Government of Western Australia
Department of Water and Environmental Regulation

Amendment Notice 1

Licence Number	L9037/2017/1
Licence Holder	Process Minerals International Pty Ltd
ACN	063 988 894
File Number:	DER2017/000308
Premises	Mount Marion Lithium Project Shire of Coolgardie Mining Tenements M15/1000 and M15/717
Date of Amendment	16 December 2017

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 Licensing (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 *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info-der@dwer.wa.gov.au
CS Act	*Contaminated Sites Act 2003* (WA)
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act*

	1999 (Cth)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force
Licence Holder	Process Minerals International Pty Ltd
m^3	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
Mtpa	million tonnes per annum
NEPM	National Environmental Protection Measure
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Occupier	has the same meaning given to that term under the EP Act.
PMI	Process Minerals International Pty Ltd
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 *Guidance Statement: Risk Assessment*
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)

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.

This notice is limited to a part assessment of an amendment application received 6 October 2017, with respect to a proposal to change the disposal method for coarse reject tailings. The other aspects relating to an increase to Categories 5, 64 and 85 will be assessed in a subsequent Amendment Notice.

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

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

Process Minerals International (PMI) have applied to amend their Licence to permit the coarse fraction of tailings from the beneficiation plant (also known as coarse reject material) to be disposed of via either:

1. Trucked and dumped off the western verge of the Ghost Crab Pit northern waste landform within the existing abandonment bund and encapsulated; or
2. Dumped on the northern ramp of the existing Ghost Crab Pit; or
3. Backloaded via truck to existing waste rock landforms on M15/1000 and comingled with existing waste from mining operations.

Approximately 2.1 Mtpa would be disposed in this manner. The remaining tailings slurry, water, brine and fines would continue to be disposed of to the existing tailings storage facility at Ghost Crab Pit. For the disposal options 1 and 2, drainage structures will be incorporated into the design to ensure that any runoff is directed back into the Ghost Crab Pit.

PMI also seek approval to increase their processing capacity under category 5 and increase the capacity of categories 64 (landfilling) and 85 (wastewater treatment) to cater for an expansion to the accommodation camp. These proposed changes will be assessed separately due to the applicant wishing to progress the disposal of coarse reject material as soon as possible.

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
The Mining Act 1978	Update to current approved Mining Proposal	Assessment in progress

Amendment history

Table 3 provides the amendment history for L9037/2017/1.

Table 3: Licence amendments

Instrument	Issued	Amendment
L9037/2017/1	15/12/2017	Amendment Notice 1 to authorise disposal of coarse rejects to either: • the western verge of the Ghost Crab Pit in an encapsulated landform; or • comingled with waste rock and disposed of to waste rock landforms; or • discharged onto the northern ramp of the existing Ghost Crab Pit.

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
Residential Premises: Woolibar station homestead	15km east of the Premises.
Town of Kambalda	23km south east of Premises.

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
Department of Biodiversity, Conservation and Attractions managed lands and waters	• "Class C" Yallari Timber Reserve, 2.3km southwest of the Premises (Native Vegetation Solutions 2016). • Karamindie State Forest, 6km northwest of Premises • Kambalda Nature Reserve, 5km southeast of Premises
Threatened/Priority Flora	The 2016 survey recorded a listed Priority 3 flora species under the *Wildlife Conservation Act 1950*, *Diocirea acutifolia*. It was recorded at 28 locations in the survey area. This species is widespread and in large numbers in the local and regional area (Native Vegetation Solutions 2016). A 2009 survey recorded 3 x Priority 3 flora species (*Diocirea acuitifolia*, *Austrostipa blackii* and *Allocasuarina eriochlamys subsp grossa*) within the Premises (Recon Environment 2009 in DER 2010).
Threatened/Priority Fauna	Malleefowl (*Leipoa ocellata*) habitat is present within the boundaries of the Prescribed Premises. A survey in 2010 identified two extinct malleefowl mounds within the Premises boundary (DER 2016). Malleefowl is listed as vulnerable under the EPBC Act and is on schedule 1 of the *Wildlife Conservation Act 1950*, that is, fauna that is rare or is likely to become extinct. A condition has been added to the Clearing Permit

	CPS#6770/2 to require a fauna survey for Malleefowl and additional approval prior to clearing of its habitat.

