



Decision Document

Environmental Protection Act 1986, Part V

Proponent: HBJ Minerals Pty Ltd

Licence: L5107/1988/13

Registered office: Level 3
18 Parliament Place
WEST PERTH WA 6005

ACN: 127 026 519

Premises address: Jubilee Gold Mine
Lot 15 on Plan 58833, Lot 50 on Plan 226299 and Lot 51 on Plan 226303,
Feysville, Lot 103 on Plan 40395, Lot 105 on Plan 40396, Karamindie, and
mining tenements M26/118, M26/143, M26/204 and M15/456

Issue date: Thursday, 2 October 2014

Commencement date: Saturday 25 October 2014

Expiry date: Friday 24 October 2036

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue an amended licence. DER 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: Fiona Sharpe
Licensing Officer

Decision Document authorised by: Tim Gentle
Delegated Officer



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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 <input type="checkbox"/> New Licence <input type="checkbox"/> Licence amendment <input checked="" type="checkbox"/> Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	5	1 650 000 tonnes per year
	6	500 000 tonnes per year
	64	5 000 tonnes per year
Application verified	Date:	
Application fee paid	Date: N/A	
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 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.		
Are 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 and assessment

HBJ Minerals Pty Ltd (HBJ) is a wholly owned subsidiary of Metals X. Jubilee has been operating as a gold mine at the current site under various operators since 1987. It is sometimes referred to as the South Kalgoorlie Operations (SKO). SKO now has in excess of 40 decommissioned mining operations on the mining tenements and location lands under its control.

Jubilee was originally owned by Hampton Australia until the mine was taken over by Normandy in January 1994. It was then owned by Normandy until April 1996, when it was acquired by New Hampton Goldfields which, in turn, was taken over by Harmony in April 2001. In December 2007, Harmony sold the operation to Dioro Exploration NL. Ore from SKO was processed at the nearby Dioro-owned Jubilee Mill, commissioned in 1987.

In April 2010 Avoca Resources was successful in its takeover bid for Dioro and ran the operation until February 2011 when after a mutual merger with Canadian company Anatolia, Alacer Gold was formed. Then in September 2013, Metals X announced that it had bought the Australian business unit of Alacer Gold and all of its subsidiaries. Its management of the operations began on 1 October 2013.

The SKO (including Jubilee mine site) is located 32 kilometres (km) south of Kalgoorlie-Boulder, adjacent to the Kalgoorlie-Kambalda Highway. SKO operates the Jubilee mill and currently treats stockpiled ore and toll treats ore from Salt Lake Mining and Blue Tiger Mines.

Jubilee processes a nominated production rate of 1 650 000 tonnes of ore per year. Jubilee processes gold ore mined from nearby underground workings and satellite open cuts using the carbon-in-leach method of gold extraction. The Jubilee plant consists of primary, secondary and tertiary crushers; fine ore storage; ball milling and agitator leaching; carbon-in-pulp absorption; elution and carbon reactivation. Currently there is no mining occurring at the site.

In conjunction with the processing plant, a number of tailings storage facilities (TSFs), including four in-pit TSFs, are located within the site. Currently over 90% of the tailings produced is pumped to the Sapphire in-pit TSF. The remainder is pumped to Jubilee TSF 3A, a paddock style TSF. HBJ has a program to top up the tails in two other approved in-pit TSF's; Golden Hope and Mt Goddard, in which deposition has already started. The aim is to put thin layers of tails over these two facilities and let



them dry before applying another layer. Bellevue in-pit TSF is decommissioned with plans to rehabilitate in 2015.

The landfill site within the premises is located within an old TSF, where wastes are covered fortnightly with waste rock. Wastes disposed to the landfill include putrescibles and inert (construction) wastes and there is some recycling of cardboard, paper and scrap metals. The landfill site is inspected every 2 weeks.

