



Decision Document

Environmental Protection Act 1986, Part V

Proponent: 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
M15/31, M15/351, M15/289, M15/225, M15/642, M15/348, M15/786,
L15/288 and L15/302
HIGGINSVILLE WA 6443

Issue date: Monday, 17 September 2018

Commencement date: Tuesday, 18 September 2018

Expiry date: Tuesday, 17 September 2024

Decision

Based on the assessment detailed in this document, the Department of Water and Environmental Regulation (DWER), has decided to issue a licence. DWER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision document prepared by:

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Decision Document Authorised By:

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1 Purpose of this Document

This decision document explains how DWER has assessed and determined the application for a works approval or licence, and provides a record of DWER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DWER'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.

Works approval and licence conditions

DWER has three types of conditions that may be imposed on works approvals and licences. They are as follows;

Standard conditions (SC)

DWER has standard conditions that are imposed on all works approvals and licences regardless of the activities undertaken on the Premises and the information provided in the application. These are included as the following conditions on works approvals and licences:

Works approval conditions: 1.1.1-1.1.3, 1.2.1, 1.2.2, 5.1.1 and 5.1.2.

Licence conditions: 1.1.1-1.1.3, 1.2.1-1.2.4, 5.1.1-5.1.4 and 5.2.1.

For such conditions, justification within the Decision Document is not provided.

Optional standard conditions (OSC)

In the interests of regulatory consistency DWER has a set of optional standard conditions that can be imposed on works approvals and licences. DWER will include optional standard conditions as necessary, and are likely to constitute the majority of conditions in any licence. The inclusion of any optional standard conditions are justified in Section 4 of this document.

Non standard conditions (NSC)

Where the proposed activities require conditions outside the standard conditions suite DWER will impose one or more non-standard conditions. These include both premises and sector specific conditions, and are likely to occur within few licences. Where used, justification for the application of these conditions will be included in Section 4.



2 Administrative Summary

Administrative Details									
Application Type	Works Approval <input type="checkbox"/> New Licence <input checked="" type="checkbox"/> Licence Amendment <input type="checkbox"/> Works Approval Amendment <input type="checkbox"/>								
Activities that cause the premises to become prescribed premises	<table border="1"> <thead> <tr> <th>Category Number(s)</th> <th>Design Capacity</th> </tr> </thead> <tbody> <tr> <td>05</td> <td>1 500 000 tonnes per year</td> </tr> <tr> <td>06</td> <td>1 900 000 tonnes per year</td> </tr> <tr> <td>54</td> <td>100 cubic metres or more per day</td> </tr> </tbody> </table>	Category Number(s)	Design Capacity	05	1 500 000 tonnes per year	06	1 900 000 tonnes per year	54	100 cubic metres or more per day
	Category Number(s)	Design Capacity							
	05	1 500 000 tonnes per year							
	06	1 900 000 tonnes per year							
54	100 cubic metres or more per day								
Application Verified	Date: 28/08/2018								
Application Fee Paid	Date: 07/09/2018								
Works Approval has been complied with	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>								
Compliance Certificate received	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>								
Commercial-in-confidence claim	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>								
Commercial-in-confidence claim outcome									
Is the proposal a Major Resource Project?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Referral Decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>								
Is the proposal subject to Ministerial Conditions?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 <i>Environmental Protection Act 1986</i>)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Department of Water consulted Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>								
Is the Premises within an Environmental Protection Policy (EPP) Area	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>								
If Yes include details of which EPP(s) here.									
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>								
If Yes, include details here, eg Site is subject to SO ₂ requirements of Kwinana EPP.									



3 Executive summary of proposal

Higginsville Gold Operation (Higginsville) was acquired by Alacer Gold Corporation as part of the merger with Avoca Resources Limited in early 2011. The Higginsville site is located approximately 30 km north of Norseman within the Eastern Goldfields region of Western Australia. The nearest sensitive receptor, Widgiemooltha, is located approximately 30 km to the north of the operation. Mining operations include Trident and Chalice mines.

Ore is treated at the Higginsville processing plant using a standard crush, grind, gravity and Carbon in Leach (CIL) circuit. Approximately 1.3 Mtpa of ore is processed.

Higginsville has been assessed as "prescribed premises" categories (5),(6) and (54) under Schedule 1 of the *Environmental Protection Regulations 1987*.

