



Amendment Notice 2

Licence Number	L8103/1989/3
Licence Holder	Aragon Resources Pty Ltd
ACN	114 714 662
File Number:	2013/001965
Premises	Fortnum Gold Mine Mining Tenements – M52/6, M52/95, M52/96, M52/98, M52/99, M52/132, M52/133
Date of Amendment	5 October 2018

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.

Alana Kidd

Manager, Resource Industries

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

Definitions and interpretation

Definitions

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

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Amendment Notice	refers to this document
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Licence Holder	Aragon Resources Pty Ltd
Minister	the Minister responsible for the EP Act and associated regulations
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>

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 primarily related to an amendment for Category 6 mine dewatering, in line with the applicant's request. Amendment of Licence conditions in relation to Category 5 have also been completed.

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: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

Aragon Resources (Aragon hereafter) hold Licence L8103/1989/3 for the Fortnum Gold Mine operation within the Shire of Meekatharra. The licence commenced in June 2011 and was amended in May 2016 and December 2016. The relevant Prescribed Premise Categories under the Licence are Categories 5, 6 and 89.

Aragon applied to amend the Licence to include tenement M52/6 within the Prescribed Premises boundary. The company plans to progress mining of an existing open cut pit known as Nathan's Pit which is within M52/6. Nathan's Pit requires dewatering to enable mining. The depth of the existing pit will be extended by approximately 20m.

Dewatering of approximately 637,253 tonnes will be required to remove the existing pit lake and any groundwater inflows during mining operations. Aragon will construct a new pipeline to convey water from Nathan's Pit to the existing water pipeline network located in the main mining hub (within tenement M52/132). Dewater from Nathan's will primarily be discharged/stored in Tom's Pit and used for processing and dust suppression. Dewater from Nathan's may also be discharged to Starlight, Callie's South, Eldorado and Trev's Pits.

Figures 1 and 2 in this amendment notice show the Prescribed Premises boundary, Nathan's Pit and discharge points within M52/132.

Table 2 notes the proposed change to the throughput capacity for Category 6.

On 18 April 2018 Aragon confirmed it does not wish to retain discharge to Yarlalweelor Creek on the Licence. Assessment of the application has therefore excluded this particular discharge option.

Table 2: Proposed throughput changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
Category 6 - Mine dewatering: premises on which water is extracted & discharged into the environment to allow mining of ore	2,500,000 tonnes per annual period	3,137,253 tonnes per annual period	Increase of 637,253 tonnes to enable dewatering of Nathan's Pit and discharge to Tom's, Starlight, Callie's South, Eldorado and Trev's Pits.

Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 3.

Table 3: Relevant approvals

Legislation	Number	Approval
<i>Mining Act 1978</i>	Reg ID 63891	Mining Proposal including dewatering and mining activities at Nathan's Pit. Granted on 25 August 2017.
<i>Rights in Water and Irrigation Act 1914</i>	GWL159877 (8)	Licence to take groundwater – increase to annual water entitlement from 3,100,000 kL to 3,700,000 kL to include Nathan's Pit dewatering. Granted on 6 April 2017.
<i>Environmental Protection Act 1986;</i> <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i>	CPS 7469/1	Clearing permit application assessed by DMIRS. Granted on 29 April 2017.

Amendment history

Table 4 provides the amendment history for Licence L8103/1989/3.

Table 4: Licence amendments

Instrument	Issued	Amendment
L8103/1989/3	19/5/2016	Licence amended to authorise dewatering discharge to the Yarlalweelor Creek and administrative correction of the throughput amount in the Licence.
L8103/1989/3	15/12/2016	Amendment Notice 1 Licence amended to include: <ul style="list-style-type: none"> ▪ Construction requirements for the embankment lifts to TSF2; and, ▪ New dewatering discharge locations (Trev's, Starlight, Tom's, Eldorado and Callie's South Pits) to support onsite operations.

Receptors and location

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

Environmental receptors	Potential pathway
Local groundwater	Nathan's Pit dewater discharged to Tom's Pit (and other approved discharge storage pits) flowing to local groundwater aquifer. The aquifer is hosted within fractured bedrock.
Livestock (cattle)	Assessment has considered that stock watering bores may be located in the broader region (given that the Premises are located in a Pastoral Station setting). Therefore livestock may be a receptor of groundwater via access to stock watering bores.

Risk assessment

Tables 6 and 7 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.

