ROLLESTON
OPEN CUT

GLENCORE

Rolleston Open Cut Annual Groundwater Report - 2021

Report

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1. Introduction

Rolleston Open Cut (ROC) is an established open cut mine located in the south-western part of the Bowen Basin within the Central Highlands Regional Council area, some 18 kilometres west of Rolleston township and 58 kilometres south-east of Springsure. The operation is situated within the catchment of Meteor Creek which flows into the Comet River and ultimately to the Fitzroy River.

Production commenced in 2005 and the mine is currently approved to produce up to nineteen million tonnes of coal per year, the majority of which is exported through the port of Gladstone. ***Figure 1-1*** shows ROC's referral area under EPBC 2011/5965 and the groundwater monitoring network.

Activities undertaken to date within the Rolleston Coal Expansion Project (RCEP) footprint have occurred in the Rolleston South Pit. Coal has been extracted from a few strips. Alluvial groundwater likely has ingress from strips in the Rolleston South Pit. The Rolleston South Pit does not have any basalt material.

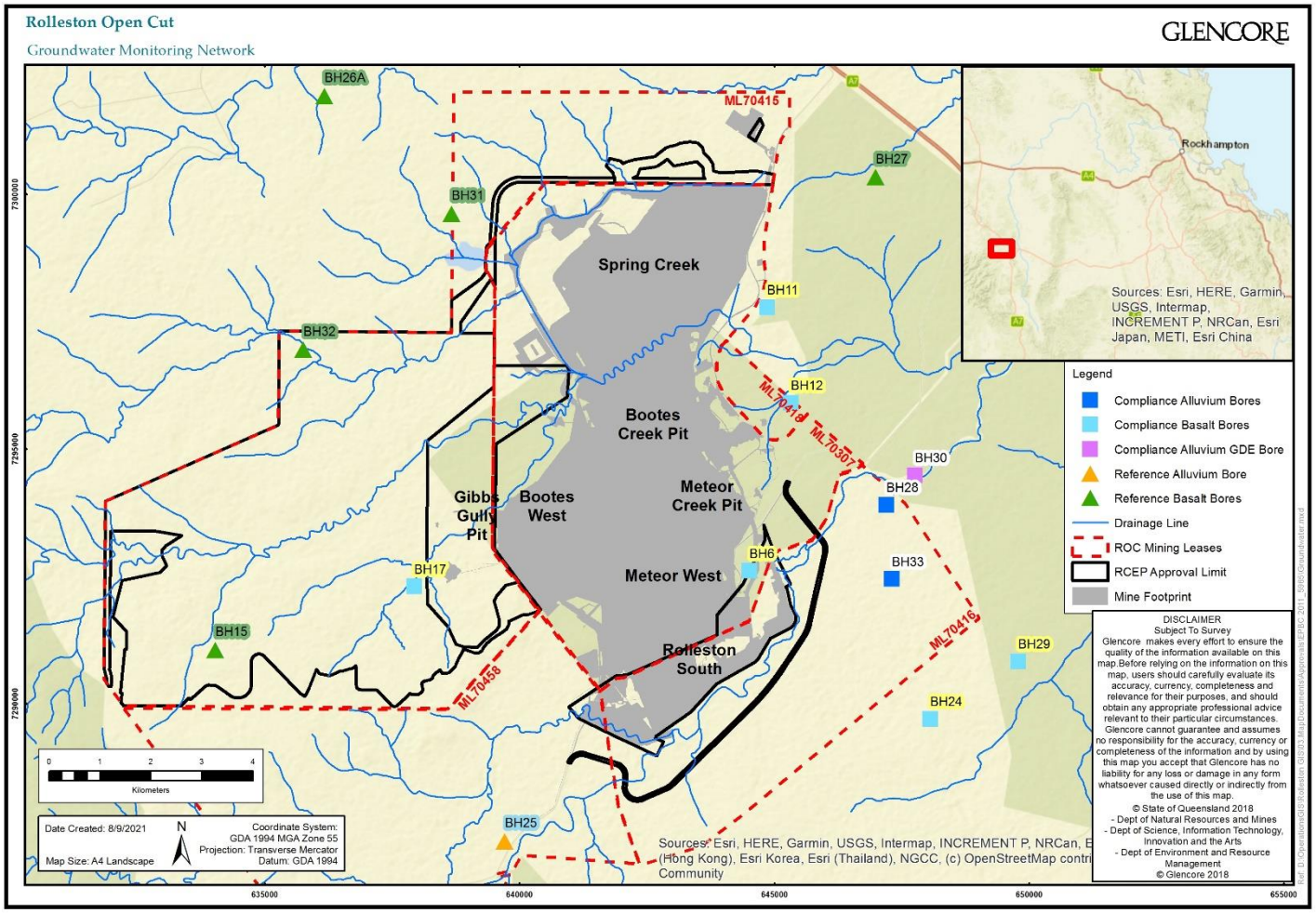

Figure 1-1 - RCEP Area and Groundwater Monitoring Network

2. Climate

Long-term rainfall at nearby Rolleston Township and recent rainfall for the mine site is provided in ***Figure 2-1***. Between 2013 and 2021 (year to date) ROC has experienced below average rainfall for each calendar year.

