Application for Works Approval

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

Works Approval Number	W6816/2023/1
Applicant	Mt Weld Mining Pty Limited
ACN	053 160 400
File number	DER2023/000295
Premises	Mt Weld Rare Earths Project Elora Road LAVERTON WA 6440 Legal description - Mining leases M38/58, M38/59, M38/326, M38/327, G38/34 and G38/35 As defined by the map in Schedule 1 of the Works Approval
Date of report	22 February 2024
Decision	Works approval granted

Michael Greenslade

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MANAGER, PROCESS 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 W6816/2023/1 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

Mt Weld Mining Pty Limited (the applicant) currently operate the Mt Weld Rare Earths Project (premises) located 35 km south-east of Laverton. The premises currently has capacity to process 300,000 tonnes of high-grade weathered zone and limonitic ironstone (CZLI) ore per year to produce rare earth concentrate. Waste from ore processing is disposed of to a tailings storage facility (TSF) comprising of TSF1, TSF2 and TSF3. Tailings is currently deposited in TSF3 but the facility is expected to reach capacity in the near future.

The applicant is proposing a site wide expansion to support an extension of operations at Mt Weld to a life of mine (LOM) extent. The LOM proposal will involve expanded ore processing infrastructure to increase production capacity to 1.3 million tpa with commensurate increases in concentrate products, tailings outputs and ancillary infrastructure. The expansion will also include processing of an additional ore type; apatite ore.

On 24 April 2023, the applicant submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act). The application is to undertake construction works relating to the construction and operation of the following infrastructure at the premises to support the implementation of the LOM proposal:

- an additional TSF (TSF4) to the west of the existing TSFs including associated infrastructure (e.g. pipelines);
- expansion of the existing evaporation ponds to the south of the existing ponds; and
- a by-products landform and associated handling facilities to facilitate the acceptance and storage of by-products generated from the associated Kalgoorlie Rare Earth Processing Facility.

It should be noted that only part of TSF4 will be constructed initially due to conflicts with the approval granted under Part IV of the EP Act however risks associated with the TSF4 proposal in its entirety have been considered in this assessment. This is discussed further in sections 2.3.1, 2.4.1 and 5.

The premises relates to the category 5 and assessed production capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6816/2023/1. 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 described below and outlined in works approval W6816/2023/1.

Changes to ore processing infrastructure to support the additional ore type and proposed increased production is being assessed under a separate works approval (W6753/2022/1) and is outside the scope of this assessment. Expansion of the run-of-mine (ROM) to accommodate

expanded mine pit and ore handling also forms part of the W6753/2022/1 assessment.

2.3 Proposal description

2.3.1 TSF4

Three tailings streams will be generated from the existing and expanded ore processing infrastructure; one fine and two course tailings streams.

Flotation tailings from rare earth oxide (REO) processing (fines tailings) represents the current tailings discharged to the existing TSFs and accounts for the majority of tailings requiring disposal.

Plant upgrades will allow processing of an additional ore type (apatite ore) and will generate two additional waste streams that are coarser grained than REO tailings:

- Apatite Pre-Float Concentrate - thickened tails from the initial apatite flotation process; and
- Apatite Leach Circuit by-products - comprise of two separate wastes generated from the apatite leaching process that are neutralised prior to disposal to the TSF:
    - Sulfuric Acid Neutralised Waste (SANW); and
    - Phosphoric Acid Neutralised Waste (PANW).

Once fully constructed, the proposed TSF will comprise of 10 cells. Each tails stream will be deposited into its own series of cells within the TSF as follows:

- Cell 1A and Cell 1B: Apatite Leach Circuit By-Products (SANW & PANW);
- Cell 2A and Cell 2B: Apatite Pre-Float Concentrate; and
- Cells 3 – 8: REO fine tailings.

SANW and PANW will not be discharged together; SANW will be discharged to the TSF initially and will then be replaced with PANW.

Tailings deposition will be from the outer walls of each cell via spigots spaced 25 m apart to form a mildly sloping tailings beach and direct the decant pond towards the internal embankments for reclaim via a floating decant system.

Tailings are characterised by a low solids content and poor settling characteristics meaning that conventional thickening processes are not effective. Consistent with operation of the existing tailings facilities, full-time mud-farming will occur to improve the tailings density and increase the lifespan of the TSF. Mud-farming operations combined with high decant pump capacity, low rainfall and high evaporation, results in little to no decant pond being maintained. Any accumulated decant water will be directed to the existing Return Water Pond and either recycled through the mine's water treatment system or discharged to the Evaporation Ponds.

Tailings deposition will be alternated between the cells to support mud-farming operations. Each tailings deposition cycle involves deposition of 1m of tailings into one cell, then alternating to another cell to allow solar drying, desiccation and consolidation of the tailings layer until it is suitable to support the amphiroller for mud-farming. Once the layer is successfully mud-farmed, dozers are utilised to contour the beach surface and tailings deposition returns back to the mud-farmed cell for the next layer.

General characteristics of the proposed tailings streams are summarised in Table 1 below.

Table 1: General characteristics of proposed tailings streams.

Tailings characteristic	REO Flotation tailings	Apatite Pre-Float Concentrate	Apatite Leach Circuit By-Products
Particle size	Fine tailings	Coarse tailings	Coarse tailings
Flow rate	566 m^3/hr	22 m^3/hr	255 m^3/hr
Annual deposition rate	862,600 tpa	139,400 tpa	160,200 tpa (Total) SANW: 108,000 dry tonnes per year PANW: 180,000 dry tonnes per year
Approximate % of tailings deposited	74%	12%	14%
Solids content	20%	50%	5%
Permeability	1×10^{-8} – 1×10^{-9} m/s	1×10^{-7} – 1×10^{-8} m/s Pending lab results.	

Tailings geochemistry

REO Flotation tailings are considered to be non-acid forming and slightly to moderately saline. Results from decant water testing indicates that the total dissolved solids (TDS) content of tailings ranges between 2,500 mg/L to 6,000 mg/L (average 3,000 mg/L) with a pH ranging between 8 - 11. Tailings are considered to be chemically benign with low levels of radiation (refer to section 2.4.3). The new apatite tails streams are considered to be geotechnically similar.

