Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Works Approval

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

Works Approval Number	W6912//2024/1
Applicant	IGO Cosmos Pty Ltd
ACN	111 599 323
File number	DER2024/000036
Premises	Cosmos Nickel Operation Goldfields Highway SIR SAMUEL WA 6437 Legal description - Mining tenements L36/118, L36/159, L36/171, L36/172, M36/127, M36/212, M36/365, M36/371, M36/375, M36/376, M36/377, M36/441, M36/659 and part of M36/180 and M36/349 As defined by the premises maps attached to the issued works approval
Date of report	11 April 2025
Decision	Works approval granted

Christine Pustkuchen
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Manager, Resource Industries
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6912/2024/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

On 24 January 2024, IGO Cosmos Pty Ltd (the applicant) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to undertake construction works and time limited operations relating to Category 5 (processing or beneficiation of metallic ore) at the Cosmos Nickel Operation (the premises) through the construction of a new paddock Tailings Storage Facilities (TSF) – TSF3.

The premises is approximately 38 km northeast of Leinster. Nickel mining and processing occur at the premises, and existing associated infrastructure includes the processing plant, a paste plant, a paddock TSF (TSF1) and a series of nine Water Management Ponds (WMPs) used for mine dewatering effluent management. The prescribed premises for this works approval will align completely with the licence for the operation, L7404/1999/9, and therefore the existing general conditions on the licence will also apply.

The premises relates to the category and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6912/2024/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6912/2024/1.

TSF3 design and location

The proposed TSF3 will be an unlined facility with a footprint of about 9.3 hectares (ha), which has been designed to a final height of about 14.3 metres (m) above surface level (RL 494). The final facility has been sized to contain about 2.27 million tonnes (Mt) of tailings, which should be sufficient storage capacity for the next 13 years of production, as it is intended that existing TSF1 and the paste plant will also continue to operate during this time. TSF3 will consist of an earthen starter embankment with an additional four 2.5m upstream lifts. It is classified as a Category 1, High B facility under the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) Code of Practice for Tailings Storage Facilities (2013). It has also been designed to retain a 48-hour probable maximum precipitation (PMP) event without overtopping. This works approval authorises the construction of the starter embankment and first lift, with the intention that subsequent lifts will be authorised through separate licence amendments.

TSF3 will abut the existing TSF1 to the south, and will directly overlap the footprint of the existing WMP1 (refer to Figure 1). This eliminates the need for clearing vegetation and restricts ground disturbance to previously disturbed areas. The proposed TSF3 embankments will be constructed in a “U” shape that will be enclosed on the northern side by the southern embankments of TSF1 (refer to Figure 2).

