Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

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

Licence Number	L8345/2009/3
Licence Holder	Greenstone Resources (WA) Pty Ltd
ACN	100 341 599
File Number	DER2021/000125
Premises	King of the Hills Gold Mine (KOTH) LEONORA WA 6438 Legal description – Part of mining tenements M37/67, M37/76, M37/90, M37/201, M37/222, M37/248, M37/330, M37/410, M37/429, M37/449, M37/451, M37/457, M37/547, M37/548, M37/572, M37/573, M37/574 and M37/1105 As defined by the Premises map attached to the Revised Licence
Date of Report	20/02/2025 (FINAL)
Proposed Decision	Revised licence granted

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1. Decision summary

Licence L8345/2009/3 is held by Greenstone Resources (WA) Pty Ltd (licence holder) for the King of the Hills Gold Mine (the Premises), located approximately 30 kilometres (km) north of Leonora, Western Australia.

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 construction and operation of the Premises. As a result of this assessment, the revised Licence L8345/2009/3 has been granted.

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

2. Scope of assessment

2.1 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 Application summary

On 12 September 2024, the licence holder submitted an application to the department to amend Licence L8345/2009/3 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- transfer of the remaining Tailings Storage Facility (TSF) 5 embankment lifts construction and operational requirements from works approval W6426/2020/1 and operate to a maximum height of reduced level (RL) 445 metres (m) (category 5);
- inclusion of a tyre landfill in the North Waste Rock Landform (WRL) (category 89);
- disposal of concrete footings (inert waste) in an additional landfill adjacent to the North WRL (category 89); and
- inclusion of TSF 4 Stage 7 embankment lift from works approval W6891/2024/1 (category 5).

2.2.1 Changes from the original scope of application

On 18 October 2024, the department sent a letter to the licence holder advising that the best approval pathway was a licence amendment application as opposed to the submitted works approval amendment application for W6891/2024/1.

The department provided the following reasons for the change (works approval amendment application to a licence amendment application):

- Works approval W6891/2024/1 relates only to additional embankment lifts for the construction and time-limited operations for TSF 4.
- Works approval W6426/2020/1 includes the construction, commissioning, and time-limited operation for TSF 4 up to an embankment height of RL 429 m, TSF 5 up to an embankment height of RL 422.5 m and the processing plant and associated infrastructure. These items of infrastructure have been transferred to the existing licence L8345/2008/3, except for TSF 5 only operating up to an approved embankment height of 413 m.

- The remaining items of infrastructure to be constructed under W6426/2020/1 is limited to the remaining TSF 5 embankment lifts to the approved height of RL 422.5 m.
- Works approval W6426/2020/1 will expire on 22 October 2025.
- Licence L8345/2008/3 as already mentioned above, includes TSF 5 operating at the approved height of RL 413 m. Construction and operational requirements under W6426/2020/1 and provided in the application form can be incorporated into the existing licence.
- Licence L8345/2008/3 already includes category 89 where operational requirements, and the location of the proposed tyre landfill can be included on the licence.

The department determined that the original application and associated supporting documentation were sufficient to proceed as a licence amendment application and no resubmission of the application was required.

On 23 October 2024, the licence holder accepted and confirmed the application to change from a works approval amendment to a licence amendment. In addition, the licence holder requested to include the approved TSF 4 Stage 7 embankment lift from W6891/2024/1 and advised that the embankment lifts for TSF 5 changed from 5 m to 7.5 m in height after internal review by the engineers. An updated TSF 5 design report was provided to the department as part of this amendment application on 28 November 2024.

Furthermore, the licence holder requested via email on 06 November 2024 some additional amendments and / or considerations to the existing licence. Table 1 provides these proposed additional amendments and considerations with the department's response. The department provided the response to these amendments and considerations to the licence holder on 28 November 2024.

Table 1: Proposed additional amendments and considerations and the department's response

Amendment and / or consideration	Licence holder's proposed action	Department's response
Increased height of the TSF 5 embankment lifts from 5 m to 7.5 m	New drawings and updated TSF 5 design report will be provided to the department by the end of November 2024. Licence holder also confirming if timeframe is acceptable for the updated TSF 5 design report.	The department has no objection to the updated TSF 5 design report being provided by the end of November 2024. The licence holder should note that this will cause a delay in the assessment period as the department will have to review the design report and seek advice from Department of Energy, Mines, Industry Regulation, and Safety (DEMIRS).
Condition 1, Table 1 Inclusion of infrastructure upgrades and surface water management works	The licence holder advised that operational improvements to the Processing Plant are required in Quarter 1, 2025 to reach permitting processing throughput capacity (category 5). The licence holder sought confirmation from the department to determine whether a works approval or licence amendment application is required for the operational improvements to meet the approved licence throughput capacity.	The department did not consider this as a minor amendment and required further information on the proposed infrastructure changes / upgrades to the existing Processing Plant and associated surface water management works. In addition, the department would need to review the existing risk assessment to ensure there are no changes to potential impacts to nearby sensitive receptors and the risk rating. The department recommended that these proposed changes would need to be assessed in a future licence

