



## Application for Licence Amendment

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

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<b>Licence Number</b>	L8457/2010/2
<b>Licence Holder</b>	Silver Lake (Integra) Pty Limited
<b>ACN</b>	093 278 436
<b>File Number</b>	APP-0030969
<b>Premises</b>	Randalls Gold Processing Facility  Mount Monger Road EMU FLAT WA 6431  Legal description  Mining Tenements M25/71, M25/125, M25/133, M25/307, M25/347 General Purpose Lease L25/27, L25/29, L25/31, L25/33, L25/41 Miscellaneous Licence G25/02  As depicted in Schedule 1.
<b>Date of Report</b>	3 February 2026
<b>Decision</b>	Revised licence granted

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# 1. Decision summary

Licence L8457/2010/2 is held by Silver Lake (Integra) Pty Limited (licence holder) for the Salt Creek Processing Facility (the Premises), located at Mount Monger Road, Emu Flat, WA 6431.

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, Revised Licence L8457/2010/2 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 Premises overview

#### 2.2.1 Tailings storage facilities and tailings management

TSF1 was constructed in 2010 under works approval W6927/2024/1 by Integra Mining Pty Ltd, as an integrated waste landform tailings storage facility (IWLTSF). The IWLTSF was constructed to support mining and processing of ore from the adjacent Salt Creek open pit (Figure 1). At the time, TSF1 was designed to a maximum embankment height of RL 323.0 m with an upstream construction method. The facility's southern embankment is integrated with a waste rock dump. It is understood that TSF1 reached maximum tailings storage capacity in December 2014. Since then, the facility had not received tailings, with existing tailings being left to dry.

A diversion channel is located along TSF1 northern embankment to divert upstream surface water runoff. The channel slopes from east to west over 1,700 m. At the time of construction in 2010, limited seepage management infrastructure was installed at TSF1, as seepage modelling undertaken at the time indicated that tailings seepage would migrate predominantly south, towards the waste rock dump and the Salt Creek open pit. As such, a downstream external toe drain was not considered necessary at the time.

It is understood that the surface tailings have drained and consolidated such that construction vehicles can mobilise on parts of the tailings beach in order to harvest dried tailings. The tailings were used for the construction at the neighbouring TSF2. The borrow zones extend up to 3.0 m deep and 1.5 m deep along the southern and eastern extent of TSF1, respectively.

Following TSF1 reaching maximum storage capacity, the Salt Creek open pit was sterilised and used as an in-pit TSF. The Salt Creek in-pit TSF was commissioned in 2015, receiving tailings slurry from 2015 to 2021. While the in-pit TSF was designed to provide approximately eight years of tailings storage capacity (at a deposition rate of 1,200,000 tonnes per annum and average in situ dry density of 1.5 tonnes/m<sup>3</sup>), subsequent surveys found the remaining storage life to be shorter than expected, due to an increase in tailings deposition rate and lower dry densities observed.

In 2021, the department granted works approval W6316/2019/2 to authorise the construction of TSF2 to provide additional tailings storage capacity for three years. TSF2 was designed as an aboveground 'side-hill' facility (Figure 1), surrounding the Salt Creek in-pit TSF (with tailings overtopping into TSF2 upon reaching capacity at the in-pit TSF), with a maximum embankment height of RL 310.0 m (Stage 3). The northeastern embankment was integrated with the existing waste rock dump, while the south-eastern embankment abuts an existing hillslope.

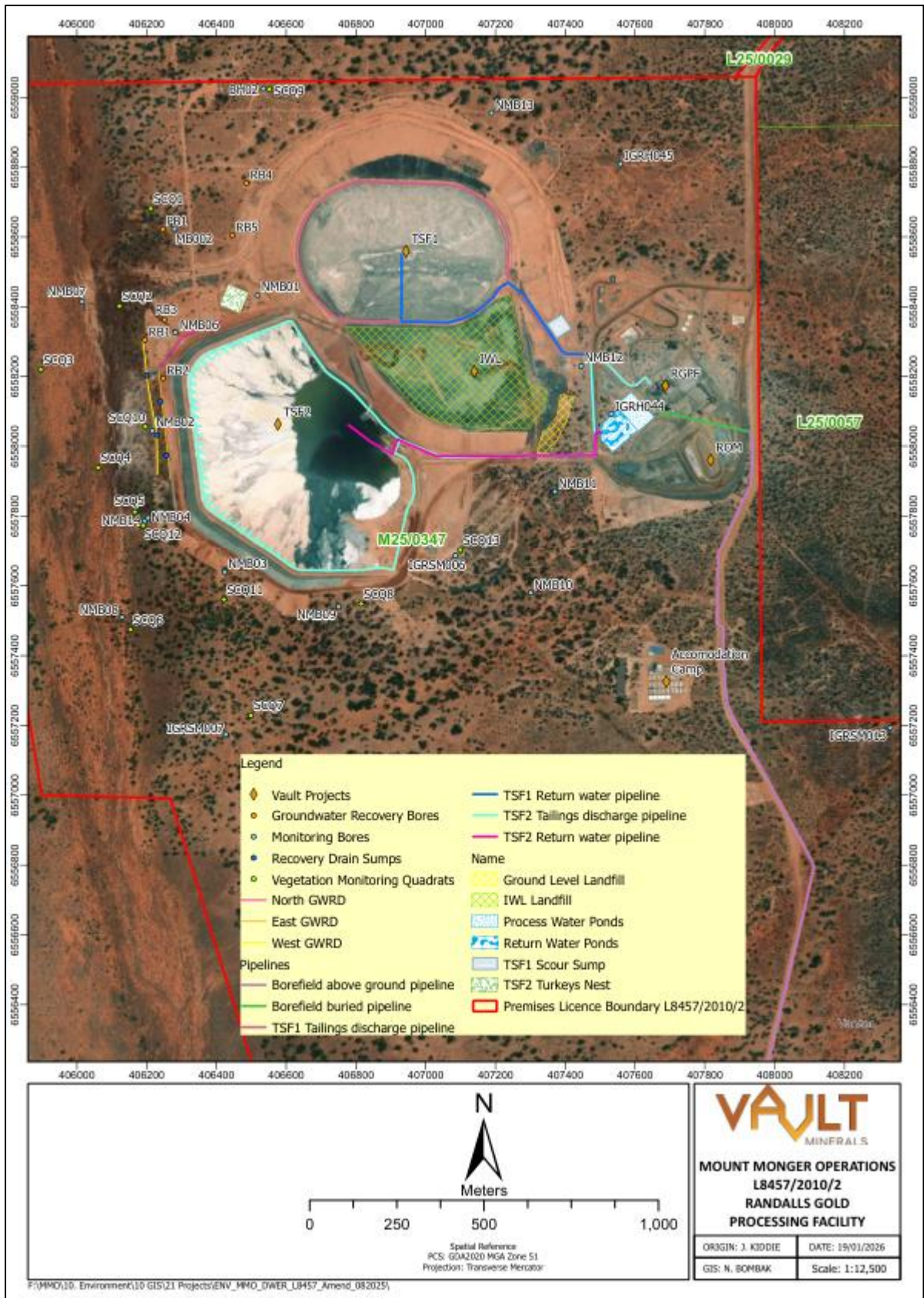


Figure 1: Site layout of TSF1 and TSF2

The TSF2 embankment raises were constructed using downstream construction method, utilising compacted tailings from TSF1 and suitable mine waste. A seepage cut-off trench was installed under the upstream starter embankment, and a downstream external toe drain was constructed at the starter embankment and during each embankment raise.

During operation of the Salt Creek in-pit TSF, the licence holder was authorised to discharge bore water from the Lucky Bay bore field into the active decant pond to ensure sufficient water levels at the pond before decant water is returned to the Randalls gold processing facility. Doing so allows minerals in the water to precipitate and settle, which minimises the occurrence of scaling damage within the processing circuit. The practice continued through to the operation of TSF2.

While this activity was authorised under existing licence L8457/2010/2, the department identified that the discharge of bore water into TSF2 may be contributing to severe groundwater mounding and surface expression of saline groundwater (refer to Section 2.2.2).

Monitoring bores have been installed and monitored around the TSF area of the premises. The purpose of the bores was to monitor and detect any changes in groundwater conditions as a result of tailings deposition occurring at the TSFs over time. The current network of monitoring bores were installed throughout different stages of operations, with the majority of monitoring bores located along the western perimeter of TSF1 and TSF2.

In 2024, the licence holder was granted works approval W6927/2024/1, to recommission the inactive TSF1 by constructing up to three embankment raises. Expansion of the active TSF2 was also authorised with up to three embankment raises. The works approval also required a number of actions be taken to improve water management around the TSFs, including upgrading existing groundwater recovery drainage systems, constructing additional water storage capabilities, and installing additional groundwater monitoring bores.

## 2.2.2 Groundwater mounding issues

Continued tailings deposition at the premises has resulted in water management issues since 2021. This has expressed itself primarily in significant volumes of seepage being emitted from TSF2, which has resulted in mounding of the local groundwater aquifer. It is also known that seepage issues were apparent during the operation of TSF1.

With shallowing groundwater over time, groundwater mounding around TSF2 has resulted in a number of environmental incidents in recent years. Surface expression of groundwater along the western embankment toe of TSF2 was reported in May 2023 following heavy rainfall, resulting in vegetation stress and death, salt crusting. Salt and sediment salinisation may have migrated downstream to the ephemeral Salt Creek. Another incident was reported in August 2023 following further series of rainfall events.