An amendment has been applied for to extend the premises boundary in order to cover future mining activities and to include three mine dewatering discharge points. The three discharge points are; Celebration Pit, Noble 5 Open Pit and Shirl Open Pit. The prescribed premises boundary has also been expanded in this amendment to include the Noble mining area and the SBS28 mining area (Shirl Open Pit). The Licence has been reviewed in accordance with DER's Guidance Statement – Setting Conditions (October 2015) and the Decision Table below provides the risk assessment and justification for the conditions.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, 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	No conditions	General conditions have been removed from the licence. They are considered redundant as they are not sufficiently clear or certain.	DER's Guidance Statement – Setting Conditions October 2015
Premises operation	L1.2.1 – 1.2.16	DER's assessment and decision making are detailed in Appendix A	Application supporting documentation General provisions of the <i>Environmental Protection Act 1986</i> .
Emissions general	L2.1.1	Descriptive limits will be set through condition 2.6.2 of the licence and therefore OSC regarding recording and investigation of exceedances of limits has been included.	N/A
Point source emissions to air including monitoring	No conditions	No significant air emissions are expected from the Premises. No conditions are required.	General provisions of the <i>Environmental Protection Act 1986</i> .
Point source	No conditions	No significant point source emissions to surface water are expected from the Premises.	General



DECISION TABLE			
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emissions to surface water including monitoring		No conditions are required.	provisions of the <i>Environmental Protection Act 1986</i> .
Point source emissions to groundwater including monitoring	L2.2	DER's assessment and decision making are detailed in Appendix A	Application supporting documentation General provisions of the <i>Environmental Protection Act 1986</i> .
Emissions to land including monitoring	No conditions	No significant emissions to land are expected from the Premises. No conditions are required.	General provisions of the <i>Environmental Protection Act 1986</i> .
Fugitive emissions	No conditions	Normal Operation <u>Emission Description</u> <i>Emission:</i> Dust is generated from movement of vehicles, materials handling and open areas. <i>Impact:</i> Dust emissions can be harmful to human health and the environment. Elevated total suspended particles (TSP) impacts ambient environmental quality which can result in amenity impacts and can smother vegetation. Particulate matter that are less than 10(PM ₁₀) or 2.5(PM _{2.5}) micrometres in diameter can be drawn deep into the lungs creating health impacts. The chemical and physical properties of the particles, the size of the particles and the duration of exposure are all factors which may affect human health impacts from dust.	DER's Guidance Statement – Setting Conditions October 2015 General provisions of the <i>Environmental Protection Act 1986</i> .



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>Controls:</i> The Licensee manages dust on site by taking all practical measures including:</p> <ul style="list-style-type: none"> • using and maintaining dust collection or dust control systems at the crusher; • using water carts to regularly wet down surface areas where dust is generated by mobile equipment; • historic TSFs are covered and capped with waste rock; and • current TSFs are sprayed with dust suppressant. <p><u>Risk Assessment</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Low</p> <p><u>Regulatory Controls</u> No fugitive conditions relating to dust are required for the Licence. Existing fugitive conditions have been removed from the Licence as they are not risk-based. The substantive offenses of the <i>Environmental Protection Act 1986</i> provide enforceable prohibitions for dust emissions that result in pollution or environmental harm.</p> <p><u>Residual Risk</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Low</p>	
Odour	No conditions	No significant odour emissions are expected during the operation of the Premises. No conditions are required.	General provisions of the <i>Environmental Protection Act 1986</i> .



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Noise	No conditions	No significant noise emissions are expected during the operation of the Premises. No conditions are required.	General provisions of the <i>Environmental Protection Act 1986</i> .
Monitoring general	L3.1.1 – 3.1.2	General monitoring conditions have been included in the Licence to support the monitoring relating to ambient environmental monitoring. Conditions 3.1.1 and 3.1.2 have been selected to ensure water monitoring is carried out in accordance with appropriate standards.	
Monitoring of inputs and outputs	No conditions	There are no specified monitoring conditions relating to inputs or outputs required.	
Process monitoring	L3.3	Process monitoring has been included in the Licence to ensure the volume of tailings deposited into the TSF and the volumes of water recovered from the TSF is monitored.	N/A
Ambient quality monitoring	L3.4	As per the risk assessment carried out in the 'premises operation' section of this table in regards to tailings seepage, Condition 3.4.1 has been included in the Licence to allow for monitoring of ambient groundwater quality.	
Meteorological monitoring	No conditions	No specific meteorological monitoring is required.	N/A
Improvements	No conditions	No specific improvements are required by DER for the operation at the Jubilee Gold Mine.	N/A
Information	L4	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 are included in the Licence. Condition 4.1.2 has been removed as this is not an enforceable condition and is considered redundant.	DER's Guidance Statement – Setting Conditions October 2015
Licence Duration	N/A	The expiry date of the Licence has been changed from 24 October 2019 to 24 October 2036.	DER's Guidance Statement on