Amendment and / or consideration	Licence holder's proposed action	Department's response
		amendment application. It should be noted that the licence holder has submitted a separate licence amendment application to the department for the inclusion of the infrastructure upgrades and surface water management. That licence amendment application was submitted on the 4 December 2024 and is currently being assessed by the department outside the scope of this Amendment Report.
Condition 11 and 14 Wastewater Treatment Plant (WWTP) limits	The licence holder has requested to amend the WWTP effluent limits to targets as done on other Vault Minerals Pty Ltd instruments. The licence holder also requested to remove condition 14 that requires resampling or reporting on each limit exceedance sampling event, which is onerous for a non-material environmental impact. The licence holder suggested the removal of condition 14 and instead replace it with reporting on the WWTP performance within the environmental report.	The department notes that the amendment report issued on 16 August 2022 included the WWTP operation and monitoring requirements, conditions 11, 14, and 15. At the time of that licence amendment, it was indicated that four out of five WWTP effluent samples did not meet the specific WWTP effluent limit between 22 February 2021 to 22 November 2021. In addition, based on the recent environmental report and Annual Audit Compliance Report (AACR), the WWTP result showed continued exceedances of the design criteria targets (NWQMS 1997). As a result, the department will make no changes to conditions 11, 14, and 15 until the WWTP design criteria targets are met over consecutive quarterly monitoring events.
Condition 12 Monitoring bore, MB18 to be replaced by MB17	The licence holder has advised that monitoring bore, MB18 is blocked and unable to be sampled. The licence holder has suggested to use the existing MB17 as a replacement bore for monitoring requirements under the licence for TSF 4. MB17 is approximately 80 m to the northeast of MB18 and intersects the same stratigraphy (silt and clay) as MB17 and is slightly shallower (about 30 m deep, as opposed to 36 m for MB18).	The department notes that MB17 may be a potential alternative monitoring bore to MB18 that is currently not usable. The department notes that L8345/2009/3 has monitoring requirements for MB18 and that monitoring requirements for MB17 are currently under works approval W6891/2024/1. The department will need to review during the assessment period whether MB18 needs to be replaced with a newly constructed bore or whether MB17 will suffice for the monitoring purposes for TSF 4.
Condition 14 Administrative error	The licence holder had noted an administrative error that incorrectly refers to condition 12 instead of condition 11.	The department will amend the administrative error during this licence amendment.
Condition 21	The licence holder has requested	If no replacement monitoring bore is

Amendment and / or consideration	Licence holder's proposed action	Department's response
monitoring bore construction requirements	the removal of this condition as all monitoring bores have been constructed.	required to be constructed, conditions 21 and 22 (bore construction report requirements) under the licence can be removed. Monitoring bores MB20-8, MB20-9, and MB20-10 have been constructed and a bore construction report was submitted to the department on 10 October 2023 and deemed compliant on 19 February 2024.
Disposal of concrete footings (inert waste) from within the Western Waste Dump to an area approximately 50 m by 100 m adjacent to the existing WRL	The licence holder requested if this additional landfill could be included in the current licence amendment application.	The department determined that the proposed landfill activity is a low environmental risk and will include it in this licence amendment. However, during the assessment period the department advised further information may be required on the proposed activity to undertake a detailed risk assessment.

3. Premises operations

3.1 TSF 5 embankment lifts

Currently TSF 5 has been constructed to Stage 1 starter embankment at a height of RL 413 m under works approval W6426/2020/1. A licence amendment for L8345/2009/3 was granted on 2 October 2023 to authorise the operation of the TSF 5 Stage 1 starter embankment.

As part of this application, the licence holder has requested to transfer the construction and operational requirements for the remaining TSF 5 embankment lifts from works approval W6426/2020/1 onto the current licence L8345/2009/3 as the works approval will expire on 22 October 2025.

