



Application for Works Approval Amendment

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

Works Approval Number	W6724/2022/1
Works Approval Holder	Golden Spur Resources Pty Ltd
ACN	161 329 933
File Number	DER2022/000143~3
Premises	Bellevue Gold Processing Plant Bellevue Gold Project Mining tenements M36/24 and M36/25
Date of Report	1 June 2023
Decision	Revised works approval granted

**A/MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES**

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Works Approval W6724/2022/1 is held by Golden Spur Resources Pty Ltd (Works Approval Holder) for the Bellevue Gold Project (the Premises), located on mining tenements M36/25 and M36/24, 34km north-north-west of Leinster.

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. As a result of this assessment, Revised Works Approval W6724/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the Department of Water and Environmental Regulation (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 19 December 2022, the Works Approval Holder applied to the department to amend Works Approval W6724/2022/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). This amendment involves adding additional Category 5 activities to the works approval and adding category 6 – mine dewatering. Table 1 below outlines the proposed changes to the existing Works Approval. Figure 1 outlines the relative timeframes proposed for construction of each facility, in the context of the operational activities undertaken at each stage.

Table 1: Proposed throughput capacity changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
6	N/A – new category added. (Note that category 6 is on the current Bellevue Project licence L9259/2020/1, with throughput of 500,000 tonnes per year)	1,000,000 tonnes per year	Seeking approval to construct and operate under time limited operations (TLO): <ol style="list-style-type: none">1. A water storage dam (WSD) for the storage of dewatering effluent from the underground mine. This WSD will later be used as a tailings storage facility (TSF) – see category 5 below.2. Increasing the storage capacity (for dewatering effluent) of Westralia Pit by constructing a berm to raise the effective crest height on the lower side; and3. Proposing a dewatering discharge volume double what is approved on the existing licence (taking into account the facilities assessed in this amendment).
5	1,000,000 tonnes per year	No change	Seeking approval to construct and operate under Time Limited Operations (TLO): Tailings storage facilities (TSF) sufficient to accommodate up to 1 million tonnes of tailings per year. The first 3 stages of the development are included in this amendment and will allow for approximately 4 years of deposition.

			<p>The stages of TSF development will be:</p> <ol style="list-style-type: none"> 1. Stage 1 In Pit TSF (IPTSF): The conversion of Vanguard Pit into an in-pit TSF. Estimated deposition life of 1.15 years. 2. Stage 2 TSF: The conversion of the WSD into a TSF. The water storage dam will be constructed with the necessary infrastructure for it to be used for tailings. Estimated deposition life of 0.44 years (1.58 years cumulative tailings storage). Natural topography is utilised so only northern and eastern embankments are required. 3. Stage 3 Integrated Waste Landform TSF (IWLTSF): The raising and extension of embankments to form an (IWLTSF) encompassing the IPTSF (stage 1) and TSF (stage 2, previously the WSD) with mined waste rock. The estimated deposition life of Stage 3 is 2.48 years (4.06 years of cumulative tailings storage). <p>An additional 5 stages (raises and additional embankments) are proposed for the IWLTSF in future but will not be authorised through this works approval. These raises will require submission of additional licence amendment / works approval applications.</p> <hr/> <p>Seeking approval of TLO of the processing plant infrastructure previously approved for construction under this works approval.</p> <p>This infrastructure was not authorised to operate under the existing works approval as there was no tailings management infrastructure approved in the original works approval.</p>
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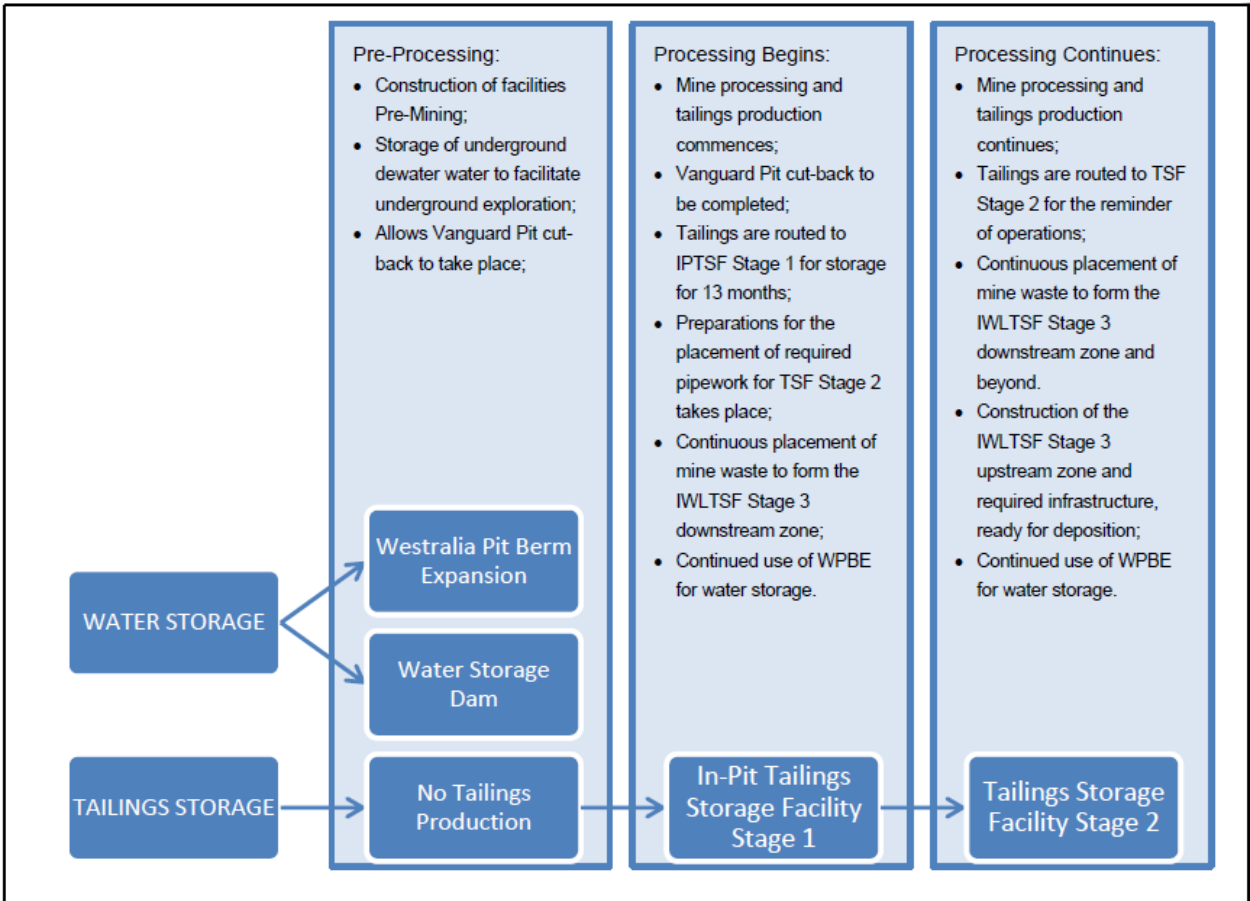


Figure 1: Process flow diagram showing relative timeframes for various infrastructure.

2.2.1 Westralia pit berm expansion (category 6)

Operating licence L9259/2020/1 was issued by the department in 2020 for the premises which authorises the discharge of 500,000 kilolitres (kL) per year of dewatering effluent from the underground mine to three discharge points (Henderson, Westralia and Vanguard pits).

In accordance with the above, the Westralia pit is currently a discharge point for saline mine dewater. The works approval holder proposes to increase the mine water storage capacity of this pit by building a wall around the lower side, referred to as the Westralia pit berm expansion (WPBE) (Figure 2). The WPBE will be constructed in phases. Phase 1 (waste stage 1 plus upstream zones) will be constructed to RL 475m. Deposition within the embankment is proposed during the construction of phase 2 (waste stage 2 to RL 475m, and waste stage 3 and upstream zones to RL 479.5 m).

This amendment does not assess any changes in transfer of mine dewater to Westralia pit. This amendment only considers the construction of the WPBE, and authorising deposition/overflow beyond the pit crest of the Westralia Pit. The new crest height when assessing required freeboard will be the embankment crest height which is nominally RL 475m (phase 1) and RL 479.5m (phase 2).

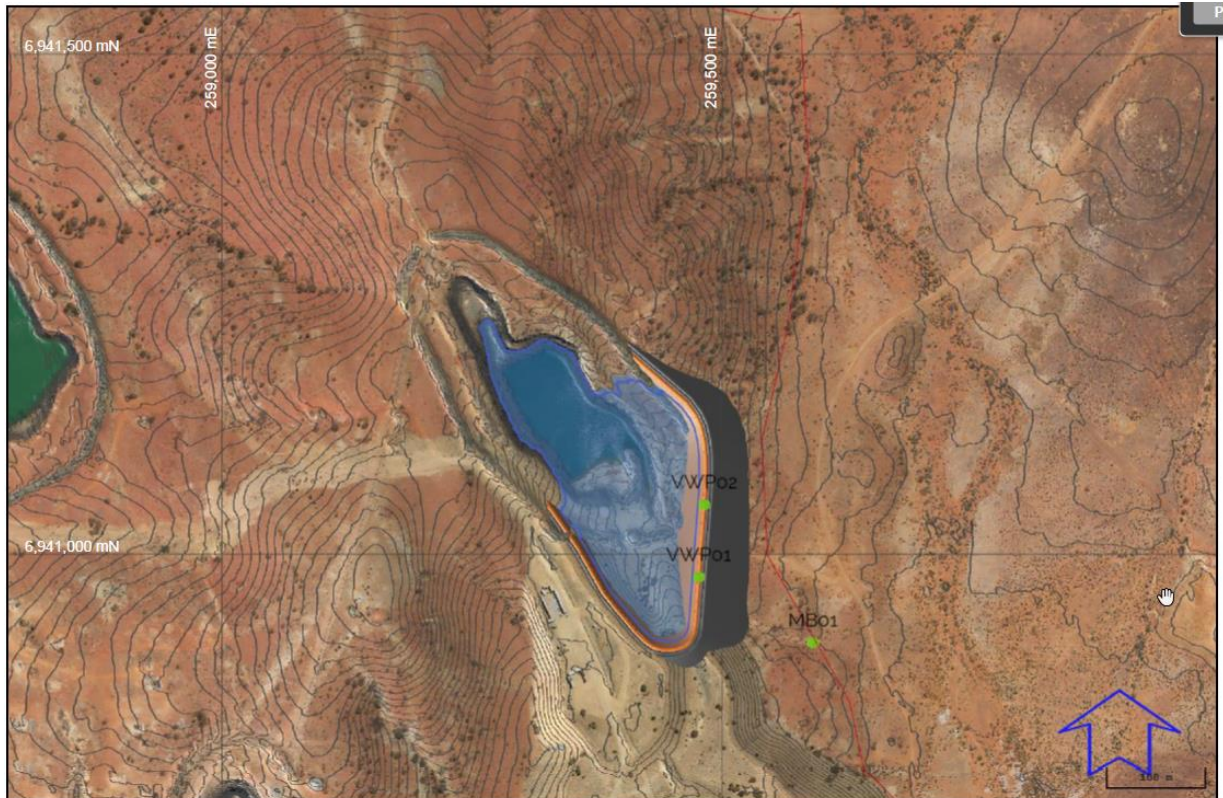


Figure 2: Westralia Pit, showing proposed berm expansion and monitoring locations.

The design layers of the embankment from downstream to upstream (as shown in Figure 3) are:

- Zone 3B - The downstream zone of the embankment - to be constructed using mine waste from underground, compacted in situ.
- Zone 3A - bulk rock mine waste with the selective removal of oversize boulders larger than 300 mm in size; traffic compacted.
- A Bidim A49 Geotextile (or equivalent) to mitigate piping.
- Zone 1 – Low permeability borrow obtained from the proposed WSD/TSF excavation will provide a low permeability clay liner above the geotextile.
- Zone 5 - Rock armour (rip rap) – placed on the inside of the low permeability face.

