



Application for Works Approval

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

Works Approval Number	W6864/2023/1
Applicant	Big Bell Gold Operations Pty Ltd
ACN	090 642 809
File number	DER2023/000732
Premises	<p>Cue Gold Operations – Big Bell Project Coodardy Road, Cue WA 6640</p> <p>Mining tenements M20/17, M20/99, M20/192, L20/21, L20/39, L20/40, L20/41, L21/14, M20/252, M20/307, M20/333, M20/418, M20/435, G20/1, G20/2, G20/3, G20/11, M20/103, M20/171, M20/202, M20/21, M20/22, M20/354, M20/78, M20/104, M20/256, M20/297, M20/301</p> <p>As defined by the premises maps attached to the issued works approval</p>
Date of report	26 February 2024
Decision	Works approval granted

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6864/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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 Application summary and overview of premises

On 4 November 2023, Big Bell Gold Operations Pty Ltd (BBGO, or ‘the applicant’) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to construct and operate a paste plant the Big Bell Project (the premises). The premises is approximately 27 km west of Cue.

The premises relates to the categories and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6864. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6864.

Big Bell Gold Operations Pty Ltd (BBGO), is a wholly owned subsidiary of Westgold Resources Limited (Westgold) that owns and operates the Cue Gold Operations (CGO) in the Murchison region of Western Australia. CGO consists of the Big Bell, Cuddingwarra, Comet, Day Dawn, and Tuckabianna Projects.

BBGO plans to construct and operate a paste plant in the Big Bell Project mine area. The paste plant will be used to mix a slurry that will be pumped into the Big Bell Project underground mine. The slurry will be mixed using cement and tailings material from the existing adjacent Big Bell TSF1. Once the slurry is pumped into the underground mining void, it will thicken and harden, improving the stability and safety of the mine.

The dry tailings material will be removed from Big Bell TSF1 using traditional open pit mining methods. An excavator will load a dump truck, which will then transport the tailings material to a proposed run of-mine (ROM) pad next to the paste plant. The proposed ROM pad and paste plant will be situated in an existing cleared area adjacent to the Big Bell pit (see Figure 1). Existing haul roads will be used to transport the tailings material.



Figure 1: Big Bell past plant location and associated infrastructure

2.3 Paste plant details

The paste plant will use a mixture of dry tailings, Minecem, and/or cement and water to create a binder that is suitable for delivery to underground mining voids at the Big Bell underground mine. It will deliver approximately 1,000 m³ of slurry per shift based on a run rate of 100 m³ per hour.

At its optimum capacity, the paste plant will produce approximately 370,000 m³ or 448,559 tonnes of paste fill per year on average (AMC Consultants, 2023).

The applicant is seeking a total of 850,000 tonnes per annum with the inclusion of the currently approved 400,000 tonnes for crushing and screening materials. The paste fill manufacturing process is expected to consume 23,608 tonnes of paste binder annually. All reagents will be stored in bunded areas.

BBGO estimates that it will need an average of 98,683 kilolitres (kL) of water per year for paste fill, with a peak demand of 150,000 kL in the eighth year. This water will be used to ensure the correct density of the paste fill so that it can be pumped underground. The water will be sourced from the existing underground dewatering circuit and no additional transfer dams will be constructed.

Currently, BBGO is permitted to abstract 5,000,000 kL of water under GWL176056(5). In the 2022 annual reporting period, BBGO only abstracted 826,525 kL, which is 16.53% of its entitlement. With the additional ~100,000 kL required for paste fill, BBGO projects that its annual dewatering amount will be 926,525 kL, or 18.53% of its entitlement. This will leave an additional 4,000,000 kL of capacity for additional dewatering activities. The paste plant will be made up of various parts of infrastructure (Figure 2) including the following:

- Control Room
- Laboratory and Crib Room
- Horizontal Binder Silos
- Wet Binder Dosing Arrangement
- Paste Mixer
- Paste Hopper
- Tailings Feed Hopper
- Conveyor
- Compressor with Accumulators.

