



Licence

Environmental Protection Act 1986, Part V

Licensee: Sandstone Operations Pty Ltd

Licence: L6949/1993/8

Registered office: Sandstone Operations Pty Ltd
 Ground Floor, 20 Kings Park Road
 WEST PERTH WA 6872

ACN: 611 811 280

Premises address: Twin Shafts Treatment Plant
 M57/128 and M57/129
 SANDSTONE WA 6639
 as depicted in Schedule 1.

Issue date: Thursday, 26 September 2013

Commencement date: Monday, 30 September 2013

Expiry date: Sunday, 29 September 2032

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
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year	500,000 tonnes per annual period

Conditions

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

Date signed: 10 November 2016

.....
Alana Kidd
Manager Licensing – Resource Industries
 Officer delegated under section 20
 of the *Environmental Protection Act 1986*



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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

Sandstone Operations Pty Ltd (Sandstone) operate the Twin Shafts Treatment Plant (Twin Shafts) which is located approximately 13km south - south west of the town of Sandstone.

Twin Shafts is a gold mine utilising a carbon-in-pulp (CIP) gold processing plant and an in-pit tailings storage facility (TSF) for tailings disposal. Other non prescribed infrastructure at Twin Shafts includes a vehicle wash down bay, fuel storage area and diesel power generation (less than 10 megawatts).

The main emissions and discharges at Twin Shafts are dust from the crushing and screening circuit and tailings discharged into the in-pit TSF.

The Project has been in a phase of 'Care and Maintenance' since October 2010.

This Licence amendment is the result of an amendment to the groundwater monitoring frequency requirements at the Twin Shaft in-pit TSF. The Licence has also been updated into the latest licencing format.

The licences and works approvals issued for the Premises since 27/07/2007 are:

Instrument log		
Instrument	Issued	Description
W4351/1993/1	27/07/2007	Works Approval for an in-pit tailings storage facility.
L6949/1993/7	25/09/2008	Licence reissued.
L6949/1993/8	26/09/2013	Licence reissued.
L6949/1993/8	10/11/2016	Licence transfer and an amendment to the sampling frequency requirement for groundwater monitoring bores at the Twins Shafts in-pit TSF. Risk assessment of emission and discharges in accordance with DER's Guidance Statement: Setting Conditions (October 2015)

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*;

'anniversary date' means 30 September of each year;

'annual audit compliance report' means a report in a format approved by the CEO as presented by the Licensee or as specified by the CEO from time to time and published on the Department's website;

'annual period' means a 12 month period commencing from 1 October until 30 September in the following year;

'APHA' means the American Public Health Association: Standard Methods for the Examination of Water and Wastewater;

'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*;

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'care and maintenance' means production has stopped but the site is managed to ensure it remains in a safe and stable condition;

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

'CEO' for the purpose of notification means;

Chief Executive Officer
Department Div.3 Pt. V EP Act
Locked Bag 33 Cloister Square
Perth WA 6850
info@der.wa.gov.au

'Department' means the department established under s.35 of the Public Sector Management Act 1994 and designated as responsible for the administration of Division 3 Part V of the Environmental Protection Act 1986;

'extreme rainfall event' means a 1 in 100 year rainfall event that has a duration greater than 72 hours;

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



'Licence' means this Licence numbered L6949/1993/8 and issued under the Act;

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

'mbgl' means metres below ground level;

'mg/L' means milligrams per litre;

'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;

'quarterly' means quarterly intervals of March, June, September and December in each year;

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

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

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'TSF' means tailings storage facility;

'µS/cm' means micro-**Siemens** per centimetre; 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 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.

1.2 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 all pipelines containing tailings material or tailings return water from the Twin Shaft in-pit TSF are either:

- (a) equipped with telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures;
- (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.

1.2.3 The Licensee shall ensure that waste materials are discharged into dams with the relevant infrastructure requirements and at the location specified in Table 1.2.1 and identified in Schedule 1.



Table 1.2.1: Containment infrastructure		
Containment point reference	Material	Infrastructure requirements
Twin Shaft in-pit TSF	Tailings	A minimum top of embankment freeboard of 750mm is maintained in order to accommodate an extreme rainfall event
Tailings return water pond	Tailings return water from the Twin Shaft in-pit TSF	A minimum top of embankment freeboard of 750mm is maintained in order to accommodate an extreme rainfall event

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
Tailings delivery pipelines	Visual integrity	Daily
Return water lines		
Tailings deposition	Visual to confirm integrity of the TSF internal walls is being maintained	
Embankment freeboard	Visual to confirm required freeboard capacity is available	

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

Table 1.2.3: Production or design capacity limits		
Category¹	Category description¹	Premises production or design capacity limit
5	Processing or beneficiation of metallic or non-metallic ore	500,000 tonnes per annual period

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

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) groundwater samples for the monitoring of WAD cyanide are collected and preserved in accordance with APHA;
- (c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
- (d) 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:

- (a) quarterly monitoring is undertaken at least 45 days apart;
- (b) 6 monthly monitoring is undertaken at least 90 days apart; and
- (c) annual monitoring is undertaken at least 9 months 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 and the requirements of the Licence.

