Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: Western Mining Pty Ltd

Licence: L8958/2016/1

Registered office: 206B Cape Street
TUART HILL WA 6060

ACN: 142 351 899

Premises address: Cue Victory Project
Mining tenement M20/519
CUE WA 6640
as depicted in Schedule 1

Issue date: Wednesday, 13 April 2016

Commencement date: Monday, 18 April 2016

Expiry date: Saturday, 17 April 2021

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
7	Vat or in situ leaching of metals: premises on which metal is extracted from ore with a chemical solution	5,000 tonnes or more per year	40,000 tonnes per annual period

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

Date signed: 13 April 2016
.....
Tim Gentle
Manager Licensing – Resource Industries
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

Introduction

This Introduction is not part of the Licence conditions.

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

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER 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

Western Mining Pty Ltd (the Licensee) was previously operating a gravity fed processing pilot plant, processing approximately 10,000 tonnes per annum (tpa) of bulk samples to test for gold deposits. The tailings from the process were then transported to a tailings storage facility (TSF). The processing plant and TSF have been in place since 2013 and were approved under DMP Registration ID31398.

The Licensee is currently conducting vat leaching operations at the Cue Victory Project (the Project) under DMP Registration ID55719, however are proposing to increase the tonnes processed in the facility to over 5,000 tpa, which triggers category 7 under Schedule 1 of the *Environmental Protection Regulations 1987*.

The leach dam was constructed in September 2015 within the existing TSF, which is built in 6 fingers. Two fingers on the west side of the TSF have become the leach dam. The leach dam is part of the existing TSF (Figure 1) and is 50 metres (m) by 45 m by 4.3 m high and designed to hold 5,000 tonnes of material at a time.

The leach dam is located on mining tenement M20/519 in the Shire of Cue, Western Australia. The leach dam is located approximately 2.8 km from the Priority 1 Cue Water Reserve and approximately 1.3 km from the residential area of the township of Cue.

The Licensee is proposing to process 40,000 tonnes of Cue 1 battery sands through the leach dam in 5,000 tonne batches. It is planned that each 5,000 tonne batch will take approximately 6 weeks to process. Once the treatment process is complete, the material will be flushed, dried and stockpiled. The material will be tested for cyanide prior to removal from the dam to ensure that cyanide is at a safe storage level (50 mg/L). The carbon is taken off-site to a commercial facility in Perth for stripping and for reactivation.

This Licence is for the operation of an existing facility with an increased throughput that triggers category 7 under Schedule 1 of the *Environmental Protection Regulations 1987.*

The licences and works approvals issued for the Premises since 2016 are:

Instrument log		
Instrument	**Issued**	**Description**
L8958/2016/1	13/04/2016	New application for category 7

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;*

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

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

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

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;

Chief Executive Officer
Department Administering the *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au;

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

'hardstand' means a surface with a permeability of 10^{-9} metres/second (m/s) or less;

'HDPE' means high-density polyethylene;

'Licence' means this Licence numbered L8958/2016/1 and issued under the Act;

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

'mg/L' means milligrams per litre;

'mBGL' means metres below ground level;

'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;

'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; and

'WAD Cyanide' means cyanide species liberated at moderate pH of 4.5

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 record and investigate the exceedance of any descriptive or numerical limit in this section.

1.2.2 The Licensee shall ensure that vat leaching material is only stored and/or treated within vessels or compounds provided with the infrastructure detailed in Table 1.2.1.

Table 1.2.1: Containment infrastructure

Containment cell or dam number(s) as depicted in Schedule 1	Material	Infrastructure requirements
Leach dam	Vat leaching material	0.27 ha facility 0.75 mm HDPE lined with permeability 10^{-14} metres per second Maintain a minimum top of embankment freeboard of 0.3 m

1.2.3 Following completion of IR2 in Table 3.1.1, the Licensee shall ensure that all processed Cue sands are stored on the bunded hardstand area.

1.2.4 The Licensee shall:
(a) undertake inspections as detailed in Table 1.2.2;
(b) 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
(c) maintain a record of all inspections undertaken.

Table 1.2.2: Inspection of infrastructure

Scope of inspection	Type of inspection	Frequency of inspection
Leach dam pipelines and pumps	Visual integrity	Daily whilst operational
Leach dam embankment freeboard	Visual to confirm required freeboard capacity is available	Daily

1.2.5 The Licensee shall ensure that all above-ground pipelines containing substances with the potential to contaminate the environment are either:
(a) equipped with telemetry; or
(b) equipped with automatic cut-outs in the event of a pipe failure; or
(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.2.6 The Licensee shall ensure the limits specified in Table 1.2.3 are not exceeded.

Table 1.2.3: Production or design capacity limits

Category[1]	Category description[1]	Premises production or design capacity limit
7	Vat or in situ leaching of metal	40,000 tonnes per annual period

Note 1: *Environmental Protection Regulations 1987,* Schedule 1.

1.2.7 The Licensee shall prevent dust generation from the surface of the leach dam and stockpiles of processed material.

2 Monitoring

2.1 General monitoring

2.1.1 The Licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;and
(c) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

2.1.2 The Licensee shall ensure that quarterly monitoring is undertaken at least 45 days apart.

2.1.3 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.

2.1.4 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

2.2 Process monitoring

2.2.1 The Licensee shall undertake the monitoring in Table 2.2.1 according to the specifications in that table.

Table 2.2.1: Process monitoring

Monitoring point reference	Process description	Parameter	Units	Frequency	Method
Leach dam	-	Volumes of vat leaching material deposited into the leach dam	m^3	Continuous	None specified

2.3 Ambient environmental quality monitoring

2.3.1 The Licensee shall undertake the monitoring specified in Table 2.3.1 according to the specifications in that table and record and investigate the exceedance of any limit specified.

