Vista Gold Australia P/L
Mt Todd Mine Site
Waste Discharge Licence 178-3

Monthly Discharge Report
February 2014

Executive Summary

This report presents results and information pursuant to Condition 30 of WDL 178-2 that requires Vista Gold submit a periodic report to the NT EPA for each calendar month during which a discharge has occurred.

One controlled discharge compliant with the conditions of WDL 178-3 occurred over six days in February 2014. 217 ML of treated RP3 water discharged at a target dilution ratio of 1:132, derived from Direct Toxicity Assessment performed on RP3 water sampled on the 25 November 2013.

Findings were as follows:

- No analytes exceeded the Australian Drinking Water Guidelines 6, 2011, Table 10.5.
- All discharge activities were compliant with Waste Discharge Licence 178-3

1. Introduction

Condition 30 of WDL 178-3 states that:

"The Licensee must submit a periodic report to the NT EPA for each calendar month during which a discharge has occurred no later than 10 Business days after the last day of the relevant calendar month.

The periodic report must

30.1. include, for each day of the month where a discharge occurred, tabulated data including

- *the factors used to assess the Dilution Factor at SW4;*
- *surface water monitoring results required under condition 21;*
- *a comparison of surface water monitoring results for monitoring point SW4 with Monitoring Values determined under condition 14;*
- *a comparison of surface water monitoring results for monitoring points SW2 and SW10 with applicable health guideline values from Australian Drinking Water Guidelines 6, 2011, Table 10.5; and*

30.2. be made available on the Licensee's Australian website within 10 Business days of providing the report to the NT EPA.

This report presents the Edith River hydrological data, RP3 discharge data as well analytical surface water monitoring results for discharges from Mt Todd conducted in accordance with Vista Gold's Discharge Plan and pursuant to the conditions of WDL 178-3 during the month of February 2014.

2. Discharge Summary

Table 1 and 2 summarise the discharges for February 2014.

Table 1 - February 2014 Discharge

Discharge	Date	Start Time (hrs)	Stop Time (hrs)	Duration (hrs & min)	Dilution Rate	Volume Discharged (ML)
1	01:02:2014	0841				
	06:02:2014		1149	5 Days 3 hrs 7 min	1:162	217.26

Table 2 - Daily flow readings

Date	Hours	SW4 Flow Rate (m^3/s)	Edith Volume (m^3)	Theoretical Flow Rate at 1:132 (m^3/s)	Actual RP3 Discharge Rate (m^3/s)	Daily Discharge Volume (m^3)	Actual Daily Dilution Ratio
01-February-2014	14.5	149	7,756,506	1.13	0.80	41,685	186
02-February-2014	24.0	118	10,217,592	0.90	0.64	54,876	186
03-February-2014	24.0	77	6,619,446	0.58	0.57	48,841	136
04-February-2014	24.0	63	5,406,300	0.47	0.44	37,843	143
05-February-2014	24.0	45	3,868,794	0.34	0.32	27,512	141
06-February-2014	12.0	30	1,286,928	0.23	0.15	6,271	205
	122.5	***80***	***35,155,566***	***0.60***	**0.49**	***217,029***	**162**

Figure 1 below graphically shows the discharge flow rate from RP3 as well as the theoretical discharge rate calculated from the flow in the Edith River and based on a dilution ratio of 1 part RP3 water to 132 diluent – this is derived from the direct toxicity assessment.

The rate of flow from RP3 is measured via an inline magnetic flow meter which is automatically measured every 30 seconds. Flow from the Edith River is determined by measurement of water level at the SW4 Gauging Station and conversion via the established rating for the site.

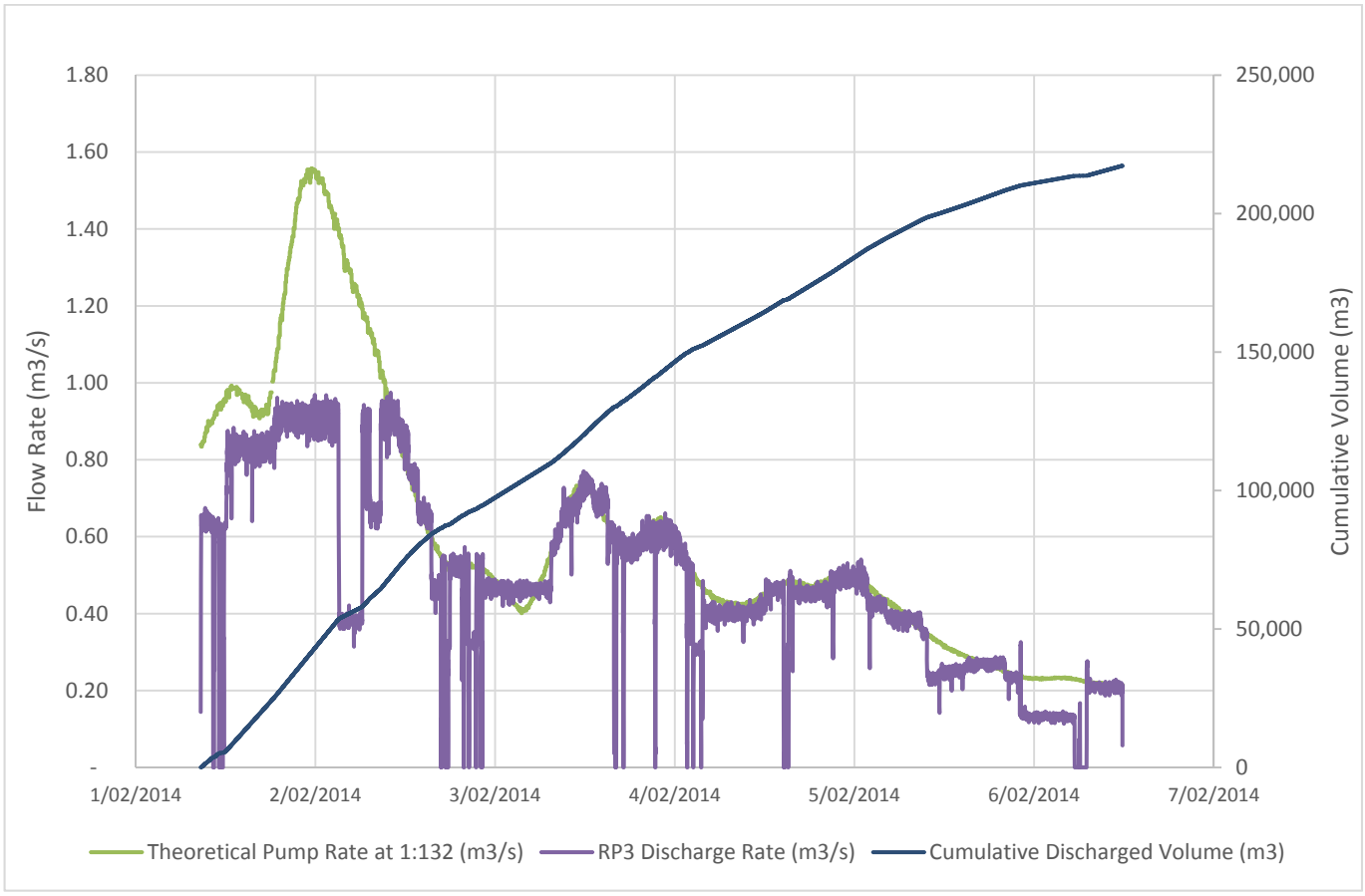

Figure 1 - RP3 treated water discharge rate during February 2014

3. Monitoring Summary

The monitoring analites at SW4 from the November 2013 Direct Toxicity Assessment on RP3 are listed as

- Zinc - 33µg/L
- Cadmium 0.4 µg/L

Table 3 is an excerpt of these elements from Appendix B. Three exceedances of the monitoring values were detected. An exceedance occurred for both Cadmium and Zinc on the second day of discharge and 7 days after discharge had ceased.

Comparisons of other element concentrations between RP3 and SW2 & SW4 on the 2nd clearly evidence the additional concentrations of Zinc and Cadmium on that day at were not as a result of exceeding the reported dilution rate during discharge from RP3. Raw data and field sampling procedures on this day were reviewed for error, however all investigations indicate the increased concentrations measured on the 2/2/2014 are due to an unknown source between SW2 and SW4. The increased Zinc concentrations on the 13/2/2014 are also of unknown origin and are unlikely to be related to any discharge activities.