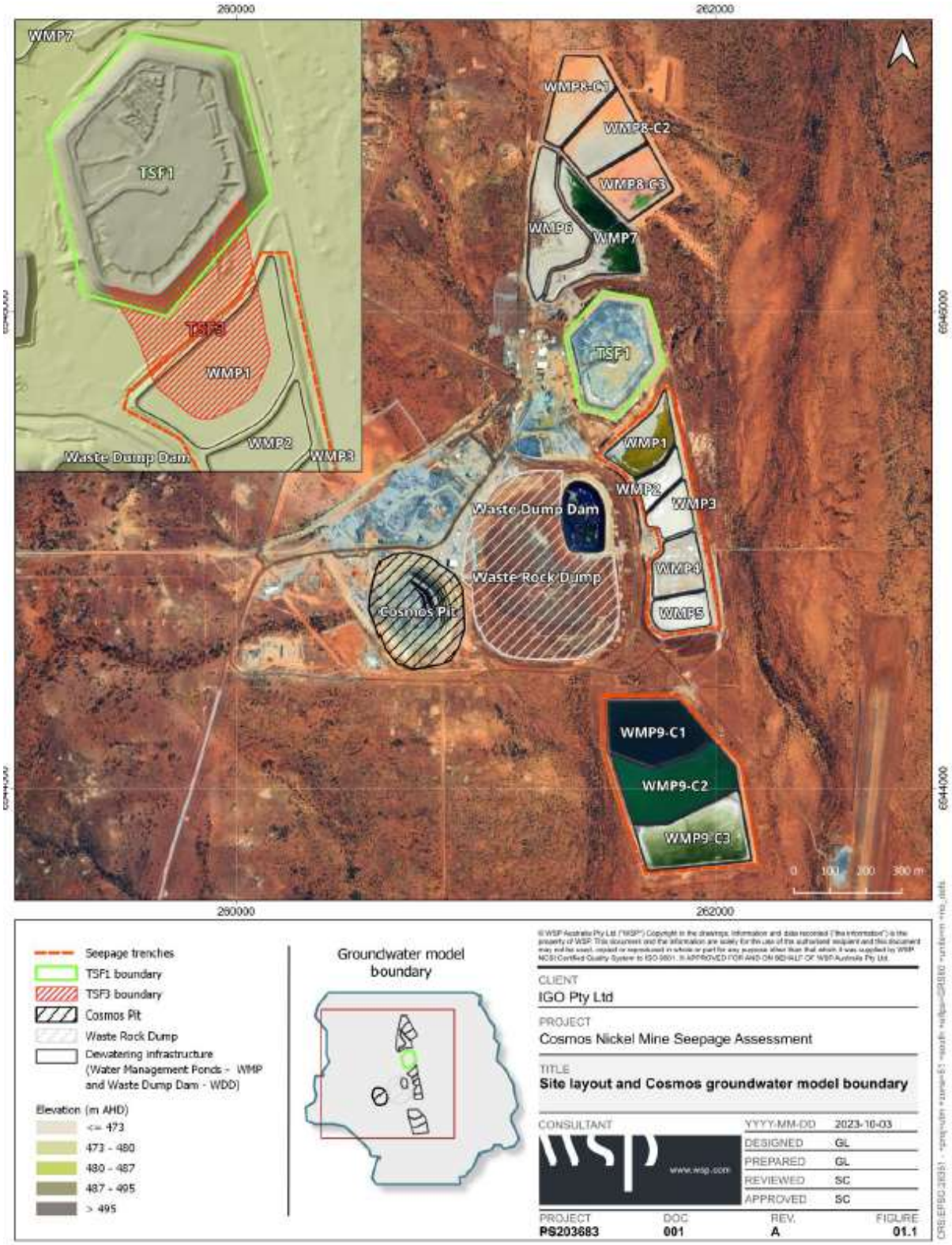

Figure 1: Proposed TSF3 location and general site layout

The construction of this facility will require the decommissioning of WMP1. The starter embankment of TSF3 has been designed to incorporate some of the southern embankments of WMP1, which will involve raising the existing structure by an additional metre and extending it to connect to the TSF1 embankments. The northern portion of the existing WMP1 embankment which is not required for the TSF will be removed and reused in the construction of the new

perimeter embankments. The existing liner on the WMP1 embankments will be removed. Loose soil material within the footprint of the planned TSF3 will be removed down to the underlying ferricrete horizon to reduce the risk of shallow seepage. An underdrainage system of finger and toe drains that will report to the decant sump has also been planned to further reduce seepage and ensure that the external embankments remain dry and stable (refer to Figure 2).

The TSF3 embankment will have a 6m wide crest with a downstream slope of 1V:3H and an upstream slope of 1V:2H. A decant access ramp will be constructed from the top of the southern embankment of TSF1, extending into TSF3. Tailings slurry will be discharged sub-aerially via spigots along the upstream crest of the constructed embankments. The decant pond will be located against the TSF1 wall, and decant water will be removed through a floating turret pumping system. The decant return pipelines will tap into the existing TSF1 return pipelines, back to the processing plant. Capacity of the pipelines should be adequate given that the operation of each TSF is designed to alternate and not occur concurrently. The target decant pond size is 10% of the TSF cell surface area, with a maximum operating pond size of 15% of the cell surface area.

Geochemical characterisation of the tailings indicates that it is non-acid forming, but contains fibrous particles and elevated levels of nickel, chromium and molybdenum. The applicant intends to armour the downstream embankment with 300mm of waste rock which will prevent tailings material in the embankments from being eroded by wind or rainfall.

Tailings and decant water are hypersaline. Processing chemicals will include frother, flocculant and carboxymethyl cellulose.