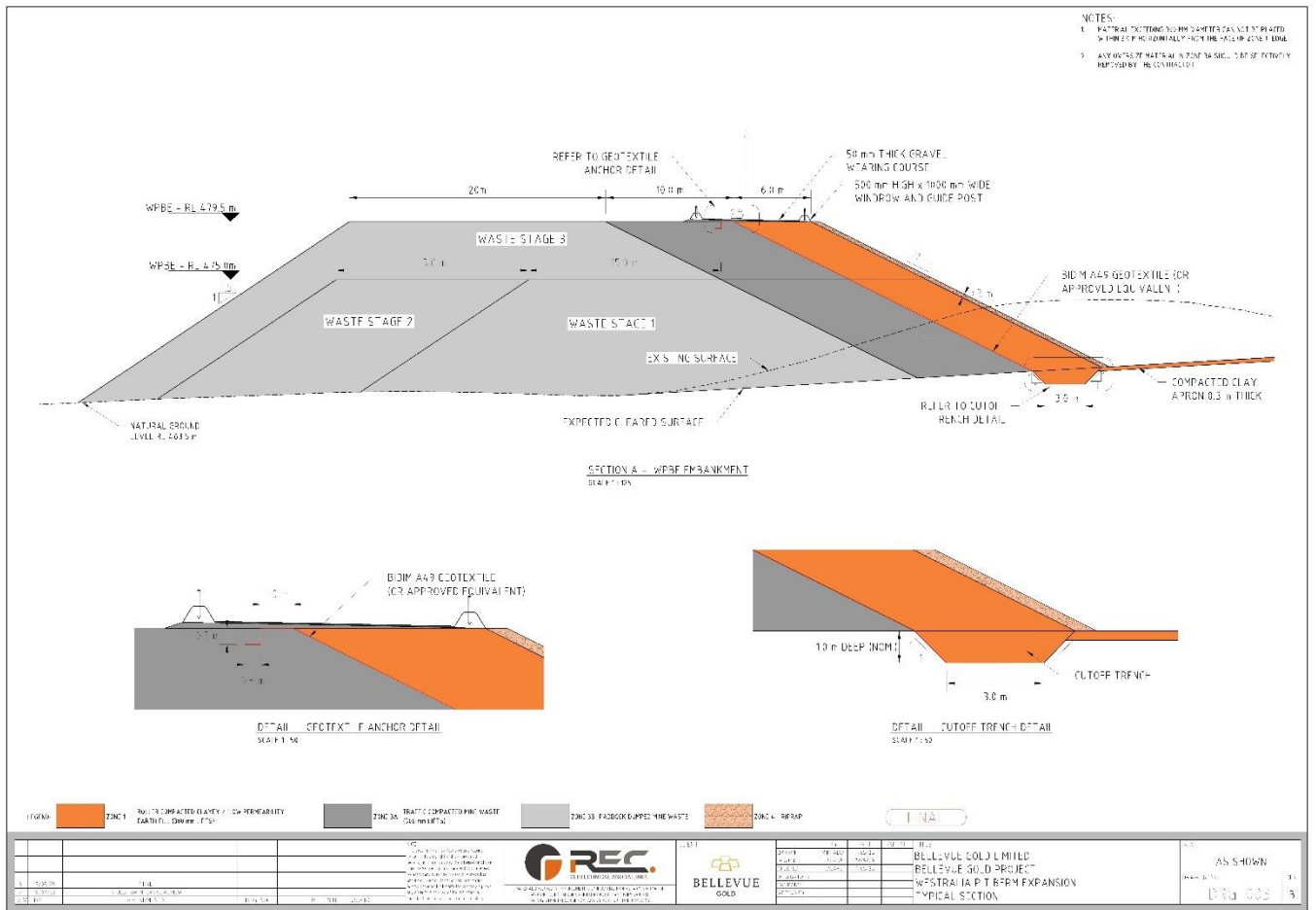


Figure 3: Westralia Pit Berm Expansion cross section

Other seepage control features include:

- A low permeability clay apron or lining will be constructed across the storage basin from the perimeter embankment to the outside edge of the existing pit development. The clay apron will comprise compacted low permeability material (minimum 300 mm thickness). Where near-surface in-situ clayey soils are present they may be compacted in place, and where sufficient suitable materials are not present, additional clayey soils will be brought in and compacted to the required minimum of 300 mm.
- A cut-off trench will be constructed beneath the WPBE embankment. This trench acts to key the embankment into the natural ground and restrict lateral seepage beneath the embankment wall. The cut-off trench will be backfilled with compacted low permeability borrow.

Monitoring infrastructure:

- Pore pressure within the WPBE embankments will be monitored via vibrating wire piezometers (VWPs) as shown in Figure 2. A total of 3 VWPs are proposed at the WPBE, comprising two VWP's within the embankment (VWP01 and VWP02) and 1 VWP within a monitoring bore near the downstream toe (MB01).
- One groundwater monitoring bore will be installed downstream of the WPBE embankment to monitor groundwater levels and groundwater quality downstream of the facility, shown as MB01 in Figure 2.

2.2.2 Water storage dam (WSD) (category 6)

The WSD will comprise an excavation of up to 4m deep, plus an embankment constructed from mine waste with low permeability borrow materials from within the WSD forming the upstream face, and a geotextile to minimise piping and 'rip rap' or rock armour to minimise erosion. The original design embankment crest was RL 482m, and the embankment extent was designed based on this height. During the assessment of this works approval amendment, mining of the Vanguard Pit led to an increased availability of construction materials and the WSD design was consequently changed to construct the WSD to 484.5m, with a design essentially the same as the later described IWLTFS stage 3. The WSD will later become the TSF stage 2, then the northern half of the IWLTFS stage 3 embankment, avoiding the need for a later 2.5m lift of the WSD embankments to bring them to stage 3 level.

Water storage in the WSD is only proposed to the original designed level of 1m freeboard below RL 482m. Should extra storage capacity be required, topographic assessment of the water extent at the new height would be required.

A cut-off trench filled with low permeability material will be constructed under the embankment, to key it into the natural ground and limit lateral seepage. The footprint of the WSD is shown in Figure 4 and the cross-sections included in Schedule 1 of amended works approval W6724/2022/1.

The underdrainage line for the TSF, shown in Figure 7 (described in section 2.2.7), will be constructed at this stage. However, it will be inactive during the operation of the WSD, and an end cap welded on the upstream side of the solid underdrainage outlet line. That will be removed after the WSD has been emptied during conversion to a TSF (stage 2 as outlined in section 2.2.6).

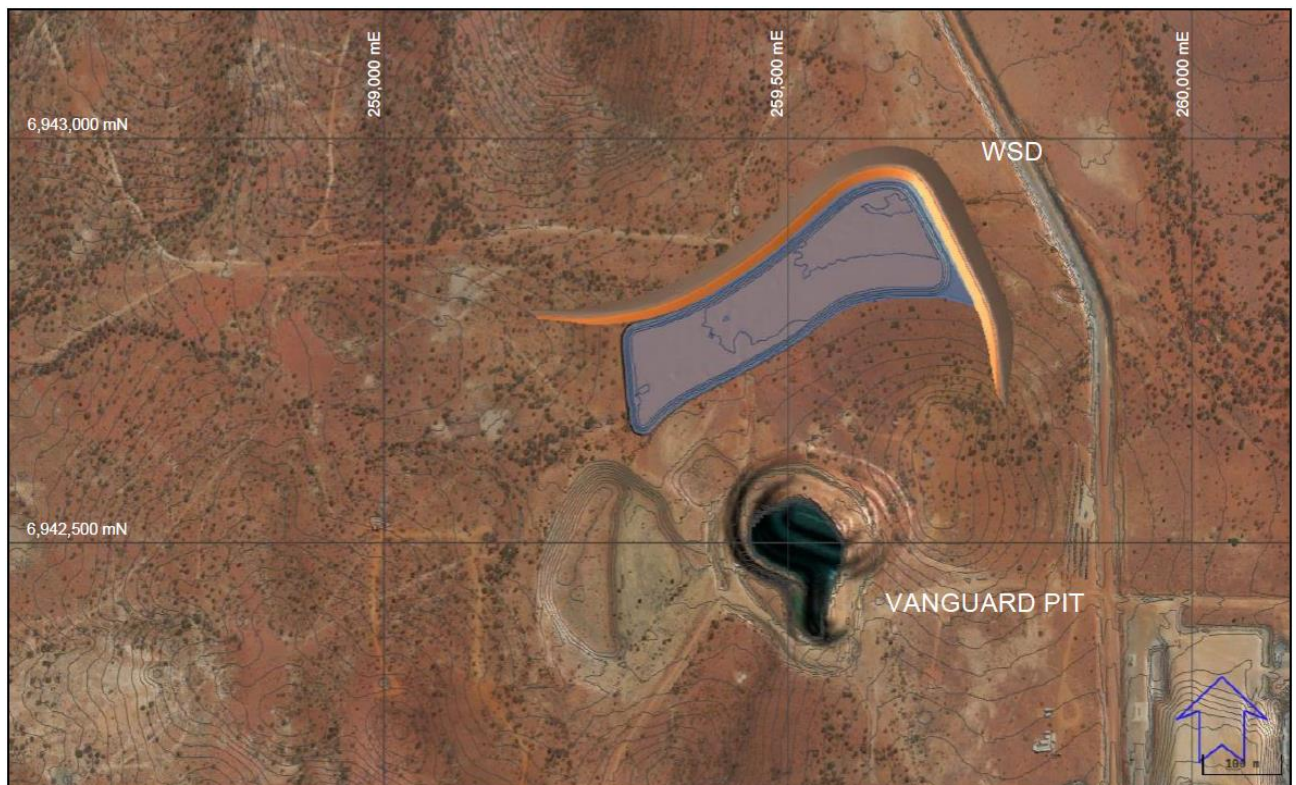


Figure 4: WSD footprint

2.2.3 Increase in category 6 assessed throughput

The applicant has applied to double the rate of dewatering discharge to the environment, over

the short term for initial dewatering of the Bellevue underground mine. The excess mine dewater that is not required in the processing plant and for dust suppression will be stored in a combination of existing storage pits and the new mine water storages assessed above (WPBE and WSD). The Delegated Officer is of the view that increasing the assessed annual dewatering does not significantly change the environmental risk, as long as the conditions placed for the individual storage facilities are complied with, so this is not assessed separately but approved as a result of assessing the water storage facilities.

2.2.4 Tailings and waste rock characterisation (category 5 – TSF construction and tailings deposition)

Tailings

The tailings have been classified as potentially acid forming (PAF) using tailings generated from metallurgical trials of each of the major mining lodes. All tailings samples were enriched in copper; molybdenum and tellurium, whilst individual tailings samples were enriched in bismuth, rhenium, selenium, and tungsten. This reflects the enrichments present in the waste rock and wider mineralization at Bellevue Gold Project.

Initial static leachate testing indicates that, if pyrrhotite oxidation can be minimised, the tailings are likely to generate non-acid seepage with low concentrations of metals and metalloids. Kinetic testing indicates a lag time of at least 3 months, so the tailings management plan for all stages of the tailings infrastructure has been designed such that deposited tailings exposure times are not more than 3 months. For the In-Pit TSF there could be a deposition gap of greater than 3 months, in which case a 1m water cover is proposed to minimise oxidation.

The tailings are also expected to be saline to hypersaline due to the process water used, and contain cyanide used as a reagent in the gold processing plant. The concentration of Weak Acid Dissociable Cyanide (WAD CN) in the decant pond in the IPTSF/TSF/IWLTSF is expected to be below the guideline value of 50 mg/L for the protection of wildlife (e.g. birds).

Waste rock

The waste rock is classified as non-acid forming (NAF) and is expected to generate alkaline, non-saline seepage/runoff with low concentrations of salts (e.g. sulfate, fluoride). It is not expected to generate neutral or alkaline metalliferous drainage.

2.2.5 Vanguard Pit in pit tailings storage facility (IPTSF) (category 5 – stage 1)

The Vanguard Pit, once fully mined out, will have an estimated storage capacity of 72,000m³, with an estimated deposition life of 1.15 years. The crest elevation is 477 m RL, and the pit depth will be approximately 68m.

