Amendment Report

Application for Licence Amendment

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

Licence Number	L8103/1989/3
Licence Holder	Aragon Resources Pty Ltd
ACN	114 714 662
File Number	2013/001965-1
Premises	Fortnum Gold Mine Mining Tenements: M52/6, M52/95, M52/96, M52/98, M52/99, M52/132 and M52/133. MEEKATHARRA WA 664 As defined in Attachment 1
Date of Report	**30 October 2020**
Decision	Revised licence granted

Suzy Roworth
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Date: 2020.10.30 10:33:08 +08'00'

SUZY ROWORTH
A/MANAGER, RESOURCE INDUSTRIES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L8103/1989/3 is held by Aragon Resources Pty Ltd for the Fortnum Gold Mine (the Premises), located within mining tenements M52/6, M52/95, M52/96, M52/98, M52/99, M52/132 and M52/133.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges as a result of the following activities:

- Installation and operation of a mobile paste plant to produce paste fill for Starlight underground mine.
- Installation and operation of a mobile crusher to produce aggregate for the paste plant.
- Development and operation of a new landfill at Yarlarweelor waste rock landform (WRL).
- The assessment also considered the proposed disposal of used tyres at Starlight pit and Toms in-pit Tailings Storage Facility (TSF).

As a result of this assessment, Revised Licence L8103/1989/3 has been granted.

The Revised Licence issued as a result of this amendment supersedes the existing Licence previously granted in relation to the Premises.

2. Scope of assessment

2.1.1 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.

2.1.2 Application summary

On 3 July 2020, the Licence Holder submitted an application to the department to amend Licence L8103/1989/3 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments were sought as detailed in Table 1:

Table 1: Proposed design/throughput capacity changes

Category	Current design/throughput capacity	Proposed design/throughput capacity	Description of proposed amendment
Category 5	1,000,000 tonnes per annual period	1,100,000 tonnes per annual period	Operation of paste plant incorporating the input of dried tailings from TSF 2 for the production of paste fill for Starlight underground mine.
Category 89	52 tonnes per annual period	300 tonnes per annual period	Development and use of new landfill at Yarlarweelor WRL for the disposal of clean fill, inert waste, putrescible waste and used tyres
Category 12	N/A	200,000 tonnes per annual period	Operation of mobile crusher to crush mine waste and produce aggregate for paste production

The Licence Holder also proposed disposal of used tyres at Starlight pit and Toms in-pit TSF.

This amendment is limited only to changes to Category 5 and 89 activities on the Existing Licence, and the addition of Category 12. No changes to the aspects of the existing Licence relating to Category 6 have been requested by the Licence Holder.

The proposed activities are further detailed below. The location of the proposed activities is illustrated in Figure 1.