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
Twin Shaft in-pit TSF	Discharge of tailings material into the Twin Shaft in-pit TSF	Volumes of tailings deposited	m ³	Continuous	None specified
	Recovery of water from the Twin Shaft in-pit TSF	Volumes of water recovered	m ³	Continuous	None specified

2.3 Ambient environmental quality monitoring

2.3.1 The Licensee shall undertake the monitoring in Table 2.3.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 2.3.1: Monitoring of ambient groundwater quality					
Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
TSWB2, MB1, MB4, BH3, BH4, BH5, TWSB4, BH8, BH9 and BH10	Arsenic	Not applicable	mg/L	Spot sample	6 monthly while the Premises is in care and maintenance Quarterly all other times
	Copper				
	Iron				
	Zinc				
	Standing water level (SWL) ¹		mbgl		
	Total dissolved solids	6,000	mg/L		
	Weak acid dissociable cyanide (WAD cyanide)	0.5			
	Electrical conductivity		µS/cm		
pH ²	≥6.0 to ≤9.0	Not applicable			

Note 1: SWL shall be determined prior to collection of other water samples.

Note 2: In-field non-NATA accredited analysis permitted.



3 Information

3.1 Records

- 3.1.1 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.
- 3.1.2 The Licensee must submit to the CEO within 90 days after the Anniversary Date, an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the Conditions in this Licence for the Annual Period.
- 3.1.3 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

3.2 Reporting

- 3.2.1 The Licensee must submit to the CEO an Annual Environmental Report within 60 calendar days after the end of the annual period. The report shall contain the information listed in Table 3.2.1 in the format or form specified in that table.

Table 3.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form¹
-	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
-	Brief overview of the Premises and its processes and a current plan of the Premises	None specified
Table 2.2.1	Volumes of tailings deposited into the Twin Shaft in-pit TSF and volumes of water recovered from the Twin Shaft in-pit TSF.	None specified
Table 2.3.1	Monitoring of ambient groundwater quality	None specified
3.1.2	Compliance	AACR
3.1.3	Complaints summary	None specified

Note 1: Forms are in Schedule 2

- 3.2.2 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 Licence limits.
- 3.2.3 The Licensee shall submit the information in Table 3.2.2 to the CEO according to the specifications in that table.



Table 3.2.2: 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

3.3 Notification

3.3.1 The Licensee shall ensure that the parameters listed in Table 3.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 3.3.1: Notification requirements			
Condition or table (if relevant)	Parameter	Notification requirement¹	Format or form²
1.3.5 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
-	Production ceasing for an unspecified period of time	As soon as practicable after the decision has been made.	None Specified
-	Production recommencing	At least 28 days prior to production recommencing.	None 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