Table 6: 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				
Construction of discharge pipeline	Vehicle movements, earthworks & construction	Noise	Nil	Air	N/A	N/A	N/A	Assessment has not located any residential premises in the vicinity. The applicant reports there are no residential receptors within 25 km of the premises. The nearest residential area identified through desktop assessment is the Yulga Jinna aboriginal community located approximately 38 km south-east of the premises.
		Dust	Nil	Air	N/A	N/A	N/A	

Table 7: Risk assessment for proposed amendments during operation

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Category 6 Mine dewatering discharge	Discharge pipeline rupture/leaks	Dewater – due to pipeline rupture/leaks	Remnant vegetation; Soil; Groundwater; Yarlarweelor Creek tributaries.	Direct contact; Infiltration; Overland flow.	Vegetation death; Soil, groundwater, surface water contamination.	Moderate	Unlikely	Medium	Based on available data, water from Nathan's Pit is mildly alkaline (pH range 8.8 to 8.95) with a salinity classification of marginal to brackish. These results indicate an unexpected discharge should not cause environmental harm. Total dissolved chromium (Cr) concentrations however are notable - reported as 0.004 mg/L and 0.003 mg/L. Further analysis (speciation) is required to evaluate hexavalent chromium concentrations against the corresponding ANZECC/ARMCANZ (2000) freshwater assessment level (0.001 mg/L).

									Given the potential for contaminants in mine pit waters and an increase in salinity at depth there is potential for on-site impacts in the event of a pipeline rupture. However, a pipeline rupture is considered to be an unlikely and typically a short-term incident.
Category 6 Mine dewatering discharge	Discharge to Tom's Pit (main discharge point), Starlight, Callie's South, Eldorado and Trev's Pits.	Dewater from Nathans Pit	Groundwater Cattle	Infiltration Via potential stock watering bores in the broader region	Groundwater contamination Adverse impact to health	Moderate	Possible	Medium	<p>Water from Nathan's Pit is mildly alkaline (pH range 8.8 to 8.95) with a salinity classification of marginal to brackish. These particular results indicate the dewater is not conducive to groundwater contamination. There is however the potential for metal contaminants in Nathan's Pit water. E.g. hexavalent chromium as indicated above.</p> <p>The Applicant has provided water quality data for other project pits, within the application, and within the 2016/2017 Annual Environmental Report - 2016/2017 results indicate Tom's Pit water is mildly alkaline (pH range 7.7 to 8.9) and brackish to marginally saline. The available data indicated some metal concentrations above the ANZECC/ARMCANZ (2000) 95% freshwater trigger values:</p> <ul style="list-style-type: none"> - Tom's Pit water reported a Cu result of 0.017 mg/L (above the trigger value of 0.0014mg/L) in July 2017; - Starlight Pit water reported a Se result of 0.013 mg/L (above the trigger value of 0.011 mg/L) in April 2017. - Tom's Pit water also reported notable total dissolved Cr results (0.35 mg/L, 0.07 mg/L & 0.014 mg/L) in 2016 and 2017, however further analysis is required to evaluate hexavalent chromium concentrations against the corresponding freshwater trigger value (0.001 mg/L). <p>There is therefore the potential for</p>

									<p>Nathan's dewater to add to existing metal contaminant loads within the discharge pits. This may occur directly and potentially as Nathan's dewater interacts with exposed rock on the mine pit walls.</p> <p>The Licence Holder indicates the Fortnum site typically consists of fractured rock aquifers with very low hydraulic conductivity. It is therefore considered that the potential impact on groundwater quality would be localised rather than regionally significant.</p>
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Decision

Summary of assessment

The Licence Holder has obtained a licence to take groundwater (GWL159877-8) including the additional entitlement/abstraction of 600,000 kL/year to dewater Nathan's Pit. Dewater from Nathan's Pit (and other pits as authorised) will be used in ore processing operations and primarily stored in Tom's Pit.

Substantial ongoing dewatering of Nathan's Pit is not expected given the hydrogeological setting. The Licence Holder indicates the Fortnum site typically consists of fractured rock aquifers with very low hydraulic conductivity. DWER's assessment of the licence to take water application (March, 2017) indicated groundwater inflow into Nathan's Pit is estimated to be 5-10 L/sec, with groundwater present in bedrock fractures with restricted extent and connectivity. The Licence Holder has also confirmed discharge of surplus dewater to Yarlarweelor Creek is not required. It is therefore understood use of dewater in ore processing and storage within Tom's Pit (along with other existing pits as specified) should manage the expected dewater volume.

The Licence Holder has conducted field and laboratory analysis of Nathan's Pit water, including pH, TDS, major ions and metals analyses. The water is mildly alkaline (pH range 8.8 to 8.95) with a salinity classification of marginal to brackish. DWER has assessed reported metal concentrations against the ANZECC/ARMCANZ (2000) freshwater trigger values for slightly to moderately disturbed ecosystems. No exceedances of the trigger values were identified in the available data. Total dissolved chromium concentrations are notable, however further analysis (speciation) is required to evaluate hexavalent chromium concentrations against the corresponding trigger value (0.001 mg/L).