Total rainfall for the period of September 2020 to August 2021 inclusive was 389.2 mm, which is well below the long-term average (638.2 mm). As the region has received below average rainfall, there has been limited opportunity for the groundwater aquifer to recharge.

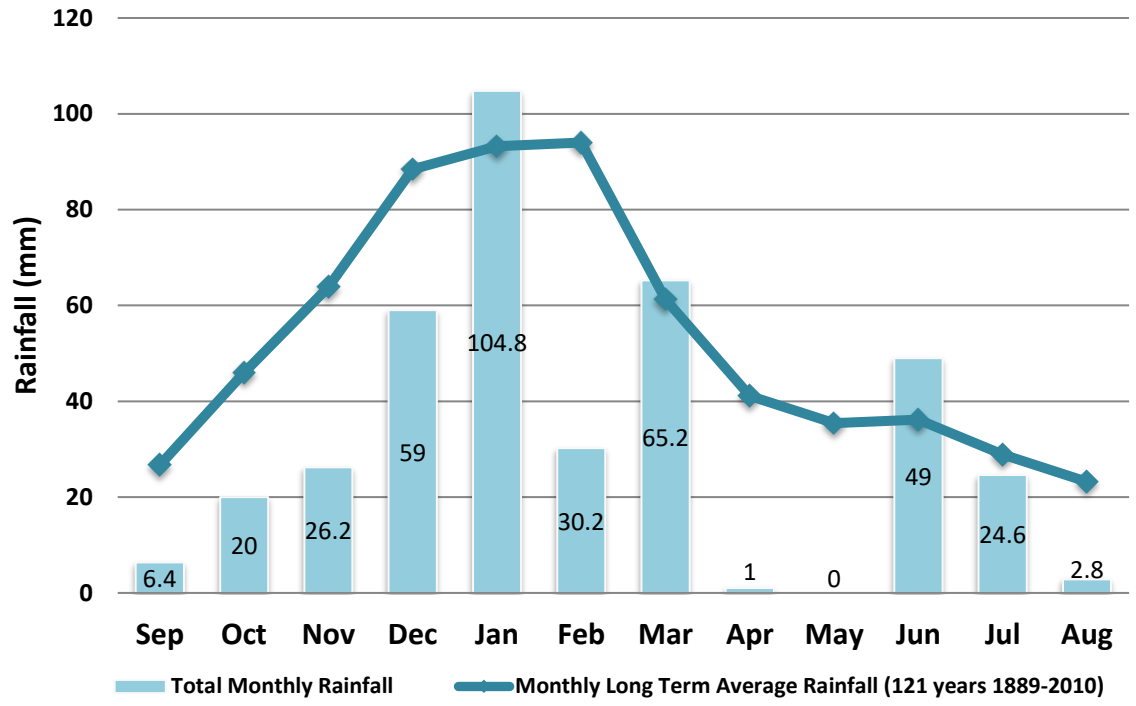

Figure 2-1 - Rolleston Open Cut 2020/2021 rainfall

3. Groundwater Monitoring History

In general, the geology of the Rolleston region consists of Quaternary alluvium, Tertiary basalt, and Permian Blackwater/Blenheim Subgroups which host economic coal seams. Groundwater occurs within each of these geological units. However, the Tertiary basalt rock formation and the Quaternary alluvium are the two dominant aquifers accessed as a groundwater source throughout the region.

Groundwater monitoring at Rolleston Open Cut (ROC) commenced in 2002 as part of the data collection for the 2002 Environmental Management Overview Strategy (EMOS). Pre-2010 groundwater monitoring was only undertaken for Standing Water Level (SWL) and only one sampling round was undertaken in 2002 for the EMOS. In 2010, an intensive monitoring program commenced in order to develop investigation trigger levels for ongoing monitoring.

The 2010 monitoring network comprised 3 coal bores, 1 alluvium bore and 6 basalt bores. Trigger levels were determined for the collective network (i.e. not separated out by aquifer type) after 12 months of sampling monthly. The limits were based on the 80th percentile of the samples. In 2012, the network was expanded to include 1 sandstone/siltstone bore and 2 alluvium bores in the Meteor Creek floodplain. Two basalt bores had also been mined out.

In 2015, the Environmental Authority (EA) EPML00370013 for ROC was updated to include the RCEP activities. As part of the EA amendment to incorporate the RCEP, separate groundwater investigation trigger levels were determined for the basalt and alluvium bores, while coal/permian aquifer bores were no longer listed. The amended EA included 5 Reference Basalt, 1 Reference Alluvium, 6 Compliance Basalt and 3 Compliance Alluvium bores. To incorporate the RCEP footprint the groundwater monitoring locations were expanded further away from the existing mining area and monitoring network. Of the original bores, only 3 basalt bores (BH6, BH11 and BH12) have continued to be monitored.

