



Application for Licence Amendment

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

Licence Number	L8978/2016/1
Licence Holder	Big Bell Gold Operations Pty Ltd
ACN	090 642 809
File Number	DER2016/000908-1
Premises	Comet Project CUE WA 6640 Mining Tenements M21/08, M21/72 and L21/16
Date of Report	15 August 2023
Decision	Revised licence granted

A/SENIOR ENVIRONMENTAL OFFICER, INDUSTRY REGULATION
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L8978/2016/1 is held by Big Bell Gold Operations Pty Ltd (Licence Holder) for the Comet Project (the Premises), located at Mining Tenements M21/08, M21/72 and L21/16, in Cue WA 6640.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L8978/2016/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Amendment summary

On 07 June 2023, the Licence Holder submitted an application to the department to amend Licence L8978/2016/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act).

The amendment is to increase the capacity of category 6 from 500,000 to 1,000,000 tonnes per annual period. Refer to Table 1.

Table 1: Proposed throughput capacity changes

Category	Current throughput capacity	Proposed design capacity	Description of proposed amendment
6	500,000 tonnes per annual period	1,000,000 tonnes per annual period	The proposed increase is to provide sufficient water to the Processing Plant during scheduled periods of water deficiency; and to enable the transfer for tailing deposition to TSF2. Both infrastructures are located within the adjacent premises (L8644/2012/1).

To note: the Licence Holder operates the Cue Gold Operations – Tuckabianna Project located adjacent to the Premises under licence L8644/2012/1.

The Licence Holder submitted a licence amendment application for licence L8644/2012/1 to the department on the 28 June 2023, to allow the acceptance and discharge of the excess dewatering wastewater (under category 61) from the Premises (licence L8978/2016/1) to the Tuckabianna Project.

2.3 Dewatering activities

The pits currently being dewatered include Comet North, Eclipse and Venus open pits as shown in Table 2. Refer also to Table 2 for the water volumes and water quality (as of 7 June 2023) of the pits.

Table 2: Projected Dewatering and Storage Volumes (Source: BBGO (A), 2023)

Pit	Volume (m ³)		Water Quality	
	Current Water Volume	Pit Capacity	pH	Total Dissolved Solids (TDS)
Comet	0	210,594	7.4	5,800
Comet North	286,993	571,771	7.8	2,600
Pinnacles	0	535,531	7.9	7,700
Eclipse	184,355	476,183	7.7	6,200
Venus	367,144	772,966	8	5,900
Friars*	618,682	2,067,780	8.3	2,800

*Friars is also listed under Prescribed Premises Licence L8644/2012/1

The combined volume of Comet North, Eclipse and Venus open pits is 838,492 kL. This volume in addition with the pit recharge of 100,000 kL per annum for the Comet, Comet North and Pinnacles pits summed up to 1,000,000 tonnes per annual period (BBGO (B), 2023).

The dewatering water from Comet and Venus pits is directed to the Eclipse pit on the Premises (L8978/2016/1), whereby it is directly transferred to the Friars pit at the Tuckabianna Project (L8664/2012/1). The dewatering flow is shown in Figure 1:

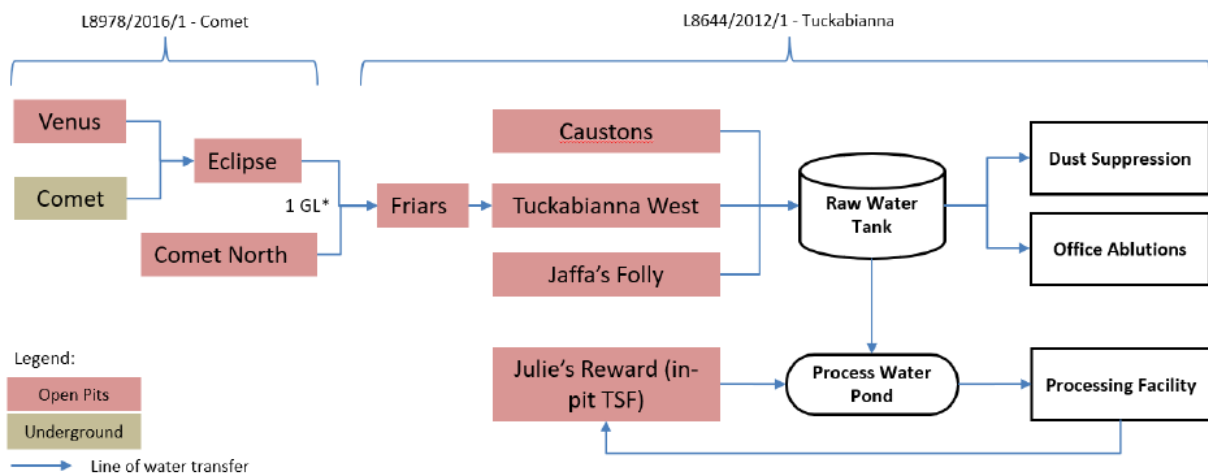


Figure 1: 2023 Tuckabianna Water Distribution Network (Source: BBGO (A), 2023)

The water in the Venus pit contains higher Total Dissolved Solids (TDS), with higher conductivity and lower acidity compared to the water within the Eclipse pit (receptor).

The water quality from the dewatered pit and receptor pits are detailed in Table 3 below:

Table 3: Latest Pit Water Quality Results (Source: BBGO, 2023)

Location	Eclipse Pit	Venus Pit	Comet North Pit	Friars Pit
Date	10/03/2023	10/03/2023	10/03/2023	10/03/2023
pH	7.9	8.3	8.1	8.3
Conductivity @ 25 C	8500	10000	5200	4400
Total Dissolved Solids Dried at 175-185°C	5600	6500	3200	2800
Carbonate Alkalinity as CO ₃	<1	<1	<1	<1
Bicarbonate Alkalinity as HCO ₃	58	140	110	160
Total Alkalinity as CaCO ₃	48	120	90	130
Acidity to pH 8.3	11	<5	11	<5
Chloride, Cl	1900	2900	1300	1000
Sulfate, SO ₄	1200	610	460	580
Fluoride by ISE	0.7	1.2	0.9	0.5
Nitrite Nitrogen, NO ₂ as N	0.83	0.35	0.08	<0.05
Nitrate Nitrogen, NO ₃ as N	100	17	9.8	3.0
Calcium, Ca	540	300	200	150
Magnesium, Mg	210	220	90	140
Sodium, Na	980	1300	740	530
Potassium, K	49	37	28	27
Silicon, Si	17	22	15	15
Total Hardness by Calculation	2200	1700	880	970
Aluminium, Al	<0.025	<0.025	0.020	<0.005
Arsenic, As	<0.005	<0.005	0.027	0.003
Cadmium, Cd	<0.0005	0.0005	0.0003	<0.0001
Cobalt, Co	<0.005	<0.005	<0.001	<0.001
Chromium, Cr	<0.005	<0.005	<0.001	0.002
Copper, Cu	<0.005	<0.005	0.002	<0.001
Iron, Fe	<0.025	<0.025	<0.005	<0.005
Manganese, Mn	0.011	<0.005	0.009	<0.001
Nickel, Ni	0.044	0.018	0.024	<0.001
Lead, Pb	<0.005	<0.005	<0.001	<0.001
Selenium, Se	0.005	0.006	0.009	0.004
Zinc, Zn	0.026	<0.025	0.019	<0.005
Molybdenum, Mo	0.038	0.032	0.071	0.013
Vanadium, V	<0.005	0.006	0.006	0.014
Mercury	<0.00005	<0.00005	<0.00005	<0.00005

The trend analysis for the Eclipse pit (receptor) for the period from 05 May 2011 to 03 June 2022 shows that the Electrical Conductivity (EC) and TDS concentration are increasing over time and the levels for Arsenic, Manganese and Zinc are stable (BBGO, 2022).