Additional water quality data for other project pits (detailed in Table 7 of this report) indicated some metal concentrations above the ANZECC/ARMCANZ (2000) freshwater trigger values. Copper and selenium have been measured above the freshwater trigger values at Toms and Starlight Pit waters. Toms Pit water also reported notable total dissolved chromium results, with further analysis required to evaluate hexavalent chromium concentrations.

DWER considers there is potential for Nathan's dewater to add to existing metal contaminant loads within the discharge pits. This may occur directly and potentially as Nathan's dewater interacts with exposed rock on the mine pit walls.

The proposed licence amendment is considered acceptable and medium risk based on the available water quality data, discharge into existing mined pits and the description of the site hydrogeology. DWER believes that the potential impact on groundwater quality would be localised rather than regionally significant. Further, assessment has indicated there is no potential human use of groundwater in the vicinity (excluding the mining operations which is outside the scope of this assessment). The nearest potential human use of groundwater is 25kms to 38km away from the Premises. In addition, there are no Public Drinking Water Source Areas in the region.

The Delegated Officer has granted the Licence amendment with updated conditions as specified.

Summary of regulatory controls

- Additional analysis of Nathan's Pit water will be required during the primary phase of dewatering, including staged sampling to capture potential variation across the pit water column.
- The licence conditions will require regular inspection of dewater pipeline integrity, with the requirement to cease pumping until any required repairs are completed.
- Continued analysis of water quality in all pits will be required to support enhanced

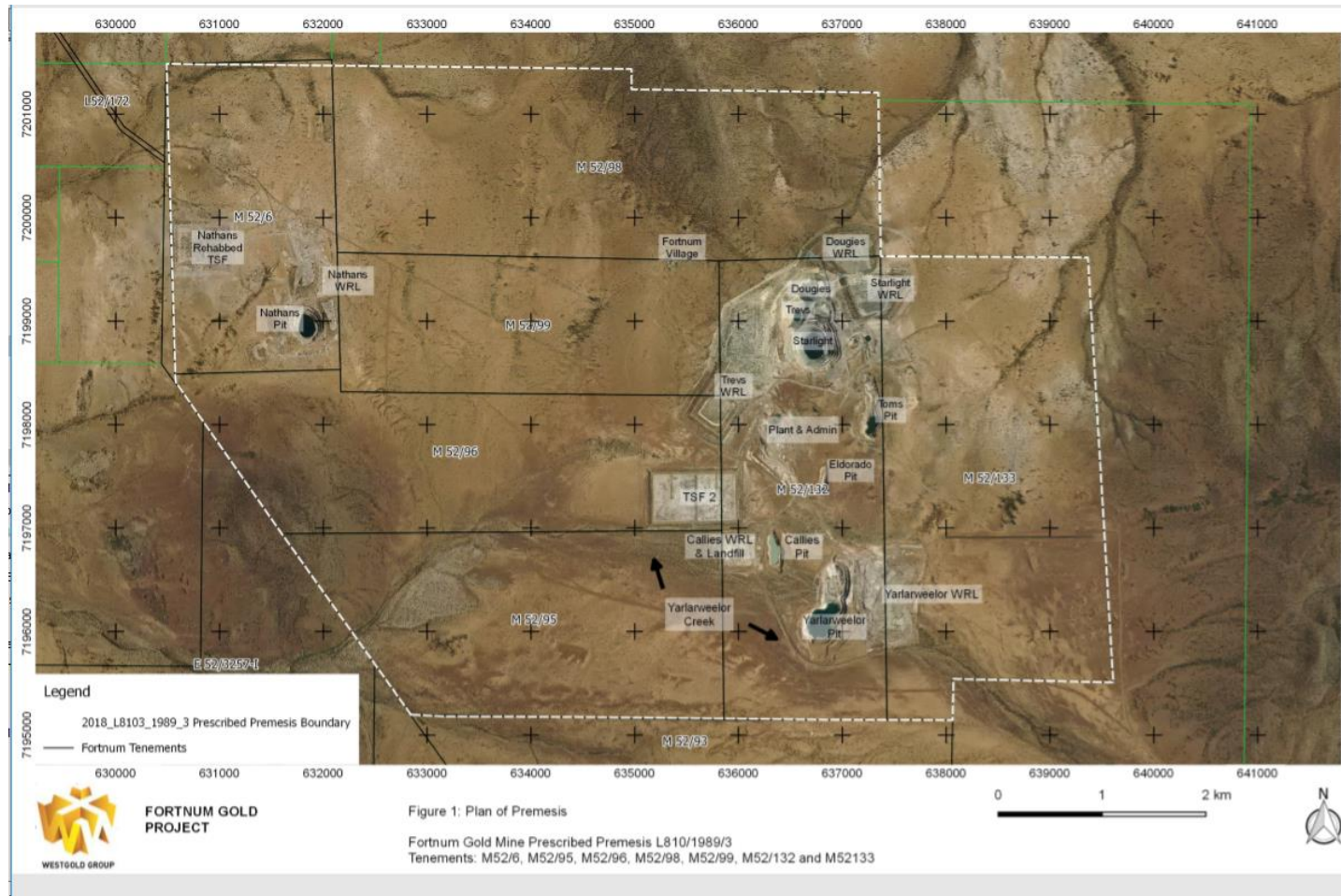
understanding and tracking of the discharge/pit water quality over time. Refinement of the monitoring program will include the addition of major ions, hexavalent chromium, nickel and zinc to the analytical suite in accordance with current practice for gold deposits.

