



Licence Number L9155/2018/1

Licence Holder Avoca Mining Pty Ltd

ACN 108 547 217

File Number: DER2018/001153

Premises

Higginsville Gold Operations (HGO)
Shire of Coolgardie

Legal description –

M15/351, M15/289, M15/225, M15/642, M15/348, M15/31,
M15/786, M15/506, M15/507, M15/620, M15/629,
M15/639, M15/640, M15/580, M15/581, M15/597,
L15/225, L15/288, L15/302, G15/19, G15/23, M15/528,
M15/231, M15/748, M15/512, M15/352, M15/610,
M15/375, M15/338, M15/1790, M15/1814, L15/282 and
L15/347

Date of Amendment 16/05/2019

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act) as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Tim Gentle

Manager Resource Industries

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Amendment Notice	refers to this document
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>

Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Licence Holder	Avoca Mining Pty Ltd
m ³	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
mtpa	million tonnes per annum
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

No changes to the existing category thresholds of the Licence have been requested by the Licence Holder.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*

Amendment description

This amendment is a DWER initiated amendment to complete an assessment of Avoca Mining's request to discharge mine dewater from their Baloo deposit to Lake Cowan. The application to discharge the mine dewater was originally submitted on 9 September 2018 as part of a larger application to construct and operate a new In-pit TSF at Fairplay East, construct a seepage recovery pond, and other changes. The assessment for the Baloo discharge was deferred at the time of the original application (refer L9155/2018/1 Amendment Notice 1).

Mine dewater is expected to be discharged over a period of between 9 – 18 months at a rate of up to 1 000 000 kL/a. Avoca Mining estimate that the total volume of water to be discharged is unlikely to exceed 1 300 000 kL.

This amendment also includes a modification of the Prescribed Premises boundary to include the mining tenements for the Baloo project.

Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 2.

Table 2: Relevant approvals

Legislation	Number	Approval
<i>Mining Act 1978</i>	Registration ID: 75377	Mining Proposal for Baloo Project

Amendment history

Table 3 provides the amendment history for L9155/2018/1 and related Works Approvals and Licences.

Table 3: Works approval and Licence amendments

Instrument	Issued	Amendment
W4688/2010/1	23 July 2010	Category 6 dewatering works approval from Chalice Pit to Aphrodite Pit.
L8146/2007/2	19 October 2010	Licence amendment
W4759/2010/1	5 November	Category 6 dewatering works approval from Chalice Pit to Chalice West

	2010	Lake.
L8146/2007/2	22 September 2011	Licence amendment
W5198/2012/1	9 October 2012	Category 5 works approval for TSF lifts for cells 3 and 4
L8146/2007/3	23 May 2013	Licence re-issue
L8146/2007/3	13 November 2014	Licence amendment to allow for mine dewatering to be discharged into Chalice West Lake
L8146/2007/3	11/06/2015	Licence amendment to include new tenements to prescribed boundary and Challenge pit dewatering operation.
L8146/2007/3	21/04/2016	Licence amendment for TSF3 and TSF4 lifts from RL 1312.5 m to RL 1315m.
L9155/2018/1	21/09/2018	New licence issued as previous licence L8146/2007/2 had ceased.
L9155/2018/1	4/01/2019	Amendment Notice 1 to include the Fairplay East Pit as a Tailings Storage Facility, construct a new seepage pond at the TSF and include the current monitoring bores at the Aphrodite in-pit TSF. Add category 64 to the Licence.
L9155/2018/1	14/05/2019	Amendment Notice 2 – Add dewatering from Baloo Pit to Lake Cowan as a discharge and amend the Premises boundary to include the tenement in which Baloo open pit is located.

Location and receptors

Table 4 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 4: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Widgiemooltha community	Approximately 30 km north west of the Higginsville operations
Norseman Town site	Approximately 50 km south of the Higginsville operations

Table 5 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 5: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Lake Cowan (refer below)	Baloo Pit located within the lake

Lake Cowan Ecology

Lake Cowan is a large salt lake with an area of approximately 1 145km². Surface water quality in the lake is hypersaline, with a total dissolved solids concentration of approximately 180 000 mg/L to 320 000 mg/L. The inundation pattern of salt lakes in the Goldfields region has been described as episodic, with lakes filled by sporadic non-seasonal rainfall events. The

salt lakes have fringing vegetation dependent on intermittent wetting, where evaporation and seepage far exceed rainfall and runoff. Groundwater interactions are not thought to be prominent processes in the ecology of these lakes (Bennelongia 2016).

Salt lakes may provide habitat for aquatic biota that provides a food source for birds and other visiting wildlife. Inundation cycles provide the mechanism for activating dormant biota present in the lake crust and sediments with the degree of the biota diversity and abundance is related to the salinity of the sediments and surface water.