While inactive, surface expression was also observed at the base of the TSF1 embankment toe in March 2024. The cause of this expression was likely due to an un-grouted historical exploration borehole having become artesian due to recent rains.

These incidents have been comprehensively documented in previous decision documents (DWER 2023, DWER 2024). There have been no environmental incidents reported since March 2024.

## 2.2.3 Landfill activities

Historically, the licence holder operated a landfill at the premises, which accepted Class I inert waste. The landfill was constructed on an existing waste rock dump (WRD) under Mining Proposal Registration ID 55699 and operated in accordance with the *Environmental Protection (Rural Landfill) Regulations 2002*. Putrescible waste and used tyres were previously sent to offsite waste facilities for disposal.

In 2019, licence L8457/2010/2 was amended to authorise construction and of a putrescible

landfill within the existing Maxwell WRD to dispose of up to 1,000 tonnes of putrescible waste and used tyres from the Maxwell and Cock-eyed Bob mining operations annually. Up to 200 used tyres were estimated for disposal.

## 2.3 Application summary

On 2 September 2025, the licence holder applied to the department to amend Licence L8457/2010/2 under section 59 and 59B of the Environmental Protection Act 1986 (EP Act). The following amendments are being sought:

- Operation of tailings storage facility 1 (TSF1) stage 1 lift to a maximum height of RL 325.5 m;
- Operation of a two-cell return water facility;
- Reduction of standing water level limit at groundwater monitoring bore IGRSM007; and
- Construction and operation of the Santa Tyre Landfill and Randalls gold processing facility (RGPF) Landfill.

This amendment is limited only to changes to Category 5 and 64 activities from the Existing Licence. No changes to the aspects of the Existing Licence relating to Category 6 have been requested by the licence holder.

### 2.3.1 Operation of TSF1 stage 1 lift

Under works approval W6927/2024/1, the licence holder constructed TSF1 stage 1 to an embankment height of RL 325.5 (i.e., 2.5 metres lift). The environmental compliance report was submitted to the department on 8 August 2025, with the facility currently undergoing time limited operation authorised under the works approval. The licence holder has applied for authorisation under licence L8457/2010/2 to continue depositing tailings into TSF1 (stage 1).

The embankment raise was constructed using upstream construction method on the existing embankment crest, using roller compacted dried tailings from the existing tailings beach at TSF. The downstream embankment was capped with mine waste. Tailings delivery and discharge spigots were reinstated along the perimeter of TSF1. The storage volume of TSF1 stage 1 is 0.59 Mm<sup>3</sup> which equates to a storage life of 0.64 years.

As part of the recommissioning of TSF1, a new decant tower was constructed using slotted pre-cast concrete pipes and surrounded by a rock ring. The previous decant tower was located near the south-west embankment. However, the new tower has been constructed at the centre of the facility and connected to the southern embankment via an accessway. Decant pump and return water pipeline were reinstated to send return water back to the processing facility for reuse in the processing circuit.

TSF1 will receive tailings from the Randalls gold processing facility. The tailings slurry is produced using conventional carbon-in-pulp processes to recover gold from gold-bearing ore at the neighbouring processing facility. Ore types are a blend from the Mount Monger Operation underground mines and open pits at the premises.

Tailings will be discharged sub-aerially and cyclically via multi spigots into TSF1 in nominal 300 mm layers to gain optimum density subjecting each layer to a drying cycle. This allows deposited tailings to dry and consolidate, which improves the density and strength of the tailings. Depositional cycles will enable the tailings beach to re-form a 'depressed cone', channelling water away from the perimeter embankments to the decant tower, while maintaining freeboard requirements (i.e., sufficient to contain a storm event of 1:100-year Annual Exceedance Probability (AEP) for 72 hours, in addition to 500 mm of total freeboard).

During the early depositional period at TSF1, there will be a time lag before sufficient decant water accumulates to form a decant pond around the decant tower. Recovered groundwater

and bore water from the newly constructed RWF may be discharged to facilitate this process.

The licence holder intends to rotate tailings deposition between TSF1 and TSF2. This will provide more time for tailings consolidation to occur, as well as facilitate further embankment raises. There will be no change in the tailings deposition operations or tailings composition from historical operations.

As part of TSF1 recommissioning works, the licence holder had upgraded existing West Groundwater Recovery Drain (West GRD). The drain was constructed in July 2023 to manage groundwater expression at TSF2. The construction of the drain did not require approval under Part V Division 3 of the EP Act as it was time-critical and necessary for mitigating further environmental harm. Under works approval W6927/2024/1, the licence holder has improved the operational aspects of the West GRD by installing a concrete-lined sump, re-grading the base of the drain and backfilled it with coarse material. The works were completed in 2025, with the Environmental Compliance Report submitted to the department on 9 July 2025. The licence holder intends to continue operating the West GRD, along with the other existing groundwater recovery drains, to manage groundwater levels around the western perimeter of TSF2. Water collected within the drain sumps will be pumped to the RWF for storage.

Additionally, seven paired (and one single) groundwater monitoring bores were installed around the perimeter of TSF1 and TSF2 to improve monitoring resolution and delineation of potential groundwater mounding that will occur as a result of recommissioning of TSF1. Of particular relevance to TSF1 is the paired bores NMB13S and NMB13D, which are located to the north of TSF1 where there are no existing monitoring bores, as well as paired monitoring bores NMB12S and NMB12D, which are located along the south-eastern toe of the IWL connected to TSF1.

### 2.3.2 Operation of two-cell return water facility

Due to the significant groundwater mounding observed at the premises in recent years, the department required the licence holder to design and implement a Water Reduction Action Plan (WRAP) (SLR, 2024). The WRAP committed to construction of a RWF (Figure 1), allowing bore water from Lucky Bay borefield, as well as water recovered from existing groundwater recovery bores and drains at TSF2, to be stored for reuse, rather than discharged into TSF2 (and TSF1). Decant water from the TSFs will also be stored at the RWF. The facility will allow minerals to precipitate from the groundwater, minimising scaling issues when the water is pumped to the Randalls gold processing facility for use. Following successful establishment of the decant pond around the decant tower at TSF1, all bore and recovered water will be sent to the RWF, and discharge to the TSFs will cease.

The RWF comprises two cells, with a total storage capacity of approximately 13,100 m<sup>3</sup>. At an estimated water discharge rate of 3,560 m<sup>3</sup>/day, the facility has sufficient capacity to store about 3.5 days' worth of water without being pumped.

The design of the facility is based on meeting operational freeboard requirements of 300 mm. In the event of significant rainfall, the RWF is equipped with an emergency spillway to prevent overtopping, where any spillage would be diverted away from access roads and the embankment toe. The flow capacity of the spillway provides sufficient capacity to contain a 1-in-100 year 72-hour storm event. A piping arrangement has been installed within the dividing embankment to manage water levels between the two cells. below the spillway elevation.

The embankment, walls and base of the ponds are lined with 2.0 mm of high-density polyethylene (HDPE) over a geosynthetic clay liner (GCL) subgrade.

### 2.3.3 Modification to standing water level limit at IGRSM007

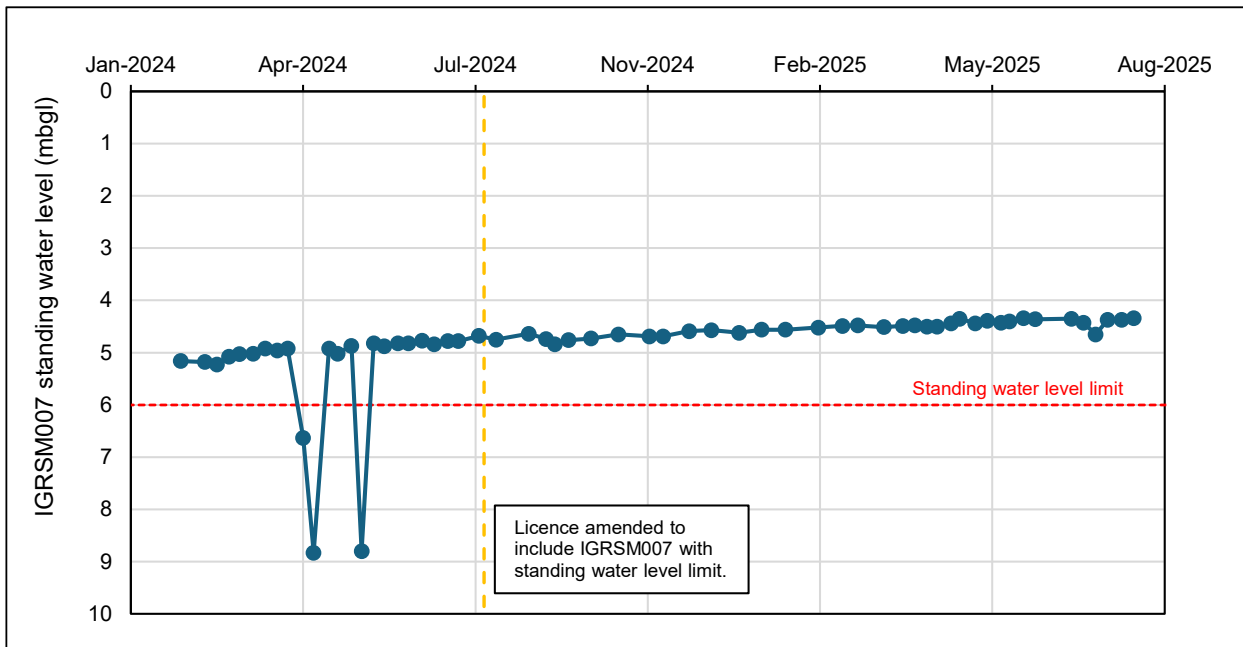
Existing groundwater monitoring bore IGRSM007 was previously identified south of TSF2 during a field visit (Figure 1). While bore construction details and screened aquifer is not known, hydrogeological advice indicated that IGRSM007 could be utilised as a regional southern monitoring location (Rockwater 2025). Consequently, the monitoring bore has been included in

the groundwater monitoring program specified in existing licence L8457/2010/2 (under a previous amendment). A standing water level limit of 6.0 mbgl was applied to this monitoring location, consistent with other regional ambient groundwater monitoring locations.