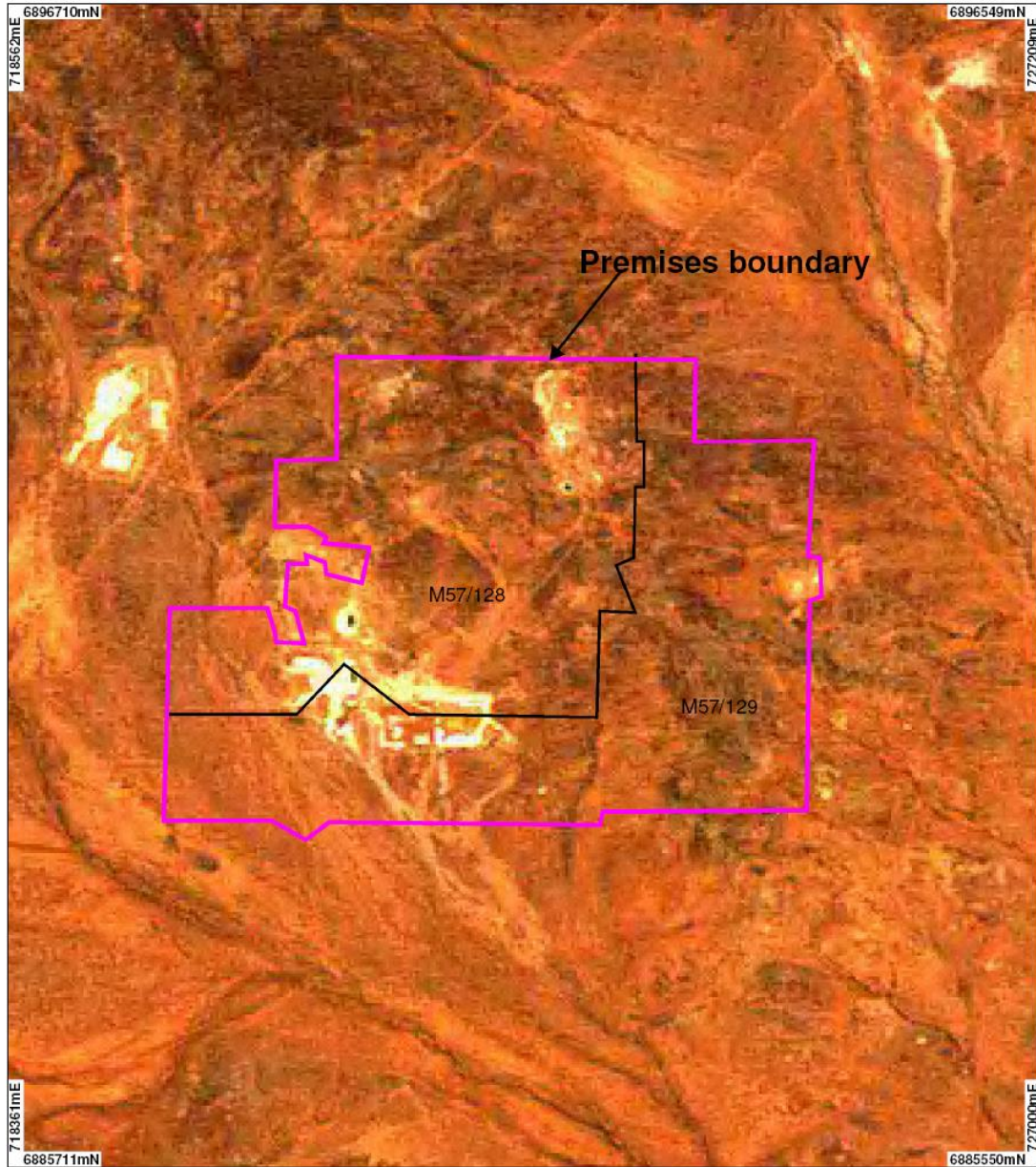


Schedule 1: Maps

Premises map

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

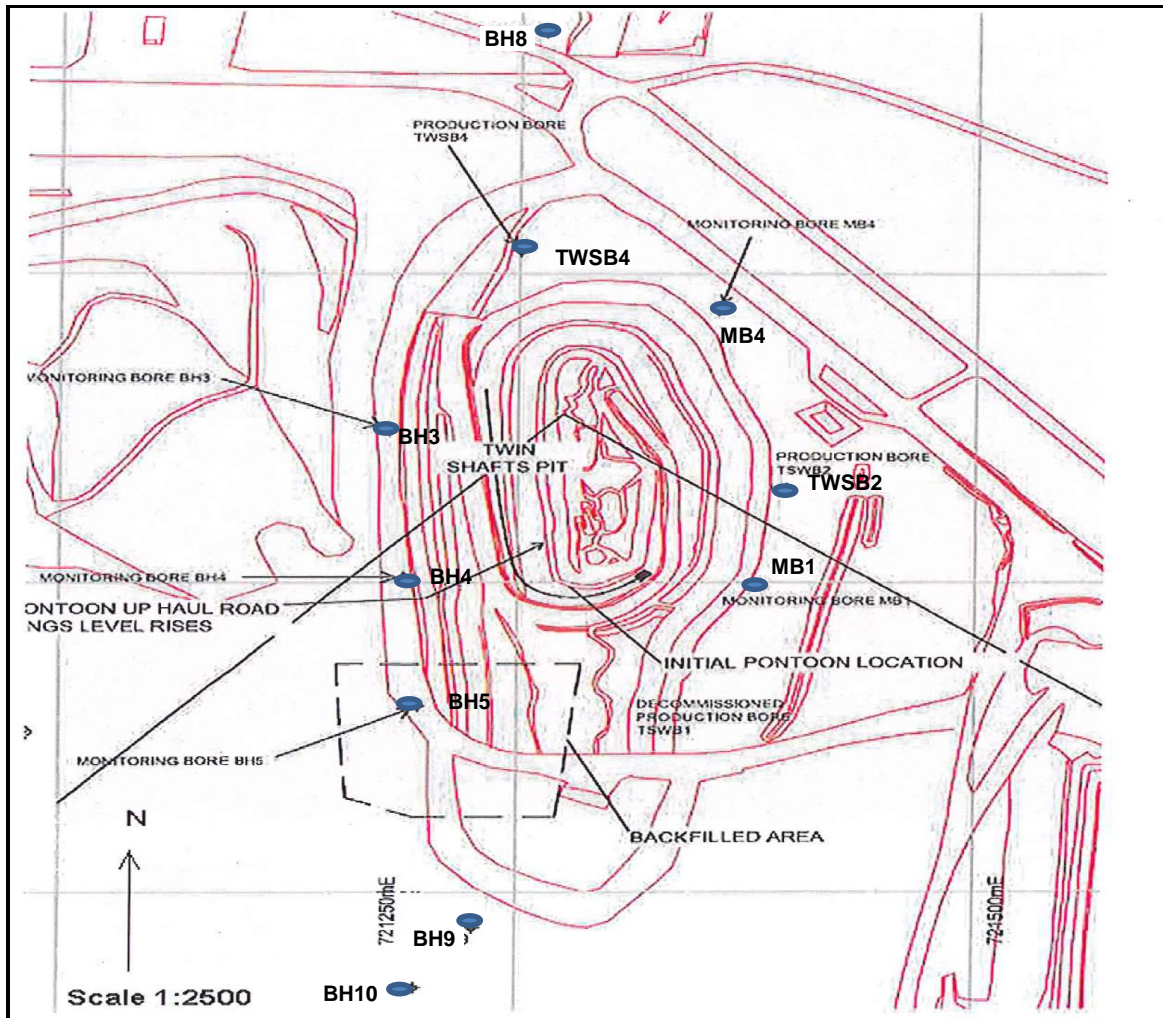
Twin Shafts Treatment Plant - Premises boundary





