater Limits	26/01/2023 8:36 AM	15-05-2023 11:23									
pH (Field)	pH units	NA	7.77	7.62									
EC (Field)	mS/cm	-	841	636									
pH (Lab)	pH units	-	7.98	7.77									
EC (Lab)	mS/cm	NA	819	698									
TDS (Lab)	mg/L	NA	490	393									
Major Ions													
Ca	mg/L	NA	15	9									
Mg	mg/L	NA	4	2									
Na	mg/L	NA	148	139									
K	mg/L	NA	2	1									
Cl	mg/L	NA	203	184									
HCO_3	mg/L	NA	88										
SO_4	mg/L	NA	45	33									
Minor Ions													
F	mg/L	NA	0.2	0.3									
Total N	mg/L	NA	0.4	<0.01									
NO_3	mg/L	NA	0.06	<0.01									
NO_2	mg/L	NA	0.19	<0.01									
Dissolved Metals													
Al	µg/L	NA	20	20									
As	µg/L	NA	2	3									
Cu	µg/L	NA	<1	<1									
Fe	µg/L	NA	<50	<50									
Mn	µg/L	NA	4	4									
Se	µg/L	NA	<10	<10									

Groundwater Bore No. 27PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2020 Time sampled	13/02/2021 -	14/04/2021 -	6/07/2021 -	13/10/2021 -	1/02/2022 -	1/06/2022 1:12 PM	19/07/2022 2:21 PM	13/10/2022 9:45 AM	23/01/2023 3:21 PM	09-05-2023 15:47
pH (Field)	pH units	NA	6.95	6.81	6.82	6.86	6.99	6.96	6.9	6.49	6.98	6.71	7
EC (Field)	µS/cm	-	9113	9908	10804	10490	11570	12339	11195	11838	9996	11642	11152
pH (Lab)	pH units	-	7.88	7.28	7.84	7.7	7.71	7.18	7.52	7.38	7.5	7.28	7.64
EC (Lab)	µS/cm	NA	8970	10200	11200	11700	11500	11200	11600	12300	12400	10100	11,800
TDS (Lab)	mg/L	NA	5830	7550	7760	8730	8190	9610	8940	9040	9240	9660	9,310
Major Ions													
Ca	mg/L	NA	461	497	583	648	627	716	708	649	685	612	612
Mg	mg/L	NA	212	210	258	269	291	283	288	288	292	267	290
Na	mg/L	NA	1150	1210	1410	1490	1560	1420	1570	1500	1560	1470	1,590
K	mg/L	NA	27	22	24	25	26	25	26	26	26	24	25
Cl	mg/L	NA	3060	3290	3720	3860	3980	4290	3920	4110	4190	4000	4,080
HCO_3	mg/L	NA	150	126	166	100	135	104	151	134	141	205	
SO_4	mg/L	NA	590	627	744	784	743	730	780	765	813	710	777
Minor Ions													
F	mg/L	NA	<0.1	<0.1	<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	0.5	<0.01
NO_3	mg/L	NA	0.03	<0.01	<0.01	<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	<0.01	<0.01
Dissolved Metals													
Al	µg/L	NA	10	40	20	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	1	1	1	1	3	3	4	3	4	4
Cu	µg/L	NA	<1	<1	2	2	<1	<1	<1	<1	4	<1	<1
Fe	µg/L	NA	640	370	1030	1480	1690	1950	2230	1690	2100	1900	2700
Mn	µg/L	NA	141	174	210	221	287	353	318	354	296	329	295
Se	µg/L	NA	<10	<10	<10	62	<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.

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	6/02/2023	15-05-2023
			Time sampled	-	-	-	-	-	2:22 PM	4:15 PM	10:45 AM	2:45 PM	13:30
pH (Field)	pH units	NA	6.28	7.08	7.04	7.11	6.8	7.89	7.38	6.69	7.1	6.36	7.37
EC (Field)	□S/cm	-	9932	9873	9526	9494	9607	9716	9283	9675	8304	9541	9063
pH (Lab)	pH units	-	7.59	6.74	7.65	7.43	7.26	6.87	7.29	7.26	7.44	7.53	7.60
EC (Lab)	□S/cm	NA	9860	10000	9970	10000	9890	9250	9660	10000	9810	10000	9,840
TDS (Lab)	mg/L	NA	6410	7430	6810	6650	7850	7710	7480	7330	7710	7830	6,190
Major Ions													
Ca	mg/L	NA	555	506	538	562	506	544	573	551	574	582	492
Mg	mg/L	NA	242	201	225	221	207	212	223	230	226	219	205
Na	mg/L	NA	1210	1100	1200	1250	1160	1140	1260	1220	1240	1220	1,080
K	mg/L	NA	30	22	23	24	23	22	24	25	24	23	22
Cl	mg/L	NA	3440	3280	3270	3370	3430	3360	3180	3400	3470	3290	3,270
HCO_3	mg/L	NA	117	67	90	55	72	94	77	69	72	71	
SO_4	mg/L	NA	614	570	593	610	582	557	602	590	622	589	576
Minor Ions													
F	mg/L	NA	<0.1	<0.1	<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	0.9	<0.01
NO_2	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01	0.03	<0.01
Dissolved Metals													
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	<10
As	µg/L	NA	3	2	1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	1	2	<1	<1	<1	<1	<1
Fe	µg/L	NA	2340	2180	1980	2060	1890	2020	2160	2060	2100	1800	2100
Mn	µg/L	NA	313	320	322	328	312	283	302	311	317	308	299
Se	µg/L	NA	<10	<10	<10	44	<10	<10	<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	18/01/2023	17-05-2023
			Time sampled	-	-	-	-	-	9:05 AM	3:43 PM	3:15 PM	3:26 PM	13:25
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	6.63	7.07
EC (Field)	□S/cm	-	2204	2195	2087	1947	1916	2385	1818	1880	1841	1870	1573
pH (Lab)	pH units	-	7.59	7.41	7.94	7.88	7.75	7.75	7.79	7.7	7.89	8.16	8.29
EC (Lab)	□S/cm	7460, 2568	2160	2200	2210	2160	2040	1960	2020	2030	1900	1560	1,660
TDS (Lab)	mg/L	5000	1400	1630	1590	1620	1450	1540	1500	1380	1530	1270	1,160
Major Ions													
Ca	mg/L	1000	144	137	162	161	137	131	140	130	135	131	100
Mg	mg/L	NA	116	103	120	116	99	101	106	105	103	97	87
Na	mg/L	NA	152	130	150	150	137	132	142	136	139	124	124
K	mg/L	NA	2	2	2	2	2	2	2	2	2	2	2
Cl	mg/L	NA	304	440	436	446	393	366	390	398	370	303	290
HCO_3	mg/L	NA	354	262	352	227	402	368	378	396	435	406	
SO_4	mg/L	1000, 338	328	336	336	338	280	267	263	239	239	228	211
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	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	0.9	0.27
NO_2	mg/L	30	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01
NO_3	mg/L	400, 16.9	1.24	0.95	0.78	0.57	0.66	0.75	1.24	1.31	1.27	0.77	0.27
Dissolved Metals													
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1
Fe	µg/L	50	<50	60	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	20	2	9	4	25	8	4	4	3	6	13	4
Se	µg/L	20, 11	<10	<10	<10	6	<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.

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	19/01/2023	23-05-2023
			Time sampled	-	-	-	-	-	11:15 AM	9:40 AM	2:00 PM	10:15 AM	10:20
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	7.69	8.12
EC (Field)	□S/cm	-	1733	1733	1644	1553	1670	2217	1613	1655	1587	1653	1564
pH (Lab)	pH units	-	8.29	7.05	7.92	7.96	7.96	7.91	7.87	7.88	7.95	8.05	8.10
EC (Lab)	□S/cm	1703	1710	1640	1600	1640	1640	1630	1650	1670	1550	1630	1,640
TDS (Lab)	mg/L	NA	1110	904	885	898	894	904	920	909	882	888	900
Major Ions													
Ca	mg/L	NA	38	27	32	31	29	33	29	29	31	32	35
Mg	mg/L	NA	6	4	5	5	5	5	5	5	5	5	5
Na	mg/L	NA	292	261	285	300	292	285	305	292	308	272	304
K	mg/L	NA	5	4	4	4	4	4	4	4	4	4	4
Cl	mg/L	NA	465	468	471	480	484	467	468	489	497	485	450
HCO_3	mg/L	NA	167	91	118	77	117	118	106	111	113	111	
SO_4	mg/L	134	64	66	66	68	62	65	64	62	66	68	70
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	<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	0.4	<0.01
NO_2	mg/L	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	5	<0.01	<0.01	<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	10	10
As	µg/L	13	7	5	5	4	3	4	5	4	4	2	5
Cu	µg/L	1.4	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	200	80	200	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	87	32	25	29	29	32	33	35	38	38	36	39
Se	µg/L	11	<10	<10	<10	76	<10	<10	<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	23/01/2023	17-05-2023
			Time sampled	-	-	-	-	-	10:14 AM	1:26 PM	12:30 PM	12:47 PM	8:10
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	6.78	6.77
EC (Field)	□S/cm	-	3339	3359	3172	2997	3155	3184	3037	3146	2966	3249	2921
pH (Lab)	pH units	-	7.63	7.47	7.92	7.84	7.65	7.73	7.73	7.62	7.72	7.59	7.99
EC (Lab)	□S/cm	7460, 3346	3230	3350	3310	3320	3200	3150	3230	3300	3010	2990	3,100
TDS (Lab)	mg/L	5000	2100	2400	2120	2520	2420	2520	2280	2300	2560	2230	2,130
Major Ions													
Ca	mg/L	1000	208	246	231	232	199	211	220	206	210	204	187
Mg	mg/L	NA	170	196	178	175	159	166	173	174	166	167	164
Na	mg/L	NA	188	184	184	190	176	176	191	181	179	184	175
K	mg/L	NA	2	2	2	2	2	2	2	2	2	2	2
Cl	mg/L	NA	762	816	788	813	817	770	782	797	796	781	740
HCO_3	mg/L	NA	446	334	480	304	506	458	438	457	479	501	
SO_4	mg/L	1000, 57.7	54	55	58	56	51	58	56	54	54	54	51
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	0.5	0.4
Total N	mg/L	NA	55.8	52.4	53.1	51.8	56.3	68.7	56.5	66.6	71.5	59.3	59.5
NO_2	mg/L	30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	400, 50.7	50.6	49	50.7	50.1	52.6	68.7	53.2	56.1	64.7	53.3	59.5
Dissolved Metals													
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1
Fe	µg/L	50	<50	60	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	20	3	2	<1	1	<1	1	<1	<1	<1	1	<1
Se	µg/L	20, 11	<10	<10	<10	13	<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

Appendix G

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	7/07/2021	14/12/2021	2/06/2022	20/07/2022	13/10/2022	23/01/2023	19-05-2023	
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	11:01 AM	2:03 PM	11:45 AM	1:32 PM	11:37
pH (Field)	pH units	6.5-7.5	-	6.64	6.59	6.74	7.19	6.91	6.99	6.97	6.86	6.89	7.72	7.1	7.27	7.23	6.98	7.35	
EC (Field)	µS/cm	-	-	3416	2652	2296	1785	1855	1878	1915	1736	1643	1702	1565	1612	1480	1519	1334	
pH (Lab)	pH units		7.32	7.57	7.27	7.07	7.49	7.34	7.53	7.38	7.98	7.69	7.73	7.48	7.8	7.94	7.63	8.15	
EC (Lab)	µS/cm	7460, 3084	4150	3360	2670	2050	1910	1890	1830	1890	1760	1720	1750	1690	1680	1570	1460	1,480	
TDS (Lab)	mg/L	5000	2350	1950	1460	1130	1240	1060	1190	1060	1000	950	988	963	845	897	884	844	
Major Ions																			
Ca	mg/L	1000	184	141	78	60	38	39	38	43	38	34	40	38	33	36	31	30	
Mg	mg/L	NA	133	76	34	20	14	13	10	14	11	10	14	13	12	12	9	9	
Na	mg/L	NA	471	450	387	372	327	323	294	348	322	321	312	327	298	301	274	290	
K	mg/L	NA	3	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	
Cl	mg/L	NA	976	884	663	501	488	455	478	486	455	434	457	412	421	406	359	336	
HCO_3	mg/L	NA	807	563	438	361	337	225	323	244	349	230	368	305	312	329	341		
SO_4	mg/L	1000, 35	79	43	20	17	17	17	17	18	17	17	15	21	20	24	25	24	
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	<0.1	<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	0.4	0.5	0.4	0.5	0.4	0.4	<0.01	
NO_2	mg/L	30	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
NO_3	mg/L	400, 5	-	-	-	-	-	-	0.02	<0.01	<0.01	<0.01	<0.01	0.03	0.06	<0.01	0.02	<0.01	
Dissolved Metals																			
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
As	µg/L	50, 13	<1	<1	1	<1	<1	1	1	2	2	2	2	2	2	1	2	<1	
Cu	µg/L	1000, 1.4	<1	<1	4	<1	12	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	
Fe	µg/L	800	140	430	850	730	640	440	580	600	550	590	600	1000	490	440	470	350	
Mn	µg/L	87	39	51	45	39	31	30	27	26	37	27	28	28	25	24	21	20	
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	<10	770	<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	13/04/2021	7/07/2021	14/12/2021	2/06/2022	20/07/2022	18/10/2022	23/01/2023	10-05-2023
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	12:10 PM	12:16 PM	1:50 PM	12:03 PM	7:50
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	7	7.01	7.78	7.07	7.3	6.98	7.01	6.96
EC (Field)	µS/cm	-	4140	4066	3833	3445	3372	2786	3113	3053	3124	3031	2990	3078	3278	3465	4013	3803	3412
pH (Lab)	pH units		7.93	7.74	7.75	7.77	7.45	7.73	7.67	7.73	7.87	7.99	7.79	7.9	7.89	7.81	8.2	7.7	8.14
EC (Lab)	µS/cm	7460, 4065	4110	3910	4010	3370	3080	3050	3150	3020	3090	3110	3110	3260	3540	3700	3680	3500	2,790
TDS (Lab)	mg/L	5000	2980	2340	2420	2120	1750	1980	1740	1960	1890	1850	1790	1960	2190	2240	2990	2480	2,320
Major Ions																			
Ca	mg/L	1000	281	276	235	181	155	113	129	114	127	129	109	111	127	128	143	131	120
Mg	mg/L	NA	98	89	104	82	82	78	82	71	82	83	76	83	101	101	102	101	99
Na	mg/L	NA	450	434	407	423	373	382	380	363	412	406	395	444	532	505	504	495	436
K	mg/L	NA	6	6	5	4	4	4	4	3	4	4	3	3	4	4	4	4	4
Cl	mg/L	NA	1200	1100	1090	921	776	784	774	790	825	839	826	862	922	999	982	1030	987
HCO_3	mg/L	NA	386	334	458	525	525	550	361	529	365	555	378	606	532	552	444	595	
SO_4	mg/L	1000, 48	28	16	42	44	44	46	48	45	48	47	48	59	81	88	95	99	89
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	0.4	0.4	0.4	0.3	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	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.02
NO_2	mg/L	30	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	400, 5	-	-	-	-	-	-	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Dissolved Metals																			
Al	µg/L	5000, 55	<10	<10	<10	10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	50, 13	<1	1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 33	<1	<1	26	6	<1	5	<1	14	<1	3	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	1600	840	1420	1420	1080	1270	1360	1370	1440	1630	1560	1570	1700	2400	90	2090	2470	2650
Mn	µg/L	87	88	50	97	353	71	60	73	59	69	67	58	53	100	42	52	55	54
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	330	<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 **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 25PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	30/09/2015 Time sampled	5/04/2016 -	13/10/2016 -	4/04/2017 -	26/10/2017 -	9/04/2018 -	25/09/2018 -	2/04/2019 -	15/10/2019 -	24/04/2020 -	3/11/2020 -	14/04/2021 -	13/10/2021 -	1/06/2022 11:06 AM	19/07/2022 12:32 PM	11/10/2022 3:15 PM	17/01/2023 1:31 PM	16-05-2023 9:10
pH (Field)	pH units	NA	7.76	7.1	7.67	7.93	6.94	6.82	7.05	6.93	6.91	7.21	6.54	6.85	7.26	7.02	6.59	6.78	6.83	6.98
EC (Field)	µS/cm	-	9301	9728	10747	10014	10023	10046	9762	9969	9074	6260	9192	9651	9598	9537	9903	8750	9957	9063
pH (Lab)	pH units	-	7.37	7.35	8.08	7.62	7.78	7.81	7.43	7.35	7.9	7.81	7.4	7.7	7.71	7.43	7.34	7.69	7.72	7.66
EC (Lab)	µS/cm	NA	11000	10400	10400	9920	9010	9840	9850	9590	9540	9740	9410	9040	9550	9700	10000	9610	9400	10,200
TDS (Lab)	mg/L	NA	9340	8760	7350	5830	5860	6700	7140	7060	7490	6330	6120	6820	6530	7420	7350	7810	7810	6,720
Major Ions																				
Ca	mg/L	NA	730	669	705	620	513	477	578	566	474	580	537	529	498	572	516	552	523	460
Mg	mg/L	NA	196	218	212	203	180	179	201	183	178	198	198	198	200	201	196	197	200	190
Na	mg/L	NA	1140	1280	1310	1260	1180	1120	1270	1170	1150	1260	1160	1220	1300	1300	1210	1250	1180	1,200
K	mg/L	NA	20	24	24	23	21	20	22	22	21	22	29	22	24	24	23	23	23	22
Cl	mg/L	NA	3620	3620	3430	3300	3170	3070	3150	3390	3170	3420	3310	3370	3330	3360	3370	3480	3390	3,210
HCO3	mg/L	NA	137	128	127	229	291	198	232	177	180	123	146	134	143	119	123	129	121	-
SO4	mg/L	NA	411	406	408	377	359	368	384	380	380	384	381	386	384	385	380	386	368	372
Minor Ions																				
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	0.8	0.6	0.5	0.5	0.5	0.5	0.6	0.5	<0.01
NO3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Metals																				
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	<1	<1	2	<1	3	1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	2740	3000	3930	3470	3570	3350	3140	3400	3030	3360	3040	3120	3010	3430	3320	3340	2970	2990
Mn	µg/L	NA	126	130	129	91	77	86	88	103	94	109	105	117	113	121	118	122	106	111
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 26PcR (Balgowan Coal Sequence)