Recently, in completing the monitoring program required under the licence, the licence holder identified that the standing water level within monitoring bore IGRSM007 was shallower than the specified limit. The first monitoring event completed at IGRSM007 following the granting of the previous licence amendment was 5.16 mbgl.

As such, the licence holder requested that the standing water level limit for IGRSM007 be reduced from 6.0 mbgl to 4.0 mbgl, in line with other monitoring locations nearer to TSF1 and TSF2. It is argued that the neighbouring vegetation monitoring quadrat SC07 has not identified any significant impact to vegetation condition as a result of shallowing groundwater level.

The licence holder indicated that shallowing of groundwater may be observed at IGRSM007, as shown in monitoring results at the time of this assessment (Figure 2). However, groundwater level may stabilise or even deepen, following transition of tailings deposition to TSF1, as well as the implementation of further groundwater management strategies (e.g., groundwater recovery bores, etc.).



**Figure 2: Standing water level at monitoring bore IGRSM007**

### 2.3.4 Construction and operation of new landfills

In addition to the putrescible landfill at the Maxwell WRD, the licence holder has proposed to construct and operate two additional landfills at the premises. No increase to the assessed production capacity for Category 64 has been proposed, with proposed landfilling capacities not exceeding 1,000 tonnes per annum in total.

#### Randalls gold processing facility landfill

The Randalls gold processing facility (RGPF) landfill has been proposed to be constructed on and adjacent to the Salt Creek integrated waste landform (IWL), adjacent to TSF1 (Figure 1). Groundwater levels around the Salt Creek IWL are at least 13 mbgl.

In addition to the IWL, the landfill area will also include a cleared area south-east of the IWL, currently used for storage. The landfilling capacity of the cleared area adjacent to the IWL is estimated to be 900 tonnes in total, with no more than 300 tonnes landfilling per annum. At

closure, this area will be covered by the toe of the IWL batter.

The landfill will accept Class II waste types, including:

- Inert plastics/metals (up to 200 tonnes);
- rubber mill liners, conveyers (up to 200 tonnes);
- pallets/cable drums and cardboard boxes (up to 100 tonnes);
- bioremediated soil to meet the contaminant limits as per Class II acceptance criteria (up to 100 tonnes); and
- clean fill.

The licence holder has indicated that no food waste will be disposed of at the RGPF landfill, reducing the risk of odour and scavenging. The estimated total throughput to the RGPF landfill is approximately 600 tonnes per annum.

The landfill will be contained by a windrow at least one metre high. Landfill cells will be constructed to approximately 20 m long, 5 m wide, and 5 deep. To minimise potential stability issues associated with the IWL, landfill cells will have a separation distance of at least 20 m from the embankment crest and five metres internally from the batter profile at closure.

### **Santa Tyre landfill**

The second landfill proposed is the Santa Tyre landfill, located within the Santa WRD approximately 19 km north-east of the Randalls gold processing facility. Pre-mining groundwater level at the Santa Pit is estimated to be greater than 50 mbgl. The landfill has been proposed for the disposal of approximately 200 used tyres annually (i.e., approximately 100 tonnes). Storage of used tyres awaiting disposal will be under 100 at all times.

Used tyres will be stored and buried in batches in the following manner:

- stored on cleared areas segregated from other waste, in batches of less than 100, with no more than 10 per stack;
- buried not within 5 m of the top or outer surface of the final WRD landform;
- cell elevation will be at least 5 m above ground level;
- buried with no contact between batches;
- covered with waste rock within 48 hours of burial; and
- landfill cells will be located at least five metres internally from the batter profile at closure.

In the event of a fire, all firewater will be directed towards the Santa open pit or bunded against toe of the Santa WRD.

## **2.4 Groundwater management**

Since 2021, the licence holder has been implementing groundwater management strategies to manage groundwater mounding at the premises, as result of the continued operation of TSF2.

A Groundwater Management Plan (GMP) was developed in October 2021, and revised twice to date, in August 2023 and March 2024. A requirement of works approval W6927/2024/1 was to undertake an audit of the current GMP and its recommendations in anticipation for the recommissioning of TSF1. The audit is summarised in Table 1 (Vault Minerals 2025).

### **Table 1: Audit of Groundwater Management Plan**

Item	Recommendation	Status (May 2025)
1	Undertake further hydrogeological investigation, as recommended by existing hydrogeological studies completed to date, which recommended additional paired groundwater monitoring bores be installed around the TSF area.	<p>A hydrogeological review was completed in March 2025 (Rockwater 2025). The review included:</p> <ul style="list-style-type: none"> <li>• Details on installation and baseline monitoring of seven paired monitoring bores and one single monitoring bore.</li> <li>• Analysis of most recent groundwater monitoring data, as detailed in Section 2.5.</li> </ul> <p>Recommendations from the review included:</p> <ul style="list-style-type: none"> <li>• Continued monitoring of the newly installed monitoring bores to detect seepage impacts along Salt Creek to the west and the wider regional environment.</li> <li>• Installation of additional groundwater recovery bores along the west and southern toe of TSF2 and pre-emptively in the vicinity of TSF1 to recover groundwater from deeper strata. Up to 10 recovery bore locations were proposed.</li> </ul>
2	Develop additional groundwater recovery bores north of TSF2, to reduce reliance on sole groundwater recovery bore in the area, PB1.	<p>The Rockwater (2025) hydrogeological review recommended the installation of four production bores to the north of TSF2 (e.g., PRB01, PRB02, PRB07, and PRB08), with one production bore near NMB01 (e.g., PRB01).</p>
3	Develop a groundwater recovery bore near existing monitoring bore NMB01, due to historical surface expression within the nearby non-operational turkeys nest.	<p>A 26D licence to construct a well has been approved under the <i>Rights in Water and Irrigation Act 1914</i>, with drilling works set to commence at the beginning of 2026.</p>
4	Continue operating and monitoring efficiency of newly constructed (at the time) East Groundwater Recovery Drain.	<p>The East Groundwater Recovery Drain has been operating continuously, recovering an average daily yield of 900 kL to 1,000 kL, though this is also affected by rainfall and periodic maintenance activities.</p>
5	Inspect and manage instances where exploration bores become artesian, to minimise risk of the incident at TSF1 from reoccurring.	<p>Historical exploration bores where groundwater expression has been observed have been equipped with recovery pumps, where feasible (e.g., RB1 and RB3). Other exploration bores are being investigated (e.g., PB5).</p> <p>Pump yields are continuously being monitored and reviewed to identify further opportunities to improve groundwater recovery.</p>
6	<p>Improve seepage collection, through:</p> <ol style="list-style-type: none"> <li>Improving pumping practices and consistency.</li> <li>Monitoring efficiency of newly constructed East Groundwater Recovery Drain (same as Item 3).</li> <li>Extending East Groundwater Recovery Drain southwards to NMB03, if feasible.</li> <li>Investigating potential for additional deep groundwater recovery bores, in addition to PB1.</li> </ol>	<p>Improved seepage collection practices are being implemented through operations, including:</p> <ul style="list-style-type: none"> <li>• Continuous pumping of key groundwater recovery bores and drains identified as integral to controlling water table levels (e.g., East Groundwater Recovery Drain, PB1, RB3), particularly after rainfall events.</li> <li>• Exposure to hypersaline groundwater has caused mechanical issues with pumps, with many breakdowns and pump failures having occurred. A review of pump sizes and manufacturers has been conducted to identify more durable products and optimise pumping capacity. Consequently, pump and generator specifications have been standardised (as far as practicable), with more spares being held in storage to allow for prompt replacement. This would ensure better continuity in pump operations.</li> <li>• Temporary piping configuration has been reviewed to reduce head pressure and extend the life of the bore</li> </ul>

Item	Recommendation	Status (May 2025)
		<p>pumps.</p> <ul style="list-style-type: none"> <li>• Additional resource has been engaged to assist with pump and piping management.</li> <li>• Upgrades have been made to the existing West Groundwater Recovery Drain under works approval W6927/2024/1, including releveling the drain base for proper drainage and construction of permanent sumps.</li> </ul> <p>The next stage of improvement will involve diverting recovered groundwater to the newly constructed return water facility through a permanent ring main, as well as the installation of additional groundwater recovery bores.</p>
7	<p>Implement Water Reduction Action Plan, with the three proposed actions:</p> <ol style="list-style-type: none"> <li>Maintain TSF1 and TSF2 decant ponds as small as practicable, and close to the decant tower.</li> <li>Design a lined return water pond at the Randalls gold processing facility to store Lucky Bay bore water in lieu of direct deposition into TSF2.</li> <li>Direct recovered groundwater to the lined return water ponds through centralised pipe network in lieu of discharging back to the TSF2 decant pond.</li> </ol>	<p>The following actions have been taken to date in relation to the three proposed actions specified in the Water Reduction Action Plan:</p> <ol style="list-style-type: none"> <li>The TSF2 decant pond has been maintained as small as possible and close to the decant pump location, other than during periods where the Randalls gold processing facility is undergoing temporary maintenance shutdown and decant water could not be sent for reuse.</li> <li>The return water ponds have been constructed under works approval W6927/2024/1. Through this amendment, the ponds will be authorised to operate and accept bore water.</li> <li>Recovered groundwater will be sent to the return water ponds once the necessary pipework and instrumentations have been installed.</li> </ol>

Going forward, the continued operation of TSF1 will be underpinned by the following works and improvements:

- Operation of the newly constructed return water facility, allowing bore water and recovered groundwater to be diverted away from the TSF decant ponds.
- Continued operation of existing key groundwater recovery bores, as well as the installation and monitoring of additional recovery bores around TSF1 and TSF2.
- Continuous monitoring of ambient groundwater level and quality at existing and newly installed monitoring bores to better understand groundwater mounding behaviour over time.
- Seeking improvements to pump and water management equipment to maximise groundwater yield and pump life/continuity and investigating potential conversion of any artesian exploration boreholes into makeshift recovery bores.

