



# Licence

## *Environmental Protection Act 1986, Part V*

**Licensee:** Avoca Mining Pty Ltd

**Licence:** L9155/2018/1

**Registered office:** Level 3, 18-32 Parliament Place  
WEST PERTH WA 6005

**ACN:** 108 547 217

**Premises address:** Higginsville Gold Project  
M15/351, M15/289, M15/225, M15/642, M15/348, M15/31, M15/786,  
M15/506, M15/620, M15/629, M15/639, M15/640, M15/580, M15/581,  
L15/288, L15/302, P15/4786, G15/19, M15/528, M15/231, M15/748,  
M15/512, M15/352, M15/610, M15/375, M15/338, M15/1790, L15/282  
and L15/347  
HIGGINSVILLE WA 6443

**Issue date:** Monday, 17 September 2018

**Commencement date:** Tuesday, 18 September 2018

**Expiry date:** Tuesday, 17 September 2024

**Prescribed premises category**  
Schedule 1 of the Environmental Protection Regulations 1987

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
05	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	1 500 000 tonnes per year
06	Mine dewatering	50 000 tonnes or more per year	1 900 000 tonnes per year
54	Sewage facility	100 cubic metres or more per day	No more than 200 cubic metres per day

### Conditions

This Licence is subject to the conditions set out in the attached pages.

Date signed: 17 September 2018

.....  
Officer delegated under section 20  
of the *Environmental Protection Act 1986*



## Contents

Licence	1
Contents	2
Introduction	2
Licence conditions	5
1 General	5
2 Emissions	7
3 Monitoring	9
4 Information	11
Schedule 1: Maps	14
Schedule 2: Reporting & notification forms	18

## Introduction

This Introduction is not part of the Licence conditions.

### DWER's industry licensing role

The Department of Water and Environmental Regulation (DWER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DWER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DWER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DWER works with the business owners, community, consultants, industry and other representatives to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DWER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

### Licence requirements

This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:

<http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html>

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.
- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.



- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

#### **Licence fees**

If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

#### **Ministerial conditions**

If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

#### **Premises description and Licence summary**

Higginsville Gold Operation (Higginsville) was acquired by Metals X from Alacer Gold Corp in October 2013. The Higginsville mine site is located 125 km south of Kalgoorlie within the Eastern Goldfields region of Western Australia. Mining operations on site include Higginsville and Lake Cowan. Ore from these mines is processed at the Higginsville processing plant. This is a standard crush, grind, gravity and carbon in leach (CIL) circuit with a throughput capacity of approximately 1.5 million tonnes per annum (Mtpa).

Current prescribed activities on site include: processing and beneficiation of metallic or non-metallic ore (category 5); mine dewatering (category 6); and a sewage facility (category 54).

The main emissions are dust produced from mining activities and seepage from the TSF into the local groundwater. Hypersaline water spillage is a risk generated by mine dewatering activities.

This Licence is the result of the previous licence expiring due the the annual fee not being paid.

<b>Instrument log</b>		
<b>Instrument</b>	<b>Issued</b>	<b>Description</b>
W4688/2010/1	23 July 2010	Category 6 dewatering works approval from Chalice Pit to Aphrodite Pit.
L8146/2007/2	19 October 2010	Licence amendment
W4759/2010/1	5 November 2010	Category 6 dewatering works approval from Chalice Pit to Chalice West Lake.
L8146/2007/2	22 September 2011	Licence amendment
W5198/2012/1	9 October 2012	Category 5 works approval for TSF lifts for cells 3 and 4
L8146/2007/3	23 May 2013	Licence re-issue



L8146/2007/3	13 November 2014	Licence amendment to allow for mine dewatering to be discharged into Chalice West Lake
L8146/2007/3	11/06/2015	Licence amendment to include new tenements to prescribed boundary and Challenge pit dewatering operation.
L8146/2007/3	21/04/2016	Licence amendment for TSF3 and TSF4 lifts from RL 1312.5 m to RL 131 5m.
L9155/2018/1	17/09/2018	New Licence issued

### Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

### END OF INTRODUCTION



## Licence conditions

### 1 General

#### 1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

**'Act'** means the *Environmental Protection Act 1986*;

**'annual period'** means the inclusive period from 1 July until 30 June in the following year;

**'AS/NZS 5667.4'** means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made*;

**'AS/NZS 5667.10'** means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters*;

**'AS/NZS 5667.11'** means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters*;

**'CEO'** means Chief Executive Officer of the Department of Water and Environmental Regulation;

**'CEO'** for the purpose of correspondence means:

Director General  
Department Administering the *Environmental Protection Act 1986*  
Locked Bag 33 Cloisters Square  
PERTH WA 6850  
[info@dwer.wa.gov.au](mailto:info@dwer.wa.gov.au);

**'cfu per 100 mL'** means colony forming units per 100 millilitres;

**'freeboard'** means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

**'Licence'** means this Licence numbered L9155/2018/1 and issued under the Act;

**'Licensee'** means the person or organisation named as Licensee on page 1 of the Licence;

**'mbgl'** means metres below ground level;

**'m/s'** means metres per second;

**'NATA'** means the National Association of Testing Authorities, Australia;

**'NATA accredited'** means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;



'NTU' means Nephelometric Turbidity Unit;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'SWL' means standing water level;

'TDS' means total dissolved solids;

'TSF' means tailings storage facility;

'WAD-CN' means weak acid dissociable cyanide; and

'waste' has the meaning defined in the *Environmental Protection Act 1986*.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

1.1.5 Nothing in the Licence shall be taken to authorise any emission that is not mentioned in the Licence, where the emission amounts to:

- (a) pollution;
- (b) unreasonable emission;
- (c) discharge of waste in circumstances likely to cause pollution; or
- (d) being contrary to any written law.

## 1.2 Premises operation

1.2.1 The Licensee shall construct, maintain and operate all pipelines containing tailings, effluent or saline water by ensuring they are either:

- (a) equipped with automatic cut-outs in the event of a pipeline failure; or
- (b) are provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.2.2 The Licensee shall ensure that tailings and mine dewater are only discharged into containment cells which have the infrastructure detailed in Table 1.2.2.

Table 1.2.2: Containment infrastructure		
Containment cell or dam number(s)	Discharge	Infrastructure requirements
TSF	Tailings	Lined with at least 0.5m of clay with a permeability of $<10^{-7}$ m/s or equivalent
Decant Water Pond	Decant water	Lined with at least 0.5m of clay with a permeability of $<10^{-7}$ m/s or equivalent

1.2.3 The Licensee shall manage TSFs such that:

- (a) a minimum top of embankment freeboard of 300mm is maintained;



- (b) a seepage collection and recovery system is provided and used to capture seepage from the TSF; and
  - (c) seepage is returned to the TSF or the process.
- 1.2.4 The Licensee shall undertake inspections as detailed in Table 1.2.4;
- (a) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
  - (b) maintain a record of all inspections undertaken.

Table 1.2.4: Inspection of infrastructure		
Scope of inspection	Type of inspection	Frequency of inspection
Tailings pipelines	Visual integrity	Daily
Tailings return water lines	Visual integrity	Daily
Embankment freeboard	Visual to confirm required freeboard capacity is available	Daily
Dewatering pipeline	Visual integrity	Daily

- 1.2.5 The Licensee shall construct the works to raise TSFs 3 and 4 in accordance with the documentation detailed in Table 1.2.5:

Table 1.2.5: Construction requirements <sup>1</sup>		
Document	Parts	Date of document
Metals X Limited, Higginsville Gold Operations, Works Approval Tailings Storage Facilities 3 & 4 Additional Embankment Raising RL1312.5m – RL1315m, Coffey Geotechnics Pty Limited	All, including drawings and appendices	29 February 2016

Note 1: Where the details and commitment of the documents listed in condition 1.2.5 are inconsistent with any other condition of this licence, the conditions of this licence shall prevail.