Table 3 – Measured concentrations of Zinc and Cadmium during discharge and one week following cessation of discharge

	01/02/2014	02/02/2014	03/02/2014	04/02/2014	05/02/2014	06/02/2014	13/02/2014
Cadmium-(0.45µm filtered) (µg/L)							
RP3	44	43	44	43	44	47	27
SW10	0.05	0.05	0.05	0.05	0.1	0.05	0.1
SW2	0.05	0.05	0.05	0.05	0.05	0.05	0.05
SW4	0.05	1.4	0.1	0.05	0.2	0.1	0.1
Cadmium-Total (µg/L)							
RP3	47	44	44	44	44	43	27
SW10	0.05	0.05	0.05	0.05	0.1	0.05	0.2
SW2	0.05	0.05	0.05	0.05	0.05	0.05	0.05
SW4	0.05	1.5	0.1	0.1	0.2	0.1	0.1
Zinc-(0.45µm filtered) (µg/L)							
RP3	2700	2700	2800	2800	2800	3000	6100
SW10	2	3	9	4	10	8	30
SW2	1	0.5	2	2	0.5	0.5	0.5
SW4	9	340	24	13	16	12	37
Zinc-Total (µg/L)							
RP3	3000	2900	2900	2900	3300	3100	5900
SW10	5	5	13	7	14	11	38
SW2	9	3	5	3	2	2	7
SW4	13	350	27	17	19	16	44

The elements from the Australian Drinking Water guidelines which have published health values comparable to the elements sampled during discharge are listed in Table 4. All samples from the Edith River (SW2, SW4, SW10) during and post discharge returned concentrations below the specified guidelines.

Table 4 - ADWG Elements available for comparison to discharge samples

Element	Health Guideline (ug/L)
Mercury	1.00
Cadmium	2.00
Lead	10.00
Nickel	20.00
Chromium	50.00
Cyanide	80.00
Manganese	500.00
Copper	2,000.00
Sulphate	500,000.00

The full tabulation of chemical results applicable to this report is presented in Appendix A

4. Conclusion

The controlled discharge of treated water from RP3 that occurred in February complied with the conditions of WDL 178-3. It is suspected that other catchments on site (i.e. Horseshoe and Batman Creeks) may be sources of elements to explain the unexpected and irregular elevated concentrations in certain parameters. This is why the WDL adopts the application of a 7 day rolling average to determine if the 80% species protection values have been met.

Appendix A – Tabulated chemical and physical results

	01/02/2014	02/02/2014	03/02/2014	04/02/2014	05/02/2014	06/02/2014	13/02/2014
Aluminium-(0.45µm filtered) (µg/L)							
RP3	16	35	72	82	110	97	4500
SW10	270	490	81	120	76	43	87
SW2	160	120	69	98	50	60	59
SW4	290	110	120	91	55	75	48
Aluminium-Total (µg/L)							
RP3	100	130	170	170	290	220	4300
SW10	750	740	300	370	540	610	190
SW2	270	40	190	200	470	310	190
SW4	370	310	40	300	810	360	230
Bicarbonate Alkalinity as (mg/L)							
RP3	38	36	36	35	38	40	6
SW10	9	11	9	11	11	10	8
SW2	7	7	8	8	8	10	10
SW4	10	5	8	10	11	9	8
Cadmium-(0.45µm filtered) (µg/L)							
RP3	44	43	44	43	44	47	27
SW10	0.05	0.05	0.05	0.05	0.1	0.05	0.1
SW2	0.05	0.05	0.05	0.05	0.05	0.05	0.05
SW4	0.05	1.4	0.1	0.05	0.2	0.1	0.1
Cadmium-Total (µg/L)							
RP3	47	44	44	44	44	43	27
SW10	0.05	0.05	0.05	0.05	0.1	0.05	0.2
SW2	0.05	0.05	0.05	0.05	0.05	0.05	0.05
SW4	0.05	1.5	0.1	0.1	0.2	0.1	0.1
Calcium - Dissolved (mg/L)							
RP3	430	440	440	410	410	420	84
SW10	0.7	0.9	1.3	1.1	1.9	1.7	0.7
SW2	0.6	0.25	0.5	0.7	0.6	0.25	0.25
SW4	0.25	5.3	1.9	1.5	2.5	1.9	0.8
Calcium - Total (mg/L)							
RP3	400	390	390	380	430	420	82
SW10	0.8	1	1.3	1.1	2.2	1.7	0.8
SW2	0.6	0.25	0.6	0.7	0.5	0.5	0.25
SW4	0.5	4	1.9	1.4	2.5	1.9	0.8
Carbonate Alkalinity as (mg/L)							
RP3	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SW10	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SW2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SW4	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Chloride, Cl (mg/L)							