## 2.5 Environmental monitoring

### 2.5.1 Groundwater level

In granting works approval W6927/2024/1, the department had conditioned a specified action for the commissioning of a hydrogeological review (Rockwater 2025). The review was completed in 2025, with the intention of informing the risk assessment for this licence amendment.

The hydrogeological review, which assessed groundwater monitoring data up until December 2024, indicated the following:

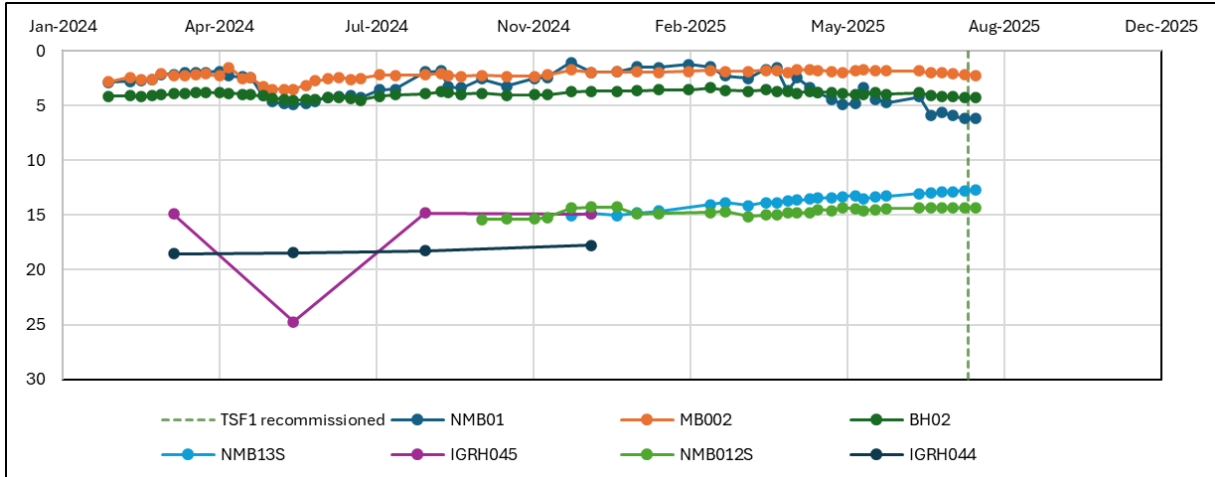
- During the operation of TSF1 in the 2010s, groundwater level within monitoring bores BH02, IGRH044, and IGRH045 rose rapidly until cessation of tailings deposition. This was attributed to a combination of tailings seepage and pressure displacement from the facility. Between 2014 until early 2020, groundwater levels gradually decreased, showing dispersal of the groundwater mound. However, tailings deposition into TSF2 from 2020 onwards had seen groundwater levels gradually rise again, with the most significant rise observed at monitoring bore BH02.
- While monitoring bore MB002 had fluctuated the least overall, it is located further east and likely topographically lower than the other monitoring bores, resulting in the shallowest groundwater levels. Groundwater mounding since 2020 has appeared more severe than during the TSF1 operations in the 2010s.
- A groundwater mound has formed beneath both TSF1 and TSF2, which extends to the west towards Salt Creek. Current groundwater recovery efforts to the west may be limiting migration further westwards. The groundwater mound may be bounded to the east of the TSFs by shallow bedrock. Migration of the groundwater mound to the south-east may occur in the future. The low permeability of deeper strata may be limiting vertical movement of the mound, especially to the west, where the mounding is closest to daylighting.
- Based on recent monitoring, groundwater levels at monitoring bores MB002, NMB01, and NMB06 were shown to respond to seepage from the TSF, as well as groundwater recovery efforts. Groundwater recovery at historical bore PB1, as well as the groundwater recovery drains, have slowed the rate of rise in groundwater levels at these monitoring bores. Monitoring bores BH02 and MB002 were also shown to respond to rainfall events.
- Based on salinity and weak acid dissociable (WAD) cyanide concentrations, seepage from TSF2 is migrating to the north-west and south-east, where concentrations of these parameters were highest. Again, vertical dispersion of these contaminants may be limited by low permeability clays acting potentially acting as an aquitard.
- Decline in vegetation health observed west of TSF1 correlated with shallow water table, low salinity, and low pH conditions observed at monitoring bores MB002, NMB01, and NMB06. Similar but less saline groundwater conditions along the south-west perimeter of TSF2 did not exhibit similar level of vegetation impacts.

Assessment of monitoring bores around TSF1 indicated the most significant locations of concern for groundwater mounding remained along the west and north-west of TSF1 (Figure 3). This was characterised by monitoring bores NMB01, MB002, and BH002. At the time TSF1 commenced time limited operation (under works approval W6927/2024/1), a declining trend had begun at these monitoring bores, perhaps due to intense groundwater recovery effort in this area.

Groundwater levels were relatively deeper to the north and east of TSF1, characterised by existing monitoring bores IGRH044 and IGRH045, as well as newly installed monitoring bores NMB12 and NMB13. A gradual shallowing trend has been observed at the newly installed monitoring bores, likely influenced by the existing groundwater mound at the adjacent TSF2. Overall, monitoring bore IGRH044 contained the deepest groundwater level. Based on the Rockwater (2025) review, this monitoring bore exists on the other side of the shallow bedrock boundary, resulting in reduced impact from the groundwater mounding in the TSF area.

Historical monitoring has shown that groundwater levels were significantly impacted by tailings deposition into TSF1. While the groundwater mound was shown to dissipate over time following cessation of tailings deposition, it is likely that the current proposed operation of TSF1 will result

in the formation of another groundwater mound and likely interact with the existing groundwater mound from TSF2. Compared to the historical operation of TSF1, the licence holder has implemented a number of groundwater recovery and water management measures at TSF2 that will also benefit TSF1 (refer to Section 2.4). The licence holder will implement further groundwater recovery measures, including installation of groundwater recovery bores. Further groundwater monitoring throughout the operation of TSF1 will be required to better understand groundwater behaviour and identify any potential impacts.



**Figure 3: Groundwater level at TSF1 monitoring bores**

### 2.5.2 Groundwater quality

Rockwater (2025) characterised the typical groundwater environment as hypersaline (total dissolved solids of 110,000 mg/L), dominated by chloride (61,000 mg/L) and sulfate (5,300 mg/L) ions, with significant levels of alkalinity (130 mg/L as CaCO<sub>3</sub>), weak acid dissociable (WAD) cyanide (0.035 mg/L), manganese and cobalt.

Historically, operation of TSF1 had resulted in concentrations of total cyanide reaching 0.5 mg/L or higher at monitoring bores BH02, IGRH044, and BH05 (now decommissioned). Concentrations of total cyanide decreased to below detectable levels following cessation of tailings deposition. Similarly, the commissioning of TSF2 resulted in observable increase in TDS, sulfate, and barium at nearby monitoring bores MB002 and IGRSM006. These shifts in groundwater quality are likely linked to seepage migration from the operational TSF.

Based on the groundwater monitoring event in December 2024, the following observations were made at monitoring bores surrounding TSF1 (i.e., NMB01, MB002, BH02, NMB13S, IGRH045, NMB12S, IGRH044):

- Groundwater was generally slightly acidic, except to the north (NMB13S) where it was slightly alkaline. The only exception was monitoring bore MB002, which was acidic at 3.8 pH unit.
- TDS ranged between 27,000 mg/L (NMB12S) and 150,000 mg/L (NMB01, MB002). Higher salinity was observed to the west of TSF1, with lower salinity at monitoring bores to the north and east, except at IGRH044 to the east. TDS is strongly correlated with and dominated by concentrations of sodium and chloride ions, followed by sulfate ions.
- Alkalinity was relatively higher than acidity at most monitoring locations, except at monitoring bore MB002, where acidity was significantly higher (490 mg/L) and alkalinity was lower (<5 mg/L).
- Total nitrogen was present throughout all monitoring bores, with concentrations of 2.9 mg/L or less. However, relatively high concentrations were detected at monitoring bores MB002 (15 mg/L) and IGRH044 (47 mg/L).