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
			Licence Duration May 2015



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
28/07/2016	Proponent sent a copy of draft instrument	Proponent satisfied with draft	N/A



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

Normal Operation

Emission Description

Emission: Tailings held in the TSF is a waste product from the gold processing and includes cyanide and heavy metals. Seepage from the TSF into the surrounding groundwater, including metals such as cyanide, may occur over time as tailings are deposited into the facility.

Impact: Contamination of surrounding land and groundwater with toxic metals, sulphide minerals, dissolved solids and cyanide affecting soil and ground water quality and causing vegetation stress or even deaths if the exposure is for a prolonged period.

Controls: Adequate design of the TSF with management measures including the collection of seepage through toe drains and monitoring of groundwater surrounding TSFs. The Licensee has provided a Groundwater Recovery Plan which details measures taken to reduce standing water level to 6mbgl or greater. The Licensee has also established photographic monitoring sites to monitor vegetation surrounding the Jubilee TSF.

Risk Assessment

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Conditions 1.2.3 – 1.2.5 have been added to the Licence to ensure the TSFs are managed appropriately and operated in accordance with original construction documents. These conditions also ensure the Licensee manages the TSF to minimise the supernatant pond as far as practical and to have a seepage collection and recovery system in place should seepage occur. Conditions 1.2.7 and 1.2.8 requires the Licensee to undertake annual vegetation assessment to ensure seepage is not affecting surrounding vegetation and an annual water balance.

A limit of 4mbgl has been included in Condition 1.2.9 as a safeguard against rising groundwater levels which can impact on surrounding vegetation. The target of 4mbgl has been removed in the July 2016 amendment as targets are not considered enforceable in accordance with DER's Guidance Statement – Setting Conditions October 2015. Ambient groundwater monitoring is included in condition 3.4.1 to monitor for trends and detect any seepage which may be occurring.

Residual Risk

Consequence: Moderate

Likelihood: Unlikely

Risk Rating: Moderate

Abnormal Operation

Emission Description

Emission: Pond overtopping and release of tailings containing cyanide, toxic metals, sulphide minerals and dissolved solids.

Impact: Contamination of surrounding soils with toxic metals, sulphide minerals, dissolved solids and cyanide affecting soil and ground water quality and causing vegetation stress or even deaths if the exposure is for a prolonged period.

Controls: The facilities are constructed and maintained in accordance with original management documents, including a minimum freeboard and daily inspections.

Risk Assessment

Consequence: Moderate



Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls

Condition 1.2.4 relates to maintaining a minimum top of embankment freeboard of 300 mm within all storage facilities containing saline, alkaline or cyanide constituents to accommodate extreme rainfall events and prevent overtopping.

Condition 1.2.6 relates to carrying out visual daily inspections by the licensee for the embankment freeboard.

Residual Risk

Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Normal Operation

Emission Description

Emission: Putrescible and inert (construction) wastes deposited into landfill

Impact: Contamination of groundwater through leachate generated from the decomposition of putrescible waste combined with infiltrating rainfall and contamination of stormwater run-off.

Controls: Adequate design of the landfill facilities and located within an old TSF (15 m high) where wastes are covered monthly with waste rock to ensure contaminated stormwater is contained. The landfill site is inspected by internal staff every two weeks. Groundwater in the area is lower than 8 mbgl. With the 15 m buffer between the landfill and ground level and the distance to groundwater, it is unlikely leachate will occur.

Residual Risk

Consequence: Minor
Likelihood: Rare
Risk Rating: Low

Normal Operation

Emission Description

Emission: Putrescible and inert (construction) wastes may become wind-blown.

Impact: Wind-blown waste can exist in the environment for a long period of time before decomposing and is hazardous to the environment. Wildlife can also ingest wind-blown waste as they may mistake it for food, which can cause serious harm and even death. Wind-blown waste may also be transported into waterways or even the ocean, where it can cause water pollution and algal blooms consequently negatively impacting on aquatic fauna.