Parameter	Units	Groundwater Limits	20/04/2015 Time sampled	30/09/2015 -	6/04/2016 -	13/10/2016 -	4/04/2017 -	27/10/2017 -	9/04/2018 -	25/09/2018 -	3/04/2019 -	18/10/2019 -	23/04/2020 -	3/11/2020 -	14/04/2021 -	13/10/2021 -	1/06/2022 12:16 PM	19/07/2022 1:32 PM	13/10/2022 8:50 AM
pH (Field)	pH units	NA	7.2	7.8	7.28	7.87	8.3	7.02	7.03	7.04	7.04	6.96	7.2	6.46	7.28	7.17	7.1	6.65	7.11
EC (Field)	µS/cm	-	11400	11502	9863	12332	12334	13320	12999	12430	12433	11530	10603	12103	11846	11822	11728	12143	10273
pH (Lab)	pH units	-	7.33	7.49	7.49	8.21	7.69	7.89	8.18	7.44	7.43	7.37	7.94	7.5	7.83	7.84	7.7	7.54	7.68
EC (Lab)	µS/cm	NA	12300	12500	11800	12100	12300	12000	12700	11000	12200	11800	11800	11850	12300	11700	11800	12300	12000
TDS (Lab)	mg/L	NA	9310	10600	9010	8230	7450	7800	8340	9830	9180	8830	7670	7670	8500	8310	9150	9050	9270
Major Ions																			
Ca	mg/L	NA	685	687	652	693	679	638	594	669	822	725	594	587	559	547	544	547	569
Mg	mg/L	NA	253	239	279	268	280	264	256	264	285	254	267	285	270	287	260	272	271
Na	mg/L	NA	1620	1490	1700	1730	1730	1690	1570	1780	1780	1600	1700	1620	1660	1850	1710	1700	1720
K	mg/L	NA	26	24	29	28	30	29	28	29	31	29	27	37	28	30	28	29	29
Cl	mg/L	NA	3340	4100	4120	3500	4060	4150	3960	3990	3940	3880	3950	4000	3930	3920	3870	4030	4140
HCO3	mg/L	NA	246	242	244	232	257	271	224	243	233	226	223	215	229	238	217	223	246
SO4	mg/L	NA	1130	955	975	400	904	854	874	922	873	849	916	895	926	898	929	915	971
Minor Ions																			
F	mg/L	NA	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.5	1.1	0.5	0.4	0.8	0.4	0.5	0.6
NO3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NO3	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	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	1	<1	<1	<1	<1
Fe	µg/L	NA	690	3050	3870	4340	3900	3880	3940	3720	4040	3720	4010	3730	3820	3910	3980	4070	4190
Mn	µg/L	NA	25	23	24	24	19	20	19	19	20	22	22	21	22	22	21	22	22
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<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.

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 2:34 PM	16-05-2023 10:41													
pH (Field)	pH units	NA	6.92	7.13													
EC (Field)	µS/cm	-	12241	11269													
pH (Lab)	pH units	-	7.97	8.02													
EC (Lab)	µS/cm	NA	12200	12,200													
TDS (Lab)	mg/L	NA	9310	8,530													
Major Ions																	
Ca	mg/L	NA	554	475													
Mg	mg/L	NA	278	259													
Na	mg/L	NA	1600	1,640													
K	mg/L	NA	28	26													
Cl	mg/L	NA	4010	4,020													
HCO_3	mg/L	NA	223														
SO_4	mg/L	NA	829	898													
Minor Ions																	
F	mg/L	NA	<0.1	<0.1													
Total N	mg/L	NA	<0.5	<0.01													
NO_2	mg/L	NA	<0.01	<0.01													
NO_3	mg/L	NA	<0.01	<0.01													
Dissolved Metals																	
Al	µg/L	NA	<10	30													
As	µg/L	NA	<1	<1													
Cu	µg/L	NA	<1	<1													
Fe	µg/L	NA	4000	3780													
Mn	µg/L	NA	20	21													
Se	µg/L	NA	<10	<10													

Groundwater Bore No. 111PgC Lower (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	4/10/2007 Time sampled	5/11/2013	5/05/2014	7/10/2014	20/04/2015	6/10/2015	1/04/2016	28/09/2016	10/04/2017	2/11/2017	6/04/2018	7/07/2021	14/12/2021	2/06/2022 1:50 PM	18-05-2023 14:05
pH (Field)	pH units	6.5-7.5	-	-	-	-	-	-	-	-	-	-	-	6.81	8.17	6.92	7.04
EC (Field)	µS/cm		-	-	-	-	-	-	-	-	-	-	-	6560	6529	6356	5787
pH (Lab)	pH units	-	NA	7.93	7.89	7.53	7.76	7.89	7.5	7.87	7.49	7.77	7.56	7.58	7.72	7.81	8.14
EC (Lab)	µS/cm	6937	NA	6570	6800	6970	6780	6740	6610	6910	6660	6710	6780	6800	6650	6680	8,130
TDS (Lab)	mg/L	NA	NA	4500	4580	4670	4020	4530	4470	4390	4440	4100	3870	4170	4830	4600	5,650
Major Ions																	
Ca	mg/L	NA	147	203	263	281	346	284	284	310	321	365	350	274	247	269	306
Mg	mg/L	NA	50	172	168	194	172	168	172	168	179	180	173	175	170	178	249
Na	mg/L	NA	791	902	862	975	834	820	902	832	876	866	853	905	871	926	1,080
K	mg/L	NA	10	12	10	14	10	10	10	10	10	10	10	10	10	10	11
Cl	mg/L	NA	1250	1610	1620	1830	1900	1520	2000	1800	1850	1890	1810	1940	1820	1800	2,500
HCO_3	mg/L	NA	501	478	462	493	529	492	612	609	628	599	574	393	612	538	
SO_4	mg/L	309	129	299	307	305	361	306	302	300	310	282	294	312	302	312	324
Minor Ions																	
F	mg/L	0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	1.4	1.8	3.6	1.8	3	<0.01
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.05	<0.01	<0.01
Dissolved Metals																	
Al	µg/L	55	NA	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	2.4	<1	2	2	2	2	3	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	4900	NA	<50	<50	<50	<50	<50	4200	4220	4300	4760	4160	4390	4040	4460	4920
Mn	µg/L	87	NA	36	42	16	17	33	22	23	22	24	22	24	22	23	41
Se	µg/L	11	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	60	<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 **Appendix G**

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 Time sampled	9/10/2014 -	16/04/2015 -	2/10/2015 -	1/04/2016 -	5/10/2016 -	4/04/2017 -	2/11/2017 -	17/04/2018 -	10/10/2018 -	10/04/2019 -	23/10/2019 -	8/07/2021 -	14/12/2021 -	1/02/2022 -	3/06/2022 9:40 AM
pH (Field)	pH units	6.5-7.5	-	-	-	-	-	-	-	-	-	-	-	-	7.27	7.62	7.7	7.53
EC (Field)	□S/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	6123	5185	5911	4929
pH (Lab)	pH units	-	7.96	6.77	7.97	7.98	7.67	7.95	7.8	7.81	7.56	7.6	7.62	7.45	7.72	7.57	7.35	7.42
EC (Lab)	□S/cm	7460, 5629	5570	5700	5530	5570	5190	5410	5440	5450	5420	5460	5350	5220	5380	5650	5100	5310
TDS (Lab)	mg/L	5000	3630	3270	3120	3200	3630	3160	3320	3610	3660	3780	3620	3150	3130	3750	3600	3450
Major Ions																		
Ca	mg/L	1000	178	185	274	217	205	232	246	276	212	236	218	233	200	179	204	193
Mg	mg/L	NA	34	35	37	37	35	36	41	39	38	38	36	36	39	36	37	38
Na	mg/L	NA	917	940	765	759	800	782	823	812	760	766	786	819	832	799	796	833
K	mg/L	NA	34	26	7	7	7	7	8	7	7	7	7	8	8	7	7	8
Cl	mg/L	NA	1640	1780	1540	1420	1720	1660	1730	1730	1540	1610	1800	1700	1720	1630	1710	1660
HCO_3	mg/L	NA	76	65	120	118	107	106	133	99	107	99	93	80	79	95	104	79
SO_4	mg/L	1000, 31	28	27	35	19	7	5	8	3	3	3	3	2	3	2	2	2
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	0.2	0.1	0.2	0.1	0.1	0.1	0.1
Total N	mg/L	NA	2	1.6	1.8	1.8	1.8	1.7	1.3	1.6	1.7	1.5	1.6	1.7	1.7	1.4	1.7	1.7
NO_2	mg/L	30	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	400, 5	-	-	-	-	-	-	-	-	-	-	-	-	0.33	0.11	<0.01	<0.01
Dissolved Metals																		
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	40	<10
As	µg/L	50, 13	1	2	3	3	3	3	3	4	3	2	1	1	1	<1	2	2
Cu	µg/L	1000, 1.4	1	1	<1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	600	<50	<50	<50	440	560	640	70	440	280	200	70	<50	200	90	530	460
Mn	µg/L	230	61	67	174	223	223	219	181	226	216	108	215	192	259	200	226	229
Se	µg/L	20, 11	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	3380	<10	<10	<10

Groundwater Bore No. 3316 WB (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	19/07/2022 8:30 AM 3:40	18/10/2022	19/01/2023	18-05-2023 13:08
pH (Field)	pH units	6.5-7.5	7	7.34	7.11	7.57
EC (Field)	□S/cm	-	5156	5805	5410	5040
pH (Lab)	pH units	-	7.52	7.82	7.67	7.80
EC (Lab)	□S/cm	7460, 5629	5450	5510	5280	3,960
TDS (Lab)	mg/L	5000	3450	3580	3840	3,270
Major Ions						
Ca	mg/L	1000	191	220	196	181
Mg	mg/L	NA	40	33	36	39
Na	mg/L	NA	824	794	758	859
K	mg/L	NA	8	8	7	8
Cl	mg/L	NA	1770	1660	1730	1,680
HCO_3	mg/L	NA	77	73	72	
SO_4	mg/L	1000, 31	3	<1	2	3
Minor Ions						
F	mg/L	0.2	0.1	0.1	0.1	0.1
Total N	mg/L	NA	1.6	1.8	1.9	0.06
NO_2	mg/L	30	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	400, 5	0.16	0.02	<0.01	0.06
Dissolved Metals						
Al	µg/L	5000, 55	<10	<10	<10	<10
As	µg/L	50, 13	2	<1	1	1
Cu	µg/L	1000, 1.4	<1	<1	<1	<1
Fe	µg/L	600	300	130	600	640
Mn	µg/L	230	182	226	216	227
Se	µg/L	20, 11	<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 **Appendix G**

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 Time sampled	1/10/2014	15/04/2015	29/09/2015	29/03/2016	27/09/2016	29/03/2017	1/11/2017	16/04/2018	2/10/2018	8/04/2019	30/10/2019	6/05/2020	6/11/2020	15/04/2021	13/10/2021	1/05/2022 8:47 AM
pH (Field)	pH units	NA	7.14	7.65	7.69	7.63	7.09	8.21	7.53	7.28	7.22	7.32	7.29	7.36	6.45	6.89	7.46	7.54	7.44
EC (Field)	µS/cm	-	5489	5542	3582	4380	4606	4690	4693	4340	5093	4605	4690	4442	4082	4456	4286	4401	4198
pH (Lab)	pH units	-	7.73	7.69	7.86	7.59	7.91	7.78	7.88	7.79	7.46	7.77	7.58	7.58	7.62	7.87	7.9	7.87	7.8
EC (Lab)	µS/cm	NA	4600	4730	4310	4780	4710	4770	4640	4620	4570	4640	4640	4540	4490	4430	4540	4510	4420
TDS (Lab)	mg/L	NA	3400	2590	2640	3330	3000	2880	3190	3250	3100	2980	2930	2870	2920	2880	2910	2910	3120
Major Ions																			
Ca	mg/L	NA	228	194	197	254	252	243	212	230	213	237	295	272	204	203	208	194	207
Mg	mg/L	NA	78	76	54	64	75	77	76	74	73	75	77	75	77	78	75	75	72
Na	mg/L	NA	629	642	487	548	602	586	605	558	561	563	618	605	581	586	602	632	617
K	mg/L	NA	20	29	14	11	13	13	12	13	13	13	13	14	13	19	13	14	13
Cl	mg/L	NA	1430	1210	1120	1230	1330	1290	1320	1360	1190	1280	1370	1240	1280	1330	1280	1260	1300
HCO_3	mg/L	NA	144	131	143	137	137	139	142	137	133	139	132	122	127	124	129	132	122
SO_4	mg/L	NA	293	274	245	245	256	263	250	235	242	239	242	242	235	261	260	267	263
Minor Ions																			
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	0.7	0.6	0.6	0.5	0.6	0.5	0.6	0.5
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	20	<10	<10	<10	<10	<10	<10	<10	20	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	<1	<1	<1	<1	<1	<1	<1	<1	61	5	<1	<1	<1	<1	<1	2
Fe	µg/L	NA	<50	<50	220	840	1060	1010	1000	900	1000	1000	1010	870	910	1070	980	940	970
Mn	µg/L	NA	77	48	40	64	60	58	62	59	58	61	62	56	57	60	62	59	61
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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 8:29 AM	19/10/2022 10:08 AM	26/01/2023 2:25 PM	16-05-2023 12:01													
pH (Field)	pH units	NA	7.49	7.32	7.04	7.47													
EC (Field)	µS/cm	-	4320	4909	4549	4079													
pH (Lab)	pH units	-	7.69	8.07	7.95	7.96													
EC (Lab)	µS/cm	NA	4580	4770	4220	4,520													
TDS (Lab)	mg/L	NA	3150	3100	3390	2,920													
Major Ions																			
Ca	mg/L	NA	198	233	189	177													
Mg	mg/L	NA	73	67	72	71													
Na	mg/L	NA	597	579	602	594													
K	mg/L	NA	13	14	13	13													
Cl	mg/L	NA	1350	1340	1400	1,300													
HCO_3	mg/L	NA	126	141	133														
SO_4	mg/L	NA	253	259	264	256													
Minor Ions																			
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1													
Total N	mg/L	NA	0.6	0.6	0.7	<0.01													
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	<10	<10													
As	µg/L	NA	<1	<1	<1	<1													
Cu	µg/L	NA	<1	<1	<1	<1													
Fe	µg/L	NA	1030	1030	1030	950													
Mn	µg/L	NA	62	65	64	58													
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.

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 -	16/04/2015 -	1/10/2015 -	30/03/2016 -	28/09/2016 -	5/04/2017 -	3/11/2017 -	18/04/2018 -	3/10/2018 -
pH (Field)	pH units	6.0-8.5	8.04	7.57	6.81	7.58	7.4	7.05	7.4	7.81	7.62	7.08	6.4	7.15	6.71	6.64	6.54	6.69	
EC (Field)	µS/cm	-	1445	1363	1458	1366	955	1313	1506	1405	1173	1198	1268	1252	1399	1305	1379	1249	
pH (Lab)	pH units	8	8.02	8.05	7.73	7.84	7.9	7.94	7.94	7.26	8.05	7.41	8.12	7.95	7.7	7.82	7.7	7.5	
EC (Lab)	µS/cm	7460, 1440	1400	1520	1350	1420	1440	1380	1440	1350	1380	1280	1360	1310	1320	1360	1310	1270	1280
TDS (Lab)	mg/L	5000	1300	871	774	sg2[2]	881	797	782	749	723	708	850	754	727	866	762	725	741
Major Ions																			
Ca	mg/L	1000	88	105	93	90	70	81	86	83	85	69	83	86	81	95	85	80	82
Mg	mg/L	NA	55	92	85	86	91	79	91	76	81	61	68	75	78	86	79	71	76
Na	mg/L	NA	220	92	84	93	109	88	93	91	98	80	89	96	94	98	87	89	88
K	mg/L	NA	2.4	1	1	1	2	1	2	1	2	1	1	1	1	1	<1	<1	1
Cl	mg/L	NA	85	91	97	87	113	97	105	100	95	92	83	84	81	78	77	78	80
HCO_3	mg/L	NA	840	791	675	751	716	682	695	691	688	668	709	694	693	792	695	645	673
SO_4	mg/L	1000, 18	11	13	11	24	20	17	16	17	18	14	15	12	14	12	13	11	12
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	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total N	mg/L	NA	18	14.7	7.8	14.3	13.3	13.2	13.9	13	14.7	13.5	16	13.9	14.3	15.8	15.2	13.9	12.6
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	<10	<10	<10	<10	<10	<10	<10	80
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	1000, 1.4	1	2	<1	<1	2	2	2	1	1	<1	<1	<1	<1	<1	<1	2	<1
Fe	µg/L	220	340	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	230
Mn	µg/L	20	98	7	10	3	14	7	9	10	6	5	2	2	2	2	<1	2	6
Se	µg/L	20, 11	<5	<10	<10	<10	<10	<10	<10	<10	<10	<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	18/01/2023 2:29 PM	12-05-2023 11:00						
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	6.47	6.71						
EC (Field)	µS/cm	-	1137	1462	1288	1434	1336	682	1347	1402	1451	1489	2921						
pH (Lab)	pH units		7.42	7.1	7.32	7.33	7.77	7.96	7.61	7.5	7.81	7.48	8.17						
EC (Lab)	µS/cm	7460, 1440	1150	1330	1360	1420	1370	723	1440	1480	1480	1260	1,200						
TDS (Lab)	mg/L	5000	678	795	884	923	852	435	934	916	901	897	819						
Major Ions																			
Ca	mg/L	1000	84	91	92	97	101	30	107	100	107	102	84						
Mg	mg/L	NA	72	85	87	84	88	22	98	99	105	100	91						
Na	mg/L	NA	95	87	82	74	81	95	91	88	93	82	81						
K	mg/L	NA	1	1	1	<1	1	<1	1	1	1	1	1						
Cl	mg/L	NA	79	78	84	81	78	80	75	79	77	69	77						
HCO_3	mg/L	NA	580	735	706	741	783	335	733	792	861	813							
SO_4	mg/L	1000, 18	12	12	12	12	11	8	14	13	14	14	13						
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	0.3	0.2						
Total N	mg/L	NA	10	16	16.5	15.9	15.8	0.9	14.2	15.3	12.8	12.3	11.9						
NO_2	mg/L	30	-	-	-	<0.01	<0.01	<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	12.3	11.9						
Dissolved Metals																			
Al	µg/L	5000, 55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
As	µg/L	50, 13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1						
Cu	µg/L	1000, 1.4	2	<1	4	<1	6	<1	<1	<1	4	8	<1						
Fe	µg/L	220	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50						
Mn	µg/L	20	2	4	1	<1	4	4	<1	<1	<1	<1	<1						
Se	µg/L	20, 11	<10	<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 **Appendix G**