In 2016, ROC and the Department of Environment and Science (DES) recognised the groundwater trigger investigation limits set pre-RCEP would not be appropriate for some of the new monitoring bores. During 2016, and again in 2019, ROC and DES reviewed all available data to determine more appropriate investigation limits.

Following the 2019 review of the effectiveness of the groundwater monitoring program, DES agreed to amend the trigger investigation levels in basalt aquifers for Electrical Conductivity (EC), Sulfate and Arsenic. The resultant trigger investigation limits for analytes with sufficient samples available were based on the 95th percentile. The trigger investigation limits for other analytes were based on the Comet River Sub-basin Zone 13 shallow aquifer 80th percentile of the Environmental groundwater quality objective[1] (***Appendix C*** and ***Appendix D***). The current bore network being monitored is listed in ***Table 3-1*** and shown in ***Figure 1-1***.

[1] *Department of Environment and Heritage Protection (2013) Comet River Sub-basin Environmental Values and Water Quality Objectives – Basin No. 130 (part), including all waters of the Comet River Sub-basin, September 2011*

Rolleston Open Cut Groundwater Monitoring Network				
Monitoring Point	**Comet River Sub-basin Groundwater Zone**	**Bore Type**	**Aquifer Type**	**Screen Interval (mbgl)**
BH15	13-Deep	Reference	Basalt	54 – 57
BH26A	13-Deep	Reference	Basalt	51 – 54
BH27	25-Deep	Reference	Basalt	67 – 70
BH31	13-Shallow	Reference	Basalt	21 – 27
BH32	13-Shallow	Reference	Basalt	05 – 25
BH25	13-Shallow	Reference	Alluvium	24 – 30
BH6	25-Shallow	Compliance	Basalt	06 – 23
BH11	25-Deep	Compliance	Basalt	49 – 59
BH12	25-Deep	Compliance	Basalt	39 – 49
BH17	13-Deep	Compliance	Basalt	69 – 86
BH24	25-Deep	Compliance	Basalt	27 – 34
BH29	25-Deep	Compliance	Basalt	30 – 46
BH33	25-Shallow	Compliance	Alluvium	20 – 23
BH28	25-Shallow	Compliance	Alluvium	16 – 22
BH30	25-Shallow	Groundwater Dependent Ecosystem Piezometer	Alluvium	12 – 15

Shallow: <30m depth; Deep: >30m depth

Table 3-1 - Rolleston Open Cut Groundwater Monitoring Network

4. Standing Water Level (SWL)

The SWL history of all the compliance bores in the groundwater monitoring network is presented in ***Figure 4-1***. From the 3 bores that have been monitored since 2003 the SWL within the basalt aquifers was relatively stable until the end of 2009. During the higher than average rainfall period between 2010 – 2012, the basalt aquifers were recharged, and the water level rose. During the dryer period since 2012, the SWL in these bores has been falling to pre-2010 levels.

BH6, the shallowest of these bores, has already reached a state similar to the pre-2010 levels, and may have been influenced by mining activities in alignment with the groundwater model. Mining in Meteor West is now approximately 600 m to the west of BH6.

Bore BH29 in Albinia National Park has been recording a declining SWL beyond the EA level Trigger Threshold of 2 m.

BH30 is a shallow bore installed to monitor potential impact on Groundwater Dependent Ecosystems; this bore is very responsive to rainfall.

The remaining bores have demonstrated a gradually declining trend in SWL towards the pre-2010 levels, as observed in BH11 & BH12, which is to be expected during the dry period.