RP3	5	5	31	75	6	5	3
SW10	0.5	0.5	1	2	1	0.5	0.5
SW2	0.5	0.5	0.5	0.5	0.5	1	1
SW4	0.5	1	0.5	67	1	1	1
Chromium-(0.45µm filtered) (µg/L)							
RP3	0.5	0.5	0.5	0.5	1	1	0.5
SW10	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chromium-Total (µg/L)							
RP3	0.5	0.5	1	0.5	1	0.5	0.5
SW10	1	0.5	0.5	0.5	0.5	0.5	0.5
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Cobalt-(0.45µm filtered) (µg/L)							
RP3	380	370	370	370	400	430	280
SW10	0.5	0.5	0.5	0.5	0.5	0.5	1
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	16	1	0.5	2	1	1
Cobalt-Total (µg/L)							
RP3	390	380	380	360	390	380	280
SW10	0.5	1	0.5	0.5	1	0.5	2
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	16	1	0.5	2	1	2
Copper-(0.45µm filtered) (µg/L)							
RP3	4	13	23	26	49	36	1400
SW10	67	81	17	58	2	1	7
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	2	50	4	4	2	1	8
Copper-Total (µg/L)							
RP3	11	21	34	38	65	46	1400
SW10	100	130	26	78	2	2	11
SW2	2	0.5	2	0.5	0.5	0.5	0.5
SW4	4	65	4	5	3	2	10
Hardness (mgCaCO3/L)							
RP3	1900	1900	1900	1800	1800	1800	540
SW10	1.5	5	8	6	11	10	6
SW2	4	1.5	4	4	4	1.5	1.5
SW4	4	35	11	10	14	12	6
Hydroxide Alkalinity (OH-) (mg/L)							
RP3	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SW10	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SW2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SW4	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Iron-(0.45µm filtered) (µg/L)							
RP3	5	5	5	5	5	5	39
SW10	140	200	120	110	140	120	150
SW2	230	150	130	150	130	150	170
SW4	230	80	140	170	110	120	150
Iron-Total (µg/L)							
RP3	130	87	92	82	67	63	62
SW10	900	730	390	490	500	510	560
SW2	640	99	360	400	460	470	600
SW4	500	240	95	550	490	510	550
Lead-(0.45µm filtered) (µg/L)							
RP3	0.5	0.5	0.5	0.5	0.5	0.5	26
SW10	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead-Total (µg/L)							
RP3	0.5	0.5	0.5	0.5	1	0.5	26
SW10	1	1	0.5	0.5	0.5	0.5	0.5
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	1	0.5	0.5	0.5	0.5	0.5	0.5
Magnesium - (0.45µm filtered) (mg/L)							
RP3	190	190	190	180	180	180	81
SW10	0.25	0.6	1.2	0.7	1.5	1.5	1
SW2	0.5	0.25	0.5	0.6	0.5	0.5	0.25
SW4	0.9	5.2	1.6	1.5	1.9	1.7	1.1
Magnesium - Total (mg/L)							
RP3	200	190	190	190	190	190	76
SW10	0.25	0.7	1.2	0.7	1.7	1.6	1.1
SW2	0.6	0.25	0.6	0.6	0.6	0.6	0.25
SW4	1	5	1.6	1.4	2	1.7	1.1
Manganese-(0.45µm filtered) (µg/L)							
RP3	4400	4400	4500	4300	4600	4900	3600
SW10	14	20	15	18	34	35	25
SW2	8	2.5	2.5	5	6	6	2.5
SW4	12	200	28	23	63	61	29
Manganese-Total (µg/L)							
RP3	4600	4400	4400	4300	4500	4400	3500
SW10	20	26	26	21	42	44	36
SW2	17	2.5	9	9	11	10	9
SW4	17	210	29	26	69	70	32
Mercury-(0.45µm filtered) (µg/L)							
RP3	0.025	0.025	0.025	0.025	0.025	0.025	0.025
SW10	0.025	0.025	0.025	0.025	0.025	0.025	0.025
SW2	0.025	0.025	0.025	0.025	0.025	0.025	0.025