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	1/05/2014	3/10/2014	14/04/2015	29/09/2015	30/03/2016	29/09/2016	4/04/2017	31/10/2017
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	7.21	7.18	7.15	7.06	6.89	6.63	6.9	7.19	7.17	8.1	6.87	-	8.3	6.89
EC (Field)	µS/cm	-	-	-	-	6660	6040	7410	7515	5711	7096	9290	8835	8316	8097	8130	3250	8008	8053
pH (Lab)	pH units	-	7.6	7.2	7.2	7.61	7.9	7.74	7.49	7.72	7.75	7.46	7.64	7.62	7.47	7.9	7.85	7.69	7.9
EC (Lab)	µS/cm	NA	7900	7400	7700	7780	7320	7630	7550	7530	8150	7440	8060	7860	8130	8120	8210	7980	8030
TDS (Lab)	mg/L	NA	4700	4900	4600	4250	4510	4900	4470	5160	4850	4560	4910	4960	5290	4950	4960	4510	4780
Major Ions																			
Ca	mg/L	NA	220	240	250	256	247	240	228	218	262	254	256	314	270	307	296	312	299
Mg	mg/L	NA	140	150	130	136	137	140	139	133	146	136	138	135	160	144	151	151	150
Na	mg/L	NA	1400	1400	1100	1200	1160	1170	1190	1020	1300	1160	1240	1120	1360	1220	1190	1250	1180
K	mg/L	NA	15	14	12	17	16	17	16	14	17	15	17	13	20	15	14	16	15
Cl	mg/L	NA	2200	2200	2200	1930	2150	2180	1990	1610	2170	2320	1960	1980	1990	2600	2340	2390	2370
HCO_3	mg/L	NA	510	540	550	508	530	549	552	546	551	578	581	488	540	519	531	554	529
SO_4	mg/L	NA	330	350	340	346	251	408	327	357	347	336	360	372	345	341	356	348	345
Minor Ions																			
F	mg/L	NA	<0.1	0.5	0.22	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	1.7	1.9	2.2	1.5	1.1	1.6	0.7	0.9
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	20	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	3.9	5	5	<1	5	<1	1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	3200	3300	4000	2340	6250	2530	2880	2970	2160	2970	1940	2720	<50	3280	2730	3160	2960
Mn	µg/L	NA	100	76	85	44	100	53	37	30	37	28	41	25	<1	32	31	31	47
Se	µg/L	NA	43	65	54	<10	<10	<10	<10	<10	<10	<10	<10	<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	19/07/2022	11/10/2022	17/01/2023	18-05-2023				
			Time sampled	-	-	-	-	-	-	-	-	9:54 AM	11:32 AM	2:40 PM	12:32 PM	9:39	-	-	-
pH (Field)	pH units	NA	6.95	7.17	7.7	7	7.03	6.52	6.73	7.5	6.94	6.48	6.93	6.73	6.88				
EC (Field)	µS/cm	-	8955	7970	8418	8379	7163	7900	7638	7707	7525	7838	7065	8100	7292				
pH (Lab)	pH units	-	7.6	7.7	7.6	7.2	8	7.52	7.85	7.93	7.78	7.59	8	8.01	8.03				
EC (Lab)	µS/cm	NA	8330	8100	7930	7880	7830	7760	8090	7870	7870	8120	7820	7710	7,980				
TDS (Lab)	mg/L	NA	4810	5650	5850	5170	5090	5040	5290	5000	5430	5530	5590	5530	5,000				
Major Ions																			
Ca	mg/L	NA	292	304	284	318	277	267	263	242	261	256	258	254	245				
Mg	mg/L	NA	148	142	141	147	149	153	151	150	144	151	147	151	139				
Na	mg/L	NA	1220	1210	1210	1120	1260	1190	1250	1290	1260	1250	1240	1210	1,150				
K	mg/L	NA	15	15	16	15	15	20	15	15	15	15	15	15	15				
Cl	mg/L	NA	1830	2620	2510	2360	2510	2520	2460	2470	2420	2550	2620	2490	2,450				
HCO_3	mg/L	NA	533	456	408	460	443	432	458	467	421	426	452	401	-				
SO_4	mg/L	NA	337	343	317	322	338	338	345	349	353	335	341	336	322				
Minor Ions																			
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<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	0.8	0.8	0.8	<0.01				
NO_2	mg/L	NA	-	-	-	-	-	<0.01	<0.01	<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	<0.01	<0.01				
Dissolved Metals																			
Al	µg/L	NA	10	<10	60	170	<10	<10	<10	<10	<10	<10	<10	<10	<10				
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
Cu	µg/L	NA	2	<1	4	<1	<1	<1	2	<1	<1	<1	<1	<1	<1				
Fe	µg/L	NA	2870	2270	1520	3170	3060	2790	2870	2790	2710	2860	2860	2450	2710				
Mn	µg/L	NA	43	61	99	42	38	42	44	41	47	50	50	50	55				
Se	µg/L	NA	<10	<10	<10	<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.

New Acland Coal Pty Ltd **Appendix G**

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	1/07/2010	22/06/2011	13/12/2011	17/04/2012	17/10/2012	17/04/2013	31/10/2013	1/05/2014
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	7.17	7.2	7.32	7.51	8.03	6.8	7.02
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	5450	5030	5950	5528	8085	5709	7140
pH (Lab)	pH units	-	8.2	7.9	7.4	7.3	7.5	7.4	7.5	8	7.9	7.4	7.73	7.99	7.85	7.8	8.17	7.82	7.64
EC (Lab)	µS/cm	NA	6400	6500	7100	6200	6100	6500	6500	6700	6400	6300	6270	5890	6130	6100	5950	6420	5880
TDS (Lab)	mg/L	NA	3129	3161	3400	3900	3600	3700	3700	3900	3800	3800	3650	3840	3740	3480	3530	3620	3820
									Major Ions										
Ca	mg/L	NA	230	230	240	200	200	210	200	220	200	190	211	211	197	179	164	199	210
Mg	mg/L	NA	97	91	100	93	96	100	100	100	98	80	89	97	97	100	87	95	96
Na	mg/L	NA	750	1000	870	960	940	940	1000	1000	960	980	849	987	932	963	857	1030	992
K	mg/L	NA	12	16	16	14	12	16	14	14	13	12	16	14	15	15	13	15	15
Cl	mg/L	NA	1800	1600	1600	1800	1700	1700	1700	1800	1800	1800	1380	1720	1690	1590	1350	1750	1760
HCO_3	mg/L	NA	305	361	430	320	350	370	370	350	390	400	354	368	378	390	265	312	340
SO_4	mg/L	NA	250	240	220	240	270	260	260	250	260	270	268	198	303	259	268	244	236
									Minor Ions										
F	mg/L	NA	0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	0.26	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<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	0.92	1.1	0.9	1.2	1.8	9.6	0.2	0.6
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	13	50	<10	30	50	40	70	<10
As	µg/L	NA	18	14	<1	15	8.4	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	3	4	<2	<2	<2	1.9	2.5	<1	5	4	<1	<1	2	2	1	1	<1
Fe	µg/L	NA	1500	1400	<5	580	820	1300	2000	4100	2200	2000	1100	880	710	110	90	<50	<50
Mn	µg/L	NA	570	130	<1	250	180	160	110	120	140	160	70	53	47	25	50	20	23
Se	µg/L	NA	9	6	<5	<5	37	39	41	39	50	49	<10	<10	<10	<10	<10	<10	<10

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	3/04/2019	18/10/2019	24/04/2020	5/11/2020	15/04/2021	12/10/2021	3/06/2022	19/07/2022
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8:35 AM	10:44 AM
pH (Field)	pH units	NA	7.22	7.32	7.57	7.03	7.76	7.32	6.91	7.12	7.2	7.05	6.89	7.13	6.64	6.81	6.66	7.04	6.5
EC (Field)	µS/cm	-	6061	6212	6287	6344	4881	6299	6620	6883	6023	6158	5638	3907	6113	5730	5706	5581	5848
pH (Lab)	pH units	-	7.14	7.75	7.59	8.07	8.1	8.02	7.77	7.54	7.67	7.53	7.41	8.13	7.91	8.02	7.43	7.78	7.85
EC (Lab)	µS/cm	NA	6290	6120	6270	6250	6080	6150	6100	6060	6060	6020	5940	5920	5960	6070	5790	5780	6070
TDS (Lab)	mg/L	NA	3930	3720	4030	3790	3490	3740	3560	4020	4070	4090	4040	3850	3870	3890	4040	3930	3920
									Major Ions										
Ca	mg/L	NA	206	264	253	254	258	215	234	212	222	306	267	212	197	192	181	188	187
Mg	mg/L	NA	96	90	80	98	101	100	91	95	94	99	90	96	102	96	95	92	95
Na	mg/L	NA	991	872	833	930	931	947	909	885	938	969	871	959	919	922	958	950	936
K	mg/L	NA	16	12	11	14	13	13	13	14	13	14	14	13	18	13	14	13	14
Cl	mg/L	NA	1650	1550	1560	1710	1680	1740	1770	1540	1770	1690	1670	1700	1740	1660	1670	1650	1760
HCO_3	mg/L	NA	335	362	346	379	354	388	368	366	357	345	328	326	323	339	366	317	307
SO_4	mg/L	NA	232	245	246	266	269	263	256	268	244	243	241	251	262	263	269	260	257
									Minor Ions										
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	0.4	0.3	0.5	0.4	0.4	0.5	0.6	0.6
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	<10	<10	40	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	3	<1	1	1	<1	<1	<1	3	247	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	<50	<50	<50	80	<50	<50	<50	<50	<50	200	220	300	200	290	120	210	140
Mn	µg/L	NA	16	45	20	40	14	17	26	33	47	48	60	56	66	70	83	85	98
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<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.

New Acland Coal Pty Ltd

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 1:30 PM	17/01/2023 11:25 AM	18-05-2023 15:12
pH (Field)	pH units	NA	7.02	6.77	7.12
EC (Field)	□S/cm	-	5566	6041	5543
pH (Lab)	pH units	-	8.05	7.52	8.01
EC (Lab)	□S/cm	NA	5940	5580	4,340
TDS (Lab)	mg/L	NA	3840	3950	3,720
Major Ions					
Ca	mg/L	NA	197	186	172
Mg	mg/L	NA	96	96	93
Na	mg/L	NA	956	890	945
K	mg/L	NA	14	13	13
Cl	mg/L	NA	1760	1690	1,670
HCO_3	mg/L	NA	333	318	
SO_4	mg/L	NA	269	259	260
Minor Ions					
F	mg/L	NA	<0.1	<0.1	<0.1
Total N	mg/L	NA	0.5	0.5	0.01
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	120	170	340
Mn	µg/L	NA	100	94	95
Se	µg/L	NA	<10	<10	<10

Bore No. 82PcR2 (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	31/01/2023 9:05 AM	18-05-2023	
pH (Field)	pH units	6.5-7.5	7.05		
EC (Field)	□S/cm	-	6252		
pH (Lab)	pH units	-	7.66	7.88	
EC (Lab)	□S/cm	7460, 9015	6880	8,330	
TDS (Lab)	mg/L	5000	4140	5,540	
Major Ions					
Ca	mg/L	1000	243	296	
Mg	mg/L	NA	167	207	
Na	mg/L	NA	1040	1,170	
K	mg/L	NA	10	11	
Cl	mg/L	NA	1620	2,400	
HCO_3	mg/L	NA	645		
SO_4	mg/L	1000, 134	672	498	
Minor Ions					
F	mg/L	0.8	0.1	<0.1	
Total N	mg/L	NA	1	<0.01	
NO_2	mg/L	30	<0.01	<0.01	
NO_3	mg/L	400, 5	<0.01	<0.01	
Dissolved Metals					
Al	µg/L	5000, 55	20	<10	
As	µg/L	50, 13	<1	<1	
Cu	µg/L	1000, 1.4	<1	<1	
Fe	µg/L	100	2460	2380	
Mn	µg/L	87	121	125	
Se	µg/L	20, 11	<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 indicat

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 **Appendix G**

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	25/10/2017	9/04/2018	9/10/2018	10/04/2019	24/10/2019	28/04/2020	9/11/2020	19/10/2022 1:05 PM
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.87
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	996.4	593
pH (Lab)	pH units		NA	8.5	8.61	7.8	8.54	8.47	8.36	8.15	8.34	8.5	8.66	8.35	8.26	8.52	8.17	8.28	8.56
EC (Lab)	µS/cm	NA	NA	567	569	641	599	502	494	523	484	498	513	495	481	472	429	490	568
TDS (Lab)	mg/L	NA	NA	365	338	360	353	293	305	329	331	324	303	311	300	277	278	318	369
Major Ions																			
Ca	mg/L	NA	6	12	12	13	11	8	8	12	10	10	10	9	7	7	6	8	13
Mg	mg/L	NA	1	1	1	2	2	<1	<1	1	1	<1	1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	88	121	116	130	103	104	111	118	106	112	109	113	106	86	102	86	122
K	mg/L	NA	2	2	1	2	2	<1	1	1	1	1	<1	<1	<1	<1	<1	<1	1
Cl	mg/L	NA	68	39	14	24	21	15	19	15	15	15	20	13	<1	18	28	20	22
HCO_3	mg/L	NA	132	263	281	299	267	257	268	304	281	288	248	296	241	175	246	314	296
SO_4	mg/L	NA	15	12	9	12	10	10	8	7	7	7	7	6	7	7	8	8	7
Minor Ions																			
F	mg/L	NA	NA	0.5	0.3	0.2	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.5	0.5	0.5	0.4	0.3
Total N	mg/L	NA	NA	0.9	1	1.7	1.3	1.2	1.7	1.1	1.1	0.8	1	0.4	0.3	<0.1	0.5	0.6	0.2
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.56	0.12
Dissolved Metals																			
Al	µg/L	NA	NA	100	40	40	40	10	30	10	10	10	10	10	<10	20	20	10	40
As	µg/L	NA	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	2	4	<1	2	2	1	23	8	3	5	6	4	4	4	3	7	15
Fe	µg/L	NA	NA	70	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	5	3	4	2	<1	2	1	<1	<1	<1	<1	<1	<1	<1	<1	6
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 109P (Basalt, Main Range Volcanics) (Continued)

Parameter	Units	Groundwater Limits	18/01/2023 12:28 PM	12-05-2023 9:50
pH (Field)	pH units	NA	7.53	7.75
EC (Field)	µS/cm	-	549	499.5
pH (Lab)	pH units	-	8.45	8.45
EC (Lab)	µS/cm	NA	537	528
TDS (Lab)	mg/L	NA	342	331
Major Ions				
Ca	mg/L	NA	14	12
Mg	mg/L	NA	1	<1
Na	mg/L	NA	114	112
K	mg/L	NA	1	1
Cl	mg/L	NA	22	22
HCO_3	mg/L	NA	278	
SO_4	mg/L	NA	6	6
Minor Ions				
F	mg/L	NA	0.3	0.3
Total N	mg/L	NA	<0.1	<0.01
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	0.07	<0.01
Dissolved Metals				
Al	µg/L	NA	10	<10
As	µg/L	NA	<1	<1
Cu	µg/L	NA	4	8
Fe	µg/L	NA	<50	<50
Mn	µg/L	NA	3	2
Se	µg/L	NA	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5.

New Acland Coal Pty Ltd **Appendix G**

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 -	24/10/2017 -	9/04/2018 -	4/10/2018 -	15/04/2019 -	24/10/2019 -	5/05/2020 -	16/10/2020 -	29/11/2022 8:41 AM
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.93
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5748	6134
pH (Lab)	pH units	-	NA	8.46	8.23	7.73	7.84	8.16	7.67	7.97	7.51	7.93	8.07	7.79	7.96	8.39	7.65	7.94	7.8
EC (Lab)	µS/cm	NA	NA	2530	4670	6470	6480	6420	6280	6490	6260	6150	6240	6290	6220	6170	6020	6320	5860
TDS (Lab)	mg/L	NA	NA	1460	2720	3980	3720	3980	3990	3800	4050	4000	3820	4330	4140	4260	3910	4110	3710
Major Ions																			
Ca	mg/L	NA	131	18	111	183	219	180	184	193	200	195	171	207	215	218	211	181	181
Mg	mg/L	NA	100	26	110	197	186	180	188	175	192	191	184	191	192	176	215	185	178
Na	mg/L	NA	748	484	714	948	856	821	900	823	856	875	817	860	883	781	950	852	823
K	mg/L	NA	8	3	4	6	5	5	5	5	5	5	5	5	6	5	5	5	6
Cl	mg/L	NA	1190	614	1110	1620	1750	1450	1630	1640	1700	1740	1660	1770	1650	1630	1640	1630	1480
HCO_3	mg/L	NA	552	426	470	493	508	509	523	526	534	524	434	501	499	374	471	596	477
SO_4	mg/L	NA	184	70	207	335	413	343	353	359	378	332	330	352	329	318	320	335	304
Minor Ions																			
F	mg/L	NA	NA	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.6
Total N	mg/L	NA	NA	0.6	0.7	0.2	0.4	0.3	0.7	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.4	0.3	0.2
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Dissolved Metals																			
Al	µg/L	NA	NA	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	1	<1	<1	<1	<1	<1	<1	<1	202	1	<1	<1	<1	1	<1	<1
Fe	µg/L	NA	NA	<50	310	<50	<50	2360	2340	2120	2380	2150	2380	2410	2430	2240	3050	2750	2.49
Mn	µg/L	NA	NA	63	58	112	122	35	58	66	48	36	40	36	36	44	38	33	33
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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
pH (Field)	pH units	NA	6.87	7.25
EC (Field)	µS/cm	-	6029	5512
pH (Lab)	pH units	-	7.99	8.07
EC (Lab)	µS/cm	NA	6050	4,070
TDS (Lab)	mg/L	NA	4040	3,750
Major Ions				
Ca	mg/L	NA	180	141
Mg	mg/L	NA	180	168
Na	mg/L	NA	855	752
K	mg/L	NA	5	5
Cl	mg/L	NA	1600	1,560
HCO_3	mg/L	NA	472	
SO_4	mg/L	NA	320	308
Minor Ions				
F	mg/L	NA	0.4	0.5
Total N	mg/L	NA	0.8	<0.01
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	0.02	<0.01
Dissolved Metals				
Al	µg/L	NA	<10	<10
As	µg/L	NA	<1	<1
Cu	µg/L	NA	<1	<1
Fe	µg/L	NA	2060	2360
Mn	µg/L	NA	32	37
Se	µg/L	NA	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5.