Bennelongia surveyed a site within the area of the proposed Baloo project and three additional sites within Lake Cowan for sediments, water quality, and aquatic biota. The location of sampling sites is as shown in Figure 1 following.

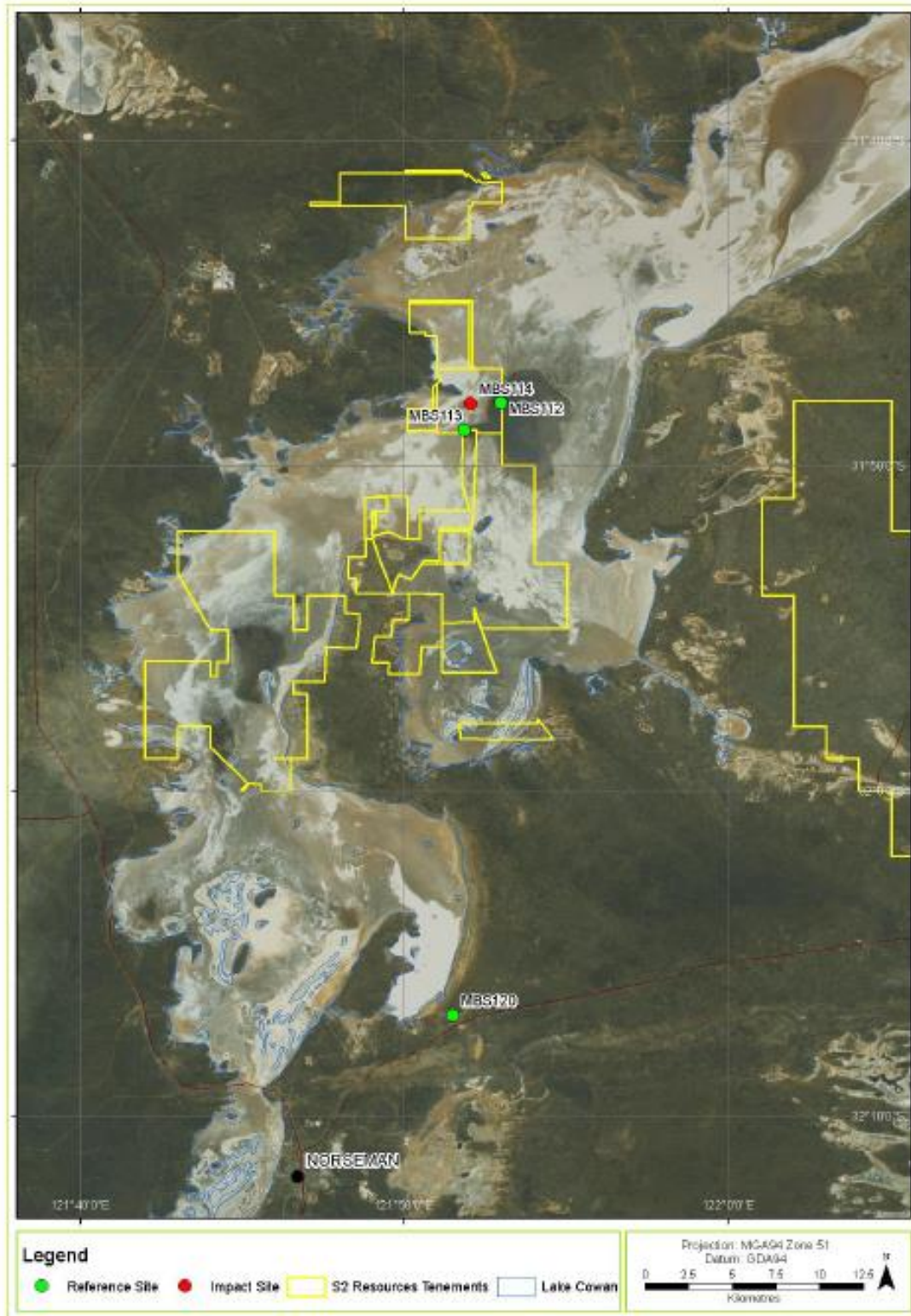


Figure 1: Location of sites sampled by Bennelongia 2016 at Lake Cowan. MBS114 is within the Baloo Project area.

At the time of sampling water depth was 3 – 18 cm, with pH neutral apart from MBS120 which was 8.23. The body of the lake was highly mobile, in that a part of the lake inundated in the morning may have no free water in the afternoon.

Sediment concentrations at the sample sites are as shown below in Table 6.