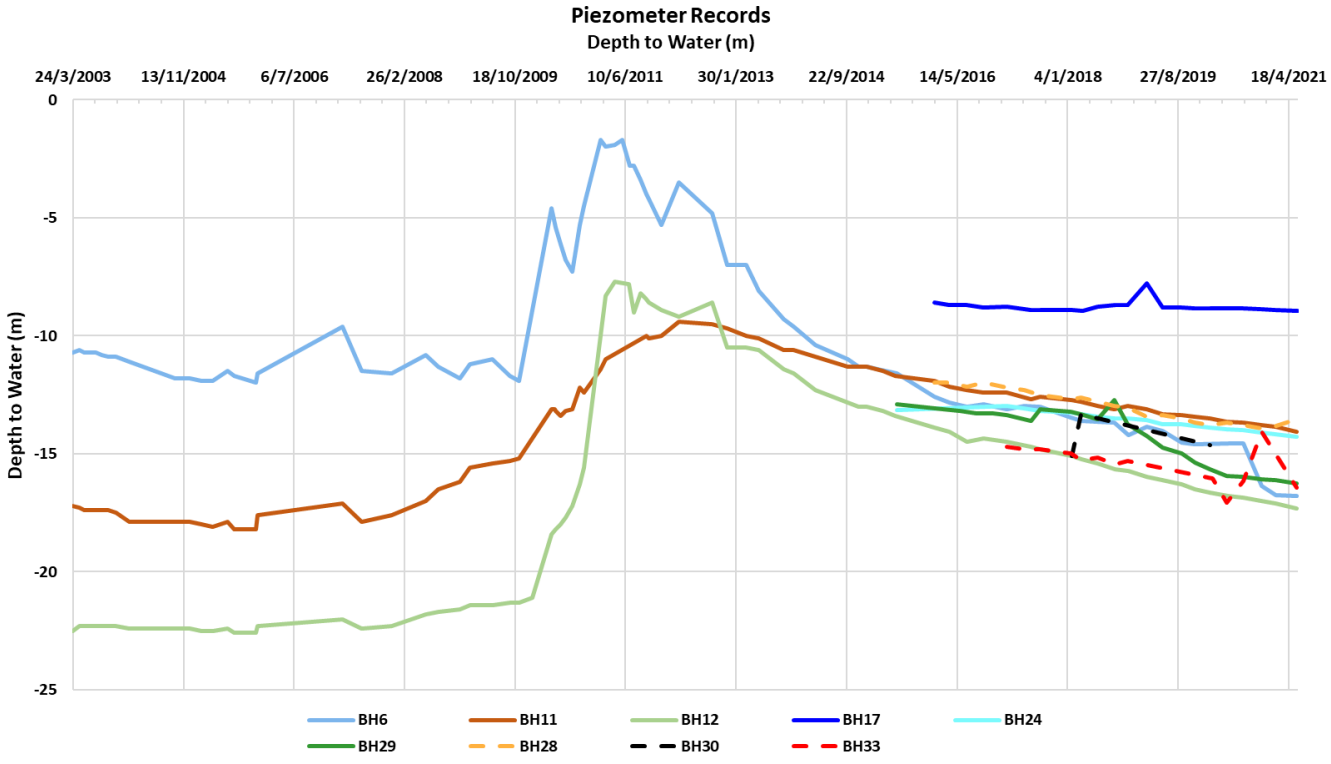

Figure 4-1 - ROC Monitoring Bores SWL

5. Discussion of Results

The studies conducted for the RCEP Environmental Impact Statement (EIS) modelled that the residual impact on groundwater after mining will be that each mining pit, or void, will act as a groundwater sink. Water within the voids will not flow outwards into regional systems. As the pits at ROC are not a source for groundwater, it will be highly unlikely that mining operations would affect groundwater quality. The EIS also found that within the vicinity of ROC there were 35 operational basalt bores and 18 alluvial bores used for stock water and 2 alluvial bores potentially could be used for irrigation.

The data presented in ***Appendix A*** and ***Appendix B*** show that during the 2020/2021 reporting period, investigations were triggered in each quarter under ROC's EA, with groundwater quality exceedances recorded for three of the compliance monitoring bores (one basalt bore, and two alluvial bores). For each sampling round, an investigation was undertaken and reported to the DES. The reports concluded that exceedances of the trigger investigation limits were not due to any mining related impact, and that no environmental harm had occurred as a result of mining activities.

In the Annual 2020/2021 Associated Water Monitoring Report, the potential cause(s) of the groundwater level reduction in BH29 was examined. The consultant that undertook the review concluded that:

> *"Basalt bore BH29's observed water level trend does not correlate with basalt bore BH6's water level trend, which is located nearer to the mining area. BH29's observed water levels also do not correlate with other basalt monitoring bores (BH11, BH12, BH27) located a similar distance away from the mine. Furthermore, BH29's water level trend does not correlate with the CRD trend. When considering the water levels and geological formation's hydraulic characteristics currently available for BH29, there is no evidence to show that the observed drawdown is related to mining activities."*
>
> *"There is no direct hydraulic gradient from the area currently being mined (Rolleston South Pit) to the Tertiary basalt screened at BH29. The Tertiary basalt is underlain by the Triassic Rewan formation that is known to have low hydraulic conductivities (AGE, 2019[2]) and therefore is likely to prevent a direct hydraulic connection between mining operations and the Tertiary basalt."*[3]

The BH29 result is therefore not considered to pose any potential for environmental harm as a result of mining activities.

[2] *Australasian Groundwater and Environmental Consultants Pty Ltd (2019). Underground Water Investigation Report for ATP769 Paranui Pilot Project, prepared for Westside Corporation, project No. G1631B, June 2019. Accessed via https://environment.des.qld.gov.au/__data/assets/pdf_file/0029/87419/atp769-uwir.pdf*

[3] *Australasian Groundwater and Environmental Consultants Pty Ltd (2021). Rolleston Coal Mine 2020/2021 Annual Groundwater Monitoring Report. ROL5000.001 – Rolleston Coal Mine 2020/2021 AGMR – v02.02*

Appendix A - EA Compliance Basalt Bores August 2020 – June 2021 Groundwater Monitoring Results