New Acland Coal Pty Ltd **Appendix G**

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 -	2/11/2017 -	19/04/2018 -	8/10/2018 -	16/04/2019 -	28/10/2019 -	5/05/2020 -	15/10/2020 -	29/11/2022 12:36 PM
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.58
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16901
pH (Lab)	pH units	-	NA	7.91	7.81	7.46	7.25	7.81	7.22	7.97	7.12	7.58	7.5	7.41	7.31	7.23	7.25	7.57	6.76
EC (Lab)	µS/cm	NA	NA	16300	17700	20000	20300	15900	16100	15500	15900	15900	16100	15800	16000	15300	14100	15400	15200
TDS (Lab)	mg/L	NA	NA	11200	12900	15000	13200	10500	10500	11000	13200	11600	10700	11100	10200	10100	9160	10000	11000
Major Ions																			
Ca	mg/L	NA	319	629	644	780	928	584	556	593	621	675	580	594	594	667	577	493	538
Mg	mg/L	NA	164	365	376	495	507	338	352	341	377	373	347	351	333	354	375	322	324
Na	mg/L	NA	1620	2450	2690	2770	2840	2240	2440	2240	2400	2380	2290	2320	2320	2410	2520	2230	2290
K	mg/L	NA	14	21	15	19	12	10	11	10	11	10	10	10	11	11	11	11	12
Cl	mg/L	NA	3270	5630	5710	6540	7200	5300	5790	5400	5580	5500	5280	5500	5010	5110	5140	5270	4980
HCO_3	mg/L	NA	238	283	270	337	357	293	327	318	345	323	315	326	304	245	288	354	284
SO_4	mg/L	NA	317	705	700	802	1040	634	659	622	690	627	611	615	581	556	585	576	601
Minor Ions																			
F	mg/L	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	2.1	2.3	2.9	2.2	2.2	2.1	1.8	2.2
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Dissolved Metals																			
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	1	2	1	2	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	870	1750	1640	5160	5400	5120	5560	6030	5380	5290	4820	4650	5940	5230	5100
Mn	µg/L	NA	NA	202	190	220	239	270	278	256	262	269	260	242	219	228	263	220	237
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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 15:07
pH (Field)	pH units	NA	5.75	6.68
EC (Field)	µS/cm	-	20546	18706
pH (Lab)	pH units	-	7.5	7.86
EC (Lab)	µS/cm	NA	21000	20,700
TDS (Lab)	mg/L	NA	16700	15,500
Major Ions				
Ca	mg/L	NA	805	673
Mg	mg/L	NA	539	524
Na	mg/L	NA	3140	3,260
K	mg/L	NA	13	13
Cl	mg/L	NA	7220	6,880
HCO_3	mg/L	NA	338	
SO_4	mg/L	NA	857	872
Minor Ions				
F	mg/L	NA	<1.0	<0.1
Total N	mg/L	NA	2.8	<0.01
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	0.01	<0.01
Dissolved Metals				
Al	µg/L	NA	<10	<10
As	µg/L	NA	<1	<1
Cu	µg/L	NA	3	<1
Fe	µg/L	NA	8500	7780
Mn	µg/L	NA	391	342
Se	µg/L	NA	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5.

New Acland Coal Pty Ltd **Appendix G**

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	24/10/2017	17/04/2018	24/09/2018	3/04/2019	16/10/2019	6/05/2020	15/10/2020	29/11/2022 3:24 PM
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.29
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.69	7.29
pH (Lab)	pH units	-	NA	8.47	8.49	7.91	8.09	8.43	8.09	8.42	7.87	8.39	7.95	8.01	799	7.98	7.92	2039	2645
EC (Lab)	µS/cm	NA	NA	2270	2490	2740	2530	2360	2290	2310	2360	2320	2220	2200	2280	2300	2320	8.26	8.08
TDS (Lab)	mg/L	NA	NA	1290	1320	1310	1370	1280	1260	1300	1300	1510	1310	1240	1270	1280	1510	2420	2440
Major Ions																		1570	1370
Ca	mg/L	NA	38	20	27	35	41	32	31	34	33	30	30	34	40	40	35	29	39
Mg	mg/L	NA	40	16	11	12	13	13	13	13	13	13	13	14	14	12	12	11	19
Na	mg/L	NA	338	449	443	537	448	417	454	420	446	438	414	477	467	412	439	441	476
K	mg/L	NA	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Cl	mg/L	NA	402	587	632	678	672	557	604	569	612	629	546	599	616	561	601	609	636
HCO_3	mg/L	NA	499	338	271	294	303	327	356	344	354	365	338	349	333	261	312	388	328
SO_4	mg/L	NA	43	41	35	36	31	40	44	46	47	48	47	46	48	49	46	52	57
Minor Ions																			
F	mg/L	NA	NA	0.1	0.1	<0.1	0.1	0.1	0.1	0.1	0.1	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	0.6	0.5	0.6	0.6	0.4	0.4	0.5	0.4
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Dissolved Metals																			
Al	µg/L	NA	NA	110	<10	<10	<10	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	1	<1	<1	2	1	<1	<1	<1	<1	4	3	<1	<1	<1	1	<1
Fe	µg/L	NA	NA	50	<50	<50	<50	70	80	90	80	80	100	80	90	80	80	100	80
Mn	µg/L	NA	NA	2	3	7	6	12	12	12	12	10	10	10	12	11	9	10	33
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. 119P (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	19/01/2023 2:48 PM	19-05-2023 10:27
pH (Field)	pH units	NA	7.25	7.62
EC (Field)	µS/cm	-	7648	2406
pH (Lab)	pH units	-	8.14	8.38
EC (Lab)	µS/cm	NA	2600	2,330
TDS (Lab)	mg/L	NA	1480	1,380
Major Ions				
Ca	mg/L	NA	40	39
Mg	mg/L	NA	22	20
Na	mg/L	NA	441	512
K	mg/L	NA	4	4
Cl	mg/L	NA	728	680
HCO_3	mg/L	NA	310	
SO_4	mg/L	NA	71	62
Minor Ions				
F	mg/L	NA	<0.1	<0.1
Total N	mg/L	NA	0.8	<0.01
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	<0.01	<0.01
Dissolved Metals				
Al	µg/L	NA	<10	<10
As	µg/L	NA	<1	<1
Cu	µg/L	NA	<1	<1
Fe	µg/L	NA	100	90
Mn	µg/L	NA	33	26
Se	µg/L	NA	<10	<10

Note: NA, monitoring bores or analytes do not have Groundwater Limits as per Schedule D, Tables D2 and D5.

New Acland Coal Pty Ltd **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. 112P (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	5/11/2013 Time sampled	5/05/2014 -	8/10/2014 -	20/04/2015 -	6/10/2015 -	31/03/2016 -	28/09/2016 -	6/04/2017 -	2/11/2017 -	8/10/2018 -	15/04/2019 -	29/10/2019 -	5/05/2020 -	17-05-2023 9:27			
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	7.71			
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3410			
pH (Lab)	pH units	-	8.07	8.15	7.62	7.65	8.08	7.7	8.02	7.99	8.07	7.97	7.63	7.82	7.84	8.03			
EC (Lab)	µS/cm	NA	3110	3110	3200	3200	3220	3260	3400	3340	3410	3470	3470	3500	3470	3,610			
TDS (Lab)	mg/L	NA	2040	1800	1810	1830	1820	1870	1720	1920	1940	1960	2020	1970	2260	2,010			
Major Ions																			
Ca	mg/L	NA	79	85	101	124	109	109	119	121	125	129	138	150	139	54			
Mg	mg/L	NA	44	37	47	40	42	44	42	46	47	48	52	51	59	9			
Na	mg/L	NA	528	471	582	488	501	545	498	532	530	547	567	562	647	640			
K	mg/L	NA	7	5	7	6	6	6	6	6	6	6	7	7	8	4			
Cl	mg/L	NA	725	701	703	754	721	802	777	823	832	882	835	870	856	1,110			
HCO_3	mg/L	NA	508	461	531	518.5	500.2	539	488	421	497	480.3706413	499	368	436				
SO_4	mg/L	NA	167	150	159	154	154	160	160	154	143	155	147	157	155	24			
Minor Ions																			
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<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	1.2	2	2.4	2	0.01			
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	<10	440	<10	170	<10			
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Cu	µg/L	NA	4	2	3	3	3	2	3	13	<1	<1	3	<1	3	<1			
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	620	<50	560	<50			
Mn	µg/L	NA	42	27	30	1860	126	145	81	76	147	133	147	170	134	108			
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10			

Groundwater Bore No. 114P (Coal, Acland)

Parameter	Units	Groundwater Limits	5/11/2013 Time sampled	5/05/2014 -	9/10/2014 -	21/04/2015 -	6/10/2015 -	4/04/2016 -	13/10/2016 -	7/04/2017 -	28/10/2017 -	10/04/2018 -	28/09/2018 -	2/04/2019 -	14/10/2019 -	21/04/2020 -	16/10/2020 -	11/10/2022 11:00 AM	17/01/2023 9:12 AM	16-05-2023 13:22
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.36	7.33	7.17	7.45
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5640	5649	6252	9835
pH (Lab)	pH units	-	8	8.09	7.83	8.17	8.18	8.23	7.72	8.14	8.04	8.09	7.75	7.72	8.23	8.12	7.94	8.13	8.23	8.13
EC (Lab)	µS/cm	NA	6720	6440	6520	6330	6320	6260	6390	6220	6180	6160	6130	6030	6020	6230	6320	6130	5910	6,210
TDS (Lab)	mg/L	NA	4000	3500	3700	3380	3670	3600	3540	3650	3410	3120	3870	3610	3330	4050	4110	3420	3620	3,490
Major Ions																				
Ca	mg/L	NA	125	126	116	149	123	127	152	144	147	117	138	131	109	116	181	125	113	96
Mg	mg/L	NA	51	43	44	36	40	44	46	44	43	41	42	43	38	38	185	38	40	40
Na	mg/L	NA	1210	1150	1120	1100	1070	1170	1140	1140	1120	1060	1100	1080	1030	1110	852	1100	1130	1,090
K	mg/L	NA	10	8	9	8	8	8	8	7	7	7	7	7	7	7	5	8	7	7
Cl	mg/L	NA	1640	1650	1560	1760	1460	1890	1700	1730	1760	1680	1490	1580	1670	1690	1630	2050	1740	1,710
HCO_3	mg/L	NA	380	346	310	300.12	276	349	361	364	380	319	397	386	290	306	596	367	354	300
SO_4	mg/L	NA	274	214	236	249	216	234	226	211	196	198	199	179	181	186	335	231	224	211
Minor Ions																				
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	1.5	1.5	1.6	1.5	1.6	1.4	1.6	1.6	0.22
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	0.22
Dissolved Metals																				
Al	µg/L	NA	10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	4	2	9	5	<1	<1	<1	2	<1	<1	29	14	<1	<1	2	<1
Fe	µg/L	NA	920	1030	<50	<50	<50	<50	1260	1200	1210	1160	1110	1260	1010	940	-	1060	1200	1210
Mn	µg/L	NA	85	58	31	20	18	24	48	46	46	47	47	46	41	53	49	49	58	50
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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.

New Acland Coal Pty Ltd **Appendix G**

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	26/09/2018	4/04/2019	15/10/2019	23/04/2020	4/11/2020	11/10/2022	17/01/2023	08-05-2023
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3:24 PM	10:25 AM	13:22
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	6.89	7.6	7.13	7.45
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2989	4822	2880	5835
pH (Lab)	pH units	-	8.14	8.2	7.8	7.97	8.29	7.98	7.85	8.03	8.2	7.8	7.9	8.25	8.21	7.92	7.82	8.17	8.08
EC (Lab)	µS/cm	NA	2970	2940	2990	2960	2980	2900	3060	2910	2850	2900	2850	2850	2800	2900	5330	2420	2,500
TDS (Lab)	mg/L	NA	1640	1600	1530	1580	1680	1600	1740	1600	1600	1680	1620	1570	1820	1820	3700	1650	1,650
Major Ions																			
Ca	mg/L	NA	57	69	62	90	69	67	83	82	66	77	100	62	60	68	196	63	57
Mg	mg/L	NA	31	29	29	26	26	27	30	28	27	28	30	26	23	30	40	28	28
Na	mg/L	NA	545	542	559	480	480	527	518	508	474	502	521	514	462	483	820	489	531
K	mg/L	NA	6	5	5	5	4	5	5	5	5	5	5	5	5	7	8	5	5
Cl	mg/L	NA	740	703	649	727	678	737	694	748	714	682	728	710	719	734	2000	748	717
HCO_3	mg/L	NA	501	462	484	516	500	525	494	519	439	525	510	398	467	612	101	463	
SO_4	mg/L	NA	52	50	52	56	52	54	57	53	52	51	53	58	54	53	3	47	75
Minor Ions																			
F	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	0.8	0.8	1.2	0.9	2.2	1.7	1	<0.01
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	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	610	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1
Cu	µg/L	NA	<1	2	2	2	<1	<1	<1	<1	<1	<1	<1	31	<1	4	<1	<1	<1
Fe	µg/L	NA	170	<50	<50	<50	660	90	630	500	510	530	630	440	440	1750	80	520	650
Mn	µg/L	NA	42	11	12	6	5	7	12	27	26	23	14	38	26	36	204	31	15
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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	10/10/2018	22-05-2023
			Time sampled	-	-	-	-	-	-	-	-	-	-	13:12
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	6.4
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	9050
pH (Lab)	pH units	-	7.17	6.59	7.21	7.7	7.4	7.62	7.41	7.53	7.06	7.18	7.53
EC (Lab)	µS/cm	NA	7080	8400	8030	8060	8120	8910	8560	8710	8540	8980	9,890
TDS (Lab)	mg/L	NA	4740	5990	5760	5270	6110	6560	5740	6110	6710	7780	7,610
Major Ions													
Ca	mg/L	NA	404	498	505	469	553	552	541	541	558	494	601
Mg	mg/L	NA	226	319	283	287	402	385	456	476	438	445	414
Na	mg/L	NA	820	836	803	796	796	787	803	803	813	798	1,070
K	mg/L	NA	17	23	17	18	17	17	18	17	17	16	19
Cl	mg/L	NA	2120	1900	1820	1650	2360	2180	2280	2280	1920	2330	2,580
HCO_3	mg/L	NA	493	540	580	527	719	717	752	710	707	720	
SO_4	mg/L	NA	693	937	968	1050	1310	1310	1380	1440	1330	1480	1,520
Minor Ions													
F	mg/L	NA	0.4	0.3	0.5	0.4	0.3	0.4	0.5	0.4	0.5	0.4	0.4
Total N	mg/L	NA	1.4	1.5	1.5	1.6	1.2	1	1.3	1	1.5	1.7	0.03
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	0.03
Dissolved Metals													
Al	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	2	3	1	2	<1
Cu	µg/L	NA	6	3	<1	<1	1	2	1	<1	<1	<1	<1
Fe	µg/L	NA	<50	1560	1890	2090	<50	<50	60	110	120	300	160
Mn	µg/L	NA	1230	1940	1680	1700	3830	3460	3820	4400	3710	3850	2670
Se	µg/L	NA	<10	<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.

New Acland Coal Pty Ltd **Appendix G**

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	30/08/2016	9/01/2017	7/04/2017	13/07/2017	25/10/2017	9/01/2018	6/04/2018	18/07/2018	9/10/2018	25/01/2019	4/04/2019	8/07/2019	17/10/2019	25/02/2020	29/04/2020	9/07/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.06	8.28	7.81	8.13	7.44	8.1	7.51	7.53	7.33	7.46	7.44	7.53	7.11	7.38	7.44	7.5	7.3
EC (Lab)	µS/cm	NA	1425	1300	1220	1310	1330	1300	1220	1300	1200	1330	1290	1270	1263	1280	1220	1250	1260
TDS (Lab)	mg/L	NA	760	725	750	844	783	845	727	756	771	812	761	775	781	787	808	812	748
Major Ions																			
Ca	mg/L	NA	59	82	88	84	80	81	84	85	81	86	80	97	86	89	71	79	82
Mg	mg/L	NA	52	58	60	61	62	59	59	58	58	66	59	64	65	57	54	56	56
Na	mg/L	NA	120	125	136	135	135	132	127	125	127	135	128	134	139	123	126	118	123
K	mg/L	NA	1.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cl	mg/L	NA	69	61	63	64	67	71	68	63	65	64	66	62	61	62	52	67	61
HCO_3	mg/L	NA	744	716	710	671	673	718	665	684	668	719	708	675	684	540	599	643	437
SO_4	mg/L	NA	5.7	16	16	17	15	17	16	14	14	15	14	15	16	15	15	15	16
Minor Ions																			
F	mg/L	NA	NA	0.9	0.9	0.9	0.9	0.9	0.9	1	0.9	1	0.9	0.8	0.8	0.9	0.9	0.7	0.9
Total N	mg/L	NA	NA	18.7	17.2	17.3	17.9	18.2	19	17.5	18.8	20.3	18.7	19.3	18.7	14.8	16.8	17.9	17.3
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	<10	<10	<10	10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	43	2	7	7	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	<1	1	<1	<1	<1	<1	<1	<1	2	<1	2	2	1	<1	<1	1
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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 7:54
pH (Field)	pH units	NA	6.88	6.86	6.85	6.95	6.77
EC (Field)	µS/cm	-	991	1245	1312	1282	1140
pH (Lab)	pH units	-	7.85	7.39	8.02	8.55	8.09
EC (Lab)	µS/cm	NA	1310	1250	1260	1020	1,190
TDS (Lab)	mg/L	NA	852	812	815	616	746
Major Ions							
Ca	mg/L	NA	80	77	90	24	78
Mg	mg/L	NA	56	54	62	4	56
Na	mg/L	NA	129	116	136	211	118
K	mg/L	NA	1	1	1	3	1
Cl	mg/L	NA	64	62	70	125	69
HCO_3	mg/L	NA	816	548	716	405	
SO_4	mg/L	NA	16	16	15	22	15
Minor Ions							
F	mg/L	NA	0.8	0.9	0.9	0.1	0.8
Total N	mg/L	NA	16.8	16.3	15.5	0.2	11.5
NO_2	mg/L	NA	<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
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	<1	1	<1	10	<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.