Table 2.3.1: Monitoring of ambient groundwater quality					
Monitoring point reference as depicted in Schedule 1	**Parameter**	**Limits**	**Units**	**Averaging period**	**Frequency**
Groundwater monitoring bores 1, 2, 3 and 4	Total Dissolved Solids	Not specified	mg/L	Spot sample	Quarterly
	pH[1]	≥ 6 to ≤ 9	pH units		
	WAD Cyanide	< 0.05	mg/L		
	Standing water level (SWL)[1]	Not specified	mbgl		
	Arsenic (As) Antimony (Sb) Cadmium (Cd) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Nickel (Ni) Selenium (Se) Zinc (Zn) Thallium (Tl)	Not specified	mg/L		

Note 1: In-field non-NATA accredited analysis permitted.

3 Improvements

3.1.1 The Licensee shall complete the improvements in Table 3.1.1 by the date of completion in Table 3.1.1.

Table 3.1.1: Improvement program

Improvement reference	Improvement	Date of completion
IR1	The Licensee shall submit to the CEO a report, investigating ambient groundwater monitoring around the leach dam. The report shall include but not be limited to: (a) A review of existing geological data from the site to establish groundwater pathways around the leach dam; (b) Determine if existing monitoring bores are appropriate and adequate to cover all groundwater pathways; (c) Determine if it is appropriate to establish a groundwater monitoring bore within the drainage line depicted in the map of surface water drainage systems in Schedule 1 Maps; (d) Propose locations of other new bores if required; (e) Establish baseline groundwater quality; and (f) Water quality triggers and contingency measures should triggers be exceeded	30 September 2016
IR2	The Licensee shall construct a suitably sized and bunded hardstand area for the storage of processed Cue sands, which is capable of preventing surface run-off of leachate and which includes a leachate collection system	One month prior to removing the first batch of processed Cue sands from the leach dam

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 4.1.1(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
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee shall ensure that:
- (a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
- (b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

4.1.3 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.

4.1.4 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 31 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[1]
-	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
Table 2.2.1	Volumes of vat leaching material deposited into the leach dam	None specified
Table 2.3.1	Ambient Environmental Quality Monitoring	None specified
4.1.3	Compliance	Annual Audit Compliance Report (AACR)
4.1.4	Complaints summary	None specified

Note 1: Forms are in Schedule 2

4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains an assessment of the information contained within the report against previous monitoring results and/or background data.

4.2.3 The Licensee shall submit the information in Table 4.2.2 to the CEO according to the specifications in that table.

Table 4.2.2: Non-annual reporting requirements				
Condition or table (if relevant)	**Parameter**	**Reporting period**	**Reporting date (after end of the reporting period)**	**Format or form**
-	Copies of original monitoring reports submitted to the Licensee by third parties	Not Applicable	Within 14 days of the CEOs request	As received by the Licensee from third parties

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.

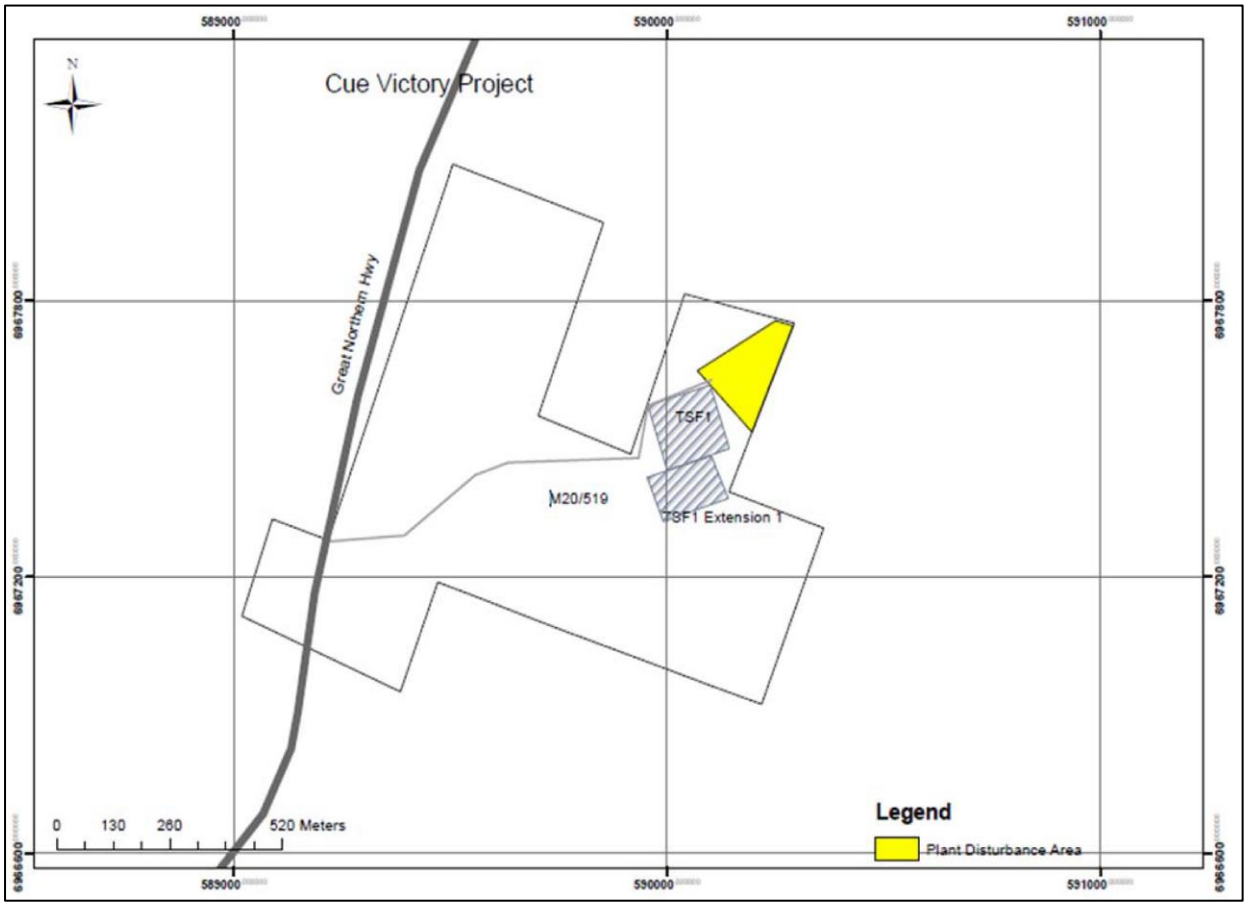
Table 4.3.1: Notification requirements			
Condition or table (if relevant)	**Parameter**	**Notification requirement[1]**	**Format or form[2]**
1.2.1 and 2.3.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
2.1.4	Calibration report	As soon as practicable.	None specified
Table 3.1.1	Construction of a hardstand or impervious area for storage of processed Cue sands from leach dam	The Licensee shall submit a compliance document that certifies that the hard stand or impervious storage area has been constructed in accordance with improvement condition IR2.	Non specified