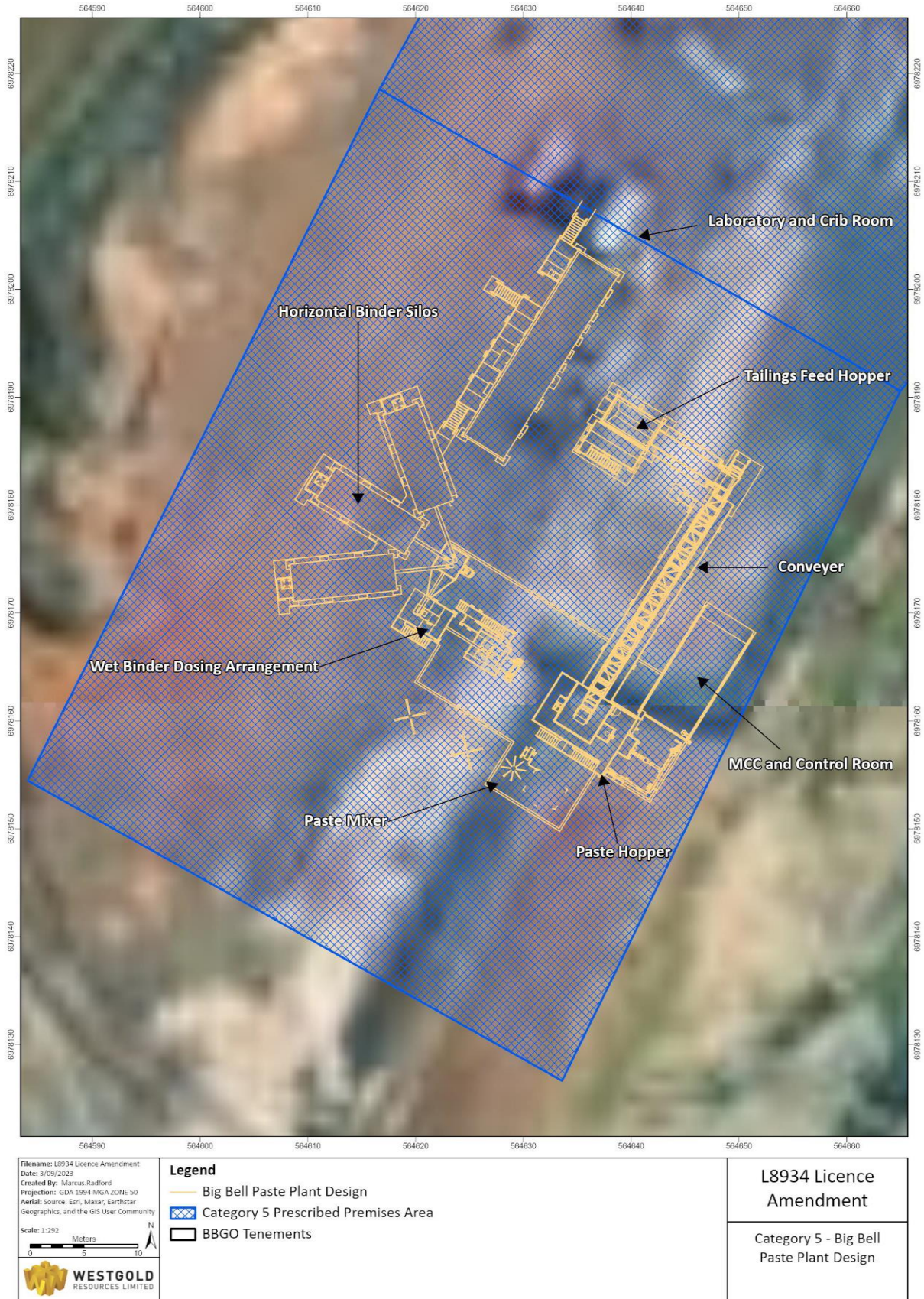


Figure 2: Proposed paste plant layout

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 construction and operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Crushing of material, vehicle movements, lift-off from stockpiles and/or stored product, earthworks etc.	Air / windborne pathway	<ul style="list-style-type: none"> Limit activities to minimise dust generation on cleared areas. Reduce vehicle movements during periods of high wind events. Use water carts for dust suppression as required. Construction period expected to be relatively short - 6 months. Visual monitoring for dust during construction and maintenance activities.
Noise	Crushing and screening of material	Air / windborne pathway	<ul style="list-style-type: none"> Distance from mine to homestead approximately 8km and noise is expected to attenuate over that distance. Construction period expected to be relatively short - 6 months. Complaints register to be maintained. If a complaint is received, an adjustment to the operations schedule will be made in consultation with the stakeholder.
Operation			
Tailing dust	Excavation and transport of tailing from TSF1 to paste plant tailings run-of-mine (ROM) pad. Lift-off of tailings while stored on ROM pad.	Air/windborne pathway causing impacts to health and amenity	<ul style="list-style-type: none"> Limit activities to minimise dust generation on cleared areas. Reduce vehicle movements during periods of high wind events. Use water carts for dust suppression as required. Dust will attenuate as the TSF is mined deeper.

