



Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence number	L8041/1990/5
Licence holder	Western Areas Limited
ACN	091 049 357
File number	DER2015/000458
Premises	Forrestania Nickel Operations Forrestania-Southern Cross Road FORRESTANIA WA 6359 Legal description - Mining tenements M74/57, M74/58, M74/90, M74/91, M77/335, M77/399, M77/545, M77/568, M77/574, M77/582, M77/583, M77/584, M77/586, M77/587, M77/588, M77/589, M77/912, L70/111, L74/44, L77/104, L77/141, G70/226 and G70/231
Date of Report	8 September 2020
Decision	Granted

Carmen Standing
A/MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES

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

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1. Decision summary

Licence L8041/1990/5 is held by Western Areas Limited (Licence Holder) for the Forrestania Nickel Operations (the Premises), located at Forrestania-Southern Cross Road, Forrestania, Western Australia.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L8041/1990/5 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence and Amendment Notices 1 - 3 previously granted in relation to the Premises. The Revised Licence has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Amendment summary

On 11 May 2020, the Licence Holder submitted an application to the department to amend Licence L8041/1990/5 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). This amendment is limited to changes to authorise operation of the bioleach plant which was recently constructed under works approval W5839/2015/1.

The bioleach circuit will allow nickel concentrate higher in arsenic that would previously have been rejected, to be further processed. It targets the Spotted Quoll ore reject cleaner flotation cell tailings stream, which is currently disposed as tailings due to the high concentration of nickel arsenide. This portion will be further concentrated by bioleaching the solids and precipitating the iron and arsenic as a stable ferric arsenate complex; the remaining nickel-rich liquor will be treated to precipitate out the nickel sulfide product.

The plant will produce a ferric arsenate residue that will be recombined into the current tailings stream and deposited within the existing Cosmic Boy tailings storage facility (TSF). This residue will make up around 5% of the total combined tailings stream.

2.2.1 Works approval W5839/2015/1

In 2015, works approval W5839/2015/1 was granted for a 'mill recovery enhancement project' that included construction of a bioleach plant, to improve nickel recovery during the ore processing phase. Construction began in the second half of 2017 and was completed by early 2018.

Commissioning of the plant commenced in early 2018 and adaptive commissioning works are still continuing to ramp-up to full throughput (currently around 30%), given the technology is novel and proprietary to the Licence Holder.

During the early commissioning phase there were multiple rounds of emissions testing to establish the environmental performance of the commissioned point source emission points (reagent mixing tank and sulfide precipitation tanks). The extractive test results indicated the concentrations of hydrogen sulfide (H₂S) being vented under upset/emergency conditions were higher than anticipated. Dispersion modelling was then undertaken to establish the potential impacts of H₂S within the surrounding environment, with the results indicating

concentrations in excess of occupational exposure standards. In order to address this, the Licence Holder proposed to install an emission abatement system (scrubbers) on the extraction system, to assist with mitigating odour and to provide an additional safeguard to H₂S risks to human health and the environment.

A compliance report was submitted in December 2017 to certify the constructed works. The department reviewed this report and was satisfied it met the requirements of conditions 5.1.1 and 5.1.2 of the works approval.

A commissioning report was then submitted in August 2019, following a protracted commissioning period. The department reviewed this report and was satisfied it met the requirements of conditions 5.1.3 and 5.1.4 of the works approval.

The Delegated Officer notes the issues with emissions testing, due to unexpectedly high readings of H₂S being vented from the sulfide precipitation tanks under upset conditions. As this issue relates primarily to worker safety, the matter has been referred to the Department of Mines, Industry Regulation and Safety (DMIRS) for their consideration under the *Mines Safety and Inspection Regulations 1995*.

In response to the higher than expected H₂S levels the Licence Holder plans to install a MREP air emissions scrubber system by late 2020/early 2021. Additional point source air emission testing will be conducted post installation of the scrubber system for comparison with the information presented within the commissioning report. The emissions testing results will be provided to the department with the subsequent Annual Environmental Report (AER).

2.3 Consolidation of Licence

As part of this amendment package the department has consolidated the licence by incorporating changes made under the Amendment Notices as summarised in Table 1.

