



CITY COUNCIL OF BROKEN HILL
ATTN: Council of Broken Hill Generic Inbox
PO BOX 448
BROKEN HILL
NSW 2880 AUSTRALIA

06/06/2024

Dear Council of Broken Hill

Please find attached the Final Analytical Report for

Customer Service Request: 120503-2023-CSR-1
Account: 120503
Project: AWQC-192991 City Council of Broken Hill - Bore Program - Routine 23/24

This report has also been sent to: Marisa Pickett

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
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+61 8 7424 1250



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Biological Testing
Accredited for compliance
with ISO/IEC 17025 -
Testing



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Report Information

Project Name	AWQC-192991
Customer	CITY COUNCIL OF BROKEN HILL
CSR_ID	120503-2023-CSR-1

Analytical Results

Sampling Point	90144-City Council of Broken Hill - Bore Hole 3
Sampled Date	21/05/2024 7:12:00AM
Sample Received Date	21/05/2024 4:40:04PM
Sample Analysis Completed	6/06/2024 10:43:04AM
Sample ID	*2024-002-5755
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 14.1°C</i>			
Cadmium - Total TIC-006(ADEL)			22/05/2024
Cadmium - Total	0.0001	0.0005 mg/L	
Calcium TIC-006(ADEL)			22/05/2024
Calcium	0.05	98.0 mg/L	
Lead - Total TIC-006(ADEL)			22/05/2024
Lead - Total	0.0001	0.0010 mg/L	
Magnesium TIC-006(ADEL)			22/05/2024
Magnesium	0.05	134 mg/L	
Potassium TIC-006(ADEL)			22/05/2024
Potassium	0.05	29.3 mg/L	
Sodium Adsorption Ratio TMZ-M06(ADEL)			21/05/2024
Sodium Adsorption Ratio - Calculation		24.1	
Sodium TIC-006(ADEL)			22/05/2024
Sodium	0.1	1560 mg/L	
Sulphur TIC-006(ADEL)			23/05/2024
Sulphate	0.6	1170 mg/L	
Sulphur	0.2	390 mg/L	
Total Hardness as CaCO3 TMZ-M06(ADEL)			21/05/2024
Total Hardness as CaCO3	2.0	797 mg/L	

Inorganic Chemistry - Nutrients	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 14.1°C</i>			
Ammonia as N T0100-01(ADEL)			22/05/2024





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Analytical Results

Sampling Point	90144-City Council of Broken Hill - Bore Hole 3
Sampled Date	21/05/2024 7:12:00AM
Sample Received Date	21/05/2024 4:40:04PM
Sample Analysis Completed	6/06/2024 10:43:04AM
Sample ID	*2024-002-5755
Status	Endorsed
Collection Type	Customer Collected

Ammonia as N T0100-01(ADEL)			22/05/2024
Ammonia as N	0.005	0.010 mg/L	
Chloride T0104-02(ADEL)			28/05/2024
Chloride	4.0	1910 mg/L	
Nitrate + Nitrite as N T0161-01(ADEL)			04/06/2024
Nitrate + Nitrite as N	0.003	18.5 mg/L	
Nitrogen - Total TMZ-M06(ADEL)			21/05/2024
Nitrogen - Total		18.84 mg/L	
TKN as N T0112-01(ADEL)			04/06/2024
TKN as Nitrogen	0.05	0.34 mg/L	

Organic Chemistry	LOR	Result	Test Start Date
Sample temperature at time of receipt 14.1°C			
Total Organic Carbon T0158-07(ADEL)			23/05/2024
Total Organic Carbon	1	5.9 mg/L	

Inorganic Chemistry - Physical	LOR	Result	Test Start Date
Sample temperature at time of receipt 14.1°C			
Conductivity & Total Dissolved Solids T0016-01(ADEL)			22/05/2024
Conductivity	2	8100 µS/cm	
Note		Conductivity measurement is corrected to 25°C	
Total Dissolved Solids (by EC)	1	4670 mg/L	
pH T0010-01(ADEL)			22/05/2024
pH		8.0 pH units	
Temperature at which pH is measured		22.2 °C	