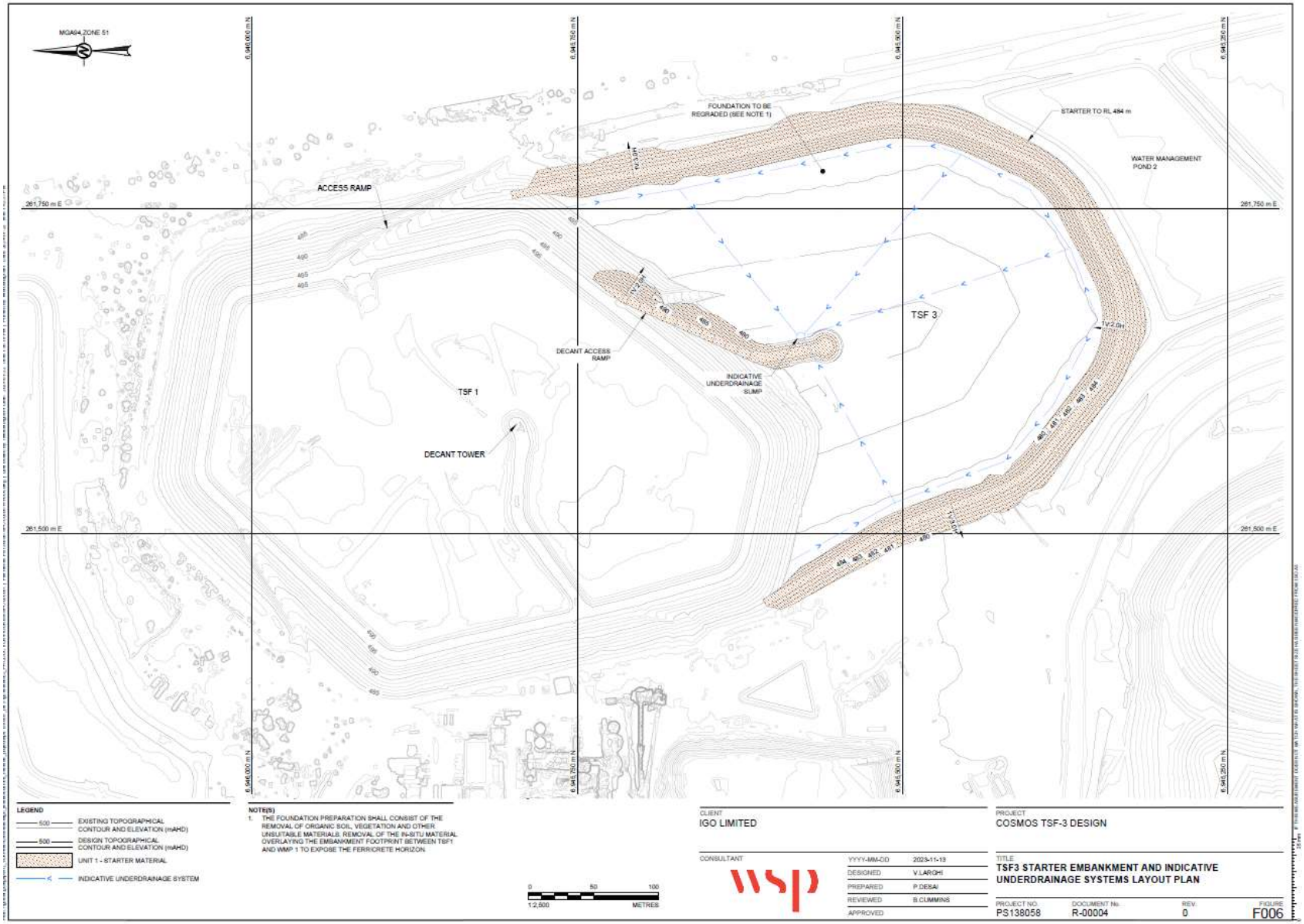

Figure 2: TSF3 starter embankment layout and underdrainage system

Hydrology and hydrogeology

The premises lies within a 42km^2 rainfall catchment area, which drains from north to south, terminating at the Lake Miranda salt lake system, about 7kms to the south of the proposed TSF3. The main drainage pathway lies about 200m to the east of the proposed TSF3, and while minor drainage lines cross the project, they do not encroach on the footprint of the new facility (refer to Figure 5). A surface water study conducted by the applicant in 2019, indicates that even during high rainfall flood events, surface water is unlikely to inundate or be directly impeded by the footprint of the proposed TSF3. The existing surface water management structures are likely to be sufficient to manage high rainfall events without additional structures being required. There is existing flood protection bunding to the north and northeast facing embankments of TSF1 which are likely to assist in diverting any large rainfall events around the facility. In addition, the applicant has proposed to rock armour the outer embankments of the TSF3 with 300mm of waste rock which will further reduce stormwater runoff impacts.

The premises is located in the proclaimed *Goldfields Groundwater Area*. Regional groundwater flow likely follows surface topography, flowing from north to south and terminating at Lake Miranda. The underlying groundwater is generally pH neutral, but salinity varies widely across the site, from 1,000 mg/L total dissolved solids (TDS) to over 100,000 mg/L TDS. Nearby mine sites use the groundwater for industrial purposes, but there are no other registered groundwater users within 3kms of the premises.

The premises currently operates a series of nine Water Management Ponds (WMPs), which are shallow, unlined evaporation ponds that are used for the management of hypersaline dewatering effluent from the mining operations. These ponds are designed to maximise seepage and evaporation to dispose of excess mine water. The site has a history of groundwater mounding issues that requires active management. A hydrogeological study undertaken by the applicant in 2023 shows that the premises is underlain by multiple geological units. The report indicates that the southern section of the TSF1 and WMPs 1 to 5 and WMP 9 are situated upon lower permeability ferricrete and saprolite, while the northern WMPs 6 to 8 and the northern edge of TSF1 lie upon a much higher permeability alluvium (refer to Figure 3).

Groundwater mounding has historically been observed around the northern WMPs 6 to 8, and the northern region of TSF1. The hydrogeological report suggests that the higher rates of groundwater mounding in this region is likely a result of the underlying, higher porosity geology allowing high rates of vertical and lateral seepage from the facilities. The southern WMPs 1 to 5 and WMP 9 exhibit far lower rates of water mounding and may be experiencing water table drawdown. The drawdown affects can be directly attributed to the lowering of the water table in the open pit and underground mines, about 1km to the west of the WMPs. Locating TSF3 within the footprint of WMP1 will reduce the risk of mounding due to the lower permeability of the underlying geology.

There is currently a groundwater monitoring bore network in place at the premises under licence L7404/1999/9 to measure potential groundwater mounding and water quality impacts. The licence includes limits and triggers to ensure that mounding is managed at least 4m below ground level (bgl), with action required when groundwater is observed at 6mbgl. The applicant currently utilises seepage recovery trenches and a seepage recovery bore system, which has been effective in managing groundwater mounding impacts.