A revised design report, *Tailings Storage Facility 4 & 5 (TSF4 & TSF5) Design Report – King of the Hill Gold Project – Leonora, Wester Australia* (CMW Geosciences, 2024) was provided to include a change in the height of the downstream embankment lifts from 5 m to 7.5 m. The upstream embankment lifts remain as three 4 m lifts. Furthermore, the overall design and construction requirements have not been changed and therefore there is no change to the geotechnical stability and factor of safety. Table 2 provides the revised TSF 5 embankment lifts.

Table 2: TSF 5 embankment lifts, storage area and capacity

Stage	Crest RL (m)	Tailings area (ha)	Storage volume (Mm^3)	Cumulative storage volumes (Mm^3)	Cumulative storage capacity (Mt)
1	413	90.9	4.9 (full)	0	0
2	420.5	99.0	7.14	11.62	16.27
3	428	108.0	7.65	25.36	35.50
4	433	115	5.65	42.14	59.00
5	437	129	5.44	47.58	66.61
6	441	128.5	5.29	52.87	74.02
7	445	127	5.15	58.02	81.23

3.2 Tyre and concrete footings landfill

The licence holder has requested for a tyre landfill to be located in the North WRL for the disposal of earthmoving and light vehicles tyres.

The tyres are proposed to be stored as follows:

- no obstruction to fire protection equipment or any related signage;
- tyres stacked on their sides or if stored upright on their treads, within a bunded area;
- no more than 99 tyres stored at any one time;
- the tyre storage area is at least 6 m away from any combustible material, wall, building or fence; and
- individual tyre stacks area are separated at least 6 m from each other and do not exceed 100 m^2 in area and 3 m in height.

The tyres are proposed to be buried as follows:

- in the North WRL, further than 100 m from the final WRL batter toes and 5 m from the final top surface;
- approximately 500 tyres per year;
- burial under a final soil cover of not less than 500 mm;
- in batches separated from each other by at least 100 mm of soil;
- ensures that the drainage, safety, soil erosion and soil stability is controlled;
- covered by the end of the working day so that the waste was deposited with enough waste rock to prevent the spread of fire and harboring of disease vectors; and
- tyre burial locations must be surveyed and recorded.

Furthermore, the licence holder has also requested for concrete footings from the historical Processing Facility located within the western waste dump be removed to allow for the Tarmoola pit expansion works. The concrete footings (inert waste) will include concrete, steel reinforcement, and plastic conduit / cable of a volume of 700 tonnes.

This inert waste will be stored in an area of approximately 50 by 100 m with the landfill cell located adjacent to the existing North WRL. The inert waste will be covered with a minimum of 2 m of non-acid forming (NAF) waste rock. The licence holder has indicated that there will be no increase in environmental risk with this additional inert waste landfill as noted below:

- maximum of 700 tonnes of inert waste is proposed to be permanently stored, but there is no increase to the already approved category 89 throughput (5000 tonnes per year) on the licence;
- there is no increased impact to sensitive receptors from dust as the landfill is located within the footprint of the pit / waste landform disturbance;
- there should be no leachate as the material to be stored is inert ;
- depth to groundwater is approximately 50 to 60 metres below ground level (mbgl); and
- the landfill will be fully encapsulated in the West Landform with no increased risk to closure outcomes.

3.3 Monitoring bore MB18

The licence holder advised via email correspondence as detailed under section 2.2.1, Table 1 of this report that monitoring bore, MB18 is blocked and unable to be sampled. The licence holder has requested whether the department accepts that monitoring bore MB18, can be replaced with existing MB17 for ongoing monitoring around TSF 4.

The department notes under section 2.2.1, the licence holder has indicated that MB17 is located approximately 80 m to the northeast of MB18 and occurs within the same stratigraphy (silt and clay). The department has also reviewed the monitoring data from these monitoring bores in the recent Environmental Report, *Greenstone Resources (WA) Pty Ltd – King of the Hills Mine L8345/2009/3 – Annual Environmental Report – September 2023 to August 2024* (Greenstone Resources 2024). The department notes the results are similar between the monitoring bores, MB17 and MB18. The department has no objection for MB17 to be replacement bore for MB18 for the ongoing monitoring around TSF 4 and there is no change to the risk rating for potential impacts to nearby sensitive receptors. The licence holder should note that the department will review monitoring data provided with the Environmental Report that is submitted to the department annually for licence L8345/2009/3 to determine if a replacement monitoring bore may be required in the future.

4. 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 2020a).

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.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this amendment report are detailed in Table 3 below.