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

Schedule 1: Maps

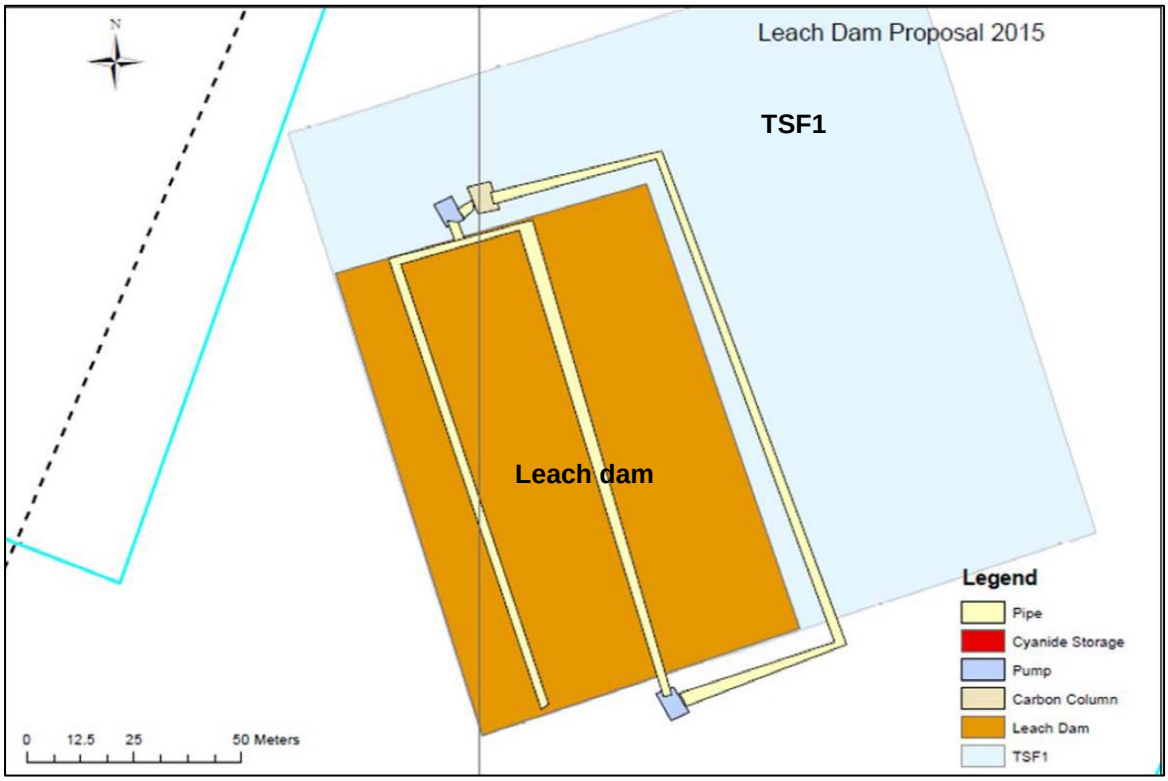
Premises map

The Premises is shown in the map below. The black line depicts the Premises boundary.