New Acland Coal Pty Ltd **Appendix G**

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	28/09/2018	25/01/2019	5/04/2019	8/07/2019	17/10/2019	25/02/2020	20/04/2020	8/07/2020
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.1	8.71	8.33	8.34	8.41	8.36	8.2	8.14	8.1	8.26	8.17	8.27	8.18	8.13	8.15	8.62	8.08
EC (Lab)	µS/cm	NA	1256	1060	1092	1060	1100	1070	1100	1050	1060	1060	1050	1040	1055	1050	1070	1060	1040
TDS (Lab)	mg/L	NA	600	652	618	584	674	614	628	615	617	660	611	629	621	631	649	689	613
Major Ions																			
Ca	mg/L	NA	12	22	23	21	19	22	21	23	21	21	21	25	21	25	20	22	22
Mg	mg/L	NA	3.4	4	4	3	3	3	4	4	4	3	3	4	4	3	3	4	3
Na	mg/L	NA	190	233	230	229	214	224	220	225	221	220	222	232	236	210	222	225	217
K	mg/L	NA	2.5	3	3	3	2	3	3	3	3	3	2	3	3	3	3	3	3
Cl	mg/L	NA	82	85	87	89	94	101	93	91	97	103	95	97	95	95	101	96	100
HCO_3	mg/L	NA	549	425	501	503	525	472	552	488	468	483	494	471	452	377	436	421	306
SO_4	mg/L	NA	13	36	38	32	35	36	32	32	31	31	31	31	31	31	31	33	32
Minor Ions																			
F	mg/L	NA	NA	0.2	0.2	0.3	0.2	0.2	0.2	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	NA	0.2	0.2	0.2	0.2	0.2	<0.1	0.2	0.2	0.1	0.2	0.2	<0.1	<0.1	0.1	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	<10	<10	<10	20	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	1	1	<1	<1	<1
Cu	µg/L	NA	NA	<1	2	<1	<1	<1	<1	<1	<1	1	<1	<1	1	<1	1	3	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	80	<50	<50	<50	<50
Mn	µg/L	NA	NA	9	8	7	7	8	8	8	7	7	8	9	7	9	7	10	8
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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												
			Time sampled				8:40												
pH (Field)	pH units	NA	7.93	7.95	7.81	7.7	7.69												
EC (Field)	µS/cm	-	1030	1066	1082	1069	969												
pH (Lab)	pH units	-	8.41	8.18	8.37	8.1	8.35												
EC (Lab)	µS/cm	NA	1060	1040	1080	1100	1,020												
TDS (Lab)	mg/L	NA	689	676	639	771	582												
Major Ions																			
Ca	mg/L	NA	21	20	22	83	19												
Mg	mg/L	NA	4	3	4	61	3												
Na	mg/L	NA	225	214	236	123	202												
K	mg/L	NA	3	3	3	1	3												
Cl	mg/L	NA	103	108	129	69	124												
HCO_3	mg/L	NA	549	393	447	662													
SO_4	mg/L	NA	32	31	26	15	22												
Minor Ions																			
F	mg/L	NA	0.2	0.2	0.2	0.8	0.1												
Total N	mg/L	NA	0.2	0.1	0.2	12.2	<0.01												
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	11.5	<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												
Mn	µg/L	NA	7	7	11	2	10												
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.

New Acland Coal Pty Ltd **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW06B (Acland Coal Sequence)

Parameter	Units	Groundwater Limits	23/06/2016 Time sampled	14/10/2016 -	12/01/2017 -	6/04/2017 -	12/07/2017 -	28/10/2017 -	12/01/2018 -	12/04/2018 -	19/07/2018 -	5/10/2018 -	22/01/2019 -	16/04/2019 -	9/07/2019 -	22/10/2019 -	4/02/2020 -	29/04/2020 -	7/07/2020 -
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.78	8.73	8.71	8.73	8.79	8.76	8.73	8.7	8.58	8.85	8.67	8.8	8.91	8.71	8.77	8.8	8.7
EC (Lab)	µS/cm	NA	999	1060	1030	1030	1060	1040	1080	1020	1030	1050	1060	1040	1056	1002	1080	1040	1060
TDS (Lab)	mg/L	NA	560	625	609	596	627	573	431	581	567	632	621	603	597	584	583	676	589
Major Ions																			
Ca	mg/L	NA	1.2	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
Mg	mg/L	NA	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	210	238	246	229	227	238	231	236	235	235	235	252	254	215	252	229	237
K	mg/L	NA	0.8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cl	mg/L	NA	150	138	138	143	150	160	146	144	159	154	150	146	153	148	154	157	162
HCO_3	mg/L	NA	427	344	354	362	389	354	329	350	356	343	361	349	351	273	337	328	228
SO_4	mg/L	NA	<5	<1	<1	<1	<1	<1	<1	<1	<1	<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	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5
Total N	mg/L	NA	NA	0.2	1	0.2	0.3	0.2	0.2	0.3	0.1	0.3	0.3	0.3	0.2	0.2	0.3	0.3	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	<10	<10	10	10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	2	3	3	3	3	3	2	3	3	3	2	3	3	3	3	2
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW06B (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	16/10/2020 Time sampled	9/02/2021 -	30/11/2022 -	8/02/2023 -	11-05-2023 15:47												
pH (Field)	pH units	NA	8.9	8.78	8.77	8.2	8.44												
EC (Field)	µS/cm	-	929	1092	1088	1076	996												
pH (Lab)	pH units	-	8.83	8.79	7.78	8.64	8.38												
EC (Lab)	µS/cm	NA	1090	1040	1090	1070	1.040												
TDS (Lab)	mg/L	NA	708	676	617	656	609												
Major Ions																			
Ca	mg/L	NA	1	1	2	2	2												
Mg	mg/L	NA	<1	<1	<1	<1	<1												
Na	mg/L	NA	247	234	246	254	232												
K	mg/L	NA	<1	<1	1	<1	<1												
Cl	mg/L	NA	159	164	156	172	174												
HCO_3	mg/L	NA	419	276	361	339													
SO_4	mg/L	NA	<1	<1	<1	<1	<1												
Minor Ions																			
F	mg/L	NA	0.3	0.5	0.5	0.4	0.4												
Total N	mg/L	NA	0.2	0.2	0.2	0.5	<0.01												
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	3	3	10	9												
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.

New Acland Coal Pty Ltd **Appendix G**

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	25/01/2019	2/04/2019	11/07/2019	14/10/2019	28/02/2020	21/04/2020	9/07/2020	13/10/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.97
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	793
pH (Lab)	pH units	-	8.09	8.2	8.19	8.17	8.36	8.18	8.07	8.04	8.23	8.15	8.25	8.25	8.59	8.1	8.64	8.06	8.34
EC (Lab)	µS/cm	NA	724	743	762	767	746	810	764	721	788	793	802	822	812	817	810	807	807
TDS (Lab)	mg/L	NA	410	412	443	565	412	470	439	397	487	443	521	436	458	484	526	482	524
Major Ions																			
Ca	mg/L	NA	14	15	14	13	14	15	16	13	15	16	16	18	13	15	16	17	15
Mg	mg/L	NA	2.4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Na	mg/L	NA	140	149	153	157	150	155	154	146	156	160	162	188	161	158	161	164	164
K	mg/L	NA	2.1	2	2	2	2	2	2	2	2	2	2	3	2	2	3	3	3
Cl	mg/L	NA	100	90	93	98	102	100	96	95	114	115	104	107	117	108	100	114	107
HCO_3	mg/L	NA	317	270	300	292	287	285	297	273	305	311	295	297	223	280	272	200	360
SO_4	mg/L	NA	<5	5	5	6	7	6	5	5	6	6	6	6	11	6	6	7	7
Minor Ions																			
F	mg/L	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	0.2	0.2	1.3	0.2	<0.1	0.3	0.2	0.1
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
NH_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
Dissolved Metals																			
Al	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	2	2	<1	<1	<1	6	<1	1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-
Mn	µg/L	NA	NA	13	5	2	2	4	2	8	6	6	6	7	7	4	8	6	4
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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
pH (Field)	pH units	NA	8.04	-	7.86
EC (Field)	µS/cm	-	825	-	1755
pH (Lab)	pH units	-	7.82	-	8.26
EC (Lab)	µS/cm	NA	796	-	1,820
TDS (Lab)	mg/L	NA	517	-	962
Major Ions					
Ca	mg/L	NA	16	18	14
Mg	mg/L	NA	2	3	3
Na	mg/L	NA	173	165	354
K	mg/L	NA	2	2	3
Cl	mg/L	NA	115	-	479
HCO_3	mg/L	NA	268	-	-
SO_4	mg/L	NA	7	-	22
Minor Ions					
F	mg/L	NA	<0.1	-	0.1
Total N	mg/L	NA	0.1	0.2	<0.01
NO_2	mg/L	NA	<0.01	-	<0.01
NO_3	mg/L	NA	0.14	-	<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	<50	<0.05	50
Mn	µg/L	NA	4	3	53
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.

New Acland Coal Pty Ltd **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW08B (Coal, Acland) This is not an EA Bore

Parameter	Units	Groundwater Limits	23/06/2016 Time sampled	5/10/2016	11/01/2017	11/04/2017	11/07/2017	31/10/2017	11/01/2018	19/04/2018	19/07/2018	9/10/2018	22/01/2019	17/04/2019	10/07/2019	21/10/2019	4/02/2020	27/04/2020	7/07/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.71	8.86	8.64	8.74	8.8	8.78	8.71	8.81	8.67	8.79	8.7	8.76	8.96	8.57	8.74	8.75	8.69
EC (Lab)	µS/cm	NA	1236	1250	1190	1230	1300	1260	1220	1280	1280	1280	1280	1240	1126	1220	1280	1210	1230
TDS (Lab)	mg/L	NA	720	788	899	760	783	750	768	750	746	729	796	743	673	745	746	786	713
Major Ions																			
Ca	mg/L	NA	0.9	2	2	2	2	2	2	2	2	2	2	2	4	2	2	2	2
Mg	mg/L	NA	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1
Na	mg/L	NA	270	304	298	307	300	306	302	300	314	296	310	318	321	274	321	297	302
K	mg/L	NA	0.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	1	1	<1
Cl	mg/L	NA	90	74	79	78	82	82	82	80	82	82	84	123	85	80	81	86	77
HCO_3	mg/L	NA	732	582	603	590	664	608	575	613	605	636	623	612	534	508	599	580	409
SO_4	mg/L	NA	<5	2	2	1	<1	<1	<1	<1	1	<1	<1	<1	4	3	<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	0.7	0.7	0.7	0.6	0.7	0.6	0.6	0.7
Total N	mg/L	NA	NA	0.2	0.3	0.4	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	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	120	<10	10	<10	10	60	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	60	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	2	2	2	2	2	2	3	2	2	2	2	5	2	3	2	3
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW08B (continued) This is not an EA Bore

Parameter	Units	Groundwater Limits	10/11/2020 Time sampled	9/02/2021		26/01/2023	24-05-2023 8:40												
pH (Field)	pH units	NA	8.79	8.7		8.44	8.71												
EC (Field)	µS/cm	-	1281	1270		1242	1332												
pH (Lab)	pH units	-	8.77	8.83		8.76	8.87												
EC (Lab)	µS/cm	NA	1230	1220		1210	1,250												
TDS (Lab)	mg/L	NA	800	793		760	768												
Major Ions																			
Ca	mg/L	NA	1	2		2	2												
Mg	mg/L	NA	<1	<1		<1	<1												
Na	mg/L	NA	284	304		307	324												
K	mg/L	NA	<1	1		1	1												
Cl	mg/L	NA	78	75		79	78												
HCO_3	mg/L	NA	705	693		605													
SO_4	mg/L	NA	<1	<1		<1	<1												
Minor Ions																			
F	mg/L	NA	0.6	0.7		0.5	0.6												
Total N	mg/L	NA	0.3	0.2		0.4	<0.01												
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		<10	<10												
As	µg/L	NA	<1	<1		<1	<1												
Cu	µg/L	NA	<1	<1		<1	<1												
Fe	µg/L	NA	<50	<50		<50	<50												
Mn	µg/L	NA	2	2		2	2												
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.

New Acland Coal Pty Ltd **Appendix G**

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	25/09/2018	22/01/2019	2/04/2019	10/07/2019	15/10/2019	3/02/2020	21/04/2020	7/07/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.54	8.51	8.53	8.65	8.63	8.62	8.45	8.71	8.75	8.38	8.22	8.48	8.78	8.63	8.38	8.67	8.56
EC (Lab)	µS/cm	NA	1533	1500	1520	1620	1810	1960	2140	2240	2210	2200	2500	2470	2631	2560	2600	2570	2450
TDS (Lab)	mg/L	NA	760	831	850	918	1010	1270	918	1290	1240	1220	1380	1360	1660	1350	1350	1670	1360
Major Ions																			
Ca	mg/L	NA	2.4	3	3	3	4	4	5	6	5	7	7	8	7	7	8	8	7
Mg	mg/L	NA	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	290	341	352	366	382	435	426	442	462	533	518	518	590	518	557	528	504
K	mg/L	NA	1.4	2	2	2	3	2	2	2	2	2	2	2	3	2	3	3	2
Cl	mg/L	NA	170	182	213	271	333	447	472	557	478	580	647	620	660	696	698	633	623
HCO_3	mg/L	NA	668	554	567	500	542	467	401	347	430	374	341	304	290	219	290	291	212
SO_4	mg/L	NA	<5	2	3	5	8	14	15	20	13	24	23	27	28	32	30	25	22
Minor Ions																			
F	mg/L	NA	NA	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Total N	mg/L	NA	NA	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5
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	20	20	10	20	20	20	30	50
As	µg/L	NA	NA	4	5	5	5	6	6	5	6	16	5	6	5	6	5	7	11
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	90	60	60	50	9	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	13	12	13	15	16	19	20	14	19	20	23	20	22	26	20	15
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW08C (Marburg Sandstone) (continued)

Parameter	Units	Groundwater Limits	13/10/2020 Time sampled	9/02/2021	29/11/2022	26/01/2023	11-05-2023 14:35												
pH (Field)	pH units	NA	8.69	8.57	8.45	8.34	8.45												
EC (Field)	µS/cm	-	2296	2616	2528	2681	2442												
pH (Lab)	pH units	-	8.71	8.72	8.58	8.48	8.44												
EC (Lab)	µS/cm	NA	2390	2410	2280	2460	2,550												
TDS (Lab)	mg/L	NA	1550	1570	1330	1370	1,410												
Major Ions																			
Ca	mg/L	NA	7	8	7	8	8												
Mg	mg/L	NA	<1	<1	<1	<1	<1												
Na	mg/L	NA	500	510	518	531	498												
K	mg/L	NA	2	2	3	3	3												
Cl	mg/L	NA	603	650	619	716	735												
HCO_3	mg/L	NA	409	260	318	301													
SO_4	mg/L	NA	18	18	12	17	16												
Minor Ions																			
F	mg/L	NA	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												
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	70	50	50	40	40												
As	µg/L	NA	14	12	0.01	8	8												
Cu	µg/L	NA	<1	<1	<1	<1	<1												
Fe	µg/L	NA	-	<50	<50	<50	<50												
Mn	µg/L	NA	10	16	12	15	17												
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.

New Acland Coal Pty Ltd **Appendix G**

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	8/10/2018	26/01/2019	11/04/2019	12/07/2019	25/10/2019	27/02/2020	1/06/2020	9/07/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.1	8.29	7.99	7.48	7.58	7.87	7.75	7.86	7.45	7.84	7.56	7.78	8.13	8.34	7.65	7.69	7.52
EC (Lab)	µS/cm	NA	2427	2760	2770	2750	2810	2790	2830	2900	2780	2820	2770	2770	1670	2730	2820	2790	2770
TDS (Lab)	mg/L	NA	1500	1540	1540	1630	1600	1600	1560	1630	1760	1640	1580	1780	1020	1780	1660	1810	1640
Major Ions																			
Ca	mg/L	NA	81	95	90	89	85	88	93	91	90	92	90	84	49	95	84	86	94
Mg	mg/L	NA	86	94	91	95	98	98	94	93	95	96	97	93	6	88	94	94	94
Na	mg/L	NA	310	352	341	341	359	339	325	339	339	348	347	334	368	309	331	330	341
K	mg/L	NA	2.3	2	2	2	2	2	2	2	2	2	2	2	10	2	2	2	3
Cl	mg/L	NA	680	685	690	706	708	715	708	725	743	751	723	749	475	705	702	726	717
HCO_3	mg/L	NA	524	514	505	520	484	512	468	494	458	478	491	430	234	355	443	456	313
SO_4	mg/L	NA	8.5	22	21	23	21	21	23	21	25	22	22	21	36	21	21	21	21
Minor Ions																			
F	mg/L	NA	NA	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	<0.1	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	2.2	2.9	2	0.6	2	1.9	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	<10	<10	<10	10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	10	<1	2	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	90	<50	<50	<50	<50	<50	<50	<50	<50	<50	130	<50	<50	<50	<50
Mn	µg/L	NA	NA	2	1	1	<1	<1	<1	<1	1	<1	7	<1	16	7	<1	5	1
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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 9:53												
pH (Field)	pH units	NA	7.08	7.11	7.06	5.83	6.92												
EC (Field)	µS/cm	-	2801	2812	2911	2806	2561												
pH (Lab)	pH units	-	7.77	7.55	7.82	7.96	8.07												
EC (Lab)	µS/cm	NA	2780	2750	2560	2880	2,360												
TDS (Lab)	mg/L	NA	1810	1810	1720	1890	1,720												
Major Ions																			
Ca	mg/L	NA	83	81	97	93	88												
Mg	mg/L	NA	85	90	98	99	102												
Na	mg/L	NA	313	320	347	365	376												
K	mg/L	NA	2	2	3	3	3												
Cl	mg/L	NA	740	768	697	774	738												
HCO_3	mg/L	NA	556	396	445	434													
SO_4	mg/L	NA	21	22	19	20	20												
Minor Ions																			
F	mg/L	NA	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												
NO_2	mg/L	NA	<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												
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	2	<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.