Map of monitoring locations

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

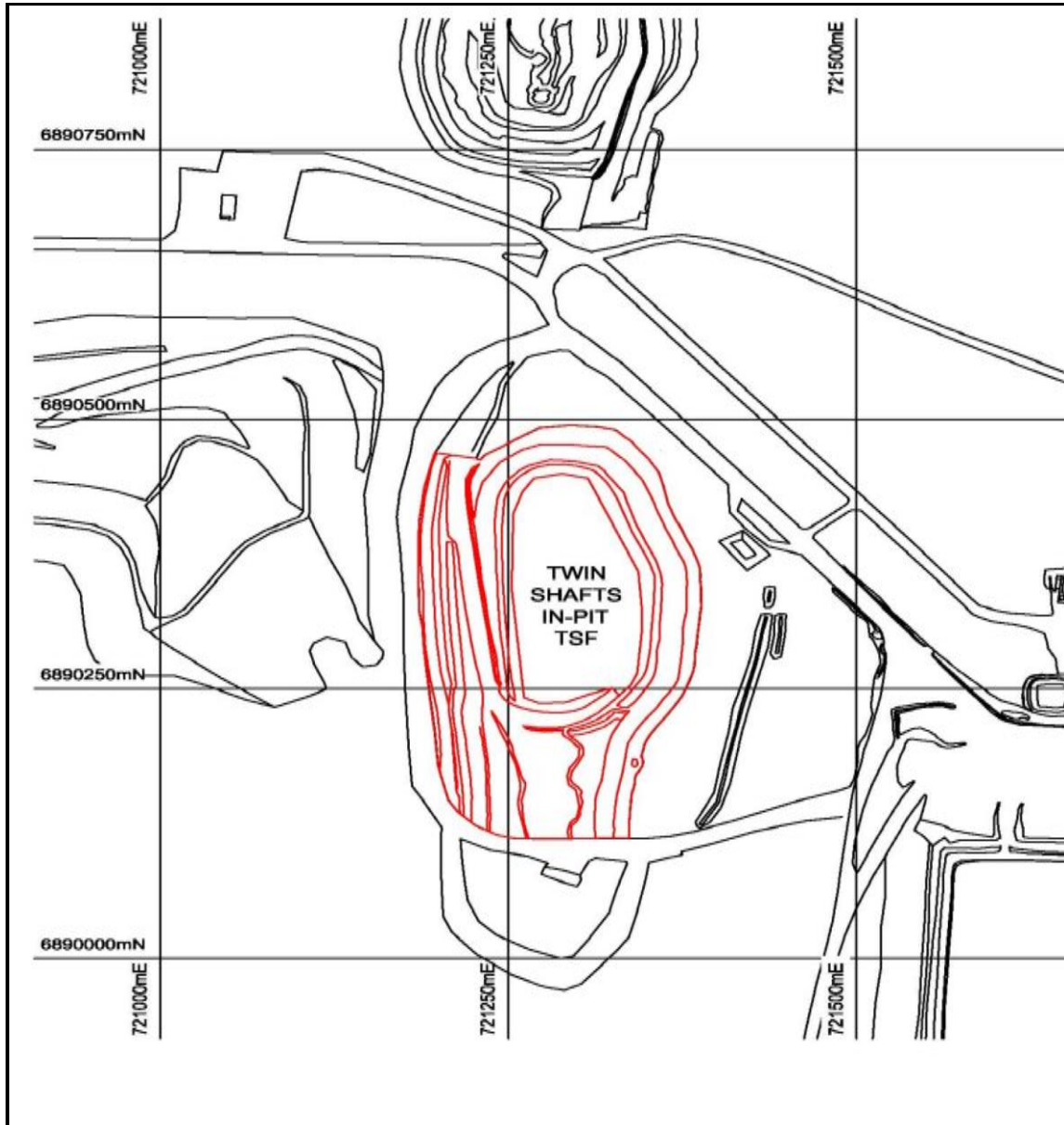




Map of storage locations

The location of the storage areas defined in Table 1.3.1 are shown below.

Twin Shaft in-pit TSF





Tailings return water pond





Schedule 2: Forms

Licence: L6949/1993/8
Form: GR1
Name: Monitoring of ambient groundwater quality

Licensee: Sandstone Operations Pty Ltd
Period :

Monitoring point	Parameter	Limit	Result	Averaging period	Sample date & times
TSWB2, MB1, MB4, BH3, BH4, BH5, TWSB4, BH8, BH9 and BH10	Arsenic	-	mg/L	Spot sample	
	Copper	-	mg/L		
	Iron	-	mg/L		
	Zinc	-	mg/L		
	Standing water level (SWL) ¹	-	mbgl		
	Total dissolved solids	6,000	mg/L		
	Weak acid dissociable cyanide (WAD cyanide)	0.5	mg/L		
	Electrical conductivity	-	µS/cm		
	pH ²	≥6.0 to ≤9.0	-		

Signed on behalf of Sandstone Operations Pty Ltd: Date:



Licence: L6949/1993/8
 Form: N1

Licensee: Sandstone Operations Pty Ltd
 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 Sandstone Operations Pty Ltd	
Date	