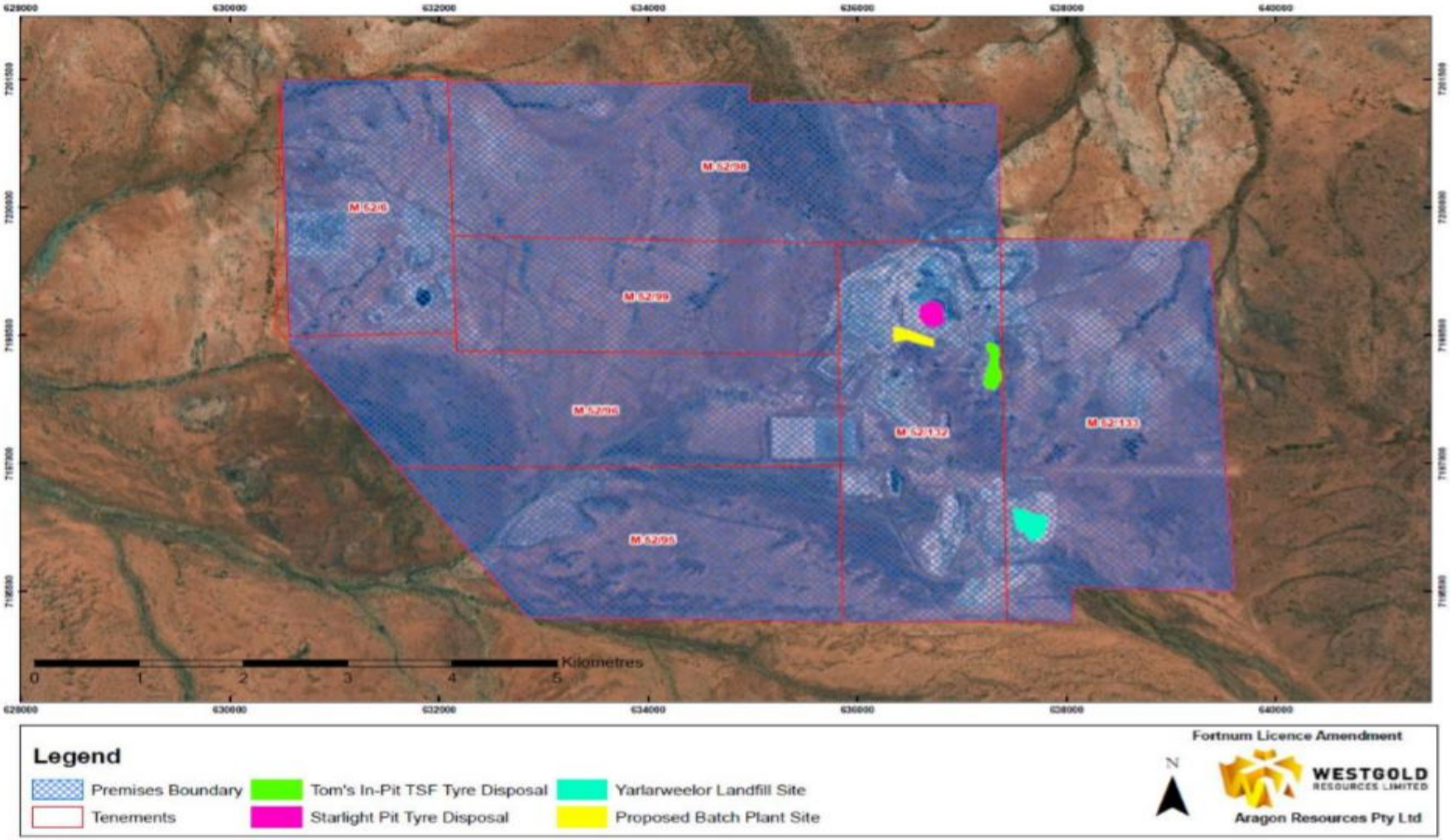

Figure 6: Location of Proposed Amendments

Figure 1: Location of paste plant, Yarlarweelor WRL landfill and tyre disposal.

2.1.3 Paste plant and mobile crusher

Infrastructure/equipment

Infrastructure will include a Transfer Stockpile Area (TSA) to receive and stockpile dry tailings borrowed from TSF2. The TSA will consist of the following components:

- Compacted floor area covered with 300mm granular mine waste;
- Perimeter drainage channels;
- Perimeter bund walls;
- Drainage collection sump constructed on the north-eastern side of the TSA;
- Two pumps installed at the drainage collection sump; and
- Contingency drainage washout sump.

The paste plant will be mobile and consist of the following components:

- Tails hopper;
- Cement hopper; and
- Pug mill.

A mobile crusher will also be used to crush mine waste and produce aggregate for paste production (aggregate may be used instead of tailings for paste production).

The location of the TSA/paste plant area is illustrated in Figure 2.