New Acland Coal Pty Ltd **Appendix G**

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 -	5/10/2018 -	26/01/2019 -	11/04/2019 -	12/07/2019 -	25/10/2019 -	27/02/2020 -	1/06/2020 -	10/07/2020 -
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.55
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2520
pH (Lab)	pH units		7.38	8.41	8.07	7.63	7.74	7.98	7.9	7.99	7.69	8.1	7.74	7.85	7.47	8.57	7.72	7.84	-
EC (Lab)	µS/cm	NA	1736	2000	2040	2070	2160	2280	2250	2320	2280	2340	2260	2440	2300	2410	2460	2470	-
TDS (Lab)	mg/L	NA	1100	1100	1150	1140	1230	1320	1260	1170	1280	1130	1310	1380	1400	1310	1370	1600	-
Major Ions																			
Ca	mg/L	NA	40	48	49	48	50	60	59	57	58	59	60	62	76	70	59	59	67
Mg	mg/L	NA	40	43	44	48	50	57	52	52	54	57	59	60	74	55	59	59	60
Na	mg/L	NA	290	314	330	333	364	356	338	346	354	385	387	366	439	339	359	358	371
K	mg/L	NA	2.8	3	3	3	3	3	3	4	4	6	3	4	4	4	4	4	4
Cl	mg/L	NA	360	377	400	419	440	542	493	514	539	575	549	595	597	561	555	580	614
HCO_3	mg/L	NA	671	615	630	632	581	566	551	578	557	482	571	521	545	394	506	513	347
SO_4	mg/L	NA	8.4	21	21	22	24	22	23	23	21	30	24	24	33	24	24	24	25
Minor Ions																			
F	mg/L	NA	NA	0.6	0.6	0.7	0.6	0.5	0.5	0.6	0.5	0.4	0.6	0.7	0.5	0.5	0.5	0.4	0.5
Total N	mg/L	NA	NA	0.3	0.4	0.4	0.4	0.5	0.3	1.2	0.3	0.6	0.4	0.4	0.3	0.3	0.3	0.4	0.4
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	<10	<10	<10	10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	3	<1	2	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	370	400	500	480	670	590	670	620	<50	720	760	830	630	770	680	780
Mn	µg/L	NA	NA	8	12	8	8	8	7	9	9	11	8	9	8	9	8	8	9
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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												
pH (Field)	pH units	NA	7.33	7.32		5.95	6.87												
EC (Field)	µS/cm	-	2607	2641		2601	2244												
pH (Lab)	pH units	-	8.07	7.77		8.08	8.23												
EC (Lab)	µS/cm	NA	2450	2470		2500	2,150												
TDS (Lab)	mg/L	NA	1590	1600		1400	1,360												
Major Ions																			
Ca	mg/L	NA	62	69		68	66												
Mg	mg/L	NA	62	71		62	65												
Na	mg/L	NA	396	388		392	405												
K	mg/L	NA	4	4		4	4												
Cl	mg/L	NA	597	630		608	606												
HCO_3	mg/L	NA	606	459		512													
SO_4	mg/L	NA	26	28		27	25												
Minor Ions																			
F	mg/L	NA	0.5	0.5		0.4	0.5												
Total N	mg/L	NA	0.4	0.4		0.5	<0.01												
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	20	<10		<10	<10												
As	µg/L	NA	<1	<1		<1	<1												
Cu	µg/L	NA	2	<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.

New Acland Coal Pty Ltd **Appendix G**

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	8/10/2018	26/01/2019	11/04/2019	12/07/2019	25/10/2019	28/02/2020	1/06/2020	10/07/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.68	8.34	8.07	7.74	7.98	8.13	8.08	8.13	7.92	8.13	7.9	7.99	7.21	8.5	7.87	8.01	7.72
EC (Lab)	µS/cm	NA	1814	1910	1920	1800	1950	1940	1930	1970	1920	1950	1900	1910	2450	1900	2000	1920	1800
TDS (Lab)	mg/L	NA	960	1080	1070	1050	1090	890	1090	905	1060	1110	1050	1080	1620	1020	1100	1250	992
Major Ions																			
Ca	mg/L	NA	40	44	46	44	42	46	49	45	45	45	45	43	112	50	46	46	47
Mg	mg/L	NA	5	5	5	5	5	5	5	5	5	6	5	5	111	5	6	5	5
Na	mg/L	NA	310	329	337	334	346	333	319	330	338	342	341	329	398	301	339	329	339
K	mg/L	NA	7.5	8	8	8	8	8	8	8	9	8	8	8	3	8	9	8	8
Cl	mg/L	NA	460	486	494	497	498	518	505	510	523	526	504	530	698	494	488	507	510
HCO_3	mg/L	NA	256	237	239	251	233	319	227	228	229	232	241	211	509	172	241	229	154
SO_4	mg/L	NA	14	42	41	41	40	42	43	40	39	41	39	40	21	40	51	42	40
Minor Ions																			
F	mg/L	NA	NA	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.3	<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	0.4	0.5	0.5	1.8	0.4	0.4	0.6	0.4
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	<10	<10	50	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	130	270	140	160	140	130	150	150	140	140	170	<50	150	200	160	190
Mn	µg/L	NA	NA	23	19	16	17	16	16	17	16	16	16	19	4	17	17	18	18
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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 12:00 PM	09-05-2023 11:30												
pH (Field)	pH units	NA	7.58	7.62		6.13	7.72												
EC (Field)	µS/cm	-	1998	2001		2033	1714												
pH (Lab)	pH units	-	8.02	7.55		8.17	8.17												
EC (Lab)	µS/cm	NA	1910	1910		1930	1,800												
TDS (Lab)	mg/L	NA	1240	1240		1100	1,060												
Major Ions																			
Ca	mg/L	NA	44	49		50	50												
Mg	mg/L	NA	5	6		6	6												
Na	mg/L	NA	303	349		363	357												
K	mg/L	NA	8	9		8	8												
Cl	mg/L	NA	517	531		514	520												
HCO_3	mg/L	NA	278	212		243													
SO_4	mg/L	NA	41	42		38	26												
Minor Ions																			
F	mg/L	NA	<0.1	<0.1		<0.1	<0.1												
Total N	mg/L	NA	0.4	0.4		0.7	<0.01												
NO_2	mg/L	NA	<0.01	<0.01		<0.01	<0.01												
NO_3	mg/L	NA	<0.01	<0.01		0.02	<0.01												
Dissolved Metals																			
Al	µg/L	NA	<10	<10		40	<10												
As	µg/L	NA	<1	<1		<1	<1												
Cu	µg/L	NA	<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.

New Acland Coal Pty Ltd **Appendix G**

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	26/09/2018	24/01/2019	3/04/2019	11/07/2019	16/10/2019	5/02/2020	22/04/2020	8/07/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.53	7.96	8.06	8.23	7.95	8.22	8.07	7.84	7.94	7.92	7.79	7.62	7.73	7.91	7.83	8.39	7.7
EC (Lab)	µS/cm	NA	2847	3090	2970	2980	2980	2910	2960	2840	2710	2980	2860	2820	2920	2920	2860	2790	2760
TDS (Lab)	mg/L	NA	1600	1720	1680	1660	1740	1890	1630	1580	1380	1620	1440	1560	1560	1550	1580	1810	1510
Major Ions																			
Ca	mg/L	NA	52	67	58	59	57	56	70	73	53	63	59	62	70	72	53	47	62
Mg	mg/L	NA	13	14	13	14	13	14	13	13	12	13	14	15	15	12	13	11	13
Na	mg/L	NA	480	543	525	535	538	537	509	516	492	510	512	544	609	476	527	448	503
K	mg/L	NA	4.4	5	5	5	4	5	5	4	4	5	4	5	6	5	4	4	5
Cl	mg/L	NA	830	815	802	846	810	863	817	754	782	776	830	826	780	740	778	802	787
HCO_3	mg/L	NA	293	292	312	290	303	328	301	312	322	317	318	304	329	246	288	280	203
SO_4	mg/L	NA	5.6	15	13	15	14	18	16	16	16	17	16	19	15	17	17	15	19
Minor Ions																			
F	mg/L	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	1	1.2	0.9	0.9	0.7	0.9	0.7	0.9
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	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	2	<1	<1	<1	<1	<1	1	<1	<1	1	<1	<1	<1	<1
Fe	µg/L	NA	NA	330	310	310	350	230	290	350	220	270	360	370	<50	340	330	220	360
Mn	µg/L	NA	NA	11	9	11	10	10	10	10	10	10	10	10	8	10	12	7	9
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW10 (Acland Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	14/10/2020 Time sampled	10/02/2021	12/10/2022	19/01/2023	09-05-2023 15:30												
pH (Field)	pH units	NA	7.68	7.62	7.58	7.44	7.49												
EC (Field)	µS/cm	-	2158	2758	2543	2786	2428												
pH (Lab)	pH units	-	8.22	8.1	8.29	8.1	8.25												
EC (Lab)	µS/cm	NA	2910	2780	2780	2750	2,550												
TDS (Lab)	mg/L	NA	1890	1810	1560	1550	1,530												
Major Ions																			
Ca	mg/L	NA	52	47	51	54	52												
Mg	mg/L	NA	12	12	13	13	13												
Na	mg/L	NA	520	482	530	476	550												
K	mg/L	NA	5	4	5	4	5												
Cl	mg/L	NA	782	814	829	811	793												
HCO_3	mg/L	NA	398	281	326	312													
SO_4	mg/L	NA	19	16	16	18	16												
Minor Ions																			
F	mg/L	NA	<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												
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	0.03												
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	350	290	310	310	340												
Mn	µg/L	NA	9	7	7	7	8												
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.

New Acland Coal Pty Ltd **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW11A (Basalt, Main Range Volcanics)

		Groundwater	21/06/2016	29/09/2016	12/01/2017	10/04/2017	10/07/2017	29/10/2017	9/01/2018	18/04/2018	18/07/2018	10/10/2018	25/01/2019	11/04/2019	8/07/2019	24/10/2019	28/02/2020	28/04/2020	8/07/2020
Parameter	**Units**	**Limits**	**Time sampled**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.45	8.3	8.3	7.86	8.21	8.22	8.26	8.17	8.14	8.28	8.12	8.08	8.46	8.31	7.93	8.12	7.99
EC (Lab)	µS/cm	NA	1202	1230	1090	942	868	1010	974	950	1030	995	981	949	886	954	900	920	954
TDS (Lab)	mg/L	NA	890	695	633	564	533	577	540	540	588	566	551	561	534	556	511	598	554
Major Ions																			
Ca	mg/L	NA	50	32	28	22	19	26	24	24	28	26	27	24	27	27	24	28	29
Mg	mg/L	NA	9	5	4	3	3	4	3	3	4	4	4	4	4	3	3	4	3
Na	mg/L	NA	240	214	196	166	177	174	159	161	173	169	169	158	176	154	147	165	159
K	mg/L	NA	2.8	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	3
Cl	mg/L	NA	270	224	210	208	211	238	206	213	231	227	227	233	222	220	206	236	227
HCO_3	mg/L	NA	354	245	207	173	165	166	143	141	154	156	157	124	147	120	124	140	98
SO_4	mg/L	NA	41	85	59	38	35	52	44	42	54	42	36	33	30	27	20	20	23
Minor Ions																			
F	mg/L	NA	NA	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	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	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<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	20	10	20	<10	<10	10	270	<10	<10	<10	10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	2	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	500	<50	<50	<50	<50
Mn	µg/L	NA	NA	49	41	31	29	32	32	33	31	23	25	20	40	26	31	26	31
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW11A (Basalt, Main Range Volcanics) (continued)

		Groundwater	2/11/2020	10/02/2021	30/11/2022	18/01/2023	19-05-2023												
Parameter	**Units**	**Limits**	**Time sampled**				**8:25**												
pH (Field)	pH units	NA	8.42	8.05	7.19	7.26	7												
EC (Field)	µS/cm	-	974	1095	1354	1298	1407												
pH (Lab)	pH units	-	8.26	7.25	8.04	8.15	8.16												
EC (Lab)	µS/cm	NA	989	1000	1330	1230	1.550												
TDS (Lab)	mg/L	NA	643	650	791	784	879												
Major Ions																			
Ca	mg/L	NA	30	30	62	53	81												
Mg	mg/L	NA	4	4	14	12	61												
Na	mg/L	NA	157	162	188	196	186												
K	mg/L	NA	3	2	7	6	2												
Cl	mg/L	NA	256	264	284	320	220												
HCO_3	mg/L	NA	177	149	171	174													
SO_4	mg/L	NA	21	18	62	22	34												
Minor Ions																			
F	mg/L	NA	0.2	0.2	0.2	0.3	1.2												
Total N	mg/L	NA	<0.1	<0.1	0.2	0.1	8.42												
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	8.42												
Dissolved Metals																			
Al	µg/L	NA	20	10	<10	<10	<10												
As	µg/L	NA	<1	3	<1	<1	<1												
Cu	µg/L	NA	58	<1	<1	<1	<1												
Fe	µg/L	NA	60	<50	100	110	<50												
Mn	µg/L	NA	34	22	71	56	8												
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.

New Acland Coal Pty Ltd **Appendix G**

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	25/01/2019	5/04/2019	8/07/2019	17/10/2019	27/02/2020	22/04/2020	8/07/2020	2/11/2020
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.92
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3119
pH (Lab)	pH units	-	7.37	7.34	7.64	7.48	7.44	7.08	7.17	6.95	7.05	6.97	7.06	6.78	7.01	7.05	7.82	6.97	7.18
EC (Lab)	µS/cm	NA	4024	3290	3200	3220	3170	3280	3090	3100	3150	3110	3080	3109	3070	3140	3080	3120	3040
TDS (Lab)	mg/L	NA	1800	1830	1890	1860	2010	1870	1890	2000	1810	1740	1870	1780	1900	1850	2000	1860	1980
Major Ions																			
Ca	mg/L	NA	92	109	116	110	116	117	122	109	105	106	129	108	121	108	111	112	103
Mg	mg/L	NA	75	70	60	59	61	56	57	58	57	59	63	63	57	59	60	56	61
Na	mg/L	NA	390	427	432	422	428	415	415	417	419	428	443	451	404	421	442	422	404
K	mg/L	NA	25	20	18	18	18	17	18	18	17	17	19	19	19	19	23	24	24
Cl	mg/L	NA	800	856	863	828	921	874	808	914	850	872	902	869	816	866	898	884	913
HCO_3	mg/L	NA	329	260	260	254	256	221	235	221	221	229	218	215	170	200	221	162	288
SO_4	mg/L	NA	32	95	95	95	95	94	98	96	98	95	95	102	93	99	99	99	89
Minor Ions																			
F	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	0.2	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	NA	0.1	<0.1	0.1	<0.1	<0.1	0.2	0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1	0.2	0.1
NO_2	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
NO_3	mg/L	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
Dissolved Metals																			
Al	µg/L	NA	NA	<10	<10	<10	<0.01	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20
As	µg/L	NA	NA	25	26	24	0.025	22	19	23	22	21	22	20	20	20	18	21	19
Cu	µg/L	NA	NA	2	1	1	<0.001	<1	19	<1	<1	<1	<1	6	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	330	350	460	0	530	540	550	600	670	690	750	750	870	670	800	860
Mn	µg/L	NA	NA	159	175	148	0.169	158	151	153	150	154	152	147	165	146	134	156	155
Se	µg/L	NA	NA	<10	<10	<10	<0.01	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW11B (Marburg Sandstone) (continued)

Parameter	Units	Groundwater Limits	~~10/02/2021~~ Time sampled ~~11:00 AM~~ 7 ~~11:10~~	12/10/2022	18/01/2023	19-05-2023 7:33													
pH (Field)	pH units	NA	6.55	6.48	6.71	6.99													
EC (Field)	µS/cm	-	3302	3058	3226	2886													
pH (Lab)	pH units	-	6.69	7.77	7.99	7.92													
EC (Lab)	µS/cm	NA	3110	3150	2480	2,790													
TDS (Lab)	mg/L	NA	2020	2070	1960	1,950													
Major Ions																			
Ca	mg/L	NA	95	104	109	112													
Mg	mg/L	NA	54	61	60	64													
Na	mg/L	NA	391	441	435	464													
K	mg/L	NA	18	19	22	28													
Cl	mg/L	NA	915	945	864	900													
HCO_3	mg/L	NA	189	229	255														
SO_4	mg/L	NA	99	93	92	92													
Minor Ions																			
F	mg/L	NA	0.2	0.2	0.2	0.2													
Total N	mg/L	NA	<0.1	0.2	0.3	<0.01													
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	<10	<10													
As	µg/L	NA	16	16	16	13													
Cu	µg/L	NA	<1	<1	<1	<1													
Fe	µg/L	NA	870	1100	1110	1160													
Mn	µg/L	NA	165	162	170	167													
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.