- Analysis of Yarlarweelor Pit water is added to the monitoring conditions given dewater from this location may be discharged to other pits as specified.
- Water quality trigger values for metals/metalloids have been added to the licence conditions to support ongoing risk evaluation and management. The Licence Holder will be required to report any exceedance of the trigger values including an evaluation of risks. This will include further information on the potential for contaminant migration off site and any updated management commitments. Note - In the absence of site-specific trigger values, the water quality trigger values for metals/metalloids have been adopted from ANZECC/ARMCANZ (2000) freshwater trigger values (for slightly to moderately disturbed ecosystems). These are typically applied to river/creek ecosystem settings, however are also used to guide risk assessment for groundwater ecosystems and groundwater dependent values in Western Australia.
- Discharge to Yarlarweelor Creek is removed from the licence as this is not currently an operational requirement. Should this be required in future, the Licence Holder will be required to evaluate the volume and quality of the proposed discharge, including assessment against the ANZECC/ARMCANZ (2000) freshwater trigger values. The Licence Holder would be required to assess the potential impact on Yarlarweelor Creek and Priority Ecological Communities in the region.
- Discharge into Yarlarweelor Pit is not authorised under the current Licence and this has been maintained in this assessment. The Licence Holder indicates the Yarlarweelor Pit region displays *atypical* hydrogeology for the site, i.e. "...the jasperoid units occurring there have been described as "very transmissive" by Peter O'Bryan and Associates (2006), by comparison with the other geological units hosting the ore body". Discharge into Yarlarweelor Pit may therefore be of comparatively higher risk to groundwater quality in the region.

Amendment

1. **Attachment 3** of the Licence, “Plan of Premises” is replaced with Figure 1 of this Amendment notice as detailed below.

Figure 1 Plan of Premises



The Licence conditions have been amended as detailed below. Where an existing condition has been amended, inserted text is written in bold, omitted text is struck out.

2. The Licence is amended by the insertion of **Condition 7 and Table 6** detailed below.

7. The Licence Holder must ensure that the infrastructure specified in Column 1 of Table 6 is maintained in good working order and operated in accordance with the requirements specified in Column 2.

Table 6: Infrastructure and equipment controls table

Column 1	Column 2
Site infrastructure	Operational requirements
<ul style="list-style-type: none"> ▪ Nathan’s Pit dewater pipeline - manufactured with high density polyethylene (HDPE) ▪ Existing dewatering/discharge pipe network 	<ul style="list-style-type: none"> ▪ Weekly monitoring of pipeline integrity ▪ Cease pumping/flow upon detection of leak in pipeline (pumping/flow may recommence subject to repair of leak).

3. Monitoring **Condition 1 a) Table 1** is *amended* as detailed below:

Table 1: Monitoring of Representative Water Samples

Column 1	Column 2	Column 3	Column 4
Monitoring sites	Frequency	Parameters	Units
FTR246D Junction Bore, FTR266D Creek Bore, M1, M2, M3, M4 and M5 (as depicted in Attachment 1)	Quarterly (January, April, July, October)	Standing Water Level (SWL)	mAHD
		pH	pH units
		Total Dissolved Solids (TDS) Arsenic (As) Antimony (Sb) Cadmium (Cd) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Nickel (Ni) Selenium (Se) Thallium (Ti) Weak Acid Dissociable Cyanide (WAD-CN) Zinc (Zn)	mg/L
Nathan's Pit dewater <u>(primary dewatering phase)</u>	Four sampling events staged evenly across the duration of the <i>primary</i> dewatering phase required to dewater the pit. <i>Refer to note 3 below</i>	pH	
		Total dissolved solids (TDS) Major ions – Na, K, Ca, Mg, HCO ₃ , SO ₄ , Cl Total Recoverable Hydrocarbons (TRH) Arsenic (As) Cadmium (Cd) Chromium (Cr) - including hexavalent chromium (Cr VI) Copper (Cu) Lead (Pb) Nickel (Ni) Nitrate-nitrogen (NO ₃ -N) Selenium (Se) Zinc (Zn)	mg/L
Nathan's Pit dewater <u>(ongoing dewatering post-primary dewatering phase)</u> & Yarlarweelor Pit dewater	Quarterly (January, April, July, October)	pH	
		Total dissolved solids (TDS)	mg/L
	Bi-annual (April & October)	Major ions – Na, K, Ca, Mg, HCO ₃ , SO ₄ , Cl Total Recoverable Hydrocarbons (TRH) Arsenic (As) Cadmium (Cd) Chromium (Cr) - including Hexavalent Chromium (Cr VI) Copper (Cu)Lead (Pb) Nickel (Ni) Nitrate-nitrogen (NO ₃ -N) Selenium (Se) Zinc (Zn)	mg/L
Mine dewatering discharge to Starlight, Tom's, Callie's South, Eldorado and Trev's Pits and the Yarlarweelor	Quarterly (January, April, July, October)	pH	pH units
		Total Recoverable Hydrocarbons (TRH)	
		Total Dissolved Solids (TDS)	mg/L