SW4	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Mercury-Total (µg/L)							
RP3	0.025	0.025	0.025	0.025	0.025	0.025	0.025
SW10	0.025	0.025	0.025	0.025	0.025	0.025	0.025
SW2	0.025	0.025	0.025	0.025	0.025	0.025	0.025
SW4	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Nickel-(0.45µm filtered) (µg/L)							
RP3	350	350	350	340	380	400	260
SW10	0.5	0.5	0.5	0.5	1	1	2
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	17	2	1	2	1	2
Nickel-Total (µg/L)							
RP3	370	350	350	340	370	360	250
SW10	0.5	0.5	0.5	0.5	2	1	2
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	17	2	1	2	1	2
Sodium - Total (mg/L)							
RP3	59	56	57	56	60	58	14
SW10	1.6	1.9	1.6	2.3	2.1	2.4	1.8
SW2	1.1	0.8	1.1	1.1	1.2	1.3	1.3
SW4	1.5	2.1	1.7	1.7	2.3	2.5	1.9
Sulphate, SO4 (mg/L)							
RP3	1600	1500	1500	1500	1700	1800	550
SW10	0.5	1	4	2	8	7	3
SW2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SW4	0.5	26	6	11	8	9	3
Total Alkalinity (mg/L)							
RP3	38	36	36	35	38	40	6
SW10	9	11	9	11	11	10	8
SW2	7	7	8	8	8	10	10
SW4	10	5	8	10	11	9	8
Total Cyanide (mg/L)							
RP3	0.002	0.002	0.002	0.002	0.002	0.002	0.002
SW10	0.002	0.002	0.002	0.002	0.002	0.002	0.002
SW2	0.002	0.002	0.002	0.002	0.002	0.002	0.002
SW4	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Total Dissolved Solids (mg/L)							
RP3	2100	2700	2600	2600	2900	2900	670
SW10	70	76	46	80	84	54	60
SW2	48	56	40	100	26	38	30
SW4	82	100	92	90	50	54	20
Total Solids (mg/L)							
RP3	2100	2700	2700	2600	2900	3000	670
SW10	110	100	77	89	97	62	88

SW2	65	66	54	120	33	38	36
SW4	92	120	110	99	59	64	29
Total Suspended Solids (mg/L)							
RP3	2.5	5	14	2.5	2.5	2.5	2.5
SW10	35	25	31	9	13	8	28
SW2	17	10	14	19	7	2.5	6
SW4	10	12	19	9	9	10	9
Zinc-(0.45µm filtered) (µg/L)							
RP3	2700	2700	2800	2800	2800	3000	6100
SW10	2	3	9	4	10	8	30
SW2	1	0.5	2	2	0.5	0.5	0.5
SW4	9	340	24	13	16	12	37
Zinc-Total (µg/L)							
RP3	3000	2900	2900	2900	3300	3100	5900
SW10	5	5	13	7	14	11	38
SW2	9	3	5	3	2	2	7
SW4	13	350	27	17	19	16	44
Temperature (degrees celcius)							
RP3	30.5	30.8	29.7	28.9	29.5	27.9	33
SW10	29.1	30.3	28.5	29.3	28.7	28.4	28.3
SW2	27.8	28.5	28.9	27.9	28.4	28.3	29.1
SW4	29.8	30.3	30	28	29.1	28.2	31.4
Electrical Conductivity (uS/cm)							
RP3	3032	3009	3939	2800	2960	2863	1298
SW10	753.9	28.1	30.6	29.5	43.2	41.8	26.1
SW2	752.2	11.9	13.9	15	14.8	15.2	14.3
SW4	752.6	100.9	39.1	34.1	52.4	45.7	28.2
pH							
RP3	7.14	6.61	6.39	6.67	6.57	6.78	4.86
SW10	6.01	5.63	5.65	5.8	5.78	5.92	6.34
SW2	5.91	5.3	5.79	5.49	5.68	5.82	6.11
SW4	6.05	5.28	5.93	5.52	5.69	5.87	6.03
Dissolved Oxygen (% Sat)							
RP3	96.1	96.5	67.7	97.2	94.2	93.9	73.3
SW10	94.5	91.5	63.5	95.1	92.3	31.9	68.4
SW2	101.5	98.8	75.7	96.2	95.9	92.9	82.2
SW4	94.5	89	67.3	89.7	91.9	91.1	83.1