## 2 Emissions

### 2.1 General

- 2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit, in this section.

### 2.2 Point source emissions to surface water

- 2.2.1 The licensee shall ensure that where waste is emitted to surface water from the emission points in Table 2.2.1 it is done so in accordance with the conditions of this licence.

Table 2.2.1: Emission points to surface water			
Emission point reference	Emission point reference on map of emission points	Description	Source including abatement
D1	Chalice West Lake	Receiving environment-hypersaline lake	Mine dewater





## 2.3 Point source emissions to groundwater

2.3.1 The Licensee shall ensure that where waste is emitted to groundwater from the emission points in Table 2.3.1 it is done so in accordance with the conditions of this Licence.

Table 2.3.1: Emission points to groundwater			
Emission point reference	Emission point reference on Map of emission points	Description	Source including abatement
G1	Aphrodite Pits	Receiving environment – previously mined pit	Mine dewater from Chalice Mine, Aphrodite West, Aphrodite Central, Higginsville underground and Challenge pit.
G2	Poseidon North Pit	Receiving environment- previously mined pit	Mine dewater from Trident and Chalice pits.

2.3.2 The Licensee shall not cause or allow emissions to groundwater greater than the limits listed in Table 2.3.2.

Table 2.3.2: Emission limits to groundwater			
Emission point reference	Parameter	Limit (including units)	Averaging period
G1 & G2	Annual cumulative volume	1 900 000 tonnes	Spot sample

## 2.4 Emissions to land

2.4.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.4.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.4.1: Emissions to land			
Emission point reference	Emission point reference on Map of Emission Points	Description	Source including abatement
L1	Irrigation Field	Sewage facility irrigation field	Sewage facility

2.4.2 The Licensee shall not cause or allow emissions to land greater than the limits listed in Table 2.4.2.

Table 2.4.2: Emission limits to land			
Emission point reference	Parameter	Limit (including units)	Averaging period
L1	Maximum inorganic nitrogen addition	480 kg/hectare/year	Spot sample
	Maximum inorganic phosphorus addition	120 kg/hectare/ year	





## 3 Monitoring

### 3.1 General monitoring

3.1.1 The licensee shall ensure that:

- (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
- (b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
- (c) all surface water sampling is conducted in accordance with AS/NZS 5667.4, AS/NZS 5667.6 or AS/NZS 5667.9 as relevant;
- (d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
- (e) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.

3.1.2 The Licensee shall ensure that:

- (a) monthly monitoring is undertaken at least 15 days apart;
- (b) quarterly monitoring is undertaken at least 45 days apart; and
- (c) annual monitoring is undertaken at least 9 months apart.

### 3.2 Monitoring of point source emissions to surface water

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Monitoring of point source emissions to surface water			
Emission point reference	Parameter	Units	Frequency
Chalice West Lake- CMB6	Aluminium, arsenic, barium, boron, beryllium, cadmium, cobalt, chromium, copper, iron, mercury, potassium, magnesium, manganese, molybdenum, sodium, nickel, lead, selenium, silicon, tin, strontium, titanium, thallium, vanadium, and zinc.	mg/L	Annually
Chalice West Lake	Aquatic invertebrate fauna	N/A	Opportunistically
	TDS	ppm	Annually
D1, D2, D3, C1, C2	Lake fringe monitoring- species richness in quadrats	N/A	Annually

### 3.3 Monitoring of emissions to land

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Monitoring of emissions to land					
Emission point reference	Parameter	Units	Limit	Reference period	Frequency
L1	Biochemical Oxygen Demand (BOD)	mg/L	-	Spot sample	Annually
	Total Suspended Solids (TSS)	mg/L	-		
	Total Nitrogen (TN)	mg/L			
	Total Phosphorus	mg/L			
	Turbidity	NTU	-		