Tailings are to be deposited from a single discharge point to the north-west of the pit within the IPTSF. Beaching will occur towards the turret (floating) pump which will be relocated as necessary as the decant pond moves toward the south of the pit. (Figure 5)

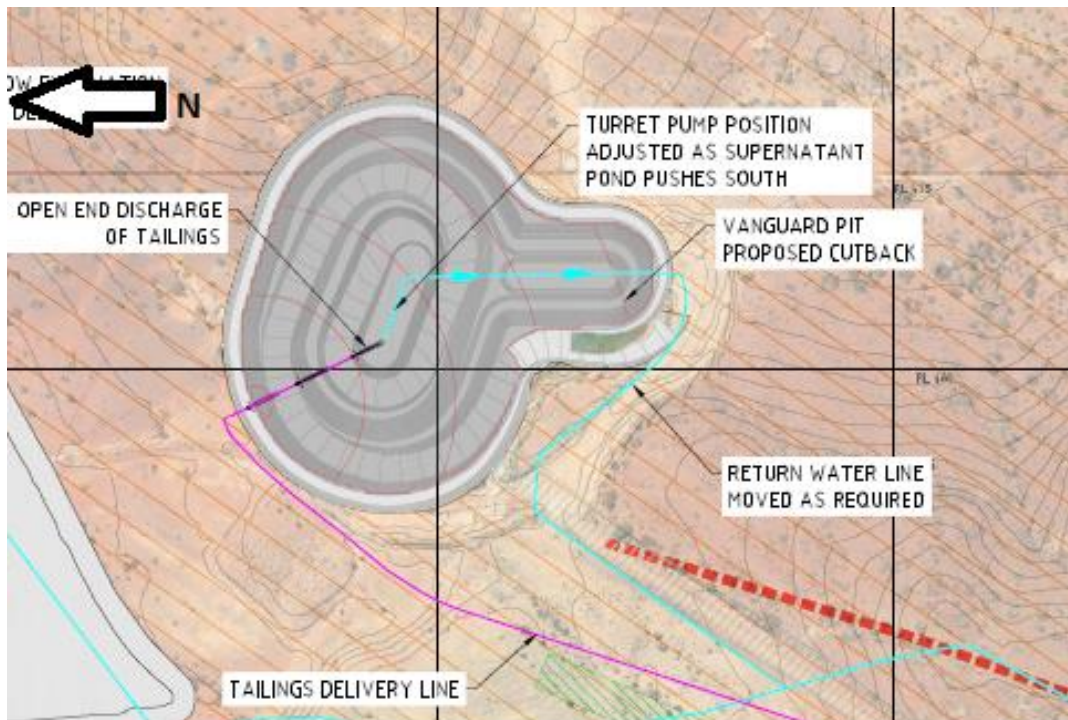


Figure 5: Position of tailings discharge and decant pump.

The location of the turret pump and the configuration and location of the decant area are essential to water management. The decant pond shall be developed away from the perimeter point of discharge in the south-east corner of the IPTSF (Stage 1). To manage the PAF nature of the tailings a freeboard including an allowance for either a 1.0m cover of water or intermittent tailings deposition to the IPTSF until the IWLTSF has completed commissioning to encompass the IPTSF.

The footprint of the IPTSF (stage 1) is shown below in Figure 6.

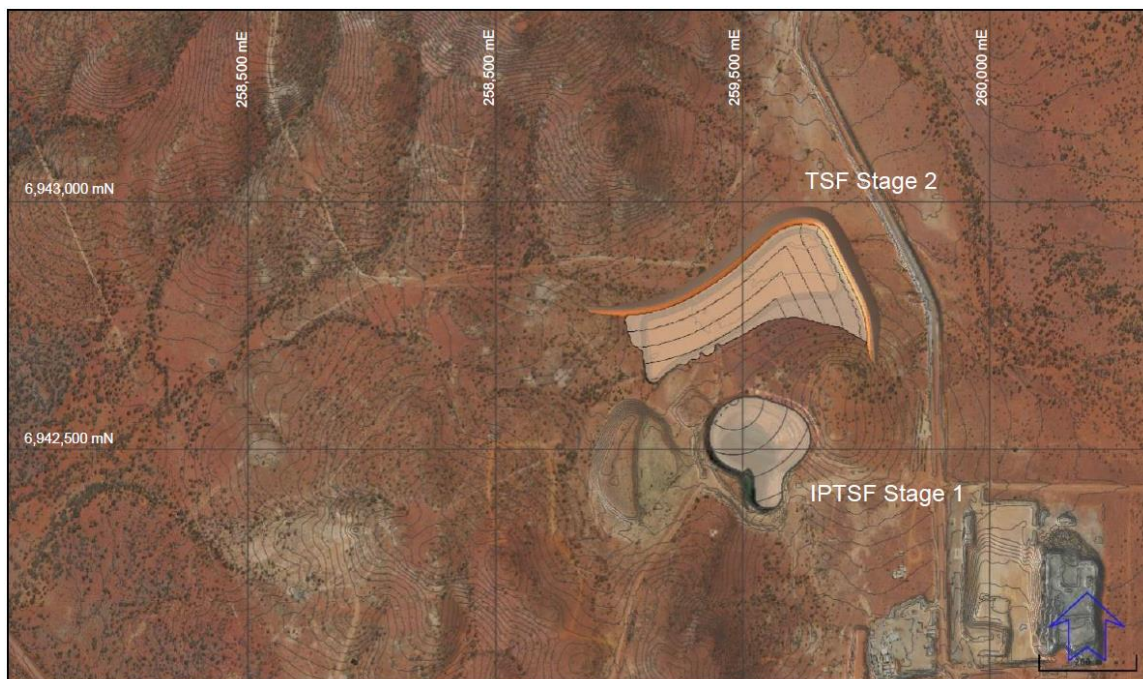


Figure 6: Footprint on IPTSF (Stage 1) and TSF (Stage 2)

2.2.6 Conversion of WSD into a tailings storage facility (TSF) (category 5 – stage 2)

The planned Stage 2 of tailings management involves converting the WSD into a TSF, with an estimated deposition life of 0.4 years. The existing embankment (see section 2.2.2) will be utilised. The footprint of the TSF (stage 2) is shown in Figure 6.

The works for this stage include:

- connection of the underdrainage system shown in Figure 7, which includes a solid underdrainage outlet pipe and a concrete underdrainage collection sump; and
- installation of tailings delivery pipelines, discharge spigots, decant return lines and other pipework infrastructure.

Tailings are to be deposited from the perimeter embankment of the TSF in a sub-areal manner in thin lifts no more than 300mm in depth to form a decant pond away from the main embankment. Deposition of tailings will occur from the perimeter of the embankments with spigot intervals ranging from 20 – 50 m. Conductor pipes laid on old conveyor belt pieces will be incorporated where reasonably practical to ensure that tailings discharged from the perimeter onto the tailings beach with minimal potential for erosion.

The design minimum normal operational freeboard for tailings is assessed as the freeboard against the perimeter embankment and will be a minimum of 1.74 m. Decant water will be removed from the TSF by floating pumps and returned to the process plant. The layout of the tailings delivery and decant return water pipelines is shown in Figure 7.

The ground within the TSF basin will be conditioned using local earthy borrow (regolith) materials.

The underdrainage sump will be sized to contain underdrainage flows for a short period of approximately 20 minutes of seepage from the TSF, based on 20% of supernatant flows reporting to underdrainage. It is sized for low storage volumes with the intention of the sumps being continuously pumped as required. It is impractical to construct large underdrainage collection sumps for greater storage duration and larger sumps may also facilitate the ponding of water at the embankment toe. The proposed response for this issue is to have a backup diesel generator and a backup pump at the sump in case of failure of the system.

The works approval holder is proposing to use existing monitoring bores and install two new groundwater monitoring bores. The location of proposed groundwater monitoring bores (MB) and vibrating wire piezometers (VWP) are shown in Figure 8. MB01 was not constructed and MB02 to MB03 have been decommissioned. MB04 and MB05 are existing bores, while MB06-MB07, along with all VWPs are proposed. All decommissioned monitoring bores and exploration bores will need to be located, decommissioned and sealed before the encroachment of deposited tailings during operation of Stages 2 and 3. MB02 and MB03 will need to be replaced. It is proposed that the new monitoring program will include shallow bores that will only be screened above the saprolitic clays in the superficial transported sediments to capture or measure any free seepage water that may flow above the confining saprolite based clay material.

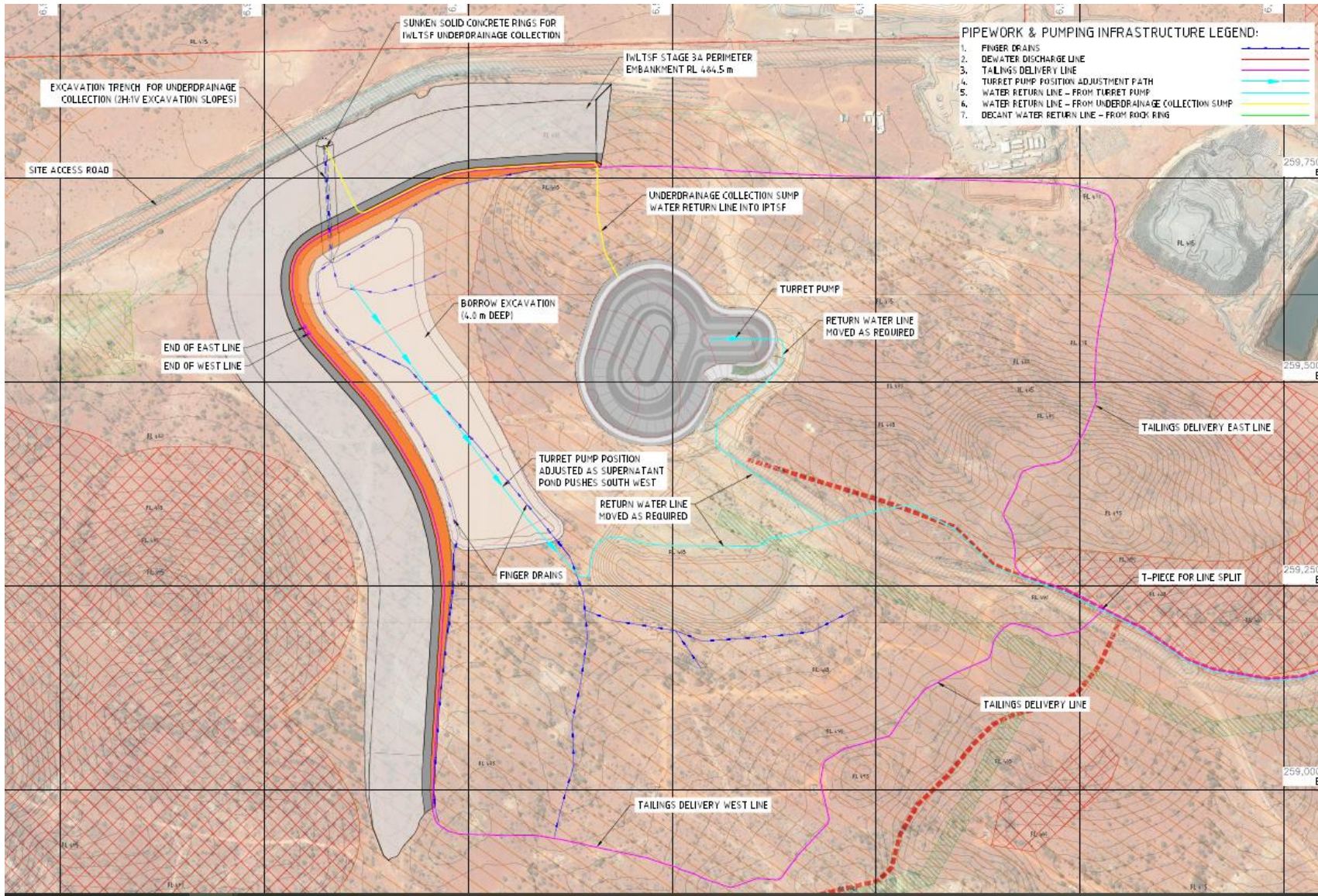


Figure 7: Tailings delivery and return water pipelines for Stage 2 TSF with position of underdrainage finger drains and sump.

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IR-T15 Amendment report template v3.0 (May 2021)



Figure 8: Monitoring infrastructure for IWL TSF (Stage 1-3)

2.2.7 Extension of TSF to form integrated waste landform TSF (IWLTsf) (category 5 – stage 3)

Stage 3 of the proposed development comprises the construction of an integrated waste landform (IWLTsf), which will utilise the (former WSD) TSF embankment as its north east corner, extend this embankment further south as shown in Figure 8 and cover the Vanguard IPTSF. The expected operational life of stage 3 is approximately 2.5 years. Subsequent downstream lifts (stages 4-8) will require authorisation through future applications and are considered outside the scope of this assessment.