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 *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to

that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 4 below. Table 4 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 4: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Saline dewater	Increase in volume of dewatering water discharged to Venus pit and Eclipse pit	Overtopping and direct discharge causing poor vegetation health	N/A
Saline dewater	Operation dewatering pipeline	Pipeline leak/rupture causing discharge to surrounding environment causing poor vegetation health/death	Pipeline infrastructure placed within a v-drain to limit movement and to capture any spills or releases. The v-drain constructed to allow any uncontrolled releases to flow to the discharge location. Pipeline monitored and inspected daily. Monitoring includes visual inspection of pipes, other infrastructure and the vegetation near to the proposed pipeline route once per 12-hour shift.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 5 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 (*Guideline: Environmental siting* (DWER 2020)).

Table 5: Environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
<p><u>Threatened Ecological Communities:</u> Lake Austin 'Priority 1' ecological community (Lake Austin vegetation complexes – banded ironstone formation)</p>	<p>0.630 m east of the last section of dewatering pipeline.</p>
<p><u>Flora:</u></p>	<p><i>Acacia speckii</i> (P4) “has been recorded within the Premises. The identified flora and vegetation are well-represented at a local and regional level and there are no records of Threatened flora or restricted communities that require special consideration. No individual trees will be impacted by the proposed prescribed premises activity”.</p> <p>The Licence Holder provided a flora assessment from 2012, it is acknowledged the limitation of this survey. Firstly, the survey area does not correspond to the Comet project (Licence L8978/2016/1) but with the associated licence Tuckabianna project L8644/2012/1 further north-east.</p> <p>Secondly, “the field survey was not undertaken during the optimal time for conducting flora and vegetation surveys for the Eastern Murchison sub-region. Although Cue had received rainfall in December and in early January, it was not considered enough, nor had enough time elapsed to allow the germination and/or flowering of annuals, geophytes, ephemerals and flowering or fruiting for perennial species.” – Level 1 Flora and Fauna assessment, Tuckabianna Project, Silverlake (2012) (REF: DWERDT799964).</p>
<p><u>Rights in Water and Irrigation Act 1914 (RIWI Act) – Groundwater Areas:</u> East Murchison Groundwater Area</p>	<p>The groundwater level was 11.40 mbgl at the Pinnacles pit within the premises boundary (DWER,2022).</p>
<p><u>Superficial water:</u> a) Lake Austin b) Ephemeral drainage lines</p>	<p>a) Lake Austin is 5 km south-west of the premises boundary. b) Drainage lines run into an open floodplain and then into Lake Austin. Reference: Figure 3.</p>
<p><u>Aboriginal Sites and Heritage:</u> a) Tuckabianna South-west -Place ID 6199 - Artefacts/Scatter b) Woman gnamma – Place ID 26010 - Water Source c) Heritage Site ID 6200: Tuckabianna South Tree Scar (Lodged) <u>Native determination:</u> Yugunga-Nya People Part A</p>	<p>a) Tuckabianna – 0.670 km south from pipeline. b) Woman gnamma 0.430 km south from Venus pit in the south of premises. c) 200 m from the Premises boundary, 3.4 km north-east of the Friars pit. Reference: Figure 2.</p>