	Chlorine Residual	mg/l	-		
	pH		-		
	<i>E.coli</i>	cfu per 100ml	-		
G1 & G2	SWL	mbgl	4	Spot sample	Monthly
	pH		-		
	TDS	mg/L	-		
	Conductivity	mS/cm	-		
	Aluminium, arsenic, barium, boron, beryllium, cadmium, cobalt, chromium, copper, iron, mercury, potassium, magnesium, manganese, molybdenum, sodium, nickel, lead, selenium, silicon, tin, strontium, titanium, thallium, vanadium, zinc.	mg/L	-	Spot sample	Quarterly

### 3.4 Process monitoring

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table.

**Table 3.4.1: Process monitoring**

Monitoring point reference	Process description	Parameter	Units	Frequency	Method
TSF	Tailings delivery to TSF	Volume, and mass of tailings deposited into the TSF (figures for wet and dry)	m <sup>3</sup> and tonnes	Monthly	None specified
TSF	TSF return water	Volumes of water recovered from the TSF	kL	Monthly	None specified
TSF	Seepage recovery	Volume of seepage water recovered from the TSF	kL	Monthly	None specified
G1 & G2	Dewatering from mines to Aphrodite Pits and Poseidon North Pit	Volume of dewatering into Aphrodite Pits and Poseidon North Pit	kL	Monthly	None specified

### 3.5 Ambient environmental quality monitoring

3.5.1 The Licensee shall undertake the monitoring in Table 3.5.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

**Table 3.5.1: Monitoring of ambient groundwater quality**

Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
Tailings outfall and decant water	pH	-		Spot sample	Monthly
	WAD CN	-	mg/L		



Monitoring bores HMB1, HMB2, HMB3, HMB4, HMB5, HMB6 and HMB7.	SWL	4	mbgl		Quarterly
	pH	-			
	TDS	-	mg/L		
	Conductivity	-	mS/cm		
	WAD CN	0.5	mg/L		

## 4 Information

### 4.1 Records

- 4.1.1 All information and records required by the Licence shall:
- be legible;
  - if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
  - except for records listed in 5.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
  - for those following records, be retained until the expiry of the Licence and any subsequent licence:
    - off-site environmental effects; or
    - matters which affect the condition of the land or waters.
- 4.1.2 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.
- 4.1.3 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

### 4.2 Reporting

- 4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report within 90 calendar days after the end of the annual period. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form <sup>1</sup>
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
5.1.3	Compliance	AACR
5.1.4	Complaints summary	None specified
Table 3.3.1	Aluminium, arsenic, barium, boron, beryllium, cadmium, cobalt, chromium, copper, iron, mercury, potassium, magnesium, manganese, molybdenum, sodium, nickel, lead, selenium, silicon, tin, strontium, titanium, thallium, vanadium, zinc, TDS, aquatic invertebrate fauna, and lake fringe monitoring- species richness in quadrats.	None specified



Table 3.5.1	Biochemical Oxygen Demand (BOD) Total Suspended Solids (TSS) Total Nitrogen (TN) Total phosphorus, Turbidity, Chlorine Residual, pH, <i>E.coli</i> , TDS, conductivity Aluminium, arsenic, barium, boron, beryllium, cadmium, cobalt, chromium, copper, iron, mercury, potassium, magnesium, manganese, molybdenum, sodium, nickel, lead, selenium, silicon, tin, strontium, titanium, thallium, vanadium, zinc volume discharged, SWL	None specified
Table 3.7.1	Volume, and wet and dry mass of tailings deposited into the TSF; Volumes of water recovered from the TSF decant pond; Volume of seepage water recovered from the TSF; and Volume of dewatering discharge into Aphrodite pit.	Tabular
Table 3.8.1	pH, WAD CN, SWL, TDS, Conductivity	None specified

Note 1: Forms are in Schedule 2

- 4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
- (a) any relevant process, production or operational data recorded under condition 3; and
  - (b) an assessment of the information contained within the report against previous monitoring results and Licence limits.