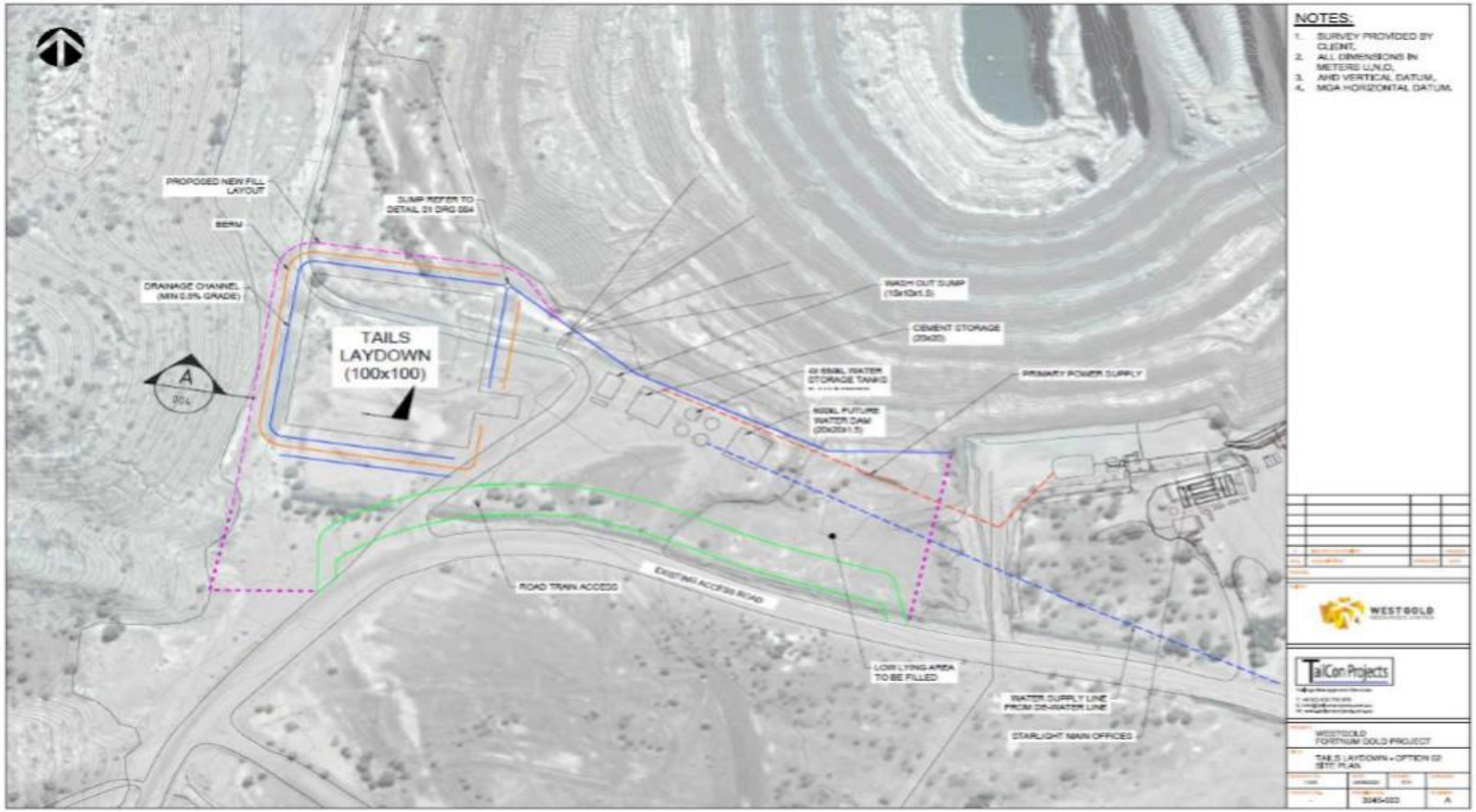

Figure 2: Batch Plant Laydown and Tailings Stockpile Design Details

Figure 2: TSA location and design

Paste production

Dried tailings will be borrowed from TSF2 and hauled by truck for stockpiling at the TSA. A maximum of 15,000m^3 tailings will be stockpiled at any one time.

The paste plant will generate paste which will be used as backfill at Starlight underground mine as required. Paste will be produced through the mixing of water, cement and dried tailings or aggregate (consisting of sand, gravel and crushed mine waste). Paste slurry will be contained within the paste hopper and delivered directly underground via a steel pipeline. Up to 100,000m^3 of paste will be generated annually over a period of approximately 5 years.

Material characterisation

The licence holder has undertaken mine waste and tailings characterisation in relation to the TSA and paste plant operation.

In summary, the tailings are considered to be non-acid forming (NAF). Mine waste is predominantly NAF. Leach tests performed on mine waste and tailings samples indicate leaching of metals from the material stockpiles may occur when subjected to rainfall, however, with metal concentrations potentially below ANZECC livestock drinking water limits (DWERDT303511, DWERDT3030521).

Stormwater management

In the event stormwater runoff is generated at the TSA, and the paste plant work area, this is to be managed through collection of runoff at the TSA sump. Runoff reporting to the TSA sump is then to be pumped through to the existing mine dewater pipelines and conveyed through to the mine process plant, or discharged at Toms in-pit TSF. Potential overflow from the TSA sump is to be directed to Starlight pit via an emergency spillway.

The TSA will incorporate perimeter bund walls to divert stormwater flow away from the TSA.

2.1.4 Yarlarweelor WRL landfill

As the existing Callies WRL landfill is nearing full capacity the Licence Holder will develop and operate the new Yarlarweelor WRL landfill to dispose clean fill, inert waste, putrescible waste and used tyres.

The Yarlarweelor Landfill site will consist of a system of trenches, excavated one at a time, for the deposition of putrescible waste. The single open trench shall receive all waste (with the exception of used tyres which will be buried separately). Each trench will be approximately 3 metres (m) deep, 5m wide and 20m-40m in length. When the level of waste reaches within 300 mm of the top of the trench (at the active tipping head), the waste will be covered immediately, and a new tipping head location will be used to deposit waste. This will result in the trench being backfilled along the length as waste accumulates. Excavators and/or dozers will be used to cover deposited materials with a minimum 300 mm of material. The landfill site will be inspected weekly and covered as required.

Earthen bunds will be constructed around the facility to control windblown waste and divert stormwater away from the waste.

Separate trenches will be excavated to receive used tyres. Each trench will be no more than 5m deep, 10m wide and 20m - 40m in length. Batches of tyres will be deposited using heavy vehicles and covered immediately (using a dozer or excavator) with a minimum of 100mm of material to maintain separation distance between batches. All batches of tyres will be stacked (laid flat) in rows within the trench. A final cover of 500 mm will be established over the final batch deposited within each trench.

2.1.5 Used tyre disposal at Starlight pit

Starlight open pit has been completely dewatered with underground mining currently taking place below the surface. Waste rock from Starlight underground mine is backfilled into the

Starlight open pit void. Two waste rock tip heads are located away from the underground portal at the southern and eastern end of the open pit void so that underground mining can continue unhindered.