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Analytical Results

Sampling Point	90143-City Council of Broken Hill - Bore Hole 2
Sampled Date	21/05/2024 7:35:00AM
Sample Received Date	21/05/2024 4:39:53PM
Sample Analysis Completed	6/06/2024 10:43:04AM
Sample ID	*2024-002-5754
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 14.1°C</i>			
Cadmium - Total TIC-006(ADEL)			22/05/2024
Cadmium - Total	0.0001	0.0003 mg/L	
Calcium TIC-006(ADEL)			22/05/2024
Calcium	0.05	96.6 mg/L	
Lead - Total TIC-006(ADEL)			22/05/2024
Lead - Total	0.0001	0.0011 mg/L	
Magnesium TIC-006(ADEL)			22/05/2024
Magnesium	0.05	96.9 mg/L	
Potassium TIC-006(ADEL)			22/05/2024
Potassium	0.05	20.3 mg/L	
Sodium Adsorption Ratio TMZ-M06(ADEL)			21/05/2024
Sodium Adsorption Ratio - Calculation		19.6	
Sodium TIC-006(ADEL)			22/05/2024
Sodium	0.1	1140 mg/L	
Sulphur TIC-006(ADEL)			23/05/2024
Sulphate	0.6	771 mg/L	
Sulphur	0.2	257 mg/L	
Total Hardness as CaCO3 TMZ-M06(ADEL)			21/05/2024
Total Hardness as CaCO3	2.0	640 mg/L	

Inorganic Chemistry - Nutrients	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 14.1°C</i>			
Ammonia as N T0100-01(ADEL)			22/05/2024
Ammonia as N	0.005	0.010 mg/L	
Chloride T0104-02(ADEL)			28/05/2024
Chloride	4.0	1320 mg/L	
Nitrate + Nitrite as N T0161-01(ADEL)			04/06/2024
Nitrate + Nitrite as N	0.003	7.47 mg/L	





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Analytical Results

Sampling Point	90143-City Council of Broken Hill - Bore Hole 2
Sampled Date	21/05/2024 7:35:00AM
Sample Received Date	21/05/2024 4:39:53PM
Sample Analysis Completed	6/06/2024 10:43:04AM
Sample ID	*2024-002-5754
Status	Endorsed
Collection Type	Customer Collected

Nitrogen - Total TMZ-M06(ADEL)		21/05/2024
Nitrogen - Total	8.45 mg/L	
TKN as N T0112-01(ADEL)		04/06/2024
TKN as Nitrogen	0.05 0.98 mg/L	

Organic Chemistry	LOR	Result	Test Start Date
Sample temperature at time of receipt 14.1°C			
Total Organic Carbon T0158-07(ADEL)			23/05/2024
Total Organic Carbon	1	10.6 mg/L	

Inorganic Chemistry - Physical	LOR	Result	Test Start Date
Sample temperature at time of receipt 14.1°C			
Conductivity & Total Dissolved Solids T0016-01(ADEL)			22/05/2024
Conductivity	2	6130 µS/cm	
Note		Conductivity measurement is corrected to 25°C	
Total Dissolved Solids (by EC)	1	3490 mg/L	
pH T0010-01(ADEL)			22/05/2024
pH		7.5 pH units	
Temperature at which pH is measured		22.2 °C	





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Analytical Results

Sampling Point	90142-City Council of Broken Hill - Bore Hole 1
Sampled Date	21/05/2024 7:53:00AM
Sample Received Date	21/05/2024 4:39:40PM
Sample Analysis Completed	6/06/2024 10:43:03AM
Sample ID	*2024-002-5753
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 14.1°C</i>			
Cadmium - Total TIC-006(ADEL)			22/05/2024
Cadmium - Total	0.0001	0.0005 mg/L	
Calcium TIC-006(ADEL)			22/05/2024
Calcium	0.05	305 mg/L	
Lead - Total TIC-006(ADEL)			22/05/2024
Lead - Total	0.0001	0.0034 mg/L	
Magnesium TIC-006(ADEL)			22/05/2024
Magnesium	0.05	291 mg/L	
Potassium TIC-006(ADEL)			22/05/2024
Potassium	0.05	43.9 mg/L	
Sodium Adsorption Ratio TMZ-M06(ADEL)			21/05/2024
Sodium Adsorption Ratio - Calculation		21.6	
Sodium TIC-006(ADEL)			22/05/2024
Sodium	0.1	2200 mg/L	
Sulphur TIC-006(ADEL)			23/05/2024
Sulphate	0.6	1390 mg/L	
Sulphur	0.2	463 mg/L	
Total Hardness as CaCO3 TMZ-M06(ADEL)			21/05/2024
Total Hardness as CaCO3	2.0	1960 mg/L	