Table 3 also details the proposed control measures the licence holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence holder controls

Sources / activities	Emission	Potential pathways	Proposed controls
Category 5 (TSF 5 embankment lifts)			
Construction			
Construction of TSF 5 embankment lifts to a maximum operating height of RL 445 m	Dust	Air / windborne pathway	• Implementation of dust minimisation measures for excavation activities and screening of material for TSF construction, including the use of water carts and watering stockpiled areas. • Vehicles and mobile equipment must travel on defined roads and adhere to speed limits. • Restricted activities during high winds.

Sources / activities	Emission	Potential pathways	Proposed controls
			• Using water carts or fixed sprays on unsealed roads.
	Sediment laden stormwater	Overland runoff during rainfall events	• Vehicles must be washed down in a purpose-built washdown facility, with sediments collected and treated appropriately.
	Hydrocarbon and other chemical reagent	Loss of containment, resulting in spills and leaks	• Vehicle maintenance must be subject to regular maintenance in designated workshop areas to minimise the likelihood of spills and leakages occurring. • Minor spillage due to accidents or breakdowns must be cleaned up immediately and reported through incident report procedure. • All hydrocarbon and chemical storages must be designed and constructed in accordance with Australian Standards (AS) AS1940-2004 and AS1692-2006.
Operation			
Deposition of tailings into TSF 5 up to a maximum operating height of RL 445 m	Dust (dried tailings)	Air / windborne pathway	• TSF must be operated using sub-aerial deposition methodology, with deposition rates appropriate climatic conditions. • Dust monitors installed upwind and downwind of the TSF to monitor the amount of dust and geochemical composition.
	Decant / return water	Pipeline rupture / failure with direct discharge to land	Existing licence L8345/2009/3 conditions applies: • **Condition 1 –** Maintaining tailings and return water pipeline within earth-bunded corridors with scour pits or sumps, and be fitted with isolation valves, as well as flow and leak detection sensors. • **Condition 4 –** Twice daily visual inspection of tailings and return water pipelines for spills or leaks.
	Tailings supernatant	Leachate by seepage through TSF walls, horizontal migration and floor	Existing works approval W6426/2020/1 conditions will be transferred onto the licence L8345/2009/3 for ongoing operational requirements. Existing licence L8345/2009/3 conditions applies: • **Condition 5 –** Tailings deposition into TSF using sub-aerial discharge from spigots.
		Direct discharge to land from embankment failure	

Sources / activities	Emission	Potential pathways	Proposed controls
			• **Condition 10 –** Process monitoring of tailings and return water recovery throughputs. • **Condition 12 –** Quarterly monitoring of ambient groundwater quality at monitoring locations around TSF 5, including corresponding limit and trigger level for standing water level. • **Condition 13** – Management actions to take in the even standing water level trigger level is exceeded.
		Overtopping of TSF	Existing licence L8345/2009/3 conditions applies: • **Condition 1 –** Maintaining total freeboard of at least 0.5 m (including sufficient allowance for a 1% AEP 72-hour event) using a freeboard marker. • **Condition 4 –** Daily inspection of TSF 5 embankment to confirm freeboard capacity and daily inspection of TSF 5 decant pond to confirm size and location.
		Direct ingestion by wildlife of tailings supernatant	• TSF 5 must be visually inspected for signs of wildlife, where any wildlife deaths must be checked and recorded. • Decant pond size must be maintained as small as possible.
Category 89 (tyre landfill and concrete footings (inert waste) landfill)			
Operation			
Disposal of earthmoving and light vehicle tyres and concrete footings	Dust	Air / windborne pathway	• Restricted activities during high winds. **No further risk assessment undertaken due to the location of the landfill and distance to nearby sensitive receptors.**
	Leachate	Leachate infiltrating through the soil	Existing licence L8345/2009/3 conditions applies: • **Condition 6 –** Management of wastes in accordance with the *Environmental Protection (Rural Landfill) Regulations 2002*, Part 6 of the *Environmental Protection Regulations 1987,* and *Environmental Protection (Controlled Waste) Regulations 2004.*
	Fire / smoke from tyres	Air / windborne pathway	• Tyres must be buried in batches to reduce the risk of fire spread.

4.1.2 Receptors

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

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 2020b)).