New Acland Coal Pty Ltd **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW12B (Coal, Acland) This is not an EA Bore

		Groundwater	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	27/09/2018	22/01/2019	4/04/2019	9/07/2019	17/10/2019	4/02/2020	23/04/2020	7/07/2020
Parameter	**Units**	**Limits**	**Time sampled**																
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units		8.84	8.6	8.59	8.67	8.68	8.76	8.75	8.58	8.59	8.68	8.53	8.71	8.96	8.64	8.61	8.75	8.55
EC (Lab)	µS/cm	NA	1450	1330	1270	1230	1300	1150	1080	1160	1170	1180	1180	1110	1182	1180	1180	1140	1140
TDS (Lab)	mg/L	NA	640	735	709	714	637	748	601	673	746	692	662	660	767	686	650	741	636
Major Ions																			
Ca	mg/L	NA	2.8	4	3	2	3	2	2	3	3	3	3	3	3	3	2	2	3
Mg	mg/L	NA	0.7	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Na	mg/L	NA	260	292	288	279	275	274	246	270	266	259	263	274	282	256	278	236	249
K	mg/L	NA	1.4	2	2	1	1	1	1	1	2	2	1	1	2	2	2	2	2
Cl	mg/L	NA	180	206	202	190	199	159	110	154	168	175	173	145	164	163	165	172	172
HCO_3	mg/L	NA	451	372	397	406	432	461	437	429	400	424	393	419	400	327	388	354	246
SO_4	mg/L	NA	<5	15	14	6.1	14	8	4	9	9	9	7	8	10	10	10	8	8
Minor Ions																			
F	mg/L	NA	NA	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.5
Total N	mg/L	NA	NA	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	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	<10	<10	<10	10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	7	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	3	2	3	3	3	2	3	3	3	3	2	3	3	3	2	2
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW12B (continued) This is not an EA Bore

		Groundwater	4/11/2020	9/02/2021	25/01/2023	15-05-2023													
Parameter	**Units**	**Limits**	**Time sampled**			14:35													
pH (Field)	pH units	NA	8.04	8.5	8.4	8.61													
EC (Field)	µS/cm	-	1160	1147	1036	952													
pH (Lab)	pH units	-	8.64	8.68	8.59	8.59													
EC (Lab)	µS/cm	NA	1120	1100	1050	1,000													
TDS (Lab)	mg/L	NA	728	715	659	606													
Major Ions																			
Ca	mg/L	NA	3	3	2	2													
Mg	mg/L	NA	<1	<1	<1	<1													
Na	mg/L	NA	242	255	243	217													
K	mg/L	NA	2	2	2	2													
Cl	mg/L	NA	180	175	174	158													
HCO_3	mg/L	NA	456	296	349	-													
SO_4	mg/L	NA	8	7	5	3													
Minor Ions																			
F	mg/L	NA	0.4	0.4	0.4	0.4													
Total N	mg/L	NA	0.3	0.2	0.4	<0.01													
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	<10	<10													
As	µg/L	NA	<1	<1	<1	<1													
Cu	µg/L	NA	<1	<1	<1	<1													
Fe	µg/L	NA	<50	<50	<50	<50													
Mn	µg/L	NA	3	4	4	4													
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.

New Acland Coal Pty Ltd **Appendix G**

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. GW13B (Waipanna Coal Sequence)

Parameter	Units	Groundwater Limits	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	27/09/2018	24/01/2019	3/04/2019	10/07/2019	16/10/2019	5/02/2020	22/04/2020	8/07/2020
			Time sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	8.47	8.42	8.47	8.62	8.5	8.68	8.48	8.4	8.37	8.52	8.46	8.5	8.72	8.46	8.51	8.7	8.33
EC (Lab)	µS/cm	NA	848	895	859	868	872	883	922	857	860	878	864	850	889	872	848	826	803
TDS (Lab)	mg/L	NA	470	496	525	519	519	574	537	472	477	524	494	517	512	524	538	537	491
Major Ions																			
Ca	mg/L	NA	4.2	6	5	5	5	5	5	6	5	5	5	6	4	6	5	6	6
Mg	mg/L	NA	1.6	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2
Na	mg/L	NA	190	200	211	205	209	208	204	246	198	203	203	216	236	192	197	201	184
K	mg/L	NA	1.6	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Cl	mg/L	NA	68	58	60	61	63	70	63	61	63	68	65	62	58	60	60	69	63
HCO_3	mg/L	NA	488	410	448	417	427	446	427	357	434	461	440	424	438	347	383	363	269.0256
SO_4	mg/L	NA	<5	<1	<1	<1	<1	<1	<1	<1	<1	<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	1	1	0.9	1	1	0.8	0.8	0.8
Total N	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.2	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	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	NA	5	4	4	5	4	4	4	4	4	4	4	4	5	5	4	5
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW13B (Waipanna Coal Sequence) (continued)

Parameter	Units	Groundwater Limits	14/10/2020	10/02/2021	12/10/2022	7/02/2023	24-05-2023
			Time sampled				7:45
pH (Field)	pH units	NA	8.33	8.35	8.18	8.51	8.12
EC (Field)	µS/cm	-	631	856	861	723	653
pH (Lab)	pH units	-	8.62	8.35	8.53	8.5	8.61
EC (Lab)	µS/cm	NA	869	825	829	739	745
TDS (Lab)	mg/L	NA	565	536	498	496	431
Major Ions							
Ca	mg/L	NA	5	5	6	9	9
Mg	mg/L	NA	2	2	2	3	4
Na	mg/L	NA	198	181	200	168	170
K	mg/L	NA	2	2	2	2	2
Cl	mg/L	NA	69	64	71	65	62
HCO_3	mg/L	NA	486	348	400	323	
SO_4	mg/L	NA	<1	<1	<1	<1	<1
Minor Ions							
F	mg/L	NA	0.7	0.9	0.8	0.5	0.5
Total N	mg/L	NA	0.1	0.2	0.2	0.5	<0.01
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	4	4	6	9	9
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.

New Acland Coal Pty Ltd **Appendix G**

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 -	27/09/2018 -	24/01/2019 -	3/04/2019 -	10/07/2019 -	16/10/2019 -	5/02/2020 -	22/04/2020 -	8/07/2020 -
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.39	7.8	8.04	8.26	7.75	8.18	7.94	7.75	7.69	7.77	7.78	7.86	7.59	7.76	7.9	8.23	7.73
EC (Lab)	µS/cm	NA	1771	2000	1890	1900	1920	1890	1900	1870	1920	1900	1870	1870	1848	1860	1880	1880	1800
TDS (Lab)	mg/L	NA	1000	1110	1040	1150	1100	1230	1060	1060	1220	1150	1050	1110	1090	1160	1250	1220	1120
Major Ions																			
Ca	mg/L	NA	88	109	100	103	97	102	107	111	104	100	101	124	123	116	100	104	106
Mg	mg/L	NA	66	74	65	71	74	72	70	71	72	69	71	78	83	67	71	75	69
Na	mg/L	NA	160	188	182	183	193	187	174	179	187	178	179	195	208	168	186	191	177
K	mg/L	NA	11	14	13	13	13	13	13	13	14	13	12	13	15	14	13	14	13
Cl	mg/L	NA	370	399	386	409	398	427	400	370	436	409	414	419	394	381	397	421	409
HCO_3	mg/L	NA	549	493	522	478	503	532	484	519	488	538	516	506	530	397	468	478	327
SO_4	mg/L	NA	13	38	36	35	32	33	31	29	28	28	27	30	28	28	28	29	30
Minor Ions																			
F	mg/L	NA	NA	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total N	mg/L	NA	NA	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	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	<10	<10	<10	<10	50	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1
Fe	µg/L	NA	NA	1290	1130	1270	1360	1240	1190	1340	1360	1140	1270	<50	1300	1230	1300	1160	1240
Mn	µg/L	NA	NA	164	157	146	166	150	148	149	166	148	141	151	139	169	159	138	150
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<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 8:25												
pH (Field)	pH units	NA	7.38	7.38	7.31	7.13	7.35												
EC (Field)	µS/cm	-	1420	1928	1889	1938	1764												
pH (Lab)	pH units	-	8.11	7.76	8.24	7.84	8.19												
EC (Lab)	µS/cm	NA	1960	1890	1910	1620	1,810												
TDS (Lab)	mg/L	NA	1270	1230	1240	1170	1,110												
Major Ions																			
Ca	mg/L	NA	100	96	104	107	87												
Mg	mg/L	NA	70	69	74	73	69												
Na	mg/L	NA	187	173	191	197	170												
K	mg/L	NA	14	13	14	14	13												
Cl	mg/L	NA	414	439	441	426	436												
HCO_3	mg/L	NA	602	426	519	479													
SO_4	mg/L	NA	29	30	28	28	27												
Minor Ions																			
F	mg/L	NA	0.4	0.3	0.3	0.3	0.3												
Total N	mg/L	NA	0.1	0.2	0.2	0.2	<0.01												
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	1490	1260	1300	1360	1280												
Mn	µg/L	NA	154	178	170	173	165												
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.

New Acland Coal Pty Ltd **Appendix G**

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 -	5/10/2018 -	23/01/2019 -	15/04/2019 -	8/07/2019 -	24/10/2019 -	27/02/2020 -	29/04/2020 -	7/07/2020 -
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	pH units	-	7.1	7.91	7.83	7.4	7.49	7.5	7.56	7.39	7.35	7.71	7.43	7.54	6.78	8.01	7.44	7.55	7.4
EC (Lab)	µS/cm	NA	2126	1970	1990	1860	2060	1960	2030	2100	2010	2100	2000	2020	1886	1940	2020	1990	2020
TDS (Lab)	mg/L	NA	1100	1120	1110	1130	1170	1200	1140	1380	1340	1280	1160	1380	1190	1430	1230	1290	1160
Major Ions																			
Ca	mg/L	NA	89	119	122	116	119	120	129	121	122	133	135	133	125	131	123	118	131
Mg	mg/L	NA	80	87	88	92	92	92	90	93	91	93	90	87	94	84	90	81	88
Na	mg/L	NA	160	161	162	162	168	161	156	153	158	166	174	168	169	144	157	151	157
K	mg/L	NA	8.8	9	10	9	10	9	10	10	10	10	10	10	10	9	10	10	10
Cl	mg/L	NA	350	381	382	382	420	392	419	418	436	475	443	428	435	435	417	470	434
HCO_3	mg/L	NA	732	642	653	669	567	634	566	563	584	557	583	536	557	381	621	480	345
SO_4	mg/L	NA	9.1	24	18	20	18	16	18	18	17	20	17	18	19	19	18	19	19
Minor Ions																			
F	mg/L	NA	NA	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4
Total N	mg/L	NA	NA	0.4	0.3	0.5	0.2	0.3	0.2	0.1	0.2	0.2	0.2	<0.1	0.2	0.1	0.1	0.2	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	<10	<10	20	30	<10	<10	<10	<10
As	µg/L	NA	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/L	NA	NA	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	2	2	<1	<1	<1	<1
Fe	µg/L	NA	NA	<50	50	<50	120	<50	<50	160	70	110	70	<50	80	80	<50	<50	<50
Mn	µg/L	NA	NA	39	22	21	20	13	12	18	11	15	11	9	15	17	27	11	10
Se	µg/L	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Groundwater Bore No. GW16A (Basalt, Main Range Volcanics) (continued)

Parameter	Units	Groundwater Limits	4/11/2020 Time sampled	9/02/2021 -	30/11/2022 -	8/02/2023 -	15-05-2023 15:30												
pH (Field)	pH units	NA	6.58	6.95	6.63	6.61	6.84												
EC (Field)	µS/cm	-	1991	2028	1744	1789	1954												
pH (Lab)	pH units	-	7.74	7.81	7.68	7.89	8.11												
EC (Lab)	µS/cm	NA	1950	2020	1360	1710	1,590												
TDS (Lab)	mg/L	NA	1270	1310	1000	1020	963												
Major Ions																			
Ca	mg/L	NA	117	125	109	106	91												
Mg	mg/L	NA	89	83	89	89	80												
Na	mg/L	NA	150	160	155	156	142												
K	mg/L	NA	12	10	10	9	8												
Cl	mg/L	NA	448	472	179	208	268												
HCO_3	mg/L	NA	657	420	896	769													
SO_4	mg/L	NA	18	19	11	12	14												
Minor Ions																			
F	mg/L	NA	0.3	0.4	0.4	0.3	0.3												
Total N	mg/L	NA	0.1	<0.1	2	2.2	1.34												
NO_2	mg/L	NA	<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												
Dissolved Metals																			
Al	µg/L	NA	<10	<10	<10	<10	<10												
As	µg/L	NA	<1	<1	<1	<1	<1												
Cu	µg/L	NA	3	<1	<1	3	<1												
Fe	µg/L	NA	<50	<50	<50	<50	<50												
Mn	µg/L	NA	10	14	5	2	2												
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.

New Acland Coal Pty Ltd

Appendix G

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 2:47 PM	18-05-2023 7:35
pH (Field)	pH units	NA	6.49	6.54
EC (Field)	µS/cm	-	7128	6426
pH (Lab)	pH units	-	7.27	7.99
EC (Lab)	µS/cm	NA	6380	7,030
TDS (Lab)	mg/L	NA	4790	4,710
Major Ions				
Ca	mg/L	NA	257	236
Mg	mg/L	NA	187	187
Na	mg/L	NA	1100	1,150
K	mg/L	NA	11	10
Cl	mg/L	NA	1510	1,440
HCO_3	mg/L	NA	979	
SO_4	mg/L	NA	941	1,050
Minor Ions				
F	mg/L	NA	<0.1	<0.1
Total N	mg/L	NA	0.3	0.03
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	<0.01	0.03
Dissolved Metals				
Al	µg/L	NA	<10	<10
As	µg/L	NA	2	3
Cu	µg/L	NA	<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 1:56 PM	18-05-2023 8:42
pH (Field)	pH units	NA	7.61	7.86
EC (Field)	µS/cm	-	676	373
pH (Lab)	pH units	-	7.81	8.25
EC (Lab)	µS/cm	NA	606	432
TDS (Lab)	mg/L	NA	373	259
Major Ions				
Ca	mg/L	NA	14	7
Mg	mg/L	NA	4	1
Na	mg/L	NA	120	90
K	mg/L	NA	2	2
Cl	mg/L	NA	103	60
HCO_3	mg/L	NA	191	
SO_4	mg/L	NA	18	7
Minor Ions				
F	mg/L	NA	0.2	0.2
Total N	mg/L	NA	<0.1	<0.01
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	0.01	<0.01
Dissolved Metals				
Al	µg/L	NA	<10	50
As	µg/L	NA	1	1
Cu	µg/L	NA	<1	<1
Fe	µg/L	NA	<50	130
Mn	µg/L	NA	24	24
Se	µg/L	NA	<10	<10

New Acland Coal Pty Ltd

Appendix G

Water Quality Data Tables - Interpretation, Compliance and Additional Monitoring Bores

Groundwater Bore No. BCS4 (Coal, Balgowan)

Parameter	Units	Groundwater Limits	26/01/2023 10:09 AM	23-05-2023 14:55	
pH (Field)	pH units	NA	7	7.75	
EC (Field)	µS/cm	-	5202	3629	
pH (Lab)	pH units	-	7.94	8.10	
EC (Lab)	µS/cm	NA	4820	3,720	
TDS (Lab)	mg/L	NA	3030	2,060	
Major Ions					
Ca	mg/L	NA	100	57	
Mg	mg/L	NA	21	6	
Na	mg/L	NA	939	727	
K	mg/L	NA	6	4	
Cl	mg/L	NA	1500	1,040	
HCO_3	mg/L	NA	182		
SO_4	mg/L	NA	207	160	
Minor Ions					
F	mg/L	NA	<0.1	<0.1	
Total N	mg/L	NA	1.3	<0.01	
NO_2	mg/L	NA	<0.01	<0.01	
NO_3	mg/L	NA	<0.01	<0.01	
Dissolved Metals					
Al	µg/L	NA	<10	<10	
As	µg/L	NA	<1	<1	
Cu	µg/L	NA	<1	<1	
Fe	µg/L	NA	120	70	
Mn	µg/L	NA	244	100	
Se	µg/L	NA	<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.

Bore No. 21P Note this is not an EA Bore

Parameter	Units	Groundwater Limits	13/10/2020 Date Sampled	24/01/2023	23-05-2023 12:57
pH (Field)	pH units	NA	6.67	6.61	7.41
EC (Field)	µS/cm	-	1602	1091	2047
pH (Lab)	pH units	-	7.52	7.25	8.33
EC (Lab)	µS/cm	NA	1690	1630	1,800
TDS (Lab)	mg/L	NA	1100	921	970
Major Ions					
Ca	mg/L	NA	27	29	35
Mg	mg/L	NA	30	30	34
Na	mg/L	NA	268	274	295
K	mg/L	NA	14	13	14
Cl	mg/L	NA	403	444	454
HCO_3	mg/L	NA	351	312	
SO_4	mg/L	NA	18	18	24
Minor Ions					
F	mg/L	NA	0.4	0.4	0.4
Total N	mg/L	NA	<0.1	0.2	0.02
NO_2	mg/L	NA	<0.01	<0.01	<0.01
NO_3	mg/L	NA	<0.01	<0.01	0.02
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	-	200	<50
Mn	µg/L	NA	10	25	194
Se	µg/L	NA	<10	<10	<10

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
Parameter	**Units**	**Limits**	**9:10 AM**	**10:50**
pH (Field)	pH units	NA	6.51	6.66
EC (Field)	µS/cm	-	9306	8676
pH (Lab)	pH units	-	7.04	7.85
EC (Lab)	µS/cm	NA	8130	9,180
TDS (Lab)	mg/L	NA	6760	6,280
Major Ions				
Ca	mg/L	NA	329	315
Mg	mg/L	NA	200	210
Na	mg/L	NA	1370	1,430
K	mg/L	NA	17	17
Cl	mg/L	NA	2900	2,820
HCO_3	mg/L	NA	604	
SO_4	mg/L	NA	541	551
Minor Ions				
F	mg/L	NA	<0.1	<0.1
Total N	mg/L	NA	0.7	0.02
NO_2	mg/L	NA	<0.01	<0.01
NO_3	mg/L	NA	<0.01	0.02
Dissolved Metals				
Al	µg/L	NA	<10	<10
As	µg/L	NA	<1	<1
Cu	µg/L	NA	<1	<1
Fe	µg/L	NA	5930	5660
Mn	µg/L	NA	325	337
Se	µg/L	NA	<10	<10

Groundwater Bore No. 48P Note this is not an EA Bore

		Groundwater	24/01/2023	17-05-2023
Parameter	**Units**	**Limits**	**10:13 AM**	**14:59**
pH (Field)	pH units	NA	6.58	6.57
EC (Field)	µS/cm	-	5113	9100
pH (Lab)	pH units	-	7.28	8.00
EC (Lab)	µS/cm	NA	4610	9,800
TDS (Lab)	mg/L	NA	3450	6,710
Major Ions				
Ca	mg/L	NA	182	328
Mg	mg/L	NA	153	408
Na	mg/L	NA	662	1,120
K	mg/L	NA	13	17
Cl	mg/L	NA	1360	2,600
HCO_3	mg/L	NA	593	
SO_4	mg/L	NA	250	764
Minor Ions				
F	mg/L	NA	0.4	0.4
Total N	mg/L	NA	26.2	153
NO_2	mg/L	NA	0.02	0.02
NO_3	mg/L	NA	25.5	153
Dissolved Metals				
Al	µg/L	NA	<10	<10
As	µg/L	NA	<1	<1
Cu	µg/L	NA	<1	2
Fe	µg/L	NA	<50	<50
Mn	µg/L	NA	457	635
Se	µg/L	NA	<10	10