The IWLTsf (Stage 3) involves extending the stage 2 embankments along the eastern edge to the Prospero waste rock dumps. The use of dried tailings as construction material for the future lifts is not proposed.

Mine waste rock from underground exploration development will form the bulk downstream zone with a low permeability upstream face comprising material won from within the IWLTsf. The downstream waste embankments will be constructed progressively as waste is produced and hauled to the IWLTsf. It is proposed that the full final width of the downstream waste zone will be constructed prior to commissioning of Stage 3, due to the generation of large quantities of mine waste early in the mine schedule. A cross section of the embankment for the IWLTsf is shown in Figure 16 of the amended works approval. The embankment will consist of:

- Bulk mine waste
- Traffic compacted mine waste in 500mm lifts
- A Bidim A49 Geotextile (or equivalent) to mitigate the migration of fines from the low permeability upstream face into the waste rock; and
- a low permeability upstream zone (compacted in 300mm lifts).

A cut-off trench filled with low permeability material will be constructed under the embankment, to key it into the natural ground and limit lateral seepage. An underdrainage system is proposed for stage 3 (IWLTsf) as shown in Figure 9. This includes upstream toe drains, finger drains and solid underdrainage outlet lines to the south-east corner of the IWLTsf (stage 3). These drain into concrete underdrainage collection sumps.

Tailings are to be deposited from the perimeter embankment of the IWLTsf in a sub-areal manner in thin lifts to form a decant pond away from the main embankment. The operation of the IWLTsf will encapsulate the IPTSF and TSF facilities as the tailings are deposited.

The design of the IWLTsf (Stage 3) includes a decant causeway and rock ring. This is positioned optimally for later stages but will contribute to the decant system at stage 3 due to the construction of three channels, up to 150m long and 6m deep, graded to channel decant toward the rock ring as per Figure 9.

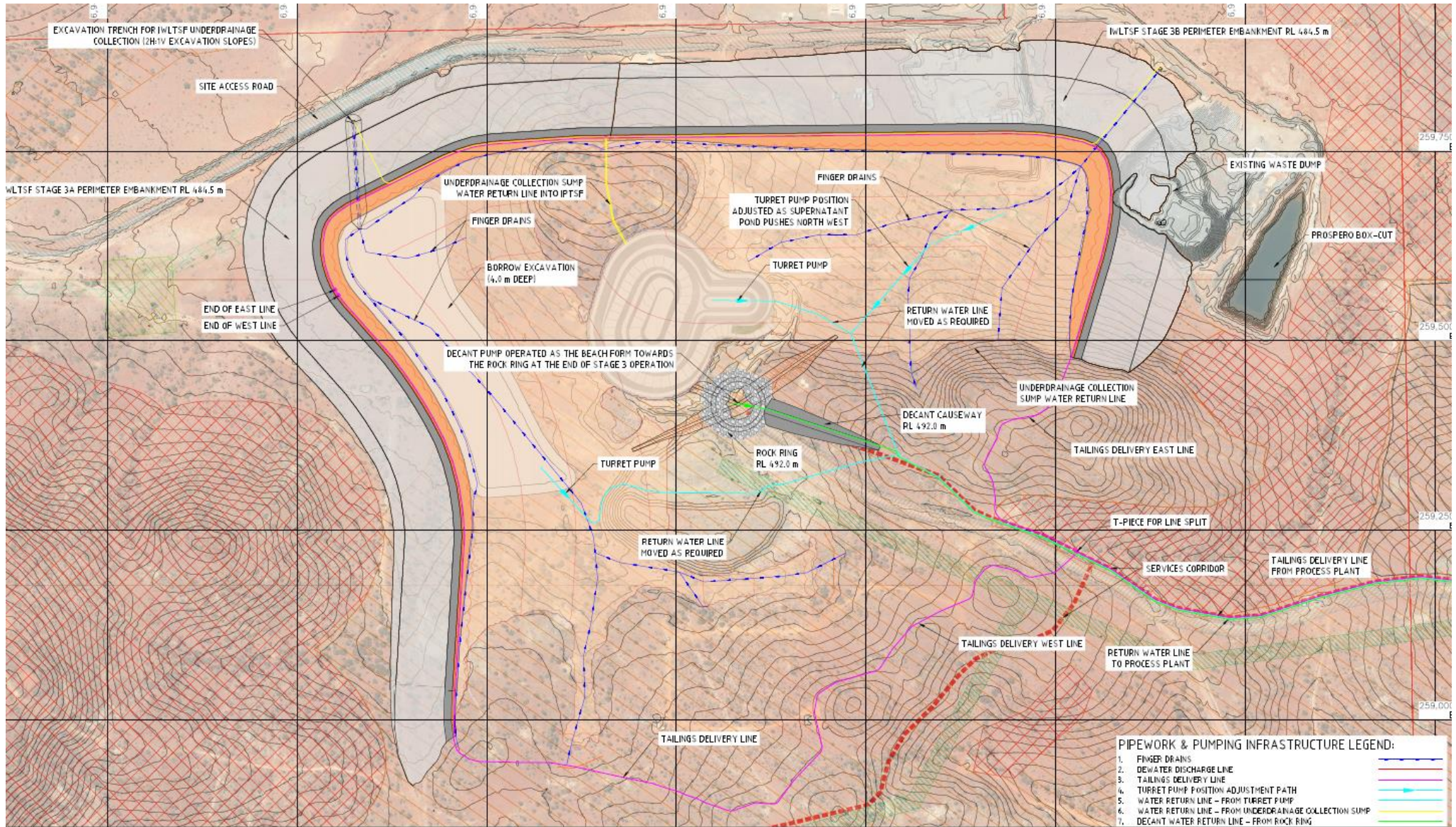


Figure 9: Pipeline and pumping infrastructure Stage 3

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IR-T15 Amendment report template v3.0 (May 2021)

2.2.8 Commissioning

The commissioning plan provided discusses three types of commissioning for tailings, tails return water and dewatering pipelines:

- Pre-commissioning, comprising static checks on unpowered equipment to confirm that the infrastructure has been built according to specification. The Delegated Officer considers this to be part of construction for this assessment.
- Wet commissioning, flushing with process water / mine dewater to test the integrity of pipelines and function of flow and pressure gauges; and
- Tailings commissioning (for tailings pipelines only), testing operation of equipment with tailings.

The Delegated Officer considers that while all the above are operationally important, the environmental risks associated with wet commissioning or tailings commissioning are similar or lower than for the operations phase, and all the same controls apply. For the purposes of this assessment, all running of material through the pipelines is operations. As such, no separate commissioning phase has been assessed or conditioned.

2.2.9 Time limited operations

This assessment includes time limited operations for all infrastructure assessed under this amendment, with conditions, as well as for elements of the gold processing plant. The processing plant was previously approved for construction but not for operation as there were no approved tailings containment infrastructure.

Changes have been made to Table 1 of W6724/2022/1 to better classify the elements of the processing plant that will be constructed at each time. This allows for a single compliance report to be submitted for closely related infrastructure, while sections of the plant that are complete and ready to operate may submit separate compliance documents to allow commencement of time limited operations for those sections.

2.3 Part IV of the EP Act

A referral to the Environmental Protection Authority (EPA) was made under Part IV of the EP Act on 24 January 2020 regarding the dewatering of the Bellevue Underground mine for an amount between 400,000 – 700,000 tonnes of water for the purpose of exploration. A decision not to assess that proposal was made on 3 November 2021.

A second referral was made to the EPA on 17 December 2021 for the recommencement of operations at the Bellevue Gold Project. A decision not to assess that proposal was made on 27 May 2022.

2.4 Mining Act 1978

The Department of Mines, Industry Regulation and Safety (DMIRS) have assessed and approved Mining Proposal REG ID 110429, which includes the Westralia Pit Berm Expansion, Intergraded Waste Landform – Tailings Storage Facility (water storage dam) and Vanguard Pit – In Pit Tailings Storage, under Provisions of the *Mining Act 1978*. The facilities are to be constructed in accordance with the below design reports, which are the same ones included in this application for amendment to works approval W6724/2022/1:

- WSD, IPTSF, TSF and IWLTSF Detailed Design Report – Rev 1. Prepared by Resource Engineering Consultants Pty Ltd, dated 10 November 2022.
- Westralia Pit Berm Expansion Design Report – Rev A. Prepared by Resource Engineering Consultants Pty Ltd, dated 17 November 2022.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Figure 3.

Table 2 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Works Approval Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Earthmoving, vehicle movements, lift off from stockpiles	Air/windborne pathway	<ul style="list-style-type: none"> Water truck utilised as required. Topsoil stripping and spreading restricted in high dust conditions. Vehicle speed limits applied
Hydrocarbon spill	Spill from vehicles, surface mobile equipment and fuel tanks	Air/windborne pathway	<ul style="list-style-type: none"> Hydrocarbons managed in accordance with Australian Standard 1940-2004: <i>The Storage and Handling of Flammable and Combustible Liquids</i>. Hydrocarbons stored and transferred within low permeability compounds designed to contain not less than 110% of the volume of the largest storage vessel and at least 25% of the total capacity of all tanks for a multiple tanks system. Fuel bowsers and fuel delivery inlets will be located on concrete or HDPE-lined pads to contain any drips and spills. The pads will drain to a sump. Vehicle cleaning facility, with sediment collected in a concrete sump and wash down water treated. Spill kits and clean-up procedures Oily wastes disposed of by licenced contractor. Contaminated soil to be treated in-situ, at the bioremediation pad¹ or transported to a controlled waste licenced facility for treatment.
Time limited operation – mine water storage			
Seepage of saline water	WPBE	Mounding into vegetation	Embankment construction outlined in section 2.2.1 including: <ul style="list-style-type: none"> A cut-off trench backfilled with compacted low permeability borrow.

Emission	Sources	Potential pathways	Proposed controls
		root zone	<ul style="list-style-type: none"> Groundwater (seepage) and pore water monitoring A low permeability clay apron A low permeability upstream face, with rock armour to protect it against erosion. Geotextile to minimise piping
	WSD		<p>Embankment construction outlined in section 2.2.2 including:</p> <ul style="list-style-type: none"> cut-off trench backfilled with compacted low permeability borrow. Groundwater (seepage) and pore water monitoring A low permeability upstream face Base to be conditioned and compacted
Overtopping of saline water	WPBE or WSD	Direct discharge to vegetation and soil	<ul style="list-style-type: none"> Design freeboard of 3.3m in the WSD and 1m in the WPBE is sufficient to contain expected water inflows. Regular monitoring of WSD and Westralia Pit water levels. Regular inspections of both water storage facilities.
Spill of saline water	Failure of pipelines between the mining area and the WSD	Direct discharge to vegetation and soil	<ul style="list-style-type: none"> Constructing water pipelines within earthen bunds to ensure spillage is contained. Equipped with automatic shutdown of pumping in the event of a pipe failure. Daily visual inspections of pipelines, and regular monitoring of pipeline network.
Time limited operation – TSFs			
Deposition of tailings to TSFs, leading to impacts to wildlife	Direct deposition	Wildlife accessing the decant ponds, which are elevated in cyanide	<ul style="list-style-type: none"> Fencing to minimise access. Cyanide monitoring, and control of cyanide levels within the processing plant. Regular monitoring of the usage of the TSF and TSF return water ponds by fauna. Process operating systems committed to minimising cyanide usage where possible. Use of pre-leach and tailings thickeners to minimise water to tailings
Seepage of process water (saline to hypersaline, containing elevated cyanide)	IPTSP (stage 1)	Seepage to groundwater, potentially impacting Lake Miranda; mounding into vegetation root zone causing plant stress or death.	<p>Decant recovery by a floating pump to maximise consolidation of tailings.</p> <p>Potential acid drainage controlled by either coverage of tailings at all times by 1.0m of water or incremental deposition of tailings until the facility is incorporated into the IWLTSP.</p> <p>Monitoring of groundwater level and chemistry.</p>
	TSF (stage 2), IWLTSP (stage 3)		Decant recovery by a floating pumps and drainage to rock ring decant.