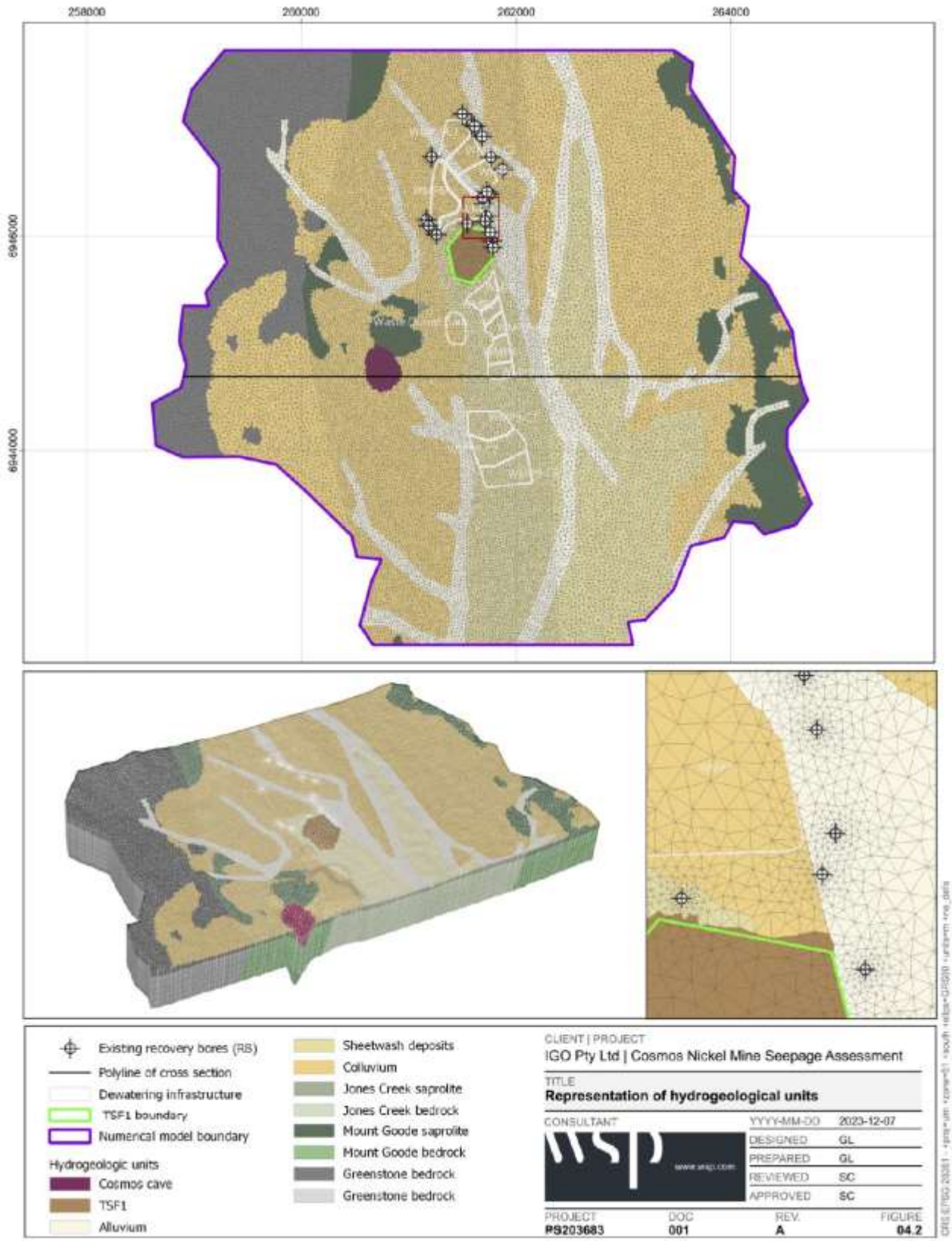

Figure 3: Map of hydrogeology underlying the Cosmos Nickel Operation infrastructure

2.3 Legislative context

In regulating the construction and operation of this TSF, determinations about the geotechnical stability are regulated under the *Work Health and Safety (Mines) Regulations 2022* (WHS (Mines) Regulations) and are therefore outside the scope of this assessment. This assessment will only consider the potential impacts from discharges and emissions from the TSF under normal operating conditions.

Similarly, the management of tailings dust which is likely to contain asbestiform material is regulated under the WHS (Mines) Regulations and is outside the scope of this assessment. This includes potential worker exposure to asbestiform material, as well as environmental considerations regarding the management of tailings dust. Should excessive amounts of tailings containing fibrous material escape into the environment, the *Contaminated Sites Act 2003* may apply.

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this decision report are detailed in

Table 1 below.

Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary. Noise emissions associated with the activities have been discounted from the risk assessment as there are no nearby sensitive receptors.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Construction of earthen starter embankments Upstream construction of tailings embankments	Air / windborne pathway	Water applied for dust suppression as required Earthworks conducted during low wind conditions
Sediment contaminated stormwater	Construction of earthen or tailings embankments	Overland runoff to creek lines and PEC areas	Existing flood protection bunding to the north and northeast facing embankments of TSF1 Construction footprint located outside of major drainage lines

Emission	Sources	Potential pathways	Proposed controls
Operation			
Tailings	Deposition of tailings to TSF	Pipeline rupture impacting soil and vegetation	Leak detection, alarms and bunding of pipelines Daily inspections
		Overtopping of TSF Tailings discharge from embankment failure	Design compliant or surpassing DEMIRS and ANCOLD guidelines Designed to retain a 48-hour probable maximum precipitation event without overtopping Embankments (6m crest width) and safety bunds Minimum 6-metre wide embankment crest with an inwardly graded crossfall of 2% Minimum 500mm freeboard Perimeter tailings deposition creating central decant pond away from perimeter embankments Maximum operating decant pond size of 15% of the TSF surface area, and a target pond size of 10% Installation of piezometers to monitor the phreatic surface Daily inspections Annual geotechnical audits Emergency action plan has been prepared
Decant water	Decant water pond Decant return pipelines	Pipeline rupture impacting soil and vegetation	Leak detection, alarms and bunding of pipelines Preventative maintenance schedule Daily inspections
		Overtopping of TSF	Designed to retain a 48-hour probable maximum precipitation event without overtopping Perimeter tailings deposition creating central decant pond away from embankments Maximum operating decant pond size of 15% of the TSF surface area, and a target pond size of 10% Minimum 500mm freeboard
		Wildlife exposure	Low-toxicity processing chemicals Hypersaline water generally not used by