Creek (as depicted in Attachment 4)	Annually Bi-annually (April & October)	Major ions – Na, K, Ca, Mg, HCO₃, SO₄, Cl Total Recoverable Hydrocarbons (TRH) Arsenic (As) Cadmium (Cd) Chromium (Cr), including hexavalent chromium (Cr VI) Copper (Cu) Lead (Pb) Nickel (Ni) Nitrate-nitrogen (NO ₃ -N) Selenium (Se) Zinc (Zn)	mg/L
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Note 1: For monitoring bores, i.e. Junction Bore, Creek Bore, M1, M2, M3, M4 and M5, standing water level shall be determined prior to collection of water samples;

Note 2: Measurement of pH with a serviced and calibrated field water quality meter is permitted. All other parameter analyses must be completed by a NATA accredited laboratory;

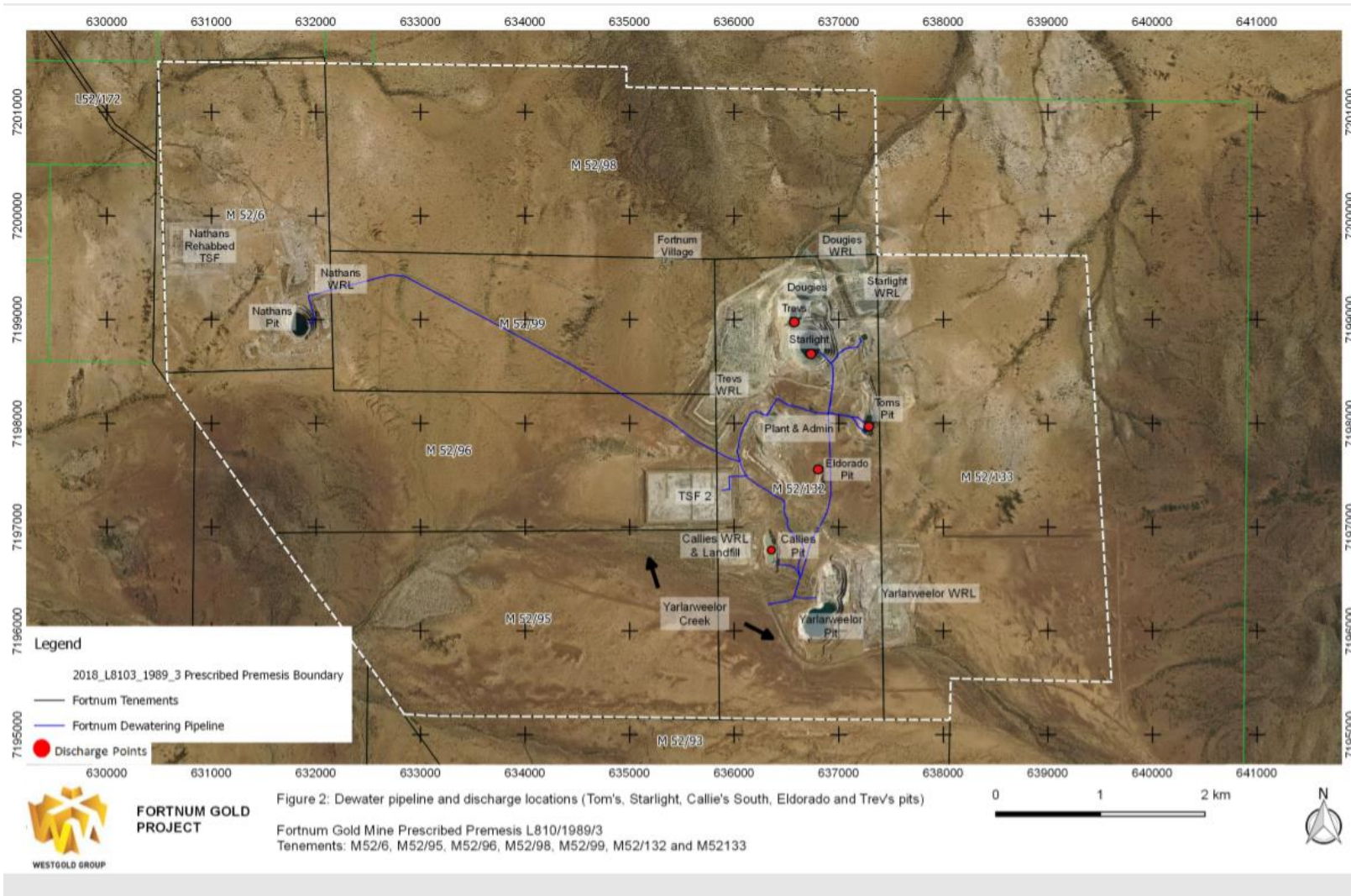
Note 3: The primary dewatering phase to remove Nathan’s Pit water (excluding any additional ongoing dewatering requirement) is expected to be undertaken over approximately 10 months. Four (4) evenly staged sampling events are required to capture water quality across the pit lake water column.

