



Decision Document

Environmental Protection Act 1986, Part V

Proponent: Saracen Metals Pty Limited

Licence: L7815/2001/11

Registered office: 89 St Georges Tce
PERTH WA 6000

ACN: 107 154 727

Premises address: North Eastern Goldfields Operations
Mining tenements L36/155, L36/157, L36/158, L36/181, L36/193,
L36/199, L36/202, L37/61, L37/73, L37/142, L37/166, L37/181, L37/199,
L37/215, L37/216, M36/35, M36/421, M36/428, M36/462, M36/473,
M36/494, M36/503, M36/504, M36/512, M36/525, M36/527, M36/541,
M36/542, M36/582, M37/339, M37/340, M37/356, M37/357, M37/358,
M37/359, M37/360, M37/361, M37/465, M37/367, M37/368, M37/437
and M36/599
LEINSTER WA 6437

Issue date: Thursday, 9 October 2014

Commencement date: Tuesday, 21 October 2014

Expiry date: Sunday, 20 October 2024

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:

Louise Lavery
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.

Works approval and licence conditions

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

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	2 600 000 tonnes per annual period
	6	450 000 tonnes per annual period
	52	14.8 megawatts
	64	5 000 tonnes per annual period
	73	105 000 cubic metres in aggregate
	85	40 m ³ per day
Application verified	Date: N/A	
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 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 and assessment

Saracen Mineral Holdings Limited is an Australian mid-tier gold producer. North Eastern Goldfields Operations, which include the Thunderbox and Waterloo operations, were purchased from Norilsk Nickel Australia Pty Ltd in May 2014, under the subsidiary Saracen Metals Pty Ltd (Saracen). The company's assets lie 40 km south of Leinster adjacent to the Goldfields Highway.

Amendment October 2015

This Licence amendment was to allow the recommencement of the Thunderbox Operations after an extended period of care and maintenance. Dewatering discharges to Double A Pit will start up at a rate of 450,000 kL to allow for a rapid drawdown of groundwater and safe mining of Thunderbox Pit before discharge rates plateau at approximately 310,000 kL. The amendment also increased approved throughput rates for the processing facility to 2.6 Mtpa compared to the nominated 50,000 tonnes when the site was in care and maintenance.

Until recently Saracen has only operated two diesel fired generators on site to produce less than 10 MW. However, the power station at Thunderbox has the capacity to produce 14.8 MW using seven LPG generators, four dual fuel generators and three diesel generators. To cater for the additional waste during production, Saracen will also be resuming the operation of a 4,000 tonne per annum landfill to accept industrial wastes only.

Amendment April 2016

This decision document described the decision making for the April 2016 licence amendment to add categories 64 (to include putrescible waste in the landfill) and 85 (to allow discharge of treated sewage effluent to the eastern waste dump) to the licence and correct an administrative error in relation to the height of the exhaust ducts from the power station.

Saracen has given an undertaking to manage putrescible and industrial waste such that they will be disposed in separate trenches, which will be covered and inspected weekly. Trenches will be constructed to be approximately 30 m in length, 3 m wide and 2 m deep, with a tipping face 3m wide. Fencing and earthen bunds will be in place to control placement of waste and prevent vehicles driving into the trenches. The trenches will be ramped at one end to allow fauna to escape. In order to reduce windblown litter and vermin all putrescible waste will be place in black



plastic bags and then 1000 L bulka bags prior to disposal. The landfill will be constructed and operated in accordance with the Saracen Waste Management Plan which includes compliance with the Environmental Protection Act 1986 and the Environmental Protection (Rural Landfill) Regulations 2002.

Amendment November 2016

This Licence amendment is to extend the Prescribed Premises boundary to include tenements to the south of Thunderbox, incorporating the Bannockburn tenements. These tenements were acquired with the original purchase of the North Eastern Goldfields Operations from Norilsk Nickel Australia.