The applicant provided results of leaching test carried out for each tailings stream using the Australian Standard Leaching Procedure (ASLP). Results show that, at a pH of 5, leachate from the existing REO tailings stream would not contain significant concentrations of metals and metalloids. By contrast, leachate from wastes produced from the processing of apatite ore contained elevated concentrations of manganese, zinc, cadmium, nickel and cobalt (Table 2). However, with the exception of cadmium levels in leachate from the apatite pre-float concentrate, concentrations of the measured metals were below levels of concern for livestock drinking water (ANZECC / ARMCANZ 2000) (Table 2).

Table 2: Tailings characterisation using pH 5 ASLP

Parameter	Limit of reporting	Livestock Drinking Water Guideline	Apatite-rich pre-flotation tailings	REO-flotation tailings	SANW	PANW
pH	0.1	-	4.3	5.0	4.4	4.7
Arsenic (As)	0.001	0.50	<0.01	<0.01	0.024	<0.01
Cadmium (Cd)	0.0002	0.01	0.038	<0.002	0.0073	0.0028
Chromium (Cr)	0.01	1.00	<0.01	<0.01	0.03	<0.01
Cobalt (Co)	0.001	1.00	0.015	<0.01	0.057	0.19
Copper (Cu)	0.001	0.50	<0.01	<0.01	<0.01	0.014
Iron (Fe)	0.05	N/A	<0.5	<0.5	<0.5	2

Parameter	Limit of reporting	Livestock Drinking Water Guideline	Apatite-rich pre-flotation tailings	REO-flotation tailings	SANW	PANW
Lead (Pb)	0.01	0.10	<0.01	<0.01	<0.01	<0.01
Manganese (Mn)	0.005	N/A	3.70	<0.05	1.80	3.4
Magnesium (Mg)	0.5	N/A	61.0	1.00	51.0	47
Mercury (Hg)	0.0001	0.002	<0.001	<0.001	<0.01	<0.001
Nickel (Ni)	0.001	1.00	0.03	<0.01	0.06	0.16
Thorium (Th)	0.05	N/A	<0.05	<0.05	<0.05	<0.05
Uranium (U)	0.005	0.20	<0.05	<0.05	<0.05	<0.05
Zinc (Zn)	0.005	20.00	0.92	<0.05	0.084	0.18
Calcium (Ca)	0.5	1000.00	120	2.3	11001	17002
Sodium (Na)	0.5	N/A	200	230	420	340
Neodymium (Nd)	0.001	N/A	0.0014	0.04	<0.001	<0.001
Cerium (Ce)	0.001	N/A	0.0015	0.02	<0.001	<0.001
Sulfur (S)	0.1	333.3	0.8	0.5	200	310

Note 1: Refers to the livestock drinking water guideline values (ANZECC & ARMCANZ 2000).

The Delegated Officer notes that although testing was carried out using ASLP test method, which is a recognised national standard for leaching tests, it does have some limitations when applied to testing tailings material that should be considered:

- Leachability of many chemical constituents in tailings materials is highly sensitive to variations in the pH of the fluid that surrounds individual particles within a TSF. For instance, under moderately acidic conditions, the leachability of metals that form stable cations in solution is enhanced, whereas the leachability of metalloids and metals that generally form stable oxyanions in solution is enhanced under neutral to alkaline pH values. In this instance, testing was carried out under a single pH value (pH of 5).

  Historical monitoring of decant water indicates that the pH of REO tailings to be between 8 - 11 with information provided by the Applicant indicating that the pH of apatite streams also ranges between 8 - 11. Noting this, it would appear that ASLP test results may not be representative of *in situ* conditions of the TSF

- Lanthanum was not considered in the leaching tests. Lanthanum is a rare earth element likely to be present at elevated concentrations in tailings and, consequently, concentrations of dissolved lanthanum are likely to be present in groundwater that receives seepage from this facility. As gypsum is soluble in water, there is also a risk that seepage produced from neutralised leach liquor (which contains gypsum) may also contain elevated concentrations of dissolved lanthanum.

  Lanthanum is known to be toxic at elevated concentrations to vegetation (Krasavtseva and Maksimova, 2022), soil fauna (Li et al., 2018) and, potentially, to animals that graze on vegetation that contains elevated concentrations of this element. Additionally, although low concentrations of lanthanum in soil pore-water can accelerate plant growth, this is done at the expense of increasing the uptake of other toxic metals such as lead

into plant tissue (He et al., 2023), which could then be consumed by grazing animals.

- Sampling methodologies used to obtain the test samples was not specified. It is not clear if the samples used in the testing are representative of the average chemical composition of tailings materials. It is important that a sufficient sample size from each tailings waste stream is obtained to ensure that the natural variability of these materials is determined during the leaching tests.

The Applicant has committed to undertaking further characterisation of apatite tailings as samples are generated. The Delegated Officer notes that while dedicated cells are proposed for each tailings stream, this is an operational preference and the Applicant wishes maintain flexibility to direct any material to any cell as required to optimise tailings capacity management. Combined discharge of tailings will be further considered through the licence assessment following completion of further tailings characterisation.

Wastewater disposal

The Applicant has indicated that Cells 3 – 8 will also receive waste from other sources including:

- A combination of waste from the Combine Waste Tank including Dual Multimedia Filtration (DMF) backwash waste, Weak Acid Cation (WAC) Ion Exchange backwash waste, and various tank overflow from the Recycle Water Treatment Plant.
- Raffinate / brine from the reverse osmosis waste treatment system; and
- Wash water from the by-product unloading area (refer to section 2.3.3).

The combined average volume of these waste streams is estimated to be 660,000 m^3 per year (1.3 GL/year maximum).

TSF4 design

Construction of the TSF will involve two stages of lifts; Stage 1 being the starter embankment to a maximum height of 10.2m and Stage 2 comprising an additional lift. Perimeter embankments will be raised using the downstream method and internal embankments lifted via a raised centreline. Key design characteristics of the TSF are outlined in Table 3.

Table 3: Summary of TSF4 key design characteristics.