4. Monitoring **Condition 1 (d)** is amended as detailed below:

1 (d) The Licensee shall maintain a flow meter to ensure the continuous and accurate recording of the cumulative quantity of dewatering discharge to the Starlight, Tom’s, Callie’s South, Eldorado, and Trev’s Pits. ~~and the Yarlalweelor Creek.~~

5. Attachment 4 of the Licence is replaced with Figure 2 of this amendment notice as detailed below.

Figure 2 Dewater pipeline and discharge locations (Tom's, Starlight, Callie's South, Eldorado and Trev's Pits)



6. Reporting **Conditions 3 (a) & 3 (b)** are amended as detailed below:

LIMIT EXCEEDANCE RESPONSE AND REPORTING

~~3 (a) In the event any trigger level stated in Table 10 has been exceeded, within 90 days of this occurrence, the Licensee shall advise the CEO in writing of the date, time and reason for the exceedance in the form of a trigger level exceedance report.~~

~~The Licensee shall, as soon as practicable but no later than 5pm of the next usual working day, on becoming aware that any limit stated in column 3 of Table 4 for the corresponding parameter stated in column 2 of Table 4 has been exceeded, advise the CEO in writing of the date, time and reason for the exceedance with a limit exceedance report.~~

~~3 (b) The limit exceedance report shall include, but not be limited to:~~

- ~~(i) the date, time and reason for the exceedance(s);~~
- ~~(ii) the potential or known environmental consequences of the exceedance(s);~~
- ~~(iii) corrective action taken or planned to mitigate any related adverse environmental consequences if appropriate; and~~
- ~~(iv) corrective action taken or planned to prevent a recurrence of the exceedance(s), if appropriate, including a timeline for implementation.~~

WATER MONITORING PARAMETER TRIGGER VALUES AND REPORTING

3. The Licence Holder shall analyse water sample analysis data against the trigger values in columns 3 and 4 of Table 4.

Table 4: Water monitoring parameter trigger values

Monitoring site	Parameters	Trigger values for groundwater & dewater discharge	Trigger values for livestock drinking water
FTR246D Junction Bore, FTR266D Creek Bore, M1, M2, M3, M4 and M5 (as depicted in Attachment 1)	pH	Range 6 to 9	Range 6.5 to 8.5
	Total Dissolved Solids (TDS)	4,000 mg/L	5,000 mg/L
	Weak Acid Dissociable Cyanide (WAD-CN)	0.5 mg/L	-
	Arsenic (As)	-	0.5 mg/L
	Arsenic (As III)	0.024 mg/L	-
	Arsenic (As V)	0.013 mg/L	-
	Cadmium (Cd)	0.0002 mg/L	0.01 mg/L
	Copper (Cu)	0.0014 mg/L	1 mg/L
	Chromium (Cr)	-	1 mg/L
	Hexavalent chromium (Cr VI)	0.001 mg/L	-
Iron (Fe)	0.3 mg/L	-	