### 4.3 Notification

- 4.3.1 The Licensee shall ensure that the parameters listed in Table 4.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 4.3.1: Notification requirements			
Condition or table (if relevant)	Parameter	Notification requirement <sup>1</sup>	Format or form <sup>2</sup>
2.1.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5PM of the next usual working day.  Part B: As soon as practicable	N1

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act

Note 2: Forms are in Schedule 2

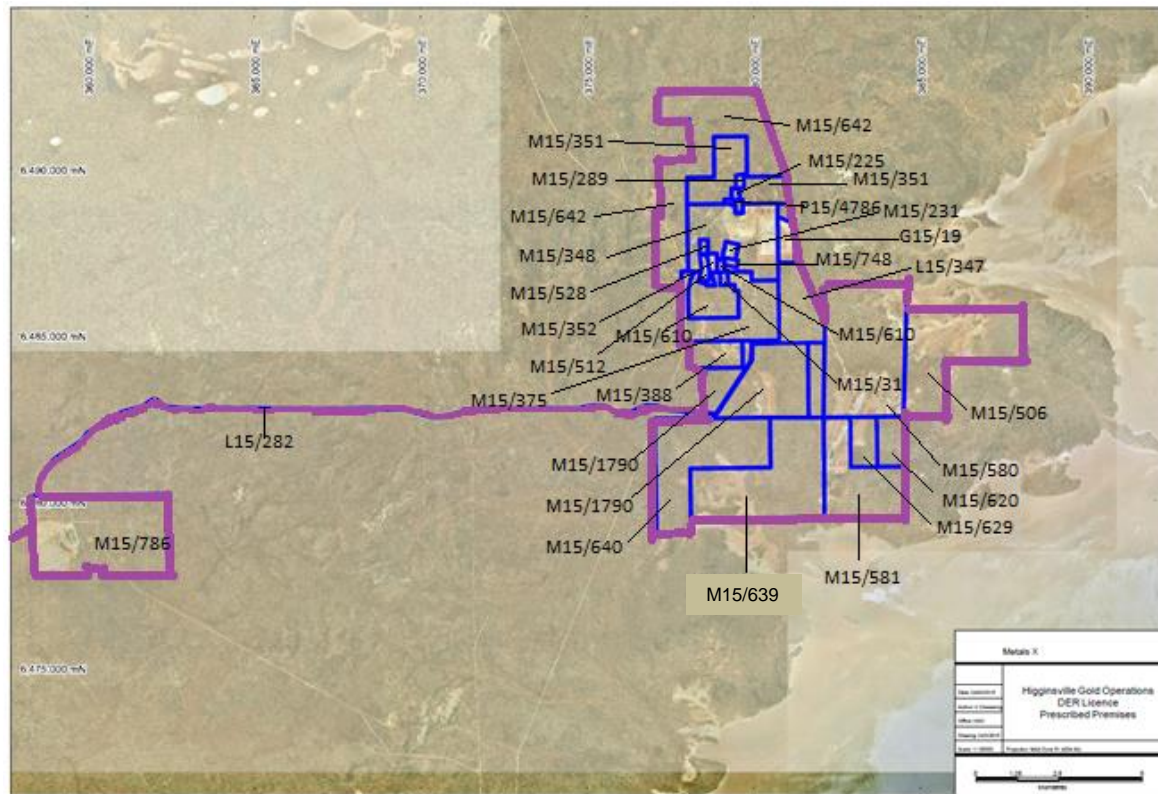
- 4.3.2 The Licencee shall submit a compliance document to the CEO, following the construction of the works listed in condition 1.3.5 and prior to commissioning of the same.
- 4.3.3 The compliance documents shall:
- (a) certify that the works were constructed in accordance with the conditions of the Licence;
  - (b) be signed by a person authorised to represent the Licencee and contain the printed name and position of that person within the company.



## Schedule 1: Maps

### Premises map

The Premises is shown in the maps below. The pink line depicts the Premises boundary.