Design parameter	**Specification**			
Surface area (hectares)	Total design footprint of TSF4 is 204 ha, however construction limited under this works approval is limited – to align with the maximum approved TSF footprint of 170ha (as approved under MS1216), as described in Section 2.4.1. Indicative footprint for cells approved for construction = 103.61 ha (Cells 1A, 1B, 2A, 2B, 3 and 4 as described in the section below)			
Disposal rate	600,000 tonnes per annum including 35,000 m^3 of dry solids per annum			
Storage capacity (per cell)	Cell 1A	472,600m^3	Cell 4	651,800m^3
	Cell 1B	440,800m^3	Cell 5	946,000m^3
	Cell 2A	399,700m^3	Cell 6	738,200m^3
	Cell 2B	333,200m^3	Cell 7	897,900m^3
	Cell 3	868,400m^3	Cell 8	687,900m^3
Embankment crest elevation	Stage 1: maximum 10.2m with a varied crest elevation (421.5 mRL - 423.2			

(m)	mRL)
Embankment crest width	6.2 m (internal and perimeter)
Perimeter embankment slopes	3H:1V downstream and 2H:1V upstream
Internal embankment slopes	2H:1V

The TSF has been designed to align with the *Guidelines on Tailings Dams* (ANCOLD 2019) and the *Global Industry Standard on Tailings Management* (UNEP/ICMM/PRI 2020) to reduce overall risk of failure including overtopping, instability and foundation failure. The consequence category associated with a dam break/failure was determined to be Significant. The Environmental Spill consequence category for the TSF (i.e. the environmental impact downstream of a dam spilling as opposed to a failure of the embankment) has been determined as Very Low.

Geotechnical investigations indicate that the sub-surface profile at the location of the TSF and evaporation ponds comprises colluvial alluvium consisting of silty sand with a high gravel content (0 – 1m) overlaying ferricrete hardpan and clay materials. It is proposed that these materials will be compacted to provide a suitable low permeability base for the foundation of the TSF (permeability equivalent to $1x10^{-8}$ to 1×10^{-9} m/s). The Applicant indicates that the subgrade material will meet the requirements outlined in *Water Quality Protection Note 27: Liners for containing pollutants, using engineered soils* (DoW 2013).

Noting that the four northernmost cells (1A, 1B, 2A and 2B) will contain coarser tailings with higher permeability, the Applicant proposes to initially deposit a 1m thick layer of fines tailings in these cells to form a lower permeability base before depositing course tailings. Deposition will occur over a number of cycles to ensure the design permeability and thickness is achieved. It is anticipated that the 1m layer will be established over a four month period.

The perimeter embankments will be constructed from fill materials from borrow stockpiles onsite and will comprise two sections:

- A 3 m wide low permeability upstream zone will be constructed using clayey mine waste material (i.e. Zone 1 material); and
- A 3.2 m wide downstream zone will be constructed using higher permeability, coarser general mine waste material (i.e. Zone 4 material).

Materials will be compacted to achieve a permeability of between 4×10^{-9} m/s to 5×10^{-9} m/s (Zone 1) and 5×10^{-6} m/s (Zone 4).

Internal embankments will have the same dimensions although will consist only of a single zone of Zone 4 mine waste material.

Limited construction

Due to limitations under Part IV of the EP Act (discussed in section 2.4.1), the works approval application initially seeks authorisation for the construction of the northern half of TSF4 only (i.e. Cells 1 – 4) while subsequent approval is obtained for the remaining cells.

No changes to the design of the TSF are proposed a result of this staging.

The Applicant has indicated that commissioning of Cells 1 - 4 may need to occur under this works approval. Commissioning involves deposition and mud-farming of fine REO tailings to create the 1m thick low permeability layer prior to commencement of deposition of apatite tailings or further REO tailings.

Noting that internal walls are designed with higher permeability than perimeter embankments, the Applicant has identified that lateral seepage may occur through the internal wall during these initial commissioning activities (Figure 1). It is expected that any seepage that occurs will be

limited and will either be contained within the footprint of the adjacent cells, evaporate, or will be pumped off using on-site pumps. To prevent lateral seepage migrating to areas outside of the TSF, construction of the cells will be staged to ensure that perimeter embankments of adjacent cells are installed. In the case of Cells 3 and 4, a 1m high earthen bund will be installed that extends the perimeter embankments of these cells to contain seepage migrating in a south / southwest direction.

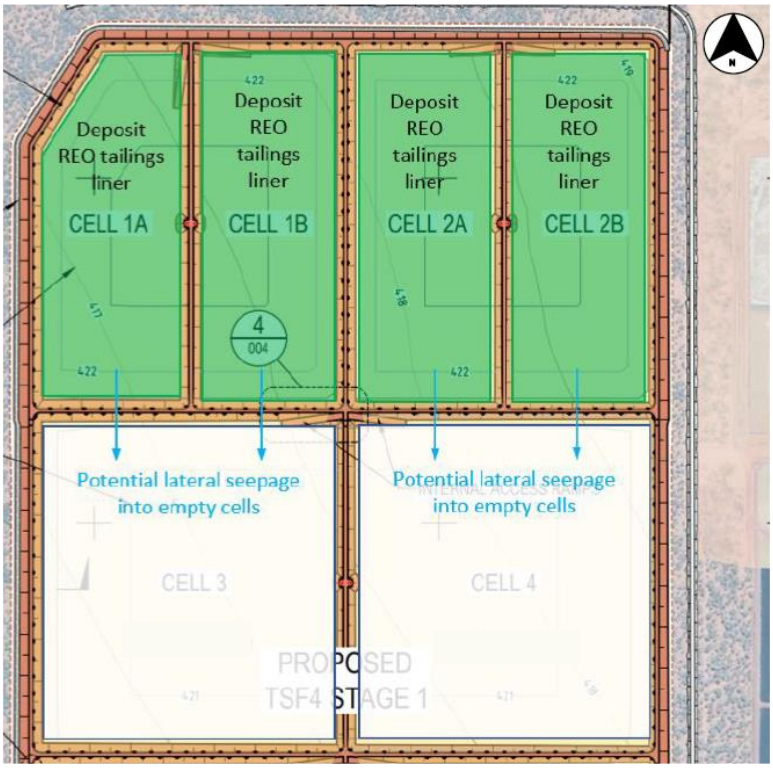

Figure 1: Plan showing the potential flow of lateral seepage during commissioning.