The Licensee has sought approval to construct a pipeline to transfer mine dewater from the open pit for use in the Thunderbox processing plant. As the mine dewater pipeline does not result in a discharge of wastewater, the construction and operation of this pipeline does not require approval through the Licence, however at the request of the Licensee it has been included in the Licence. Provisions of the *Environmental Protection Act 1986*, including section 72 apply. Existing conditions within the Licence for pipelines and inspection of mine dewater pipelines also apply.

Revisions and removal of some standard conditions has been made to ensure consistency with DER's *Guidance Statement: Setting Conditions*, October 2015.



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	Former condition L1.1.5	DER has reviewed standard condition L1.1.5 and determined it is an explanatory statement designed to provide clarification on the operation of the Licence, and as such is not enforceable. DER has now removed this condition from the Licence.	General provisions of the <i>Environmental Protection Act 1986</i>
	Former condition L1.2.1	Former condition L1.2.1 has been removed from the Licence as the pollution control and monitoring equipment that is subject to this condition is not specified and the internal management system is subject to a subjective test of being "effective". Consequently the condition is considered not enforceable as it is not clear.	
	Former condition L1.2.2	Former condition L1.2.2 is also considered not enforceable and is contrary to the Guidance Statement: Setting Conditions as the requirement to manage substances in accord with the Code of Practice for the Storage and Handling of Dangerous Goods as this a duplicates requirement of other legislation.	
	Former condition L1.2.4	Condition L1.2.4 has been removed from the Licence as the condition does not specify clearly which stormwater infrastructure is to be utilised or maintained and does not clearly specify which management actions are required to determine compliance with this condition. Existing provisions under the <i>Environmental Protection Act 1986</i> are considered to adequately regulate discharges to the environment potentially arising from contaminated stormwater.	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Premises operation	L1.3.1, L1.3.5	<p>November 2016 Amendment</p> <p>Clarification of the pipelines subject to this condition has been made, to ensure the condition is valid and enforceable consistent with DER's <i>Guidance Statement: Setting Conditions</i>.</p> <p>The new dewatering pipeline from Bannockburn pit to Thunderbox Processing Plant.</p> <p>Refer also to Appendix A for DER's assessment and decision making for pipelines.</p>	<p><i>Guidance Statement: Setting Conditions, October 2015</i></p> <p>Appendix A</p>
	L1.3.2	<p>November 2016 Amendment</p> <p>The addition of the Bannockburn tenements and dewatering pipeline to Thunderbox has resulted in the mine dewatering dam at Bannockburn being added to the list of approved containment infrastructure on the Licence.</p>	
	L1.3.3, L1.3.5	<p>Refer to Appendix B for DER's assessment and decision making for TSF operation.</p>	Appendix B
	L1.3.4	<p>November 2016 Amendment</p> <p>This condition has been amended to clearly specify the action to be taken to manage seepage recovery from the TSFs, to ensure the condition is valid and enforceable consistent with DER's <i>Guidance Statement: Setting Conditions</i>.</p> <p>Refer also to Appendix B for DER's assessment and decision making for TSF operation.</p>	<p><i>Guidance Statement: Setting Conditions, October 2015</i></p> <p>Appendix B</p>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
	L1.3.7 to 1.3.10	<p>October 2015 Amendment</p> <p>Premises operation conditions have been applied to the amended Licence to regulate the operation of the landfill. These conditions include requirements for the types of waste permitted, trench size and location, covering regularity, security and recovering of windblown waste. These conditions mirror the requirements of the <i>Environmental Protection (Rural Landfill) Regulations 2002</i>, where appropriate.</p>	<p>Application supporting documentation</p> <p><i>Environmental Protection (Rural Landfill) Regulations 2002.</i></p>
	L1.3.7	<p>April 2016 Amendment</p> <p>Modifications to Table 1.3.3 were made to allow for putrescible waste to be disposed of to the onsite landfill.</p>	
Emissions general	L2.1.1	<p>November 2016 Amendment</p> <p>Limits are prescribed by condition L3.3.1. This general condition has been amended to clarify that all exceedances of limits must be recorded and investigated.</p>	<p>General provisions of the <i>Environmental Protection Act 1986.</i></p>
Point source emissions to air including monitoring	L2.2.1 and L3.2.1	<p>October 2015 Amendment</p> <p>The previous Licence permitted 10 MW of power generation from two generators. These generators will be decommissioned and replaced by 11 smaller generators constructed under Works Approval W5794/2014/1 and have a cumulative production capacity of 14.8 MW. Table 2.2.1 has been adjusted accordingly and monitoring conditions under 3.2.1 will apply to the new generators.</p>	<p>Application supporting documentation</p> <p>General provisions of the <i>Environmental Protection Act 1986.</i></p>
	L2.2.1	<p>April 2016 Amendment</p> <p>Table 2.2.1 has been updated to reflect the correct amount of emissions stacks and heights from the new generators.</p>	