Table 6: Lake Cowan sediment concentrations (Bennelongia 2016)

	Method Code	Limits of Reporting	Units	MBS112 Reference	MBS113 Reference	MBS114 Impact	MBS120 Reference
As	iMET2SAMS	0.2	mg/kg	5.6	2.9	5.1	1
Cd	iMET2SAMS	0.05	mg/kg	0.09	0.07	<0.05	0.06
Cr	iMET2SAICP	0.05	mg/kg	64	140	140	32
Cu	iMET2SAMS	0.5	mg/kg	4.6	6	6.8	4.4
Hg	iMET2SAMS	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02
Ni	iMET2SAMS	0.1	mg/kg	25	28	32	9.9
Pb	iMET2SAMS	0.5	mg/kg	2.7	2.9	1.9	1.6
Zn	iMET2SAMS	0.25	mg/kg	13	9	8.1	4.8

The lake sediments have elevated nickel and chromium concentrations, which is consistent with other saline lakes in the goldfields.

Twelve diatom (algae) species were collected, of which most are characterised by wide distributions. One species recorded at MBS112 and MBS113 may be new (*Navicula sp. 1*) although it is unlikely to be restricted to Lake Cowan. On comparison with other limited sampling reports for Lake Cowan there is evidence that there is differing diatom compositions recorded at different sites in the lake (Bennelongia 2016). The lowest species richness of 5 was recorded at MBS114 (Baloo project site) compared to the other sites. It was noted that the sampling effort was low (only 4 sites) and that further sampling may yield a higher number of taxa. Diatom species and abundance are as detailed below in Table 7.

Table 7: Diatoms and abundance collected from Lake Cowan (Bennelongia 2016)

Taxa	MBS112	MBS113	MBS114	MBS120	Total
<i>Amphora coffeaeformis</i>	72	38	8	7	125
<i>Amphora micrometra</i>	7	5		13	25
<i>Entomoneis alata</i>	32	4			36
<i>Navicula cincta</i>				7	7
<i>Navicula cincta var minuta</i>	1				1
<i>Navicula aff duerrenbergiana</i>	12	5		7	24
<i>Navicula aff salinicola</i>	55	147	156	8	366
<i>Navicula sp. 1</i>	13	2			15
<i>Navicula sp. 2</i>				1	1
<i>Nitzschia aff pellucida</i>	9	2	34		45
<i>Nitzschia pusilla</i>			2		2
<i>Proshkinia bulnheimii</i>		2	2		4
Number of taxa	8	8	5	6	11T
Total Abundance	201	205	202	43	651

No macrophytes (aquatic plants) were recorded. Seven species of aquatic invertebrates were recorded. The most abundant species were crustaceans. Bennelongia notes that the same aquatic invertebrate community occurs within the Project area as around it. They also noted that there was evidence that the southern part of Lake Cowan supports a slightly different aquatic invertebrate community to the Project area (Bennelongia 2016).

Table 8: Aquatic invertebrates and abundance collected from Lake Cowan (Bennelongia 2016)

Higher Group	Family	Species	Sites	No. collected
Nematoda	-	Nematoda sp.	112, 113	30
Crustacea				
Anostraca	Branchiopodidae	<i>Parartemia serventyi</i>	112, 113, 114, 120	185
Copepoda	Cyclopidae	<i>Meridiocyclops platypus</i>	120	12
Ostracoda	Cyprididae	<i>Diacypris whitei</i>	112, 113, 114, 120	77
	-	Ostracoda sp. unident.	112	1
Insect				
Diptera	Muscidae	Muscidae sp.	112, 113, 114, 120	36
	Chironomidae	<i>Tanytarsus barbatarsis</i>	120	1

Risk assessment

Tables 11 and 12 describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Risk Assessment Methodology

The risk assessment following utilises the risk rating matrix as shown in Table 7, in accord with DWER's *Guidance Statement: Risk Assessments (November 2016)* (DER 2016a). The risk criteria used in the matrix below is further defined in Table 9.

Table 9: Risk Rating Matrix

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

Table 10: Risk criteria definitions (taken from DWER's *Guidance Statement: Risk Assessments*)