Emission	Sources	Potential pathways	Proposed controls
			wildlife
Seepage	Deposition of tailings to TSF Cumulative impacts from the concurrent use of WMPs with TSF3	Seepage to groundwater causing mounding Seepage through the embankments of the TSF	Location of TSF3 on lower permeability geology Stripping of the footprint of the TSF to the ferricrete horizon Maximum operating decant pond size of 15% of the TSF surface area, and a target pond size of 10% Downstream toe-drain to be installed Under drainage seepage recovery system Existing seepage recovery trench along the eastern boundary of WMP 1-5 Decant water returned to processing plant Groundwater monitoring including a weekly standing water level requirement in accordance with L7404 Water balance requirements in accordance with L7404 Groundwater trigger levels in accordance with L7404 Vegetation monitoring in accordance with L7404 Continue operation of existing seepage recovery bores and additional bores in accordance with groundwater seepage modelling report
Dust	Dust from dried embankments or TSF surface	Air / windborne pathway	300mm rock armouring on downstream embankments Wet deposition of tailings will prevent dust generation during operations.
Contaminated stormwater and sedimentation	Earthen and tailings embankments	Overland runoff to creek lines and PEC areas	300mm rock armouring on the outer embankments Downstream toe-drains Existing surface water diversions Annual soil and vegetation monitoring downstream of TSF3 in accordance with L7404
Hydrocarbons	Mobile equipment	Leaks and spills	Hydrocarbons/chemicals stored on impervious bunds and spill kits available to mobile plant and vehicles. Soil contaminated by hydrocarbons to be treated in-situ, at the bioremediation pad or

Emission	Sources	Potential pathways	Proposed controls
			transported offsite to a controlled waste licensed facility for treatment.

3.1.2 Receptors

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

Table 2 and Figures 4 and 5 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

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

Human receptors	Distance from prescribed activity
The Yakabindie pastoral station	5 km north-west of TSF3. The premises is occupied intermittently, during pastoral activities (i.e., mustering).
Mining / industrial premises	Bellevue Gold Project, approximately 4.5 km south-west of the TSF3 infrastructure. The prescribed premises boundaries are adjacent to each other.
Environmental receptors	**Distance from prescribed activity**
Native vegetation	The flora on the premises is primarily characterised by mulga low woodland dominated by Acacia aneura on plains, transitioning to scrub on hills. While most of the premises has been cleared or disturbed, remnant native vegetation is present to the east of TSF3 infrastructure.
Priority ecological communities (PEC)	Immediately adjacent to the proposed TSF3 and inside the prescribed premises boundary - Priority 1 PEC ***Violet Range*** *(Perseverance Greenstone) vegetation complexes (banded ironstone formation)*. 3.7 km southeast of proposed TSF3 – Priority 1 PEC ***Lake Miranda east calcrete*** *groundwater assemblage types on Carey paleodrainage on Yakabindie Station*. 4.8 km west of proposed TSF3 – Priority 1 PEC ***Yakabindie calcrete*** *groundwater assemblage type on Carey paleodrainage on Yakabindie Station* which overlaps Lake Miranda.
Fauna	*Dasycercus blythi* (brush-tailed mulgara) (P4) has been recorded (2004) 8.6km northeast of proposed TSF3.

	Kwonkan moriartii (Moriarty's trapdoor spider) (P2) has been recorded (1962) 11.2 km north of TSF3.
Subterranean fauna	Limited sampling found at least 10 species of stygofauna in the immediate vicinity of the premises, primarily at the nearby PECs surrounding Lake Miranda.
Surface water bodies	Overall, surface drainage channels have been disrupted by mining operations. Several creek lines are located east of TSF3 infrastructure, running from north to south. The closest creek line is within 200 m of TSF3. Regional drainage lines flow towards Lake Miranda to the south of the premises. Lake Miranda is a terminal salt lake, located approximately 5.5 km from the TSF3 infrastructure. The salt lake is part of the Carey paleoriver system, with a surface area of approximately 200 km^2, containing a number of low islands and intersecting playas. Three Priority 1 PECs surround the salt lake, due to the likely presence of unique subterranean fauna assemblages within the calcrete geological units.
Groundwater aquifer	Overlies the proclaimed *Goldfields Groundwater Area*. Regional groundwater flow likely follows surface topography, flowing from north to south and terminating at Lake Miranda. Groundwater is characterised as brackish to hypersaline, with total dissolved solids (TDS) levels ranging from 1,000 mg/L to 100,000 mg/L. There are a number of groundwater users nearby, with groundwater abstraction licences primarily held by commercial entities requiring water to support mining activities (e.g., Bellevue Gold Project). No non-industrial users of groundwater are registered within a 3km radius of the mine.
Aboriginal heritage places	Nantanantakukura (Place ID 821; lodged) – approximately 700 m east of TSF3. Classified as named place. Violet Range2 (Place ID 22277; registered site) – approximately 1.8 km west of TSF3. Classified as mythological and natural feature.