Controls: The landfill site is enclosed with waste from the open pit to prevent wind-blown waste. Each fortnight the exposed site is covered with dirt and the area is hand-picked where necessary to ensure all the waste is buried.

Risk Assessment

Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory Controls

Condition 1.2.14 ensure the Licensee takes appropriate measures to ensure wind-blown waste doesn't escape the premises and that any wind-blown waste is collect and returned to the landfill on a fortnightly basis.



Residual Risk

Consequence: Moderate

Likelihood: Unlikely

Risk Rating: Moderate

Emergency Situation

Emission Description

Emission: Hypersaline water as well as tailings, a waste product from gold processing and includes cyanide, arsenic and other heavy metals are transported in pipelines through areas of native vegetation. Emissions will occur if the pipelines were to rupture and/or leak.

Impact: Contamination of surrounding soils with cyanide, toxic metals, sulphide minerals and dissolved solids, affecting ground water quality and causing vegetation stress or even deaths if the exposure is for a prolonged period.

Controls: Adequate design, construction and maintenance of pipelines. Tailings and dewatering pipelines are either bunded or buried and have collection sumps to capture any spills. The pipelines are visually inspected every 12 hours.

Risk Assessment

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Conditions relating to pipelines have been added to the Licence in 1.2.1 and 1.2.6. These conditions will ensure pipelines containing tailings or hypersaline water will be managed appropriately and corrective action is taken in the event that pipelines leak or rupture.

Construction requirements have been included in the July 2016 amendment through conditions 1.2.15 and 1.2.16 to ensure pipelines installed for the dewatering projects are done so in accordance with the specifications and commitments outlined in the application.

Residual Risk

Consequence: Moderate

Likelihood: Rare

Risk Rating: Moderate

Point source emissions to groundwater including monitoring

Normal Operations

Emission Description

Emission: Hypersaline water may be transported in pipelines from the HBJ underground and discharged into the Celebration Open Pit. There is also potential for HBJ to mine the Lanarkshire Open Pit. Any excess water from this pit not used for dust suppression will also be pumped via pipeline to the Celebration Open Pit.

Hypersaline water may be transported in pipelines from the Bakers Flat Open Pit and discharged into the Shirl Open Pit. Currently there is 160,000kL of water in the Bakers Flat Open Pit that needs to be removed prior to mining. During mining it is proposed a similar amount will be required to be pumped out but exact figures are not known due to inflow coming from exposed sand seams in the palaeochannel.



Hypersaline water may be transported in pipelines from the Noble 6 pit and discharged to the Noble 5 Open Pit, located less than 400 m away. The Noble 5 pit is currently the main source of water for the Greenfields mill, operated by FMR Investments Pty Ltd.

Impact: Potential contamination of groundwater and possible mounding of the water table in the vicinity of the receiving pit. The water quality in the area is considered hypersaline and levels in the receiving pits are all above 50 000 mg/L TDS. The levels in Celebration pit can fluctuate up to around 130 000 mg/L TDS.

As the groundwater in the project area is hypersaline and within the same aquifer, there is little impact expected in the water quality in the receiving environment. The biggest concern would be rising groundwater levels, as hypersaline water can be detrimental to surrounding vegetation. Groundwater in the area ranges from 35 mbgl to 170 mbgl.

Controls: HBJ has proposed that the discharge will not exceed the point where the open pit surface water level is less than 10 metres below the lowest ground level point around the open pit. HBJ will install four vegetation monitoring sites around the pit when the water levels reach the point where it is 15mbgl and will carry out annual vegetation monitoring at these sites whilst the water in the pit is less than 15mbgl.

There are no known groundwater dependent ecosystems in the vicinity of the project, nor wetlands or public drinking water source areas that could be affected by the drawdown caused by dewatering of the pits.

Risk Assessment

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Licence conditions 2.4.1 will allow the discharge to occur and 3.4.1 will be included to ensure pit level monitoring, along with volumetric flow, pH and TDS is undertaken. The Licence will have a limit of 4 mbgl for standing water level within the pit through Table 3.4.1.

Residual Risk

Consequence: Moderate

Likelihood: Unlikely

Risk Rating: Moderate