The distances to groundwater and water sources are as described in Table 6 below.

Table 6: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
Public drinking water source areas	No public drinking water source areas are located with a 100km radius of the Premises	N/A
Major watercourses/waterbodies	No major surface watercourses are located on or adjacent to the Premises. The nearest surface water receptor is Lake Lefroy, a saline lake located 24 km to the south east of the Premises. Lake Lefroy is also the groundwater receptor, from where the Wollubar/Lefroy palaeochannel discharges.	Lake Lefroy is a regionally significant salt lake, with peak biological productivity during large rainfall events, wherein invertebrate species coming out of dormancy are able to reproduce.
Groundwater	Three groundwater systems are present on the Premises: • Surficial alluvium, silts and sandy material located less than 5m below ground level with an average thickness of between 5 – 15m. • Palaeochannel sediments: channel of fine to coarse quartz sand. A tributary of the Wollubar Palaeochannel intersects the Ghost Crab Pit, at approximately 345m RL to 333m RL (between approximately 35 m and 47m below ground level), travelling from the south west to the south east through the pit. Inflow to the pit estimated at 190L/s during previous mining of gold at Ghost Crab Pit in 1998 (PSM 2016). • Weathered/fractured bedrock, groundwater located in sheared and fractured rock zones (PSM 2016).	The palaeochannel tributary passing through the pit is hypersaline with a TDS of between 32 000 and 40 000 mg/L and pH of 6.4 (PSM 2016) and therefore not considered of environmental value. Groundwater samples taken from pegmatite intrusive stratigraphy at the Project (2km east of Ghost Crab Pit) recorded low salinity water (TDS 4 500 – 5 200 mg/L and alkaline pH (7.9 – 8.3) (PSM 2016). Previous gold mining operations have dewatered around the pit. The dewatering program consisted of six bores installed in the 1990s which attempted to access the palaeochannel aquifer but only recorded very low groundwater yields of less than 1 L/s (compared to recorded inflows of up to 190 L/s into the pit) (PSM 2016). Both groundwater sources are used for the purposes of mining or industrial applications. Adjacent towns are serviced by scheme water (PSM 2016).

Risk assessment

Tables 9 and 10 below 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.

The risk rating for these risk events has been determined in accordance with the risk rating matrix set out in Table 7 below.

Table 7: 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

The assessment of the consequence and likelihood of the Risk Event was made in accordance with the criteria in Table 8 below.

Table 8: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	• **onsite impacts**: catastrophic • **offsite impacts local scale**: high level or above • **offsite 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	• 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
Likely	The risk event will probably occur in most circumstances	Major	• **onsite impacts**: high level • **offsite impacts local scale**: mid-level • **offsite 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	• **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

Likelihood	
The following criteria has been used to determine the likelihood of the Risk Event occurring.	
Possible	The risk event could occur at some time
Unlikely	The risk event will probably not occur in most circumstances
Rare	The risk event may only occur in exceptional circumstances

Consequence		
The following criteria has been used to determine the consequences of a Risk Event occurring:		
	Environment	**Public health* and amenity (such as air and water quality, noise, and odour)**
Moderate	(i) **onsite impacts**: mid-level (ii) **offsite impacts local scale**: low level (iii) **offsite impacts wider scale**: minimal (iv) Specific Consequence Criteria (for environment) are at risk of not being met	(v) **Adverse health effects:** low level or occasional medical treatment (vi) Specific Consequence Criteria (for public health) are at risk of not being met (vii) **Local scale impacts:** mid-level impact to amenity
Minor	(viii) **onsite impacts**: low level (ix) **offsite impacts local scale**: minimal (x) **offsite impacts wider scale**: not detectable (xi) Specific Consequence Criteria (for environment) likely to be met	(xii) Specific Consequence Criteria (for public health) are likely to be met (xiii) **Local scale impacts:** low level impact to amenity
Slight	• **onsite impact**: minimal • Specific Consequence Criteria (for environment) met	• **Local scale**: minimal to amenity (xiv) Specific Consequence Criteria (for public health) met

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

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

Table 9: 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 5 Processing or beneficiation of metallic or non-metallic ore	Construction of tailings coarse reject material stockpile[1]	**Dust:** associated with construction activities	Native vegetation	Air	Vegetation health impacts	N/A	N/A	N/A	Clearing of native vegetation is assessed and managed separately through the Clearing Permit process according to s51 of the EP Act.