Freeboard

TSF4 has been designed based on the minimum flood design criteria (corresponding to a Significant TSF as presented in the ANCOLD Guidelines) being a 72 hour, 1:1000 annual exceedance probably (AEP) design flood. As the dam spill consequence was determined to be Very Low, there is no requirement for wave run-up freeboard under the ANCOLD Guidelines. TSF4 is designed with an operational freeboard of 300mm and includes an allowance for a 1 in 1,000 year, 72 hour rainfall event (312mm). The Applicant has also indicated that the design will also be capable of containing a 72 hour Probably Maximum Precipitation (PMP) event without needing to increase the operational freeboard.

2.3.2 Evaporation ponds

Current operations include Evaporation Ponds, comprising eight cells in total, that receive a blend of raffinate from reverse osmosis water treatment and a combination of treated and direct raw TSF supernatant (decant) water. The Applicant is proposing to establish a new borefield and upgrades to existing water treatment infrastructure to provide mine water for expanded operations and support mine water recycling. Two new Evaporation Ponds are proposed to be constructed to the south of the existing ponds, and similar to the existing ponds, will receive a blend of raffinate from the new and existing water treatment plants, as well as raw and treated water decant from the TSF.

The new ponds will adopt similar design principles as the existing Evaporation Ponds. To prevent lateral seepage, upstream perimeter embankments will have a HDPE liner that extends 2m along the embankment crest and 2m along the pond floor. Internal embankments and the

base of the ponds will comprise 400mm of compacted in situ colluvium soils to achieve a permeability of 1.65 x 10^{-8} m/s. The typical design of the embankments is shown in Figure 2 and Figure 3.

The new Evaporation Ponds will comprise of five cells each and will be constructed in two stages (noting that the order of construction each cell is not specified):

- Stage 1: Eastern Evaporation Pond, stormwater drains and overland flow diversion; and
- Stage 2: Western Evaporation Pond.

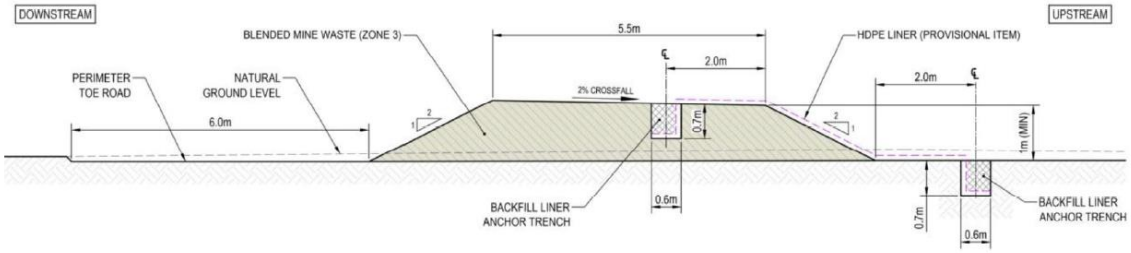

Figure 2: Typical section of evaporation pond perimeter embankment

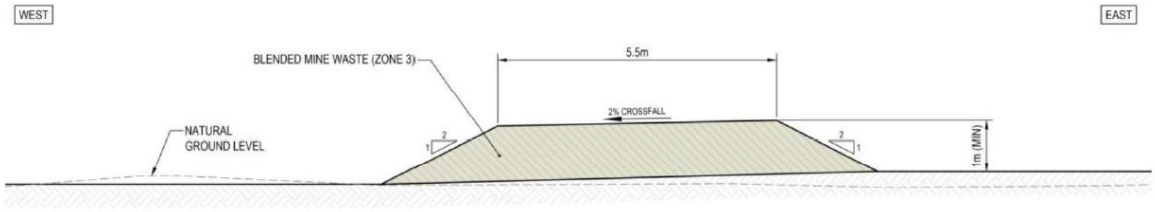

Figure 3: Typical section of evaporation pond internal embankment

Sampling and analysis of wastewater directed to the existing Evaporation Ponds is carried out as per the existing operating licence (L8141/2007/2). Average results of water quality sampling, as reported in the *2022 Annual Environmental Report* (Lynas 2023), are provided in Table 4, and indicate that wastewater is generally below the *Livestock Drinking Water Guidelines* (ANZECC / ARMCANZ 2000) with the exception of Total Dissolved Solids (TDS), sodium, sulphate, molybdenum and selenium.

Table 4: 2022 water quality results of the combined wastewater stream discharging to the Evaporation Ponds (Lynas 2023)

Parameter	Combined wastewater (consisting of raffinate and treated tailings decant)					Livestock Drinking Water Guideline (ANZECC / ARMCANZ 2000)
Sampling date	Jan-22	Apr-22	Jul-22	Oct-22	2022 average	
pH	8.2	8.1	8	8.2	8.13	-
Total dissolved solids (mg/L)	15,000	14,000	26,000	14,000	17250	5000
Sodium (mg/L)	4000	4400	690	3740	3208	1,000
Calcium (mg/L)	390	410	610	485	474	1000
Sulphate (mg/L)	3500	3300	3700	3900	3600	2000
Aluminium (mg/L)	<0.01	<0.01	<0.01	0	0.010	5
Arsenic (mg/L)	0.005	0.005	<0.001	0.005	0.005	0.5
Cadmium (mg/L)	0.0007	0.0013	0.0003	0.0002	0.001	0.01
Chromium	0.035	0.034	0.085	0.044	0.050	1
Copper	0.007	0.003	0.003	<0.001	0.004	0.5
Mercury (mg/L)	0.00005	0.00005	0	0	0.000	0.002
Molybdenum (mg/L)	0.45	0.51	0.07	0.4	0.358	0.15
Nickel (mg/L)	0.003	0.004	0.001	0.039	0.012	1
Selenium (mg/L)	0.034	0.032	0.081	0.023	0.043	0.02
Uranium (mg/L)	0.091	0.097	0.14	0.054	0.096	0.2
Zinc (mg/L)	0.007	0.009	0.01	0.034	0.015	20

Groundwater monitoring suggests that this does not impact groundwater with results showing that, with the exception of TDS, the *Livestock Drinking Water Guidelines* are being met at all monitored bores. Only one bore (LMW08 located directly east of the Evaporation Ponds) recorded TDS above the *Livestock Drinking Water Guidelines* ranging from 5,000m/L to 7,500 mg/L in 2022 (Lynas 2023).

