



CITY COUNCIL OF BROKEN HILL

ATTN: Kathy Graham
240 Blende Street
Broken Hill
NSW 2880 AUSTRALIA

11/01/2023

Dear Kathy

Please find attached the Final Analytical Report for

Customer Service Request: 120503-2022-CSR-1
Account: 120503
Project: AWQC-177250 City Council of Broken Hill - Bore Program - Routine 22/23

AWQC Sample Receipt hours are Monday and Tuesday 8:30am to 8pm and Wednesday, Thursday and Friday 8:30am to 4:30pm.

Yours sincerely,

Scott Kraft
Customer Services Officer
Scott.Kraft@sawater.com.au
+61 8 7424 1250





FINAL REPORT: 353775

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Report Information

Project Name	AWQC-177250
Customer	CITY COUNCIL OF BROKEN HILL
CSR_ID	120503-2022-CSR-1

Analytical Results

Sampling Point	90142-City Council of Broken Hill - Bore Hole 1
Sampled Date	16/12/2022 6:20:00AM
Sample Received Date	16/12/2022 3:23:33PM
Sample Analysis Completed	10/01/2023 2:38:22PM
Sample ID	*2022-009-6512
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 20.4°C</i>			
Cadmium - Total TIC-006(ADEL)			19/12/2022
Cadmium - Total	0.0001	0.0005 mg/L	
Calcium TIC-006(ADEL)			
Calcium	0.04	256 mg/L	
Lead - Total TIC-006(ADEL)			19/12/2022
Lead - Total	0.0001	0.0042 mg/L	
Magnesium TIC-006(ADEL)			
Magnesium	0.04	285 mg/L	
Potassium TIC-006(ADEL)			19/12/2022
Potassium	0.040	49.0 mg/L	
Sodium Adsorption Ratio TMZ-M06(ADEL)			16/12/2022
Sodium Adsorption Ratio - Calculation		21.3	
Sodium TIC-006(ADEL)			19/12/2022
Sodium	0.04	2080 mg/L	
Sulphur TIC-006(ADEL)			
Sulphate	0.6	1350 mg/L	
Sulphur	0.2	449 mg/L	
Total Hardness as CaCO3 TMZ-M06(ADEL)			16/12/2022
Total Hardness as CaCO3	2.0	1810 mg/L	

Inorganic Chemistry - Nutrients	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 20.4°C</i>			
Ammonia as N T0100-01(ADEL)			21/12/2022



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Analytical Results

Sampling Point	90142-City Council of Broken Hill - Bore Hole 1
Sampled Date	16/12/2022 6:20:00AM
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Sample Analysis Completed	10/01/2023 2:38:22PM
Sample ID	*2022-009-6512
Status	Endorsed
Collection Type	Customer Collected

Ammonia as N T0100-01(ADEL)			21/12/2022
Ammonia as N	0.005	0.081 mg/L	
Chloride T0104-02(ADEL)			20/12/2022
Chloride	4.0	3140 mg/L	
Nitrate + Nitrite as N T0161-01(ADEL)			04/01/2023
Nitrate + Nitrite as N	0.003	48.4 mg/L	
Nitrogen - Total TMZ-M06(ADEL)			16/12/2022
Nitrogen - Total		50.02 mg/L	
TKN as N T0112-01(ADEL)			05/01/2023
TKN as Nitrogen	0.05	1.62 mg/L	

Organic Chemistry	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Total Organic Carbon T0158-07(ADEL)			23/12/2022
Total Organic Carbon	0.3	21.3 mg/L	

Inorganic Chemistry - Physical	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Conductivity & Total Dissolved Solids T0016-01(ADEL)			20/12/2022
Conductivity	2	12100 µS/cm	
Note		Conductivity measurement is corrected to 25°C	
Total Dissolved Solids (by EC)	1	7110 mg/L	
pH T0010-01(ADEL)			20/12/2022
pH		7.4 pH units	
Temperature at which pH is measured		23.1 °C	

SGS Australia Pty Ltd (NSW)	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Phenols T0030-01			



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Sample Analysis Completed	10/01/2023 2:38:22PM
Sample ID	*2022-009-6512
Status	Endorsed
Collection Type	Customer Collected