	Date	Field pH (pH unit)	Field EC (µS/cm)	Dissolved Calcium (mg/L)	Sulfate as SO4 (mg/L)	Dissolved Aluminium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Cadmium (µg/L)	Dissolved Chromium (µg/L)	Dissolved Copper (µg/L)	Fluoride (µg/L)	Dissolved Lead (µg/L)	Dissolved Molybdenum (µg/L)	Dissolved Nickel (µg/L)	Dissolved Selenium (µg/L)	Dissolved Zinc (µg/L)	TPH C6 - C9 Fraction (µg/L)	TPH C10 - C36 Fraction (µg/L)
EA Trigger Values		6.5 - 9.5	2650	102	125	140	11	0.3	60	80	800	3	10	5	10	300	20	50
Water Quality Objectives#	**Zone 13 Deep[1]**	8.2	1950	72	67	-	-	-	-	35	370	-	-	-	-	135	-	-
	Zone 25 Shallow[2]	8.19	1420	59	48	-	-	-	-	-	400	-	-	-	-	-	-	-
	Zone 25 Deep[3]	8.5	1345	30	38	-	-	-	-	-	379	-	-	-	-	507	-	-
BH6[2]	Aug-20	7.66	1269	32	30	<10	2	<0.1	<1	<1	200	<1	4	1	<10	<5	<20	<50
	Nov-20	7.73	1313	38	32	<10	2	<0.1	<1	<1	400	<1	4	<1	<10	<5	<20	<50
	Feb-21	7.69	1353	34	27	<10	2	<0.1	<1	<1	300	<1	2	<1	<10	<5	<20	<50
	Jun-21	7.78	1347	31	26	<10	2	<0.1	<1	<1	300	<1	2	<1	<10	<5	<20	<50
BH11[3]	Aug-20	8.27	1193	3	1	<10	11	<0.1	<1	<1	600	<1	32	<1	<10	<5	<20	<50
	Nov-20	8.35	1175	2	<1	<10	10	<0.1	<1	<1	700	<1	28	<1	<10	<5	<20	<50
	Feb-21	8.38	1196	2	<1	<10	10	<0.1	1	<1	700	<1	27	<1	<10	<5	<20	<50
	Jun-21	8.47	1187	2	<1	<10	10	<0.1	<1	<1	800	<1	32	<1	<10	<5	<20	<50
BH12[3]	Aug-20	6.96	1525	84	7	<10	1	<0.1	<1	<1	100	<1	1	<1	<10	28	<20	<50
	Nov-20	6.99	1505	80	7	<10	<1	<0.1	<1	<1	100	<1	2	<1	<10	<5	<20	<50
	Feb-21	7.09	1544	74	7	<10	<1	<0.1	<1	<1	100	<1	2	<1	<10	<5	<20	<50
	Jun-21	7.12	1534	69	7	<10	<1	<0.1	<1	<1	200	<1	1	<1	<10	<5	<20	<50
BH17[1]	Aug-20	9.22	928	1	1	20	2	<0.1	<1	<1	300	<1	7	<1	<10	<5	<20	<50
	Nov-20	9.31	909	1	1	20	1	<0.1	<1	<1	300	<1	6	<1	<10	<5	<20	<50
	Feb-21	9.37	927	1	1	20	1	<0.1	<1	<1	300	<1	5	<1	<10	<5	<20	<50
	Jun-21	9.38	915	1	1	20	1	<0.1	<1	<1	300	<1	6	<1	<10	<5	<20	<50
BH24[3]	Aug-20	7.11	2551	101	75	<10	<1	<0.1	<1	<1	200	<1	<1	<1	<10	96	<20	<50
	Nov-20	7.13	2515	96	66	<10	<1	<0.1	<1	<1	300	<1	<1	<1	<10	103	<20	<50
	Feb-21	7.20	2572	93	70	<10	<1	<0.1	<1	<1	300	<1	1	1	<10	86	<20	<50
	Jun-21	7.28	2563	82	65	<10	<1	<0.1	<1	<1	300	<1	<1	<1	<10	67	<20	<50
BH29[3]	Aug-20	7.61	1275	44	114	<10	<1	<0.1	<1	<1	100	<1	2	<1	<10	<5	<20	<50
	Nov-20	7.65	1256	40	106	<10	<1	<0.1	<1	<1	100	<1	2	<1	<10	<5	<20	<50
	Feb-21	7.71	1273	38	111	<10	<1	<0.1	<1	<1	100	<1	2	<1	<10	<5	<20	<50
	Jun-21	7.80	1260	36	105	<10	<1	<0.1	<1	<1	200	<1	2	<1	<10	<5	<20	<50

Comet River Sub-basin environmental groundwater quality objectives (80th percentile)
Shallow: <30m depth; Deep: >30m depth

Appendix B - EA Compliance Alluvial Bores August 2020 – June 2021 Groundwater Monitoring Results