Used tyres will be buried at the two active tip heads within the Starlight open pit. The method of tyre disposal is summarised below:

- Tyres deposited once per month, with a maximum of 50 tyres in each batch deposited;
- Tyres deposited across tipping face;
- Cover material deposited over each batch of tyres prior to a new batch of tyres being dumped; and
- Tyres covered by at least 500mm of waste rock.

The Licence Holder has advised there are large quantities of cover material to ensure a final cover of 500mm of waste rock. Approximately 10,000 to 15,000 tonnes of waste rock is deposited at Starlight tip head each month.

2.1.6 Used tyre disposal at Toms in-pit TSF

Used tyres to be deposited at Toms in pit TSF will be large/heavy earthmover tyres with large holes or punctures inserted into the walls to prevent the creation of air pockets. Light vehicle tyres will not be deposited at Toms in pit TSF as these would be conducive to floating. Earthmover tyres will be deposited at the following locations:

- The main pit access ramp; and
- Bench and other ramp areas.

At the main pit access ramp tyres will be placed in batches of up to two tyres at the interface between the ramp and the current water level within the in-pit TSF. As tailings is deposited the tyres will ultimately be covered by tailings. Tyres will be progressively placed at the ramp once the preceding tyres have been completely covered.

Other suitable flat benches and ramps will be selected to place batches of up to 20 tyres for subsequent covering with deposited tailings.

The location of tyre disposal at Toms in-pit TSF is illustrated in Figure 3.

The Licence Holder additionally proposed disposing earthmover tyres directly into pit water – this particular activity is not supported as detailed in section 6 of this report.

Figure 5: Prism Monitoring and Tyre Disposal Locations

Figure 3: Location of tyre disposal at Toms in-pit TSF

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.

3.1.1 Source-pathways and receptors

Emissions, pathways and controls

The key emissions and associated actual or likely pathway during premises construction and 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: Key emissions, potential pathways and proposed controls

Emission	Sources	Potential pathways	Proposed controls
Category 5 - Reprocessing of tailings at paste plant **Category 12 - Crushing of material (mine waste) to be incorporated in paste fill**			
Dust	Dried tailings and waste rock stockpiles at the TSA. Operation of mobile crusher and paste plant	1. Wind acting on material stockpiles; 2. Wind acting on dust generated during mobile crusher and paste plant operation	Tailings and mine waste stockpiles will be 1.5 m in height.
Tailings and mine waste leachate – containing metals/metalloids	Stockpiling of dried tailings and mine waste at TSA	1. Generation of leachate from stockpiles following significant rain events; 2. Overflow from TSA sump (via emergency spillway) to Starlight pit and through to groundwater.	Purpose built Transfer Stockpile Area (TSA) for tailings stockpiles. The TSA incorporates: ▪ Area of 100m x 100m to store approximately 15,000m^3 of harvested tailings at any one time; ▪ 200mm compacted earth base layer for seepage control. 300mm granular mine waste layer to protect the base layer; ▪ Drainage channels around the TSA perimeter to direct any surface run off to a collection sump; ▪ A stormwater collection sump at the north eastern end of the TSA; ▪ Pumps linked to a water level indicator installed within the TSA sump (pumping rates capable of dealing with a 72 hour rainfall event). Water pumped from the TSA sump will be directed to existing dewater pipelines and conveyed to the processing plant or Tom's in pit TSF; ▪ Overflow from the TSA sump will be directed to Starlight pit via an emergency spillway; ▪ 1m high bund walls around the TSA perimeter (outside of the drainage channels) to further contain any surface run off from the TSA and divert stormwater away from the TSA.
Paste slurry	Spillage from the paste plant	Spill/leak from paste hopper or paste pipeline	Containment within paste hopper and direct delivery underground via fit for purpose steel piping. Weekly inspection during operation to ensure

			containment is maintained.
Leached contaminants from paste fill deposited underground	Deposition of paste fill in underground mine stopes	Groundwater interaction with paste	Nil
Category 89 - Putrescible landfill - Yarlarweelor WRL landfill			
Landfill leachate - containing organics, nutrients and hydrocarbons	Disposal of waste – including putrescible waste and used tyres	Infiltration of significant rainfall through to waste materials, resulting in the generation of leachate	New landfill sited at an existing waste rock landform (WRL) which is 10 -15m high above ground level. <u>Putrescible waste</u> ▪ Deposited in excavated trenches within the WRL; ▪ Trenches 3m deep, 5m wide, and 20-40m long; ▪ Waste covered immediately once waste reaches 300mm from the top of the trench; ▪ Waste covered with 300mm of material. <u>Used tyres</u> ▪ Deposited in excavated trenches (for tyres only) within the WRL; ▪ Trenches 5m deep, 10m wide, and 20-40m long; ▪ Tyres laid flat in rows within the trench and covered immediately with minimum 100mm of material to maintain a separation distance between batches; ▪ Final cover over the last deposited batch will be 500mm of material. Landfill inspected weekly and covered as required.
Windblown waste	Tipping of waste into landfill trenches	Waste inadvertently deposited on the WRL surface (during tipping) and conveyed to surrounding environment by wind.	Waste deposited in trenches and covered. Earthen bunds constructed around the facility to control windblown waste.