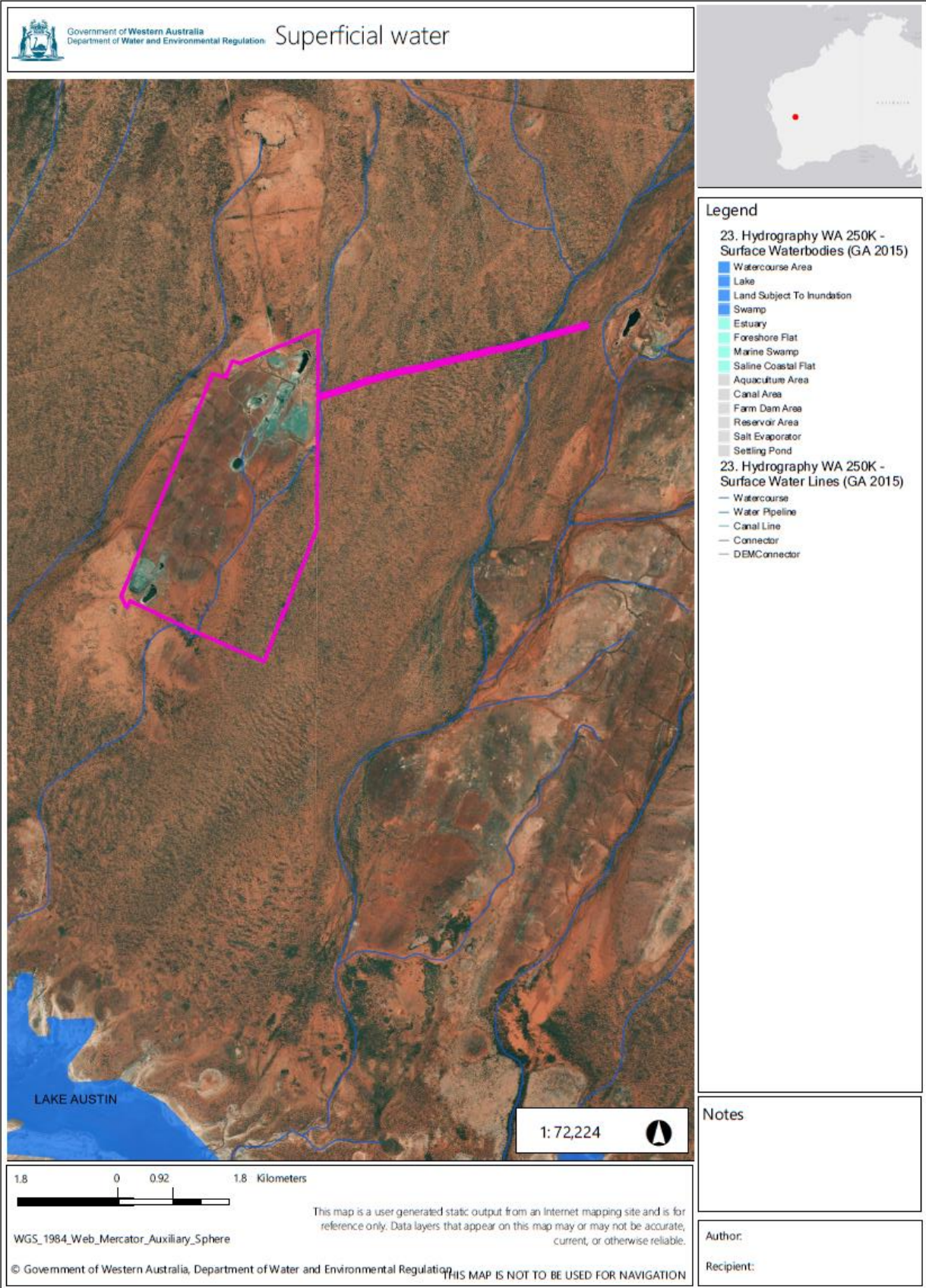


Figure 3: Superficial water

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

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

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 6.

The Revised Licence L8978/2016/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. dewatering activities.

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

Table 6. Risk assessment of potential emissions and discharges from the Premises operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
Increase in volume of dewatering water discharged to Venus pit and Eclipse pit	Saline dewater	Overtopping and direct discharge causing poor vegetation health	Soil, native vegetation, aboriginal site, ephemeral creek lines	NA	C = Moderate L = Possible Medium Risk	NA	Conditions on existing licence relating to: Condition 3 - Freeboard requirement for Venus and Eclipse pits Condition 5 - Inspection of infrastructure including the freeboard of Venus and Eclipse pits	NA
		Pipeline leak/rupture causing discharge to surrounding environment causing poor vegetation health/death	Adjacent native vegetation Ephemeral creek lines	Refer section 3.1.1	C = Minor L = Possible Medium Risk	Y	Conditions on existing licence relating to: Condition 4 – Dewatering pipelines telemetry and containment Condition 5 - Inspection of infrastructure including dewatering effluent pipelines Condition 6 – Construction requirements for dewatering pipelines	NA

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020).