	Date	Field pH (pH unit)	Field EC (µS/cm)	Chlorine (mg/L)	Sodium (mg/L)	Dissolved Aluminium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Cadmium (µg/L)	Dissolved Chromium (µg/L)	Dissolved Copper (µg/L)	Fluoride (µg/L)	Dissolved Iron (µg/L)	Dissolved Lead (µg/L)	Dissolved Lithium (µg/L)	Dissolved Molybdenum (µg/L)	Dissolved Nickel (µg/L)	Dissolved Selenium (µg/L)	Dissolved Zinc (µg/L)	TPH C6 - C9 Fraction (µg/L)	TPH C10 - C36 Fraction (µg/L)
EA Trigger Values		6.5 - 9.5	1810	245	113	160	15	0.2	30	14	700	200	1	20	3	10	10	240	20	50
Water Quality Objectives	**Zone 25 Shallow**	8.19	1420	194	267	-	-	-	-	-	400	20	-	-	-	-	-	-	-	-
BH33	Aug-20	7.68	1021	30	110	<10	<1	<0.1	<1	<1	200	440	<1	12	<1	2	<10	347	<20	<50
	Nov-20	7.63	1053	34	108	<10	<1	<0.1	<1	<1	100	120	<1	8	2	<1	<10	<5	<20	<50
	Feb-21	7.52	1071	35	108	<10	<1	<0.1	<1	<1	300	170	<1	12	<1	6	<10	36	<20	<50
	Jun-21	7.78	1063	38	102	<10	<1	<0.1	<1	<1	300	260	<1	10	<1	<1	<10	159	<20	<50
BH28	Aug-20	7.31	1324	105	62	<10	<1	<0.1	27	<1	200	<50	<1	3	<1	<1	<10	<5	<20	<50
	Nov-20	7.21	1322	103	61	<10	<1	<0.1	27	<1	200	<50	<1	3	<1	<1	<10	<5	<20	<50
	Feb-21	7.33	1371	113	61	<10	<1	<0.1	30	<1	200	<50	<1	3	<1	<1	<10	<5	<20	<50
	Jun-21	7.35	1394	110	71	<10	<1	<0.1	40	<1	200	<50	<1	3	<1	<1	<10	8	<20	<50

Comet River Sub-basin environmental groundwater quality objectives (80th percentile)
Shallow: <30m depth; Deep: >30m depth

Appendix C - Comet River Sub-basin Environmental Values and Water Quality Objectives (Zone 13 Deep and Shallow)