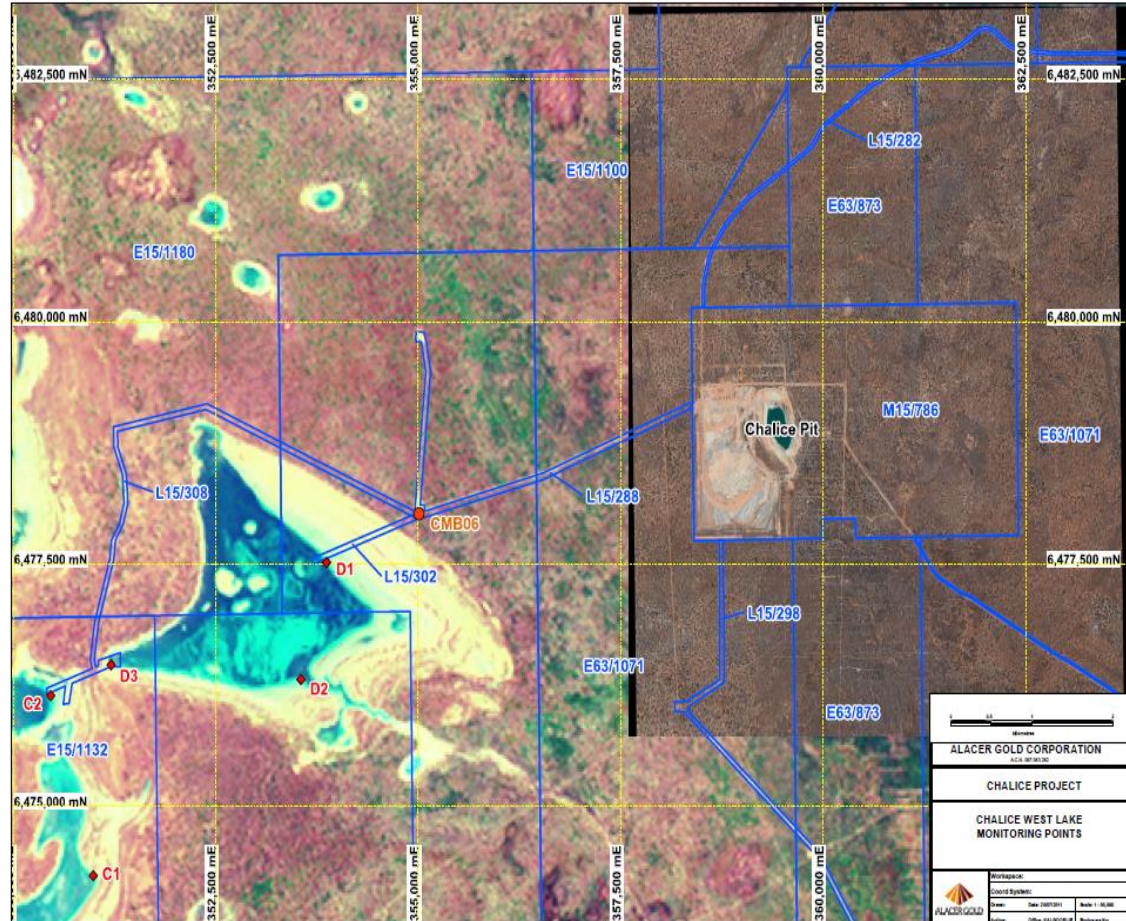






## Map of Emission Points

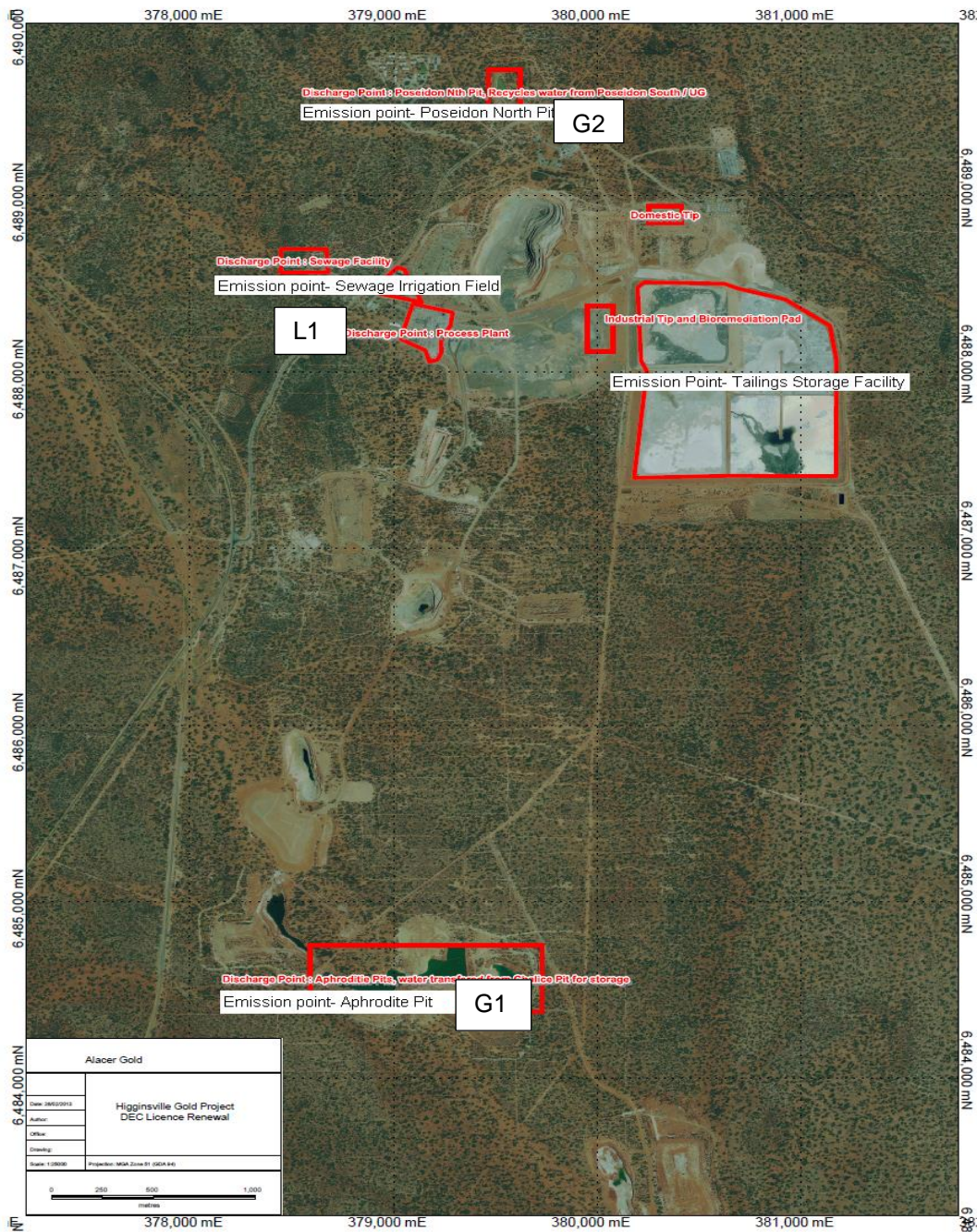
The locations of the emission points defined in tables 2.2.1 and 3.2.1 shown below.







The locations of the emission points defined in Tables 2.3.1 and 2.4.1 shown below.







The locations of the monitoring points defined in Table 3.5.1 are shown below.





## Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

Licence: L8146/2007/3  
Form: N1

Licensee: Avoca Mining Pty Ltd  
Date of breach: \_\_\_\_\_

### Notification of detection of the breach of a limit or any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution.

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

### Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	



## Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Avoca Mining Pty Ltd	
Date	