Decision Document

Environmental Protection Act 1986, Part V

Proponent: Sandstone Operations Pty Ltd

Licence: L6949/1993/8

Registered office: Sandstone Operations Pty Ltd
Ground Floor, 20 Kings Park Road
WEST PERTH WA 6872

ACN: 611 811 280

Premises address: Twin Shafts Treatment Plant
M57/128 and M57/129
SANDSTONE WA 6639

Issue date: Thursday, 26 September 2013

Commencement date: Monday, 30 September 2013

Expiry date: Sunday, 29 September 2032

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 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: Paul Anderson
Licensing Officer

Decision Document authorised by: Alana Kidd
Manager Licensing



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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	500,000 tonnes per annual period
Application verified	Date: 9 September 2016	
Application fee paid	Date: 16 September 2016	
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	N/A	
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

Sandstone Operations Pty Ltd (Sandstone) operate the Twin Shafts Treatment Plant (Twin Shafts) which is located approximately 13 kilometres (km) south - south west of the town of Sandstone and approximately 550 km northeast of Perth in Western Australia.

Twin Shafts was originally owned and operated by Black Oak Minerals Limited however the company went into receivership in 2015.

Twin Shafts is a small scale gold mine utilising a carbon-in-pulp (CIP) gold processing plant with a capacity of 500,000 tonnes per annum and an in-pit tailings storage facility (TSF) for tailings disposal. Other non prescribed infrastructure at Twin Shafts includes a vehicle wash down bay, fuel storage area and diesel power generation (less than 10 megawatts). The main emissions and discharges at Twin Shafts when operational are dust from the crushing and screening circuit and tailings discharged into the in-pit TSF.

The Project has been in a phase of 'Care and Maintenance' since October 2010, with no Mining, processing or tailings disposal occurring. A caretaker resides onsite.

This Licence amendment is the result of an application from Sandstone to reduce the groundwater monitoring frequency requirements at the Twin Shaft in-pit TSF, and a transfer of ownership of the Licence. DER has also implemented changes by updating the Licence format to ensure that conditions are valid, enforceable and/or risk-based. Accordingly, conditions that are not valid, enforceable and/or risk based have been removed from the Licence. DER decisions during this process is provided in Section 4 of this report.

DER has also considered whether the risk profile of emissions and discharges from the premises has significantly changed since the previous Licence was granted. No significant changes have occurred.



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
Definitions	N/A	Various definitions have been removed where no longer relevant to the amended Licence, or added where necessary to account for current operations and Licence conditions.	N/A
Premises operation	L1.2.1 to L1.2.5	<p>Condition 1.2.1 has been included in this Licence amendment as a new condition because limits are applied to the Licence. Condition 1.2.1 requires the Licensee to record and investigate any exceedance of a limit in the Licence.</p> <p>Previous conditions W2(a) and W2(b) have been transferred over into the amended Licence as condition 1.2.2. DER has assessed the risk associated with pipelines containing tailings and tailings return water.</p> <p><u>Emission Description</u> <i>Emission:</i> Discharge of tailings or tailings decant return water to land as a result of a pipeline failure. <i>Impact:</i> Soil contamination, impacts to groundwater and surface water quality and vegetation harm with tailings solids and liquors containing cyanide. <i>Controls:</i></p> <ul style="list-style-type: none"> All tailings and decant return water pipelines are located within bunded corridors designed to contain any spilt tailings and are inspected twice a day when the premises is operational. Groundwater at Twin Shafts is typically 30 - 50 metres below ground level. Groundwater at this depth is unlikely to be impacted by spills of environmentally hazardous materials outside of containment areas. The nearest surface water (ephemeral drainage creek) is located 	<p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p> <p>Guidance Statement <i>Setting conditions</i> (DER, October 2015).</p>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>approximately 30 km away and any spills at the premises is unlikely to have any impacts.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Moderate. <i>Likelihood:</i> Possible. <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u> Condition 1.2.2 requires all pipelines are either fitted with automatic cut-outs in event of failure, provided with secondary containment or provided with telemetry systems and pressures systems to allow the detection of leaks and failures.</p> <p>Condition 1.2.4 requires all pipelines are visually inspected daily to assess the integrity of the pipelines. If protection is not being maintained then corrective action is required as soon as practicable. A record of all inspections is required.</p> <p><u>Residual Risk</u> <i>Consequence:</i> Moderate <i>Likelihood:</i> Possible <i>Risk Rating:</i> Moderate</p> <p>Previous condition W1 has been transferred over as condition 1.2.3 in the amended Licence. This condition sets out which containment infrastructure waste materials are to be discharged in to, and the containment infrastructure requirements.</p> <p>Previous condition W2(c), W5(c) and W5(d) have not been transferred over as part of this amended Licence.</p> <p><i>W2(c) The licensee shall immediately recover or remove and dispose of any spills or leaks of pipelines containing saline, alkaline or cyanide constituents.</i></p>	