Monitoring site	Parameters	Trigger values for groundwater & dewater discharge	Trigger values for livestock drinking water
	Lead (Pb)	0.0034 mg/L	0.1 mg/L
	Nickel	0.011 mg/L	1 mg/L
	Selenium (Se)	0.011 mg/L	0.02mg/L
	Zinc (Zn)	0.008 mg/L	20 mg/L
Nathan's, Yarlalweelor, Starlight, Tom's, Callie's South, Eldorado and Trev's Pits <i>Mine dewatering discharge to Yarlalweelor Creek (as depicted in Attachment 4)</i>	pH	Range 6 to 9	Range 6.5 to 8.5
	Total Dissolved Solids (TDS)	2,000 mg/L	5,000 mg/L
	Total Recoverable Hydrocarbons (TRH)	0.15 mg/L	-
	Arsenic (As)	-	0.5 mg/L
	Arsenic (As III)	0.024 mg/L	-
	Arsenic (As V)	0.013 mg/L	-
	Cadmium (Cd)	0.0002 mg/L	0.01 mg/L
	Chromium (Cr)	-	1 mg/L
	Hexavalent Chromium (Cr VI)	0.001 mg/L	-
	Copper	0.0014 mg/L	1 mg/L
	Nickel	0.011 mg/L	1 mg/L
	Selenium (Se)	0.011 mg/L	0.02mg/L
	Zinc (Zn)	0.008 mg/L	20 mg/L

Note 1: Metal/metalloid trigger values for groundwater and dewater discharge have been derived from ANZECC/ARMCANZ (2000) 95% trigger values for freshwater.

Note 2: TDS and metal/metalloid trigger vales for livestock drinking water have been derived from ANZECC/ARMCANZ (2000).

7. Reporting (Annual Environmental Report) conditions have been amended, i.e. amendment of **condition 4 (ii)** and the addition of **conditions 4 (vii) and (viii)** as detailed below:
- 4 ii) a discussion of the monitoring data, and other collected data, against historical data (trend analysis) and **trigger values** set in this licence;
- (vii) an evaluation of the potential or known environmental risks of any trigger level exceedances; and**
- (viii) a description of action(s) taken or planned to mitigate adverse environmental impacts.**

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 25 June 2018 for review and comment. The Licence Holder responded on 3 July 2018. DWER addressed the Licence Holder's comments as detailed below and issued a second draft Amendment Notice on 6 September 2018.

On 25 September the Licence Holder met with DWER to clarify the requirements of the draft conditions. At this meeting the use of ANZECC freshwater trigger values to support an evaluation of risk to groundwater was explained, along with the investigation into trigger values. The application of trigger values does not constitute limits to be applied to ambient groundwater, and does not require an investigation every time that monitoring results do not meet the trigger values. The ANZECC freshwater trigger values are intended to signal the need for a site-specific consideration of the groundwater conditions at the premises including background (unimpacted) concentrations in mineralized areas, the conceptual hydrogeological model and likely movement of groundwater to receptors. Where background values are above the selected trigger values, the site-specific consideration can propose alternative trigger values to be used to identify potential impacts in future monitoring programs or propose a rationalized monitoring program with or without trigger values or limits. The conditions require a single investigation into groundwater trigger values at the time of the annual environmental report submission. The options for the licence holder were discussed with respect to further information including background groundwater data to support a re-evaluation of risk to groundwater, accepting the amendments with minor changes, and appeal rights on any decision to grant an amended licence.

On 27 September 2018 DWER received a written request from the Licence Holder to waive the consultation period and issue the Licence amendment.

Item	Licence Holder comments	DWER response
	Aragon Resources wish to object to the changes presented in the draft licence for the following reasons (items 1 to 9 below):	
1.	"Table 1 and Table 4 are in conflict (different monitoring parameters)"	Table 1 details the parameters to be analysed. Table 4 details the relevant ANZECC/ARMCANZ (2000) <i>trigger values</i> for each parameter where a trigger value has been published.
2.	"Aragon does believe ANZECC 2000 freshwater limits are applicable for waters at Fortnum and believe stock water limits would be more appropriate"	The conditions on the Licence require analysis of dewater discharge and groundwater against the ANZECC/ARMCANZ (2000) trigger values for freshwater. This is considered appropriate monitoring of emissions and supports evaluation of risks to any groundwater ecosystems and