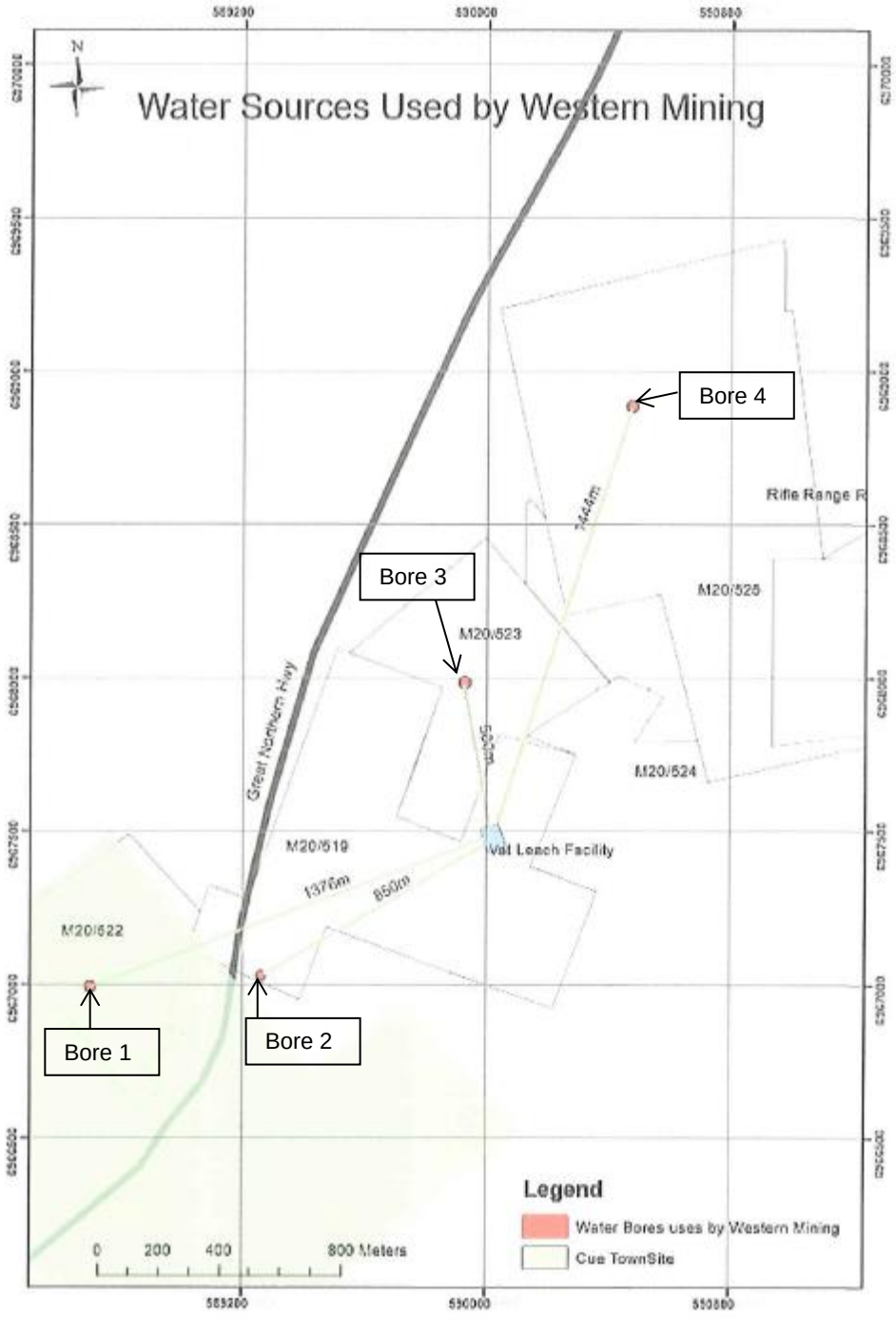
Map of storage locations

The location of the containment infrastructure defined in Table 1.2.1 is shown below.



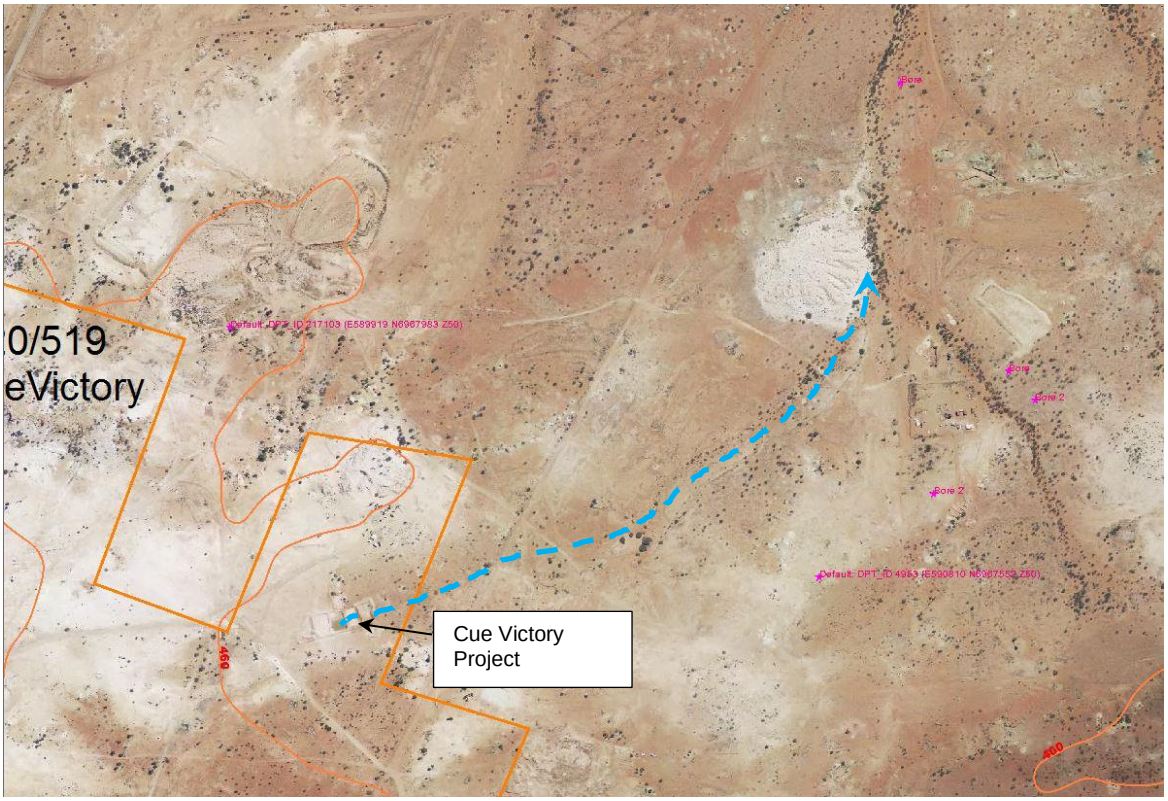
Map of monitoring locations

The locations of the monitoring points defined in Table 2.3.1 shown below.



Map of surface water drainage systems

The location of the surface water drainage system located within the Premises boundary is shown below. The blue line portrays approximate direction of surface flow.