Consequence			Likelihood	
The following criteria will be used to determine the consequences of a risk event occurring:			The following criteria will be used to determine the likelihood of the risk event occurring.	
	Environment	Public Health* and Amenity (such as air and water quality, noise, and odour)		
Severe	<ul style="list-style-type: none"> on-site impacts: catastrophic off-site impacts local scale: high level or above off-site impacts wider scale: mid level or above Mid to long term or permanent impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> Loss of life Adverse health effects: high level or ongoing medical treatment Specific Consequence Criteria (for public health) are significantly exceeded Local scale impacts: permanent loss of amenity 	Almost Certain	The risk event is expected to occur in most circumstances
Major	<ul style="list-style-type: none"> on-site impacts: high level off-site impacts local scale: mid level off-site impacts wider scale: low level Short term impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> Adverse health effects: mid level or frequent medical treatment Specific Consequence Criteria (for public health) are exceeded Local scale impacts: high level impact to amenity 	Likely	The risk event will probably occur in most circumstances
Moderate	<ul style="list-style-type: none"> on-site impacts: mid level off-site impacts local scale: low level off-site impacts wider scale: minimal Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> Adverse health effects: low level or occasional medical treatment Specific Consequence Criteria (for public health) are at risk of not being met Local scale impacts: mid level impact to amenity 	Possible	The risk event could occur at some time
Minor	<ul style="list-style-type: none"> on-site impacts: low level off-site impacts local scale: minimal off-site impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> Specific Consequence Criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity 	Unlikely	The risk event will probably not occur in most circumstances.
Slight	<ul style="list-style-type: none"> on-site impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal impacts to amenity Specific Consequence Criteria (for public health) criteria met 	Rare	The risk event may only occur in exceptional circumstances

[^] Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*

* In applying public health criteria, DER may have regard to the Department of Health's, *Health Risk Assessment (Scoping) Guidelines*

“on-site” means within the prescribed premises boundary

Table 11: Risk assessment for proposed amendments during construction

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Category 6 Mine dewatering	Installation of dewatering pipeline	Dust: associated with construction activities	Wildlife (birds) accessing Lake Cowan	Airborne	Health and amenity impacts	Slight	Possible	Low	Construction activities to lay the pipeline may impact on birds accessing the lake but it is more likely that machinery noise will deter birds from the area while construction is in progress. The time to lay the pipeline is limited so not likely to cause any prolonged or acute health impacts.

Table 12: Risk assessment for proposed amendments during operation

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Category 6 Mine dewatering	Discharge of mine dewater to Lake Cowan	Mine dewater with elevated soluble metal(loid)s. pH of discharge is slightly acidic (5.88 – 6.0) (AQ2 2016).	Lake Cowan aquatic biota (diatoms, invertebrates); waterbirds No threatened species recorded in baseline survey although survey was limited (only 4 sampling sites) (Bennelongia 2016).	Metal(loid)s and salt deposition to lake sediments	Alteration of sediment quality impacting on biota hatching rates; trophic transfer impacts from metal exposure to higher order species (waterbirds)	Minor	Possible	Medium	Receiving saline playa environment is circum-neutral (pH 7 – 7.2) (Bennelongia 2016). Potential to mobilise some metals in the sediments at the discharge area (sediments elevated chromium and nickel). However this discharge is of short duration (9 – 18 months) likely to be dispersed over a wider area due to winds, mitigating the consequence of the potential impact. Limited survey results for aquatic biota means it is difficult to

									extrapolate the potential impact of the discharge on the lake ecology. Similar studies (Lake Carey) suggest that the system may not be impacted in the long term providing a future flooding event can flush the lake.
		Excessive salt loading from discharge deposition	Lake Cowan (playa) surface	Direct discharge	Visual amenity impacts to the lake; reduced tourism values	Minor	Possible	Medium	The location of the Baloo project and the discharge point is 1.1km into the centre of the lake, so the discharge may not be visible from the shore, and in comparison from the visual amenity impacts of the project itself (waste rock dump and open pit), would be a lesser impact. There has been other mining in immediate area (open pits at the Lake Cowan projects) so there is also existing disturbance. No additional regulatory controls deemed necessary beyond those already proposed (placing discharge point at least 500m away from the shoreline into the centre of the playa (pipeline is 1.1km).
Category 6 Mine dewatering	Pipeline failure leading to uncontrolled discharge not at the authorised discharge point	Mine dewater with elevated soluble metal(loid)s. pH of discharge is slightly acidic (5.88 – 6.0) (AQ2 2016).	Riparian vegetation Aquatic biota within Lake Cowan	Direct to the lake	Uncontrolled discharge may result in saline water migrating to the shoreline	Moderate	Possible	Medium	The Licence Holder has proposed to install telemetry on this pipeline to automatically shut off flow in the event of a loss of pressure. This will mitigate the rate of uncontrolled discharge. This requirement will be conditioned on the

									Licence. The location of the pipeline to the east of the Project site and away from the shoreline also mitigates the risk of a discharge impacting the shoreline. The pipeline route will also be conditioned on the Licence.
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Decision

The dewater discharge to Lake Cowan is approved subject to conditions. Licence Holder controls for the construction of the works are conditioned on the Licence to ensure that the pipeline is installed as proposed and that the telemetry system and diffuser are also installed to mitigate the risk of pipeline failures and erosion at the discharge point respectively. The requirements are as detailed in Table 1.2.5 and it is noted that existing conditions 1.2.6 and 4.3.2 and 4.3.3 apply in relation to submission of compliance documents post pipeline installation.