Item	Licence Holder comments	DWER response
		<p>groundwater dependent values in the region.</p> <p>Given the potential for stock watering bores in the region, the ANZECC/ARMCANZ (2000) livestock drinking water quality values for TDS and metals/metalloids have been added to the reporting conditions (Table 4). This is to support analysis of water quality data and evaluation of risk to cattle which may access stock watering bores in the region.</p>
3.	<p>“The time series plots shown below clearly explain that the existing data cannot be compared to ANZECC 2000 freshwater guideline limits”</p>	<p>The amended reporting conditions (3a and 3b) confirm parameter limits are not currently prescribed under the Licence. Rather, parameter trigger values have been prescribed. Water quality parameter data can be analysed against the prescribed trigger values for risk evaluation purposes and any adaptive management as required.</p> <p>The “existing data” referred to by the Licence Holder (supplied during the Licence amendment comment period) primarily details historical copper and zinc analysis data for monitoring bores surrounding the Tailings Storage Facility. The data indicates copper and zinc concentrations at the monitoring bores have historically exceeded the ANZECC/ARMCANZ (2000) 95% trigger values for copper and zinc. The Licence Holder will be required to further evaluate the risks associated with these results and report on its evaluation within future Annual Environmental Reports (AERs). Assessment of risks and regulatory controls associated with the Tailings Storage Facility is outside the scope of this assessment, however this will be undertaken by DWER as part of the AER and Licence review process.</p>
4.	<p>“DWER have incorrectly stated 0.005 mg/L for selenium when it is 0.011 mg/L ANZECC 2000”</p>	<p>The trigger value for selenium quoted in Table 4 has been corrected to 0.011 mg/L as the 95% trigger value (for freshwater) quoted in ANZECC/ARMCANZ (2000).</p>
5.	<p>“Sulphate is repeated twice in the table”</p>	<p>Table 1 details analysis of sulfate is required for multiple monitoring events – i.e. during primary dewatering of Nathan’s Pit; during any ongoing dewatering of Nathan’s Pit (post-primary dewatering); for pit water at Yarlalweelor Pit; and, for dewater discharged at other project pits as specified. Where sulfate has been listed twice within the same row and column in the tables it has been removed.</p>
6.	<p>“Aragon believes total chromium and total arsenic is</p>	<p>As detailed previously in this Amendment Notice analysis of hexavalent</p>

Item	Licence Holder comments	DWER response
	acceptable”	chromium (Cr VI) concentrations is required given the total dissolved chromium concentrations reported for Nathan’s and Tom’s Pit waters. This will enable monitoring of Cr VI concentrations in dewater discharge and further risk evaluation, including assessment against the ANZECC/ARMCANZ (2000) trigger value for Cr VI. Arsenic speciation is not currently required as noted in Table 1. However, speciation may be undertaken/requested subject to total arsenic results.
7.	“ANZECC 2000 guidelines clearly state it is a guideline and <i>“These Guidelines should not be used as mandatory standards”</i> ”	DWER concurs that the specified ANZECC/ARMCANZ (2000) trigger values are guideline values. The trigger values are prescribed on the Licence to facilitate ongoing risk evaluation and any adaptive management as required.
8.	“DWER have not considered the hardness algorithm used for copper, chromium, nickel, zinc, cadmium and lead”.	Metal analysis data can be assessed against the specified trigger values (Table 4) and, in addition, a hardness modified trigger value (HMTV) can be derived in accordance with ANZECC/ARMCANZ (2000). The Licence Holder may elect to derive HMTV’s as part of the data analysis, risk evaluation and reporting process required under the Licence.
9.	“Aragon consider the potential impact in groundwater quality will be localised rather than regionally significant”.	DWER has granted the licence amendment to enable the discharge of dewater effluent from Nathan’s Pit. As detailed in DWER’s assessment this activity is considered medium risk and DWER believes the potential impact on groundwater quality would be localised rather than regionally significant. Nonetheless, monitoring of dewater effluent and receiving pit water quality is required (as specified) to support continued risk evaluation/mitigation and reporting.

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Licence for prescribed premises - Licence number L8103/1989/3 - amendment date 19 May 2016.	Licence	www.dwer.wa.gov.au
2.	Amendment notice 1 – Licence number L8103/1989/3 – granted 15 December 2016.	Amendment notice 1	www.dwer.wa.gov.au
3.	Fortnum Gold Mine - L8103/1989/3 licence amendment application, (signed 15 February 2018) & supporting documentation (dated February 2018).	Licence amendment application	DWER record number - A1619394
4.	Correspondence dated 18 April 2018 for application to amend L8103/1989/3.	Licence amendment application	DWER record number - A1657042
5.	Fortnum Gold Mine – Annual Environmental Report – 1 July 2016 to 30 June 2017	2016/2017 Annual Environmental Report	DWER record number - A1539932
6.	Correspondence received 3 July 2018 for application to amend L8103/1989/3: - Licence Holder comments on draft amendment notice 2	Licence Holder comments on draft amendment notice 2	DWER record number – A1701500
7.	Correspondence received 4 July 2018 for application to amend L8103/1989/3: - Updated premises and activity maps; - Comment on estimated timeframe to dewater Nathan’s Pit.	Licence amendment application	DWER record number - A1701718
8.	ANZECC & ARMCANZ National Water Quality Management, Strategy, Paper No.4, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1, Chapters 1-7, October 2000.	ANZECC & ARMCANZ (2000)	http://www.agriculture.gov.au/water/quality/guidelines/volume-1
9.	Correspondence received 27 September 2018 for application to amend L8103/1989/3: - Licence Holder request to waive consultation period and issue the licence amendment	Licence Holder comments on draft amendment notice 2	DWER record number - A1723927