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>W5(c) The licensee shall immediately recover, or remove and dispose of, any liquid resulting from spills or leaks of chemicals including fuel, oil or other hydrocarbons outside the low permeability compound(s).</i></p> <p><i>W5(d) The licensee shall report to the Director any spills of environmentally hazardous chemicals greater than 250L that may adversely impact on the environment.</i></p> <p>The general provisions of the <i>Environmental Protection Act 1986</i> with respect to the causing of pollution and environmental harm apply, as does subsidiary legislation including the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>. It is the responsibility of the Licensee to ensure all spills are recovered or removed and disposed of correctly so as to prevent or reduce any further environmental harm or pollution from occurring.</p> <p>Previous condition W2(d) has not been carried over as part of this Licence amendment.</p> <p><i>W2(d) The licensee shall ensure any area affected by saline spills is rehabilitated as needed.</i></p> <p>The previous condition was invalid as it did not describe how to assess whether an area had been affected by saline spills and what level of rehabilitation was expected (expected outcome). No new conditions have been applied to the amended Licence as the general provisions of the <i>Environmental Protection Act 1986</i> with respect to the causing of pollution and environmental harm and clearing of native vegetation apply.</p> <p>Previous condition W2(e) has not been transferred over as part of this amended Licence.</p> <p><i>W2(e) The licensee shall report within 24 hours of next working day to the Director</i></p>	