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> Visual monitoring for dust during construction and maintenance activities.
Leak from, or failure of the process water pipeline.	Process water pipeline	Discharge and leaching into groundwater or soils	<ul style="list-style-type: none"> Process water pipeline to be equipped with telemetry or automatic cut-offs in the event of a pipe failure. Pipeline to be installed within secondary containment 'channel' of sufficient size to contain any spills for a period of time equal to the time between routine inspections. Pipelines to be inspected daily to confirm integrity.
Spills and leaks (hydrocarbons/reagents from paste plant infrastructure)	Paste production/handling	Spillage of paste, direct discharge to land, release of reagents	<ul style="list-style-type: none"> Earthen windrows on ROM installed around paste plant to divert uncontaminated stormwater away from the area. Paste spills will be contained by the pit hardstand, abandonment bund or pit itself. Spill control equipment to be made available and maintained at the paste plant.
Leaching of contaminants from paste	Paste deposition underground	Leaching into groundwater or soils	<ul style="list-style-type: none"> Water consumption of the paste plant is to be monitored as part of the Big Bell water balance. Monitoring of regional groundwater will continue. Water used is to be from existing mine dewatering operations and is not an additional direct abstraction bore into the nearby bore field.

3.1.2 Receptors

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

Table 2 and Figure 3 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors ¹	Distance from prescribed activity
Town historical common / station boundary	Big Bell 2 km southeast
Environmental receptors	Distance from prescribed activity
Big Bell Historical Water Reserve	2 km east of the paste plant area. The Big Bell Water Reserve is currently authorised for

	groundwater abstraction for mining use.
Groundwater	10 m below ground level.
Environmentally Sensitive Areas (ESA)	<p>The Taincrow PEC (Priority 1) is located approximated 6.6 km to the East of the paste plant area.</p> <p>The Lake Austin PEC (Priority 1) is located 2 km SE of the paste plant area.</p> <p>Dust suppression measures to be utilised to reduce ambient dust emissions.</p>
Native Vegetation	<p>The proposed activity is located on an existing cleared pit hardstand area.</p> <p>No additional clearing is required.</p>
Lake Austin – a large ephemeral salt lake	14 km south of the proposed activity.
Minor Non-Perennial Water Courses	<p>2 km west.</p> <p>Direction of water course flow is south towards Lake Austin.</p>

Note 1: Coodardy Homestead (8 km), Austin Downs Homestead (13 km), and Heritage Site (ID 16943) Telegootherra Spring (8.5 km) are unlikely to be significantly impacted from the resulting construction and operations of the paste plant and are not considered as sensitive receptors.