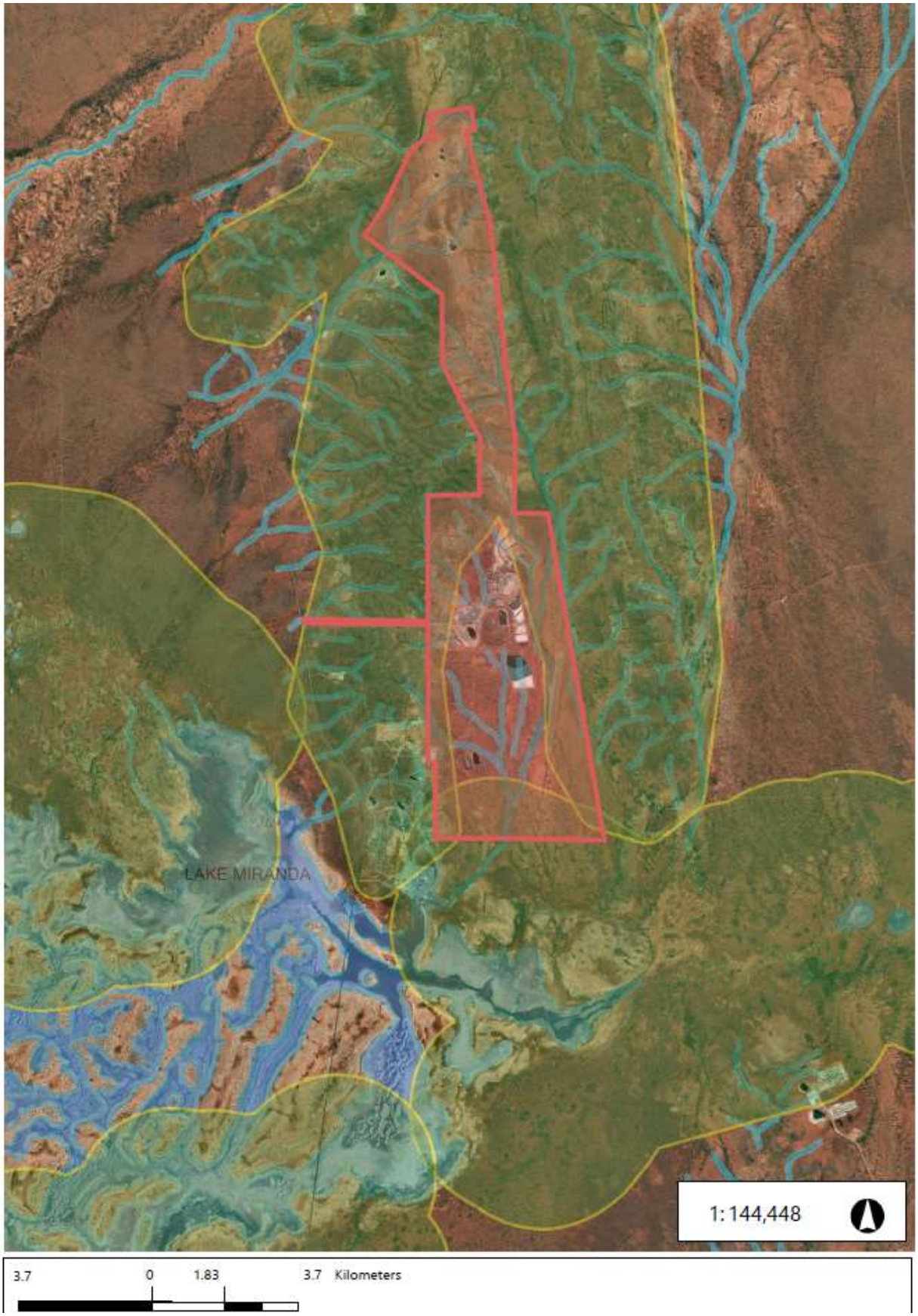

Figure 4: Cosmos Nickel Operations prescribed premises boundary (red) and distance to sensitive receptors – Priority Ecological Communities (yellow) with regional surface water drainage lines (blue).

3.2 Risk ratings

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

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

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

Works approval W6912/2024/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

An amendment to licence L7404/1999/9 is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e. category 5 activities. A risk assessment for the operational phase has been included in this decision report, however licence conditions may be revised when the department assesses the licence amendment application.

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

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Construction of TSF embankments – earthworks using soil or tailings material	Dust	Air / windborne pathway causing environmental impacts	Priority 1 PEC immediately to the east	Refer to Section 3.1	C = Minor L = Rare **Low Risk**	Y	N/A	Minimal dust emissions are expected to be generated during construction phase. Due to the short duration of construction, the Department considers the risk low and additional controls are not required.
	Sediment laden stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Priority 1 PEC immediately to the east Creek line draining to Lake Miranda PEC 200m to the east.	Refer to Section 3.1	C = Moderate L = Rare **Medium Risk**	Y	N/A	Existing controls include flood protection bunding that is already in place. The department considers that additional conditions on this works approval are not required.
Operation (including time-limited-operations operations)								
Deposition of tailings material in the TSF	Dust	Air / windborne pathway causing environmental impacts	Priority 1 PEC immediately to the east	Refer to Section 3.1	C = Minor L = Rare **Low Risk**	Y	Condition 1	During operations the tailings will be deposited as a wet stream and is unlikely to create dust. Rock armouring of the downstream embankment has been conditioned and will minimise dust risks from the dry embankments.
	Tailings	Overtopping of TSF Direct discharge	Priority 1 PEC immediately to the east	Refer to Section 3.1	C = Major L = Unlikely **Medium Risk**	Y	Condition 1, 6 and 7	The applicant has proposed embankment designs that will minimise the likelihood of overtopping. They have also proposed a minimum