During the 2011/12 reporting period, the mill throughput was 1,343,990 tonnes. The slurry residue (tailings) is either pumped out to the tailings storage facility (TSF) and distributed into cells via spigots, or delivered to the paste plant via a tailings thickener. The tailings deposited into the TSF are left to dry, while the associated process water is captured either in the decant water pond or through seepage recovery mechanisms. All process water recovered is pumped back into the processing plant.

Category (6), mine dewatering, occurs on site from Trident and Chalice mining operations. Mine dewater is pumped to Poseidon North pit where it is stored before returning to Trident underground for services. Mine dewater is also pumped from Chalice pit to Aphrodite pit where it is stored before being pumped to the mill and used as the main water source.

During 2011, Higginsville increased the rate of dewatering from the Chalice pit for three months. The additional mine dewater was discharged to Chalice West Lake. Mine dewater is no longer discharged into Chalice West Lake. Monitoring of Chalice West Lake during dewatering and for three years post dewatering was added to the operating licence. The 2012/13 AER will include the final results of monitoring data from Chalice West Lake.

Category (54), sewage facility provides waste water treatment services to the staff at Higginsville. The plant is designed to accommodate the treatment and refinement of waste water for 260 personnel at 450 litres per person per day. The system comprises of an aeration tank and chlorination/irrigation tank. The system is connected to a 3.2 ha irrigation field.

Because the previous Licence (L8146) for these premises had expired, a new licence is now being issued. This Decision Document provides an assessment of the environmental risks from each of the prescribed activities. Based on this assessment the same environmental conditions have been applied as in the previous licence.



4 Decision Table

All applications are assessed under the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987*, and *DWER's Policy Statement - Limits and targets for prescribed premises 2006* and the risk matrix attached to this decision document in Appendix A. Where other references have been used in making the decision they are detailed in the decision table.

DECISION TABLE				
Works Approval / Licence Section	Condition Number L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference Documents
General Conditions	L1.2.5	OSC	Potential contamination of stormwater may occur. OSC 1.2.5 has been included in the licence to ensure the Licensee maintains sufficient infrastructure to direct stormwater from any possible contamination sites.	Application supporting documentation
	L1.3.1 – L1.3.4	OSC	These optional standard conditions have been added to the licence to ensure that infrastructure maintenance and operational monitoring is adequately managed for mine dewatering and tailings deposition activities. Infrastructure includes (but is not limited to): pipelines; bunding; embankment freeboard; basin liners; and decant pond management.	Application supporting documentation
Emissions General	L2.1.1	OSC	Descriptive limits will be set through condition 2.5.2 of the licence and therefore OSC regarding recording and investigation of exceedances of limits or targets have been included.	N/A
Point source emissions to air including monitoring	L2.2 and L3.2	N/A	<p>Operation <i>Emission Significance - 1</i> <i>Socio-political context - No concern or interest.</i> <i>Risk Assessment - E – no regulation, other management mechanisms</i></p> <p>No significant point source air emissions are expected from the operations at Higginsville. No specified conditions relating to point source emissions to air or the monitoring of these emissions are required to be added to the licence.</p>	<p>Environmental Protection (Unauthorised Discharges Regulations, 2004).</p> <p>Application supporting documentation</p>



DECISION TABLE			
Works Approval / Licence Section	Condition Number L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)
Point source emissions to surface water including monitoring	L2.3 and L3.3	OSC	<p>Operation <i>Emission Significance</i> – 2 <i>Socio-political context</i> – No concern or interest <i>Risk Assessment</i> – D – other management mechanisms/ licence conditions/ other regulatory tools</p> <p>There are no current point source emissions to surface water at Higginsville. However, in 2011 dewatering from Chalice pit to Chalice West Lake took place for three months. Dewatering of the lake has since ceased. Annual lake monitoring/ water quality analysis will occur for three years post dewatering. Optional standard condition 3.3.1 has been added to the licence to require monitoring and analysis of any impacts caused by dewatering. The final report will be submitted in the 2012/13 AER.</p>
			Reference Documents
			Application supporting documentation