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

4. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

Consultation method	Comments received	Department response
The Department of Mines, Industry Regulation and Safety (DMIRS) was advised of proposal on 17 July 2023	DMIRS responded on 07 August 2023 stating they had no objection or further comment regarding the referral	Noted
Licence Holder was provided with draft amendment on 11 August 2023	The Licence Holder responded on 14 August 2023 waiving the remaining consultation period	N/A

5. Conclusion

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

5.1 Summary of amendments

Table 8 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 8: Summary of licence amendments

Condition no.	Proposed amendments
Cover page	Category 6 design capacity changed from 500,000 to 1,000,000 tonnes per annual period
Contents & Introduction	Removed as per new licence format
Instrument Log	Updated as per new licence format to Licence History with this licence amendment added
Severance	Removed as per new licence format
Interpretation	Updated in line with new licence format
Previous conditions 1, 1.1, 1.1.1-1.1.4	Removed as per new licence format
Numbering of conditions, tables and headings	Updated to new licence format
Condition 10, Table 4	Inclusion of Venus pit as an emission point
Condition 11, Table 5	Limit for the volume of dewatering effluent water increased from 500,000 to

Condition no.	Proposed amendments
	1,000,000 tonnes
Previous conditions 4.1, 4.1.1-4.1.4	Removed as per new licence format
Condition 17	Included as per new licence format
Condition 18	Included as per new licence format
Condition 19	Updated in line with the Notice of amendment and schedule of licences with amended reporting conditions (2022).
Condition 20	Included as per new licence format
Condition 21	Included as per new licence format
Definitions	Updated as required

References

1. Department of Water and Environmental Regulation (DWER) 2022, L8978/2016/1 Amendment Report, date of publication 13 June 2022.
2. Department of Environmental Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. DWER 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Big Bell Gold Operation (BBGO)(A) 2023, *Request for further Information Comet Dewatering Increase* (REF: DWERDT799964).
6. BBGO (B) 2023, *Supporting Document L8978 Licence Amendment* (REF: A2180873).
7. BBGO, 2022, *Annual Environmental Report – L8978/2016/1* (REF: DWERDT686086).

Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L8978/2016/1		
		Relevant works approval number:		N/A	<input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None	<input type="checkbox"/>
Date application received		7/June/2023			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Big Bell Gold Operations Pty Ltd			
Premises name		Cue Gold Operations – Comet Project			
Premises location		L21/16, M21/8, M21/72			
Local Government Authority		Shire of Cue			
Application documents					
HPCM file reference number:		DER2016/000908-1 (though within 2013/003909-1~10 sub-folder)			
Key application documents (additional to application form):		Letter of authority Supporting documents -Other approvals -Sensitive receptors -Stakeholders Engagement -Existing Environment -Environmental Impacts and Management -Risk Assessment -Hydrogeological assessment (2011) -Flora/Fauna assessment 2012 -Laboratory report Tuckabianna pit water quality -Laboratory report Comet pit water quality			
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.		Increase of the groundwater discharge throughput of 1,000,000 tonnes per annual period to the Friars pit			
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 6: Mine dewatering	500,000 tonnes per annual period	1,000,000 tonnes per annual period			

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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input checked="" type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? Mining tenure
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	CPS No: No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: Licence/permit No: No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Application reference No: Licence/permit No: GWL207612(1)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A

<p>Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>-<i>Mining Act 1978</i> -<i>Rights in Water and Irrigation Act 1914</i> -<i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i></p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>N/A</p>
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>N/A</p>
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>N/A</p>