Emission	Sources	Potential pathways	Proposed controls
Overtopping of tailings or process water (Saline to hypersaline, containing elevated cyanide)	IPTSP (stage 1), TSF (stage 2), IWLTSP (stage 3)	Direct discharge to vegetation and soil	Design operating freeboard calculated to allow for expected inflows. Inspections performed at least once per 12 hour shift
Spill of tailings or tails return water	Failure of pipelines between the processing plant and TSFs	Direct discharge to vegetation and soil	<ul style="list-style-type: none"> All tailings and associated return water pipelines (excluding pipelines which are situated on the In-Pit TSF, TSF and IWLTSP embankments) are to be in an earthen bund which is sufficient to contain any spill for the time between inspections. All pipelines equipped with remote monitoring systems and pressure sensors to allow the detection of leaks and failures, and triggering automatic shutdown of pumping in the event of a pipe failure.
Time limited operation - processing plant			
Dust	Crushing and screening of ore. Lift off from fine ore stockpiles	Air / windborne pathway	<ul style="list-style-type: none"> Misting systems/sprinklers used on crusher. Onsite speed limits enforced. Water cart retained onsite. Wetting down of roads when required. Distance from receptors makes dust emissions unlikely to be a concern
Noise	Crushing and screening of ore Stockpiling of fine ore	Air / windborne pathway	<ul style="list-style-type: none"> Onsite machinery fitted with muffler and reversing air horns rather than beepers where practical. Distance from receptors makes noise emissions unlikely to be a concern.
Contaminated stormwater	Runoff from process plant footprint	Soil Surface water	Contaminated surface water runoff will be managed by: <ul style="list-style-type: none"> Diversion infrastructure, including bunds and drains, to divert contaminated water within the process plant footprint but outside the infrastructure bunds toward the site drainage pond. The site drainage pond will have a capacity of approximately 11,850 m³, greater than 72 hour 1 in 5-year rainfall event. Water will be removed from the site drainage pond following a rainfall event by pumping the water to the process water pond.
Spills and leaks of hydrocarbons / chemicals	Spills from machinery operating, refuelling and fuel storage	Soil, surface water runoff	Hydrocarbon storage and hydrocarbon contaminated waste will be managed as per the same control measures used during construction. All chemical reagents will be stored within tanks in appropriately bunded facilities whereby 110% of the largest vessel is contained and 25% of the total volume is contained according to Australian Standards AS1940 and AS1692.
Air emissions	Air emissions	Air /	None provided

Emission	Sources	Potential pathways	Proposed controls
- Particulates, sulfur dioxide, oxides of nitrogen, carbon monoxide and volatile organic compounds (VOCs)	from the carbon regeneration and gold room areas	windborne pathway	

Note 1: No details of the bioremediation facility have been provided, and DWER does not generally assess hydrocarbon bioremediation facilities on mine sites which process under 1000 tonnes per annum as an associated activity (WA holder has confirmed the facility will be under this throughput). The Environmental Protection (Unauthorised Discharges) Regulations 2004 prohibit the discharge of hydrocarbons into the environment, and this works approval does not provide any defence against non-compliance with these regulations. *Bioremediation of hydrocarbon-contaminated soils in Western Australia* (Department of Environment, 2004) provides guidance on appropriate management.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Works Approval 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 3 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Yakabindie Homestead	Approximately 5 km north-west of the proposed IWLTSF. Note: screened out as a receptor due to separation distance
Numerous Aboriginal heritage sites	Within the premises boundary, but all within the area identified as 'Heritage Exclusion Zones' in Figure 10. A Native Title Agreement and Cultural Heritage Management Plan has been signed by the works approval holder and Tjiwarl Aboriginal Corporation. A letter has been provided from Tjiwarl Aboriginal Corporation stating that they have no objection to the placement of the TSF.
Environmental receptors	Distance from prescribed activity
Violet Range (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation) – Priority Ecological Community - Priority 1	Buffer zone for the PEC is present across the premises including discharge points. The majority of the PEC within the proposed operational areas of the Bellevue Gold Operation is in a degraded state due to historic mining activities.

Yakabindie calcrete groundwater assemblage type on Carey palaeodrainage on Yakabindie Station – Priority Ecological Community - Priority 1	Nearest point approximately 2.5km west of the premises boundary.
Lake Miranda east calcrete groundwater assemblage types on Carey palaeodrainage on Yakabindie Station – Priority Ecological Community – Priority 1	Approximately 2.5km south-east of the Westralia Pit, the nearest Cat 6 discharge point within the premises. Approximately 1.8km from the processing plant, the nearest Cat 5 activity on the premises.
Underlying groundwater (non-potable purposes)	Fractured rock aquifer with water levels approximately 15 – 30m below ground level. Salinity between 17,900mg/L and 90,400mg/L total dissolved solids.
Lake Miranda	<p>Westralia Pit and the proposed WSD/TSF are both upstream of Lake Miranda. According to the Geocortex hydrography layer, they are approximately 500m and 1km respectively from the edge of the lake.</p> <p>The centre of the processing plant is within 350m of a flat playa that is connected to Lake Miranda. The Geocortex hydrography layer records this as a section of Lake Miranda itself. The tailings and return water pipelines will also be upstream of Lake Miranda.</p> <p>Groundwater within the Project area flows south from the mine area to the Lake Miranda, which acts as a groundwater sink. Groundwater at the lake is typically far shallower than at the mine area and may be less than two meters below the surface. These waters support halophytic vegetation across the lake.</p>
Conservation Significant Flora - P3 - Goodenia lyrata (P3) and Grevillea inconspicua (P4)	Within the premises. Known locations shown in Figure 11.

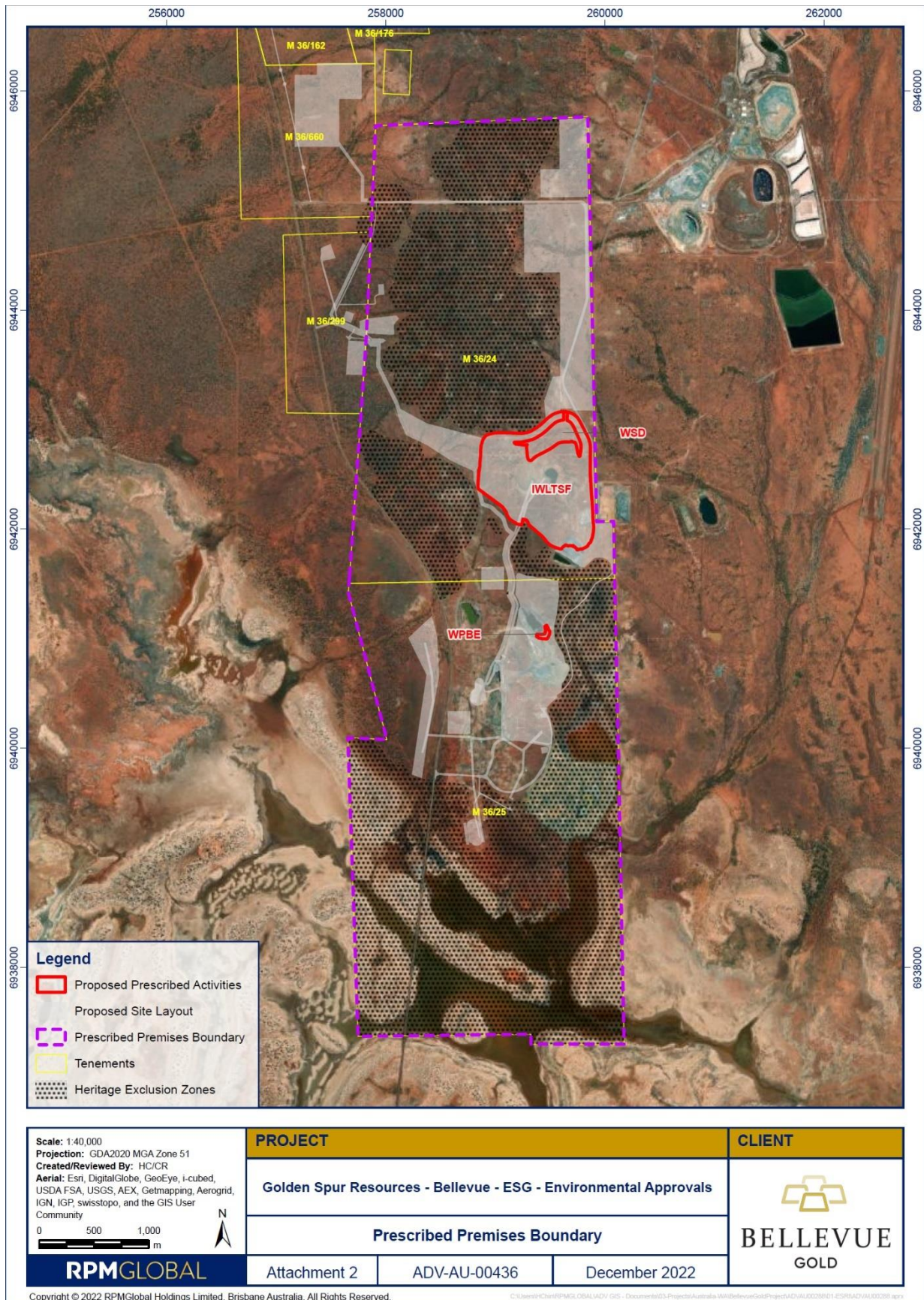


Figure 10: Location of proposed works relative to Heritage Exclusion Zones

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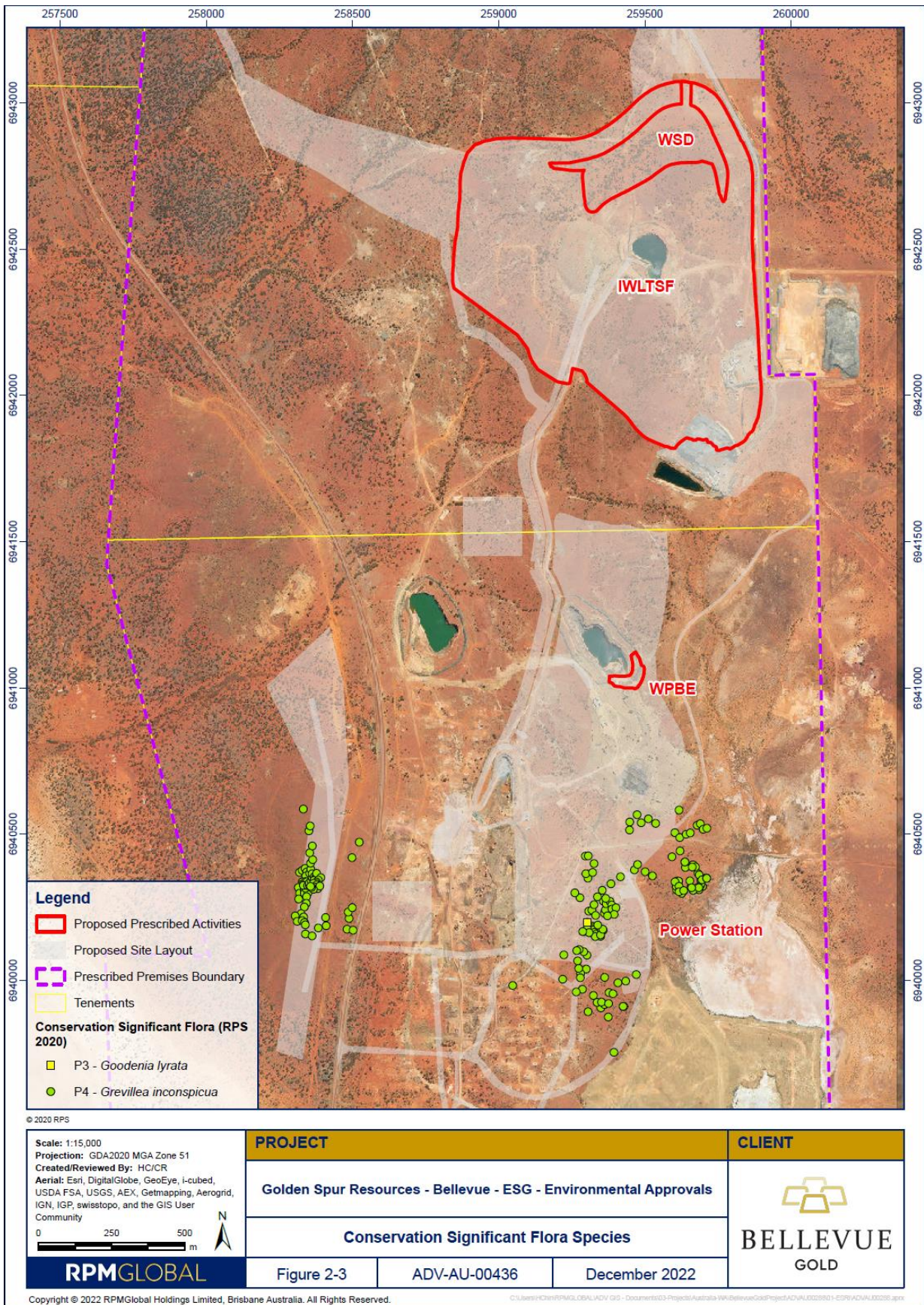