Inorganic Chemistry - Nutrients	LOR	Result	Test Start Date
<i>Sample temperature at time of receipt 14.1°C</i>			
Ammonia as N T0100-01(ADEL)			22/05/2024
Ammonia as N	0.005	0.747 mg/L	
Chloride T0104-02(ADEL)			28/05/2024
Chloride	4.0	2990 mg/L	
Nitrate + Nitrite as N T0161-01(ADEL)			04/06/2024
Nitrate + Nitrite as N	0.003	33.6 mg/L	





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Analytical Results

Sampling Point	90142-City Council of Broken Hill - Bore Hole 1
Sampled Date	21/05/2024 7:53:00AM
Sample Received Date	21/05/2024 4:39:40PM
Sample Analysis Completed	6/06/2024 10:43:03AM
Sample ID	*2024-002-5753
Status	Endorsed
Collection Type	Customer Collected

Nitrogen - Total TMZ-M06(ADEL)			21/05/2024
Nitrogen - Total		37.02 mg/L	
TKN as N T0112-01(ADEL)			04/06/2024
TKN as Nitrogen	0.05	3.42 mg/L	

Organic Chemistry	LOR	Result	Test Start Date
Sample temperature at time of receipt 14.1°C			
Total Organic Carbon T0158-07(ADEL)			23/05/2024
Total Organic Carbon	1	28.8 mg/L	

Inorganic Chemistry - Physical	LOR	Result	Test Start Date
Sample temperature at time of receipt 14.1°C			
Conductivity & Total Dissolved Solids T0016-01(ADEL)			22/05/2024
Conductivity	2	12300 µS/cm	
Note		Conductivity measurement is corrected to 25°C	
Total Dissolved Solids (by EC)	1	7240 mg/L	
pH T0010-01(ADEL)			22/05/2024
pH		7.1 pH units	
Temperature at which pH is measured		22.2 °C	





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AWQC Signatories

Dzung Bui - Supervisor Metals and Physical

Ivana Cech - Technical Officer Chemistry

Thuy Diep - Technical Officer Chemistry

Aji John - Technical Officer Chemistry

John Martini - Method Development Specialist

Gayle Polley - Supervisor Nutrients and Waste

Julian Weidenbach - Senior Technical Officer Chemistry



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Incidents

Sample ID	S.Point	Description	Sampled Date	Analysis (where Applicable)	Incident Description
2024-002-5753	90142	City Council of Broken Hill - Bore Hole 1	21/05/2024	pH	Test not processed within holding time
2024-002-5754	90143	City Council of Broken Hill - Bore Hole 2	21/05/2024	pH	Test not processed within holding time
2024-002-5755	90144	City Council of Broken Hill - Bore Hole 3	21/05/2024	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
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

Sampling Method

Sampling Method Code	Description
W09-023	Sampling Method for Chemical Analyses Sampling point and date sampled are provided when collected by customers. Validity of results are based on information and samples supplied by customers. Unless it is reported that sampling has been performed by AWQC, the samples have been analysed as received.

Laboratory Information

Laboratory	NATA accreditation ID
Inorganic Chemistry - Physical	1115
Inorganic Chemistry - Nutrients	1115
Organic Chemistry	1115
Inorganic Chemistry - Metals	1115
Customer Service Unit	-



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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.
 12. AWQC Melbourne Laboratory are only NATA accredited for sampling of potable waters by inhouse method W 09-023.