Comet River Sub-basin Environmental Values and Water Quality Objectives

Zone[1]	Depth[2] (±30m)	Percentile[3]	EC[4] (µScm^{-1})	Hardness (mgL^{-1}as $CaCO_3$)[4]	pH	Alkalinity (mgL^{-1})	Ca[4] (mgL^{-1})	Mg[4] (mgL^{-1})	Na[4] (mgL^{-1})	Cl[4] (mgL^{-1})	SO_4[4] (mgL^{-1})	HCO_3[4] (mgL^{-1})	NO_3[4] (mgL^{-1})	SiO_2[4] (mgL^{-1})	F[4] (mgL^{-1})	Fe[4] (mgL^{-1})	Mn[4] (mgL^{-1})	Zn[4] (mgL^{-1})	Cu[4] (mgL^{-1})	SAR[4]	RAH[4] (meqL-1)	EH[4] (mV)
12	Deep	20th	1298	212	7.79	552	11	45	172	80	39	660	0.00	ID	0.232	ID	ID	ID	ID	3.91	3.49	ID
12	Deep	50th	1835	266	8.15	782	29	47	304	148	48	933	0.00	ID	0.265	ID	ID	ID	ID	7.95	8.25	ID
12	Deep	80th	2085	467	8.37	867	55	81	430	170	97	1034	0.98	ID	0.361	ID	ID	ID	ID	12.41	12.96	ID
12	Shallow	20th	690	164	7.70	113	26	24	44	13	10	117	ID	ID	0.190	0.000	ID	ID	ID	1.20	ID	ID
12	Shallow	50th	761	219	8.00	237	42	28	77	91	30	277	ID	ID	0.270	0.400	ID	ID	ID	2.45	ID	ID
12	Shallow	80th	832	273	8.30	360	58	31	109	168	50	436	ID	ID	0.350	0.800	ID	ID	ID	3.70	ID	ID
13	Deep	20th	720	136	7.50	262	21	15	75	54	8	315	0.00	18	0.157	0.000	0.000	0.010	0.000	2.00	0.51	ID
13	Deep	50th	1256	326	7.90	355	40	51	139	141	25	429	1.00	37	0.200	0.020	0.010	0.035	0.010	3.50	2.23	ID
13	Deep	80th	1950	540	8.20	560	72	88	279	327	67	673	4.93	56	0.370	0.090	0.040	0.135	0.035	8.96	3.98	ID
13	Shallow	20th	630	145	7.50	249	21	21	56	30	5	295	0.50	28	0.200	0.000	0.000	0.000	0.000	1.60	0.30	ID
13	Shallow	50th	1150	350	8.00	409	40	54	135	110	24	490	3.00	46	0.310	0.010	0.010	0.015	0.010	3.15	1.79	ID
13	Shallow	80th	2509	650	8.30	626	73	119	326	400	125	754	16.39	60	0.594	0.040	0.020	0.050	0.030	7.01	4.08	ID
14	Deep	20th	756	209	7.50	270	24	28	66	68	15	314	0.47	31	0.165	0.000	0.000	0.020	0.001	1.77	0.00	ID
14	Deep	50th	1420	433	7.80	380	64	57	135	147	32	450	2.50	47	0.350	0.000	0.010	0.040	0.020	2.70	0.49	ID
14	Deep	80th	2150	777	8.10	507	129	129	212	382	99	615	6.49	80	0.545	0.020	0.057	0.139	0.050	4.10	1.63	ID
14	Shallow	20th	1006	294	7.50	284	51	36	88	129	29	343	0.50	40	0.200	0.000	0.000	0.010	0.010	2.00	0.00	ID
14	Shallow	50th	1619	458	7.90	377	80	61	164	260	52	454	3.00	69	0.350	0.005	0.000	0.030	0.020	3.20	0.00	ID
14	Shallow	80th	2765	743	8.10	507	125	108	308	604	103	609	13.20	84	0.530	0.030	0.020	0.091	0.050	5.49	1.27	ID
15	Deep	20th	330	74	6.69	67	19	4	19	35	25	61	0.00	11	0.100	0.000	0.049	0.010	ID	0.99	0.00	ID
15	Deep	50th	1200	111	7.45	135	32	12	166	190	110	142	0.35	19	0.180	0.000	0.220	0.060	ID	3.95	0.02	ID
15	Deep	80th	1340	263	8.00	188	57	31	216	290	151	224	3.10	24	0.313	0.018	0.220	0.110	ID	9.33	1.90	ID
15	Shallow	20th	229	50	6.61	74	8	7	33	33	0	91	0.32	15	0.065	ID	ID	ID	ID	1.25	0.24	ID
15	Shallow	50th	1050	464	7.95	280	18	69	56	43	0	262	0.50	28	0.200	ID	ID	ID	ID	2.20	1.00	ID
15	Shallow	80th	1515	500	8.17	525	70	96	133	259	49	632	0.95	38	0.370	ID	ID	ID	ID	3.10	1.29	ID
16	Deep	20th	1859	513	7.80	385	78	76	202	311	45	459	0.58	22	0.260	0.000	0.000	0.028	0.009	3.70	0.00	ID
16	Deep	50th	2000	580	8.00	461	101	81	225	331	89	550	4.60	29	0.300	0.010	0.010	0.650	0.030	4.10	0.00	ID
16	Deep	80th	2285	634	8.30	543	114	86	294	434	130	650	7.32	35	0.489	0.049	0.078	1.183	0.052	5.38	0.79	ID
16	Shallow	20th	1000	310	7.40	194	58	38	86	177	22	235	0.00	28	0.140	0.000	0.000	0.010	0.000	2.00	ID	ID
16	Shallow	50th	1700	527	7.80	335	90	70	165	350	45	405	1.50	35	0.210	0.020	0.010	0.020	0.010	3.10	ID	ID
16	Shallow	80th	2800	810	8.10	476	136	120	310	650	97	570	5.00	41	0.300	0.040	0.040	0.174	0.030	4.90	ID	ID
17	Deep	20th	2370	630	7.42	460	62	108	284	473	105	560	0.73	28	0.443	0.010	0.025	0.010	0.030	4.95	ID	ID

Appendix D - Comet River Sub-basin Environmental Values and Water Quality Objectives (Zone 25 Deep and Shallow)