DECISION TABLE			
Works Approval / Licence Section	Condition Number L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)
Point source emissions to groundwater including monitoring	L2.4 and L3.4	OSC	<p>Operation <i>Emission Significance – 1</i> <i>Socio-political context – No concern or interest</i> <i>Risk Assessment – E – no regulation, other management mechanisms</i></p> <p>There will be no point source emissions to groundwater during the operation of the processing plant, dewatering, or sewage facility.</p> <p>No specified conditions relating to point source emissions to groundwater or the monitoring of such emissions are required to be added to the licence.</p>
			<p>Application supporting documentation</p> <p>General Provisions of the <i>Environmental Protection Act 1986</i></p> <p>Environmental Protection (Unauthorised Discharge) Regulations 2004</p> <p>Higginsville Gold Operations Groundwater Recovery Plan November 2012</p>



<p>Emissions to land including monitoring</p>	<p>L2.5, L3.5, and L3.8.1</p>	<p>OSC</p>	<p>Operation <i>Emission Significance – 3</i> <i>Socio-political context – Low concern or interest</i> <i>Risk Assessment – C – licence conditions</i></p> <p><i>Dewatering</i> Optional standard conditions have been added to the licence to ensure adequate management of mine dewater discharging to the receiving environment. Licence condition 2.5.2 will prevent the licensee from exceeding the nominated capacity of mine dewaterers. Monitoring conditions (3.5) and Table 3.5.1 have been included to capture groundwater quality and groundwater levels. Higginsville has committed to regular visual inspections and monitoring of pipelines, pipeline bunding, and regulation of dust suppression is outlined in the licence conditions (2.6).</p> <p><i>Sewage Facility</i> Emissions to land related to the sewage facility are confined to the irrigation field outlined in 2.5.1 and limits set in 2.5.2. These emissions are also required to be monitored, with target concentrations and throughput limit outlined in Table 3.5.1.</p> <p><i>TSF</i> There are risks of emissions to land associated with operating a TSF. Seepage from the TSF has the potential to: raise the local watertable; increase rootzone salt content; and introduce dissolved metals to the aquifer. All factors could stress adjacent vegetation causing death. Management strategies outlined in the Groundwater Recovery Plan (November 2013) have been implemented to reduce this risk. Optional standard conditions on the licence include the requirement to monitor ambient groundwater quality, and standing water level (SWL) via bores around the TSF. These specific conditions have been included under section 3.8.1.</p>	<p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p>Application supporting documents.</p> <p>Environmental Protection (Unauthorised Discharge) Regulations 2004</p> <p>Higginsville Gold Operations Groundwater Recovery Plan November 2012</p> <p>Water Quality Protection Note - Irrigation with nutrient-rich wastewater, Water Quality Protection Note 22, July 2008</p>
<p>Fugitive Emissions</p>	<p>L2.6.1 and L2.6.2</p>	<p>OSC</p>	<p>Operation <i>Emissions Significance – 2</i> <i>Socio-political context – No concern or interest</i> <i>Risk Assessment – D – other management mechanisms/licence conditions</i></p> <p>General provisions of the <i>Environmental Protection Act 1986</i>.</p>	



DECISION TABLE

Works Approval / Licence Section	Condition Number L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference Documents
			Fugitive dust emissions can damage surrounding vegetation and impact human health. Dust may be caused by vehicles on site, or exposure of disturbed areas to wind. Rotation of slurry spigots around the TSF perimeter embankments will help to manage dust generation by maintaining surface tailings moisture. Optional standard conditions have been added to the licence to ensure adequate management of dust emissions.	
Odour	L2.7	N/A	Operation <i>Emissions Significance – 1</i> <i>Socio-political context – No concern or interest</i> <i>Risk Assessment – E –other management mechanisms</i> Potential odour emissions may be generated by the operation of the sewage facility. However, odour emissions are not expected to have a significant impact off site (the nearest sensitive receptor is 30 km from site). No specific conditions relating to odour are required to be added to the licence.	General Provisions of the <i>Environmental Protection Act 1986</i> .
Noise	L2.8	N/A	Operation <i>Emission Significance – 1</i> <i>Socio-political context –No concern or interest</i> <i>Risk Assessment – E –other management mechanisms</i> Noise emissions will be generated from the processing plant and dewatering pumps. However it is not expected to have a significant impact offsite. No specified conditions relating to noise are required to be added to the licence.	General Provisions of the <i>Environmental Protection Act 1986</i> . Environmental Protection (Noise) Regulations 1997