- Dissolved metal and metalloids were detected in most of all groundwater monitoring bores, including barium, cobalt, manganese, nickel, and zinc. Arsenic, chromium, molybdenum, selenium, and mercury were not detectable at all monitoring bore locations.
- Lead was only detected at monitoring bore MB002, potentially mobilised in the acidic groundwater environment.
- Cadmium and copper were detected only at monitoring bore IGRH044. Detectable concentrations of these metals, as well as WAD cyanide and total nitrogen, may suggest contamination from the Randalls gold processing facility. This is further supported by the shallow bedrock that acts as a physical barrier between this monitoring bore and the groundwater mounding from the TSF area, where groundwater level at this bore is lower than other nearby monitoring bores.

Significant differences in groundwater chemistry (e.g., pH, acidity, WAD cyanide, total nitrogen, lead) at monitoring bore MB002 may warrant further investigation and groundwater recovery. Groundwater recovery bore PB01 is located adjacent to monitoring bore MB002. While historical production bores RB4 and RB5 are located hydraulically upgradient, between monitoring bore MB001 and TSF1, continued operation of these bores for groundwater recovery was not feasible in the long-term due to low yields.

The licence holder will install additional groundwater recovery bores, where at least four will be located to the west, north, and north-west of TSF1 to intercept groundwater mound from the facility.

### 2.5.3 Vegetation condition

As TSF1 was previously inactive, vegetation monitoring around the facility was limited due to the lower risk of impacts. Nevertheless, vegetation quadrats SCQ1 and SCQ9 provide an indication of current vegetation conditions around TSF1, as they correspond with monitoring bores MB002 and BH02 (Figure 1).

Since 2023, vegetation condition at SCQ1 has been classified as ‘Excellent’ and ‘Very Good’, while at SCQ9, vegetation condition has been classified as ‘Good’ and ‘Poor’ (Table 2). A more detailed survey in January 2025 around the SCQ1 quadrat revealed a varying degree of vegetation conditions, though overall still better than vegetation further south that was impacted by seepage from TSF2 (Figure 4). This is a noteworthy observation, as groundwater levels at MB002 is shallower than at BH02, yet the vegetation conditions at BH02 (SCQ9) are poorer than those at MB002 (SCQ1). This suggests other factors besides groundwater mounding are currently driving differences in vegetation condition.

**Table 2: Vegetation condition rating around TSF1**

Monitoring location	2023			2024			2025		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
SCQ1	5	4	5	5	5	5	4	5	4
SCQ9	N/A	2	2	2	3	2	2	2	3



Figure 4: Vegetation condition heat mapping from January 2025

### 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 2020b).

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 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**

Emission	Sources	Potential pathways	Proposed controls
<b>Construction</b>			
Dust	Construction of landfill cells on Santa waste rock dump and integrated waste landform	Air/windborne pathway	<ul style="list-style-type: none"> <li>Water carts will be utilised for dust suppression during construction activities, with dribble bars used to avoid over-spraying.</li> </ul>
<b>Operation</b>			
Dust	Deposition of tailings at TSF1 stage 1 embankment (RL325.5)	Air/windborne pathway	<ul style="list-style-type: none"> <li>Tailings delivery spigot points will be rotated around the TSF perimeter embankment to maintain damp tailings beach conditions. Spigot rotation may be adjusted to have shorter drying cycles in order to maintain damp beach conditions and minimise dust liftoff, though care will be given to maintain the intent of the deposition plan.</li> </ul>
Sediment laden stormwater		Overland runoff during rainfall event	<ul style="list-style-type: none"> <li>Downstream embankments have been capped with at least 500 mm of compacted mine waste.</li> <li>Embankment crest has been constructed to have 2% crossfall towards the upstream side of the TSF, with intermittent gaps to allow surface drainage into the tailings beach.</li> </ul>
Tailings supernatant		Vertical infiltration and lateral migration through base and embankment wall	<ul style="list-style-type: none"> <li>Tailings deposition strategy will involve discharging tailings slurry subaerially and spirally around the full perimeter of the TSF embankments to form and maintain desired tailings beach and decant pond.</li> <li>Decant pond will be maintained as small as practicable, around the decant tower.</li> <li>Separation distance of at least 120 m between decant pond boundary and respective perimeter embankments will be maintained, following initial formation of tailings beach and decant pond.</li> <li>Decant tower pumping will be maintained to maximise decant water recovery from the decant pond.</li> <li>Floating pontoon mounted pump will be kept on standby in case decant tower is rendered inoperable (e.g., blockage, maintenance, etc).</li> <li>Decant pond and TSF embankments will be inspected at least daily for evidence of seepage, as well as embankment cracking or erosion.</li> <li>Existing groundwater recovery drains and groundwater recovery bores will continue to be operated to maximise groundwater capture and recovery. Where possible, this</li> </ul>

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Emission	Sources	Potential pathways	Proposed controls
			<p>infrastructure will be operated continuously, as needed (other than during maintenance activities). Continuous improvements will be made to the existing configuration to maximise operational efficiency and recovery yields. Additional groundwater recovery bores are planned to be installed.</p> <ul style="list-style-type: none"> <li>Two additional return water ponds have been constructed next to existing process water ponds to store bore water from the Lucky Bay borefield, recovered groundwater and process water, mitigating any further need to discharge these waters into TSFs.</li> <li>Additional shallow and deep groundwater monitoring bores have been installed to the west, north, and south-east of TSF1, to improve monitoring resolution around the TSF1 perimeter.</li> <li>Exploration bores that become artesian and are discharging groundwater will be inspected and managed, such that the discharge does not impact on sensitive receptors.</li> </ul> <p>Existing licence L8457/2010/2 includes the following requirements:</p> <ul style="list-style-type: none"> <li><b>Condition 1</b> – Requirement for groundwater recovery bores PB1, RB1, and RB3 to be operated.</li> <li><b>Condition 3</b> – Requirement for TSF1 to achieve a permeability of at least <math>&lt;10^{-6}</math> m/s.</li> <li><b>Condition 15</b> – Requirement for ambient groundwater monitoring, with specified limit on standing water level and WAD cyanide.</li> <li><b>Condition 17</b> – Requirement for vegetation condition monitoring.</li> </ul>
Tailings slurry		Overtopping of TSF1	<ul style="list-style-type: none"> <li>TSF1 has been designed to temporarily store rainfall from a 1:100-year annual exceedance probability (AEP) 72-hour storm event, in addition to maintaining a minimum operational freeboard of 300 mm and beach freeboard of 200 mm.</li> <li>TSF1 have also been designed to temporarily store rainfall from a 4-hour probable maximum precipitation event of 610 mm at full storage capacity (i.e., immediately prior to an embankment raise).</li> <li>During operation, a total freeboard of 500 mm will be maintained, in addition to sufficient capacity to contain a 1:100-year AEP storm event for at least 72 hours.</li> <li>Decant pond will be inspected at least daily to ensure required freeboard is available.</li> <li>Decant tower pumping will be maintained to maximise decant water recovery from the decant pond.</li> <li>Floating pontoon mounted pump will be kept on standby in case decant tower is rendered inoperable (e.g., blockage, maintenance, etc).</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> <li>Two additional return water ponds have been constructed next to existing process water ponds to store bore water from the Lucky Bay borefield, recovered groundwater and process water, mitigating any further need to discharge these waters into TSFs.</li> </ul> <p>Existing licence L8457/2010/2 includes the following:</p> <ul style="list-style-type: none"> <li><b>Condition 5</b> – Requirement for a minimum 300 mm freeboard or a 1-in-100 year storm event for 72 hours (whichever is greater) to be maintained.</li> <li><b>Condition 6</b> – Requirement for visual inspection of TSF1 freeboard daily.</li> </ul>
	Transport of tailings slurry / return water via pipelines	Pipeline rupture or failure	<ul style="list-style-type: none"> <li>All tailings delivery and decant/return water pipelines have been bunded and equipped with pressure sensors/telemetry or cut-off valves.</li> <li>Pipelines installed have been designed to withstand high ambient temperature and loss in pipe strength.</li> <li>Tailings delivery pipeline has been installed within bunded corridor with associated scour sump at sag points along the corridor.</li> <li>Pipelines will use automated leak detection system, where flow rates and pressure losses can be monitored from a control room.</li> <li>All tailings delivery and decant/return water pipelines will be inspected at least every 12 hours (i.e., once per shift).</li> <li>Pipelines will be replaced periodically as part of preventative maintenance.</li> </ul> <p>Existing licence L8457/2010/2 includes the following:</p> <ul style="list-style-type: none"> <li><b>Condition 2</b> – Requirement for tailings and return water pipeline to be equipped with either telemetry system and pressure sensors, automatic cut-outs, or provided with sufficient secondary containment to contain spills.</li> <li><b>Condition 6</b> – Requirement for visual inspection of tailings and return water pipelines every 12 hours.</li> </ul>
Decant / return water	Storage of decant / return / process water at return water ponds	Pipeline rupture or failure	<ul style="list-style-type: none"> <li>All tailings delivery and decant/return water pipelines have been bunded and equipped with pressure sensors/telemetry or cut-off valves.</li> <li>Pipelines installed have been designed to withstand high ambient temperature and loss in pipe strength.</li> <li>Tailings delivery pipeline has been installed within bunded corridor with associated scour sump at sag points along the corridor.</li> <li>Pipelines will use automated leak detection system, where flow rates and pressure losses can be monitored from a control room.</li> <li>All tailings delivery and decant/return water pipelines will be inspected at least every 12 hours (i.e., once per shift).</li> <li>Pipelines will be replaced periodically as part of preventative maintenance.</li> </ul> <p>Existing licence L8457/2010/2 includes the following:</p> <ul style="list-style-type: none"> <li><b>Condition 2</b> – Requirement for tailings and return water pipeline to be equipped with either telemetry system and pressure sensors, automatic cut-outs, or provided with sufficient secondary containment to contain spills.</li> <li><b>Condition 6</b> – Requirement for visual inspection of tailings and return water pipelines every 12 hours.</li> </ul>
		Vertical infiltration and lateral migration through base and embankment wall	<ul style="list-style-type: none"> <li>Return water ponds were lined with 2.0 mm of HDPE over a geosynthetic clay liner (GCL) subgrade.</li> </ul>
		Overtopping of return water ponds	<ul style="list-style-type: none"> <li>An emergency spillway lined with rip-rap rock layer has been constructed to prevent overtopping, with the return water ponds being connected by piping arrangement to better manage storage capacities.</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> <li>• Diversion channels have been constructed to the south and west of the return water ponds, along access roads, to divert water from the spillway away from the downstream pond embankment.</li> <li>• Return water ponds have been equipped with high water level alarms.</li> <li>• Return water ponds will be inspected regularly to ensure pond water levels are below the design water level.</li> </ul>
Windblown waste	Landfilling of Class II waste types at Randalls gold processing facility (RGPF) landfilling area	Air/windborne pathway	<ul style="list-style-type: none"> <li>• No putrescible and/or food waste will be disposed at landfill, reducing the risk of odour emissions and scavenging by fauna and pests.</li> <li>• Landfill cells will be constructed specific dimensions and nominal depth of 5 m, with at least one-metre-high windrows to minimise risk of windblown waste exiting the landfill cell.</li> <li>• Landfill cells will be covered with clean fill fortnightly.</li> </ul> <p>Existing licence L8457/2010/2 includes the following requirements:</p> <ul style="list-style-type: none"> <li>• <b>Condition 8</b> – Requirement for putrescible waste to be limited to 500 tonnes per annum and be covered at least weekly with clean fill or inert waste type 1.</li> </ul>
Landfill leachate		Vertical infiltration and lateral migration through base of landfill cell	<ul style="list-style-type: none"> <li>• Landfill cells will be constructed within the existing integrated waste landform, with a separation distance of at least 14 m between the base of landfill cell and belowground water table. Landfill cells constructed on ground level adjacent to the integrated waste landform will have a separation distance of at least 13 m between the base of landfill cell and belowground water table.</li> <li>• No putrescible and/or food waste will be disposed at landfill, minimising leachate generation.</li> <li>• Landfill cells will be covered with clean fill fortnightly, minimising contact between waste material and water.</li> </ul> <p>Existing licence L8457/2010/2 includes the following requirements:</p> <ul style="list-style-type: none"> <li>• <b>Condition 8</b> – Requirement for putrescible waste to be limited to 500 tonnes per annum and be covered at least weekly with clean fill or inert waste type 1.</li> </ul>
Contaminated stormwater		Overland runoff during rainfall events	<ul style="list-style-type: none"> <li>• Landfill cells will be constructed with at least one-metre-high windrows to minimise surface runoff ingress and control overtopping of landfill cell.</li> <li>• Landfill cells will be constructed at least 20 m from embankment crest and five metres internally from the closure batter profile.</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
Fire water and contaminated stormwater	Landfilling of used tyres at Santa tyre landfill	Overland runoff during landfill fires and rainfall events	<ul style="list-style-type: none"> <li>• Storage of tyres at the landfill will not exceed 100 tyres at any period.</li> <li>• Tyres will be stored and buried systematically, including ensuring proper separation of tyre stacks from other wastes.</li> <li>• Tyres will be buried within 48 hours of placement to minimise ingress of stormwater and, in the event of a fire, firewater.</li> <li>• In the event of a fire, all fire water will be contained within the waste rock dump and directed towards the Santa open pit or bunded against the toe of the waste rock dump.</li> <li>• Landfill cells will be constructed at least five metres internally from the closure batter profile.</li> </ul>