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>any spills greater than 5,000L of liquid containing saline, alkaline or cyanide constituents.</i></p> <p>It is the responsibility of the Licensee under Section 72 of the <i>Environmental Protection Act 1986</i> to report to DER, as soon as practicable, any discharge of waste that has or is likely to cause pollution, material harm or environmental harm.</p> <p>Previous conditions W2(f) has been transferred over into this amended Licence as condition 3.2.1. Condition 3.2.1 requires the reporting of incidents in the Annual Environmental Report (AER) that have occurred during the reporting year.</p> <p>Previous condition W3 and W7 have partially been transferred over as part of this amended Licence.</p> <p>STORMWATER DIVERSION AWAY FROM WASTE MANAGEMENT AREAS W3 <i>The licensee shall make suitable arrangements to divert stormwater run-off away from areas adjacent to waste management facilities to minimise contamination of the stormwater and the threat of accidental loss of stored matter due to flooding or erosion.</i></p> <p>The previous condition W3 was not enforceable as it is not sufficiently clear or certain what stormwater infrastructure is required to be constructed and maintained. The intent of the previous conditions was to prevent contamination of stormwater and loss of stored waste matter from erosion or flooding (overtopping of storage facilities). DER has assessed the risk associated with stormwater diversion away from waste management areas and prevention of erosion or flooding of waste storage facilities to determine if any regulatory controls are required.</p> <p><u>Emission description</u> <i>Emission:</i> Discharge of stored wastes from waste management facilities (in-pit TSF and return pond) to the environment due to flooding (overtopping) or erosion.</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>Discharge of contaminated stormwater from waste management facilities. <i>Impact:</i> Impacts to groundwater and surface water quality, ecosystem disruption. <i>Controls:</i></p> <ul style="list-style-type: none"> • The In-pit TSF is bunded and channelled to divert stormwater away from the facility. • The TSF return water pond is constructed with earthen walls that divert stormwater away from the facility. • A minimum freeboard of 750 mm is maintained at the in-pit TSF and TSF return water pond to accommodate an extreme rainfall event. • Groundwater at Twin Shafts is typically 30 - 50 metres below ground level. Groundwater at this depth is unlikely to be impacted from the infiltration of contaminated stormwater. <p><u>Risk Assessment</u> <i>Consequence:</i> Moderate <i>Likelihood:</i> Rare <i>Risk rating:</i> Moderate</p> <p><u>Regulatory Controls:</u> Condition 1.2.3 requires a minimum top of embankment freeboard of 750 mm is maintained at the in-pit TSF and tailings return water pond.</p> <p>Condition 1.2.4 requires daily inspections of the in-pit TSF and tailings return water pond to confirm that the required freeboard is being maintained. If protection is not being maintained then corrective action is required as soon as practicable. A record of all inspections is required.</p> <p>The general provisions of the <i>Environmental Protection Act 1986</i> with respect to the causing of pollution and environmental harm apply, as does subsidiary legislation including the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><u>Residual Risk:</u> <i>Consequence: Moderate</i> <i>Likelihood: Rare</i> <i>Risk rating: Moderate</i></p> <p>Previous conditions W4(a), W4(b), W5(a) and W5(b) have not been transferred over into the amended Licence.</p> <p>WASTE MANAGEMENT FROM ANCILLARY OPERATIONS <i>W4(a) The licensee shall manage wastes from ancillary facilities such as maintenance workshops and laboratories, in a manner which avoids their detrimental effect on the surrounding environment. Practical measures such as protective bunding, skimmers, silt traps, neutralisation pits and petrol/oil traps are to be provided and maintained as appropriate.</i></p> <p><i>W4(b) The licensee shall install and maintain, as appropriate, protective bunding, skimmers, silt traps, neutralisation pits, fuel and oil traps, drains and sealed collection sumps around the process plant, maintenance workshops, laboratory and power generation areas to enable recovery of spillages and protection of surrounding soils and groundwater. Collected material shall be used in the process where practicable or disposed of by export off-site, or by an alternative method approved by the Director.</i></p> <p>ENVIRONMENTALLY HAZARDOUS CHEMICAL STORAGE <i>W5(a) The licensee shall store environmentally hazardous chemicals including, but not limited to, fuel, oil or other hydrocarbons (where the total volume of each substance stored on the premises exceeds 250 litres) within low permeability (10⁻⁹ metres per second or less) compound(s) designed to contain not less than 110% of the volume of the largest storage vessel or inter-connected system and at least 25% of the total volume of substances stored in the compound.</i></p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>W5(b) <i>The compound(s) described in part (a) to this condition shall:</i></p> <ul style="list-style-type: none"> (i) <i>be graded or include a sump to allow recovery of liquid;</i> (ii) <i>be chemically resistant to the substances stored;</i> (iii) <i>include valves, pumps and meters associated with transfer operations wherever practical. Otherwise the equipment shall be adequately protected (eg. bollards) and be contained in an area designed to permit recovery of chemicals released following accidents or vandalism;</i> (iv) <i>be designed such that jetting from any storage vessel or fitting will be captured within the bunded area [see for example Australian Standard 1940-1993 Section 5.9.3 (g)];</i> (v) <i>be designed such that chemicals which may react dangerously if they come into contact, are in separate bunds in the same compound or in different compounds; and</i> (vi) <i>be controlled such that the capacity of the bund is maintained at all times (eg. regular inspection and pumping of trapped uncontaminated rain water).</i> <p>These conditions are not valid as they inconsistently regulate activities below prescribed category thresholds. DER has assessed the risk associated with managing wastes from axillary facilities such as workshops and laboratories to determine if specific regulatory controls are required.</p> <p><u>Emission description</u> <i>Emission:</i> Discharge of environmentally hazardous materials, including fuel, oil or other hydrocarbons, from workshops, washdown bays, power station, and laboratory. <i>Impact:</i> Soil contamination, impacts to groundwater and surface water quality, ecosystem disruption, depending on nature and volume of material released to the environment. <i>Controls:</i></p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<ul style="list-style-type: none"> The Licensee has implemented management measures on site, including the requirement to store environmentally hazardous materials in bunded areas, in accordance with relevant Australian Standards. Waste oil storage area is under cover. The refuelling and diesel storage area and the wash down bay drain into separate triple interceptors with treated waste water discharging into lined ponds. Stormwater from the ore processing plant is collected by a drainage network, incorporating bunds and sediment traps. Regular inspections are also carried out by the caretaker. Caretaker is aware of spill recovery requirements and undertakes regular inspections of storage areas. Groundwater at Twin Shafts is typically 30 - 50 metres below ground level. Groundwater at this depth is unlikely to be impacted by minor spills of environmentally hazardous materials outside of containment areas. The nearest surface water (ephemeral drainage creek) is located approximately 30 km away and any spill at the premises is unlikely to have any impacts. <p><u>Risk Assessment</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely <i>Risk rating:</i> Low</p> <p><u>Regulatory Controls:</u> The general provisions of the <i>Environmental Protection Act 1986</i> with respect to the causing of pollution and environmental harm apply, as does subsidiary legislation including the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p> <p>It is the responsibility of the Licensee to ensure compliance with other legislative</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>requirements, including Australian Standard 1940-2004 – The storage and handling of flammable and combustible liquids, which specifies that clean up action needs to be initiated immediately following a leak or spill.</p> <p><u>Residual Risk:</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely <i>Risk rating:</i> Low</p> <p>Condition 1.2.5 is a new condition which has been added to the Licence to include production or capacity limits for categories 5.</p> <p>Previous conditions W8(a) and W8(b) which requires visual inspections of pipelines and the operation of the TSF, and the recording of those inspections, have been transferred over as condition 1.2.4 in the amended Licence. Reference to the TSF has been changed to in-pit TSF as the above ground paddock style TSF is no longer used and has been rehabilitated.</p>	