Phenols T0030-01

!External Lab Report No.	SE240959
Phenols	0.01 <0.05 mg/L



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Analytical Results

Sampling Point	90143-City Council of Broken Hill - Bore Hole 2
Sampled Date	16/12/2022 6:40:00AM
Sample Received Date	16/12/2022 3:23:44PM
Sample Analysis Completed	10/01/2023 2:38:23PM
Sample ID	*2022-009-6513
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 20.4°C</i>			
Cadmium - Total TIC-006(ADEL)			19/12/2022
Cadmium - Total	0.0001	0.0009 mg/L	
Calcium TIC-006(ADEL)			19/12/2022
Calcium	0.04	99.2 mg/L	
Lead - Total TIC-006(ADEL)			19/12/2022
Lead - Total	0.0001	0.0014 mg/L	
Magnesium TIC-006(ADEL)			19/12/2022
Magnesium	0.04	88.4 mg/L	
Potassium TIC-006(ADEL)			19/12/2022
Potassium	0.040	21.5 mg/L	
Sodium Adsorption Ratio TMZ-M06(ADEL)			16/12/2022
Sodium Adsorption Ratio - Calculation		19.0	
Sodium TIC-006(ADEL)			19/12/2022
Sodium	0.04	1080 mg/L	
Sulphur TIC-006(ADEL)			21/12/2022
Sulphate	0.6	660 mg/L	
Sulphur	0.2	220 mg/L	
Total Hardness as CaCO₃ TMZ-M06(ADEL)			16/12/2022
Total Hardness as CaCO ₃	2.0	612 mg/L	

Inorganic Chemistry - Nutrients	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 20.4°C</i>			
Ammonia as N T0100-01(ADEL)			21/12/2022
Ammonia as N	0.005	0.129 mg/L	
Chloride T0104-02(ADEL)			20/12/2022
Chloride	4.0	1300 mg/L	
Nitrate + Nitrite as N T0161-01(ADEL)			04/01/2023
Nitrate + Nitrite as N	0.003	7.85 mg/L	



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Sample Received Date	16/12/2022 3:23:44PM
Sample Analysis Completed	10/01/2023 2:38:23PM
Sample ID	*2022-009-6513
Status	Endorsed
Collection Type	Customer Collected

Nitrogen - Total TMZ-M06(ADEL)			16/12/2022
Nitrogen - Total		8.55 mg/L	
TKN as N T0112-01(ADEL)			05/01/2023
TKN as Nitrogen	0.05	0.70 mg/L	

Organic Chemistry	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Total Organic Carbon T0158-07(ADEL)			23/12/2022
Total Organic Carbon	0.3	9.6 mg/L	

Inorganic Chemistry - Physical	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Conductivity & Total Dissolved Solids T0016-01(ADEL)			20/12/2022
Conductivity	2	5950 µS/cm	
Note		Conductivity measurement is corrected to 25°C	
Total Dissolved Solids (by EC)	1	3390 mg/L	
pH T0010-01(ADEL)			20/12/2022
pH		7.9 pH units	
Temperature at which pH is measured		23.1 °C	

SGS Australia Pty Ltd (NSW)	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Phenols T0030-01			
!External Lab Report No.		SE240959	
Phenols	0.01	<0.05 mg/L	



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Analytical Results

Sampling Point	90144-City Council of Broken Hill - Bore Hole 3
Sampled Date	16/12/2022 7:10:00AM
Sample Received Date	16/12/2022 3:23:56PM
Sample Analysis Completed	10/01/2023 2:38:24PM
Sample ID	*2022-009-6514
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 20.4°C</i>			
Cadmium - Total TIC-006(ADEL)			19/12/2022
Cadmium - Total	0.0001	0.0045 mg/L	
Calcium TIC-006(ADEL)			19/12/2022
Calcium	0.04	86.0 mg/L	
Lead - Total TIC-006(ADEL)			19/12/2022
Lead - Total	0.0001	0.0007 mg/L	
Magnesium TIC-006(ADEL)			19/12/2022
Magnesium	0.04	117 mg/L	
Potassium TIC-006(ADEL)			19/12/2022
Potassium	0.040	29.1 mg/L	
Sodium Adsorption Ratio TMZ-M06(ADEL)			16/12/2022
Sodium Adsorption Ratio - Calculation		23.6	
Sodium TIC-006(ADEL)			19/12/2022
Sodium	0.04	1430 mg/L	
Sulphur TIC-006(ADEL)			21/12/2022
Sulphate	0.6	1070 mg/L	
Sulphur	0.2	358 mg/L	
Total Hardness as CaCO₃ TMZ-M06(ADEL)			16/12/2022
Total Hardness as CaCO ₃	2.0	697 mg/L	

Inorganic Chemistry - Nutrients	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 20.4°C</i>			
Ammonia as N T0100-01(ADEL)			21/12/2022
Ammonia as N	0.005	0.119 mg/L	
Chloride T0104-02(ADEL)			20/12/2022
Chloride	4.0	1880 mg/L	
Nitrate + Nitrite as N T0161-01(ADEL)			04/01/2023
Nitrate + Nitrite as N	0.003	15.6 mg/L	



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Analytical Results

Sampling Point	90144-City Council of Broken Hill - Bore Hole 3
Sampled Date	16/12/2022 7:10:00AM
Sample Received Date	16/12/2022 3:23:56PM
Sample Analysis Completed	10/01/2023 2:38:24PM
Sample ID	*2022-009-6514
Status	Endorsed
Collection Type	Customer Collected

Nitrogen - Total TMZ-M06(ADEL)			16/12/2022
Nitrogen - Total		16.29 mg/L	
TKN as N T0112-01(ADEL)			05/01/2023
TKN as Nitrogen	0.05	0.69 mg/L	

Organic Chemistry	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Total Organic Carbon T0158-07(ADEL)			23/12/2022
Total Organic Carbon	0.3	5.6 mg/L	

Inorganic Chemistry - Physical	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Conductivity & Total Dissolved Solids T0016-01(ADEL)			20/12/2022
Conductivity	2	7990 µS/cm	
Note		Conductivity measurement is corrected to 25°C	
Total Dissolved Solids (by EC)	1	4600 mg/L	
pH T0010-01(ADEL)			20/12/2022
pH		8.0 pH units	
Temperature at which pH is measured		23.1 °C	

SGS Australia Pty Ltd (NSW)	LOR	Result	Test Start Date
Sample temperature at time of receipt 20.4°C			
Phenols T0030-01			
!External Lab Report No.		SE240959	
Phenols	0.01	<0.05 mg/L	



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AWQC Signatories

Dzung Bui - Supervisor Metals and Physical

Thuy Diep - Technical Officer Chemistry

Andrew Ford - Senior Technical Officer Chemistry

Melissa Phillips - Technical Officer Chemistry

Gayle Polley - Supervisor Nutrients and Waste

Kamilla Springer - Senior Technical Officer Chemistry



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Incidents

Sample ID	S.Point	Description	Sampled Date	Analysis (where Applicable)	Incident Description
2022-009-6512	90142	City Council of Broken Hill - Bore Hole 1	16/12/2022	pH	Test not processed within holding time
2022-009-6513	90143	City Council of Broken Hill - Bore Hole 2	16/12/2022	pH	Test not processed within holding time
2022-009-6514	90144	City Council of Broken Hill - Bore Hole 3	16/12/2022	pH	Test not processed within holding time

Analytical Method

Analytical Method Code	Description	Reference Method
T0010-01	Determination of pH	AP4500HB
T0016-01	Determination of Conductivity - Corrected to 25C	AP2510B
T0030-01	Determination of Phenols	AP5530BC
T0100-01	Ammonia/Ammonium - Automated Flow Colorimetry	AP4500NH3G
T0104-02	Chloride - Discrete Analyser	AP4500CLE
T0112-01	Nitrogen- Total Kjeldahl by discrete analyser	AP4500NORGA
T0158-07	Total and Dissolved Organic Carbon (OI Analytical)	SM5310C
T0161-01	Nitrate + Nitrate (NOx) - Automated Flow Colorimetry	AP4500NO3I
TIC-006	Elemental Analysis By ICP- MS	EPA200.8
TMZ-M06	Derived Results and Data Checks	
TMZ-M06	Derived Results and Data Checks	AP4500NORGA
TMZ-M06	Derived Results and Data Checks	APHA2340B
W-052	Preparation of Samples for Metal Analysis	AP3030AD

Laboratory Information

Laboratory	NATA accreditation ID
Inorganic Chemistry - Physical	1115
Inorganic Chemistry - Nutrients	1115
SGS Australia Pty Ltd (NSW)	2562
Organic Chemistry	1115
Inorganic Chemistry - Metals	1115



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- Notes
1. The last figure of the result value is a significant figure.
 2. # determination of the component is not covered by NATA Accreditation.
 3. ^ indicates result is out of specification according to the reference guideline. Refer to report footer.
 4. * indicates an incident has been recorded against the sample. Refer to report footer.
 5. & Indicates the results have changed since the last issued report.
 6. Where a result is required to meet compliance limits the associated measurement uncertainty must be considered. Measurement uncertainty is available at <https://www.awqc.com.au/our-services/Water-quality-testing-and-analysis/measurement-uncertainty>
 7. Uncertainty of Measurement is reported with a coverage factor of 2 providing approximately 95% confidence interval
 8. The Limit of Reporting (LOR) is the lowest concentration of analyte which is reported at the AWQC and is based on the LOQ rounded up to a more readily used value. The Limit of Quantitation (LOQ) is the lowest concentration of analyte for which quantitative results may be obtained within a specified degree of confidence.
 9. Where collection type is AWQC Collect, NATA has confirmed that due to a robust system in place for maintaining the temperature integrity for samples collected by AWQC's Field Laboratory Services, the recording of temperature when samples arrive at the AWQC is out of scope.
 10. If pH has been tested then the pH will be outside of its holding time unless measured in the field.
 11. (ADEL) indicates analysed in Adelaide, (MELB) indicates analysed in Melbourne.