DECISION TABLE											
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents								
	L2.2.1	<p>November 2016 Amendment</p> <p>The description of the generators in the front of the Licence has been updated to reflect the correct configuration of generators. The height of the stacks and numbers of stacks in Table 2.2.1 has been corrected. There is no change to the total capacity of 14.8 MW.</p>									
Fugitive emissions	Previous L2.3.1 – L2.3.3	<p>November 2016 Amendment</p> <p>The Licensee requested the removal of previous conditions 2.3.1 and 2.3.2 as the TSF's are active and hence the surface of each cell is wet, mitigating the risk of dusting. Previous licence condition 2.3.3 has been replaced to describe directly the action from the management plan to mitigate the risk of dusting in the TSF Cells or in the area adjacent to the TSF Cells known as the 'TSF Affected Area' and shown in Figure 7 in Schedule 1. Also refer to the Table 5, summary of consultation, following.</p>	Appendix 2 of Thunderbox Gold Mine Tailings Storage Facility Fugitive Dust Environmental Management Plan (EMP)								
Emissions to land	L2.4.1	<p>April 2016 Amendment</p> <p>This condition authorises discharge of treated effluent to the eastern waste dump.</p> <p>Abnormal Operations <u>Emission Description</u> <i>Emission:</i> Discharge of treated effluent (30kL/day) to the Eastern Waste Dump. <i>Impact:</i> A baseline analysis of the treated effluent water quality was provided in the application supporting document as summarised below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: black; color: white;">Baseline Water Quality Results</th> </tr> <tr> <th style="width: 60%;">Parameters</th> <th>Discharge Point</th> </tr> </thead> <tbody> <tr> <td>5 day Biochemical Oxygen Demand (BOD)</td> <td>45 mg/L</td> </tr> <tr> <td>Total Dissolved Solids</td> <td>977 mg/L</td> </tr> </tbody> </table>	Baseline Water Quality Results		Parameters	Discharge Point	5 day Biochemical Oxygen Demand (BOD)	45 mg/L	Total Dissolved Solids	977 mg/L	<p>Application supporting documentation</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p>
Baseline Water Quality Results											
Parameters	Discharge Point										
5 day Biochemical Oxygen Demand (BOD)	45 mg/L										
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DECISION TABLE									
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents						
		<table border="1"> <tr> <td>Total Nitrogen</td> <td>65.2 mg/L</td> </tr> <tr> <td>Total Phosphorus</td> <td>9.54 mg/L</td> </tr> <tr> <td>E. coli (cfu/100mL)</td> <td><10 cfu/100mL</td> </tr> </table> <p>In comparison with the Department of Water's Water Quality Protection Note 22 (WQPN 22) 'Irrigation with nutrient-rich wastewater' the phosphorus concentration above in is excess of the recommended amount (9.54 mg/L as compared to 7.5 mg/L). It is noted that the criteria in WQPN 22 is recommended in relation to preventing eutrophication risk. As the effluent is being discharged to a disturbed site (waste rock dump) it is considered that this level of protection is not relevant. WQPN 22 uses a BOD of 150mg/L limit as a concentration in which further treatment (chemical or biological stabilisation) should be used. The effluent's BOD is at 45mg/L by way of comparison.</p> <p><i>Controls:</i> The effluent will have been treated by aeration and chlorination prior to discharge. It is only intended to discharge effluent to this waste dump when the mill is offline (i.e.shutdown for maintenance). Normal discharge will be via the mill as part of the tailings return water. The Eastern waste dump is 40 m high (any effluent would have to migrate through the 40m of waste prior to infiltrating land. Sprinklers will be used to discharge the effluent to reduce the risk of pooling. The discharge site is removed from personnel.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Rare <i>Risk rating:</i> Low</p> <p>No regulatory controls are proposed.</p>	Total Nitrogen	65.2 mg/L	Total Phosphorus	9.54 mg/L	E. coli (cfu/100mL)	<10 cfu/100mL	
Total Nitrogen	65.2 mg/L								
Total Phosphorus	9.54 mg/L								
E. coli (cfu/100mL)	<10 cfu/100mL								
Noise	L – no conditions	Noise has not been reassessed as part of this amendment. As the previous licence	<i>Environmental</i>						