Note 1: Clearing of native vegetation for construction of the stockpile is assessed according to Part V, Division 2 of the EP Act and associated *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* by DMIRS under delegation from DWER.

Table 10: 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 5 Processing or beneficiation of metallic or non-metallic ore	Disposal of coarse reject material to new Coarse Fraction stockpile area on western extent of the Ghost Crab pit northern waste landform	Dust	Native vegetation	Via air; associated with deposition of coarse rejects	Adverse impacts on vegetation and fauna habitat	Slight	Unlikely	Low	Moisture content of the tailings coarse reject material is approximately 5 -8% (PMI 2017a). Unlikely to result in significant rate of fugitive dust emissions.
		Leachate with soluble metals/metalloids	Native vegetation Fauna habitat	Leachate infiltration to soil	Adverse impacts to the health and survival of vegetation	Slight	Unlikely	Low	Leachate test results of coarse fraction samples indicate that leachate from the coarse reject material is likely to have low concentrations of soluble alkali metals (rubidium and lithium), be moderately alkaline (pH 9.4) and of low salinity. (MBS 2017). At alkaline to neutral pH, (expected site conditions) leachability of metals is at

									the lowest concentrations across the pH range. Actual level of solubilised lithium in seepage/leachate is expected to be lower in-situ due to the coarse sizing of the material (MBS 2017). Providing the waste landforms are designed to prevent the expression of salts at surface from any rainfall induced seepage (adequate stormwater management and encapsulation) the risk is low. The design of the waste landform will ensure that there is no pooling of water on or around the landform and the abandonment safety bund around the perimeter of the landform isolates the landform from surface water (PMI 2017b).
	Disposal of coarse reject material to existing waste rock landforms (comingled with existing mining overburden waste)	Dust	Native vegetation	Via air; associated with deposition of coarse rejects	Adverse impacts on vegetation and fauna habitat	Minor	Possible	Medium	Moisture content of the tailings coarse reject material is approximately 5 -8%. However comingled stream with waste rock deposition is likely to result in dust emissions.
		Leachate with soluble metals/metalloids	Native vegetation	Rainfall infiltration to soil	Adverse impacts to the vegetation and fauna habitat	Slight	Unlikely	Low	Expected leachate from coarse rejects expected to be low in soluble lithium and rubidium, low salinity (refer to reasoning above in leachate impacts from disposal to new coarse fraction

									landform.) Drainage structures will be constructed to contain stormwater.
	Disposal of coarse reject material to northern ramp of Ghost Crab Pit	Leachate with soluble metals/metalloids (lithium and rubidium)	Native vegetation	Increasing groundwater mounding	Inundation of vegetation rootzones	N/A	N/A	N/A	Leachate will be of low salinity, thereby not causing additional impact to vegetation (MBS 2017). Drainage will report to the Ghost Crab Pit and leachate volumes will be minimal and capacity for incident rainfall and freeboard within the Pit has been previously assessed as sufficient providing the freeboard limit is met.

Decision

All three coarse reject material disposal options are acceptable. Control for the management of drainage from surface waste landforms accepting coarse reject material is conditioned on the Licence. A corresponding Condition to ensure that no runoff or leachate from the surface waste landforms is released to vegetation has been added to the Licence. The requirement for controlling fugitive dust is captured by existing Condition 1 under Table 2 (refer to the text for General Emissions). Table 2 has been updated to include reference to coarse reject material as a specified emission.

Construction requirements for surface waste landforms storing tailings coarse reject material are specified in new Conditions 4 and 5, and operational requirements in new Condition 6.

Table 1, Definitions has been updated to account for the recent changes in State Government Departments.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 15 December 2017. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

Amendment

1. Table 1, Definitions, of the Licence are amended by the insertion of the red text shown in underline below:

(Part of) Table 11: Definitions

Term	Definition
DMIRS	Department of Mines, Industry Regulation and Safety.
DWER	Department of Water and Environmental Regulation.