Condition 1.2.4 currently on the Licence requires daily inspection of all dewatering pipelines. Tables 2.2.1, 3.2.1 and 3.4.1 have been updated to authorise the discharge to Lake Cowan, the monitoring of the volume and water quality of the discharge and the receiving environment's sediment quality and aquatic biota at two sites MBS112 and MBS113. These sites were subject to a baseline survey prior to the land disturbance for the Baloo Project. Table 3.5.1 has also been amended to remove these sites which were erroneously added to the groundwater monitoring sites at the date of the last amendment.

The Prescribed Premises boundary map has been updated to include the Baloo mining tenement and is as shown in point 9 of the Amendment.

Additionally works authorised by the previous Amendment Notice 1 have been completed and a compliance construction document submitted, as required by the Licence (Westgold 2019). Accordingly these requirements have been removed from Table 1.2.5 of the Licence.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 14 May 2019. No comments were received from the Licence Holder and the remaining consultation period was waived.

Amendment

1. Definitions of the Licence are amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

'CEO' for the purpose of correspondence means:

Director General
Department Administering the *Environmental Protection Act 1986*
Locked Bag ~~33 Cloisters Square~~ 10
~~PERTH WA 6850~~ JOONDALUP DC 6919
info@dwer.wa.gov.au;

2. Table 1.2.5 of Condition 1.2.5 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

Table 1.2.5: Construction requirements		
Column 1	Column 2	Column 3
Infrastructure/Equipment	Requirements (design and construction)	Site plan reference
Tailings discharge and return water pipelines to and from existing Aphrodite TSF pipelines to the Fairplay East in-pit TSF.	• Located within a bunded corridor. • Flowmeters installed on pipelines at the processing plant and at the discharge point with telemetry into the control system.	Bunding as per Drawing No. 754-PERGE219368-02 (included in this

		amendment notice as Figure 2.) Pipelines to be located as per 754-PERGE219368-01 (included in this amendment notice as Figure 3.)
Pipeline catchment sump (scour pit)	<ul style="list-style-type: none"> Construct an earthen catchment sump of dimensions 10m x 10m x 1.5m within the pipeline corridor. 	Indicative location as per drawing 754-PERGE219368-01 (included in this amendment notice as Figure 3.)
Groundwater monitoring bores	<ul style="list-style-type: none"> Installation of monitoring bores FPMB1, FBMB2 and FBMB3 to depth of 60m from surface. 	Indicative locations as per drawing 754-PERGE219368-01 (included in this amendment notice as Figure 3.)
TSF Seepage Recovery Pond	<ul style="list-style-type: none"> Install a pond of dimensions 25m x 50 m x 2m, lined with 1.5mm HDPE. 	Location as per Figure 5 of this Amendment Notice <u>1</u>
<u>Baloo Project dewatering pipeline</u>	<ul style="list-style-type: none"> <u>Install a 1.1 km pipeline fitted with telemetry leak detection.</u> <u>The dewater pipeline is to be fitted with an energy diffusion device at the discharge point.</u> 	<u>Pipeline to run from Baloo pit to discharge point of easting 393,885.63 m and northing 6,480,253.55 mas shown in point 10 of this Amendment Notice 2.</u>

3. Table 2.2.1 of Condition 2.2.1 of the Licence is amended by the insertion of the red text shown in underline below:

Table 2.2.1: Emission points to surface water			
Emission point reference	Emission point reference on map of emission points	Description	Source including abatement
D1	Chalice West Lake	Receiving environment-hypersaline lake	Mine dewater
<u>Baloo Project on Map of Emission Points</u>	<u>Lake Cowan Coordinates: Easting 393,885.63 m Northing 6,480,253.55 m</u>		<u>Mine dewater Energy diffusion device fitted at the outlet</u>

4. Table 3.2.1 of Condition 3.2.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

Table 3.2.1: Monitoring of point source emissions to surface water			
Emission point reference	Parameter	Units	Frequency
Chalice West Lake-CMB6	Aluminium, arsenic, barium, boron, beryllium, cadmium, cobalt, chromium, copper, iron, mercury, potassium, magnesium, manganese, molybdenum, sodium,	mg/L	Annually <u>during active discharge</u>

	nickel, lead, selenium, silicon, tin, strontium, titanium, thallium, vanadium, and zinc.		
Chalice West Lake	Aquatic invertebrate fauna	N/A	<u>Opportunistically- Annually during active discharge</u>
	TDS	ppm	<u>Annually during active discharge</u>
D1, D2, D3, C1, C2	Lake fringe monitoring- species richness in quadrats	N/A	Annually
<u>Baloo pit dewater discharge</u>	<u>pH</u>	<u>=</u>	<u>Monthly during active discharge</u>
	<u>TDS</u> <u>TSS</u>	<u>mg/L</u>	<u>Annually during active discharge</u>
	<u>Bicarbonate (HCO₃)</u> <u>Carbonate (CO₃)</u> <u>Calcium (Ca)</u> <u>Chloride (Cl)</u> <u>Magnesium (Mg)</u> <u>Potassium (K)</u> <u>Sodium (Na)</u> <u>Sulfate (SO₄)</u> <u>Aluminium (Al)</u> <u>Antimony (Sb)</u> <u>Arsenic (As)</u> <u>Barium (Ba)</u> <u>Beryllium (Be)</u> <u>Boron (B)</u> <u>Cadmium (Cd)</u> <u>Chromium (Cr)</u> <u>Cobalt (Co)</u> <u>Copper (Cu)</u> <u>Iron (Fe)</u> <u>Lead (Pb)</u> <u>Manganese (Mn)</u> <u>Mercury (Hg)</u> <u>Molybdenum (Mo)</u> <u>Nickel (Ni)</u> <u>Selenium (Se)</u> <u>Silicon (Si)</u> <u>Thallium (Tl)</u> <u>Uranium (U)</u> <u>Vanadium (V)</u> <u>Zinc (Zn)</u>	<u>mg/L</u>	<u>Annually during active discharge</u>
<u>Lake Cowan (Baloo Project) monitoring sites MBS112 and MBS113 (as shown in Figure 1 of this Amendment Notice 2)</u>	<u>Diatoms</u> <u>Macrophytes</u> <u>Aquatic invertebrates</u>	<u>N/A</u>	<u>Annually during active discharge</u>
	<u>Sediments:</u> <u>Nitrate plus Nitrate (NO₂ + NO₃)</u> <u>Total Nitrogen</u> <u>Total Phosphorus</u> <u>Total Organic Carbon</u> <u>Bicarbonate (HCO₃)</u> <u>Carbonate (CO₃)</u> <u>Calcium (Ca)</u> <u>Chloride (Cl)</u>	<u>mg/kg</u>	<u>Annually during active discharge</u>

	<u>Magnesium (Mg)</u> <u>Potassium (K)</u> <u>Sodium (Na)</u> <u>Sulfate (SO₄)</u> <u>Aluminium (Al)</u> <u>Antimony (Sb)</u> <u>Arsenic (As)</u> <u>Barium (Ba)</u> <u>Beryllium (Be)</u> <u>Boron (B)</u> <u>Cadmium (Cd)</u> <u>Chromium (Cr)</u> <u>Cobalt (Co)</u> <u>Copper (Cu)</u> <u>Iron (Fe)</u> <u>Lead (Pb)</u> <u>Manganese (Mn)</u> <u>Mercury (Hg)</u> <u>Molybdenum (Mo)</u> <u>Nickel (Ni)</u> <u>Selenium (Se)</u> <u>Silicon (Si)</u> <u>Thallium (Tl)</u> <u>Uranium (U)</u> <u>Vanadium (V)</u> <u>Zinc (Zn)</u>		
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5. Condition 3.2.2 is added to the Licence as shown below:

3.2.2 Monitoring of aquatic biota (algae (diatoms), macrophytes, invertebrates (including resting stages)) shall be undertaken by a qualified scientist experienced in biological sampling from salt lakes. The ecological components monitored will reflect the lake conditions at the time of sampling (i.e. whether wet or dry). If sampled during dry conditions, hatching of dormant species must be completed to provide a complete record of all species present.

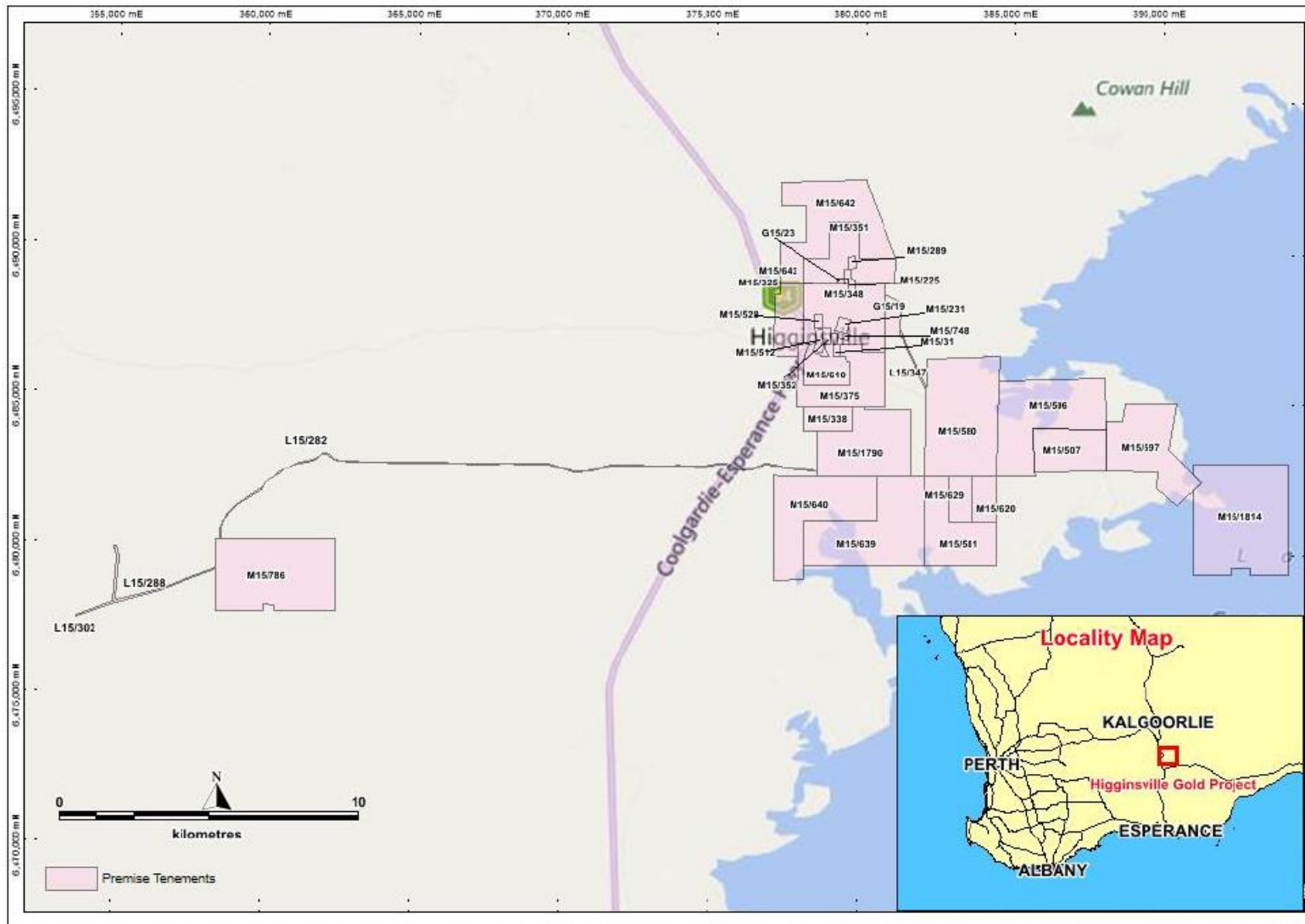
6. Table 3.4.1 of Condition 3.4.1 of the Licence is amended by the insertion of the red text shown in underline below:

Table 3.4.1: Process monitoring					
Monitoring point reference	Process description	Parameter	Units	Frequency	Method
TSF	Tailings delivery to TSF	Volume, and mass of tailings deposited into the TSF (figures for wet and dry)	m ³ and tonnes	Monthly	None specified
TSF	TSF return water	Volumes of water recovered from the TSF	kL	Monthly	None specified
TSF	Seepage recovery	Volume of seepage water recovered from the TSF	kL	Monthly	None specified

G1 & G2	Dewatering from mines to Aphrodite Pits and Poseidon North Pit	Volume of dewatering into Aphrodite Pits and Poseidon North Pit	kL	Monthly	None specified
<u>Baloo Pit</u>	<u>Dewatering from pit to Lake Cowan</u>	<u>Volume discharged</u>	<u>kL</u>	<u>Monthly</u>	<u>Flowmeter readings</u>

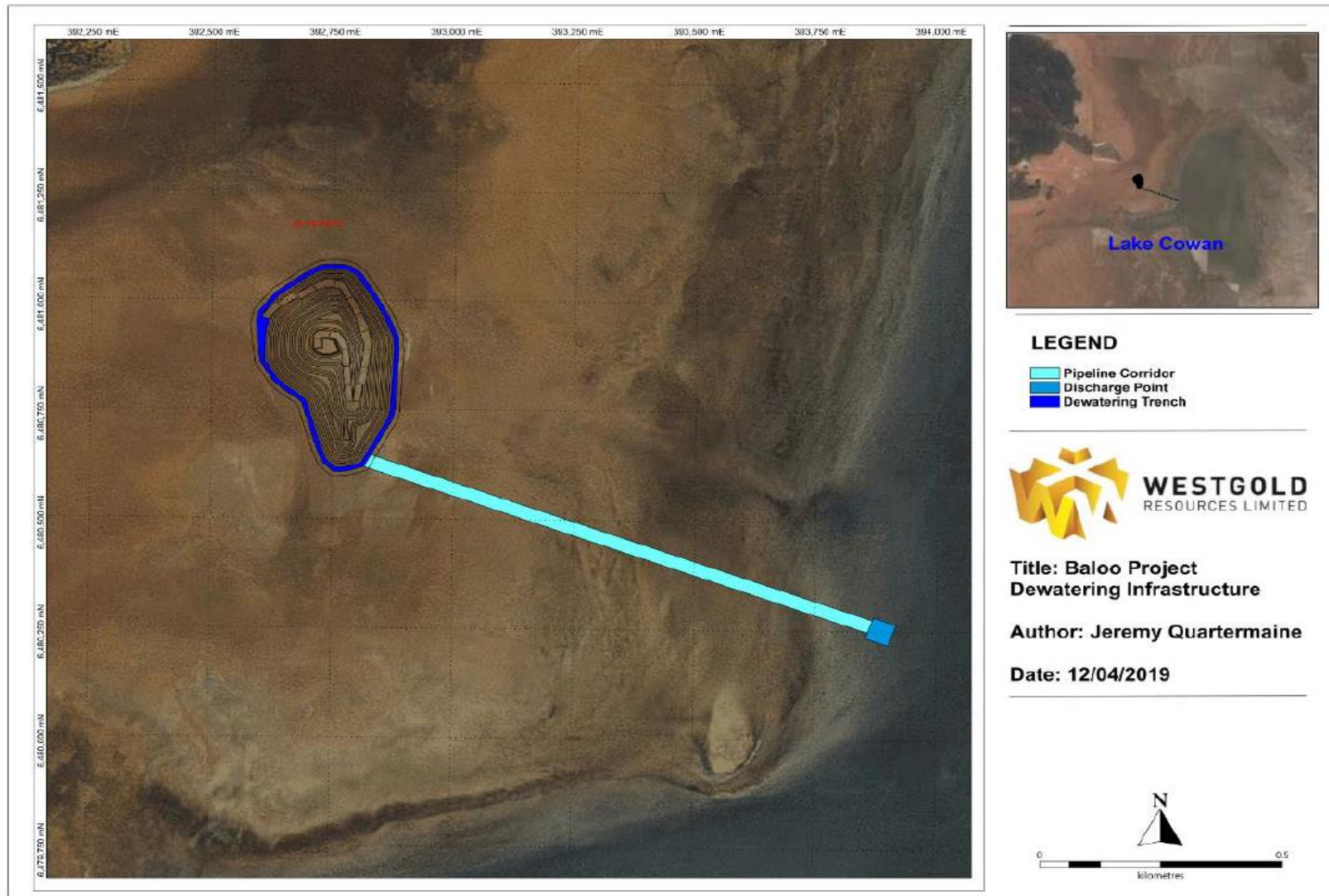
7. Table 3.5.1 of Condition 3.5.1 of the Licence is amended by the deletion of monitoring sites MBS112 and MBS113.
8. Condition 4.3.2 of the Licence is amended by the deletion of text in strikethrough and the insertion of text in red underline as shown below:
 - 4.3.2 The Licensee shall submit a compliance document to the CEO, following the construction of the works listed in condition ~~1.3.5~~ 1.2.5 and prior to commissioning of the same.

9. The Prescribed Premises Map of the Licence is replaced by the map below:



Licence: L9155/2018/1

10. The Map of the Emission Points of the Licence is amended by insertion of the map below showing the emission point for Baloo Pit dewater discharge as per condition 2.2.1:



Licence: L9155/2018/1

Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L9155/2018/1	L9155/2018/1	accessed at www.dwer.wa.gov.au
2	Application to amend L9155/2018/1 dated 20 September 2018	Application	DWER record (A1722109)
3	Bennelongia (2016) <i>Baloo Project: Salt Lake Ecological Study</i> , Prepared for S2 Resources Ltd, April 2016.	Bennelongia 2016	Appendix 4 of DWER record (A1722109)
4	AQ2 (2016) Water Management Baloo Gold Deposit, prepared for S2 Resources, July 2016	AQ2 2016	Appendix 3 of DWER record (A1722109)
5	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
6	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	DER 2016b	
7	DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	DER 2016c	
8	Westgold (2019) Letter to DWER (T Gentle) <u>L9155/2018/1 – Amendment Notice – Construction Compliance Document and Listed Departures</u> , dated 6 January 2019.	Westgold 2019	DWER record (A1754449)