Figure 11: Distance to sensitive receptors – Priority Flora

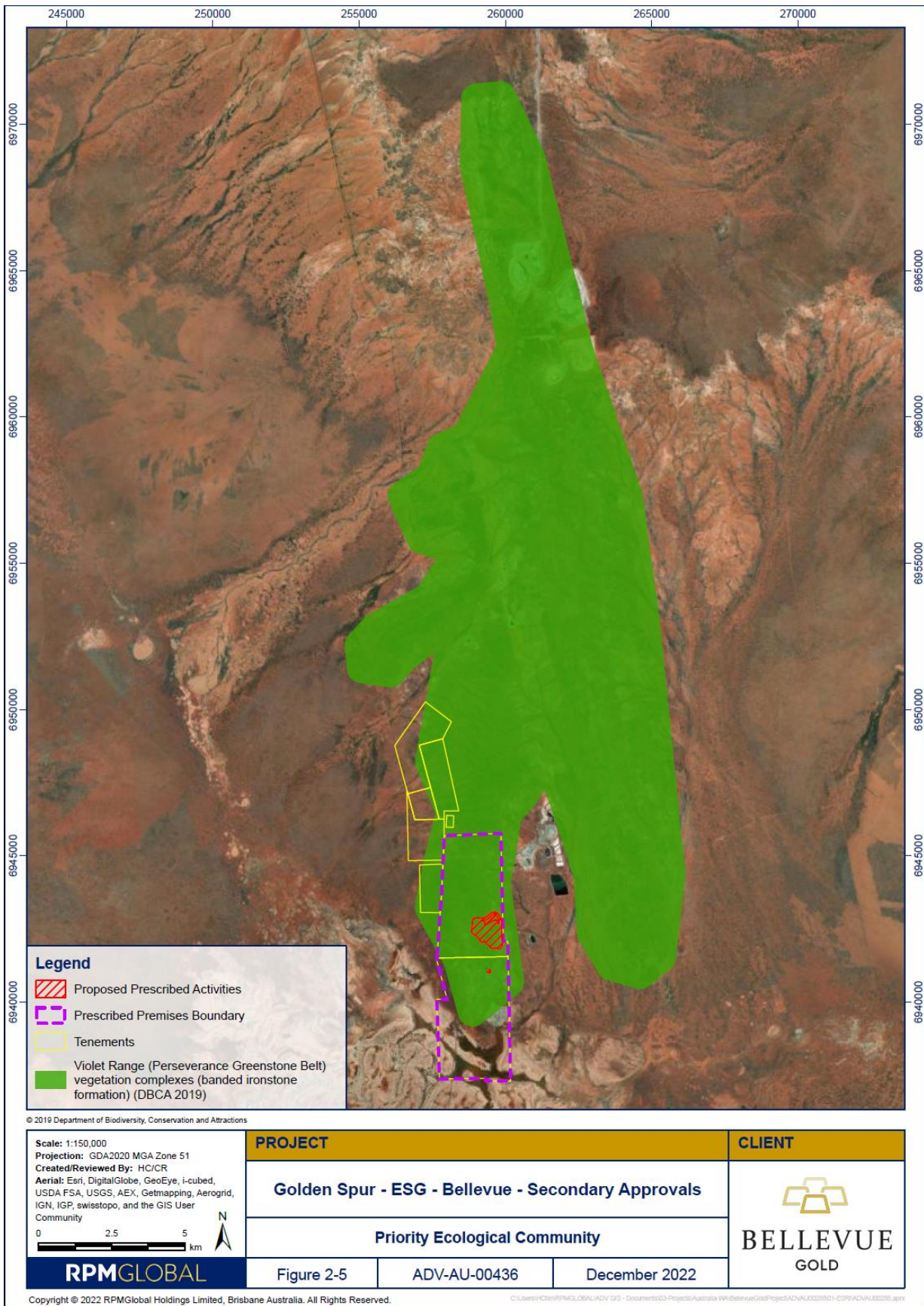


Figure 12: Distance to sensitive receptors – Priority Ecological community

3.2 Risk ratings

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

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

Additional regulatory controls may be imposed where the Works Approval Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Works Approval W6724/2022/1 that accompanies this Amendment Report authorises construction and time-limited operations. The conditions in the Revised Works Approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

An amendment to licence L9259/2020/1 will be required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the infrastructure authorised under this works approval. A risk assessment for the operational phase has been included in this Amendment Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 4. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
Construction								
Earthworks to construct Westralia pit expansion bund, water storage dam (WSD) and IWL TSF	Dust	Air/windborne pathway causing impacts to plant stress	Native vegetation	Refer to Section 3.1.1	C = Slight L = Unlikely Low Risk	Y	N/A	N/A
	Spill of hydrocarbons	Direct emission to soil; runoff to groundwater	Soil, surface water		C = Slight L = Unlikely Low Risk	Y	N/A	N/A
	Sediment laden stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Native vegetation, surface water runoff to Lake Miranda	None provided	C = Slight L = Possible Low Risk	Y	N/A	N/A
Operation (including time-limited-operations)								
Discharge of saline water (from dewatering of underground mine) within the Westralia Pit expansion bund.	Saline water	Seepage through the berm wall, basin floor and 1.5m below the crest of the pit (previously freeboard)	Soil; vegetation; surface water	Refer to Section 3.1.1	C = Minor L = Possible Medium Risk	Y	Condition 1, embankment and monitoring instrumentation construction. Conditions 3-4, compliance reporting Condition 11 – operating conditions Conditions 12 and 13 - monitoring	Refer to section 3.3.1 for detailed assessment Compliance reporting conditions required to validate construction in accordance with conditions.
		Overtopping of berm wall	Soil; vegetation; surface water	Refer to Section 3.1.1	C = Moderate L = Unlikely	Y	Condition 11 - freeboard and inspection requirements	

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Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
					Medium Risk			
Discharge of saline water (from dewatering of underground mine) to the WSD	Saline water	Seepage through the base or embankment wall	Soil; vegetation; surface water	Refer to Section 3.1.1	C = Minor L = Possible Medium Risk	N	Condition 2, embankment, clay apron , monitoring instrumentation construction. Conditions 5-6, compliance reporting Condition 11 – operating conditions Conditions 12 and 13 - monitoring	Extent of clay liner specified to cover deposition area – this was not specified in application. Compliance reporting conditions required to validate construction in accordance with conditions.
		Overtopping of embankment wall	Soil; vegetation; surface water	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 11 - freeboard and inspection requirements	
		Spills or leaks from pipelines causing contamination of soil / impacts to vegetation	Soil; vegetation; surface water	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	Y	Condition 2 – pipeline construction Condition 11 – pipeline inspections	
Deposition of tailings into in-pit TSF (Vanguard pit) (Stage 1)	Tailings / return water	Spills or leaks from pipelines causing contamination of soil / impacts to vegetation	Vegetation / soil	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	Y	Condition 2 – pipeline construction Condition 11 – pipeline inspections	
		Overtopping of in-pit TSF	Vegetation / soil	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 11 - freeboard and inspection requirements	

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
	Leachate	Seepage from base and walls of in-pit TSF causing groundwater mounding reaching root zone of vegetation /soil contamination. Changes in water chemistry of groundwater	Vegetation / soil Groundwater (non-potable), potentially discharging into Lake Miranda	Refer to Section 3.1.1	C = Minor L = Possible Medium Risk	Y	Condition 1 – decant pump Condition 11 – operating requirements	Additional controls not proposed as mounding is likely to be within the footprint of the planned IWLTFS. Water cover is required to minimise acid formation.
Deposition of tailings into TSF (WSD converted to TSF – Stage 2)	Tailings / return water	Spills or leaks from pipelines or sumps causing contamination of soil / impacts to vegetation	Vegetation / soil	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	N	Condition 2 – pipeline construction, additional sump controls Condition 11 – pipeline inspections, additional sump controls	Additional controls to avoid underdrainage sump overflow since the sumps are only sized for approximately 20minutes of flow – inspections, backup equipment and remote monitoring
		Overtopping of TSF		Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 11 - freeboard and inspection requirements	
	Leachate	Seepage from base and walls of TSF causing groundwater mounding reaching root zone of vegetation /soil contamination. Changes in water chemistry of groundwater, with potential impact to	Vegetation / soil Groundwater, potentially discharging to Lake Miranda	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	N	Condition 2 – construction Conditions 5-6, compliance reporting Condition 11 – operating conditions Conditions 12 and 14 - monitoring	Refer to section 3.3.2 for detailed assessment Compliance reporting conditions required to validate construction in accordance with conditions. Additional controls to avoid sump overflow – inspections, backup equipment and remote monitoring.

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Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
		Lake Miranda						Process monitoring required.
Deposition of tailings into IWLTSF (Stage 3)	Tailings / return water	Spills or leaks from pipelines or sumps causing contamination of soil / impacts to vegetation		Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	N	Condition 2 – pipeline construction <u>Condition 11</u> – pipeline inspections, <u>additional sump controls</u>	Additional controls to avoid underdrainage sump overflow since the sumps are only sized for approximately 20minutes of flow – inspections, backup equipment and remote monitoring
		Overtopping of TSF		Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 11 - freeboard and inspection requirements	
	Leachate	Seepage from base and walls of TSF causing groundwater mounding reaching root zone of vegetation /soil contamination. Changes in water chemistry of groundwater, with potential impact to Lake Miranda	Vegetation / soil Surface water	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	N	Condition 2 – construction Conditions 5-6, compliance reporting <u>Condition 11 – operating conditions</u> <u>Conditions 12 and 14 - monitoring</u>	Refer to section 3.3.2 for detailed assessment Compliance reporting conditions required to validate construction in accordance with conditions. Process monitoring, and additional groundwater monitoring required.
Wildlife accessing decant ponds on IP TSF, TSF or IWLTSF and being impacted due to elevated cyanide concentrations	Decant water collecting on tailings facilities following deposition of tailings	Direct ingestion of water with elevated cyanide	Wildlife, particularly birds	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	N	Conditions 12 – decant pond monitoring. <u>Condition 13 – actions if WAD CN exceeds trigger limit</u>	Refer to section 3.3.3 for detailed assessment

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
Operation of processing plant infrastructure: - Grinding and classifying infrastructure - Leachate and absorption circuit - Gold recovery including carbon regeneration etc	Contaminated or potentially contaminated stormwater runoff	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Branch of Lake Miranda <200m east of site drainage point	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 1 – construction Conditions 3-4, compliance reporting Condition 11 – time limited operations requirements	Compliance reporting conditions required to validate construction in accordance with conditions.
	Spills and leaks of processing chemicals	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Branch of Lake Miranda <200m east of site drainage point	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	Y	Condition 11 – time limited operations requirements	
		Seepage into ground	groundwater	Refer to Section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 1 – construction Conditions 3-4, compliance reporting Condition 11 – time limited operations requirements	
	Combustion by products of LPG (carbon dioxide (CO ₂), methane (CH ₄), and nitrous oxide (N ₂ O)) in gold room furnace, carbon regeneration kiln and elution heater. Vapourised contaminants from loaded carbon during carbon regeneration e.g., heavy metals, sulfur dioxide (SO ₂).	Air / windborne pathway causing impacts to health and amenity	No near receptors	Refer to Section 3.1.1	No plausible impact to receptors	Y	Condition 1 – construction Conditions 3-4, compliance reporting	

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

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

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3.3 Detailed risk assessments

3.3.1 Detailed risk assessment for deposition of saline water within the Westralia Pit expansion berm, causing seepage to groundwater.

Deposition of saline water to 1.5m below the lowest pit crest of Westralia Pit is already authorised under licence L9259/2020/1. This assessment considers deposition of saline water up to the crest of Westralia pit, and outside the pit within the Westralia Pit expansion bund. The new crest height when assessing freeboard is the embankment height of nominally 475m (for phase 1) and RL 479.5m (for phase 2). Saline water seeping from the facility has the potential to contaminate soil and cause stress or death of vegetation if it comes within vegetation root zone.