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

Human receptors	**Distance from prescribed activity**
Tarmoola Homestead (pastoral residence) The licence holder has noted that the premises occurs on the Tarmoola Pastoral Lease (N049945/63) and are in the process of ownership transfer to Greenstone Resources (WA) Pty Ltd. Potential for dust emissions from the construction of the TSF embankment lifts and vehicle / mobile equipment movements.	Approximately 4 km southwest of the prescribed activities.
Environmental receptors	**Distance from prescribed activity**
Native vegetation, including riparian vegetation along the Sulivan Creek and tributary 300 m south of the TSF 5. Previous / historical groundwater mounding from TSF 4 and mounding / seepage has the potential to impact vegetation in particular riparian or groundwater dependent vegetation. There are no known threatened or priority ecological communities within the premises or immediate surroundings of the premises.	Within the premises.
Native fauna in particular birds and bats. Possible direct ingestion of tailings supernatant water. There are no threatened or priority fauna within the premises or immediate surroundings of the premises.	Within and surrounding the premises.
Priority (P) flora (no threatened flora within the premises). *Frankenia georgei* P1 *Stenanthemum patens* P1 Due to the distance from the prescribed activities and that the activities are occurring within already existing disturbed / cleared areas, there are no impacts to the priority flora.	*Frankenia georgei* P1: population located approximately 3.4 km northwest from the prescribed activities. *Stenanthemum patens* P1: individuals located approximately 3.8 km north of the prescribed activities.
Underlying groundwater (non-potable purposes). Historical groundwater levels were approximately 47 mbgl. Groundwater levels near TSF 4 are approximately 8 – 9 mbgl.	Current groundwater (June 2024) ranges from 12 – 43 mbgl as measured under the licence monitoring requirements.
Hydrology *Sullivan Creek and associated tributaries*	Sullivan Creek is located approximately 2. 5 km west of the prescribed activities. Minor tributary approximately 300 m south of the proposed prescribed

	activities. The creek flows towards Lake Raeside, a hypersaline Salt Lake located approximately 15 km south-west of the premises.
Public Drinking Water Source Area *Leonora Water Reserve*	Approximately 6 km southeast from the prescribed activities.
Cultural receptors	**Distance from prescribed activity**
There are 3 registered aboriginal and heritage sites and 18 lodged aboriginal and heritage sites within the King of the Hill tenements. The following five sites are located within 3 km of the prescribed activities.	
Wanangari Pool (ID: ACH-00022420 - Lodged)	Approximately 350 m south of the prescribed activities.
Leighter's Drilling Area (ID: ACH-00022413 – Lodged)	Approximately 2 km southwest from the prescribed activities. **Screened out due to distance from the prescribed activities.**
Dinosaur Hill (Quartz Hill) (ID: ACH-00022419 – Lodged)	Approximately 2.6 km south of the prescribed activities and outside the premises boundary. **Screened out due to distance from the prescribed activities.**
Lake Raeside / Sullivan Creek (ID: ACH-00001741 - Registered)	Approximately 1.8 km west of the prescribed activities.
Ngunnga Thunni Tjarra (ID: ACH-00038798 – Registered)	Approximately 2.5 km south of the

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 4.1. 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 4.1), 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 5.

The revised Licence L8345/2009/3 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

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

Table 5. Risk assessment of potential emissions and discharges from the Premises during construction and 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**				
Category 5 (TSF 5 embankment lifts)								
Construction								
Construction of TSF 5 embankment lifts to a maximum operating height of RL 445 m	Dust	**Pathway:** air / windborne pathway **Impact:** impact to human health and ecological health, as well as amenity	Tamoola pastoral station Native vegetation	Refer to Section 4.1	C = Minor L = Rare **Low Risk**	Y	No current construction conditions under the licence.	**Condition 22:** Inclusion of critical containment infrastructure and equipment for TSF 5 subsequent embankment lifts. Transferred from works approval W6426/2020/1. **Condition 23 & 24:** Critical containment infrastructure and equipment compliance reporting requirements. Transferred from works approval W6426/2020/1.
	Sediment laden stormwater	**Pathway:** overland runoff during rainfall events **Impact:** impact to ecological health	Native vegetation Surface water receptors: nearby minor water course (Sullivan Creek approximately 2.5 km west of the TSF)	Refer to Section 4.1	C = Slight L = Unlikely **Low Risk**	Y	No current construction conditions under the licence, however condition 1 has surface water management system with operational requirements imposed.	
	Hydrocarbon and other chemical reagent	**Pathway:** loss of containment, resulting in spills and leaks **Impact:** direct discharge to land, resulting in impacts to ecological health	Native vegetation Surface water receptors: nearby minor water course (Sullivan Creek approximately 2.5 km west of the TSF)	Refer to Section 4.1	C = Minor L = Rare **Low Risk**	Y	No conditions imposed.	The general provisions of the *Environmental Protection (Unauthorised Discharges) Regulations 2004* applies.