Receptors

Human receptors

Potential impacts on human receptors from noise, dust and odour emissions were considered during assessment. However, no human receptors were identified as there are no residences in the vicinity of the premises. The nearest residential premises is the Yulga Jinna Aboriginal Community located approximately 38km south-east of the premises.

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

Environmental receptors

Table 3 below provides a summary of potential 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)).

Screening of potential receptors is also outlined in Table 3.

Table 3: Environmental receptors and distance from prescribed activity

Environmental receptors	Description / distance from the prescribed activity	Screening for risk assessment
Priority Ecological Community buffer area - Robinson range vegetation complexes (banded ironstone formation)	Noting that the existing mine development footprint incurs into the PEC buffer area, the remaining PEC buffer area is located approximately 650m or greater to the northwest of the TSA.	*Screened out.* Potential dust emissions from material stockpiles at the TSA, and operation of the mobile crusher and paste plant, are not expected to impact the Robinson range vegetation complexes. This is due to the following key factors: ▪ The relatively small scale of the TSA (100m x 100m) ▪ Tailings and mine waste stockpiles will be 1.5 m in height ▪ The separation distance of approximately 650m or greater.
Site soils	Within and in the vicinity of the TSA Beneath Yarlarweelor WRL landfill	Potential receptor of diluted leachate from tailings/waste rock stockpiles Potential receptor of paste slurry spillages Potential receptor of leachate from Yarlarweelor WRL landfill
Groundwater - beneath TSA area	The depth to groundwater beneath the TSA is approximately 45m below ground level. Groundwater flow in the vicinity of the TSA is towards Starlight and Trevs pits which act as groundwater sinks. Post mining, Starlight and Trevs pits are expected to be permanent groundwater sinks.	*Screened out.* Potential leachate from the TSA is not expected to migrate through to groundwater beneath the TSA due to the separation distance of approximately 45m.
Groundwater - beneath Starlight pit	Starlight open pit is fully dewatered. However, groundwater is expected beneath Starlight pit.	Potential receptor of stormwater from the TSA area in the event of overflow from the TSA sump Potential receptor upon interaction of groundwater with paste fill deposited at Starlight underground mine

Cattle (via stock watering bores)	Duffey well, Kinder bore, Sam well – located more than 5 kilometres away from Starlight pit.	*Screened out* The water quality in stock watering bores is not expected to be impacted by the paste plant operation due to the site hydrogeology and separation distance to stock watering bores. The Starlight mine area is considered to be a groundwater sink. The site hydrogeology is generally characterised as fractured rock with very low hydraulic conductivity. These factors are expected to limit impacts on groundwater away from the Starlight mine.
Groundwater - beneath Yarlarweelor WRL landfill	Depth to groundwater beneath Yarlarweelor WRL landfill is expected to be significant given the pre-mining depth to groundwater at the premises was 10 to 16mbgl. Furthermore, the licence holder has reported groundwater wells surrounding Yarlarweelor pit (adjacent to the proposed landfill) indicate a depth to groundwater of 80mbgl.	*Screened out* The generation of leachate at Yarlarweelor WRL landfill is expected to be reduced by the sporadic rainfall expected at the site. Should leachate be generated, this is not expected to migrate through to groundwater due to the expected separation distance of 10m or greater.
General environment	Surrounding Yarlarweelor WRL landfill	Potential receptor of windblown waste from Yarlarweelor WRL landfill

4. 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 3.1.1. 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 3.1.1), 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 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 during operation

	Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Activity	**Emission source**	**Potential emission**	**Potential receptors**	**Potential pathway and impact**	**Licence Holder's controls**				
Operation									
Category 5 Reprocessing of tailings at paste plant **Category 12** Crushing of material (mine waste)	Dried tailings and mine waste stockpiles at the TSA	Tailings and mine waste leachate – containing metals/metalloids	Soils in the vicinity	Pathway Generation of leachate from stockpiles following significant rain events. Impact Soil contamination.	Purpose built Transfer Stockpile Area (TSA) for tailings stockpiles. Refer to Table 2 for details.	**Medium** **Consequence = Minor** **Likelihood = Possible** The likelihood of impact on soils is considered to be reduced based on tailings being NAF and mine waste being predominantly NAF, coupled with sporadic rainfall expected at the site. Potential impacts are expected to be minor/slight and localised, due to the relatively small TSA and absence of environmental receptors at the surface. In addition, the TSA is designed to divert stormwater away from area, and to maximise capture of runoff from the TSA.	Yes	**Construction requirements** New conditions 7 and 8 Construct TSA including stormwater management infrastructure/equipment as specified. **Operational requirements** Amended condition 7 (updated to condition 10) Inspect stormwater management infrastructure and equipment monthly and maintain to ensure functionality.	N/A
			Groundwater - beneath Starlight pit	Pathway Generation of leachate from stockpiles following significant rain events. Overflow from TSA sump (via emergency spillway) to Starlight pit and through to groundwater. Impact Groundwater contamination		**Low** **Consequence = Slight** **Likelihood = Unlikely** Stormwater from the TSA will report to the TSA sump for conveyance to the process plant or Toms in-pit TSF. Should the TSA sump capacity be exceeded, stormwater will report via an emergency spillway to Starlight pit. Stormwater is typically not expected to flow through to Starlight pit and migrate to groundwater beneath Starlight pit. Should groundwater quality beneath Starlight pit be impacted, this is expected to occur in the vicinity of Starlight pit. Starlight pit has been dewatered for underground mining and is expected to be a groundwater sink post-mining.	Yes		
	Spillage of paste	Paste fill (sand, aggregate/tailings, water and cement slurry)	Soils in the vicinity	Pathway Spill/leak from paste hopper or paste pipeline Impact Soil contamination.	Paste slurry contained within paste hopper and sent directly underground via fit for purpose steel piping linked to the paste hole. Weekly inspection during operation to ensure containment is maintained.	**Low** **Consequence = Slight Likelihood = Unlikely** A paste slurry spill may cause localised soil contamination within the TSA / paste plant area. However, this is unlikely to occur given the containment measures employed by the licence holder.	Yes	**Infrastructure requirements** New condition 7 Paste plant components to include: ▪ Paste hopper; ▪ Steel pipeline for delivery of paste from the paste plant to the underground mine.	N/A

	Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Activity	**Emission source**	**Potential emission**	**Potential receptors**	**Potential pathway and impact**	**Licence Holder's controls**				
	Paste deposition in underground mine stopes	Leaching of contaminants from paste fill - contaminants including metals/metalloids	Groundwater	<u>Pathway</u> Groundwater interaction with paste <u>Impact</u> Groundwater contamination	Nil	**Low** **Consequence = Slight Likelihood = Unlikely** Potential impact is expected to be localised groundwater contamination. The risk rating is based on the following key factors: ▪ Tailings and mine waste characterisation work completed by the Licence Holder indicates the tailings are non-acid forming (NAF); ▪ Tailings or mine waste aggregate will be combined with a cement mix prior to deposition at Starlight underground mine; ▪ Volume of paste to be deposited is up to 100,000 tonnes per annum over 5 years; ▪ Deposited paste fill and groundwater interaction is not expected to be significant in a dewatered underground mine; ▪ The Starlight mine area is considered to be a groundwater sink. The site hydrogeology is generally characterised as fractured rock with very low hydraulic conductivity. This is expected to limit impacts away from the Starlight mine area.	N/A	**Authorised discharge points** New condition 11 Prescription of authorised paste discharge point **Reporting requirements** Amended condition 4 Reporting of paste fill deposition volumes annually	N/A
Category 89 Putrescible landfill – Yarlarweelor WRL landfill	Disposal of waste - including clean fil, inert waste, putrescible waste and used tyres	Landfill leachate - containing organics, nutrients and hydrocarbons	Soils beneath landfill	<u>Pathway</u> Infiltration of significant rainfall through to waste materials, resulting in the generation of leachate <u>Impact</u> Soil contamination	Refer to Table 2 for details.	**Low** **Consequence = Slight** **Likelihood = Possible** Landfill leachate may migrate through the WRL and through to soils beneath the landfill over time. This is expected to be mitigated by the placement of cover material and the separation distance of approximately 5 to 7m between putrescible waste / tyres and soils beneath the WRL. Impact on soil from landfill leachate is expected to be minor and localised.	Yes	**Landfill operational requirements** Amended condition 2 (a) Yarlarweelor WRL landfill operational requirements Amended Condition 2 (c) Landfilled waste cover requirements Requirements for the landfilling of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987.*	N/A

	Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Activity	**Emission source**	**Potential emission**	**Potential receptors**	**Potential pathway and impact**	**Licence Holder's controls**				
		Windblown waste	Surrounding environment	<u>Pathway</u> Waste inadvertently deposited on the WRL surface (during tipping) and conveyed to surrounding environment by wind. <u>Impact</u> Degradation of aesthetic value	Waste deposited in trenches and covered. Earthen bunds constructed around the facility to control windblown waste.	**Low** **Consequence = Slight** **Likelihood = Possible** Minimal on site impact expected in the course of the landfill operation.	No	**Landfill operational requirements** Amended condition 2 (a) Yarlarweelor WRL landfill waste disposal requirements Amended Condition 2 (c) Landfilled waste cover requirements **<u>Existing Condition 2 (d)</u>** **<u>Management of windblown waste</u>**	In addition to proposed controls, existing Condition 2 (d) requires collection of windblown waste on a weekly basis. The proposed controls will reduce the likelihood of the risk event, however some windblown waste is nonetheless anticipated and regular collection is required to reduce aesthetic impacts on the surrounding environment.