### 3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020b), 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 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 2020a)).

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

Human Receptors	Distance from prescribed activity
None	N/A
Environmental receptors	Distance from prescribed activity
Native vegetation	<p>A vegetation survey of the premises identified <i>Maireana</i>, <i>Atriplex</i>, <i>Eremophila</i>, <i>Eucalyptus</i>, <i>Acacia</i> and as the dominant genera (Outback Ecology 2009b). Vegetation communities at the premises were considered typical of the Goldfields region and was well represented outside the premises.</p> <p>The return water ponds and proposed RGPF and Santa landfills are abutted by native vegetation at their boundaries. The Santa landfill is located within the Randalls timber reserve.</p> <p>Recent vegetation quadrat monitoring in 2024 showed that floristic species richness around TSF2 ranged between three to up to 16 species within a 100 m<sup>2</sup> area. Vegetation conditions around TSF2 were shown to range between 'Degraded' to 'Excellent', with majority of quadrats rated as 'Degraded' or 'Poor'. Based on the location of degraded quadrats, the primary cause of deterioration of vegetation health was due to recent events involving surface expression of hypersaline groundwater, which had also formed a salt crust in these areas. There was also evidence of cattle grazing in the area, which were likely the cause of vegetation degradation in areas outside of the salt crust.</p> <p>Riparian vegetation, including <i>Cratystylis subspinescens</i>, <i>Maireana pyramidata</i> and <i>Tecticornia</i> species were sighted along Salt Creek, which are common species on saline clay pans (Outback Ecology 2009a).</p>
Conservation significant flora	There is one sighting of <i>Eucalyptus websteriana</i> subsp. <i>norsemanica</i> (Priority 1) located near the premises boundary, approximately 650 m and 1.2 kilometres south-east of the return water facility and TSF1, respectively.
Surface water body and creek lines	<p>Salt Creek, a tributary of Lake Randall, is located approximately 700 m west of the TSF1 western embankment. The creek is ephemeral, flowing from the north to the south periodically for short periods following extreme rainfall events. The morphology of Salt Creek is characterised by braided channelling.</p> <p>Previous studies have found diatom species from sediments at Salt Creek, with <i>Navicula symmetrica</i> and <i>Nitzschia palea</i> being the most dominant species (Outback Ecology 2009a), which are generally associated with low salinity lakes and creeks (John 1998; Taukulis &amp; John 2009). Only one algal specimen was observed in a non-flowing pool during a recent site visit (Stantec 2023). To date, no biologically significant elements have been identified at the Salt Creek.</p> <p>Algal, invertebrate, vegetation and fauna associated with salt creek were not considered to be unique and were typical of inland lakes throughout the semiarid region of Western Australia (Outback Ecology 2009a).</p> <p>Salt Creek flows into Lake Randall, a major ephemeral playa within the Lake</p>

	<p>Lefroy paleo drainage located approximately 4.8 km south of TSF1.</p> <p>Ephemeral creeks are also present approximately 2 km to the west, south, and south-east of the Santa landfill, all of which flows into Lake Randall.</p>
<p>Groundwater aquifer</p>	<p>The regional water table occurs at a depth ranging from less than one metre below ground level (mbgl) around the low-lying Lake Randall to over 50 mbgl in elevated areas. Regional groundwater flows towards Lake Randall, where the water table is closest to the surface.</p> <p>Based on groundwater monitoring in December 2024, groundwater levels were relatively shallow to the east of TSF1 (and TSF2), around the Salt Creek creek line. Standing water levels in this area ranged between 1.2 mbgl and 2.35 mbgl. Groundwater levels increased to the east, where standing water level at the Randalls gold processing facility and return water facility were around 14.27 mbgl to 17.9 mbgl. Regional eastern monitoring bore IGRSM013 had a groundwater depth of 24.65 mbgl.</p> <p>At the RGPF landfill, groundwater levels are at least 13 mbgl. At the Santa landfill, groundwater levels are expected to be approximately 50 mbgl.</p> <p>Groundwater at the premises has been influenced by seepage and groundwater mounding, especially around TSF2. Local groundwater flow direction appears to be to the west and south-west, towards Salt Creek. Seepage migration to the east may be limited by the presence of a shallow bedrock that runs between the TSFs and Randalls gold processing facility.</p> <p>Groundwater analysis undertaken in December 2024 found that pH ranged between 3.3 pH unit to 9.5 pH unit, indicating acidic to alkaline groundwater conditions. Total dissolved solid ranged between 1,100 mg/L to 210,000 mg/L. Monitoring bores along the western perimeter of the TSF area were the most saline. In newly installed paired monitoring bores, deeper bores were generally less saline, compared to the corresponding shallow bores. Groundwater was dominated by sodium and chloride ions.</p> <p>Weak acid dissociable cyanide was detected in some monitoring bores around TSF2. The highest concentration of 0.082 mg/L recorded at monitoring bore IGRSM006 along the south-eastern perimeter of TSF2, where rapid groundwater mounding had been observed recently.</p> <p>There are no third-party groundwater users within 20 km of TSF1, except for other mining operations.</p> <p>While there are no groundwater dependent ecosystems within the premises, national assessment from the GDE Atlas predicted that native vegetation at the Lake Randall playa may be groundwater dependent.</p>

## 3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020b) 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 5.

The Revised Licence L8457/2010/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 5 and 64 activities.