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								
Deposition of tailings into TSF 5 up to a maximum operating height of RL 445 m	Dust (dried tailings)	**Pathway:** air / windborne pathway **Impact:** impact to human health and ecological health, as well as amenity	Tamoola pastoral station Native vegetation	Refer to Section 4.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1: Operational requirements for TSF 5.	N/A
	Decant / return water	**Pathway:** pipeline rupture / failure with direct discharge to land **Impact:** contamination of soils and surface water	Native vegetation Surface water receptors: nearby minor water course (Sullivan Creek approximately 2.5 km west of the TSF)	Refer to Section 4.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1: Operational requirements related to pipelines. Condition 4: Visual inspection of pipeline integrity.	N/A
	Tailings supernatant	**Pathway:** leachate by seepage through TSF walls, horizontal migration and floor **Impact:** mounding of groundwater causing vegetation death	Soils Native vegetation including groundwater dependent vegetation Nearby minor water course (Sullivan Creek approximately 2.5 km west	Refer to Section 4.1	C = Moderate L = Possible **Medium Risk**	Y	Condition 1: TSF 5 operational requirements. Condition 5: Authorised discharged points for the deposition of tailings. Condition 10: Process monitoring for tailings deposition. Condition 12: Groundwater monitoring for TSF 5.	**Condition 14:** Inclusion to undertake monitoring of the water balance for TSF 5. Transferred from works approval W6426/2020/1.

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**				
		Pathway: leachate by seepage through TSF walls, horizontal migration and floor **Impact:** contamination of groundwater impacting soil, surface water courses, aboriginal heritage site, and groundwater dependent vegetation	of the TSF) Groundwater Nearby aboriginal heritage site	Refer to Section 4.1	C = Moderate L = Possible **Medium Risk**	Y	Condition 1: TSF5 operational requirements. Condition 5: Authorised discharged points for the deposition of tailings. Condition 10: Process monitoring for tailings deposition. Condition 12: Groundwater monitoring for TSF 5.	**Condition 14:** Inclusion to undertake monitoring of the water balance for TSF5. Transferred from works approval W6426/2020/1.
		Pathway: direct discharge to land from embankment failure **Impact:** contamination of soils and surface water	Native vegetation Surface water receptors: nearby minor water course (Sullivan Creek approximately 2.5 km west of the TSF)	Refer to Section 4.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1: TSF 5 operational requirements. Condition 5: Authorised discharged points for the deposition of tailings. Condition 10: Process monitoring for tailings deposition. Condition 12: Groundwater monitoring for TSF 5.	**Condition 14:** Inclusion to undertake monitoring of the water balance for TSF 5. Transferred from works approval W6426/2020/1.
		Pathway: overtopping of TSF **Impact:** contamination of soils, native vegetation,	Soils Native vegetation Nearby minor water course (Sullivan	Refer to Section 4.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1: TSF 5 operational requirements including maintain a minimum 0.5 m total freeboard. Condition 4: Visual inspection of	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
		aboriginal heritage site, and nearby surface water	Creek ~2.5 km west of the TSF) Nearby aboriginal heritage site				embankment freeboard and decant pond. Condition 5: Authorised discharged points for the deposition of tailings. Condition 10: Process monitoring for tailings deposition.	
		Pathway: direct ingestion by wildlife of tailings supernatant **Impact:** impacts to wildlife health	Transient wildlife, particularly birds and bats	Refer to Section 4.1	C = Major L = Unlikely **Medium Risk**	Y	Condition 1: TSF 5 operational requirements Condition 4: Visual inspection of the decant pond.	N/A
Category 89 (tyre landfill and concrete footings (inert waste) landfill								
Operation								
Disposal of earthmoving and light vehicle tyres, and concrete footings	Leachate	**Pathway:** leachate infiltrating through the soil **Impact:** contamination of soil and possible contamination of groundwater	Soils Groundwater	Refer to Section 4.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 6: Management of waste for category 89 landfill.	**Condition 1:** Inclusion of additional operational requirements for the tyre storage areas and tyre disposal in North WRL landfill.
	Fire / smoke from tyres	**Pathway:** air / windborne pathway **Impact:** impact to human health and wildlife health, as	Tamoola pastoral station Native fauna	Refer to Section 4.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 6: Management of waste for category 89 landfill.	

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				
		well as amenity						

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

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

5. Consultation

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

Table 6: Consultation

Consultation method	Comments received	Department response
DEMIRS advised of proposal 4 December 2024	DEMIRS replied on 10 January 2024 advising that they do not have any concerns about the proposed TSF 5 design where the upstream lifts changed from 5 m to 7.5 m embankment lifts.	The department has noted DEMIRS' comment.
Licence holder was provided with draft amendment on 20 January 2025	The licence holder's comments are provided in Appendix 1.	The department's response is provided in Appendix 1.