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

Note 2: Proposed Licence Holder's controls are depicted by standard text. **<u>Bold and underline text</u>** depicts additional regulatory controls imposed by department.

5. Consultation

Table 5 provides a summary of the consultation undertaken by the Department.

Table 5: Consultation

Consultation method	Comments received	Department response
Request for comment/advice issued to DMIRS on 11 August 2020	Summary of comments received: DMIRS has no specific comments on the proposal. The following general advice is given regarding the suitability of the proposed tyre disposal within Starlight pit and Toms in-pit TSF. <u>Used tyre disposal at Starlight pit</u> ▪ DMIRS recommends more than 500mm of waste rock is required to adequately encapsulate the tyres. A conservative approach (5m) is recommended. <u>Used tyre disposal at Toms in-pit TSF</u> ▪ Activity could lead to an uneven final surface for rehabilitation, the risk of this to the environment is considered low and could be managed in the Mine Closure Plan; ▪ Covering of tyres with tailings preferential to direct disposal into pit water; ▪ Given the tailings slurry solid percent is around 44% DMIRS recommends more than 500mm cover is required; ▪ Tailings may react with the tyres, however the tailings geochemistry data we have suggest that the tailings will be non-acid forming (NAF) with very low concentrations of cyanide, lead and arsenic.	DWER notes the proposed disposal of used tyres at Starlight pit and Toms in-pit TSF. These particular activities are assessed as not fitting the description of prescribed premises. However, are regulated through *Part 6 of the Environmental Protection Regulations 1987. Part 6 14(2) of the Environmental Protection Regulations 1987 specifies a final soil cover of not less than 500mm.* However, the specification of additional cover requirements with regard to site stability and rehabilitation should be considered by DMIRS. The Licence Holder must not dispose used tyres directly into pit water at Toms in-pit TSF as this is not consistent with the requirements of *Part 6 of the Environmental Protection Regulations 1987.*
Request for comment/advice issued to Shire of Meekatharra on 11 August 2020	No comment received	Noted
Licence Holder was provided with draft amendment on 19 October 2020	Appendix 2	Appendix 2

6. Conclusion

Category 5, 89 and 12 prescribed premises activities

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.

Disposal of tyres at Starlight pit and Toms in-pit TSF

DWER notes the proposed disposal of used tyres at Starlight pit and Toms in-pit TSF. These particular activities are assessed as not fitting the description of prescribed premises. However, are regulated through *Part 6 of the Environmental Protection Regulations 1987.*

The Licence Holder must not dispose used tyres directly into pit water at Toms in-pit TSF as proposed as this is not consistent with the requirements of *Part 6 of the Environmental Protection Regulations 1987.*

Approval for the disposal of tyres at Starlight pit and Toms in-pit TSF should also be sought from the Department of Mines, Industry Regulation and Safety.

6.1.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 6: Summary of licence amendments

Condition no.	Proposed amendments
2 (a)	Amended condition to include requirements for Yarlarweelor WRL Landfill
2 (c)	Amended condition to specify cover requirements for Yarlarweelor WRL landfill
4	Amended condition to require the reporting of paste fill volumes deposited at Starlight underground mine
7	New condition – design/construction/installation/ requirements for TSA, mobile crusher and paste plant
8	New condition – construction compliance reporting
9	New condition – to authorise operation of the mobile crusher and paste plant following submission of compliance reports required under condition 7
10	Existing condition 7 updated to condition 10
10	Addition of operational requirement for TSA stormwater management infrastructure
11	New condition – prescription of paste fill discharge point
Appendix 2	New figure - Location of mobile paste plant, Yarlarweelor WRL landfill and tyre disposal locations
Appendix 3	New figure - Stockpile area design for paste plant and paste discharge location

7. Appendix 1: Key documents

Document title	In text ref	Availability
Licence amendment application and supporting documents - received 3 July 2020.	Application	DWERDT303511, DWERDT3030521
Additional information submitted by the Licence Holder, received 30 September 2020	Application	DWERDT346035
Additional information submitted by the Licence Holder, received 2 October 2020	Application	A1939375
Submission received from the Department of Mines, Industry Regulation and Safety – received 9 September 2020	N/A	A1940131
L8103/1989/3 Amendment Notice 3, dated 26 February 2019	N/A	https://www.der.wa.gov.au/our-work/licences-and-works-approvals/current-licences
Licence Holder response to draft amendment report and draft licence – received 22 October 2020	Application	A1945667

