

RESULTS OF WATER ANALYSIS

12 samples collected for Ground Water Data Collection Service on the 7th December, 2018 - Lab. Job No. H6673
 Analysis requested by Mathew Baker. Your Project: PO 68163 Blakebrook Quarry - GW and SW
 2 Tildon Drive CLUNES NSW 2480

Parameter	Methods reference	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
		BQS1-S	BQS1-I	BQS1-D	BQN1-B	BQN1-A
	Job No.	H6673/1	H6673/2	H6673/3	H6673/4	H6673/5
pH	APHA 4500-H ⁺ -B	6.84	8.16	8.29	7.04	9.7
Conductivity (EC) (dS/m)	APHA 2510-B	0.45	1.554	1.777	1.126	1.917
Total Dissolved Salts (mg/L)	** Calculation using EC x 680	306	1057	1208	766	1304
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	252	448	264	20.5	151
Turbidity (NTU)	APHA 2130	..	..	..	..	..
Dissolved Oxygen (mg/L O ₂)	Onsite	..	..	..	..	..
Alkalinity (mg/L CaCO ₃)	** Total Alkalinity - APHA 2320	..	..	..	..	..
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	<2	<2	<2	<2	<2
Nitrate (mg/L N)	APHA 4500 NO ₃ -F	0.03	<0.005	0.075	<0.005	0.374
Silver (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001	<0.001	<0.001	<0.001
Aluminium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.487	0.804	0.356	<0.005	0.952
Arsenic (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	0.001	0.001	0.003	0.001
Cadmium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.001	0.001	0.001	<0.001	0.004
Copper (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.004	0.006	0.005	<0.001	0.006
Iron (mg/L)	Total - APHA 3125 ICPMS*note 1&2	2.627	4.888	1.102	1.705	0.940
Manganese (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.151	0.157	0.049	0.148	0.066
Nickel (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.008	0.007	0.010	<0.001	0.004
Lead (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.002	0.004	0.004	<0.001	0.001
Selenium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.043	0.142	0.048	0.003	0.016
Mercury (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Silver (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Aluminium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Arsenic (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Cadmium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Chromium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Copper (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Iron (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Manganese (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Nickel (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Lead (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Selenium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Zinc (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
Mercury (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	..
BTEX						
Benzene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
m-p-Xylene (µg/L or ppb)	Subcontracted: SGS report SE187233	<1	<1	<1	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons (TRH)						
C6-C9 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<40	<40	<40	<40	<40
C10-C14 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<50	<50	<50	<50	<50
C15-C28 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<200	<200	<200	<200	<200
C29-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<200	<200	<200	<200	<200
C10-C16 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<60	<60	<60	<60	<60
C16-C34 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<500	<500	<500	<500	<500
C34-C40 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<500	<500	<500	<500	<500

Notes:

- Total metals - samples digested with nitric acid; Total available (acid soluble/ extractable) metals - samples acidified with nitric acid to pH <2
 Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysis
- Metals and salts analysed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS).
- 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre) = 1000 ppb (part per billion).
- For conductivity 1 dS/m = 1 mS/cm = 1000 µS/cm.
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise.
- Analysis conducted between sample arrival date and reporting date.
- ** NATA accreditation does not cover the performance of this service.
- .. Denotes not requested.
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12 samples collected for Ground Water Data Collection Service on the 7th December, 20
 Analysis requested by Mathew Baker. Your Project: PO 68163 Blakebrook Quarry - GW a
 2 Tildon Drive CLUNES NSW 2480

Parameter	Methods reference	Sample 6	Sample 7	Sample 8	Sample 9	Sample 10
		BQN1-D	BQN2-B	BQN2-A	BQN2-D	BQSW1
	Job No.	H6673/6	H6673/7	H6673/8	H6673/9	H6673/10
pH	APHA 4500-H ⁺ -B	8.9	9.21	8.01	8.92	7.47
Conductivity (EC) (dS/m)	APHA 2510-B	1.413	1.149	1.54	0.965	0.906
Total Dissolved Salts (mg/L)	** Calculation using EC x 680	961	781	1047	656	616
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	88.5	16.5	344	470	223
Turbidity (NTU)	APHA 2130	..	..	..	..	67
Dissolved Oxygen (mg/L O ₂)	Onsite	..	..	..	..	0.17
Alkalinity (mg/L CaCO ₃)	** Total Alkalinity - APHA 2320	..	..	..	..	..
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	<2	2	3	3	3
Nitrate (mg/L N)	APHA 4500 NO ₃ -F	0.096	0.068	0.023	0.073	<0.005
Silver (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001	<0.001	<0.001	<0.001
Aluminium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	1.112	0.094	0.451	0.228	0.324
Arsenic (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.004	0.003	0.005	0.002	0.004
Cadmium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.005	<0.001	<0.001	<0.001	<0.001
Copper (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.119	0.002	0.007	0.005	0.002
Iron (mg/L)	Total - APHA 3125 ICPMS*note 1&2	4.069	0.059	1.484	1.526	5.470
Manganese (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.074	0.013	0.110	0.036	8.272
Nickel (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.010	0.001	0.009	0.003	0.004
Lead (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.001	<0.001	0.002	0.002	<0.001
Selenium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.066	0.004	0.020	0.057	0.011
Mercury (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Silver (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.001
Aluminium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	0.005
Arsenic (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	0.003
Cadmium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.001
Chromium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.001
Copper (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.001
Iron (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	1.064
Manganese (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	8.461
Nickel (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	0.002
Lead (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.001
Selenium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.002
Zinc (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	0.016
Mercury (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	..	..	..	..	<0.0005
BTEX						
Benzene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
m-p-Xylene (µg/L or ppb)	Subcontracted: SGS report SE187233	<1	<1	<1	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5	<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons (TRH)						
C6-C9 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<40	<40	<40	<40	<40
C10-C14 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<50	<50	<50	<50	<50
C15-C28 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<200	<200	<200	<200	<200
C29-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<200	<200	<200	<200	<200
C10-C16 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<60	<60	<60	<60	<60
C16-C34 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<500	<500	<500	<500	<500
C34-C40 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<500	<500	<500	<500	<500

Notes:

- Total metals - samples digested with nitric acid; Total available (acid soluble/ ex Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified
- Metals and salts analysed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)
- 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per l
- For conductivity 1 dS/m = 1 mS/cm = 1000 µS/cm.
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Parameter	Methods reference	Sample 11	Sample 12
		BQSW2	BQSW3
	Job No.	H6673/11	H6673/12
pH	APHA 4500-H ⁺ -B	7.63	7.72
Conductivity (EC) (dS/m)	APHA 2510-B	0.203	0.2
Total Dissolved Salts (mg/L)	** Calculation using EC x 680	138	136
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	10.5	11
Turbidity (NTU)	APHA 2130	10.9	10.9
Dissolved Oxygen (mg/L O ₂)	Onsite	7.32	8.16
Alkalinity (mg/L CaCO ₃)	** Total Alkalinity - APHA 2320	..	..
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	3	<2
Nitrate (mg/L N)	APHA 4500 NO ₃ ⁻ -F	<0.005	<0.005
Silver (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Aluminium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.109	0.109
Arsenic (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Cadmium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Chromium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Copper (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.001	0.001
Iron (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.810	0.712
Manganese (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.054	0.061
Nickel (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.001	0.001
Lead (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Selenium (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.002	<0.002
Zinc (mg/L)	Total - APHA 3125 ICPMS*note 1&2	0.002	0.004
Mercury (mg/L)	Total - APHA 3125 ICPMS*note 1&2	<0.0005	<0.0005
Silver (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Aluminium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	0.071	0.069
Arsenic (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Cadmium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Chromium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Copper (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	0.001	0.001
Iron (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	0.565	0.505
Manganese (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	0.015	0.005
Nickel (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	0.001	0.001
Lead (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.001	<0.001
Selenium (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.002	<0.002
Zinc (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	0.003	0.003
Mercury (mg/L)	Dissolved - APHA 3125 ICPMS*note 1&2	<0.0005	<0.0005
BTEX			
Benzene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5
m+p-Xylene (µg/L or ppb)	Subcontracted: SGS report SE187233	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted: SGS report SE187233	<0.5	<0.5
Total Recoverable Hydrocarbons (TRH)			
C6-C9 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<40	<40
C10-C14 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<50	<50
C15-C28 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<200	<200
C29-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<200	<200
C10-C16 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<60	<60
C16-C34 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<500	<500
C34-C40 Fraction (µg/L or ppb)	Subcontracted: SGS report SE187233	<500	<500

Notes:

- Total metals - samples digested with nitric acid; Total available (acid soluble/ ex Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified
- Metals and salts analysed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)
- 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per l)
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Blakebrook Quarry Surface Water sampling Sampling

Station	Date	Time	DO (ppm)	EC uS/cm	Salinity ppm	pH	Eh Redox mV (Ag/AgCl saturated KCL)	Temp deg C
BQSW1	6/12/2018	12:50	0.80	808	360	7.16	133	18.0
BQSW2	6/12/2018	13:20	2.70	204	86	7.18	146	23.3
BQSW3	6/12/2018	13:50	2.80	202	85	7.48	153	24.6

Sample Method	Laboratory Analysis Sample Retained	Comment
Grab	Yes	Unnamed creek Nimbin Rd culvert near quarry entrance
Grab	Yes	Terania Creek
Grab	Yes	Terania Creek