6. 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.

6.1 Summary of amendments

Table 7 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 7: Summary of licence amendments

Condition no.	Proposed amendments
Throughout licence	Minor grammatical changes have been made including consistent wordings, typographical and formatting errors.
Cover page	Change of registered business name as requested by the licence holder. Change of DWER file number.
Licence history	Removal of reference to works approval W6426/2020/1 and W6525/2021/1, as table is related to the history of the licence. Inclusion of this licence amendment.
1, Table 1	Amended wording to be consistent throughout the licence. Maximum operational height for TSF 4 is (Stage 7) RL 433.0 m. Maximum operational height of TSF 5 embankment RL 445.0 m. Inclusion of operational controls for tyre storage areas and tyre disposal in North WRL landfill.
5, Table 3	Updated figure reference for category 52 in the table.
6, Table 4	Inclusion of 'concrete footings' to the waste type column and inclusion of the 'North WRL Tyre Landfill' and 'WRL Industrial Landfill'.
12, Table 8	Amended the order and monitoring bore names.

Condition no.	Proposed amendments
	Included element / parameter symbols, trigger and limit level units. Included limit level of 0.5 mg/L for WAD CN to be consistent with monitoring for TSF4 under works approval W6891/2024/1. Furthermore, a limit of 0.5 mg/L for WAD CN is the standard limit for protection of groundwater quality and groundwater dependent ecosystems.
14	Inclusion of the monitoring of the water balance for TSF 4 and TSF 5, which has been transferred from works approval W6426/2020/1 for ongoing water balance monitoring during operations.
15 to 20	Condition number change, previously conditions 14 to 19, after the inclusion of water balance monitoring condition.
21, Table 10	Amended the wording of the condition to the standard condition for annual reporting. Inclusion of a summary of the following: • product produced; • tailings deposited; • tailings density (solid vs water content); and • volume of mine dewater discharge. Amended the condition reference and the wording of the reporting requirements.
21 and 22 (previous conditions)	Removed conditions as related to construction of additional monitoring bores and the report required. The monitoring bores have been constructed, report submitted to the department and deemed compliant and in operation.
22, Table 11	Inclusion of critical containment infrastructure and equipment, construction requirements. Transferred condition from works approval W6426/2020/1.
23	Inclusion of critical containment infrastructure and equipment, reporting requirements. Transferred condition from works approval W6426/2020/1.
24	Inclusion of critical containment infrastructure and equipment, reporting requirements. Transferred condition from works approval W6426/2020/1.
Definitions, Table 12	Inclusion of additional or missing definitions / abbreviations.
Figure 1	Updated figure.
Subheading	Amended subheading to state ‘Emission and discharge points’ and removed sentence ‘the location of emission points found in Table 3 is shown in the map below.’
Figure 5	Updated figure to include TSF 4 and TSF 5 discharge points and include WWTP and landfill locations from the previous Figure 7.
Figure 6	Updated figure to include an outline to indicate Tarmoola pit covers the North, Saddle or South Pits.
Figure 7 (previous)	To be removed and the authorised discharge points of the WWTP and landfill locations to be included within Figure 5.
Subheading	Amended subheading to state ‘Monitoring locations’ and removed sentence ‘the location of TSF4 monitoring points found in Table 8 is shown in the map below.’
Figure 7	Previously Figure 8. Updated Figure that combines Figures 8, 9, 10 to show TSF 4 and TSF 5 groundwater monitoring bore locations.

Condition no.	Proposed amendments
Figure 9 and 10	Removed to be merged with Figure 7 to combine TSF 4 and TSF 5 groundwater monitoring locations.
Figure 8	Previously Figure 11. Updated figure of the vibrating wire piezometers and standpipe piezometers.
Subheading	New subheading that states ‘TSF 5 construction drawings’.
Figure 9	New figure, general arrangement – TSF 4 Stage 10 and TSF 5 Stage 7.
Figure 10	New figure, sections – TSF 5 Stages 2 to 4.
Figure 11	New figure, sections – TSF 5 Stages 2 to 7.