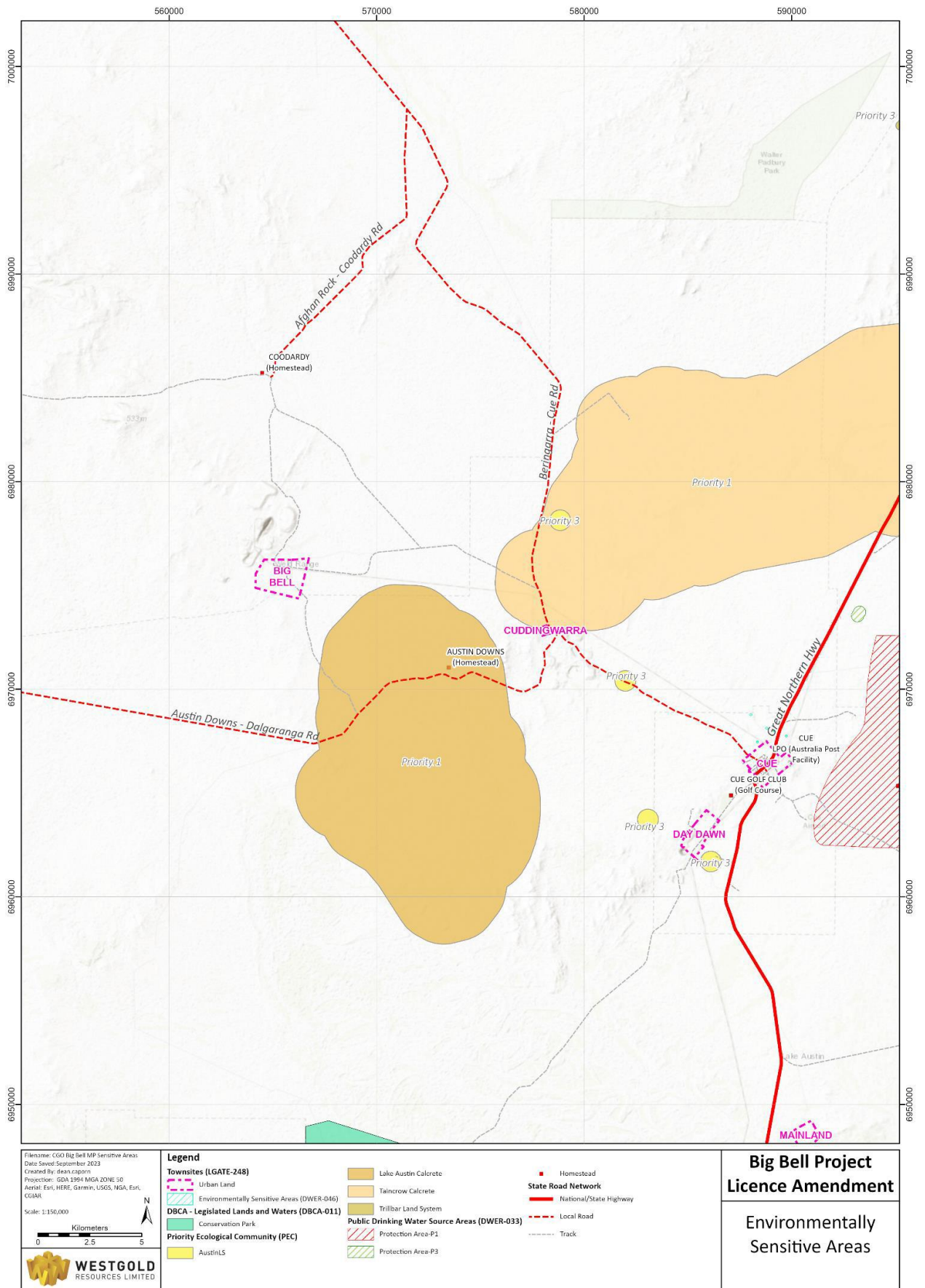


Figure 3: Distance to receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant 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 applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works approval W6864/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

An amendment to licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e. Category 5 paste plant activities. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction, commissioning, and operation

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification of conditions in works approval
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Construction								
Construction of new Big Bell Paste Plant	Dust	Air / windborne pathway causing impacts to health and amenity	Big Bell Town historic common/station boundary	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A	The Delegated Officer notes the construction period will be short and the paste plant location is central to the operations and separate from vegetation.
	Noise		Undisturbed land and native vegetation	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A	The Delegated Officer considers noise and dust impacts will remain low due to distance from homestead and short construction timeframe.
Commissioning								
Commissioning of Big Bell Paste Plant	Tailing dust	Air / windborne pathway causing impacts to health and amenity	Big Bell Town historic common/station boundary Undisturbed land and native vegetation	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 5	Dust suppression measures are to be undertaken during environmental commissioning of the paste plant.
Operation (including time-limited-operations operations)								
Operations of Big Bell Paste Plant	Tailings dust with potential elevated metals and metalloids concentrations	Air/windborne pathway causing impacts to health and amenity	Big Bell Town historic common/station boundary Undisturbed land and native vegetation	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 10	Conditions related to management of dust from tailing excavation are included in the works approval.
	Process water used in paste production	Leak from, or failure of process water	Contamination of soil or groundwater	Refer to Section 3.1	C = Minor L = Unlikely	N	<u>Condition 1,</u> <u>Condition 10.</u>	The applicant did not include any specific controls related to process water leak or spill from process water

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification of conditions in works approval
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
		pipeline.			Medium Risk			pipeline. The Delegated Officer has included standard conditions related to pipeline construction (installation of telemetry or automatic cut-off, and construction of secondary containment) in the instrument along with ongoing daily inspection of pipelines during time limited operations (TLO).
	Paste production/handling	Spillage of paste, direct discharge to land, release of reagents	Contamination of soil or groundwater	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 10	Conditions related to the storage and handling of reagents, as well as stormwater management are included in the works approval.
	Paste deposition underground	Leaching of contaminants from paste	Contamination of groundwater with heavy metal and metalloids	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	N/A	BBGO conduct field water quality samples on a quarterly basis as conditioned in existing licence L8934/2015/1.

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

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

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 4 January 2024	None received	N/A
Local Government Authority (Shire of Cue) advised of proposal on 4 January 2024	None received	N/A
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) advised of proposal 4 January 2024	DEMIRS replied on 16 January 2024 and informed the department that the proposed works appear to align with MP Reg ID 119434 (under assessment), and DEMIRS has no further comment to provide regarding the proposed works.	Noted.
Applicant was provided with draft documents on 15 February 2024.	Response received 20 February 2024. Applicant confirmed controls related to pipeline construction and operation. Applicant waived remainder of the comment period.	N/A

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Big Bell Gold Operations Pty Ltd 2023, *Application form for works approval W6864/2023/1*, Perth, Western Australia
2. Westgold Resources Limited 2023, *Big Bell Gold Operations Pty Ltd L8934/2015/1 works approval supporting document Big Bell Project November 2023*, Perth, Western Australia
3. AMC Consultants Pty Ltd 2023, *Report: Big Bell Paste Fill Testwork Westgold Resources Limited, project ID 221112 June 2023*, Melbourne, Victoria
4. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
5. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
6. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.