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
		from spills	Creek line draining to Lake Miranda PEC 200m to the east.					freeboard, maximum decant pond size and inspections. These controls have been included on the works approval.
	Decant water	Overtopping of TSF Wildlife exposure	Priority 1 PEC immediately to the east Creek line draining to Lake Miranda PEC 200m to the east.	Refer to Section 3.1	C = Major L = Unlikely **Medium Risk**	Y	Condition 1 and 6	The applicant has proposed embankment designs that will minimise the likelihood of overtopping. They have also proposed a minimum freeboard, maximum decant pond size and inspections. These controls have been included on the works approval.
	Seepage	Vertical or lateral seepage through the floor or embankments of the TSF causing groundwater mounding	Priority 1 PEC immediately to the east Creek line draining to Lake Miranda PEC 200m to the east. Groundwater	Refer to Section 3.1	C = Major L = Unlikely **Medium Risk**	Y	Condition 1, 6, 8 and 9	Refer to section 3.3 for a detailed risk assessment
	Sediment laden stormwater	Overland runoff from the embankments potentially causing ecosystem disturbance or impacting	Priority 1 PEC immediately to the east Creek line draining to Lake	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1	The applicant's proposed rock armouring of the downstream embankment and an external toe-drain has been conditioned and will minimise the risks of erosion of the embankments.

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
		surface water quality	Miranda PEC 200m to the east.					
Operation of tailings and decant return pipelines	Tailings or saline process water	Direct discharge from pipeline rupture	Priority 1 PEC immediately to the east Creek line draining to Lake Miranda PEC 200m to the east. Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1 and 6	The applicant has proposed leak detection, alarms, bunding and daily inspections, in line with existing licence (L7404) requirements. This has been conditioned on the works approval.

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

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

3.3 Detailed risk assessment for seepage potentially causing groundwater mounding impacts

The applicant undertook detailed hydrogeological modelling in 2023, which considers the expected increase in dewatering and predicted seepage from the WMPs and TSFs over the next ten years. The modelling looked at a variety of scenarios involving the use of TSF3 in conjunction with the existing TSF1, and the use of selected WMPs. It then considered if any additional infrastructure would be required to operate in accordance with the 4mbgl standing water level limit and 6mbgl standing water level trigger on licence L7404/1999/9.

The site has a history of groundwater mounding issues, largely due to the use of the existing dewatering infrastructure which requires active management through seepage trenches and recovery bores. In the past, the areas north of the TSF1, around WMPs 6 to 8, have been the most problematic. The modelling report suggests that this is likely a result of the underlying geology in that area.

The modelling found that the use of TSF3 is likely to increase the seepage in the immediate vicinity of the TSFs. Due to the location, some of the seepage is likely to migrate towards the groundwater sink caused by the mine dewatering. Even so, shallow seepage from the TSF3 has the potential to occur in close proximity to the facilities, particularly to the north and east. The applicant has proposed an underdrainage system and downstream toe drains to reduce the total seepage from the facility. Alone, the resulting seepage from TSF3 would be unlikely to require intensive groundwater level management to meet the licence requirements. However, the applicant has considered that if all WMPs are also in use, the cumulative impacts to groundwater levels are likely to be significant, and require significant additional seepage recovery infrastructure.

Proposed controls

The applicant is proposing to decommission WMP1 to construct TSF3, and use TSF1 and TSF3 for alternating tailings disposal. To mitigate the risk of groundwater mounding that this may create, the applicant is proposing to cease use of WMP 8, while utilising the other WMPs for mine dewatering management. According to the modelling, the pond capacity required to manage mine dewatering going forward can be met without the use of WMP 8 and without the risk of overtopping the other WMPs. The modelling shows that by eliminating the use of WMP 8, only modest additional mounding is likely to occur outside the footprint of the infrastructure, primarily between WMP 7 and TSF1 (refer to Figure 5). The report indicates that it is likely that this could be easily managed through reequipping an existing production bore in this area and installing an additional one.

The applicant has also proposed a number of measures to reduce total seepage from TSF3 including the installation of an underdrainage system and downstream toe drain, and maintaining a small decant pond when operating.

In addition to these proposed controls, the applicant intends to us the existing monitoring bore network to check for potential groundwater mounding impacts. They have also proposed to reequip one of the seepage recovery bores and install a new one if required to meet the standing water level target and limit on L7404/1999/9.