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.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name: Trading as:	ABN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the Licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐ Please proceed to Section C

No ☐ Please proceed to Section B

Each page must be initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:

SECTION B

DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each Licence condition that was not complied with.

a) Licence condition not complied with:	
b) Date(s) when the non compliance occurred, if applicable:	
c) Was this non compliance reported to DER?:	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?:	
e) Summary of particulars of the non compliance, and what was the environmental impact:	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram):	
g) Cause of non compliance:	
h) Action taken, or that will be taken to mitigate any adverse effects of the non compliance:	
i) Action taken or that will be taken to prevent recurrence of the non compliance:	

Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:

SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this AACR is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your Premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
An individual	□	by the individual licence holder, or
	□	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	□	by affixing the common seal of the licensee in accordance with the *Corporations Act 2001*; or
	□	by two directors of the licensee; or
	□	by a director and a company secretary of the licensee, or
	□	if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	□	by the chief executive officer of the licensee; or
	□	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SEAL (if signing under seal)

Licence: L8958/2016/1 Licensee: Western Mining Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit.

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 Western Mining Pty Ltd	
Date	

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Western Mining Pty Ltd

Licence: L8958/2016/1

Registered office: 206B Cape Street
TUART HILL WA 6060

ACN: 142 351 899

Premises address: Cue Victory Project
Mining tenement M20/519
CUE WA 6640

Issue date: Wednesday, 13 April 2016

Commencement date: Monday, 18 April 2016

Expiry date: Saturday, 17 April 2021

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue a licence. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by: Sonya Poor/Rachel Vukmirovic
Licensing Officers

Decision Document authorised by: Tim Gentle
Delegated Officer

Contents

1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986.* Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval ☐ New Licence ☒ Licence amendment ☐ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	7	40,000 tonnes per annual period
Application verified Application fee paid	Date: 19/02/2016 Date: 18/03/2016	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome	N/A	
Is the proposal a Major Resource Project?	Yes☐ No☒	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☐ No☒	Referral decision No: Managed under Part V☐ Assessed under Part IV☐
Is the proposal subject to Ministerial Conditions?	Yes☐ No☒	Ministerial statement No:

		EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☐ No☒ Department of Water consulted Yes ☒ No ☐	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒ If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes☐ No☒ If Yes, include details here, e.g. Site is subject to SO_2 requirements of Kwinana EPP.		

3 Executive summary of proposal and assessment

Western Mining Pty Ltd (the Licensee) was previously operating a gravity fed processing pilot plant, processing approximately 10,000 tonnes per annum (tpa) of bulk samples to test for gold deposits. The tailings from the process were then transported to a tailings storage facility (TSF). The processing plant and TSF have been in place since 2013 and were approved under DMP Registration ID31398.

The Licensee is currently conducting vat leaching operations at the Cue Victory Project (the Project) under DMP Registration ID 55719, however are proposing to increase the tonnes processed in the facility to over 5,000 tpa, which triggers category 7 under Schedule 1 of the *Environmental Protection Regulations 1987*.

The leach dam was constructed in September 2015 within the existing TSF, which is built in 6 fingers. Two fingers on the west side of the TSF have become the leach dam. The leach dam is part of the existing TSF (Figure 1) and is 50 metres (m) by 45 m by 4.3 m high and designed to hold 5,000 tonnes of material at a time.

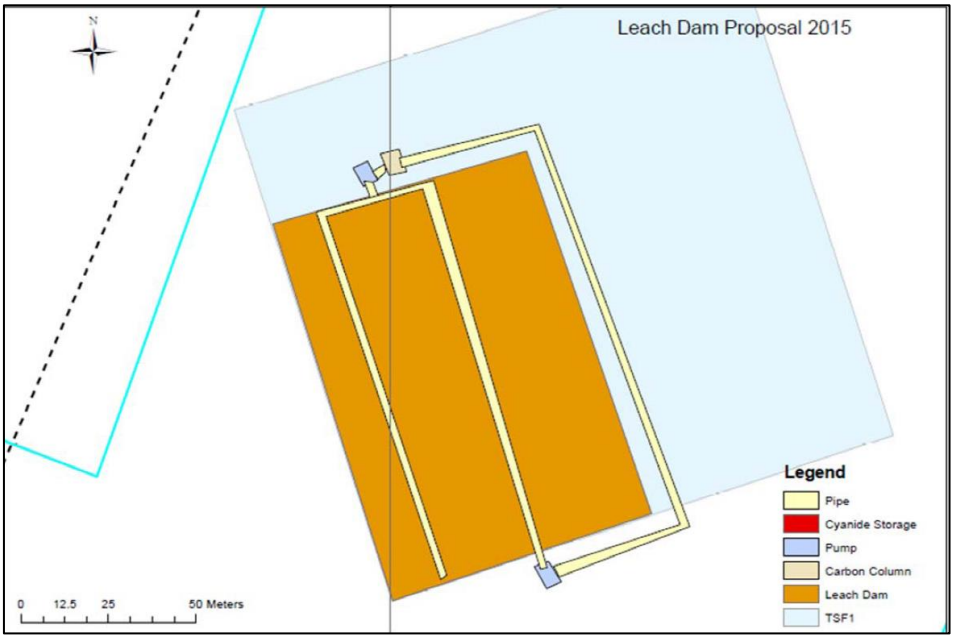


Figure 1: Location of leach dam within TSF

The leach dam was built on as flat a surface as possible to reduce the risk of foundations slipping and the base is cap rock covered with fines material (crushed kaolinite and oxidised granite). The walls are made of rock and were compacted in lifts of 1 m to ensure stability. A 0.75 millimetre (mm) high-density polyethylene (HDPE) liner with a permeability of 10^{-14} metres per second (m/s) has been installed with fines sheeted over the top to provide a finish to minimise the risk of puncture. The leach dam has a 50 degree batter on the inside and a 20 degree batter on the outside. The internal dimensions are shown in Figure 2.