With the operation of the new water treatment plant, blended raffinate is expected to be significantly more saline due to the quality of groundwater from the new borefield supplying mining operations. TDS of new water blends is predicted to be between 50,000 mg/L and 66,000 mg/L. Seepage associated with increased salinity of wastewater in the Evaporation Ponds could increase salinity of local groundwater.

The Delegated Officer also notes that reject water from reverse osmosis plants commonly contains elevated concentrations of radium and could result in elevated concentrations of radium in groundwater near the Evaporation Ponds. To ensure that radium levels in groundwater can be better understood and managed, radium isotopes have been added to the analytical suite for groundwater monitoring near the Evaporation Ponds.

2.3.3 By-products handling and storage

Ore concentrate generated at the Mt Weld Mine is transported to the Kalgoorlie Rare Earth Processing Facility for further refining. By-products generated from this process include gypsum and iron phosphate (IP). The Applicant proposes to transfer the by-products from the Kalgoorlie Rare Earth Processing Facility to the Mt Weld Mine for long-term storage. This activity is authorised under Ministerial Statement 1811 (section 2.4.1). Up to 132,000 dry tpa of IP and

330,000 dry tpa of gypsum will be received at the premises.

By-products will be received onsite via rotainer trucks. Trucks will empty by-products into stockpiles (approximately 5,000 m^3 each) within a concrete apron. Front end loaders will be used to reclaim the material and transfer it onto a conveyor via a conveyor feed bin (hopper). Material is transported along an overland conveyor and transferred via a transfer chute, to the moveable stacker system, which will stack by-products in linear fingers in a north-south direction. The general layout of the unloading area is provided in Figure 4.

By-products will be stacked such that the IP will form the innermost portion of the landform which will then be encapsulated by a gypsum outer layer. Once the landform formation has been achieved, it will be capped to form an erosion barrier using alluvium material.

No synthetic liner is proposed on the base of the landform. The Applicant proposes to use either traffic rolled/compacted lake clays mined from the Mt Weld pit, gypsum or the IP material as a lining system to mitigate any seepage loss. Permeability of the base of the landform is expected to comply with the requirements of *Water Quality Protection Note 27: Liners for containing pollutants, using engineered soils* (DoW 2013).

A crest bund will be installed to manage surface water on the landform (Figure 6). A toe bund will be installed at the base of the landform with all stormwater diverted to a run-off basin.

Prior to being trucked offsite, rotainers used for the delivery of by-products will be washed to remove any residue material. Approximately 8,000 m^3 of wash water will be generated from this activity and require disposal. Noting their preference for water recycling onsite, the Applicant has indicated that wash water may be directed to multiple water containment systems prior to treatment in the Recycle Water Treatment Plant for reuse. If the Recycle Water Treatment Plant is unavailable, wash water may be directed to the Return Water Pond or, as a last priority, to the TSF for temporary holding prior to sending to the Return Water Pond.

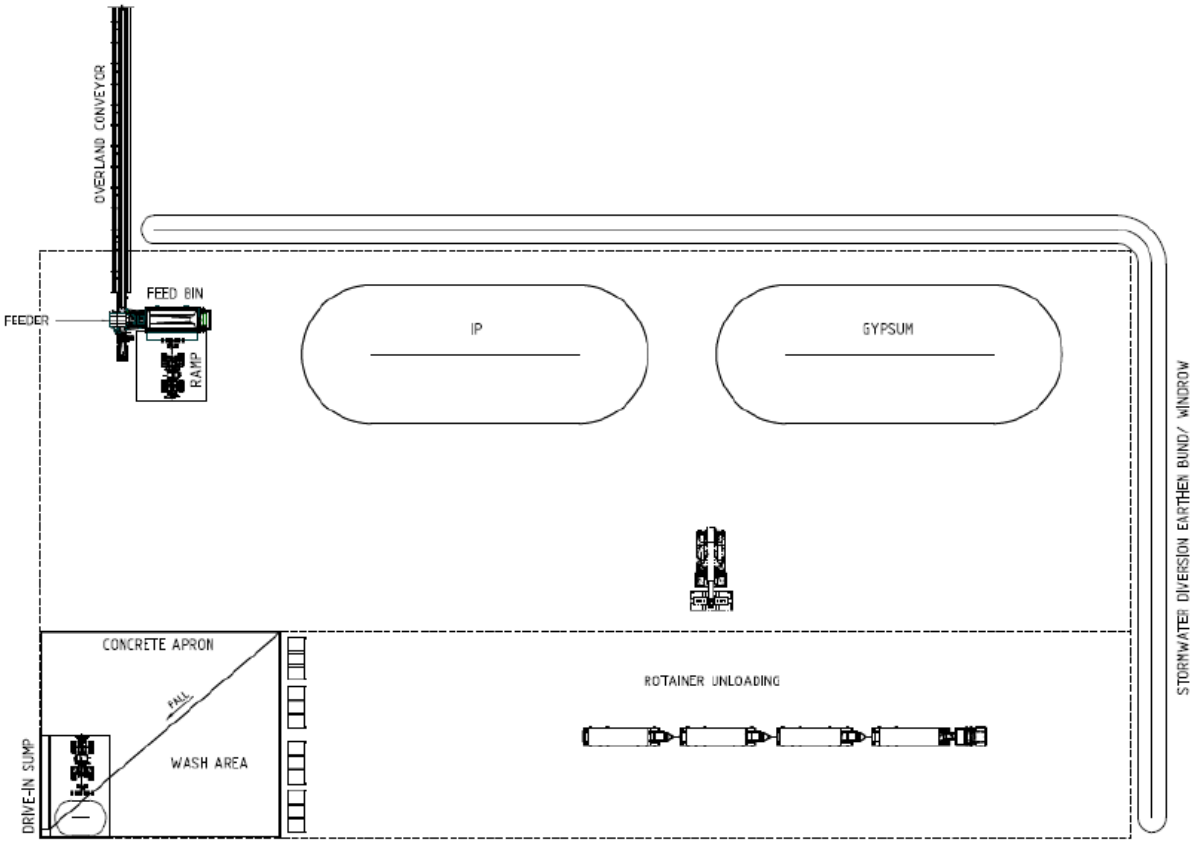

Figure 4: Layout of the by-products unloading area.