Comet River Sub-basin Environmental Values and Water Quality Objectives

Zone[1]	Depth[2] (±30m)	Percentile[3]	EC[4] (µScm^{-1})	Hardness (mgL^{-1}as CaCO$_3$)[4]	pH	Alkalinity (mgL^{-1})	Ca[4] (mgL^{-1})	Mg[4] (mgL^{-1})	Na[4] (mgL^{-1})	Cl[4] (mgL^{-1})	SO$_4$[4] (mgL^{-1})	HCO$_3$[4] (mgL^{-1})	NO$_3$[4] (mgL^{-1})	SiO$_2$[4] (mgL^{-1})	F[4] (mgL^{-1})	Fe[4] (mgL^{-1})	Mn[4] (mgL^{-1})	Zn[4] (mgL^{-1})	Cu[4] (mgL^{-1})	SAR[4]	RAH[4] (meqL-1)	EH[4] (mV)
22	Deep	80th	5276	1861	8.10	636	181	283	809	1973	218	775	16.29	57	0.697	0.010	0.030	0.695	0.050	12.36	2.20	ID
22	Shallow	20th	1403	367	7.20	245	60	41	145	218	30	295	0.00	35	0.163	0.000	0.000	0.010	0.000	3.00	0.00	ID
22	Shallow	50th	2220	591	7.70	360	105	76	240	475	61	439	1.30	45	0.300	0.000	0.010	0.020	0.010	4.40	0.00	ID
22	Shallow	80th	3722	1001	8.00	510	175	145	420	979	95	610	9.20	64	0.560	0.050	0.100	0.080	0.037	6.93	1.01	ID
23	Deep	20th	2496	350	7.51	233	50	55	312	553	42	282	0.00	20	0.149	0.014	0.000	ID	ID	5.50	0.00	ID
23	Deep	50th	3465	1098	7.80	463	138	165	587	851	100	565	0.00	47	0.370	0.040	0.025	ID	ID	10.45	0.73	ID
23	Deep	80th	7450	1621	7.99	618	260	244	1106	1930	520	753	2.25	54	1.020	0.382	0.340	ID	ID	13.00	10.83	ID
23	Shallow	20th	3333	461	7.60	445	51	70	501	558	50	543	0.00	13	0.680	0.006	0.020	ID	ID	5.71	1.83	ID
23	Shallow	50th	3850	793	7.75	650	100	140	561	750	95	793	0.50	21	0.800	0.035	0.035	ID	ID	8.40	2.85	ID
23	Shallow	80th	4506	1146	8.45	903	223	185	599	989	832	1091	1.65	48	1.200	0.085	0.176	ID	ID	14.36	9.36	ID
24	Shallow	20th	1790	559	7.90	360	73	88	194	328	45	433	0.09	36	0.480	0.000	0.000	ID	ID	3.84	ID	ID
24	Shallow	50th	3140	762	8.00	402	126	109	350	605	160	485	7.30	52	0.650	0.000	0.010	ID	ID	5.50	ID	ID
24	Shallow	80th	6908	1400	8.23	601	176	234	1151	1935	318	729	12.76	62	1.060	0.015	0.025	ID	ID	15.39	ID	ID
25	Deep	20th	791	15	7.90	301	4	1	159	67	11	358	0.00	17	0.150	0.000	0.000	0.012	0.000	5.50	2.46	ID
25	Deep	50th	1037	40	8.35	332	10	3	198	96	20	391	0.00	19	0.260	0.000	0.000	0.030	0.000	14.15	5.32	ID
25	Deep	80th	1345	229	8.50	457	30	41	263	178	38	544	0.60	37	0.379	0.100	0.020	0.507	0.000	23.80	6.07	ID
25	Shallow	20th	685	49	7.70	251	11	5	68	37	6	300	0.20	19	0.190	0.000	0.000	ID	ID	1.83	0.84	ID
25	Shallow	50th	1085	171	7.90	350	27	22	142	118	10	421	2.20	28	0.300	0.010	0.010	ID	ID	4.70	3.90	ID
25	Shallow	80th	1420	370	8.19	579	59	55	267	194	48	630	8.62	34	0.400	0.020	0.020	ID	ID	15.47	6.70	ID
26	Deep	20th	450	13	7.38	197	4	1	111	27	0	208	0.91	10	0.500	0.000	0.000	ID	ID	10.15	3.39	ID
26	Deep	50th	550	18	8.00	240	4	2	128	58	0	256	1.00	12	0.600	0.000	0.000	ID	ID	12.95	4.18	ID
26	Deep	80th	667	38	8.20	254	9	4	159	89	5	303	2.00	14	0.600	0.000	0.000	ID	ID	15.39	4.69	ID
27	Deep	20th	158	4	6.90	63	1	0	32	9	0	70	0.00	12	0.100	0.010	0.000	0.000	0.010	3.93	1.15	ID
27	Deep	50th	210	8	7.50	91	2	1	45	12	0	103	0.00	13	0.200	0.040	0.010	0.010	0.010	7.70	1.64	ID
27	Deep	80th	297	24	7.90	151	7	1	68	36	2	142	0.50	14	0.300	0.245	0.030	0.020	0.030	10.34	2.35	ID
27	Shallow	20th	177	4	7.13	79	1	0	38	7	0	94	0.00	11	0.159	0.007	0.007	0.000	0.003	4.80	1.50	ID
27	Shallow	50th	215	5	7.40	99	2	0	45	8	1	120	0.00	12	0.200	0.010	0.010	0.005	0.010	8.20	1.76	ID
27	Shallow	80th	284	24	7.97	144	9	1	66	10	2	170	0.50	14	0.238	0.023	0.013	0.010	0.024	9.25	2.00	ID
28	Deep	20th	308	24	7.10	74	5	3	28	32	0	85	0.00	13	0.100	0.010	0.010	0.010	0.030	1.89	0.83	ID
28	Deep	50th	425	45	7.80	156	9	5	73	45	2	186	0.50	15	0.200	0.010	0.010	0.020	0.030	4.60	2.25	ID
28	Deep	80th	723	66	8.20	219	16	9	128	74	5	257	0.50	17	0.230	0.040	0.210	0.030	0.045	9.73	3.54	ID

GLENCORE