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		did not impose controls on noise, no specified conditions have been included in this section. The <i>Environmental Protection (Noise) Regulations 1997</i> apply.	<i>Protection (Noise) Regulations 1997</i>
Odour	L – no conditions	No odour impacts are anticipated from the premises. No conditions relating to odour are included in the Licence.	General provisions of the <i>Environmental Protection Act 1986</i> .
Monitoring general	L3.1.1 – L3.1.2	General monitoring conditions are included in the licence to ensure ambient environmental monitoring specified in condition 3.3.1 of the licence is carried out in accordance with the relevant standards and at appropriate intervals.	AS/NZS 5667.1 AS/NZS 5667.11
Monitoring of inputs and outputs	L – no conditions	No conditions relating to monitoring of inputs and outputs are included in this Licence.	N/A
Process monitoring	L – no conditions	No conditions relating to process monitoring are included in this Licence.	N/A
Ambient quality monitoring	L3.3.1, L3.3.2	Refer to DER's assessment and decision making in Appendix B for justification for groundwater monitoring. November 2016 Amendment Monitoring bore MB3 has been removed from the monitoring schedule as it has been destroyed by the southern extension of the eastern waste dump.	Appendix B
Information & Schedule 2	L4.1.3 Removal of AACR template	November 2016 Amendment Following DER review of the Annual Audit Compliance Report (AACR) procedure, the template for an AACR has been updated and is now available via DER's public website: der.wa.gov.au. Consequently the template is not included in the Licence and has been removed.	
Licence	N/A	29 April 2016 Amendment Notice	Sections 59(1)(k)



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Duration		The duration of the licence was extended to 20 October 2024 on April 29 2016 by amendment notice, to align with the Premises' mining tenement expiry dates.	and s59B(9) of the <i>Environmental Protection Act 1986</i>



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
09/03/16	Licensee sent a copy of draft instrument	Minor errors identified. Updated infrastructure map supplied. Change to reporting requirement for data obtained according to condition 2.3.1.	Changes accepted.
7/11/2016	Licensee sent a copy of draft instrument	Corrections to the list of tenements within the prescribed premises boundary. Request to remove conditions 2.3.1 and 2.3.2 as the site is no longer in care and maintenance and the TSF surfaces are now wetted due to active tailings deposition. DER replaced the wording in previous condition 2.3.3 (now 2.3.1) to refer directly to the actions required in the previously referenced management plan. To aid clarity to condition 2.3.1, Figure 7 was added to Schedule 1.	Changes adopted made and accepted.



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 – Tailings, Mine Dewater and Tailings Return Pipelines

Abnormal Operations

Emission: Saline water and tailings (a slurry waste product from the gold processing that contains cyanide, arsenic and other heavy metals in solution) are transported in pipelines through areas of native vegetation. Emissions may impact on vegetation if the pipelines were to rupture and/or leak.

Impact: Potential contamination of surrounding soil with hypersaline water or tailings resulting in localised alteration of the environment and potentially vegetation death.

Controls: Adequate design, construction and maintenance of pipelines. Regular inspections of pipeline integrity.

The new Bannockburn to Thunderbox pipeline will be designed with scour pits at suitable locations to allow draining of the line in a controlled manner. The pits will be sized to hold the amount of water for that segment of the pipeline feeding the scour location, approximately 250kL. The pipe will be laid on a smooth bed of soft, fine broken material, and covered by a 300mm graded cover thus minimising the potential of puncturing the polyethylene pipes. The pipeline will be welded in accordance with international standard ISO21307 (Saracen Metals 2016).

Risk Assessment

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Condition 1.3.1 requires the Licensee to ensure that all pipelines are either equipped with automatic cut-offs or sufficiently contained within a secondary containment area in the event of a pipe failure. Condition 1.3.5 is also included to ensure regular visual inspections of the integrity of the pipelines are carried out.

Residual Risk

Consequence: Minor

Likelihood: Possible

Risk Rating: Moderate

Reference

Saracen Metals Pty Ltd (2016) *Bannockburn Haul Road and Water Pipeline Licence Amendment Supporting Information*, September 2016.



Appendix B

Premises Operation – Tailings Storage Facility

Normal Operation

Emission Description

Emission: Tailings held in the TSF are a slurry waste product from gold processing containing cyanide, arsenic and other substances in solution. Seepage from the solid tailings into the surrounding groundwater occurs over time as tailings are deposited into the facility.

Impact: Groundwater mounding resulting in localised death of vegetation from groundwater inundation of their rootzone. Contamination of groundwater from increased metals and metalloids and cyanide in solution.

Controls: Adequate design of the TSF with a seepage recovery and groundwater monitoring program. The TSF is lined to limit its permeability of at least $<10^{-8}$ m/s.

Risk Assessment

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Conditions 1.3.2 authorises tailings deposition and storage to specified TSF containment infrastructure to ensure the tailings are discharged to adequately designed facilities. Condition L1.3.4 ensures the Licensee manages the TSF to have a seepage collection and recovery system in place to capture any seepage. An annual water balance is also required in Condition L1.3.6 as a check to determine if seepage is increasing over time. L3.3.1 requires quarterly monitoring of groundwater levels and quality in the vicinity of the TSF and also prescribes a limit for groundwater levels, in order to prevent groundwater mounding inundating the rootzone of adjacent vegetation. L3.3.2 specifies action to be taken in the event of the groundwater levels recorded above a target of 6 mbgl.

Residual Risk

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Emergency - Operations

Emission Description

Emission: Overtopping of the TSF releasing tailings supernatant or tailings slurry to surrounding land either during a storm event or due to operator error.

Impact: Tailings will contain elevated levels of arsenic, metals and metalloids in solution. Weak acid dissociable cyanide is also present in supernatant (tailings liquor that ponds on the surface of the TSF). A release of tailings may impact on the adjacent Goldfields Highway in addition to impacting surrounding vegetation.

Controls: The TSF will be operated in accord with a Tailings Operating Manual which will prescribe periodic checks of the integrity of the TSFs' embankments and also check the operating freeboard of the cell.

Risk Assessment

Consequence: Major

Likelihood: Rare

Risk Rating: Moderate



Regulatory Controls

Licence conditions 1.3.3 (minimum freeboard provision of 500 mm) and 1.3.5 (inspection of infrastructure frequency and requirements) apply.

Residual Risk

Consequence: Major

Likelihood: Rare

Risk Rating: Moderate