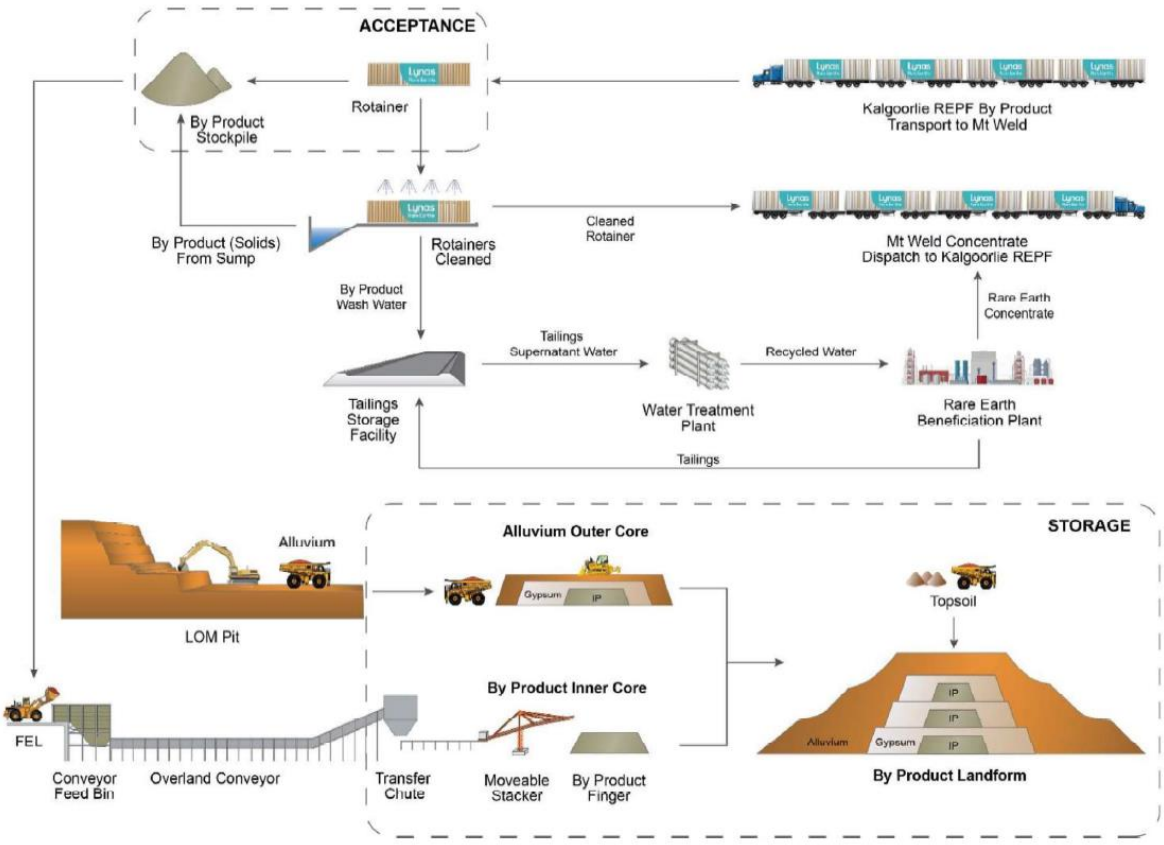

Figure 5: General process of By-Product handling and storage.

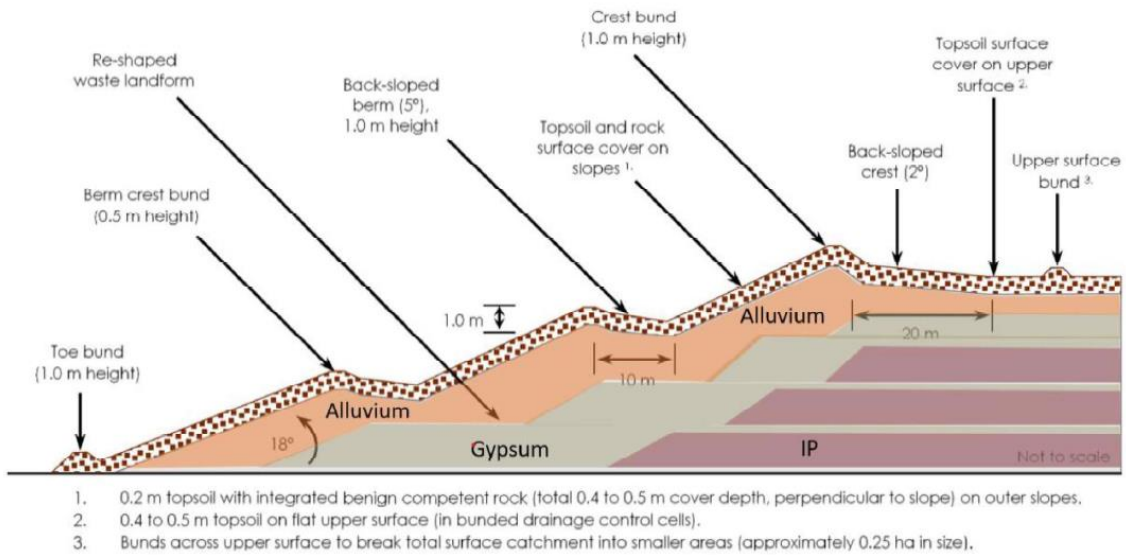

Figure 6: General configuration of the by-products landform.

2.3.4 Stormwater management

Surface water flow is generally from the northeast and flows towards the southwest. Local and regional stormwater will be managed through the installation of various diversion bunds, drains and erosion protections:

- An overland flow diversion bund will be installed to divert overland flows from the north and northeast of the site and redirect towards the southwest, away from TSF and other mining infrastructure. The bund is set at 1m high; being above the 1:100 year AEP depth.
- Diversion drains to be installed on the eastern and northern sides of TSF4 which are designed with a 6 m base and slope of 1:5.
- The diversion drain running along the eastern side of the existing Evaporation Pond will be redirected and extended along the east of the new Evaporation Ponds. Drains are designed with a 10 m base and 1:5 slope.
- TSF4 is designed to includes a riprap layer as the outer layer of the TSF batter to prevent erosion of the north and northwest corners or TSF4 (cells 1A, 1B, 2A and 2B during large flood events (Figure 7).

A site plan showing the overall stormwater management strategy is shown below in Figure 7.