2. Table 2 of Condition 1 of the Licence is amended by the insertion of the red text shown in underline below:

(Part of)Table 12: Authorised Emissions table

Column 1	Column 2
Emission type	**Exclusions/Limitations/Requirements**
Specified Emissions	
Tailings (with the exception of coarse reject material)	Subject to compliance with Condition 6.
Treated effluent	To be discharged to the irrigation spray field located as per 'WWTP spray field' in Figure 1 of Schedule 1.
	Wastewater effluent that is discharged to

Column 1	Column 2
Emission type	**Exclusions/Limitations/Requirements**
	the irrigation area to meet the limits as prescribed in Condition 5.
Class II waste (putrescible and inert)	To be disposed to the fenced landfill located within the Ghost Crab Pit waste rock landform as shown in Figure 1 in Schedule 1.
Used tyres and rubber	To be disposed of to the waste rock landform adjacent Pit 1 as shown in Figure 1 in Schedule 1.
Coarse reject (tailings) materials	Subject to compliance with Conditions 4, 5 and 6.

3. The Licence is amended by the insertion of the Conditions 4 and 5, shown below:

Coarse Rejects Waste Surface Landforms

4. Where coarse rejects are to be disposed to surface waste landforms, the Licence Holder must install and undertake the following Works for the infrastructure:

(a) specified in Column 1; and

(b) to the requirements specified in Column 2

of Table 4 below.

5. Within 60 days of the completion of the Works specified in Column 1 of Table 4, the Licence Holder must provide to the CEO a compliance document certified by the installer confirming each item of infrastructure or component of infrastructure specified in Column 1 of Table 4 below has been constructed to the requirements specified in Column 2. The compliance document shall be signed by a person authorised to represent the Licence Holder.

Table 4: Coarse Rejects Waste Landform Infrastructure requirements

Column 1	Column 2
Infrastructure	**Requirements (design and construction)**
Stand Alone Coarse Rejects Landform(s)	Install drainage structures for each landform to contain any run-off or stormwater originating within the landform surface area.

4. Table 5 (previously Table 4) of Condition 5 (previously 4) of the Licence is amended by the insertion of the red text shown in underline below:

(Part of)Table 4: Infrastructure and equipment controls table

Column 1	Column 2
Site infrastructure and equipment	**Operational requirements**
Coarse reject (tailings) material surface waste landform	• No run-off to be released to vegetation.

5. The Licence is amended by renumbering of existing Conditions 4 - 19 as Conditions 6 – 21. Tables 4 – 6 have been renumbered to Tables 5 – 7.

Appendix 1: Key documents

	Document title	In text ref	Availability
1	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
2	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
3	DER, February 2017. *Guidance Statement: Risk Assessments.* Department of Environment Regulation, Perth.	DER 2016b	
4	DER, November 2016. *Guidance Statement: Decision Making.* Department of Environment Regulation, Perth.	DER 2016c	
5	Licence L9037/2017/1 Mt Marion Lithium Project	L9037/2017/1	accessed at www.dwer.wa.gov.au
6	MBS Environmental (2017) Mount Marion Project Coarse Rejects Geochemical Assessment, November 2017	MBS 2017	DWER records (A1577416)
7	Process Minerals International (2017a) Application to Amend Licence L9037/2017/1, dated 6 October 2017	PMI 2017a	DWER records (A1536763)
8	Process Minerals International (2017b) Letter to DWER 'Re: Response to Request for Further Information', dated 8 November 2017	PMI 2017b	DWER records (A1558833)

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 15 December 2017 for review and comment. The Licence Holder responded on 15 December 2017, waiving the remaining comment period, with only the following comments received on the draft Amendment Notice.

Condition	Summary of Licence Holder comment	DWER response
N/A	Clarifying that assessment of tailings freeboard and mounding was completed in the previous assessment and provides for containment of incident rainfall	Accepted.
Condition 5	Comment that requirement for drainage structures should not be necessary for comingled waste , as the coarse rejects will be placed in the centre of the waste dump.	Accepted