Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Works Approval

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

Works Approval Number	W30612025/1
Applicant	Brightstar Resources Limited
ACN	100 727 491
Application number	APP-0029987 INS-003061
Premises	Menzies Gold Mine Legal description - Mining tenements M29/153, M29/154, and M29/14 As defined by the coordinates provided in Schedule 2 of the issued works approval
Date of report	30 October 2025
Decision	Works approval granted

Table of Contents

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 W3061/2025/1 (W3061) 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 18 July 2025, 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 undertake construction works relating to the installation of a Fixed Film Bioreactor Wastewater Treatment Plant (WWTP) at the premises to support an accommodation camp. The premises is approximately 30 km south of Menzies. The WWTP will cater to a maximum camp population of 120 personal with a production and design capacity (P&DC) of 30 m^3/day. The WWTP will manage domestic wastewater generated by the accommodation camp and amenities and treated wastewater (TWW) will be discharged to a dedicated 1.75 ha irrigation sprayfield (ISF). The ISF will be fenced and located away from sensitive receptors. Table 1 outlines the WWTP and process.

Table 1: WWTP and process

Tank	Process	Capacity
Primary Settling Tanks and Balance Tanks	Settleable solids and associated biological oxygen demand is removed in the first primary settling tank. Supernatant overflows onto the balance tank for flow equalisation and contact stabilisation.	4 x 50,000 L
Aeration Treatment Unit with aerobic reactor and clarifier chambers	Liquid from the balance tank is fed at a fixed rate into an aeration chamber, aerated in the presence of fixed media to promote growth of heterotrophs and autotrophs. The oxygen demand is satisfied, and ammonia is converted to nitrate. The liquid flows to a secondary settling chamber where settled sludge is returned upstream into the balance tanks. Clear effluent overflows into the chlorine tank.	2 x 21,500 L Tanks (each with a 12,500 L Aerobic reactor volume and a 5,900L clarifier chamber)
Emergency overflow Effluent Tank	Liquid from the WWTP can overflow into this tank in case of power outage as additional containment.	1 x 50,000L Tank
Chlorine Contact Tank	Clear liquid from the secondary settling chamber is chlorinated and disinfected before they are discharged to the ISF.	2 x 9,000L Tank

Clearing of native vegetation if required will be undertaken in accordance with the clearing permit CPS-10921/1 which was submitted to Department of Mines, Petroleum and Exploration (DMPE).

The premises relates to the category / categories and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W3061. 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 W3061.

2.3 Targets for Treated Wastewater

TWW is proposed to be treated to a 'low exposure risk level' (ERL) as outlined in the Department of Health *Guidelines for the Non-potable Uses of Recycled Water in Western Australia* (DoH Guidelines 2024). The proposed TWW targets have also been compared to the Australian and New Zealand Environment and Conservation Council (ANZECC) 1997 *Australian Guidelines for Sewerage systems, Effluent Management, National Water Quality Management Strategy* (ANZECC (1997) (ANZECC (1997).

Table 2 outlines the proposed discharge quality of the TWW.

Table 2: WWTP Target discharge quality

Parameter	Target	ERL[1]	ANZECC (1997)[2]
Biochemical Oxygen Demand (BOD)	<20 mg/L	<20 mg/L	20-30 mg/L
Total Suspended Solids (TSS)	<30 mg/L	<30 mg/L	25-40 mg/L
Total Nitrogen (TN)	<60 mg/L	N/A	20-50 mg/L
Total Phosphorus (TP)	<18 mg/L	N/A	6-12 mg/L
E. coli	<1000 cfu/100mL	<1000 cfu/100mL	10^5 – 10^6 org/100ml
pH	6.5 – 8.5 pH Units	6.5 – 8.5 pH Units	N/A
Disinfection (if used)	0.2 – 2.0 mg/L	0.2 – 2.0 mg/L	N/A

Note 1: Table 7 of the DoH Guidelines.

Note 2: Appendix 6 ANZECC (1997).

The WWTP will undergo a Commissioning and Time-limited operations period, requiring TWW sampling, assessment, and reporting against the above discharge standards. Any waste sludge will be transported off site to a licensed facility.

2.4 Irrigation of Treated Wastewater

The applicant intends to discharge TWW from the WWTP to the ISF. The volume of TWW discharged will be 30 m^3/day as per Table 1.

2.4.1 Description of potential adverse impact

Irrigation of nutrient rich TWW has the potential to cause contamination of soil and health impacts (degradation) to native vegetation in the ISF. TWW also has potential to infiltrate and cause adverse impacts to underlying groundwater.

2.4.2 Loading calculations

The applicant has referred to the document *Department of Water and Environmental Protection Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewater* in determining an appropriate ISF area size to accommodate the proposed nutrient loading from TWW irrigation. The applicant advises that the soil type within the ISF is considered to be risk Category D (Sandy to loamy textured soils) as detailed in WQPN22.

Based on the following inputs:

- the anticipated discharge quality for TWW (targets) outlined in Table 2;
- an irrigation area of 1.75 ha; and
- and an effluent volume (throughout) of 30 m^3/d of TWW outlined in Table 1.

The irrigation loading rates will be 375 kg/ha/year for Total Nitrogen (TN) and 112.63 kg/ha/year for Total Phosphorus (TP). Category D nutrient loading rates from WQPN22 are 480 kg/ha/year for TN and 120 kg/ha/year for TP respectively. This indicates that the proposed sprayfield size is sufficient to accommodate the TN and TP loadings proposed for discharge through irrigation.