Point source emissions to air including monitoring	N/A.	<p>Power for Twin Shafts is supplied by a power station made up of small diesel generators which have a combined total output of less than trigger thresholds set out in the <i>Environmental Protection Regulations 1987</i>, whereby a Registration or Licence would be required.</p> <p>No conditions relating to point source emission to air or the monitoring of these emissions are included in the Licence.</p>	General provisions of the <i>Environmental Protection Act 1986</i> .
Point source emissions to surface water including monitoring	N/A.	<p>There are no point source emissions to surface water at Twin Shafts. The nearest surface water is approximately 30 km south west of Twin Shafts. No conditions relating to point source emission to surface water or the monitoring of these emissions are required to be added to the Licence.</p>	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
Point source emissions to groundwater including monitoring	N/A	There are no point source emissions to groundwater at Twin Shafts. No conditions relating to point source emission to groundwater or the monitoring of these emissions are required to be added to the Licence.	General provisions of the <i>Environmental Protection Act 1986</i> .
General monitoring	L2.1.1 to 2.1.4	<p>General monitoring conditions have been included in the Licence to ensure monitoring is carried out in accordance with relevant standards.</p> <p>Previous conditions W6(c) and W6(d) have been transferred over into the amended Licence as condition 2.1.1.</p> <p>Condition 2.1.2 is a new condition requiring minimum set periods of time between sampling events.</p> <p>Conditions 2.1.3 and 2.1.4 are new conditions requiring the Licensee to ensure all monitoring equipment used on the premises is calibrated to ensure results are accurate.</p>	Australian Standard AS/NZS 5667.1 – Water Quality – Sampling –
Process Monitoring	L2.2.1	Condition 2.2.1 has been included as a new condition requiring the Licensee to record the volumes of tailings discharged to the Twin Shaft in-pit TSF and the volumes of recovery water returned.	N/A
Ambient quality monitoring	L2.3.1	<p>Previous conditions W6(a), W6(b) and W6(e) have been transferred over into the amended Licence as condition 2.3.1. This condition is for ambient monitoring of groundwater at the Twin Shaft in-pit TSF.</p> <p>Previous condition W6(f), which requires the reporting of the monitoring results from W6(a) in the AER, has been transferred over as condition 3.2.1.</p> <p>The frequency of monitoring in condition 2.3.1 (and previous condition W6(a)) is currently quarterly for all parameters listed. Sandstone has requested the frequency is reduced to biannually (6 monthly) while Twin Shafts is in a phase of care and</p>	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>maintenance. DER has assessed the risk for biannual sampling during periods of care and maintenance, and has decided to reduce it to biannual as requested by Sandstone. DER assessment of the risk is provided below.</p> <p>Groundwater quality sampling results for the past 6 years at the Twin Shafts in-pit TSF indicate:</p> <ul style="list-style-type: none"> • a steady trend for all parameters sampled with little to no variation occurring over that time; • limits set in the Licence for total dissolved solids, WAD cyanide, and pH have not been exceeded with all results well below the limits; and • heavy metals are either below levels of detection or well below recommended maximum concentrations for livestock drinking water as set out in the ANZECC Livestock Drinking Water Guidelines, section 9.3. 	
Noise	N/A	Noise emissions are expected during operation of Twin Shafts however the nearest sensitive premises is located 13 km away and therefore no impacts are expected. No conditions relating to noise emissions are included in the amended Licence. Any noise from the Project can be adequately managed through the provisions of the <i>Environmental Protection (Noise) Regulations 1997</i> .	<i>Environmental Protection (Noise) Regulations 1997</i>
Fugitive emissions	N/A.	<p>Previous condition A1 which required all reasonable and practicable measures are taken to prevent dust, has not been transferred over into the amended Licence.</p> <p><i>DUST - GENERAL REQUIREMENT</i> <i>A1 The licensee shall take all reasonable and practicable measures to prevent or minimise the generation of dust from all materials handling operations, stockpiles, open areas and transport activities, such that visible dust does not cross the boundary of the premises.</i></p> <p>DER has assessed the risk associated with fugitive dust to determine if specific regulatory controls are required.</p>	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><u>Emission description</u> <i>Emission:</i> Dust emissions from crushing and screening operations, stockpiles, blasting and vehicle movement. <i>Impact:</i> Dust emissions can be harmful to human health and the environment. Elevated total suspended particulates can impact ambient environmental quality resulting in amenity impacts and can smother vegetation. <i>Controls:</i></p> <ul style="list-style-type: none"> • The Licensee has implemented management measures on site when Premises is operational, including the use of water carts and mobile sprinklers, sprinklers on the crushing and screening plant and rehabilitation of completed areas. • Nearest sensitive premises is located 13 km away. • The premises is not located in or near an Environmentally Sensitive Area. • Speed limits on roads and access tracks. <p><u>Risk Assessment</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely <i>Risk rating:</i> Low</p> <p><u>Regulatory Controls:</u> Given the Licensee's management controls, and the location of the Premises, fugitive emissions of dust are considered a low risk. Fugitive dust emissions can be sufficiently regulated under Section 49 of the <i>Environmental Protection Act 1986</i>.</p> <p><u>Residual Risk:</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely <i>Risk rating:</i> Low</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>Previous condition A2 has not been transferred over into the amended Licence.</p> <p><i>DUST - SALINE WATER</i> A2 Where saline water is used for dust suppression, there shall be no impact on vegetation.</p> <p>No new conditions have been applied to the amended Licence as the general provisions of the <i>Environmental Protection Act 1986</i> with respect to the causing of pollution and environmental harm and the clearing of native vegetation apply.</p>	
Information	L3.1.1 to L3.1.3, L3.2.1 to L3.2.3, L3.3.1	<p>Administrative conditions G1(a), G1(b) and G1(c), G2 and G3 from the previous Licence which covers records, reporting and notification have been transferred over to the amended Licence as conditions 3.1.1 to 3.1.3, 3.2.1 to 3.2.3, and 3.3.1.</p> <p>Twin shafts is currently under care and maintenance. Therefore condition 3.3.1 has been modified by requiring the Licensee to notify DER when production has ceased at Twin Shafts and when it is about to recommence operations. This is a new requirement in the amended Licence that was not in the previous Licence version. This will enable DER to be informed of site operations.</p>	
Licence Duration	N/A	In accordance with DER's Licence Duration Guidance Statement, the amended Licence has an expiry date of 29 September 2032.	N/A



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
13/10/2016	Proponent sent a copy of draft instrument	No comments recieved	Not applicable
14/11/2016	Amended Licence advertised in West Australian (or other relevant newspaper)	-	-



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