



**Licensee:** Perilya Broken Hill Limited

**Environmental Protection Licenses:** 2688

**Locations:** Southern Operations

### **Water Quality Monitoring**

#### **Methods**

##### **Water Quality Assessment**

Water quality is determined from the collection of samples at various points. To ensure environmental responsibility is taken, water samples are collected at all three mine sites to monitor pollutants. However, only the Southern Operations has a legal requirement to monitor water discharging from two designated monitoring points within the mine site.

Water sampling and handling of the samples is undertaken in accordance with the Australian/New Zealand Standard: AS/NZS 5667.1:1998. The samples are assayed at a NATA accredited laboratory.

Any water discharged from the Southern Operations is not received by town drinking water supplies but is received by waterways on pastoral or mining leases. The relevant measure of heavy metals is determined by the Australian *and New Zealand Guidelines for Fresh and Marine Water Quality* (2002). Inorganics and alkali metals are monitored but the results are not required to be reported to the EPA as per the EPL.

## Water Quality

**Date sampled submitted for analysis:** As required

**Date results received:** 20 days after samples submitted for analysis

**Published on website:**

Site	Monitoring frequency required by licence	Sample Date	Inorganics*							Alkali metals*
			BOD-5 Day	Conductivity	Oil & Grease (mg/L)	pH	Sulphate (S)	Suspended Solids	Total Dissolved Solids	Calcium (mg/L)
POINT 1	Monthly during discharge	29/02/2012	< 5	3100	< 5	7	220	18	1900	220
POINT 1	Monthly during discharge	06/03/2012	< 5	5400	< 5	7.3	400	8	3100	410
POINT 1	Monthly during discharge	15/03/2012	< 5	9800	< 5	6.6	790	19	5500	760
POINT 1	Monthly during discharge	16/03/2012	< 5	9700	< 5	6.8	790	15	6000	730
POINT 1	Monthly during discharge	11/04/2012	< 5	11000	< 5	7	850	15	7400	860
POINT 1	Monthly during discharge	6/06/2012	<5	11000	10	6.3	1000	13	8100	940
POINT 2	Daily during discharge	30/01/2012	< 5	7400	12	7	610	18	5200	610
POINT 2	Daily during discharge	29/02/2012	< 5	3000	< 5	7.1	230	32	1900	240
POINT 2	Daily during discharge	06/03/2012	< 5	9000	6.2	6.1	740	15	5300	690
POINT 2	Daily during discharge	15/03/2012	< 5	11000	< 5	6.6	950	10	6500	790
POINT 2	Daily during discharge	16/03/2012	< 5	2400	< 5	6.6	180	120	1500	460
POINT 2	Daily during discharge	11/04/2012	< 5	12000	< 5	7.2	810	11	7800	840

Site	Monitoring frequency required by licence	Sample Date	Heavy metals								
			Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Zinc (mg/L)
POINT 1	Monthly during discharge	29/02/2012	0.005	0.05	0.001	0.04	0.3	0.0001	0.005	0.011	11
POINT 1	Monthly during discharge	06/03/2012	0.005	0.11	0.001	0.037	0.1	0.0001	0.011	0.025	37
POINT 1	Monthly during discharge	15/03/2012	0.004	0.13	0.001	0.02	0.1	0.0001	0.018	0.032	46
POINT 1	Monthly during discharge	16/03/2012	0.005	0.16	0.001	0.014	0.1	0.0001	0.017	0.033	61
POINT 1	Monthly during discharge	11/04/2012	0.005	0.04	0.001	0.013	0.1	0.0001	0.016	0.018	18
POINT 1	Monthly during discharge	6/06/2012	0.002	0.26	< 0.001	0.005	0.1	< 0.0001	0.011	0.037	91
POINT 2	Daily during discharge	30/01/2012	0.009	0.08	0.002	0.015	0.3	0.0001	0.014	0.018	20
POINT 2	Daily during discharge	29/02/2012	0.02	0.06	0.003	0.02	0.6	0.0001	0.005	0.013	13
POINT 2	Daily during discharge	06/03/2012	0.008	0.09	0.002	0.009	0.0	0.0001	0.012	0.035	38
POINT 2	Daily during discharge	15/03/2012	0.003	0.49	0.004	0.01	0.4	0.0001	0.011	0.082	160
POINT 2	Daily during discharge	16/03/2012	0.026	0.06	0.007	0.041	1.0	0.0001	0.005	0.012	19
POINT 2	Daily during discharge	11/04/2012	0.006	0.02	0.002	0.012	0.2	0.0001	0.012	0.017	13

Heavy Metal limits as specified in Environmental Protection Licence									
All data is in mg/L	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Zinc (mg/L)
ANZECC Stock drinking water limits	0.5	0.01	1	5	0.1	0.002	0.15	1	20

\* No limits specified within the Environmental Protection Licence

**Observations:**

Cadmium, lead and zinc levels were elevated on numerous occasions during May 2012. This is due to the Southern Operations receiving underground water from off-site. It was not uncommon for this water to contain elevated levels of heavy metals. This water is no longer being received on the southern site consequently the water results for June are expected to have lower levels of heavy metals.