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 which have been considered in this decision report are detailed in Table 3 below. Table 3 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 3: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Construction of WWTP, vehicle movements, lift-off from soils and earthworks etc.	Air / windborne pathway	• Physical separation from sensitive receptors. • Small size for construction site, so speed will be minimal – vehicles all on defined roads. • Water Cart.
Noise			• Works will be conducted in accordance with the *Environmental Protection (Noise) Regulations 1997.* • Construction during daytime only.

Emission	Sources	Potential pathways	Proposed controls
			• Siting location for sensitive receptors. • Vehicles and equipment will be fitted with appropriate noise controls. • All plant, equipment, and vehicles will be regularly inspected and maintained.
Commissioning and Time-limited operations			
Dust	Operation of WWTP and vehicles movements	Air / windborne pathway	• Physical separation from sensitive receptors. • Water cart as required.
Nosie			• Physical separation from sensitive receptors. • Operations comply with the *Environmental Protection (Noise) Regulations 1997.* • Limited vehicle movements required. • Containerised WWTP has noise protection.
Odour	Operation of WWTP and abnormal operations of the WWTP		• Physical separation from sensitive receptors. • Daily plant inspection and maintenance. • Sludge removed from Premises.
Discharges to land	Treated wastewater containing contaminants (e.g. nutrients, pathogens, metals)	Discharge to land and subsurface seepage causing contamination of soil, degradation of groundwater quality and impacts to downgradient receptors.	• Physical separation from sensitive receptors. • Advanced secondary treatment. • Flow meters maintained on WWTP outlet. • Target TWW Parameters. • ISF area of at least 1.75 ha. • Spray and run-off will not occur beyond the boundary of the ISF. • Sprinklers evenly distributed within the ISF to avoid pooling/water logging and erosion. • Suitable storage will be maintained in the treated wastewater tank. • Sewage sludge removed off-site. • Fencing and signage installed around ISF. • Depth to groundwater is 30-50mbgl.

Emission	Sources	Potential pathways	Proposed controls
Spills / Leaks	Operation of WWTP	Direct discharge to land and groundwater	• Daily inspection and maintenance. • Spills / leaks immediately cleaned up. • All storage components are impermeable. • High level alarms. • Sufficient freeboard in each tank. • Spare pumps kept on site. • Chemicals stored in accordance with Australian Standard AS 3780:2008 Storage and Handling of Corrosive Substances. • Sludge will be stored in separate sludge storage tanks and removed off-site.
Contaminated Stormwater	Operation of WWTP	Direct discharge to land and surface water	• Physical separation from sensitive receptors. • All wastewater treatment infrastructure will be bunded.

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 4 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 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Menzies	30 km north
Environmental receptors	**Distance from prescribed activity**
Ephemeral creek	900 m south of ISF.
Groundwater	30-50 mbgl
Menzies PDSWA	2.7 km south-east of ISF.
Aboriginal site	600 m west of camp

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 5.

Works approval W3061 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 5 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A Registration is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises. 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 5: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and operations

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Construction of WWTP and ISF and associated equipment including vehicle movements (reversing beepers).	Dust	Air / windborne pathway causing impacts to health and amenity	Residences 30 km north	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	N/A	The Delegated Officer has considered the scale of the works and the separation distance between the source and receptors as indicating that the risk of dust emission impacts is not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.
	Noise			Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	N/A	The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise emissions are adequately regulated under the *Environmental Protection (Noise) Regulations 1997*.
Commissioning and Time-limited-operations operations								
Commissioning and operation of WWTP and ISF Associated vehicle movements	Dust	Air / windborne pathway causing impacts to health and amenity	Residences 30 km north	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	The Delegated Officer has considered the scale of the works and the separation distance between the source and receptors as indicating that the risk of dust emission impacts is not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	Noise	Air / windborne pathway causing impacts to health and amenity	Residences 30 km north	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise emissions are adequately regulated under the *Environmental Protection (Noise) Regulations 1997*.
	Odour	Air / windborne pathway causing impacts to health and amenity	Residences 30 km north	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Conditions 1, 2, 3, 4, 5, 6, 10, 11, 12, 13, 14, 15, 18, 19 and 20	The Delegated Officer has considered the scale of the works and the separation distance between the source and receptors as indicating that the risk of odour emission impacts is not foreseeable. Odour can be adequately regulated by section 49 of the EP Act.
	Discharges to Land	Discharge to land and subsurface seepage causing contamination of soil, degradation of groundwater quality and impacts to downgradient receptors	Creek 900 m south of SIF Groundwater 30-50 mbgl	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Conditions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20	N/A
	Spills / Leaks	Direct discharge to land and groundwater	Groundwater 30-50 mbgl	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Conditions 1, 2, 3, 5, 10, 11, 14, 18 and 19.	N/A
	Sediment laden stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Creek 900 m south of SIF	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Conditions 1, 2, 3, 5, 10, 11, 12, 13, 14, 18 and 19.	N/A

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 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 10 September 2025 and West Australian on 15 September 2025.	None received.	Noted.
Local Government Authority advised of proposal on 9 September 2025.	The Shire of Menzies did not respond.	Noted.
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 9 September 2025.	DMIRS did not respond.	Noted.
Department of Planning, Lands and Heritage (DPLH) advised of proposal on 9 September 2025.	DPLH did not respond.	Noted.
Department of Health (DoH) advised of proposal on 9 September 2025.	DoH did not respond.	Noted.
Applicant was provided with draft documents on 27 October 2025.	N/A – comment period waived.	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. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.