There are three possible new seepage paths to be considered in this change:

1. Through the berm embankment
2. Through the basin outside of Westralia Pit; and
3. Through the upper section of Westralia Pit.

The Delegated Officer considers that the design of the berm includes reasonable controls to minimise the rate of seepage through the berm itself, including the cut off trench to minimise seepage immediately under the embankment. These will be specified in conditions of the amended works approval.

The proposed clay apron and removal of uncontrolled fill to minimise seepage from the basin outside Westralia Pit will also be required to extend up to the embankment crest level for each phase. It is unclear from the application if this is the proposed extent of the apron, but the Delegated Officer considers this a reasonable control.

The rate of seepage through the upper meters of the Westralia Pit is unknown, but likely to be similar to the lower sections of the pit. The licence holder reports that a monitoring bore installed in December 2020 was dry until May 2021 when it is believed to have been destroyed. There has been no evidence provided of exactly where this bore was constructed so the reliability of this data is low, but it does indicate that potentially no significant seepage currently originating from the Westralia Pit. It is noted however that the monitoring data only covers a few months of deposition into Westralia Pit.

Technical review of the proposal has been undertaken and it was noted that there is some uncertainty in the seepage modelling, as hydraulic conductivity values of the various geological materials used in the models were assumed on the basis of limited laboratory and field testing. Changes in these values by one or more orders of magnitude would have the potential to significantly alter the predicted seepage rates and the predicted magnitude of groundwater mounding.

It was also noted that the evaporation rate from the facility was assumed to be the same as the annual pan evaporation rate for the area. This assumption is invalid as due to the high salinity of the groundwater in the area, evaporation is likely to be 50-60% of that rate. However given this facility is used to store saline water only, the Delegated Officer considers that any difference between assumed and actual evaporation rate will not impact seepage rate, only residence time. Freeboard limits on the embankment and seepage trigger values will adequately control how much water can be stored in the facility. Differences in assumed and actual evaporation rates may impact the capacity of the facility to receive mine dewater within these parameters, but this is an operational matter to be managed by the works approval holder.

The Delegated Officer considers that the one monitoring bore proposed downstream from the Westralia Pit, along with vibrating wire piezometers in the embankment wall, is suitable for

monitoring the seepage from this facility given it is in a highly disturbed mining area. Standard conditions on the installation of monitoring bores will be imposed to ensure the integrity of monitoring data. Groundwater monitoring parameters and frequency will match the current monitoring requirements on licence L9259/2020/1. The standing water level limit of 5mbgl is an appropriate, outcomes based condition. The works approval holder should monitor trends in standing water levels, and if this limit is approached then actions should be taken to avoid breach of the limit, which may include cessation or slowing of dewatering deposition into this facility.

The Delegated Officer considers that it is **Possible** that there could be mid level onsite impacts to soil and vegetation, giving a consequence rating of **Moderate**. This gives an overall rating for the risk of seepage from the WPBE impacting on soil and vegetation to be **Medium**.

3.3.2 Detailed risk assessment for deposition of tailings into TSF (stage 2) and IWLTSF (stage 3) causing seepage to groundwater.

Process water from the TSFs is expected to be saline to hypersaline, containing elevated cyanide and metals. Seepage from the facilities has the potential to contaminate non-potable groundwater. As there is a regional groundwater flow toward Lake Miranda, there is potential for contaminated groundwater to impact the chemistry of the lake. Additionally, contaminated groundwater mounding within the root zone of vegetation could cause stress or death of this vegetation.

There are three possible seepage paths to be considered:

1. Through the berm embankment;
2. Through the Vanguard Pit; and
3. Through the basin

The Delegated Officer considers that the design of the embankment includes reasonable controls to minimise the rate of seepage through the berm itself, including the cut off trench to minimise seepage immediately under the embankment. These will be specified in conditions of the amended works approval.

The rate of seepage through the Vanguard Pit is unknown, but mounding is likely to remain within the footprint of the IWLTSF. Compaction of the basin is required, as proposed.

Monitoring bores MB01 – MB03 as shown in Figure 17 of W6724/2022/1 were not fully constructed or have been decommissioned. MB04 and MB05 are existing monitoring bores. MB06 and MB07 are proposed.

Technical review of the proposal has been undertaken and it was noted that there is some uncertainty in the seepage modelling, as hydraulic conductivity values of the various geological materials used in the models were assumed on the basis of limited laboratory and field testing. Changes in these values by one or more orders of magnitude would have the potential to significantly alter the predicted seepage rates and the predicted magnitude of groundwater mounding. Discharge monitoring has been added to the works approval during time limited operations to ensure an appropriate water balance can be developed.

Technical review also found that the proposed groundwater monitoring bores downgradient of the TSFs would not adequately capture radial seepage from the TSFs. At least three additional monitoring bores are recommended, hydraulically upgradient of the TSF/IWLTSF. A condition has been added to the works approval for the design of these additional bores by a suitable qualified hydrogeologist, and installation prior to operation of the IWLTSF.

Groundwater monitoring conditions have been added to the works approval for groundwater levels and chemistry around the TSF/IWLTSF. Monthly monitoring is required during time limited operations. Footnotes to Table 6 provide information on changes to which bores are required to be monitored over time, as the facilities progress through the planned stages.

The Delegated Officer considers that it is **Possible** that there could be mid level onsite impacts to soil and vegetation, giving a consequence rating of **Moderate**. This gives an overall rating for the risk of seepage from TSF or IWLTsf impacting on vegetation or Lake Miranda to be **Medium**.

3.3.3 Detailed risk assessment for wildlife impacts due to use of decant ponds in TSFs (stage 1-3)

Process water from the TSFs is expected to contain elevated cyanide and metals. The greatest potential impact is expected to be cyanide. The applicant has committed to fencing TSFs to minimise fauna access. Birds are more likely to access the decant ponds than other wildlife.

The applicant has stated that the concentration of Weak Acid Dissociable Cyanide (WAD CN) in the decant pond in the IPTSF/TSF/IWLTsf is expected to be below 50 mg/L, which is the guideline value for the protection of wildlife (e.g. birds) specified in the *Leading practice sustainable development program for the mining industry, 2008*.

It is accepted that wildlife is unlikely to access water with a salinity exceeding 50,000 mg/L. However, given the local groundwater ranges from brackish to hypersaline, it is not clear whether the decant water salinity will fall into this category. Wildlife, particularly birds may access the decant ponds as a water source. The Delegated Officer has therefore set 50mg/L of WAD CN as a trigger value. If cyanide levels exceed this, further actions are required to reassess the risk based on the actual decant pond salinity and propose additional controls if required.

The Delegated Officer considers that though it is **Unlikely** given the elevated salinity, there could be low level impacts to wildlife (mostly birds) that extends off site, giving a consequence rating of **Moderate**. This gives an overall rating for decant pond impacting wildlife of **Medium**.

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
<p>Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal (28/2/23)</p> <p>Follow up consultation for the change in some design details on 25/05/2023.</p>	<p>Replied on 3/3/23 advising that DMIRS have assessed and approved Mining Proposal REG ID 110429 which includes the Westralia Pit Berm Expansion, Intergraded Waste Landform – Tailings Storage Facility (water storage dam) and Vanguard Pit – In Pit Tailings Storage, under provisions of the <i>Mining Act 1978</i>. The design reports approved are referenced.</p> <p>Follow up comments received 29/5/2023:</p> <p>Westralia Pt Berm Expansion: DMIRS have approved the overall facility – under Mining Proposal Reg ID 110429. The amendment to the staged construction of the facility is still consistent with the Mining Proposal approval.</p> <p>Water Storage Dam:</p> <p>The Key Mining Activity Table (KMA) for the Waste Storage Dam currently approves the dam to be constructed and operated to the 482 mRL, with a separate KMA table for the Stage 3 TSF approved to construct and operate to the 484.5 mRL.</p>	<p>Noted. These design reports are the same documents as provided with this amendment application.</p> <p>Follow up comment noted.</p>

	<p>The works approval strategy proposed is not consistent with Mining Proposal Reg ID 110429, however a Mining Proposal amendment for Bellevue Gold is currently under assessment. DMIRS will include a Request for Information to Bellevue Gold, requesting they resubmit the Mining Proposals to make the KMA table align with the works approval.</p> <p>DMIRS has no objections to the issue of the Works Approval and will ensure that the Mining Proposal under assessment aligns with DWER approvals</p>	
The Tjiwarl Aboriginal Corporation was advised of proposal (28/2/23)	No response provided. A letter has been provided from Tjiwarl Aboriginal Corporation via the works approval holder stating that they have no objection to the placement of the TSF.	Noted.
Works Approval was provided with draft amendment on 12/05/2023	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 Works Approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Works Approval as part of the amendment process.

Table 6: Summary of works approval amendments

New condition no.	Proposed amendments
1	<p>Table rearranged, and Infrastructure rows 3-4 added.</p> <p>Conditions for pipelines amended as requested to allow remote monitoring to be considered in bund size, or pipelines buried. Equivalent controls so no change to environmental risk.</p> <p>'Machinery fitted with mufflers' clarified to 'Mobile plant fitted with mufflers...'</p>
2	New condition for construction of critical containment infrastructure.
4	<p>Sub condition (a) redefined as applying to items 1-2 only, and 'mining process engineer' corrected to 'process engineer'.</p> <p>Sub condition (b) added for new infrastructure rows 3-4.</p>
5-6	New conditions - construction compliance conditions for critical containment infrastructure
7-9	Construction and baseline monitoring of groundwater monitoring bores around TSFs

10	Clarification that TLO is considered for each numbered row of infrastructure, and referencing condition 5 as well as condition 3.
11	Table rearranged to align with tables 1 and 2, new infrastructure added including TLO for remainder of the processing plant. Conditions for pipelines amended as requested to allow remote monitoring to be considered in bund size, or pipelines buried. Equivalent controls so no change to environmental risk. Sizing screen added to crushing and screening circuit. Was in original assessment but omitted from condition.
12	New condition – discharge (of tailings and mine dewater) monitoring during time limited operations.
13	New condition - WAD CN contingency condition.
14-15	New condition - groundwater monitoring near Westralia Pit and TSFs.
16	Clarified that this condition refers to each numbered (group) item of infrastructure.
17	Added recording of tailings deposited and monitoring results.
Definitions	Definitions added for ‘monthly period’, ‘suitably qualified geotechnical engineer’, ‘suitably qualified hydrogeologist’, ‘AS 1726’, ‘Assessment of Site Contamination NEPM’, and ‘ASTM D5092/D5092M-16’.
Schedule 1	Premises map updated to include additional tenement; new Figures added for additional infrastructure.
Schedule 2	Schedule added to detail the construction requirements of groundwater monitoring wells

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Department of Mines and Petroleum 2015, *Guide to the preparation of a design report for tailings storage facilities (TSFs)*, Perth, Western Australia.
5. Australian Government May 2008, *Leading practice sustainable development program for the mining industry: Cyanide Management*.
6. Department of Environment, 2004, *Bioremediation of hydrocarbon-contaminated soils in Western Australia*, Perth, Western Australia.
7. Works Approval W6724/2022/1 Amendment Supporting Documentation, submitted by Golden Spur Resources Pty Ltd to DWER on 19 December 2023.
8. REC, 29 May 2023. ‘*IWLTSF Stage 1 – 3 Design Changes - Bellevue Gold Project*’, Western Australia (in DWER Document A2179134)

Appendix 1: Summary of Works Approval Holder's comments on risk assessment and draft conditions