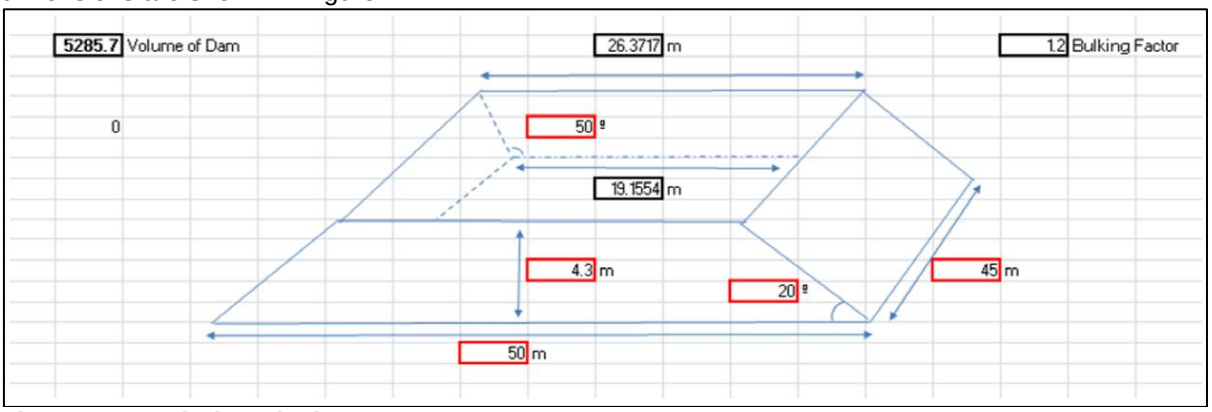


Figure 2: Leach dam design

The leach dam is located on mining tenement M20/519 in the Shire of Cue, Western Australia. The leach dam is located approximately 2.8 km from the Priority 1 Cue Water Reserve and approximately 1.3 km from the residential area of the township of Cue.

The material to be processed is Cue battery sands stored on a nearby tenement. The battery sands will be added mechanically to the leach dam. Water is added to the sands over a period of 1.5 weeks until the dam is full (ensuring the 0.3 m freeboard is maintained). Water used to top up the dam comes from a separate pipe that is connected to the mine water trucks. Solid sodium cyanide is added to a splash tank at the top of the dam and the solution percolates through the dam causing the leaching of metals out of the sands as it percolates through.

The pregnant solution is pumped out of the slotted pipes at the base of the dam through to the carbon column and is then pumped back into the top of the dam again. The carbon removes the gold from the pregnant solution as it passes through the column. The solution is recycled through the process until the gold levels have dropped to approximately 0.2 g/tonne. The spent ore is then rinsed with water until the cyanide concentration in the effluent is below the safe storage level of 50 mg/L.

It is planned that each batch of 5,000 tonnes will take approximately 6 weeks to process. Once the treatment process is complete, the material will be flushed, dried and stockpiled. The carbon is taken off-site to a commercial facility in Perth for stripping and for reactivation.

The facility is self-contained, in that the solution is recycled around the facility and is not discharged. The carbon column and pump are situated within a bunded area. A diagram of the process is shown in Figure 3.