Table 1: Licences consolidated in this amendment

Instrument	Issued	Summary of approval
L8041/1990/5	14/04/2016	Amended Licence granted
	14/12/2017	Amendment Notice 1 – changes to groundwater monitoring program following submission of groundwater management plan for the Mossco Farm pond.
	26/01/2019	Amendment Notice 2 – dewatering from Spotted Quoll mine.
	14/05/2019	Amendment Notice 3 – operation of septage drying lagoons constructed under W5665.

The obligations of the Licence Holder have not changed in consolidating the licence. The department has not undertaken any additional risk assessment of the Premises related to previous Amendment Notices.

In consolidating the licence, the CEO has:

- updated the format and appearance of the Licence;
- revised licence condition's numbers, and removed any redundant conditions and realigned condition numbers for numerical consistency; and
- corrected clerical mistakes and unintentional errors.

Previously issued Amendment Notices will remain on the department's website for future reference and will act as a record of the department's decision making.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 2 below. Table 2 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Air Emissions / Odour H ₂ S gas vented to the atmosphere	Sulphide precipitation process	No pathway to offsite human receptors due to distance	<p>Not Applicable for offsite human receptors.</p> <p>Reagent mixing tanks and sulphide precipitation tank stacks are fitted with emission monitoring systems.</p> <p>Ambient emissions monitoring systems in the facility working areas have been installed to detect H₂S presence above safe working limit values for occupational safety and health purposes.</p> <p>Personnel working within the plant are also required to wear a body alarm to inform them of high H₂S levels.</p> <p>An air emissions scrubber system is planned to be installed to reduce levels of H₂S. The Licence Holder plans to install and commission the system late 2020/ early 2021.</p> <p>Impacts to on site employees of the Licence Holder will not be assessed in the risk assessment table as this relates to workers safety. This matter has been referred to DMIRS for their consideration under the <i>Mines Safety and Inspection Regulations 1995</i>.</p>
Noise	Operation of Bioleach plant (pumps and agitators)	No pathway to offsite receptors	Emission will not be assessed in Risk Assessment table.
Dust	Disposal of bioleach plant tailings (containing arsenic)	Air/wind dispersion to nearby	A water cart with dribble bars will be used to control dust during operations when required.

Emission	Sources	Potential pathways	Proposed controls
	to existing TSF Arsenic may be present at elevated concentrations in dust derived from the surface of the TSF	vegetation	Deposition of tailings into the TSF is rotated regularly with the entire surface of the TSF renewed every 4-6 weeks, thereby maintaining a saturation layer on the surface of the TSF minimising dust lift off.
Leachate from TSF containing arsenic	Disposal of bioleach plant tailings to existing TSF	Seepage to soils and groundwater	<p>Tailings stream from the Bioleach plant will be combined with the current tailings and disposed of into the existing active TSF onsite.</p> <p>Cosmic Boy TSF is clay lined to achieve a permeability of at least 1×10^{-9} m/s</p> <p>A network of 6 seepage recovery bores exist to the north of the Cosmic Boy TSF. These bores are used capture seepage from the TSF and to reduce groundwater mounding.</p> <p>Groundwater monitoring bores exist around the TSF to monitor groundwater quality and groundwater mounding / standing water level (SWL).</p>
Contaminated stormwater	Bioleach plant tank / pipeline failure resulting in release of toxic substances to land	Soils and overland flow to vegetation	<p>Tanks are located on bunded concrete hardstands to capture spills/leaks.</p> <p>Rainfall runoff generated by the Bioleach plant area will be directed to the existing plant footprint sedimentation pond, which will allow sediment to settle out. The water in the sump will be pumped to the TSF.</p>

3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 3: below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guidance Statement: Environmental Siting* (DER 2016)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors (off site)	Distance from prescribed activity
Town of Southern Cross	160 km north of premises

Town of Hayden	80km west of premises
Environmental receptors	Distance from prescribed activity
Priority Ecological Community (PEC) buffer area i.e. Ironcap Hills vegetation complexes (Mt Holland, Middle, North and South Ironcap Hills, Digger Rock and Hatter Hill) (banded ironstone formation)	The proposed activity will take place within the PEC Ironcap Hills vegetation complexes buffer area.
Threatened flora	DWERs GIS database indicates that threatened flora has been identified within 200m of the bioleach plant location.
Threatened fauna <i>Dasyurus geoffroii</i> (Chuditch) <i>Paroplocephalus atriceps</i> (Lake Cronin snake)	DWERs GIS database indicates that threatened fauna has been identified within 200m – 500m of the bioleach plant location. A search on Nature Map lists 12 conservation significant fauna species identified to occur in the Forrestania area.
Soils, remnant native vegetation.	In vicinity of proposed activity
Surface water body (unnamed)	Approximately 4.5km south east of the bioleach plant and TSF.
Local groundwater	Natural groundwater levels in the Forrestania region are between 20 to 60m below ground level (mbgl). Groundwater salinity ranges from saline to hyper-saline and is approximately 40,000 mg/L TDS. Near the Cosmic boy TSF groundwater levels are approximately 7 – 35mbgl. Six groundwater recovery bores are located near MB01 near the Cosmic Boy TSF to manage rising groundwater levels in the area (AER, 2019).

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Licence L8041/1990/5 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 4: Risk assessment of potential emissions and discharges from the Premises operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation of Bioleach Plant and disposal of tailings into Cosmic Boy TSF.	Dust (containing arsenic) from surface of Cosmic Boy TSF	Air/windborne pathway causing impacts to vegetation health and soil quality	Nearby vegetation – PEC and threatened flora (closest <500m from plant) Threatened fauna (closest <500m from plant)	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	New condition 9: Dust emissions from TSF to not cross premises boundary.	<p>Arsenic may be present at elevated concentrations in dust derived from dried tailings, which can impact flora and fauna values in proximity to the TSF. The TSF is located close to the edge of the premises prescribed boundary.</p> <p>A water cart with dribble bars will be used to control dust during operations when required. Deposition of tailings into the TSF is rotated regularly with the entire surface renewed every 4 – 6 weeks, thereby maintaining a saturation layer on the surface of the TSF and minimising dust liftoff.</p> <p>Due to the medium risk this risk event poses a new condition will be added to the licence to ensure the Licence Holder manages dust lift off from the TSF to prevent dust emissions from crossing the prescribed premises boundary.</p>
	Contaminated stormwater (from leaks and spills from Bioleach plant (high nickel concentration))	Overland runoff potentially causing ecosystem disturbance (vegetation health and soil quality)	Nearby vegetation – PEC and threatened flora (closest <500m from plant) Threatened fauna (closest <500m from plant)	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	No additional regulatory controls are required.	<p>In large doses nickel can be toxic to many organisms and may result in a reduction of fresh groundwater and surface water quality. Nickel concentrations in plants above 50 µg/g are toxic and can cause growth restraints.</p> <p>Rainfall runoff generated by the Bioleach plant area will be directed to the existing plant footprint sedimentation pond, which will allow any sediment to settle out. The water in the sump will be periodically pumped to the TSF.</p>

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
								The Licence Holder's controls have been deemed to be sufficient to manage this risk. The provisions of the <i>Environmental Protection (Unauthorised discharge) Regulations 2004</i> also apply.
	Leachate from Cosmic Boy TSF containing arsenic	Seepage through soil into groundwater causing arsenic contamination Mounding of groundwater table resulting in impacts to vegetation (smothering of roots and exposure to pollutants causing death).	Groundwater beneath TSF Vegetation adjacent to TSF	Refer to Section 3.1.1	C = Major L = Unlikely / Possible Medium / High Risk	Y	Existing condition 3. Existing condition 19 updated to include a limit for SWL within bores around the Cosmic Boy TSF. New condition 20 added to require the Licence Holder to operate the groundwater recovery bore network to ensure mounding of the groundwater table does not exceed the limits specified in Table 11 (condition 19). New condition 21 will be added to the licence requiring the Licence Holder to take action in the event that the concentration of arsenic in groundwater monitoring bores exceeds a concentration of 25 µg/L.	See detailed risk assessment in section 3.3

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

3.3 Detailed risk assessment for leachate from Cosmic Boy TSF containing arsenic

3.3.1 Leachate emissions from Cosmic Boy TSF

Arsenic contamination of shallow groundwater from leaching of tailings. Mounding of groundwater (contaminated with arsenic) surrounding the TSF.

Ferric arsenate is a stable arsenic compound; it is soluble, but the solubility increases rapidly as the ratio of iron to arsenic decreases. Arsenic is very soluble at low acid concentrations and high temperatures.

3.3.2 General characterisation of emission

The Bioleach plant will produce a ferric arsenate residue that will be recombined into the current tailings stream and disposed into the existing Cosmic Boy TSF. This residue will make up approximately 5% of the total combined tailings stream. A metals analysis of a typical residue sample (bioleach and current tailings) and subsequent leach testing for major metals indicates only a minor change to the tailings makeup from the addition of the bioleach tailings, as seen in Table 5 below.

Table 5: ALSP leach results for typical ferric arsenate and current tailings stream

Parameter	Units	Bioleach plant tailings Acetic Acid leachate	Cosmic Boy Current tailings Acetic Acid leachate	Combined result	Bioleach plant tailings DI water leachate	Cosmic Boy current tailings DI water leachate	Combined result
Arsenic	mg/L	0.3	0.1	0.11	0.198	0.02	0.029
Cadmium	mg/L	0.05	0.05	0.05	0.0001	0.005	0.005
Chromium	mg/L	0.1	0.1	0.1	0.006	0.01	0.001
Cobalt	mg/L	3.0	0.1	0.245	3.13	0.01	0.17
Copper	mg/L	1.5	0.1	0.17	2.44	0.01	0.13
Lead	mg/L	0.1	0.1	0.1	0.001	0.01	0.001
Nickel	mg/L	151	17.6	24.27	163	0.04	8.2
Trivalent chromium	mg/L	0.01	0.01	0.01	0.01	0.01	0.01
Hexavalent chromium	mg/L	0.01	0.01	0.01	0.01	0.01	0.01

The concentration of mobile arsenic in liquid for the above Bioleach plant tailings sample (0.3 mg/L) is nearly 16 times less than the leachable concentration criteria for a Class III landfill of 5 mg/L (Landfill Definitions 1996). When combined with current tailings, the concentration of arsenic in leachate is below the leachable concentration criteria for a Class I inert landfill of 0.05 mg/L (this is also the criterion for Arsenic in drinking water (NHMRC, 2004)). All other metals tested appear to be relatively stable.

Ferric arsenate is a stable arsenic compound; it is soluble, but the solubility increases rapidly as the ratio of iron to arsenic decreases. Arsenic is very soluble at low acid concentrations and

high temperatures. Geochemical characterisation of the old tailings solids in 1998 (i.e. prior to closure and capping by Outokumpu Mining Australia), upon which the current TSF has been constructed upon, indicates the current TSF is sitting on mainly neutral-to-alkaline material, which would provide additional buffering capacity for any seepage.

3.3.3 Description of impact from the emission

Arsenic contamination of groundwater presents a serious threat to public health, particularly if the groundwater is used for drinking purposes. Arsenic is a documented human carcinogen with an acute toxicity at high concentrations, as well as harmful effects from low level, long-term exposure (e.g. arsenicosis). There are no nearby groundwater users due to the salinity of the groundwater. However the water may be used for stock watering purposes and within the mining process.

Groundwater flow is likely to be towards the west to a local drainage system located approximately 9km from the TSF. This drainage system links to a number of lakes along the Hyden Lake Kind Road (Coffey, 2015).

Mounding of the groundwater table as a result of leachate from the TSF (which may include arsenic with the addition of the Bioleach plant tailings stream) could impact native vegetation by smothering of roots or exposure to toxic substances (such as arsenic) leading to vegetation death.

In 2015 when W5839/2015/1 (for the construction of the Bioleach plant) was issued there was evidence from a TSF Audit from 2014 (Coffey, 2014) that seepage from the TSF was discharging into the groundwater due to a raise in groundwater levels. As a result an improvement condition was added to W5839/2015/1 which required a water balance, groundwater modelling and updates to the groundwater recover model for the Cosmic Boy TSF. This report was submitted to the department in October 2015 in accordance with the improvement condition. The report indicated that a groundwater recovery program is operating along the TSF north wall to manage groundwater mounding. Two groundwater recovery bores (plus 2 additional contingency recovery bores) were installed in 2011 and were operated at the TSF to alleviate groundwater level rises in MB01. The report (which included groundwater modelling showing the extent of seepage from the TSF at a crest height of RL419m (Stage 4 lift)) indicated that the current pumping rate of the two recovery bores (45m³/day) was insufficient to keep SWL below 4mbgl at this height. The report recommended that pumping rate should be increased to 130m³/day and that an additional 4 seepage recovery bores should be installed and operated.

The construction of the Stage 4 lift on the TSF to a crest height of RL419m has recently been completed under works approval W6273/2019/1. Through the assessment process for this works approval, conditions were added to require additional groundwater recovery bores to be installed to manage predicted levels of groundwater mounding as a result of the TSF lift. An additional 4 seepage recovery bores were installed in late 2019/early 2020. Currently there are eight seepage recovery bores (six operating and two contingency recovery bores on standby) at the TSF to capture seepage and manage groundwater mounding. See Figure 1 for location of groundwater recovery bores.

The most recent AER indicates that groundwater SWL from June 2019 are between 7.15mbgl and 31.85mbgl.

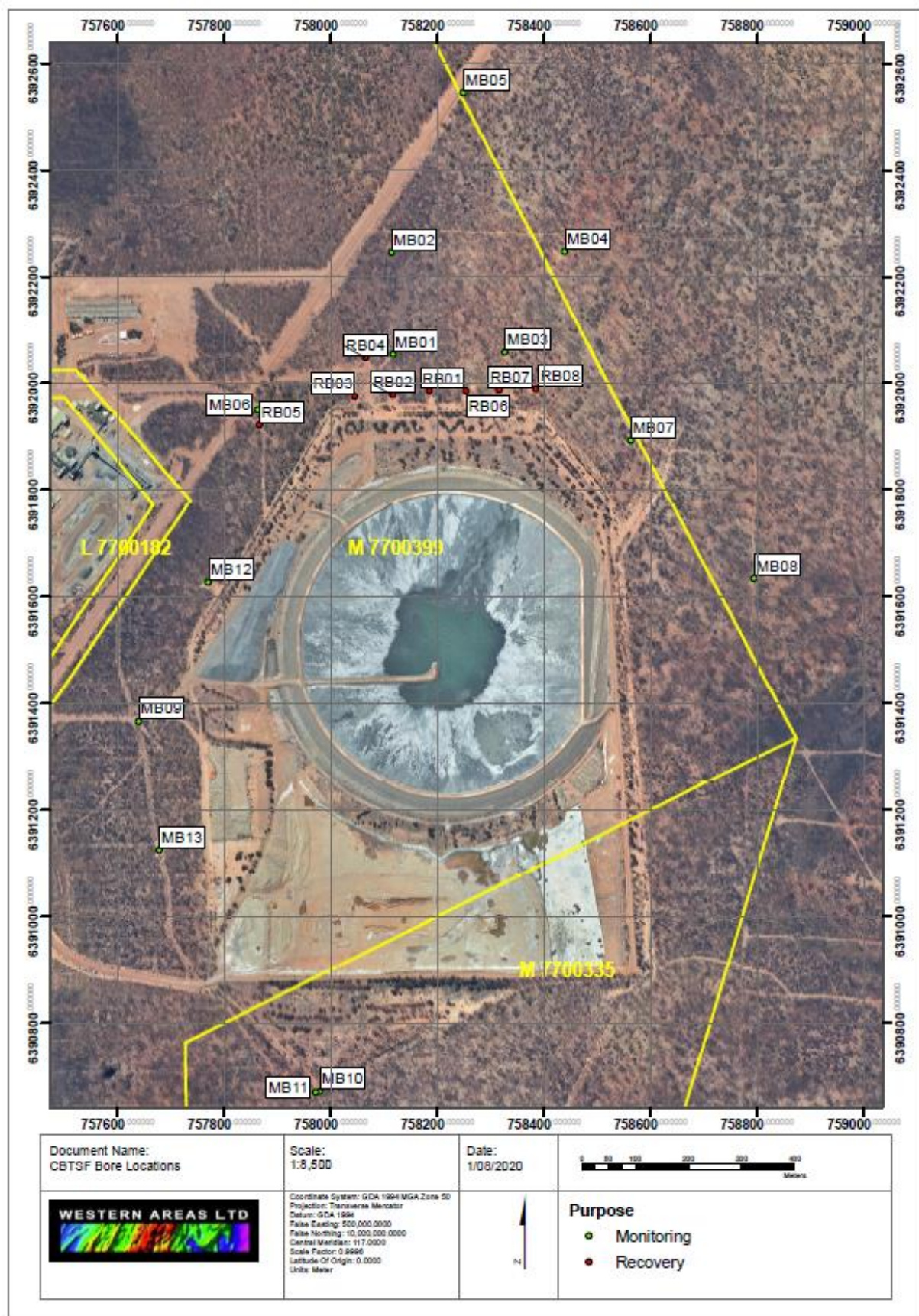


Figure 1: Location of groundwater recovery bore network at the Cosmic Boy TSF.

3.3.4 Licence holder's controls

See section 3.1.1.

3.3.5 Risk rating

Arsenic levels within groundwater

If leachate containing high levels of arsenic were to seep from the TSF, then the Delegated Officer has determined that high-level on site impacts and mid-level offsite impacts may occur. Therefore, the Delegated Officer considers the consequence of this risk event to be 'major'.

The Delegated Officer has determined that the likelihood of arsenic levels within the groundwater beneath the TSF reaching levels that could significantly impact the receiving environment as 'unlikely' based on the tailings metal analysis data provided by the Licence Holder.

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix and determined that the overall rating for this risk event is 'Medium'.

Groundwater mounding

If mounding of the groundwater table were to occur beneath the TSF as a result of this additional tailings stream then the Delegated Officer has determined that high-level on site impacts may occur (vegetation death due to root smothering or exposure to pollutants). Therefore the Delegated Officer considers the consequence of this risk event to be 'major'.

The Delegated Officer has determined that the likelihood of mounding of the groundwater table beneath the TSF to be 'possible' due to evidence of seepage already occurring from the TSF and the modelling carried out by Coffey in 2015 that indicated that groundwater mounding was likely to occur with the construction of the stage 4 lift on the TSF.

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix and determined that the overall rating for this risk event is 'high'.

3.3.6 Regulatory controls

Existing condition 3 requires that tailings is only deposited into Cosmic Boy TSF which has the following infrastructure requirements; clay-lined to achieve a permeability of at least 1×10^{-9} m/s or equivalent and a seepage collection and recovery system to capture seepage from the TSF.

Existing condition 19 requires groundwater quality monitoring around the TSF to determine the extent of seepage and mounding. This condition will be updated to include a limit (of 4mbgl) for SWL within bores around the Cosmic Boy TSF.

New condition 20 requires the Licence Holder to operate the groundwater recovery network (8 recovery bores in total with two being contingency bores) to ensure mounding of the groundwater table does not exceed the limits specified in Table 11 (condition 19).

New condition 21 requires the Licence Holder to take action in the event that the concentration of arsenic exceeds a concentration of 25 µg/L. This trigger concentration for arsenic (24 µg/L) within groundwater is based on the *ANZECC Guidelines (2000)* trigger value for arsenic within freshwater for 95% species level of protection (there is no trigger value for saline groundwater and so therefore the freshwater guideline has been adopted as a trigger for action and not a limit within the licence).

4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 14/8/2020. Comments received 27/08/2020.	With regard to the draft amended licence, Western Areas Limited (WSA) requests that the following additional requirement is removed from the amended licence; Table 11 – Groundwater monitoring table has included an additional requirement that has not been discussed (or justified) in the new licence/decision document i.e. is the increase in the water quality monitoring at Mossco Farm from Annual to Quarterly.	The requirement for quarterly monitoring at Mossco Farm is a partial error made in the licence during this amendment process. Only pH, Electrical conductivity and total dissolved solids is required to be monitored quarterly at Mossco Farm (as per the current Amendment Notice 1 - Table 3.4.1) and not the entire suite of water quality parameters. This error was made when formatting Table 11 during the amalgamation process of transferring the changes made in the three amendment notices into the licence document. DWER has now corrected this error.
Licence holder follow up comments on 3/9/2020	Thank you for clarifying DWERs mistake on the draft licence and for rectifying this on the amended licence. Based on the amended licence I wish to waive the remaining review period and finalise the licence.	Noted.