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 <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptor	Licence holder's controls				
<b>Construction</b>								
Construction of landfill cells on Santa waste rock dump and integrated waste landform	Dust	<b>Pathway:</b> Air/ windborne pathway <b>Impact:</b> Impact to ecological health and amenity	Native vegetation.	Refer to Section 3.1	C = Slight L = Unlikely <b>Low risk</b>	Y	None	N/A
<b>Operation</b>								
Deposition of tailings at TSF1 stage 1 embankment (RL325.5)	Dust (dried tailings)	<b>Pathway:</b> Air / windborne pathway <b>Impact:</b> Impact to ecological health and amenity	Native vegetation; Surface water bodies and creek lines.	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium risk</b>	Y	None	N/A
	Sediment laden stormwater	<b>Pathway:</b> Overland runoff during rainfall events <b>Impact:</b> Impact to ecological health	Native vegetation; Surface water bodies and creek lines.	Refer to Section 3.1	C = Slight L = Rare <b>Low risk</b>	Y	None	N/A
	Tailings supernatant	<b>Pathway:</b> Vertical infiltration and lateral migration through base and embankment wall <b>Impact:</b> Groundwater mounding and deterioration of groundwater quality, potentially resulting in impact to ecological health	Native vegetation; Surface water bodies and creek lines; Groundwater aquifer.	Refer to Section 3.1	C = Moderate L = Possible <b>Medium risk</b>	N	Condition 1 – Operational requirements for TSF1, groundwater recovery drains, and groundwater recovery bores Condition 5 – Authorised discharge points Condition 11 – Ambient groundwater quality monitoring requirements <b>Condition 12 – Water balance monitoring for TSF1</b>	Refer to Section 3.2.1.

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptor	Licence holder's controls				
							Condition 13 – Vegetation condition monitoring requirements Condition 21 – Installation requirements for groundwater recovery bores	
	Tailings slurry	<b>Pathway:</b> Overtopping of TSF1 <b>Impact:</b> Impact to ecological health	Native vegetation; Surface water bodies and creek lines.	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium risk</b>	Y	Condition 1 – Operational requirements for TSF1 Condition 3 – Inspection requirements for TSF1	N/A
Transport of tailings slurry / return water via pipelines	Tailings slurry and return water	<b>Pathway:</b> Pipeline failure or leaks resulting in direct discharge to land <b>Impact:</b> Impact to ecological health	Native vegetation; Surface water bodies and creek lines.	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium risk</b>	Y	Condition 2 – Pipeline requirements Condition 3 – Inspection requirements for TSF1, tailings and return water pipelines, and groundwater recovery drains	N/A
Storage of decant / return process water at return water ponds	Decant / return water	<b>Pathway:</b> Vertical infiltration and lateral migration through base and embankment wall <b>Impact:</b> Groundwater mounding and deterioration of groundwater quality, potentially resulting in impact to ecological health	Native vegetation; Groundwater aquifer.	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium risk</b>	Y	Condition 1 – Operational requirements for return water ponds	N/A
		<b>Pathway:</b> Overtopping of return water ponds <b>Impact:</b> Impact to ecological health	Native vegetation, including conservation significant flora.	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium risk</b>	Y	Condition 1 – Operational requirements for return water ponds Condition 3 – Inspection requirements for return water ponds	N/A
		<b>Pathway:</b> Pipeline failure or leaks resulting in direct	Native vegetation, including	Refer to Section 3.1	C = Moderate	Y	Condition 2 – Pipeline requirements	N/A

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptor	Licence holder's controls				
		discharge to land <b>Impact:</b> Impact to ecological health	conservation significant flora.		L = Unlikely <b>Medium risk</b>		Condition 3 – Inspection requirements for return water pipelines	
Landfilling of Class II waste types at Randalls gold processing facility (RGPF) landfill	Windblown waste	<b>Pathway:</b> Air/ windborne pathway <b>Impact:</b> Impact to amenity	Native vegetation	Refer to Section 3.1	C = Slight L = Possible <b>Low risk</b>	Y	Condition 1 – Operational requirements for RGPF landfill Condition 4 – Waste specification for putrescible landfill Condition 20 – Construction requirements for RGPF landfill	N/A
	Landfill leachate	<b>Pathway:</b> Vertical infiltration and lateral migration through base of landfill cell <b>Impact:</b> Deterioration of groundwater quality, potentially resulting in impact to ecological health.	Groundwater aquifer	Refer to Section 3.1	C = Slight L = Unlikely <b>Low risk</b>	Y		N/A
	Contaminated stormwater	<b>Pathway:</b> Overland runoff during rainfall event <b>Impact:</b> Impact to ecological health	Native vegetation	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium risk</b>	Y		N/A
Landfilling of used tyres at the Santa landfill	Fire water	<b>Pathway:</b> Overland runoff during landfill fires and rainfall events <b>Impact:</b> Impact to ecological health	Native vegetation; Surface water body and creek lines	Refer to Section 3.1	C = Minor L = Unlikely <b>Low risk</b>	Y	Condition 1 – Operational requirements for Santa landfill Condition 4 – Waste specification for used tyres	N/A

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

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

### 3.2.1 Additional regulatory requirements

The department has considered the existing and proposed controls for the operation of TSF1 (stage 1). Given the historical observations, the department noted that seepage and groundwater mounding may potentially recur as a result of recommissioning of the facility. As such, the department has required water balance monitoring to be undertaken at TSF1, in accordance with condition 12 in the amended licence. The condition currently applies to the active TSF2 in the existing licence. The purpose of water balance monitoring is to estimate the volume of water that is lost from the facility in the form of seepage and may assist in contextualising groundwater monitoring and recovery trends around the TSF. Further, estimated seepage rates from the water balance will enable the performance of TSF1 to be assessed against seepage modelling undertaken in designing the facility.

At this stage, the department considers further groundwater monitoring throughout the operation of TSF1 to be required to identify potential impacts to the groundwater and other sensitive receptors.

Proposed groundwater recovery bores are targeting areas with no existing groundwater management infrastructure. Groundwater recovery bores will be installed to the north, north-east and south-west of TSF1, supplementing existing pumping at PB1 to the west of TSF1. While groundwater mounding is not an issue to the north-east and east sections of TSF1 at this stage, these areas are equipped with groundwater monitoring bores to identify potential impacts from continued operation of the facility. Where impacts are likely to occur, the department may impose further requirements to undertake groundwater recovery and vegetation condition monitoring at these locations.

### 3.2.2 Modification of standing water level limit at IGRSM007

In considering the information presented, the department has amended the standing water level at monitoring bore IGRSM007 from 6.0 mbgl to 4.0 mbgl. The rationale for the amendment includes:

- Groundwater levels at this monitoring location were already shallower than 6.0 mbgl at the time when the limit was specified on the licence in August 2024. This was demonstrated with fortnightly monitoring data prior to and following the specification of the limit (Figure 2).
- The department adopts a standard limit of 4.0 mbgl for the protection of native vegetation from potential adverse impacts of groundwater mounding, which may result in waterlogging of root zones, hypoxic subsurface environments, salt stress, and potentially vegetation death. As the monitoring bore is sited within a location with relatively dense native vegetation, this limit is appropriate.
- There are a number of existing monitoring bores located hydraulically upgradient, between TSF2 and IGRSM007, including NMB03 and NMB08. These monitoring bores have limits specified for standing water level, where an exceedance of the limit at these monitoring locations may trigger further action, such that groundwater mounding can be controlled so as to not impact further downgradient locations, where IGRSM007 is located.
- Groundwater recovery bores will be installed hydraulically upgradient, where monitoring bore NMB03 is located. The operation of groundwater recovery bores will allow groundwater mounding from TSF2 to be better managed.

Overall, the department is satisfied that tailings seepage and groundwater mounding can be managed such that potential impacts to sensitive receptors around monitoring bore IGRSM007 are not significant. A standing water level limit of 4.0 mbgl is considered acceptable. Consequently, condition 11 of licence L8457/2010/2 has been amended. The department may

review the suitability of the limit in the future, subject to operational and monitoring data.

## 4. Consultation

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

**Table 6: Consultation**

Consultation method	Comments received	Department response
Licence holder was provided with draft amendment on 23 January 2026.	Refer to Appendix 1	Refer to Appendix 1

## 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 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
----	Updated premises name from Salt Creek Processing Facility to Randalls Gold Processing Facility.
Condition 1	Updated Table 1 to: <ul style="list-style-type: none"> <li>• Include operational requirements for TSF1 (Stage 1), return water ponds, RGPF landfill, and Santa landfill.</li> <li>• Include operational requirements for infrastructure specified in existing condition 3, including TSF2 (Stage 3), North groundwater recovery drain, West groundwater recovery drain, East groundwater recovery drain, process ponds, and Maxwells landfill.</li> <li>• Specify the operation of groundwater recovery bore RB2.</li> <li>• Specify diversion of bore water, recovered groundwater, toe drainage, and sump water to return water ponds (or process ponds), instead of TSF2.</li> </ul>
----	Removed existing condition 3 and amalgamated with condition 1 for the following infrastructure: Integrated waste landform tailings storage facility (IWLTSF) (renamed as 'TSF1 (Stage 1)'), Tailings storage facility 2 (TSF2) (renamed as 'TSF2 (Stage 3)'), TSF2 North groundwater recovery drain, TSF2 West groundwater recovery drain, TSF2 East groundwater recovery drain, process ponds, Maxwells landfill.
Condition 3	Updated Table 2 to: <ul style="list-style-type: none"> <li>• Improve clarity on inspection requirements</li> <li>• Modify <i>Note 1</i> to require seepage from the TSF2 turkeys nest to be returned to the return water ponds (or process ponds), instead of TSF2.</li> </ul>
----	Removed existing condition 7, as the requirements have been included in condition 1.