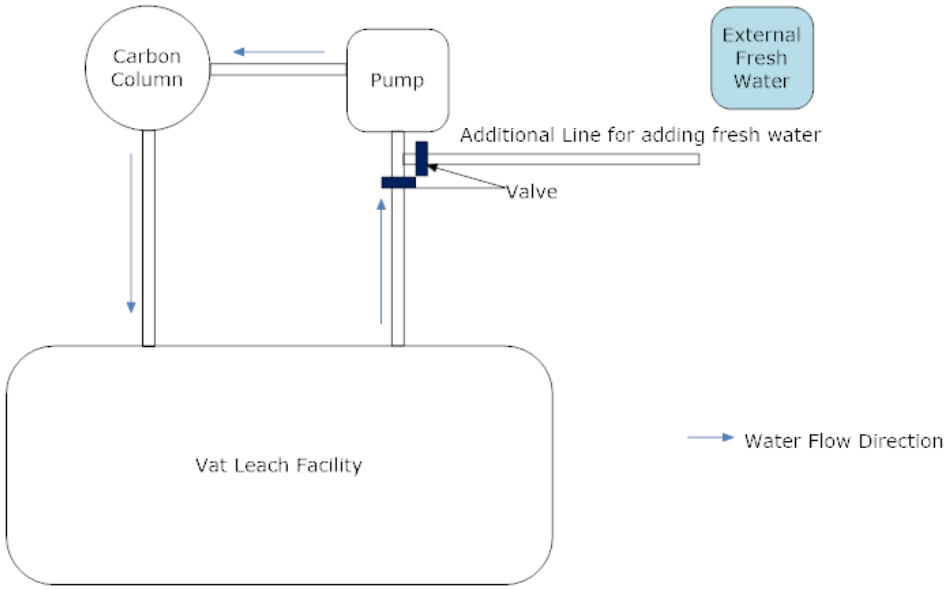


Figure 3: Process flow diagram

4 Decision table

All applications are assessed in line with the *Environmental Protection Act1986*, the *Environmental Protection Regulations 1987*and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions	N/A	Emission Description *Emission: S*tormwater contaminated with hydrocarbons or elevated sediment loading. *Impact:* Localised alteration of the environment including soil contamination and increased sediment in run-off. *Controls:* • Stormwater is directed away from the leach dam and towards local surface creeks; and • Fuel is stored on site within a 50,000 litre double bunded fuel tank approximately 900 m from the TSF. Risk Assessment *Consequence*: Minor *Likelihood:* Unlikely *Risk Rating:* Moderate Regulatory Controls Nil conditions relating to stormwater management are required to be added to the Licence. The general provisions of the *Environmental Protection Act 1986* and *Environmental Protection (Unauthorised Discharges) Regulations 2004* apply and are considered sufficient to regulate this. Nil conditions relating to the storage of dangerous goods are required to be added to the Licence. The Dangerous Goods Licence, *Dangerous Goods Safety Act 2004* and associated Regulations are sufficient to regulate this.	Licence application supporting documentation. Dangerous Goods Storage Licence. *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007.* *Dangerous Goods Safety Act 2004.* Western Mining Pty Ltd, Cyanide Handling Procedure, 30 October 2015.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Residual Risk *Consequence:* Minor *Likelihood:* Unlikely *Residual Risk Rating:* Moderate Cyanide is the only chemical stored onsite in any significant quantity and it is stored in a locked facility in accordance with the Dangerous Goods Site Storage Licence (DGS022057). Cyanide is only handled by personnel who are trained and competent to manage the dangerous good.	
Premises operation	L1.2.1-1.2.2 L1.2.4-1.2.5	DER's assessment and decision making are detailed in Appendix A.	Licence Application Form General provisions of the *Environmental Protection Act 1986*.
Emissions general	N/A	No general emission conditions are required to be added to the Licence.	Licence application supporting documentation.
Point source emissions to air including monitoring	N/A	There are no point source emissions to air from the operation of the leach dam. No conditions relating to point source emissions to air or the monitoring of these emissions are required to be added to the Licence.	Licence Application Form. General provisions of the *Environmental Protection Act 1986*.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Point source emissions to surface water including monitoring	N/A	There are no point source emissions to surface water from the operation of the leach dam. No conditions relating to point source emissions to surface water or the monitoring of these emissions are required to be added to the Licence.	Licence Application Form. General provisions of the *Environmental Protection Act 1986*. *Environmental Protection (Unauthorised Discharges) Regulations 2004*.
Point source emissions to groundwater including monitoring	N/A	There are no point source emissions to groundwater from the operation of the leach dam. No conditions relating to point source emissions to groundwater or the monitoring of these emissions are required to be added to the Licence. The water table is approximately 30-40 m below the leach dam.	Licence Application Form. General provisions of the *Environmental Protection Act 1986*. *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Emissions to land including monitoring	L1.2.3 and L1.2.7	**<u>Emission Description</u>** *Emission*: Deposition of processed stockpiles from the leach dam to an area that is not currently bunded or lined. Windblown deposition of processed material onto land. *Impact*: Seepage of heavy metals and cyanide to land and localised contamination of groundwater in the fractured rock hydrogeology. Contamination of surface water drainage line that flows over the existing TSF. *Controls:* At the completion of the leaching process, the dam will be flushed with freshwater until the cyanide has dissipated to safe levels below the current safe storage level of 50 mg/L. The material in the dam will then be dried and removed and stockpiled for future use. The Licensee plans to use the material for further construction of the TSF. <u>Risk Assessment</u> *Consequence*: Moderate *Likelihood:* Possible *Risk Rating:* Moderate <u>Regulatory controls</u> Improvement condition L3.1.1 (IR2) has been included in the Licence which requires the Licensee to construct a bunded hardstand area capable of preventing surface run-off or infiltration into the underlying ground of leachate from the processed Cue sands removed from the leach dam. Use of the material for construction is not authorised by the Licence. Condition L1.2.3 has been included in the premises operation section of the Licence requiring the Licensee to store processed Cue sands on the bunded hardstand area following the completion of IR2. L1.2.7 has been included in the premises operation section of the Licence to require the Licensee to prevent dust generation from the surface of the leach dam and stockpiles of processed material.	Licence application supporting documentation. General provisions of the *Environmental Protection Act 1986*. *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Residual Risk *Consequence:* Moderate *Likelihood:* Rare *Residual Risk Rating:* Low	
Fugitive emissions	L1.2.7	A condition has been included in the Licence that requires the Licensee to prevent dust generation from the surface of the leach dam and the stockpiles. This has been assessed under the emissions to land section of Table 4.	General provisions of the *Environmental Protection Act 1986*. *Environmental Protection (Unauthorised Discharges) Regulations 2004*.
Odour	N/A	No odour emissions are expected from the operation of the leach dam, which is located approximately 1.38 km from the Cue residential area. No conditions relating to odour emissions are required to be added to the Licence. Section 49 of the *Environmental Protection Act 1986* is sufficient to regulate this.	General provisions of the *Environmental Protection Act 1986*.
Noise	N/A	Noise emissions should not be significant during the operation of the leach dam. The leach dam is approximately 1.38 km from the Cue residential area. No conditions are required to be added to the Licence. The Licensee has a statutory responsibility to comply with the *Environmental Protection (Noise) Regulations 1997*.	*Environmental Protection (Noise) Regulations 1997*.
Monitoring general	L2.1.1 – L2.1.4	No additional general monitoring conditions are required in the Licence other than the standard NATA accreditation, monitoring timeframes and calibration requirements.	N/A.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Monitoring of inputs and outputs	N/A	No conditions relating to the monitoring of inputs and outputs are required to be added to the Licence.	N/A.
Process monitoring	L2.2.1 L1.2.6	Condition L2.2.1 requires the Licensee to monitor the volume of vat material deposited into the leach dam. This condition is included to assess against the premises production limit set in the premises operation condition L1.2.6.	Licence application supporting documentation.
Ambient quality monitoring	L2.3.1	Monitoring of ambient groundwater quality has been included on the Licence. Refer to DER's assessment for Premises Operation included as Appendix A.	Licence application supporting documentation.
Meteorological monitoring	N/A	No conditions relating to meteorological monitoring are required to be added to the Licence.	N/A.
Improvements	L3.1.1	An improvement condition (IR1) has been added to the licence requiring the Licensee to submit to the CEO a report on ambient groundwater quality monitoring. Refer to DER's assessment for Premises Operation included as Appendix A. An improvement condition (IR2) has been added to the Licence requiring the Licensee to construct a bunded hardstand area to store processed Cue battery sands from the leach dam. This has been assessed in the emissions to land section of Table 4.	Licence application supporting documentation.
Information	L4.1.1 – L4.1.4, L4.2.1 - L4.2.3 and L4.3.1	Conditions are included on the Licence relating to records, reporting and notification requirements.	N/A.
Licence Duration	N/A	The estimated operating period for the vat leaching operation is 2 years. The Licence will be issued for a 5 year period.	N/A.