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 7 below provides a summary of the proposed amendments and will act as a record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 7: Summary of licence amendments

Condition no.	Proposed amendments
Cover page	Restructured to clearly indicate what prescribed activities have been risk assessed.
Introduction	Deleted, consistent with current template (this guidance is now available in the <i>Guide to Licensing (June 2019)</i>).
Interpretation	Added, consistent with current template (based on recent legal advice). Replaces existing conditions 1.1.3 and 1.1.4.
Condition and Table numbers	Condition and table numbers have been modified to match current

Condition no.	Proposed amendments
	template.
Condition 3 – Table 1	Reference to bioremediation facilities deleted from the authorised containment infrastructure table. These facilities do not form part of the primary activities on the Premises (guidance is available in the Contaminated Sites guidelines: <i>Assessment and management of contaminated sites (December 2014)</i>).
Condition 7 – Table 4	Reference to flying fox tip has been added to clarify where disposal of waste is approved.
Condition 2.2.1	Deleted, consistent with current template.
Condition 9	New condition added to manage dust emissions from the TSF.
Condition 10 – Table 6	Reference to new emission points: sulfide precipitation tank vents (A4), reagent mixing tank vent (A5).
Condition 17 – Table 9	Footnote references 3 & 4 deleted. @ 25°C added to Electrical conductivity.
Condition 18 – Table 10	Footnote references 2 & 3 deleted. @ 25°C added to Electrical conductivity.
Condition 19 – Table 11	Text relating to recording and investigating limit exceedances deleted (replaced by new conditions 19 & 20).
	Footnote references 2 & 3 deleted. Information from existing footnote 5 (footnote 3 in revised licence) moved into body of table to make requirements clearer (quarterly monitoring of pH, TDS and EC).
Condition 20	Requirement to manage groundwater mounding of the TSF, with limits imposed.
Condition 21	Requirement to conduct management actions in the event of elevated concentrations of arsenic in groundwater beneath the TSF.
Condition 25	AACR condition replaced with current template.
Conditions 27 & 28	AER conditions replaced with current template.
Condition 29	Condition 5.3.1 replaced with new condition wording to match current template.
Non-annual reporting	Condition 5.2.3 - former non-annual reporting removed as considered redundant.
Definitions	Definitions replace existing conditions 1.1.1 and 1.1.2
	Definitions removed: 'anniversary date', 'compliance report', 'environmentally hazardous material', 'nuisance level' – conditions which contained these references have been removed, consistent with current template, as part of this amendment.
	Definitions added: 'AACR', 'condition', 'Department', 'discharge', 'emission', 'EP Regulations', 'prescribed premises'.
	Definitions modified: 'Act' (replaced with 'EP Act'), 'CEO', 'licence', 'licensee' (replaced with 'licence holder').
Schedule 1: Maps	Premises map updated to more recent aerial photo.
	Maps of emission points and environmental monitoring removed, updated and combined in a new map.
	New map of the flying fox tip location has been added to the licence
	New map of groundwater recovery bores surrounding TSF has been added to the licence
Schedule 2: Groundwater monitoring point ref	Schedule renamed to Schedule 2. No change to table. Map of monitoring bore locations for the Mossco Farm Evaporation Pond added.
Schedule 2: Notification & Forms	Removed as considered redundant.

References

Document title	In text ref	Availability
WSA, January 2020. Western Areas Limited – Cosmic Boy Operation. Application form: Bioleach plant.	Application	DWER records (A1892412)
WSA, January 2018. Western Areas Limited – Forrestania Nickel Operation. Works Approval 5839-2015-1; Bioleach plant – compliance document.	Compliance report	DWER records (A1595701)
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