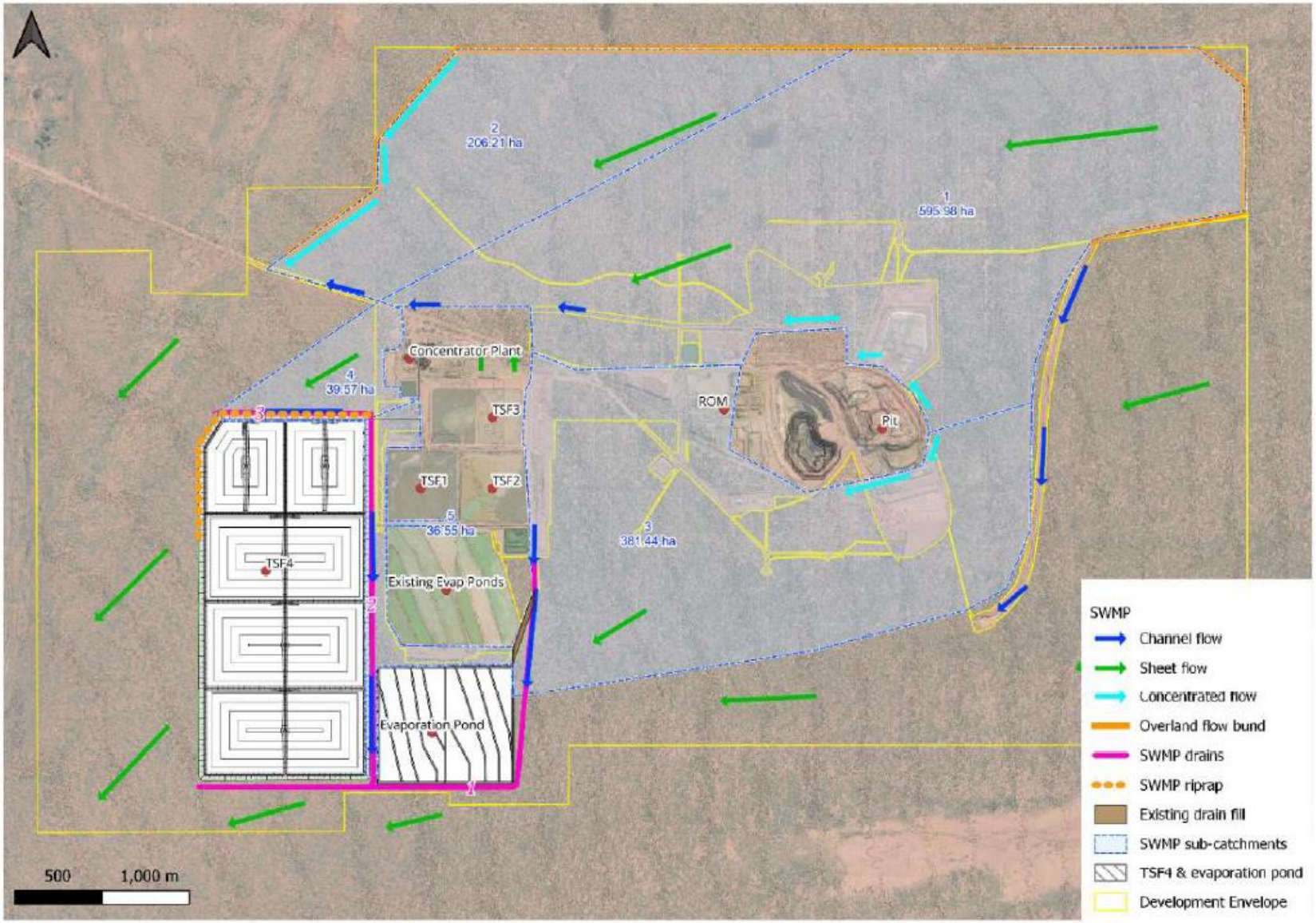

Figure 7: Stormwater management infrastructure.

2.4 Legislative context and other approvals

Table 5: Relevant approvals

Legislation	Approval
Part IV of the EP Act Ministerial Statement (MS) 496 and 1216	Conditions for the operation of the existing mine infrastructure, and construction and operation of the Life of Mine expansion proposal. Refer to section 2.4.1.
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Clearing of up to 2,241.6 ha of native vegetation within a Development Envelope of 2,802 ha assessed and authorised under Part IV of the EP Act (MS 1216)
Mining Act 1978 (WA)	A Mining Proposal relating to the proposed works has been submitted. The Delegated Officer notes that it is the responsibility of the works approval to ensure they have obtained all necessary approvals for the proposed works and activity.
Radiation Safety Act 1975	An approved Radiation Management Plan (RMP) is currently in place for the existing Mt Weld operations (Lynas 2022). Acceptance of by-products at the premises is not expected to occur for a number of years as the Kalgoorlie Rare Earth Processing Facility has at least two years of on site storage capacity for by-products. This activity will be subject to a future update to the RMP.
Aboriginal Heritage Act 1972	The area is located within the Nyalpa Pirniku Native Title Claim area. The applicant has received conditional approval under the *Aboriginal Heritage Act 1972* for the Mt Weld expansion project. The applicant has committed to developing and implementing a Social Surrounds and Cultural Heritage Management Pan in consultation within the Nyalpa Pirniku Native Title Claim group.

2.4.1 Part IV of the EP Act

Mt Weld Mine

Ministerial Statement (MS) 476 that was published on 26 May 1998 applies to the Premises and is for the mining and beneficiation of a rare earths deposit at Mt Weld.

The Applicant submitted a section 38 referral under Part IV of the EP Act on 17 August 2022, for a significant amendment to the proposal regulated under MS476 for the expansion of infrastructure and mining activities at the Mt Weld Rare Earth's Mine to its life-of-mine extent (proposed to be an additional 23 years). The proposed mine expansion involves an increase in the development envelope from 505 ha to 2802 ha and includes the following key components to allow for an increased ore production capacity to 1.3 Mtpa:

- Expansion of the existing Run of Mine (ROM) pad;
- Expansion of the rare earth open pit mine;
- Increase to Waste Rock Landforms;
- Long-term storage of Kalgoorlie's REPF by-products;
- Construction of TSF4;
- Additional evaporation ponds;
- Inclusion of a dry tailings stack area;
- Construction of a 22-megawatt hybrid solar/wind power station;

- Establishment of a worker's accommodation village; and
- Additional borefield and tailings water recycling infrastructure.