Condition	Summary of Works Approval Holder's comment	Department's response
Works Approval History	Vanguard Pit is not water storage	Corrected to Westralia Pit Berm Expansion
Throughout	Request to reference 'remote monitoring' rather than 'telemetry' as fibre optic cables are proposed, rather than wireless transmission.	Change accepted.
1 (Table 1)	Add a 2-stage sizing screen to the description of the crushing and screening circuit	Added. There is a product screen included in the flow diagram of the processing plant assessed in the existing W6724/2022/1 (Figure 1 of the original decision report). This was missed from Table 1 in the original W6724/2022/1 and is therefore been corrected.
1 (Table 1) – 1b	'machinery' changed to 'mobile equipment' for accuracy	Change accepted. Change also made to time limited operation condition (Table 4).
1 (Table 1) – 1d and 2e	Requesting options to bury or use remote monitoring on pipelines instead of secondary containment for time between inspections.	Use of remote monitoring in conjunction with suitable secondary containment or burying is an acceptable alternate control. Alternate wording proposed and accepted by WA holder (A2178802)
1 (Table 1) - 3	Request to construct the WPBE in 2 parts - starter is stage 1 and 2 in diagram, lift is stage 3. Updated wording proposed (A2178420) Propose monitoring equipment required with Phase 2, no monitoring required for Phase 1 (expected 8-12 weeks)	<ul style="list-style-type: none"> Propose terminology of 'phase 1' (WPBE waste stage 1, and upstream layers) and 'phase 2' (WPBE waste stage 2-3, and upstream layers) DMIRS advised (A2178574) that no change to the mining proposal is required for the construction to take part in stages, provided the overall facility is unchanged. Changes to dimensions can be addressed in current amendment to Mining Proposal if required (A2178883). No objection to issue of works approval amendment. DWER has reviewed the description, risk assessment and conditions for the WPBE. It is noted that as well as the change to a two phase design, the dimensions of the embankment design have changed. The new design features stronger seepage controls as the basic components are similar but the cut-off trench and low permeability zone are wider. The total embankment width is also wider. It is therefore considered that the embankment design is still acceptable. Works approval holder proposed that all monitoring equipment (VWPs and monitoring bore) be completed in Phase 2. The Delegated Officer

Works Approval: W6724/2022/1

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		<p>considers that monitoring equipment should be installed as early as possible. WA holder agreed to install monitoring bore at phase 1. However ongoing construction of phase 2 immediately after completion of phase 1 will make construction of VWP's difficult. The Delegated Officer has taken this into account along with the disturbed nature of the downstream environment and decided that for the short period before construction of Phase 2, VWP's are not necessary to monitor the seepage risk within the embankment.</p> <ul style="list-style-type: none"> The Licence holder is advised that DWER has not assessed whether piezometers are required for monitoring of embankment stability, and an amendment of the approved mining proposal could be required. DWER has notified DMIRS of the change in design, and proposal to operate phase 1 without piezometers. Plan and section figures updated.
1 (Table 1) – 3 d and e	Change from point location of Westralia Pit monitoring bore MB01 to defining an envelope – final location to be determined in consultation with Tjwarl people.	Proposed envelope is downstream of the WPBE. Acceptable. Replacement Figure 7 inserted to show monitoring bore envelope.
1 (Table 1) – 4a	Reworded.	Agree proposed rewording more appropriate.
2 (Table 2) – 1a	Seeking clarification as to what is meant by 'conditioned and compacted to minimise seepage'	<p>This condition requires conditioning and compacting as stated in the design report. No compaction testing regime is specified. The works approval holder should seek technical advice, including testing if required, to ensure compaction is sufficient such that seepage is comparable with the modelling provided. Assessment of future lifts will consider the extent of seepage from these initial stages.</p> <p>Query only. No change made to condition.</p>
2 (Table 2) – 1b	Changing the requirements for decommissioning bores	DWER queried the variance to the recommendations in the TSF design report. Works approval holder proposed new wording to maintain the extent, but allow bentonite grout rather than only cement. Acceptable. Variation on WA holder wording used.
2 (Table 2) – 1c and 1e	<ul style="list-style-type: none"> Increase crest elevation at this stage from original design of RL 482m (with lift to 484.5m at tailings stage 3) to full stage 3 height of RL 482m. Change in description of embankment zones 	<ul style="list-style-type: none"> The WSD embankment has been redesigned. WA holder provided a technical memorandum 'IWLTSF Stage 1 – 3 Design Changes - Bellevue Gold Project' (REC, 2023) outlining these changes, which has been considered. The new design provides an equivalent level of seepage controls so is acceptable. This condition has been reviewed, figures updated and descriptions in the decision report reviewed. The increased embankment height does not change the risk of overtopping or running around the embankment, if operated to the same height as originally proposed. Adjusted condition 11 to limit operating height.

Condition	Summary of Works Approval Holder's comment	Department's response
		<ul style="list-style-type: none"> DMIRS advise that the change is not consistent with the current mining proposal Reg ID 110429. However they are currently assessing a mining proposal amendment and will consider this change under that review. DMIRS have no objection to issue of the works approval amendment (DWER document A2178574)
2 (Table 2) – 1f	Questioning figure reference.	Both are relevant. Figure 13 is section and Figure 14 is plan view. Reworded to clarify that both should be referenced.
2 (Table 2) – 1j	Requesting options to bury or use remote monitoring on pipelines instead of secondary containment for time between inspections.	Use of remote monitoring in conjunction with suitable secondary containment or burying is an acceptable alternate control. Alternate wording proposed and accepted by WA holder (A2178802)
2 (Table 2) – 2a	Incorrect Figure reference	Agree Figure 13 is most appropriate here. Corrected.
2 (Table 2) – 2a	Reworded.	Agree proposed rewording more appropriate.
2 (Table 2) – 2b and 3d	Proposed changes to sump controls	Clarified with licence holder. Agreed to wording with change from 'telemetry' to 'remote monitoring' (A2179134). Inspection frequency is specified in condition 11.
2 (Table 2) – 3e	Seeking clarification as to what is meant by 'conditioned and compacted to minimise seepage'	This condition requires conditioning and compacting as stated in the design report. No compaction testing regime is specified. The works approval holder should seek technical advice, including testing if required, to ensure compaction is sufficient such that seepage is comparable with the modelling provided. Assessment of future lifts will consider the extent of seepage from these initial stages. Query only. No change made to condition.
2 (Table 2) – 3h	Changing the requirements for decommissioning bores	As per Table 2 – 1b above.
4a	Please can DWER confirm the definition of a mining process engineer – is this a mining engineer or processing engineer?	This wording is from the existing works approval and has been reassessed in this amendment. It relates to process plant design not mining, so processing engineers is more appropriate. 'Mining' will be removed.
9	Request changes to groundwater monitoring bores – MB1-3 did not exist or have been decommissioned.	Baseline and time limited operations monitoring, as well as monitoring bores required and installation timing have been reviewed in light of this information.
10a	Refer to condition 5 as well as condition 3.	Agreed. For critical containment infrastructure this will be condition 5, for other infrastructure it will be condition 3.
11 – 1a	Propose to change 'The HDPE lining is maintained such that permeability is $1 \times 10^{-9} \text{ ms}^{-1}$ ' to 'The HDPE lining has a permeability of $1 \times 10^{-9} \text{ ms}^{-1}$ '.	The WA holder's concern appears to be that the liner should not require active maintenance. It is noted that condition 1, item 1e specifies the installation requirements of the liner. Condition 11 is an operational condition, and the intent of item 1a is that damage that would increase this permeability should be

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		avoided and if there is damage to the liner, operation is not authorised until this damage has been repaired.
11 – 1b	Remove requirement for mufflers and reversing air horns to be maintained, stating that these are safety controls not environmental.	This was an applicant proposed control conditioned in the original works approval. The choice of safety noise and maintenance of mufflers are environmental controls to minimise noise impacts. However given the distance to noise sensitive receptors, the Delegated Officer considers that this is not necessary so will be removed as requested.
11 – 2e	Requesting options to bury or use remote monitoring on pipelines instead of secondary containment for time between inspections.	Use of remote monitoring in conjunction with suitable secondary containment or burying is an acceptable alternate control. Alternate wording proposed and accepted by WA holder (A2178802)
11 - 3	Separate into two parts, in line with proposed two part construction.	Done. Phase 1 and phase 2 terminology used (to differentiate from 'stage' terminology used in design)
11-6g (now 7f)	Change decant pond 'shall at all times be at least 100m from the embankment' to 'will be maintained at the maximum possible distance from the embankment'. Reason given is that during commissioning 100m may not always be possible.	The 100m minimum was taken from the TSF design report. The DO acknowledges that this may not be achievable in the commissioning stage, and that failure and seepage risks will be lower at facility commencement. New wording accepted. 100m minimum will be placed on the licence for ongoing operation beyond time limited operations.
12	Allow sampling of decant return if direct sampling of decant pond is not safe	Acceptable. Table note added.
14	Changes to monitoring bore locations.	Baseline and time limited operations monitoring, as well as monitoring bores required and installation timing have been reviewed in light of non-existence of MB01 to MB03.
Figures 5-7,	Updated Figures provided, as discussed above.	Acceptable. Inserted.
Figures 12-13	Updated Figures provided, as discussed above.	Essentially acceptable, considering new design report. Noting that these are for the WSD construction 'tailings level' has been removed from figures before insertion.
Schedule 2	Multiple changes proposed	<ul style="list-style-type: none"> • Timings reviewed in light of non-existence of MB01 to MB03 – MB02A and MB03A needed before TLO of WSD. • Locations given as approximate and subject to advice of hydrogeologist and Tjwarl people acceptable. Some changes to proposed wording. • This is construction requirements only, so MB4 not required. • It is not clear where a replacement for MB05 would go, and this does not appear to be necessary given the other required bores. Additional bores may be installed as recommended by hydrogeologist.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY				
Application type				
Works approval	<input type="checkbox"/>			
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?		Yes <input type="checkbox"/> No <input type="checkbox"/>
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes <input type="checkbox"/> No <input type="checkbox"/>
		Date Report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input checked="" type="checkbox"/>	Current works approval number:	W6724/2022/1	
Amendment to licence	<input type="checkbox"/>	Current licence number:		
		Relevant works approval number:		N/A <input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>
Date application received		19/12/2022		
Applicant and Premises details				
Applicant name/s (full legal name/s)		Golden Spur Resources Pty Ltd		
Premises name		Bellevue Gold Project		
Premises location		Mining tenements: M 36/24 and M 36/25		
Local Government Authority		Shire of Leonora		
Application documents				
HPCM file reference number:		DER2022/000143~3		
Key application documents (additional to application form):		Attachment 2 – Premises map Attachment 3A – Commissioning Plan Attachment 3B – Amendment Supporting Document Attachment 3C – Proposed clearing		
Scope of application/assessment				

<p>Summary of proposed activities or changes to existing operations.</p>	<p>Works approval amendment</p> <p>Construction of Water storage dam (WSD)/tailings storage facility (TSF) and Westralia Pit berm extension.</p> <p>Cat 6 – New category on WA, same throughput as on licence (500,000tpa) The construction of a water storage dam and the increasing of capacity of the Westralia pit by constructing a berm. This is to increase water storage capacity for ongoing dewatering of the underground pit prior to the water being required for the processing plant.</p> <p>Cat 5 – No increase in throughput. The stages of development will be:</p> <ol style="list-style-type: none"> 1. The conversion of Vanguard Pit into an in-pit TSF. Estimated deposition life of 1.15 years. 2. The conversion of the WSD into a TSF. The water storage dam will be constructed with the necessary infrastructure for it to be used for tailings. Estimated deposition life of 1.58 years. 3. The construction of an integrated waste landform TSF (IWLTS). Estimated deposition life of 4.06 years.
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Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 6: Mine dewatering	Category not on existing works approval. Assessed capacity of existing licence is 500,000 tonnes per year	100,000 tonnes per year
Category 5: Processing or beneficiation of metallic or non-metallic ore	1,000,000 tonnes per year	No change

Legislative context and other approvals

<p>Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>Referral decision No: CMS 18084</p> <p>Managed under Part V <input checked="" type="checkbox"/></p> <p>Assessed under Part IV <input type="checkbox"/></p>
<p>Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Has the proposal been referred and/or assessed under the EPBC Act?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Mining lease / tenement <input checked="" type="checkbox"/> Expiry: M36/24 – 16/01/2028 M36/25 – 16/01/2028
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	If N/A explain why? Mining tenure
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input type="checkbox"/>	CPS No: 9951/1 Granted 19/01/2023
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Licence/permit No: GWL 202924(1)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Name: Goldfields Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i> , <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , <i>State Agreement Act xxxx</i>)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>Mining Act 1978</i> : mining proposal 110429 was applied for in March 2022 and was approved 19 January 2023. <i>Mine Safety and Inspection Act 1994</i>
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>M36/24. CSS 18607 Classification: possibly contaminated – investigation required (PC–IR) Date of classification: 20/11/2011</p> <p>M36/25 Classification: awaiting classification Date of classification: N/A</p>
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