DECISION TABLE			
Works Approval / Licence Section	Condition Number L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)
Monitoring General	L3.1	OSC	General monitoring conditions have been included on the licence to support the monitoring relating to emissions to surface water and land, process monitoring and ambient groundwater quality monitoring.
Monitoring of inputs and outputs	L3.6	N/A	Monitoring of inputs or outputs is not required to ensure efficient operation of the plant and therefore no specific conditions relating to monitoring of inputs or outputs are required to be included in the licence.
Process Monitoring	L3.7	OSC	Monitoring of tailings deposited into the TSF, seepage water recovered, and TSF decant return is required to record process throughput and water efficiency. Table 3.7.1 shows monitoring requirements.
Ambient Quality Monitoring	L3.8	OSC	Environmental groundwater quality monitoring is required to capture the ambient groundwater quality surrounding the TSF. Monitoring is required to; a) Ensure SWL at the receiving cells does not affect adjacent vegetation. Limits and targets for SWL's have been imposed as part of the licence conditions, along with notification requirements if targets and limits are breached; and, b) Identify trends in contaminant levels caused by the seepage of tailings liquor. The suite of chemical analysis identifies metals, metal availability, acid generation, and hardness.
Meteorological monitoring	L3.9	N/A	Monitoring of meteorological conditions is not required.
			Reference Documents
			Australian Standard AS/NZS 5667.1 – Water Quality – Sampling – Guidance on the Design of sampling programs, sampling techniques and the preservation and handling of samples
			Application supporting documents.
			Application supporting documents.
			General provisions of the <i>Environmental Protection Act 1987</i>
			Australian Standard AS/NZS 5667.1 – Water Quality – Sampling – Guidance on the Design of sampling programs, sampling techniques and the preservation and handling of samples



DECISION TABLE

Works Approval / Licence Section	Condition Number L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference Documents
Improvements	L4	N/A	No specific improvements are required by DWER. It has been assessed that the management measures committed to by Avoca Mining Pty Limited are adequate to manage the potential emissions and discharges produced from the site. No specific conditions relating to improvements are required to be added to the licence.	Application supporting documents.
Information	L5	N/A	Standard conditions relating to the management of records and complaints, notification requirements, and the submission of an annual audit compliance report and annual environmental report have been added to the licence.	General provisions of the <i>Environmental Protection Act 1986</i> .



5 Advertisement and Consultation Table

Date	Event	Comments received/Notes	How comments were taken into consideration
6/08/2018	Proponent sent a copy of draft instrument	No comments received	N/A



Appendix A - EMISSIONS AND DISCHARGES RISK ASSESSMENT MATRIX

Table 3: Measures of Significance of Emissions

Emissions as a percentage of the relevant emission or ambient standard		Worst Case Operating Conditions (95 th Percentile)			
		>100%	50 – 100%	20 – 50%	<20%*
Normal Operating Conditions (50 th Percentile)	>100%	5	N/A	N/A	N/A
	50 – 100%	4	3	N/A	N/A
	20 – 50%	4	3	2	N/A
	<20%*	3	3	2	1

*For reliable technology, this figure could increase to 30%

Table 4: Socio-Political Context of Each Regulated Emission

		Relative proximity of the interested party with regards to the emission				
		Immediately Adjacent	Adjacent	Nearby	Distant	Isolated
Level of Community Interest or Concern*	5	High	High	Medium High	Medium	Low
	4	High	High	Medium High	Medium	Low
	3	Medium High	Medium High	Medium	Low	No
	2	Low	Low	Low	Low	No
	1	No	No	No	No	No

Note: These examples are not exclusive and professional judgement is needed to evaluate each specific case

*This is determined by DWER using the DWER "Officer's Guide to Emissions and Discharges Risk Assessment" May 2006.

Table 5: Emissions Risk Reduction Matrix

		Significance of Emissions				
		5	4	3	2	1
Socio-Political Context	High	A	A	B	C	D
	Medium High	A	A	B	C	D
	Medium	A	B	B	D	E
	Low	A	B	C	D	E
	No	B	C	D	E	E

PRIORITY MATRIX ACTION DESCRIPTORS

A = Do not allow (fix)

B = licence condition (setting limits + EMPs - short timeframes)(setting targets optional)

C = licence condition (setting targets + EMPs - longer timeframes)

D= EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools

E = No regulation, other management mechanisms