New Acland Coal Pty Ltd **Appendix G**

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	12/02/2021	25/01/2023 10:47 AM	11-05-2023 10:00
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7	7.03	6.78	6.95
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	8215	8185	7885	7342
pH (Lab)	pH units	-	8	7	7	7	7	7	7	7	8	7.33	7.66	7.94
EC (Lab)	µS/cm	NA	8060	8030	7980	7738	8130	8060	7840	8030	7880	8100	7190	8,100
TDS (Lab)	mg/L	NA	5660	4720	5670	4890	5250	5280	5100	5280	5120	5260	5850	4,940
Major Ions														
Ca	mg/L	NA	302	299	281	295	344	289	266	301	250	243	235	229
Mg	mg/L	NA	185	192	188	208	197	197	191	191	177	177	186	179
Na	mg/L	NA	1160	1170	1130	1240	1200	1160	1160	1180	1080	1060	1160	1,080
K	mg/L	NA	8	8	8	8	9	9	8	8	8	8	8	8
Cl	mg/L	NA	2540	2460	2490	2350	2360	2300	2310	2360	2380	2460	2490	2,290
HCO_3	mg/L	NA	478	474	460	479	357	444	444	304	537	389	449	
SO_4	mg/L	NA	500	456	500	510	499	514	503	520	526	534	501	517
Minor Ions														
F	mg/L	NA	<0.1	<0.1	<0.1	<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	1.1	1.2	<0.01
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	<10	6	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/l	NA	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
Cu	µg/l	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/l	NA	4310	4610	4700	4270	4060	4800	4720	4510	4270	4570	4450	4390
Mn	µg/l	NA	42	45	48	46	45	46	47	50	45	47	47	54
Se	µg/l	NA	<10	<10	<10	<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	12/02/2021	25/01/2023 11:40 AM	11-05-2023 10:50
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	8	8.47	8.2	8.35
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	2503	2978	2836	2659
pH (Lab)	pH units	-	8	8	8	9	8	8	8	8	8	7.74	8.27	8.07
EC (Lab)	µS/cm	NA	2910	2820	2840	2895	2800	2830	2780	2770	2900	2800	2680	2,760
TDS (Lab)	mg/l	NA	1270	1470	1580	1440	1480	1590	1810	1440	1880	1820	1530	1,530
Major Ions														
Ca	mg/l	NA	16	17	15	16	20	14	14	16	13	14	13	13
Mg	mg/l	NA	2	2	2	2	2	2	2	2	2	2	2	2
Na	mg/l	NA	581	636	540	607	534	534	590	549	559	553	554	526
K	mg/l	NA	3	3	3	3	3	3	3	3	3	3	3	3
Cl	mg/l	NA	904	895	885	849	851	834	840	852	852	885	903	895
HCO_3	mg/L	NA	157	168	171	157	124	148	152	104	186	150	163	
SO_4	mg/l	NA	6	4	4	3	2	1	1	<1	<1	<1	<1	1
Minor Ions														
F	mg/l	NA	<0.1	<0.1	0	0	<0.1	0	<0.1	<0.1	0	<0.1	<1.0	<0.1
Total N	mg/l	NA	0.8	0.8	0.8	0.8	0.6	0.7	0.8	0.9	0.7	0.9	1	<0.01
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	<10	<10	<10	<10	<10	<10	<10	<10	<10	10
As	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	2
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Mn	µg/L	NA	23	23	25	23	26	22	24	23	24	22	24	27
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

New Acland Coal Pty Ltd **Appendix G**

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 Time Sampled	23/01/2019 -	16/04/2019 -	9/07/2019 -	29/10/2019 -	26/02/2020 -	4/05/2020 -	9/07/2020 -	15/10/2020 -	12/02/2021 -	1/02/2023 9:25 AM	11-05-2023 11:50
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7.31	7.31	6.83	7.23
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	7174	8582	8725	8177
pH (Lab)	pH units	-	7.78	7.48	7.69	7.43	7.59	7.53	7.56	7.46	7.91	7.22	7.52	8.13
EC (Lab)	µS/cm	NA	7710	8020	7170	6955	7890	7940	8120	8290	8790	8650	8730	9,070
TDS (Lab)	mg/L	NA	5040	4470	4400	4460	4820	4940	5280	5200	5710	5620	5660	5,460
Major Ions														
Ca	mg/L	NA	201	217	193	190	235	198	236	229	212	204	213	197
Mg	mg/L	NA	101	114	88	105	110	109	134	114	122	121	134	128
Na	mg/L	NA	1270	1300	1250	1310	1310	1240	1500	1340	1360	1300	1470	1,310
K	mg/L	NA	7	6	7	7	7	7	8	7	7	7	7	7
Cl	mg/L	NA	2610	2700	2260	2380	2520	2560	2650	2770	2940	2830	2830	2,830
HCO_3	mg/L	NA	229	245	213	231	179	240	239	160	312	232	251	
SO_4	mg/L	NA	160	165	131	155	165	171	182	200	200	207	204	208
Minor Ions														
F	mg/L	NA	<0.1	<0.1	<0.1	<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	2.2	2.2	<0.01
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	<10	50	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	5	4	8	7	6	4	4	5	4	3	<1	1
Cu	µg/L	NA	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	1650	1970	1490	1560	1540	1820	2260	1890	2150	2140	2170	2160
Mn	µg/L	NA	41	41	42	43	41	39	50	48	44	44	43	43
Se	µg/L	NA	<10	<10	<10	<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 Time Sampled	23/01/2019 -	16/04/2019 -	11/07/2019 -	29/10/2019 -	26/02/2020 -	4/05/2020 -	9/07/2020 -	15/10/2020 -	12/02/2021 -	1/02/2023 10:28 AM	11-05-2023 12:45
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7.8	7.87	7.13	7.84
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	4895	5942	5555	5787
pH (Lab)	pH units	-	7.99	7.77	7.94	8.09	7.87	7.78	7.85	7.72	8.03	7.18	7.56	7.93
EC (Lab)	µS/cm	NA	4830	4790	4880	4735	5150	5220	5280	5520	5770	5770	5670	6,140
TDS (Lab)	mg/L	NA	2710	2640	2780	2870	2960	3120	3430	3160	3750	3750	3240	3,440
Major Ions														
Ca	mg/L	NA	75	76	89	105	106	82	94	106	100	94	104	106
Mg	mg/L	NA	14	14	15	17	17	17	19	18	19	20	21	22
Na	mg/L	NA	886	881	946	1050	959	918	1050	976	998	946	1120	1,020
K	mg/L	NA	5	5	6	6	6	6	6	6	6	6	6	6
Cl	mg/L	NA	1520	1450	1440	1450	1580	1570	1600	1660	1680	1780	1720	1,890
HCO_3	mg/L	NA	137	143	139	143	101	123	122	84	152	130	122	
SO_4	mg/L	NA	28	26	27	27	27	30	31	34	36	40	40	43
Minor Ions														
F	mg/L	NA	<0.1	<0.1	<0.1	<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	2.5	2.4	<0.01
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	20	<10	30	<10	<10	<10	<10	<10	<10	<10	<10	<10
As	µg/L	NA	1	1	1	1	1	<1	1	1	<1	<1	<1	<1
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	200	210	210	220	240	280	290	310	370	360	170	420
Mn	µg/L	NA	34	35	35	34	38	39	46	43	46	50	58	59
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

New Acland Coal Pty Ltd **Appendix G**

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	12/02/2021	1/02/2023	23-05-2023
Parameter	**Units**	**Limits**	**Time Sampled**	-	-	-	-	-	-	-	-	-	**12:39 PM**	**16:15**
pH (Field)	pH units	NA	-	-	-	-	-	-	-	-	7.99	8.13	7.68	8.1
EC (Field)	µS/cm	-	-	-	-	-	-	-	-	-	2480	3504	3282	3070
pH (Lab)	pH units	-	8.15	8.05	8.15	8.34	8.11	8.02	8.1	7.97	8.27	7.58	7.92	8.32
EC (Lab)	µS/cm	NA	3310	3290	3260	3400	3320	3320	3290	3230	3350	3260	3180	3,280
TDS (Lab)	mg/L	NA	1830	1700	1840	1770	1760	1830	2140	1790	2180	2120	1780	1,720
Major Ions														
Ca	mg/L	NA	25	25	31	29	31	24	24	25	21	25	24	25
Mg	mg/L	NA	2	2	2	2	2	2	2	2	2	2	2	2
Na	mg/L	NA	644	642	681	755	666	632	611	640	641	643	679	665
K	mg/L	NA	3	3	3	4	4	3	3	4	3	3	4	4
Cl	mg/L	NA	894	979	972	890	955	939	938	941	938	1030	963	926
HCO_3	mg/L	NA	204	198	185	190	148	177	182	128	238	186	185	
SO_4	mg/L	NA	71	66	70	65	71	72	65	63	59	63	60	60
Minor Ions														
F	mg/L	NA	<0.1	<0.1	<0.1	<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	0.6	0.5	<0.01
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	20	10	<10	<10	10	20	10	<10	20	10
As	µg/L	NA	3	3	3	3	4	3	4	6	6	3	4	4
Cu	µg/L	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fe	µg/L	NA	90	90	90	80	80	80	90	120	170	90	100	100
Mn	µg/L	NA	45	44	46	42	45	43	43	39	39	43	41	45
Se	µg/L	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Appendix H:

RPD Table

RPD Table

				Metals															
				Arsenic	Arsenic (filtered)	Barium	Barium (filtered)	Copper	Copper (filtered)	Aluminium	Aluminium (filtered)	Iron	Iron (filtered)	Manganese	Manganese (filtered)	Selenium	Selenium (filtered)	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate 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
EQL				0.001	0.001	0.001	0.001	0.001	0.001	0.01	0.01	0.05	0.05	0.001	0.001	0.001	0.001	1	1	1
Date	Sample Type	Field ID	Lab Report Number																	
09 May 2023	Normal	GW10	EB2314152	-	<0.001	-	0.491	-	<0.001	-	<0.01	-	0.34	-	0.008	-	<0.01	252	252	<1
08 May 2023	Field_D	QAQC01	EB2314152	-	<0.001	-	0.495	-	<0.001	-	<0.01	-	0.36	-	0.008	-	<0.01	253	253	<1
RPD				-	0	-	1	-	0	-	0	-	6	-	0	-	0	0	0	0
09 May 2023	Normal	GW10	EB2314152	-	<0.001	-	0.491	-	<0.001	-	<0.01	-	0.34	-	0.008	-	<0.01	252	252	<1
08 May 2023	Interlab_D	QAQC02	990429	<0.001	-	0.47	-	<0.001	-	<0.05	-	0.37	-	0.008	-	<0.001	-	250	250	<20
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0
15 May 2023	Normal	18PbR2	EB2314679	-	0.003	-	0.012	-	<0.001	-	0.02	-	<0.05	-	0.004	-	<0.01	49	49	<1
	Field_D	QAQC03	EB2314679	-	0.003	-	0.013	-	<0.001	-	0.02	-	<0.05	-	0.004	-	<0.01	50	50	<1
RPD				-	0	-	8	-	0	-	0	-	0	-	0	-	0	2	2	0
15 May 2023	Normal	18PbR2	EB2314679	-	0.003	-	0.012	-	<0.001	-	0.02	-	<0.05	-	0.004	-	<0.01	49	49	<1
	Interlab_D	QAQC04	991571	-	0.003	-	0.010	-	<0.001	-	<0.05	-	<0.05	-	<0.005	-	<0.001	-	-	-
RPD				-	0	-	18	-	0	-	0	-	0	-	0	-	0	-	-	-
22 May 2023	Normal	3307WB_R	EB2315513	-	<0.001	-	0.149	-	<0.001	-	<0.01	-	0.16	-	2.67	-	<0.01	392	392	<1
	Field_D	QAQC05	EB2315513	-	<0.001	-	0.145	-	<0.001	-	<0.01	-	0.14	-	2.60	-	<0.01	389	389	<1
RPD				-	0	-	3	-	0	-	0	-	13	-	3	-	0	1	1	0
22 May 2023	Normal	3307WB_R	EB2315513	-	<0.001	-	0.149	-	<0.001	-	<0.01	-	0.16	-	2.67	-	<0.01	392	392	<1
15 May 2023	Interlab_D	QAQC06	994030	-	<0.001	-	0.13	-	0.001	-	<0.05	-	0.17	-	2.4	-	<0.001	360	360	<10
RPD				-	0	-	14	-	0	-	0	-	6	-	11	-	0	9	9	0

Comments

#1 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

*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																
				Alkalinity (Hydroxide) as CaCO3	Ferrous Iron	Hardness as CaCO3	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)
				mg/L	mg/L	mg/L	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
EQL				1	0.05	1	1	0.01	0.01	0.01	1	10	1	0.01	0.01	0.1	0.1	0.2	0.01	0.01
Date	Sample Type	Field ID	Lab Report Number																	
09 May 2023	Normal	GW10	EB2314152	<1	-	-	183	27.7	27.7	0.04	2,550	1,530	1,660	8.25	0.76	1.1	1.1	-	0.03	0.03
09 May 2023	Field_D	QAQC01	EB2314152	<1	-	-	187	28.4	28.0	0.75	2,630	1,540	1,710	8.22	0.76	0.9	0.9	-	<0.01	<0.01
RPD				0	-	-	2	2	1	180	3	1	3	0	0	20	20	-	100	100
09 May 2023	Normal	GW10	EB2314152	<1	-	-	183	27.7	27.7	0.04	2,550	1,530	1,660	8.25	0.76	1.1	1.1	-	0.03	0.03
09 May 2023	Interlab_D	QAQC02	990429	<20	<0.05	170	-	-	-	-	3,100	1,400	1,860	8.3	0.86	0.9	0.9	<0.2	<0.05	<0.02
RPD				0	-	-	-	-	-	-	19	9	11	1	12	20	20	-	0	40
15 May 2023	Normal	18PbR2	EB2314679	<1	-	-	31	6.86	6.68	1.26	698	393	454	7.77	<0.01	0.1	0.1	-	<0.01	<0.01
	Field_D	QAQC03	EB2314679	<1	-	-	31	6.87	6.08	6.12	699	395	454	7.79	<0.01	0.1	0.1	-	<0.01	<0.01
RPD				0	-	-	0	0	9	132	0	1	0	0	0	0	0	-	0	0
15 May 2023	Normal	18PbR2	EB2314679	<1	-	-	31	6.86	6.68	1.26	698	393	454	7.77	<0.01	0.1	0.1	-	<0.01	<0.01
	Interlab_D	QAQC04	991571	-	-	-	-	-	-	-	-	-	-	-	0.02	0.4	0.4	0.38	<0.05	<0.02
RPD				-	-	-	-	-	-	-	-	-	-	-	67	120	120	-	0	0
22 May 2023	Normal	3307WB_R	EB2315513	<1	0.08	-	3,200	112	111	0.52	9,890	7,610	6,430	7.53	0.88	1.8	1.8	-	0.03	0.03
	Field_D	QAQC05	EB2315513	<1	0.07	-	3,090	111	107	2.00	9,530	7,600	6,190	7.58	0.89	1.7	1.7	-	0.03	0.03
RPD				0	13	-	3	1	4	117	4	0	4	1	1	6	6	-	0	0
22 May 2023	Normal	3307WB_R	EB2315513	<1	0.08	-	3,200	112	111	0.52	9,890	7,610	6,430	7.53	0.88	1.8	1.8	-	0.03	0.03
22 May 2023	Interlab_D	QAQC06	994030	<20	0.18	3,400	-	-	-	-	9,000	4,200	5,000	8.3	1.1[#1]	1.07	1.0[#1]	<0.2	0.07	0.05
RPD				0	77	-	-	-	-	-	9	58	25	10	22	51	57	-	80	50

RPD Table

					Major/minor ions									NA
				Nitrite (as N)	Calcium	Calcium (filtered)	Magnesium	Magnesium (filtered)	Potassium	Potassium (filtered)	Sulphate	Sodium	Sodium (filtered)	Chloride	Fluoride	Sulfate as SO4 - Turbidimetric (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
EQL				0.01	0.5	0.5	0.5	0.5	0.5	0.5	5	0.5	0.5	1	0.1	1
Date	Sample Type	Field ID	Lab Report Number													
09 May 2023	Normal	GW10	EB2314152	<0.01	-	52	-	13	-	5	-	-	550	793	<0.1	16
08 May 2023	Field_D	QAQC01	EB2314152	<0.01	-	52	-	14	-	5	-	-	555	818	<0.1	15
RPD				0	-	0	-	7	-	0	-	-	1	3	0	6
09 May 2023	Normal	GW10	EB2314152	<0.01	-	52	-	13	-	5	-	-	550	793	<0.1	16
08 May 2023	Interlab_D	QAQC02	990429	<0.02	48	-	12	-	4.2	-	<5	520	-	760	<0.5	-
RPD				0	-	-	-	-	-	-	-	-	-	4	0	-
15 May 2023	Normal	18PbR2	EB2314679	<0.01	-	9	-	2	-	1	-	-	139	184	0.3	33
	Field_D	QAQC03	EB2314679	<0.01	-	9	-	2	-	1	-	-	125	183	0.3	34
RPD				0	-	0	-	0	-	0	-	-	11	1	0	3
15 May 2023	Normal	18PbR2	EB2314679	<0.01	-	9	-	2	-	1	-	-	139	184	0.3	33
	Interlab_D	QAQC04	991571	<0.02	9.0	-	2.3	-	1.2	-	-	140	-	-	-	-
RPD				0	-	-	-	-	-	-	-	-	-	-	-	-
22 May 2023	Normal	3307WB_R	EB2315513	<0.01	-	601	-	414	-	19	-	-	1,070	2,580	0.4	1,520
	Field_D	QAQC05	EB2315513	<0.01	-	583	-	398	-	18	-	-	1,030	2,540	0.4	1,540
RPD				0	-	3	-	4	-	5	-	-	4	2	0	1
22 May 2023	Normal	3307WB_R	EB2315513	<0.01	-	601	-	414	-	19	-	-	1,070	2,580	0.4	1,520
15 May 2023	Interlab_D	QAQC06	994030	<0.02	660	-	430	-	21	-	1,700	1,000	-	2,600	1.6	-
RPD				0	-	-	-	-	-	-	-	-	-	1	120	-

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