References

1. CMW Geosciences 2024, *Tailings Storage Facility 4 & 5 (TSF4 & TSF5) Design Report – King of the Hill Gold Project – Leonora, Western Australia (PER2024-0292AB Rev 1)*, unpublished report for Greenstone Resources (WA) Pty Ltd.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
5. Greenstone Resources (WA) Pty Ltd (Greenstone Resources) 2024, *Greenstone Resources (WA) Pty Ltd – King of the Hills Mine L8345/2009/3 – Annual Environmental Report – September 2023 to August 2024*, unpublished report for Department of Water and Environmental Regulation.
6. National Water Quality Management Strategy (NWQMS) 1997, *Australian Guidelines for Sewerage Systems – Effluent Management,* Australia.

Appendix 1: Summary of licence holder's comments on risk assessment and draft conditions

Condition	Summary of licence holder's comment	Department's response
1, Table 1	TSF 4 – maximum operational height The licence holder requests that the maximum operational height is amended to Stage 7 – RL 433 m as per W6891.	The department has amended the maximum operating height to RL 433 m.
1, Table 1	Tyre storage area (DWER requested clarification) The licence holder has stated that "*tyre storage (no more than 99) will occur at workshops etc. across the prescribed premise. There is no change proposed from current practice as the number of tyres does not reach the threshold for the prescribed premise category 57.*"	The department has amended the infrastructure location for tyre storage areas as 'not depicted' based on the locations the licence holder has stated. The infrastructure has been amended to 'Tyre storage areas at workshops and stores'.
1, Table 1	Tyre disposal area(s) (DWER requested clarification) The licence holder has requested that the 'Landfill Area (Class II)' and 'Landfill General Area (Class II)' remain as designated tyre disposal areas (per Table 4).	The department has noted this.
12, Table 8	TSF 4 and TSF 5 emission monitoring. Preferred Option: The licence holder requests that the monitoring condition for decant water is removed as not a discharge to the environment. Acknowledging this condition has been applied to W6891 for the TSF4 decant pond during TLO, the Assessment Report did not conclude additional controls are warranted and the value of this monitoring is queried as decant water is reused at the mill (not discharged). In addition, the proposed limits cannot be achieved, Seepage risk is managed with underdrainage, water return to the mill and groundwater monitoring triggers. During the operation of the facilities no fauna fatalities attributed to TSF management have been recorded and this condition has not been applied to other Licences held by Vault Minerals subsidiaries. Alternate Option:	The department has determined the requirements for TSF 4 and TSF 5 decant monitoring can be removed on the basis of the licence holder's explanation provided.

Condition	Summary of licence holder's comment	Department's response
	If the above preferred option is not enacted, the licence holder requests that the trigger levels for TSF4 and 5 monitoring are removed. As per discussion with a Resource Industries Licensing Officer (pers comms 28/01/2025), the limits are not relevant for decant waters. Decant water WADCN will not be controlled below the proposed trigger limit due to processing requirements. The below ground SWL limits are unachievable in an aboveground facility. The licence holder comments that the TSF4 and TSF5 shall be operated alternatively, with decant sampling only achievable from the active facility via the decant return pipeline. As decant waters are from the same processing source there would be minimal variation in water quality parameters between the two locations. The licence holder requests the emission point reference is amended to "TSF4/TSF5 Decant Return Pipeline" (identified as blue line in Figure 3).	
12, Table 8	Monitoring Bores The licence holder requests confirmation if dissolved or total metals and metalloids are to be analysed.	Department has amended the subheading back to 'dissolved metals and metalloids'.
12, Table 8	Monitoring Bores It is identified that replacement of MB18 with MB17 is appropriate in the amendment report, however MB18 is still identified as an emission monitoring point in Table 8. The licence holder requests that the reference to MB18 is changed to MB17.	The department has removed MB18 and included MB17 to Table 8.
21, Table 10	Decant monitoring reporting If the preferred option is accepted, it is requested the requirement to monitor the decant is removed. If not, please remove limits.	As per the above explanation, the decant monitoring reporting requirements has been removed from Table 10.
Schedule 1, Figure 1	Update of figure (DWER requested clarification) An updated figure is provided showing premise boundary and site layout of main infrastructure.	Updated figure included in the licence.
Schedule 1, Figure 5	Update of figure (DWER requested clarification) An updated figure is provided. The Tarmoola pit includes the combined North, Saddle and South pits.	Updated figure included in the licence.
Schedule 1, Figure 6	Update of figure (DWER requested clarification) An updated figure is provided.	Updated figure included in the licence.

Condition	Summary of licence holder's comment	Department's response
Schedule 1, Figure 7	Update of figure (DWER requested clarification) An updated figure is provided, combining previous licence figures 8-10.	Updated figure included in the licence.