8. Appendix 2: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition or Amendment Report section	Summary of Licence Holder's comment	Department's response
Licence Appendix 3 - Stockpile area design for paste plant and paste discharge location	DWER request: Please provide an updated drawing with grid coordinates and illustrate the paste discharge point location for Starlight underground mine Licence Holder comment: Appendix 3 map has been updated to include grid coordinates and illustrate the location of the paste discharge point.	Updated drawing with grid coordinates and paste discharge point location noted and added to Appendix 3 of the Licence
Amendment report section 2.1.2 – application summary	DWER request: Please confirm the proposed capacity for Category 89 excluding the tonnage of tyres to be disposed of at Starlight and Toms in-pit TSF. Licence Holder comment: The proposed Capacity for Category 89 (excluding tonnage of tyres to be disposed of at Starlight and Toms) will be 300 tonnes	DWER has determined the proposed disposal of used tyres at Starlight pit and Toms in-pit TSF does not fit the description of prescribed premises. These particular activities are nonetheless regulated through *Part 6 of the Environmental Protection Regulations 1987* as noted in section 6 of this report. The proposed capacity for Category 89 (Callies and Yarlarweelor WRL landfills) has therefore been reduced from 500 tonnes per annum to 300 tonnes per annum. The Licence Holder is required to comply with landfill conditions 2 (a) to (d).
Amendment report section 2.1.3 – paste plant and mobile crusher infrastructure/equipment	DWER request: Please confirm the number of pumps for the drainage collection sump Licence Holder comment: Two pumps will be installed in the sump	Noted. Condition 8 requires the licence holder to submit an audit report to DWER to demonstrate compliance with infrastructure/equipment requirements for the Transfer Stockpile Area.
Amendment report section 3.1.1, Table 2 - key emissions, potential pathways and proposed controls	DWER request: Please advise if the TSA sump will be lined Licence Holder comment:	Noted. The potential impact of leachate (generated at the TSA) on site soils is medium risk and acceptable subject to the licence conditions (Table 4). The licence

Condition or Amendment Report section	Summary of Licence Holder's comment	Department's response
	The TSA sump will be constructed as detailed in the TailCon Report (Appendix A). The sump will not be lined.	conditions aim to mitigate the impact on soils in the vicinity of the TSA. The design of the TSA sump is that it is not required to be lined as the potential impact on underlying soil is expected to be minor and localised. In addition, potential leachate from the TSA is not expected to migrate through to groundwater beneath the TSA due to the separation distance of approximately 45m (as noted in Table 3 of this report).
Licence	There are several tables that have not been cross referenced and error messages are found in the Monitoring Conditions (page 5) and Infrastructure and Equipment section (page 10) (error message "Error Reference source not found).	Cross referencing for Table 1 and Table 4 on the Licence corrected.

9. Appendix 3: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
Works approval	☐				
Licence	☐	Relevant works approval number:		None	☐
		Has the works approval been complied with?		Yes ☐ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☐ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☐ No ☐	
		Date Report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☒	Current licence number:	L8103		
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		3 July 2020			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Aragon Resources Pty Ltd			
Premises name		Fortnum Gold Mine			
Premises location		M52/6, M52/95, M52/96, M52/98, M52/99, M52/132 and M52/133			
Local Government Authority					
Application documents					
HPCM file reference number:		2013/001965-1~5			
Key application documents (additional to application form):		Additional documents include: 1) Methodology of TSF tailings harvesting for underground works backfillng, June 2020; *2)* Fortnum material characterisation report, July 2020; 3) Supporting documentation – licence amendment – paste plant, new landfill site and tyre disposal locations, July 2020. *Additional documents are also supplied.*			
Scope of application/assessment					

Summary of proposed activities or changes to existing operations.	LICENCE AMENDMENT Category 5 Applicant proposes to install/operate a batch/paste plant at the premises to produce fill for underground mining operations, with an estimated production of 100,000m3 per annum. Inputs to the batch/paste plant will include tailings obtained from TSF2, water and cement. Aggregate (sand/rock/gravel) from the existing crushing plant (or imported) may also be used instead of tailings. Proposed increase in Category 5 production of 100,000 tpa to allow for reprocessing of tailings at the paste plant. Category 70 or 12 A mobile crusher may be installed/operated at the batch/paste plant site to produce aggregate for the paste plant. Applicant to confirm the expected throughput for the mobile crusher. Category 89 Existing Callies landfill is approaching capacity. Applicant proposes disposal of clean fill, inert waste, putrescible waste and used tyres at new Yarlarweelor WRL landfill. Proposed increase in production from 52 tpa to 300tpa. Other proposed waste disposal activities include: 1. Disposal of tyres at Starlight pit; 2. Disposal of tyres at Toms in-pit TSF.

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5	1,000,000 tpa	Increase by 100,000 tpa
Category 89	52 tpa	Increase to 300tpa

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐ Note - verified in DWER GIS	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☐ Expiry: Other evidence ☐ Expiry:

Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: 6873/1
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☒ No ☐	Application reference No: Licence/permit No: GWL159877
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☒ No ☐	Name: 1) Surface water area – Gascoyne River and Tributaries 2) Proclaimed Groundwater Area – East Murchison Groundwater area Has Regulatory Services (Water) been consulted? Yes ☐ No ☒ N/A ☒ Regional office:
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☐
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	Mining Act
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Classification: Date of classification: