



# Monthly Discharge Report

February – March 2020

Vista Gold Australia Pty Ltd Mt Todd

WDL 178-07

# DOCUMENT CONTROL RECORD

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# 1 INTRODUCTION

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## 1.1 Purpose and scope

This report details the results of water quality monitoring undertaken during discharge events over the 2019-2020 wet season, at the Mount Todd Gold Mine. The report has been structured to enable it to be a combined Monthly Discharge Report, for the months of February and March 2020, during which discharges occurred. The Monthly Discharge Report is a requirement of Waste Discharge Licence (WDL) 178-07 issued by the Northern Territory Environment Protection Authority (NT EPA) under section 74 of the NT *Water Act*.

## 1.2 Background

The Mt Todd Gold Mine is located within the Daly River Catchment area in the Northern Territory. The Edith River is located directly to the south of the mine site and intersects Mineral Lease Number 1127. The Edith River is the largest of various tributary rivers and creeks to the Fergusson River, which ultimately flows into the Daly River.

The Edith River has a high ecological and recreational value, with the mine site located approximately 9 km downstream of Edith Falls situated within Nitmiluk National Park. The Edith River is fed by several ephemeral creeks, five of which run through the Mt Todd mine site and currently receive runoff from site related catchments within the mineral leases. The regional drainage pathway and catchment plan of the Edith River sub-catchment is described in detail in the Mt Todd Gold Mine Water Management Plan (WMP 2017).

Vista Gold Australia Pty Ltd (Vista Gold) have operated the care and maintenance phase of the Mt Todd Gold Mine since 2006; the site was previously mined for gold during the 1990s before its closure in 2000. Vista Gold's water management strategy for the Mt Todd Gold Mine respects that water management is an integral part of managing the mine site and its interaction with the surrounding environment. In accordance with their objectives Vista Gold have adopted an integrated multiple lines of evidence approach to manage the environmental impacts from active and passive discharges entering the Edith River, including water quality, macroinvertebrate, ecotoxicology and sediment monitoring programs.

Vista Gold's water management strategy includes onsite storage, treatment and licenced water discharges, to reduce the risk of uncontrolled discharges offsite. Water is treated in-situ within Batman Pit prior to active discharge. Discharge of treated water only occurs during the wet season, to manage additional inputs from rainfall, ensure integrity of site water storages, and minimise the risk of uncontrolled discharge.

## 1.3 WDL requirements

WDL 178-07 licences Vista Gold to discharge treated water from Batman Pit into the Edith River, subject to conditions. The licence was granted on 26 November 2019, and is valid until 30 November 2020. A copy of WDL 178-07 is provided in Appendix A. The licence allows for active discharge of treated water from the Batman Pit (RP3), at the authorised discharge point, from where it flows to the Edith River via Stow Creek. The compliance monitoring point is SW4, which is downstream of the mine and receives flow from the upstream Edith River catchment.

This report has been developed to fulfil condition 52 of WDL 178-07, as follows:

*52 The licensee must submit to the Administering Agency a Monthly Discharge Report for any month when a discharge occurs via the authorized discharge point by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au). The Monthly Discharge Report is due by the last business day of the following month and must include:*

*52.1 tabulated water quality data for RP3 and SW4 for each day of the month where a discharge occurred. Data must be provided electronically in Microsoft Excel format;*

*52.2 tabulated daily environmental field data, relating to the particular month, for SW4 and RP3 as required in Appendix 1. Data must be provided electronically in Microsoft Excel format;*

*52.3 tabulated water quality data for all monitoring locations associated with this licence and specified in Appendix 1. Data must be provided electronically in Microsoft Excel format;*

*52.4 surface water quality management actions taken in the event of trigger value exceedance measured at SW4;*

*52.5 assessment of surface water monitoring results for SW4 against the SSTVs specified in Appendix 1;*

*52.6 where SSTVs were exceeded an assessment of the environmental impact, resulting from the discharge activity and exceedances, on the receiving environment at SW4; and*

*52.7 details of current water inventory on site.*

Note, *52.7 details of current water inventory on site* is not discussed as the data reviewed is for the 2019/2020 wet season, which has finished.

Note that the monthly discharge reports were not submitted for the months of February or March 2020, and therefore this report is a combined report on the two months. However, the excel spreadsheet of data (conditions 52.1, 52.2 and 52.3) was provided to the NT EPA at the end of the relevant month whilst discharge was occurring, and data is publicly available on the Mt Todd website: see <https://www.mttodd.com.au/>

All relevant tabulated water quality data is also provided in Appendix B.

## **2 WATER QUALITY DATA**

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### **2.1 Monitoring Overview**

Water quality monitoring is undertaken in accordance with Waste Discharge Licence (WDL 178-07) Appendix 1. Monitoring locations, frequency and parameters are outlined in the WDL; see Appendix A. This report, consistent with Condition 52 of the WDL, focusses on water quality data from RP3, SW2 and SW4 (compliance point). The monitoring which occurred at these three points over the reporting period is summarised in Table 1 below.

**Table 1. Monitoring overview 2019/2020 wet season**

DATE	FREQUENCY	DISCHARGING	SITE	TESTING PARAMETERS
31/01/2020	MONTHLY	NO	SW2, SW13, SW3, SW10, RP3, SW4	Metals Nutrients/Ions Environmental Field Data General water quality – field testing
2/02/2020	DAILY	YES	SW2, SW4, RP3	General water quality – field testing
7/02/2020	WEEKLY	NO	SW2, SW4, RP3	Metals Nutrients/Ions Environmental Field Data General water quality – field testing
16/02/2020	WEEKLY	YES	SW2, SW4, RP3	Metals Nutrients/Ions Environmental Field Data General water quality – field testing
26/02/2020	DAILY	YES	SW2, SW4, RP3	General water quality – field testing
29/02/2020	MONTHLY	YES	SW2, SW4, RP3	Metals Nutrients/Ions Environmental Field Data General water quality – field testing
01/03/2020	MONTHLY	YES	SW2, SW13, SW3, SW10, RP3, SW4	Metals Nutrients/Ions Environmental Field Data General water quality – field testing
4/03/2020	WEEKLY	YES	SW2, SW4, RP3	Metals Nutrients/Ions Environmental Field Data General water quality – field testing
9/03/2020	DAILY	YES	SW2, SW4, RP3	General water quality – field testing
24/03/2020	WEEKLY	NO	SW2, SW4, RP3	Metals

DATE	FREQUENCY	DISCHARGING	SITE	TESTING PARAMETERS
				Nutrients/Ions Environmental Field Data General water quality – field testing
31/03/2019	MONTHLY	NO	SW2, SW13, SW3, SW10, RP3, SW4	Metals Nutrients/Ions Environmental Field Data General water quality – field testing

\*Metals include: Aluminium (Total and Filtered), Cadmium (Total and Filtered), Cobalt (Filtered), Copper (Total and Filtered), Chromium (Filtered), Iron (Total and Filtered), Lead (Filtered), Manganese (Filtered), Nickel (Filtered), Zinc (Filtered).

\*Nutrients include: Total nitrogen, total phosphorus, organic carbon (Total).

\*Major Ions include: Bicarbonate (Filtered), Calcium (Filtered), Carbonate (Filtered), Chloride (Filtered), Sodium (Filtered), Magnesium (Filtered), Potassium (Filtered), Sulphate (Filtered), Total Dissolved Solids (Calculated).

\*Other include: Hardness (Filtered), Total Suspended Solids, Total Cyanide.

All sampling is undertaken in accordance with the site specific DRAFT Mt Todd Surface Water Monitoring Standard Operating Procedure (Appendix C)

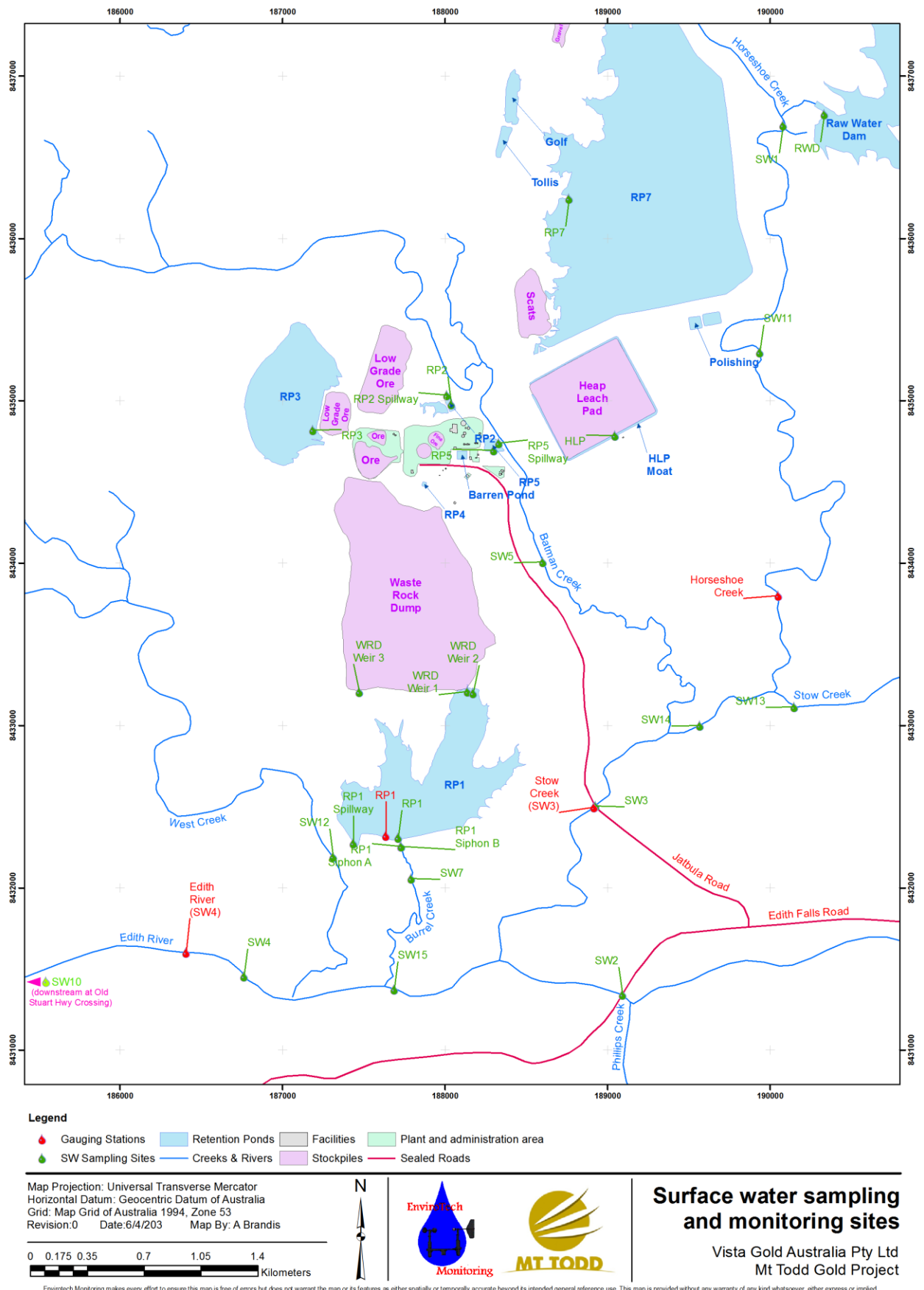


Figure 1. Map of all surface water monitoring locations



## 2.2 Results for the reporting period

During the 2019-2020 wet season rainfall was below average. Discharge occurred in February and March 2020. Discharge pumping occurred on the following dates:

- 2/02/2020
- 3/02/2020
- 16/02/2020
- 26/02/2020 – 5/03/2020
- 9/03/2020 – 10/03/2020

Discharge pumping totaled 235.22 hours with 115.99 of those pumping hours occurring in February 2020 and 119.23 hours occurring in March 2020.

Rainfall received during the 2019-2020 wet season has been well below average. Between October 2019 and April 2020 457.2 mls of rainfall fell at Tindal RAFF Base just outside Katherine (based on data from the Bureau of Meteorology, Station number 14932; BoM 2020). Due to this, discharge only occurred in February and March 2020. Discharge pumping totaled 235.22 hours. A summary of discharge dates and volumes is provided in Table 2.

**Table 2. Discharges over the reporting period**

MONTH	DISCHARGE DATES	AVERAGE DISCHARGE RATE (L/s)	ML DISCHARGED
February 2020	2-29 (non-consecutive)	404	168.73
March 2020	1-10 (non-consecutive)	199	85.25
<b>Total</b>			<b>253.98</b>

Monitoring occurred during the discharge period in accordance with WDL 178-07 (see Appendix A). All water quality data is provided in Appendix B. Exceedances of the site specific trigger values (SSTVs) at site SW4, the compliance point, are summarised in Table 3 below. All other parameters at site SW4 were below the SSTV for the reporting period. Note the SSTVs are based on water quality data (80<sup>th</sup> percentile) from the upstream reference site, SW2 (shown on Figure 1), and only apply to the compliance point, SW4.

It is evident from Table 3 that the SSTVs were exceeded at SW4 on ten occasions. Six of these exceedances were very minor with the result falling marginally outside the SSTV. Two exceedances were related to elevated iron levels in background water (SW2) and two exceedances were minor and non-consecutive zinc SSTV exceedances. No non-compliances with the WDL, as per condition 49.2 were recorded.

**Table 3. Exceedances recorded during discharge February - March 2020**

DATE	SITE	MONITORING FREQUENCY	ELEMENT	UNITS	SSTV	ACTUAL	ACTION
3/02/2020	SW4	Daily	Dissolved oxygen	(%sat)	85-120	84.7%	Minor exceedance. Previous background levels also low.
3/02/2020	SW4	Daily	Electrical conductivity	(uS/cm)	250	255	Minor exceedance.
16/02/2020	SW4	Weekly	Iron	µg/L	350	602	Turn around on results can take 10 days, however, pumping ceased 16/02/2020. Exceedance most likely influenced by background water iron levels.
18/02/2020	SW4	Daily	Dissolved Oxygen	(%sat)	85-120	78%	Minor exceedance. Previous background levels also low.
26/02/2020	SW4	Weekly	Iron	µg/L	350	420	Turn around on results can take 10 days. Exceedance most likely influenced by background water iron levels.
27/02/2020	SW4	Daily	Dissolved Oxygen	(%sat)	85-120	82%	Minor exceedance. Previous background levels also low.
27/02/2020	SW4	Daily	pH	pH units	6.0-8.0	5.85	Minor exceedance. Very close to SW2 pH reading.
28/02/2020	SW4	Daily	pH	pH units	6.0-8.0	5.9	Minor exceedance. Very close to SW2 pH reading.
29/02/20	SW4	Daily	Zinc	µg/L	31	53	Minor exceedance. Pumping ceased 05/03/2020.
01/03/2020	SW4	Monthly	Zinc	µg/L	31	53	Minor exceedance. Pumping ceased 05/03/2020.
04/03/2020	SW4	Weekly	Zinc	µg/L	31	48.9	Minor exceedance. Pumping ceased 05/03/2020.

## 2.3 Discussion of potential environmental impacts of SSTV exceedances

As demonstrated in Table 3, few exceedances of the SSTVs occurred over the discharge period (February – March 2020).

The SSTV exceedance for iron recorded at SW4 on 16/02/2020 was 602 µg/L and on 26/02/2020 was 420 µg/L. Both exceedances occurred whilst pumping was occurring, however it is clear that both exceedances are related to elevated iron levels in background water. Water samples taken in February 2020 at SW2 show elevated iron levels in upstream, background water.

Iron levels at SW2 include:

- 2/02/2020 876 µg/L
- 16/02/2020 644 µg/L
- 26/02/2020 532 µg/L

This demonstrates that the background water level is exceeding the SSTV and that the Mt Todd discharge is likely reducing the concentration of iron in the river rather than adding to it.

The SSTV exceedance for zinc recorded on 29/03/2020 was 52.8 53 µg/L, on 01/03/2020 was 53 µg/L and on 4/03/2020 was 49 µg/L. The SSTV at SW4 for zinc is 31 µg/L. Pumping ceased on 05/03/2020 and therefore water with marginally elevated levels of zinc ceased to be released. The lag between collecting a water sample and receiving water quality results relating to metals, means that immediate on site management actions are not possible. The Vista Gold team review water quality results when received and adjust discharge dilution ratios as required. On 09/03/2020 zinc levels had returned to 12.1 µg/L which is below the SSTV. No environmental impact resulting from the discharge activity is deemed likely.

SSTV exceedances for dissolved oxygen (DO) recorded on 3/02/2020, 18/02/2020 and 27/02/2020 were 85%, 78% and 82% respectively, which are below the SSTV of 85% - 120%. Discharging was not occurring on 18/02/2020 and had not occurred since 16/02/2020 when the DO was recorded at its lowest (78%). It is also worth noting that DO levels at SW4 had been outside of the SSTV range several times prior to discharging commencing (in February 2020) for the 19/20 wet season.

DO levels at SW4 include:

- 23/12/2019 50.0%
- 31/12/2019 74.2%
- 28/01/2020 56.5%

No environmental impact resulting from the discharge activity is deemed likely and DO levels recorded on 26/02/2020 at SW4 were 88.2%.

The two exceedances of pH during the discharging period were minor with a pH of 5.85 on 27/02/2020 and 5.9 on 28/02/2020. Both exceedances were just outside the SSTV for pH of 6.0-8.0. The pH on 28/02/2020 at SW2 (background water) was 6.01, just inside the SSTV. It is also worth noting that the pH was outside of the SSTV recorded at 5.96 at SW2 and SW4 on 15/01/2020 (prior to the discharge period commencing).

The exceedance of electrical conductivity (EC) of 255.2 µS/cm on 3/02/2020 at SW4 was only marginally (2%) outside of the SSTV. The EC level returned to below the SSTV in subsequent monitoring events.

### 3 CONCLUSIONS AND RECOMMENDATIONS

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An assessment of surface water quality monitoring results for SW4 against the SSTVs has been undertaken for 2019-2020 wet season, focusing on discharges which occurred between February and March 2020. Laboratory results, background water quality results, field monitoring results/records and associated management practices and responses were reviewed.

As shown in Table 3 the SSTVs were exceeded at SW4 on ten occasions. Six of these exceedances were very minor with the result falling marginally outside the SSTV. Two exceedances were related to elevated iron levels in background water (SW2) and two exceedances were minor and non-consecutive zinc SSTV exceedances. No non-compliances with the WDL, as per condition 49.2 were recorded. As such, no environmental impact is likely to have occurred as a result of the exceedance.

Zinc exceeded the SSTV at SW4 on three occasions. The SSTV exceedance for zinc recorded on 29/03/2020 was 52.8 53 µg/L, on 01/03/2020 was 53 µg/L and on 4/03/2020 was 48.9 µg/L. The SSTV at SW4 for zinc is 31 µg/L. Discharge ceased on 5/03/2020, and zinc concentrations were below the SSTV again in the following monitoring event (09/03/2020 zinc level at 12 µg/L). Based on the fact that the exceedances of the SSTV at SW4 were for a relatively short period of time, and only occurred twice between February and March 2020, it is unlikely that there was a significant environmental impact as a result. This is supported by the macroinvertebrate, sediment and ecotoxicology data, which indicates that discharge of water from Batman Pit at current dilution ratios is not having a measurable impact on aquatic ecosystem health downstream of the mine site.

Site staff have good knowledge of WDL requirements and management procedures in the event of an exceedance, and aim to receive laboratory water quality data as soon as possible after monitoring. However, a delay of up to 10 days can occur between sampling and receipt of laboratory results, which makes it difficult for staff to respond to exceedances after the fact. In both instances when laboratory results indicated that zinc concentrations exceeded the SSTV at SW4, discharging had already ceased, however future dilution ratios were adjusted accordingly.

## 4 REFERENCES AND ACRONYMS

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### 4.1 References

Australian & New Zealand Guidelines for fresh & Marine Water quality

<https://www.waterquality.gov.au/anz-guidelines>

Bureau of Meteorology (BoM) 2020, *Climate data online*, monthly rainfall data for Tindall RAAF station number 014932, Commonwealth of Australia, accessed 8/05/2020, available <<http://www.bom.gov.au/climate/data>>

GHD 2019, *Vista Gold Australia Pty Ltd, Mt Todd 2019 WDL Reporting – WDL 178-06 Monitoring Report 2019*, July 2019, report for Vista Gold Australia Pty Ltd.

### 4.2 Acronyms and abbreviations

<b>ANZECC</b>	Australian and New Zealand Environment and Conservation Council
<b>ARMCANZ</b>	Agriculture and Resource Management Council of Australia and New Zealand
<b>BoM</b>	Bureau of Meteorology
<b>EC</b>	Electrical conductivity
<b>NT EPA</b>	Northern Territory Environment Protection Authority
<b>SSTV</b>	Site specific trigger value
<b>WDL</b>	Waste Discharge Licence

## APPENDIX A WDL 178-07



Northern  
Territory  
Government

## WASTE DISCHARGE LICENCE

(Pursuant to section 74 of the *Water Act*)

<b>Licensee</b>	Vista Gold Australia Pty Ltd
<b>Licence Number:</b>	<b>WDL178-07</b>
Registered Business Address:	1/4 Manning Road DOUBLE BAY NSW 2028
ABN:	117 327 509
Premises Address:	Mount Todd Mine Edith Falls Road, Edith Falls 0852
Anniversary Date:	26 November
Commencement Date:	26 November 2019
Amendment Date:	September 2019
Expiry Date:	30 November 2020
<b>Licensed Activity:</b>	Controlled discharge of treated water, in accordance with the licence conditions, from Batman Pit through the authorised discharge point to the Edith River.

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## WASTE DISCHARGE LICENCE (WDL178-07)

### INFORMATION ABOUT THIS LICENCE

#### Definitions of Terms

- A section on the definition of terms used in this licence can be found at the end of this licence.
- Terms used in the waste discharge licence which are defined in the *Water Act* (the Act) have the meaning given in that Act unless specifically indicated otherwise.

#### Responsibilities of Licensee

- It is an offence under the *Water Act*, if the holder of a waste discharge licence contravenes or fails to comply with the conditions of a waste discharge licence.
- Licensees must comply at all times with the requirements of these Acts and all other applicable laws.
- Except as expressly provided for in this licence, the licensee must not:
  - cause environmental harm either directly or indirectly;
  - allow waste to come into contact with water; or
  - allow water to be polluted.
- Without limiting the conditions of this licence, in conducting the activity, the licensee must do all things reasonable and practicable to:
  - prevent or minimise the likelihood of pollution occurring as a result of, or in connection with, the activity;
  - prevent or minimise the likelihood of environmental harm occurring as a result, or in connection with, the activity;
  - effectively respond to pollution and the risk of pollution occurring as a result of, or in connection with, the activity;
  - effectively respond to environmental harm and the risk of environmental harm occurring as a result of or in connection with the activity; and
  - apply the principles of ecologically sustainable development.

#### Duration of licence

- This licence will remain in force until its expiry date, it is surrendered by the licensee, or until it is suspended or revoked by the Controller of Water Resources.
- As set out in section 94 of the *Water Act*, the holder of a licence may, at any time, surrender the licence.

#### Amendment, Modification or Revocation of Licence (section 93 of the *Water Act*)

- As set out in section 93 of the *Water Act*, the Controller of Water Resources may, by notice:
  - amend or modify the terms and conditions of a licence;
  - revoke a licence; or

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- suspend a licence.

### Public Register

- A copy of waste discharge licences and any plans for environmental management, reports, submissions or documents required as a condition of a waste discharge licence, will be placed on a register.
- A copy of the Annual Return will be placed on the register.
- The Administering Agency makes this register freely available from the Northern Territory Environment Protection Authority (NT EPA) website.

### Beneficial Use Declaration (section 73 of the Water Act)

- Beneficial Use Declaration (BUD) is a legislated process that reduces the effects of water pollution and assists in the protection and management of water. The community decides how a particular water body should be used by choosing on one or more Beneficial Use categories.

### Environmental Interests

- This section highlights the beneficial uses as declared under the *Water Act* and the sensitivity of the surrounding land use and environment associated with the location of the approved activity.
  - declared beneficial uses and or water quality objectives. Daly Roper Beetaloo Water Control District. Surface water from all natural waterways located in the Daly Roper Beetaloo Water Control District (the District), and all ground water located in the District, to be agriculture, aquaculture, public water supply, environment, cultural, industry and rural stock and domestic (Northern Territory Government Gazette: no. S057/2018);
  - sites of conservation significance (SOCS), Yinberrie Hills (SOCS Site Number 30); and
  - there are no Ramsar wetlands present.

### Cultural Interests

- It is the licensee's responsibility to contact the Aboriginal Areas Protection Authority, appropriate land council or other governing body and ensure that any Authority Certificates required as a result of conducting the licenced activity are obtained and complied with.

### RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

- Where there is a discrepancy between the conditions of this licence and any plan, standard, guideline or other document referred to in this licence, the conditions of this licence prevail to the extent of the inconsistency.
- Any reference to any standard (Australian or international) in this licence means the relevant parts of the current version of that standard.
- A reference to any guideline or code of practice (or to the relevant parts of any guideline or code of practice) in this licence means the current version of the guideline or code of practice.
- Under section 76 of the *Water Act*, any contravention of or failure to comply with this licence by the licensee may be an offence.
- In this licence, unless the contrary intention appears, words that are defined in the *Water Act* are intended to have the meaning given to them in that Act.

## WASTE DISCHARGE LICENCE (WDL178-07)

### LICENCE CONDITIONS

#### GENERAL

1. The licensee must ensure the contact details recorded with Administering Agency for this licence are correct at all times.
2. The licensee must at all times have a 24 hour emergency contact.
3. The licensee must notify the Administering Agency prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm.
4. The licensee must cause clear and legible signage, in English, to be displayed in a prominent location at each public entrance to the premises that includes the following details:
  - 4.1. waste discharge licence number issued under the *Water Act*; and
  - 4.2. 24 hour emergency contact details.
5. The licensee must cause a copy of this licence to be available for inspection by any person, in hard copy form, at the premises.
6. The licensee must provide to the Administering Agency, within 10 business days of a request, a copy of any document, monitoring data or other information in relation to the activity, in the format requested by the Administering Agency.
7. All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this licence, must be provided in electronic form by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au).
8. The licensee must maintain, implement and follow the documents listed in Table 1.

**Table 1 Licence Documents**

Document Title	Document Reference Number
Biological Monitoring Program: Chapter 4 – WDL178-05 Annual Report	DENR Ref: EN2010/0195-06-077~0025
Sediment Monitoring Program: Chapter 5 – WDL178-05 Annual Report	DENR Ref: EN2010/0195-06-077~0025
Ecotoxicology Plan: Chapter 6 – WDL178-05 Annual Report	DENR Ref: EN2010/0195-06-077~0025
Discharge Plan – Revision 6	DENR Ref: EN2010/0195-06-077~0026
Water Monitoring SOP	DENR Ref: EN2010/0195-06-077~0028

9. Within 10 business days of any amendment being made to a document listed in Table 1 the licensee must provide the amended document to the Administering Agency, along with:
  - 9.1. a tabulated summary of the amendment(s) with document references;
  - 9.2. reasons for the amendment(s); and
  - 9.3. an assessment of environmental risk associated with the amendment(s).
10. The Administering Agency may require the licensee to revise or amend and resubmit any document. Where the Administering Agency requires a document to be resubmitted, the licensee must submit it to the Administering Agency by the date specified by the Administering Agency.
11. The licensee must, for the duration of this licence, implement, maintain and follow a Consultation and Communication Plan which includes a strategy for communicating with persons who are likely to have a real interest in, or be affected by, the activity.
12. The licensee must operate and maintain a community feedback number.
13. The licensee must display the community feedback number:

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- 13.1. where the licensee has a website, in a prominent location on the licensee's website;
  - 13.2. in the Consultation and Communication Plan; and
  - 13.3. in other publicly available documents relating to the activity.
14. The licensee must maintain a Complaint Log for all complaints received by the licensee in relation to the activity.
15. The licensee must ensure that the Complaint Log includes, for each complaint received by the licensee, the following information:
- 15.1. the person to whom the complaint was made;
  - 15.2. the person responsible for managing the complaint;
  - 15.3. the date and time the complaint was reported;
  - 15.4. the date and time of the event(s) that led to the complaint;
  - 15.5. the contact details of the complainant if known, or where no details are provided a note to that effect;
  - 15.6. the nature of the complaint;
  - 15.7. the nature of event(s) giving rise to the complaint;
  - 15.8. prevailing weather conditions at the time (where relevant to the complaint);
  - 15.9. the action taken in relation to the complaint, including any follow-up contact with the complainant; and
  - 15.10. if no action was taken, why no action was taken.
16. The licensee must implement, maintain and follow an Emergency Response Plan that addresses procedures for responding to emergencies associated with the activity that may cause environmental harm.

### EARLY SURRENDER OF LICENCE

17. Any reports, records or other information required or able to be provided by the licensee under this licence must be submitted to the Administering Agency prior to the licensee surrendering the licence. If the date on which a report, record or other information is required falls after the date the licensee requests to surrender this licence, the licensee must provide the report, record or information as far as possible using data available to the licensee up to and including the date the request to surrender the licence is made.

### OPERATIONAL

18. The licensee must, without limiting any other condition of this licence, in conducting the activity do all things reasonable and practicable to ensure the activity does not adversely affect the Declared Beneficial Uses and Objectives as declared from time to time, including those applying to:
- *Declaration Beneficial Uses and Objectives Daly Roper Beetaloo Water Control District*
19. The licensee must ensure any plant and equipment used by the licensee in conducting the activity:
- 19.1. is reasonably fit for the purpose and use to which it is put;
  - 19.2. is maintained; and
  - 19.3. is operated by a person trained to use the plant and equipment.
20. No change, replacement or alteration of plant and equipment is permitted if the change, replacement or alteration increases the risk of environmental harm for the licenced activity, unless approved by the Administering Agency.

### DISCHARGES

## WASTE DISCHARGE LICENCE (WDL178-07)

21. This licence authorises the controlled discharge of treated water from the authorised discharge point as identified in Table 2.
22. The licensee must ensure that the controlled discharge of treated water from the authorised discharge point consist only of water from the source identified in Table 2.

**Table 2 Authorised Discharge Point**

Authorised Discharge Point	Source	Location
RP3	Treated water is pumped from Batman Pit to the authorised discharge point which is fitted with a diffuser to aid dispersion.	Latitude: -14.139117° Longitude: 132.111550°

*Note: See Figure 1 for map showing locations.*

23. The licensee must ensure that all discharge events at the authorised discharge point take place when there is sufficient flow in Edith River to meet the trigger values specified in Appendix 1.
24. The licensee must, for the authorised discharge point, install, operate and maintain a device to measure and record, for each discharge event:
  - 24.1. the time the discharge commenced and the duration of the discharge;
  - 24.2. the discharge rate of flow; and
  - 24.3. the discharge volume.
25. The licensee must, within 24 hours of commencing discharge from the authorised discharge point identified in Table 2, notify the Administering Agency by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au).
26. The licensee must, within 24 hours of ceasing discharge from the authorised discharge point identified in Table 2, notify the Administering Agency by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au).
27. The licensee must ensure that the discharge from all discharge events at each authorised discharge point does not:
  - 27.1. contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;
  - 27.2. cause or generate odours which would adversely affect the use of surrounding waters;
  - 27.3. cause algal blooms in the receiving water;
  - 27.4. cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;
  - 27.5. cause mortality of fish or other aquatic organisms; or
  - 27.6. cause adverse impacts on plants.
28. The licensee must, within 24 hours after first becoming aware of a non-compliance as described in condition 49:
  - 28.1. cease discharge of water from the authorised discharge point;
  - 28.2. notify and provide an investigation report to the Administering Agency in accordance with conditions of this licence;
  - 28.3. implement corrective actions to achieve the water quality objectives specified in condition 27, prior to recommencing discharge.

### MONITORING

29. The licensee must conduct surface water monitoring in accordance with Appendix 1.
30. The licensee must assess the concentration of pollutants at the compliance point, SW4, against site specific trigger values specified in Appendix 1.

## WASTE DISCHARGE LICENCE (WDL178-07)

31. The licensee must maintain continuous water quality monitoring equipment to ensure it is capable of undertaking continuous water quality monitoring at RP3 and SW4 for the duration of any month when a discharge occurs.
32. The licensee must ensure that the continuous water quality monitoring equipment:
  - 32.1. measures water flow rate, pH, electrical conductivity and temperature at intervals sufficient to detect a change relevant to the parameter being measured and the duration of discharge;
  - 32.2. measures, records and transmits measured data in real time to the Vista Gold data management system; and
  - 32.3. achieves greater than or equal to 90% valid data capture for all measurements.
33. The licensee must implement, maintain and follow the Biological Monitoring Program as specified in Table 1 for the life of this licence.
34. The licensee must implement, maintain and follow the Sediment Monitoring Program as specified in Table 1 for the life of this licence.
35. The licensee must implement, maintain and follow the Ecotoxicology Plan as specified in Table 1 for the life of this licence.
36. The licensee must revert back to the previously approved Ecotoxicological Plan if the results of the current Ecotoxicological Plan confirm the presence of toxicity at SW4.
37. The licensee must ensure that all samples and field environmental data are representative of the conditions at the time of sampling.
38. The licensee must ensure that all samples and field environmental data are collected in accordance with current recognised Australian Standards and guidelines (such as AS/NZS 5667, ANZECC/ARMCANZ)
39. The licensee must for all land based monitoring points specified in the licence:
  - 39.1. install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and
  - 39.2. maintain safe access and egress, as is reasonable practicable.
40. The licensee must ensure that all monitoring samples are analysed at a laboratory with current NATA accreditation or equivalent, for the parameters to be measured.
41. The licensee must for all land based monitoring points specified in the Monitoring Plan:
  - 41.1. install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and
  - 41.2. maintain safe access and egress, as is reasonably practicable.
42. The licensee must ensure any samples collected in accordance with this licence, are obtained by, or under the supervision of a qualified sampler.
43. The licensee must ensure that, for each sample collected in accordance with the Monitoring Plan or the activity the following information must be recorded and retained:
  - 43.1. the date on which the sample was collected;
  - 43.2. the time at which the sample was collected;
  - 43.3. the location at which the sample was collected;
  - 43.4. the name of the person who collected the sample;
  - 43.5. the chain of custody forms relating to the sample;
  - 43.6. the field measurements (if any) and analytical results (if any) relating to the sample; and
  - 43.7. laboratory quality assurance and quality control documentation.

## WASTE DISCHARGE LICENCE (WDL178-07)

### RECORDING AND REPORTING

44. The licensee must keep records of all non-compliances with this licence. These records must be adequate to enable the licensee to comply with the non-compliance notification conditions of this licence.
45. The licensee must notify the Administering Agency of any non-compliance with this licence by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au), within 24 hours after first becoming aware of the non-compliance.
46. The licensee must include in the notification of non-compliance the following information:
  - 46.1. when the non-compliance was detected and by whom;
  - 46.2. the date and time of the non-compliance;
  - 46.3. the actual and potential causes and contributing factors to the non-compliance;
47. The licensee must, within 10 business days of the notifying the Administering Agency of the non-compliance provide an incident investigation report to the Administering Agency.
48. The licensee must ensure that the incident investigation report includes the following information:
  - 48.1. when the non-compliance was detected and by whom;
  - 48.2. the date and time of the non-compliance;
  - 48.3. the actual and potential causes and contributing factors to the non-compliance;
  - 48.4. the risk of environmental harm arising from the non-compliance;
  - 48.5. the action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;
  - 48.6. corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur; and
  - 48.7. if no action was taken, why no action was taken.
49. A non-compliance with this licence includes:
  - 49.1. an exceedance of a SSTV at SW4, as specified in Appendix 1, on two consecutive sampling occasions;
  - 49.2. an exceedance of a SSTV at SW4, as specified in Appendix 1, of two times or more a trigger value on a single occasion; and
  - 49.3. subsequent consecutive exceedances of the SSTV from an exceedance described in condition 49.1 and 49.2.
50. The licensee must keep records of all exceedances of SSTVs specified in Appendix 1 of this licence.
51. The licensee must ensure that the records of the SSTV exceedance includes the following information:
  - 51.1. when the exceedance was detected and by whom;
  - 51.2. the date and time of the exceedance;
  - 51.3. the actual and potential causes and contributing factors to the exceedance;
  - 51.4. the risk of environmental harm arising from the exceedance;
  - 51.5. the action(s) that have or will be undertaken to address the exceedance and/or environmental harm; and
  - 51.6. if no action was taken, why no action was taken.
52. The licensee must submit to the Administering Agency a Monthly Discharge Report for any month when a discharge occurs via the authorised discharge point by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au). The Monthly Discharge Report is due by the last business day of the following month and must include:

## WASTE DISCHARGE LICENCE (WDL178-07)

- 52.1. tabulated water quality data for RP3 and SW4 for each day of the month where a discharge occurred. Data must be provided electronically in Microsoft Excel format;
  - 52.2. tabulated daily environmental field data, relating to the particular month, for SW4 and RP3 as required in Appendix 1. Data must be provided electronically in Microsoft Excel format;
  - 52.3. tabulated water quality data for all monitoring locations associated with this licence and specified in Appendix 1. Data must be provided electronically in Microsoft Excel format;
  - 52.4. surface water quality management actions taken in the event of trigger value exceedance measured at SW4;
  - 52.5. assessment of surface water monitoring results for SW4 against the SSTVs specified in Appendix 1;
  - 52.6. where SSTVs were exceeded an assessment of the environmental impact, resulting from the discharge activity and exceedances, on the receiving environment at SW4; and
  - 52.7. details of current water inventory on site.
53. The licensee must submit a completed Annual Return, by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au), by 30 August, unless otherwise agreed, for each year of this licence, which report relates to the preceding 12 month period.
54. The licensee must complete and provide to the Administering Agency a Monitoring Report, as prescribed by this licence by 30 August for each year of this licence, unless otherwise agreed, which report relates to the preceding 12 month period.
55. The licensee must ensure that each Monitoring Report:
- 55.1. is prepared in accordance with the requirements of the Administering Agency 'Guideline for Reporting on Environmental Monitoring';
  - 55.2. includes a tabulation of all monitoring data required as a condition of this licence. Data must be provided electronically in Microsoft Excel format;
  - 55.3. includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where the data is available). Data used in this analysis must be provided electronically in Microsoft Excel format; and
  - 55.4. includes an assessment and determination of environmental impact determined by the Receiving Environment Monitoring Program specified in Table 1.

### PERFORMANCE IMPROVEMENT

56. The licensee must provide to the Administering Agency, prior to commencing authorised discharge for the 2018/19 wet season, the final version of the Water Management Plan.
57. The licensee must implement, maintain and follow the approved final version of the Water Management Plan following the Administering Agency review for the life of this licence.
58. The licensee must provide to the Administering Agency an updated Receiving Environment Monitoring Plan, prior to commencing authorised discharge for the 2018/19 wet season, to include the following:
- 58.1. in addition to edge habitat sampling, riffle habitat sampling must also be done;
  - 58.2. the Receiving Environment Monitoring Plan should be designed to detect impact through multivariate, ANOVA and other analyses. Hypotheses and the statistical test (and support design) should to be explicit in the document; and
  - 58.3. recommendations from the 2017/18 monitoring program.
59. The licensee must implement, maintain and follow the approved final version of the Receiving Environment Monitoring Plan following the Administering Agency review for the life of this licence.



## WASTE DISCHARGE LICENCE (WDL178-07)

### END OF LICENCE CONDITIONS

This licence is not valid unless signed below:



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JOANNE TOWNSEND

Controller of Water Resources

Dated the 25 September 2019

### END NOTES

This licence supersedes WDL178-06 which was issued 26 November 2018

WDL178-05 was issued on 16 January 2017

WDL178-4 was issued on 23 December 2014

WDL178-3 was issued on 26 November 2013

WDL178-2 was issued on 5 February 2013

WDL178-1 was issued on 9 March 2012

WDL178 was issued on 21 January 2011

## WASTE DISCHARGE LICENCE (WDL178-07)

### DEFINITIONS

In this licence, unless a contrary intention appears:

Term	Definition
24 hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the activity.
Activity	the Licenced activity as described on the covering page of this licence.
Administering Agency	means the Department of Environment and Natural Resources, or if dissolved, another Government Department with responsibility for administering the Water Act.
Annual Return	an Administering Agency prescribed format for demonstrating and reporting compliance with the conditions of this licence.
ANZECC/ARMCANZ	Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000: National Water Quality Management Strategy: <i>Australian Guidelines for Water Quality Monitoring and Reporting</i> .
Business days	a day not Saturday, Sunday or a public holiday, in the Northern Territory.
Community feedback number	a telephone number enabling members of the public to contact, at any time, a person or voice mail system that can accept, on behalf of the licensee, enquiries or complaints about the activity, and to which the licensee must respond.
Complaint Log	a register of complaints to be maintained by the Licensee that records the details of each complaint received in relation to the activity.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the activity before, during and after the activity which includes a strategy for communicating with members of the public who are likely to have a real interest in, or be affected by, the activity.
Contact details	includes the 24 hour emergency contact, and name, position title and phone number of a representative of the licensee who can be contacted about the licence and activity.
Contaminant	a solid, liquid or gas or any combination of such substances and includes: <ul style="list-style-type: none"><li>(a) noise, odour, heat and electromagnetic radiation;</li><li>(b) a prescribed substance or prescribed class of substances; and</li><li>(c) a substance having a prescribed property or prescribed class of properties.</li></ul>
Discharges	allow a liquid, gas or other substance to flow out from where it has been confined.
Emergency Response Plan	a written plan documenting the licensee's procedures for responding to emergencies caused by, resulting from or associated with the activity and that may cause environmental harm.
Environmental harm	any harm to or adverse effect on, or potential harm to or potential adverse effect on, the environment
incident	includes: <ul style="list-style-type: none"><li>(a) an accident, emergency or malfunction; and</li><li>(b) a deliberate action, whether or not that action was taken by the person conducting the activity in the course of which the incident occurred.</li></ul>

## WASTE DISCHARGE LICENCE (WDL178-07)

<b>Term</b>	<b>Definition</b>
Land	includes water and air on, above or under land.
Maintain	kept in a manner that it does not present or cause a risk of environmental harm or a hazard to persons or property or, for the purposes of documents including plans, a process of reviewing and amending documentation to ensure it is relevant.
Material environmental harm	environmental harm that: <ul style="list-style-type: none"><li>(a) is not trivial or negligible in nature;</li><li>(b) results, or is likely to result, in not more than \$50,000 or prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the harm or rehabilitate the environment; or</li><li>(c) results in actual or potential loss or damage to the value of not more than \$50,000.</li></ul>
NATA	National Association of Testing Authorities, Australia.
Non-compliance	failure or refusal to comply, whether by act or omission, with obligations or requirements and includes any exceedance of a licence limit.
Non-compliance notification	an Administering Agency prescribed format for notifying the Administering Agency of a non-compliance.
Plant and equipment	all material items used in association with the activity, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.
Point source discharge	means any discernible, confined or discrete conveyance from which contaminants or waste are or may be discharged.
Pollute	in relation to water, means directly or indirectly to alter the physical, thermal, chemical, biological or radioactive properties of the water so as to render it less fit for a prescribed beneficial use for which it is or may reasonably be used, or to cause a condition which is hazardous or potentially hazardous to: <ul style="list-style-type: none"><li>(a) public health, safety or welfare;</li><li>(b) animals, birds, fish or aquatic life or other organisms; or</li><li>(c) plants.</li></ul>
Pollution	<ul style="list-style-type: none"><li>(a) a contaminant or waste that is emitted, discharged, deposited or disturbed or that escapes; or</li><li>(b) a contaminant or waste, effect or phenomenon, that is present in the environment as a consequence of an emission, discharge, deposition, escape or disturbance or a contaminant or waste.</li></ul>
Premises	the premises identified in this licence which includes equipment, plant and structures, whether stationary or portable, and the land on which premises are situated.
Public entrance	access to the premises that is utilised by the public.
Qualified person	a person registered under Section 68 of the WMPC Act.
Qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Serious environmental harm	environmental harm that is more serious than material environmental harm and includes environmental harm that: <ul style="list-style-type: none"><li>(a) results or is likely to result in more than \$50,000 or prescribed amount (whichever is greater) being spent in taking appropriate</li></ul>

## WASTE DISCHARGE LICENCE (WDL178-07)

Term	Definition
	action to prevent or minimise the harm or rehabilitate the environment;
	(b) results in actual or potential loss or damage to the value of more than \$50,000;
	(c) damages an aspect of the environment that is of a high conservation value or of special significance; and
	(d) is irreversible or otherwise of a high impact or on a wide scale.
Trigger values	assigned value for each indicator used to assess the risk to an environmental value, a value that initiates some type of pre-defined management action.
Waste	Includes matter or a thing, whether wholly or partly in a solid, liquid or gaseous state, which, if added to water, may pollute the water.
Wastewater	water that contains a contaminant or waste.
Water	means water, whether or not it contains impurities.
WMPC Act	the Northern Territory <i>Waste Management and Pollution Control Act</i> .

**WASTE DISCHARGE LICENCE (WDL178-07)**

**APPENDIX 1: SURFACE WATER MONITORING PROGRAM**

<b>Site Code</b>	<b>SW2</b>	<b>SW13</b>	<b>SW3</b>	<b>SW10<sup>1</sup></b>	<b>RP3 (Batman Pit)</b>	<b>SW4 Online</b>	<b>SW4 Compliance</b>	
<b>Description</b>	Non-Impacted Reference Site in Edith River	Non-Impacted Reference Site in Stow Creek	Impacted Information Site in Stow Creek	Impacted Downstream Information Site in Edith River	Wastewater Discharge Source Batman Pit	Continuous real-time in situ telemetry station in Edith River	Compliance Point in Edith River	
<b>Longitude</b>	-14.17195°	-14.15605°	-14.16144°	-14.18464°	-14.14109°	- 14.16925°	-14.17067°	
<b>Latitude</b>	132.11990°	132.12989°	132.11851°	132.03037°	132.10322°	132.09835°	132.09835°	

Parameter	Abbrev.	Units	Sample Type	Sample Frequency							SSTV <sup>3</sup>
<b>Environmental Field Data</b>											
Daily Site Rainfall	Rain	mm	Field measure	N/A	N/A	N/A	N/A	D	N/A	N/A	N/A
Daily Site Evaporation	Evap	mm	Field measure	N/A	N/A	N/A	N/A	D	N/A	N/A	N/A
Daily Maximum Air Temperature	T <sub>max</sub>	°C	Field measure	N/A	N/A	N/A	N/A	D	N/A	N/A	N/A
Daily Minimum Air Temperature	T <sub>min</sub>	°C	Field measure	N/A	N/A	N/A	N/A	D	N/A	N/A	N/A
Pumping Rate	Discharge	L/s	Field measure	N/A	N/A	N/A	N/A	D	N/A	N/A	N/A

**WASTE DISCHARGE LICENCE (WDL178-07)**

				Site Code		SW2	SW13	SW3	SW10 <sup>1</sup>	RP3 (Batman Pit)	SW4 Online	SW4 Compliance	
Cumulative Discharge Volume	Cum Discharge	m <sup>3</sup>	Calculation	N/A	N/A	N/A	N/A	N/A	N/A	C	N/A	N/A	N/A
River Flow	Flow	m <sup>3</sup>	Calculation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	N/A	N/A
Water Level	Gauge height	m	Field measure	N/A	N/A	N/A	N/A	N/A	N/A	D	C	N/A	N/A
Dissolved Oxygen <sup>4</sup>	DO	% saturation	Field measure	D	M	M	M	M	D	D	N/A	D	85 - 120
Water Temperature	T <sub>water</sub>	°C	Field measure	D	M	M	M	M	D	D	C	D	N/A
Electrical conductivity <sup>4</sup>	EC	µS/cm	Field & lab measure	D	M	M	M	M	D	D	N/A	D	250
Electrical conductivity <sup>5</sup>	EC	µS/cm	Field measure	N/A	N/A	N/A	N/A	N/A	N/A	D	C	N/A	N/A
pH <sup>4</sup>	pH	pH units	Field measure	D	M	M	M	M	D	D	N/A	D	6.0 – 8.0
pH <sup>5</sup>	pH	pH units	Field measure	N/A	N/A	N/A	N/A	N/A	N/A	D	C	N/A	N/A
<b>Metals and Metalloids</b>													
Aluminium	Al	µg/L	Filtered	WF	M	M	M	M	WF	WF	N/A	WF	150
Aluminium	Al	µg/L	Total	WF	M	M	M	M	WF	WF	N/A	WF	N.D
Cadmium	Cd	µg/L	Filtered	WF	M	M	M	M	WF	WF	N/A	WF	0.8
Cadmium	Cd	µg/L	Total	WF	M	M	M	M	WF	WF	N/A	WF	N.D
Cobalt	Co	µg/L	Filtered	WF	M	M	M	M	WF	WF	N/A	WF	13 <sup>10</sup>

**WASTE DISCHARGE LICENCE (WDL178-07)**

			Site Code	SW2	SW13	SW3	SW10 <sup>1</sup>	RP3 (Batman Pit)	SW4 Online	SW4 Compliance	
Copper	Cu	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	2.5
Copper	Cu	µg/L	Total	WF	M	M	M	WF	N/A	WF	N.D
Chromium <sup>6</sup>	Cr	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	N.D
Iron	Fe	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	350
Iron	Fe	µg/L	Total	WF	M	M	M	WF	N/A	WF	N.D
Lead	Pb	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	9.4
Manganese	Mn	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	3,600
Nickel	Ni	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	17
Zinc	Zn	µg/L	Filtered	WF	M	M	M	WF	N/A	WF	31
<b>Nutrients</b>											
Total Nitrogen <sup>2</sup>	TN	µg/L	Total	WF	M	M	M	WF	N/A	WF	N.D
Total phosphorus	TP	µg/L	Total	WF	M	M	M	WF	N/A	WF	N.D
Organic carbon (total)	TOC	mg/L	Total	N/A	N/A	N/A	M	N/A	N/A	M	N.D
<b>Major Ions</b>											
Bicarbonate	HCO <sub>3</sub>	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	319
Calcium	Ca	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	N.D
Carbonate	CO <sub>3</sub>	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	N.D
Chloride	Cl	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	64
Sodium	Na	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	N.D
Magnesium	Mg	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	21 <sup>9</sup>

### WASTE DISCHARGE LICENCE (WDL178-07)

				Site Code							
				SW2	SW13	SW3	SW10 <sup>1</sup>	RP3 (Batman Pit)	SW4 Online	SW4 Compliance	
Potassium	K	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	N.D
Sulphate	SO42-	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	129
Total Dissolved Solids	TDS	mg/L	Calculated	WF	M	M	M	WF	N/A	WF	N.D
<b>Other Water Quality Parameters</b>											
Hardness	hardness as CaCO3	mg/L	Filtered	WF	M	M	M	WF	N/A	WF	N.D
Total Suspended Solids <sup>7</sup>	TSS	mg/L	Total	WF	M	M	M	WF	N/A	WF	N.D
Total Cyanide <sup>8</sup>	HCN	µg/L	Total	M	M	M	M	M	N/A	WF	7

**NOTE:** Monitoring in accordance with this program is only required during months where a discharge is occurring from the authorised discharge point. Where a discharge ceases prior to the end of the month monitoring must continue until for at least 7 days after ceasing discharge

**KEY:**

**Filtered:** All filtered samples must be filtered in the field at the time of sample collection using membrane filters with pore diameter of 0.45µm

**N.D:** Not Determined

**N/A:** Not Applicable

**C:** Continuous, real-time, online measurement

**D:** Daily during months where a discharge is occurring from the authorised discharge point

**WF:** Weekly when discharging and at least once per discharge event, fortnightly when not discharging during months where a discharge is occurring from the authorised discharge point

**M:** Monthly during months where a discharge is occurring from the authorised discharge point

**FOOTNOTES:**

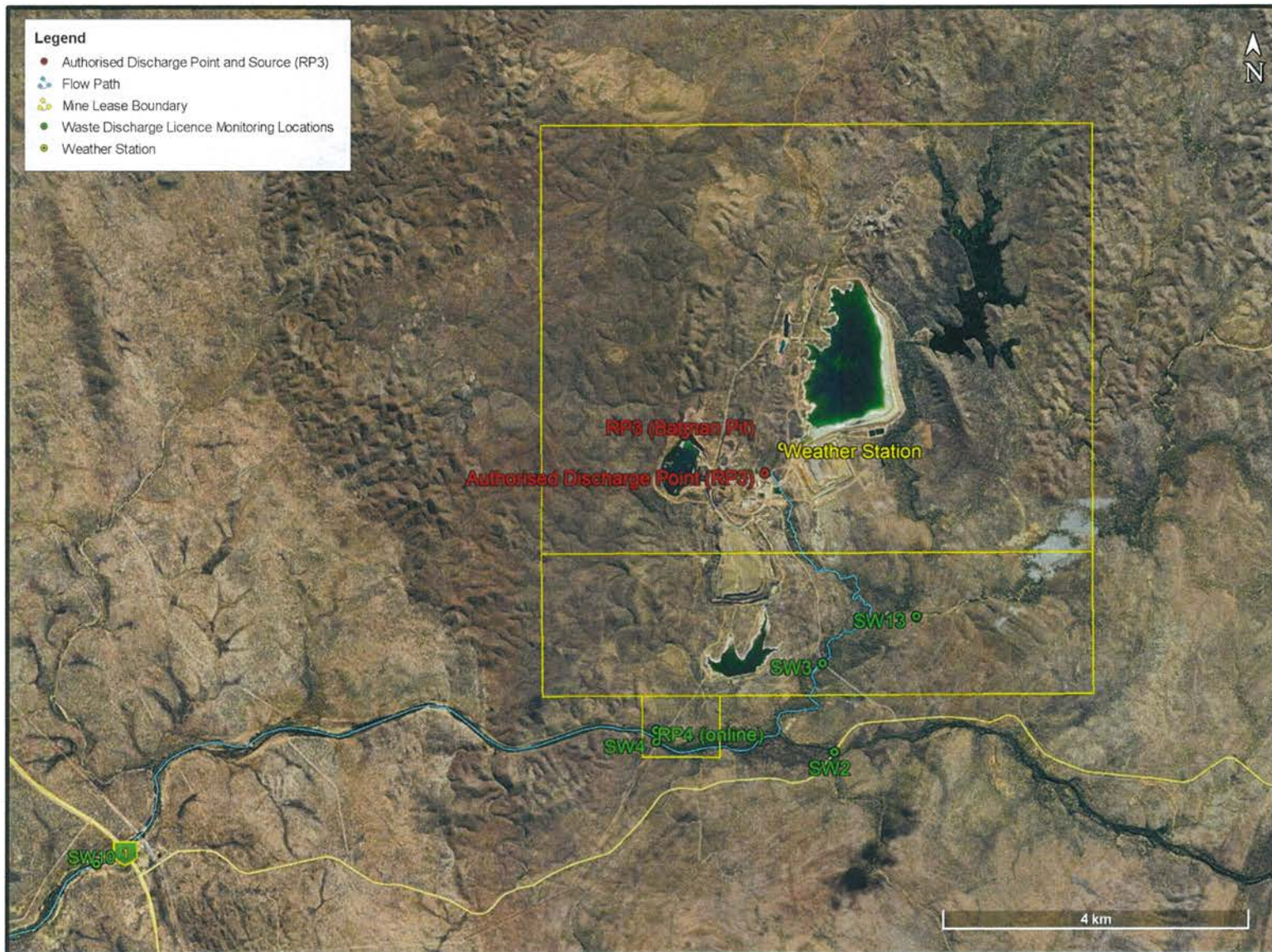


## WASTE DISCHARGE LICENCE (WDL178-07)

- <sup>1</sup> The licensee is no longer required to monitor SW10. The licensee must resume monitoring of SW10, in accordance with this monitoring program, if at any time during the life of this licence, the licensee or the Administering Agency determine that the water quality at SW4 is deteriorating.
- <sup>2</sup> The licensee must resume monitoring of NO<sub>2</sub>, NO<sub>3</sub> and NH<sub>3</sub> at the same locations and frequency as total nitrogen if the concentration of total nitrogen increases for three monitoring rounds in succession or the licensee or administering agency identifies an increasing trend in total nitrogen.
- <sup>3</sup> SSTVs are derived from 80<sup>th</sup> percentile of reference site dataset at SW2, being the Edith River ambient water quality and default ANZECC values for 80% species protection. SSTVs only apply to SW4 as the Compliance Point. SSTVs do not apply to SW4 online data.
- <sup>4</sup> Field measurements must be taken using a properly maintained and calibrated hand-held field instrument and the reading compared to the SSTV. The laboratory measurement value is for information.
- <sup>5</sup> The online value measured is for operational control to provide warning that water quality has changed and to trigger operational corrective action, if required.
- <sup>6</sup> If total Chromium of the filtered sample returns a result greater than the practical quantification limit, the sample is to be reanalysed for speciated Chromium.
- <sup>7</sup> Calculated using residue remaining on filter with nominal pore size of 0.45 µm.
- <sup>8</sup> WAD Cyanide is required if Total Cyanide analysis (by APHA 4500-CN-C) is greater than 4 µg/L. WAD cyanide must then be conducted on the same day as the analysis for Total Cyanide.
- <sup>9</sup> The trigger value for Magnesium was derived by ERISS for protection of Magela Creek for 80% species protection.
- <sup>10</sup> The trigger value for Cobalt is a Canadian guideline adopted by ANZECC.

# WASTE DISCHARGE LICENCE (WDL178-07)

## FIGURE 1 – LOCATION OF WDL POINTS OF INTEREST



## APPENDIX B TABULATED WATER QUALITY DATA

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### Mt Todd Gold Mine - 2019/20 SW4 Water Quality Data

LEGEND	Exceeds SSTV
	Was below detection limit/LOR. < has been
	Discharge was occurring

LOCATION	DATE	Field Data			Major Ions								Nutrients			Metals (filtered)											Metals (total)				Other		
		pH	EC µS/cm	DO % Sat	Bicarbonate mg/L	Calcium mg/L	Carbonate mg/L	Chloride mg/L	Sodium mg/L	Magnesium mg/L	Potassium mg/L	Sulphate mg/L	TDS mg/L	Total Nitrogen µg/L	Total Phosphorus µg/L	TOC mg/L	Al µg/L	Cd µg/L	Cr µg/L	Co µg/L	Cu µg/L	Fe µg/L	Pb µg/L	Mn µg/L	Ni µg/L	Zn µg/L	Al µg/L	Cd µg/L	Cu µg/L	Fe µg/L	Hardness mg/L	TSS mg/L	Cyanide (total) µg/L
SW4	23-12-2019	6.06	53.5	50																													
SW4	31-12-2019	6.23	95.9	74.2																													
SW4	15-01-2020	5.96	45.8	87.5																													
SW4	28-01-2020	6.21	79.4	56.5																													
SW4	31-01-2020														7																		
SW4	02-02-2020	6.03	47	91.5	1	1.7	3	2	2.5	1.9	1.5	11.7				32.6	0.02	0.4	0.64	0.85	1220	0.09	78	0.71	3.1	291	0.02	0.94	2830	12.2	110	0.005	
SW4	03-02-2020	6.02	255.2	84.7												54	0.04	0.2	0.91	1.75	286	0.13	80.3	1.09	8.4	2280	0.04	4.7	3160				
SW4	16-02-2020	6.16	132.6	87.7	13	5.8	1	8	6.4	5.8	2.4	41.3	3210			83.9	0.06	0.3	0.6	1.28	602	0.16	88.1	1.08	7.4	1850	0.06	2.66	2600	38.1	10		
SW4	18-02-2020	6.05	102.5	78.4																													
SW4	26-02-2020	6.22	49.4	86.8	8	2	1	2	2.2	1.9	1.8	9.2	40			19.2	0.02	1	0.49	1.22	420	0.14	46.1	0.72	4.2	1970	0.06	3.05	3790	12.9	120	0.005	
SW4	27-02-2020	5.85	66	82.1																													
SW4	28-02-2020	5.9	112.3	94																													
SW4	29-02-2020	6.01	137.5	91.4																													
SW4	01-03-2020	6.06	120.7	89.7																													
SW4	02-03-2020	6.05	110.1	88.6																													
SW4	03-03-2020	6.26	120.2	89																													
SW4	04-03-2020	6.15	112.4	90	6	8.2	1	2	3.2	5.1	1.2	38.1	80			24.9	0.38	0.2	1.07	1.91	188	0.02	47.9	3.16	48.9	1030	0.38	3.28	1180	41.6	10	0.005	
SW4	09-03-2020	6.01	33.7	90.5	5	1.3	1	2	2.3	1.4	1	6.8	40			64.6	0.02	0.2	0.47	1.8	220	0.1	30.3	0.79	12.1	3060	0.04	4.07	2070	9.2	30	0.005	
SW4	24-03-2020	6.4	82.9	81.1	7	3.7	1	2	4.5	4	1.2	23.4	60			14.6	0.02	0.2	0.82	0.7	596	0.03	46.8	1	7.6	106	0.02	1.24	2710	25.6	10	0.005	
SW4	31-03-2020	6.13	59.7	90.9																													
SW4	27-04-2020	6.48	31.8	98.7																													
	<b>Count</b>	20	20	20	6	6	6	6	6	6	6	6	5			5	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	
	<b>Minimum</b>	5.85	31.80	50.00	1.00	1.30	1	2.00	2.20	1.40	1.00	6.80	40			3.00	10.0	0.02	0.20	0.47	0.70	130	0.01	18.0	0.71	3.00	30.00	0.02	0.94	600	9.20	10	0.004
	<b>Median</b>	6.06	89.40	88.15	6.50	2.85	1	2.00	2.85	2.95	1.35	17.55	60			3.00	28.2	0.06	0.30	0.91	1.28	420	0.13	47.9	1	7.60	1030.00	0.06	3.00	2070	19.25	20	0.005
	<b>Maximum</b>	6.48	255.20	98.70	13.00	8.20	3	8.00	6.40	5.80	2.40	41.30	3210			7.00	83.9	0.42	1.00	1.34	2.47	1220	1.00	88.1	4	53.00	3060.00	0.50	4.70	3790	41.60	120	0.005
	<b>SSTV @ SW4</b>	6.0-8.0	250	85-120	319		64		21			129				150	0.8		13	2.5	350	9.4	3600	17	31							7	

## **APPENDIX C MT TODD SURFACE WATER MONITORING SOP**



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