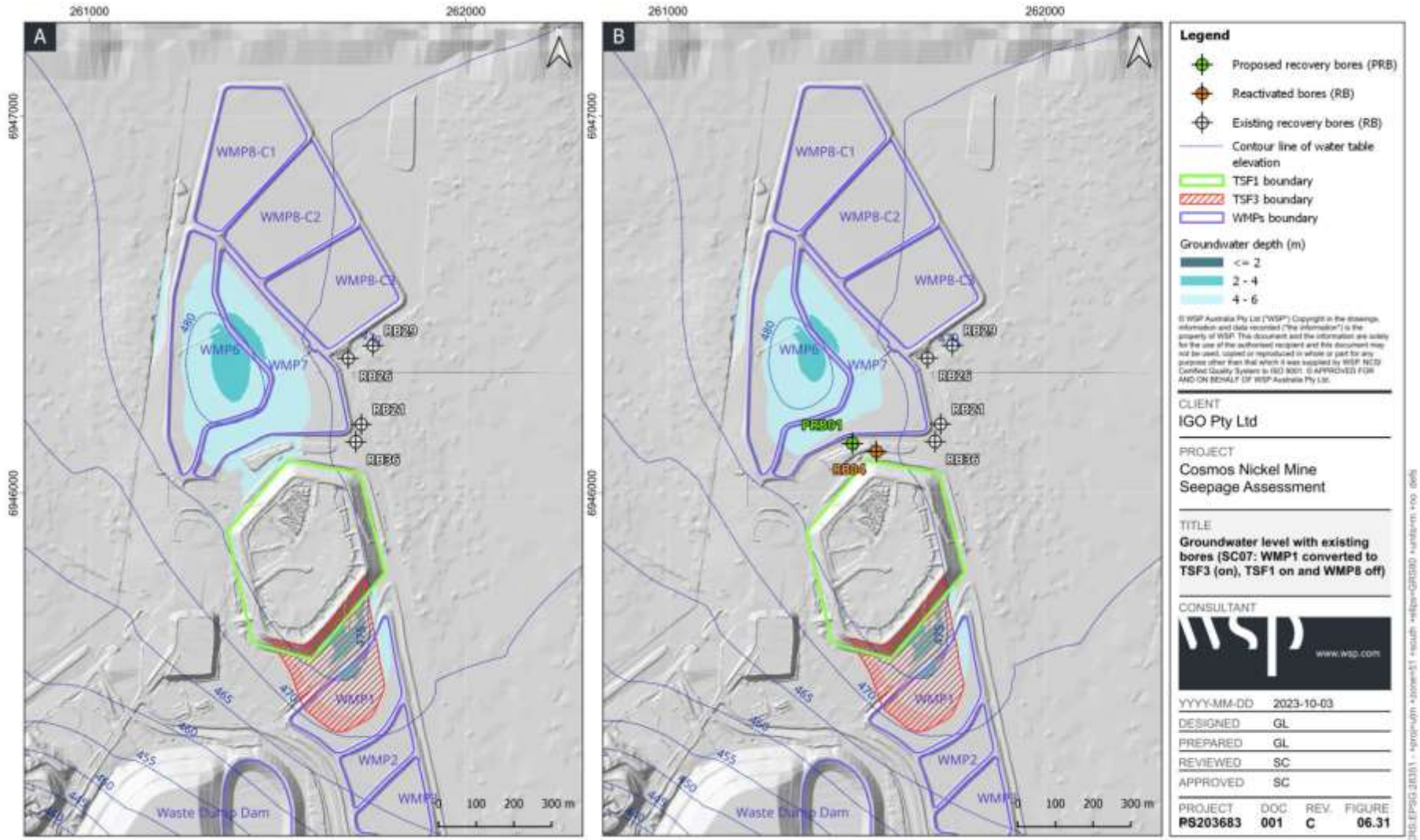

Figure 6.34 (A) Exceedance of trigger levels under Scenario 7 in 2034 and (B) groundwater conditions for the same scenario considering the introduction of 2 new recovery bores

Figure 5: Map of modelled groundwater standing levels with the use of TSF3 and the decommissioning of WMP 8

Decision

The Delegated Officer has determined to condition the proposed seepage mitigation strategies on the works approval, including the requirement not to discharge water to WMP 8 during the operation of TSF3. This is a critical measure to ensure that the TSF can be operated with limited risks to the surrounding PEC vegetation from groundwater mounding. With these controls in place, the risk from seepage remains **Major**, but the likelihood becomes **Unlikely**, resulting in a rating of **Medium**. It is noted that the use of WMP 8 is currently authorised on L7404/1999/9. The applicant has recently applied to amend the licence to include Category 5 activities. The Delegated Officer recommends that during this process, the authorisation to use WMP 8 for mine dewatering effluent discharge be removed from the licence to bring these instruments into alignment.

The Delegated Officer agrees with the applicant that the existing groundwater monitoring network is likely to be sufficient to detect potential groundwater mounding issues. While the recommendations for additional recovery bores is noted, the department prefers to set outcome-based conditions, such as the triggers and limits that are in place on L7404/1999/9. These triggers and limits have also been included on the works approval to be reported against, however, the specific groundwater level action criteria that is listed out in L7404/1999/9 will not be duplicated on this works approval and will be managed through the licence. Furthermore, the installation of specific recovery bores will not be conditioned, as it is the responsibility of the applicant to ensure that the seepage recovery bore network is adequate to maintain compliance with conditions.

Monitoring requirements for bores that are located in close proximity to TSF3 have been transferred to this works approval to ensure that monitoring information is captured in reports to the department relating to the operation of TSF3. It should be noted, however, that the Delegated Officer has increased the frequency to measure the standing water level of five key bores around the TSFs (MB09, MB10, MB17, MB18 and MB22) to weekly, in line with other key monitoring bores (MB08, MB14, MB15, MB16 and MB21) that are used to detect mounding impacts on the licence. This information will be important to gauge the performance of the seepage mitigation systems for the TSFs. Should the data collected during time limited operations indicate that the impacts are low, the monitoring regime can be reviewed during the transfer of this infrastructure to licence L7404/1999/9.

4. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 24 April 2024	None received	N/A
Local Government Authority advised of proposal on 24 April 2024	None received	N/A
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) advised of proposal 24 April 2024	DEMIRS confirmed that the mining proposal covering this proposal has been approved REG ID 114110	Noted.

Applicant was provided with draft documents on 6 September 2024	No comments.	N/A

5. Conclusion

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

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.