Condition 4	<p>Updated Table 3 to:</p> <ul style="list-style-type: none"> <li>Remove landfill cover specification for putrescible waste, as this has been duplicated in condition 1.</li> <li>Specify authorised landfill locations for each waste type.</li> </ul>
Condition 5	<p>Updated Table 4 to:</p> <ul style="list-style-type: none"> <li>Specify TSF1 and TSF2 as authorised discharge points for tailings slurry, such that no bore water, recovered groundwater, toe drainage, and sump water should be discharged to these facilities.</li> </ul>
Condition 10	<p>Updated Table 5 to:</p> <ul style="list-style-type: none"> <li>Specify unit for pH measurements.</li> </ul>
Condition 11	<p>Updated Table 6 to:</p> <ul style="list-style-type: none"> <li>Include monitoring of newly installed shallow and deep monitoring bores at NMB07, NMB08, NMB09, NMB10, NMB11, NMB12, and NMB13, as well as monitoring bore NMB14.</li> <li>Modify naming convention of 'Seepage Recovery Drain' to 'North GWRD' to align with updated Figure 2 in the amended licence.</li> <li>Amend standing water level limit for monitoring bore IGRSM007 from 6.0 mbgl to 4.0 mbgl.</li> </ul>
Condition 12	<p>Updated condition to:</p> <ul style="list-style-type: none"> <li>Require water balance monitoring for TSF1.</li> <li>Update naming convention.</li> </ul>
Condition 13	Updated condition to mention TSF1. No changes made to Table 7.
----	Removed existing condition 18 to update requirements for recordkeeping. Superseded by condition 16 in the amended licence.
Condition 16	New condition to reflect updated licence recordkeeping requirements. Supersedes existing condition 18.
Condition 17	Updated condition to specify submission date for Annual Audit Compliance Report, in line with updated licence formatting.
Condition 18	<p>Updated condition to specify submission date for Environmental Report, in line with updated licence formatting.</p> <p>Updated Table 8 to ensure reporting requirements include new infrastructure, including TSF1, RGPF landfill, and Santa landfill.</p>
Condition 20	New condition to specify design and construction requirements for RGPF landfill (on integrated waste landform), RGPF landfill (on ground surface), and Santa landfill.
Condition 21	New condition to specify design and installation requirements for eight groundwater recovery bores (PRB01 to PRB08) and timeframe.
Condition 22	New condition to specify requirements to submit Environmental Compliance Report on the construction of infrastructure specified in condition 20.
Condition 23	New condition to specify requirements of the Environmental Compliance Report required under condition 22.
Condition 24	New condition to specify requirements to submit Bore Construction Report on the construction of groundwater recovery bores specified in condition 21.

----	<p>Updated Table 12 to:</p> <ul style="list-style-type: none"> <li>• Specify the definition of: RGPF.</li> </ul>
----	<p>Updated Schedule 1: Maps to:</p> <ul style="list-style-type: none"> <li>• Updated Figure 1 in the amended licence with current aerial imagery; no changes made to premises boundary.</li> <li>• Update Figure 2 in the amended licence (previously Figure 3 in the existing licence) to include newly installed monitoring bores, return water ponds, and RGPF landfill.</li> <li>• Remove existing Figure 2, Figure 4, and Figure 5 from the amended licence, as these figures have been duplicated by the updated Figure 2 in the amended licence (previously Figure 3 in the existing licence).</li> <li>• Update Figure 3 in the amended licence (previously Figure 7 in the existing licence) to include Santa landfill, as well as existing Maxwells landfill.</li> <li>• Remove existing Figure 7 from the amended licence, as the figure has been duplicated by the updated Figure 3 in the amended licence (previously Figure 6 in the existing licence).</li> <li>• Include new Figure 4 to indicate location of proposed groundwater recovery bores to be installed under condition 21 of the amended licence.</li> </ul>

## References

1. Department of Water and Environmental Regulation (DWER) 2020a, Guideline: Environmental Siting, Perth, Western Australia.
2. DWER 2020b, Guideline: Risk Assessments, Perth, Western Australia.
3. DWER 2023, *Licence L8457/2010/2 Amendment Report*, granted 7 November 2023, Perth, Western Australia.
4. DWER 2024, *Works Approval W6927/2024/1 Decision Report*, granted 6 August 2024, Perth, Western Australia.
5. John J 1998, Diatoms: Tools for bioassessment of river health, a model for south-western Australia (Project UCW 3).
6. Outback Ecology 2009a, Biological Baseline Survey of Salt Creek and Lake Randall – Randalls Gold Project, Jolimont, Western Australia.
7. Outback Ecology 2009b, Salt Creek Level 2 and Maxwells/Cock-Eyed Bob Level 1 Vegetation and Flora Surveys – Randalls Gold Project, Jolimont, Western Australia.
8. Rockwater Pty Ltd (Rockwater) 2025, Mount Monger Operations Randalls Gold Processing Facility – Tailings Storage Facility Hydrogeological Review, ref: 588.0/25/01, Jolimont, Western Australia.
9. Silver Lake Resources (SLR) 2024, RGPF Prescribed Premise Licence L8457/2010/2 TSF2 Water Reduction Action Plan, South Perth, Western Australia.
10. Stantec 2023, Ecological Impact Assessment of Groundwater Mounding and Surface Expression Adjacent to Randalls Gold Processing Facility TSF2, 2023, ref: 304501080, Perth, Western Australia.
11. Taukulis FE & John J 2009, Development of a diatom-based transfer function for lakes and streams severely impacted by secondary salinity in the south-west region of Western Australia, *Hydrobiologia*, 626, pp. 129-143.
12. Vault Minerals Limited (Vault Minerals) 2025, W6927/2024/1 C.6 Specified Actions – Hydrogeological Review & Groundwater Management Plan Audit, South Perth, Western 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
----	The licence holder requested the premises name be updated from Salt Creek Processing Facility to Randalls Gold Processing Facility.	The department has amended the cover page of the amended licence accordingly.
Condition 1	In Table 1, the licence holder clarified that embankment crest specified in construction of landfill trenches at the RGPF trenches refer to TSF1 and requested the operational requirements be amended to improve clarity.	The department has amended the relevant operational requirements in Table 1 to specify the embankment crest of TSF1 for the construction of the RGPF landfill trenches in the amended licence.
Condition 21	<p>In Table 11, the licence holder requested that the installation of groundwater recovery bores be revised to include only PRB01 to PRB08 (n=8) prior to 30 June 2026, instead of ten groundwater recovery bores.</p> <p>While the licence holder remains committed to installing the outstanding two groundwater recovery bores (PRB09 and PRB10), it was proposed that these bores be installed by 30 December 2026, where a review will be undertaken during the time limited operation of TSF2 Stage 4 embankment raise (currently under construction in accordance with works approval W6927/2024/1). In doing so, the licence holder aims to identify optimal locations for the installation of these two bores, following installation of the initial eight recovery bores, following 12 months of tailings deposition into TSF1, and in accordance with subject matter advice from a qualified hydrogeologist.</p> <p>As such, the licence holder requested that groundwater recovery bores PRB09 and PRB10 be removed from Table 11.</p> <p>Furthermore, the licence holder has revised the proposed location of the eight groundwater recovery locations. The initial locations of the recovery bores spanned across the western perimeter of TSF1, as well as from the north-western to south-eastern boundary of TSF2. The revised locations now target the north, north-east, and western perimeter of TSF1, as well as the south and south-east perimeter of TSF2. The location of the two remaining groundwater recovery bores will be determined at a later stage.</p>	<p>The department has reviewed the revised locations for groundwater recovery bores PRB01 to PRB08 and has no issues with the construction of only eight bores by 30 June 2026.</p> <p>Noting that the licence holder has committed to installing the remaining two groundwater recovery bores at a later date, the department will review these requirements following further monitoring of the TSF1 and TSF2 operations.</p>

Condition	Summary of licence holder's comment	Department's response
Condition 22	<p>The licence holder requested that the requirements for an environmental compliance report be removed, noting that it is an onerous process and was not previously required for the construction of landfills in the licence. The licence holder stated that compliance with the requirements will be provided in the annual environmental report for the licence.</p>	<p>Condition 22 is based on a standard condition for the construction of infrastructure associated with prescribed premises (i.e., landfill; Category 64).</p> <p>Condition 22 is required as it is associated with construction requirements specified in condition 20. Standard compliance reporting is required for the landfills specified in Table 10 to ensure that the licence holder is able to construct the relevant infrastructure in accordance with the requirements specified.</p> <p>Following submission of the environmental compliance report, the licence holder may continue constructing the landfill trenches in accordance with the requirements of condition 1, and environmental reporting in accordance with condition 18.</p> <p>Consequently, the department has not removed this condition.</p>
Condition 23	<p>The licence holder requested this condition and the term 'suitably qualified professional' be removed, as the landfills will be excavations, rather than constructed infrastructure.</p>	<p>Condition 23 is associated with condition 20 and 22. Consequently, the department has not removed this condition.</p> <p>The use of the term 'suitably qualified professional' is retained as a standard requirement of this condition. As the relevant infrastructure is not considered high risk, the department has not specified requirements for a suitably qualified professional.</p>