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
28/03/2016	Application advertised in West Australian (or other relevant newspaper) for a 7 day period	Nil comments received	-
29/03/2016	Application referred to interested parties listed: • Department of Water (DoW) • Shire of Cue • Department of Mines and Petroleum (DMP)	Nil comments received from Shire of Cue and DMP Comments received from DoW on 4/04/2016 verifying that given the hydrogeology of the area, the DoW is satisfied that the proposed works located approximately 2.8 km's from the Cue Water Reserve gives sufficient protection to the Cue drinking water bores and other water resources Comments received from DoW on 13/04/2016 identifying the location of a drainage line within the existing TSF.	Minor administrative changes made to the risk rating of emissions to land and Appendix A within the decision document Requirement to determine if it is appropriate to establish a groundwater monitoring bore within the drainage line depicted within the map of drainage systems in Schedule 1 maps has been included in improvement condition IR1.
08/04/2016	Proponent sent a copy of draft instrument Amended copy sent to proponent 13/04/2016	Response received 12/04/2016, no changes required Response received 13/04/2016 on amended draft, no changes required	-

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

Premises operation

Emergency operation: Overtopping of leach dam

Emission Description
Emission: Overtopping of leach dam due to poor management or storm inundation causing the release of process liquor containing heavy metals and cyanide to land. Contamination of onsite surface water systems.
Impact: Localised soil contamination and impact to vegetation, including death from contact with saline, alkaline liquor containing heavy metals and cyanide. Potential impact on the headwaters of a local drainage line located within the existing TSF, with the approximate direction of surface flow being in a north-north easterly direction to the intersection a major northerly trending drainage line with discharge into the Murchison Palaeovalley drainage system.
Controls: A minimum top of embankment freeboard of 0.3 m is to be maintained. Reducing water levels in the vat leach facility prior to anticipated weather events.

Risk Assessment
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls
Conditions L1.2.2 and L1.2.4 have been added to the Licence to ensure that the leach dam's freeboard is maintained and that the leach dam freeboard is inspected daily.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Emergency operation: TSF wall failure and spillage of battery sands

Emission Description
Emission: Processed Cue Victory battery sands spilling out of the facility if the existing TSF (containing the leach dam) wall fails. Discharge of tailings to the environment outside of pipelines or TSF. This may be through leaching, burst pipes, overflowing or breached TSF dam walls.
Impact: Seepage from the tailings entering the groundwater system causing potential groundwater contamination. Impact on localised groundwater within the fractured rock hydrogeology.
Controls: The TSF walls are made of rock and were compacted in lifts of 1 m to ensure stability. A 0.75 millimetre (mm) high-density polyethylene (HDPE) liner with a permeability of 10^{-14} metres per second (m/s) has been installed within the leach dam area, with fines sheeted over the top to provide a finish to minimise the risk of puncture. The leach dam has a 50 degree batter on the inside and a 20 degree batter on the outside. The HDPE liner was tested to ensure the integrity prior to filling with battery sands. The carbon column, pump and connection points are contained within a bunded area. Daily inspections of the facility are undertaken including checking pumps and lines. The water table is approximately 30-40 m below the facility.

Risk Assessment
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls
Conditions L1.2.2 and L1.2.4-1.2.5 have been added to the licence and require the Licensee to manage the leach dam to ensure a freeboard of 0.3 m is maintained. The conditions are to ensure that the leach dam and associated infrastructure is inspected and all pipelines containing substances that have the potential to contaminate the environment are fitted with appropriate engineering controls, to minimise any potential spills from equipment failure.

Residual Risk
Consequence: Moderate
Likelihood: Rare
Residual Risk Rating: Moderate

Emergency Operation: Leakage through dam liner system

Emission Description
Emission: Leakage from the leach dam liner system caused by a rupture in the lining system, discharging saline, alkaline process liquor containing heavy metals and cyanide to land.
Impact: Contamination of local groundwater with cyanide and heavy metals, increasing the pH of groundwater and elevation of groundwater levels. A priority 1 Public Drinking Water Source Area (PDWSA) is located approximately 2.8 km to the east of the leach dam. However, it has been verified by the Department of Water that the groundwater beneath the premises does not flow towards the PDWSA and therefore will not impact on this water resource. Potential impact on the headwaters of a local drainage line located within the existing TSF, with the approximate direction of surface flow being in a north-north easterly direction to the intersection of a major northerly trending drainage line, with discharge into the Murchison Palaeovalley drainage system.
Controls: The leach dam lining system is constructed with a 0.75mm HDPE liner to prevent any seepage or leakage. The liner is installed over a lining of fines material (crushed kaolinite and oxidised granites). The walls of the facility are made of rock, with the fines sheeted over the top to provide a finish that would minimise the risk of puncture. The base of the dam is cap rock covered with fines material. The groundwater is between 30-40 metres below ground level. Groundwater monitoring is conducted via testing of the water bores in the area. These bores are old mine shafts that are full of water. Given the water from these locations is pumped to the plant, Western Mining tests this water for contamination. The parameters tested are for salts, Total Dissolved Solids and pH. The pH in the bores range from 7.4-7.6 and the TDS is up to 17,000 mg/L.

Risk Assessment
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls
Condition L2.3.1 and table 2.3.1 details the ambient groundwater monitoring parameters to be undertaken at the current monitoring locations. The condition requires quarterly groundwater monitoring of a standard suite of parameters, including standing water level, WAD cyanide and a series of metals. An improvement condition (IR1) has been applied to the Licence to ensure the Licensee investigates ambient monitoring around the leach dam to ensure that all groundwater pathways are identified to determine if the existing monitoring bores (mine shafts) are adequate to cover all groundwater pathways. The Licensee is also required to determine if it is appropriate to establish a groundwater monitoring bore within the surface water drainage line given that the headwaters of this drainage line are located within the existing TSF.

Residual Risk
Consequence: Moderate

Likelihood: Unlikely
Risk Rating: Moderate