EPA Report 1752 was released on 9 November 2023. No appeals were received. The proposal was approved by the Minister for Environment on 20 December 2023 by the issuing of MS 1216.

Environmental factors considered in the assessment were:

- Terrestrial fauna including impacts associated with land clearing, fugitive emissions (dust), radiation and altered surface hydrology; and
- Human health including impacts from radiation.

In its report, the Environmental Protection Authority (EPA) determined that environmental risks associated with the waste structures (e.g. tailings facilities, evaporation pond and by-products landforms) could be regulated under Part V of the EP Act and the Mining Act.

Radiological risks associated with human health are considered to be appropriately managed to meet the EPA's objectives under the existing regulatory framework administered DEMIRS and the Radiological Council.

Limited TSF construction

As discussed in section 2.3.1, MS 1216 does not authorise the full design extent of the proposed TSF, limiting the total TSF footprint (comprising of both new and existing infrastructure) to 170 ha.

In accordance with DWER's Guidance Statement: Setting Conditions, conditions of a Part V works approval must not be "*…contrary to, or otherwise than in accordance with, an implementation agreement or decision under Part IV of the EP Act*." Noting this, and to ensure consistency with the approval under Part IV of the EP Act, this works approval only authorises a maximum TSF footprint of 170 ha (including existing TSFs), equating to Cells 1 – 4 of the proposed TSF.

The Applicant intends to apply under section 45C of the EP Act to alter MS 1216 and seek additional approval for the full extent of the TSF up to 280 ha. Approval will also be sought under Part V of the EP Act via a works approval amendment and amendments to the Mining Proposal.

Kalgoorlie Rare Earths Plant

The Kalgoorlie Rare Earths Plant proposal was assessed under Part IV of the EP Act. The project was approved by the Minister for Environment on 1 February 2022 through the issuing of MS 1181.

MS 1181 includes requirements relating to the management of waste (i.e. gypsum and iron phosphate waste) generated at the facility. In accordance with the referred proposal and conditions 3-1 and 3-3 of MS 1181, the waste products will be stored temporarily in dedicated on site storage facilities.

The by-product landforms, which are subject to this works approval, will facilitate the transfer of this waste to the Mt Weld Mine for long-term storage in accordance with conditions 3-2 and 3-4 of MS 1181. The conditions require that gypsum and iron phosphate waste is removed to a waste facility located at the Mt Weld Mine (or for gypsum waste, an alternative facility) approved by DEMIRS.

The conditions also specify the timeframe for which waste must be removed from the premises (Table 6).

Table 6: Timeframes for removing gypsum and iron phosphate waste as specified in MS 1181.

	Gypsum	Iron phosphate
Specified timeframe for removal	By the later of: • 12 months of its production; or • the capacity of the dedicated gypsum waste storage infrastructure at the site being exceeded.	• Within 12 months; and • By no later than two years of its production.

2.4.2 Mining proposal

The Department of Energy, Mines Industry Regulation and Safety (DEMIRS) has advised that matters relating to the stability and rehabilitation of TSF4, Evaporation Pond and by-products landforms will be regulated throughout the life of the project and considered as part of the final closure plan under the *Mining Act 1978* for the Mt Weld Rare Earths Project.

Geotechnical design and stability of the TSF, Evaporation Pond and by-products landform has been considered satisfactory through the DEMIRS assessment of the Project's mining proposal. No objections were raised regarding proposal to initially construct the northern cells only and commission Cells 1 and 2 noting that the proposed staging does not change the design, and therefore the risk, of the facility.

Concern was raised regarding the proposal to disposal of wash water generated from the washing of by-products rotainers to the TSF, noting that infrastructure used to transfer water may be used to transfer larger volumes of water than initially proposed which may impact the geotechnical stability of the TSF. To mitigate this risk, it was agreed that the volume of water allowed to be disposed of to the TSF should be limited under conditions of the works approval and licence.

2.4.3 Radiological risks

Rare earth deposits at Mt Weld contain naturally occurring radioactive material (NORM) in the form of thorium (Th) and uranium (U) radionuclide chains. The various waste streams being disposed of at the premises are associated with varying levels of radioactivity.

Current tailings typically contain up to 450 ppm Th and 30 ppm U, which is equivalent to a specific radiation activity of 1.6 Bq/g and 0.3 Bq/g respectively. Apatite Pre-Float Concentrate are expected to have similar properties while the Apatite Leach Circuit by-products will be less radioactive (<10ppm Th and <40ppm U).

Beneficiation of Mt Weld concentrate at the Kalgoorlie plant will result in activity concentrations within the iron phosphate by-product of approximately 6.5 Bq/g. The 232Th decay chain contributes 90% of total activity (6.1 Bq/g) and remaining contributions from the 238U decay chain. Gypsum by-products are not considered to be radioactive.

Risks to human health associated with radiation safety are regulated by the Radiological Council under the *Radiation Safety Act 1975* and its regulations. As a mining operation, the site and operations are co-regulated for radiation with the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).

A registration will be required under the *Radiation Safety Act 1975* which will require compliance with Australia's *Code of practice for radiation protection and radioactive waste management in mining and mineral processing* (2005), published by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). The Code addresses those risks associated with mining processing and the disposal of waste which have elevated levels of NORM and requires an RMP.

The TSF expansion and by-products landform have been forecast in the currently approved RMP. DEMIRS advised that, from a radiological perspective, the expansion is not expected to materially change the risk profile of the premises as it relates to the workforce, community or environment. Current tailings have a radioactivity of about 1.6 Bq/g which is slightly above the 1 Bq/g threshold used to determine if a material is classified as radioactive in mines regulations and well below the 10 Bq/g threshold for transport. DEMIRS advised that the proposed expansion is not expected to change the radioactivity of the tailings, only the quantity.

DEMIRS also advised that the proposed TSF expansion to allow for increased site production and receipt of waste from the Kalgoorlie REPF does not present a significant change in risk profile to workers, community or environment and as such, no additional conditions are required outside the requirements of the Work Health and Safety (Mines) Regulations 2022, and the associated Radiation Management Plan and Radiation Waste Management Plan provisions.

Key finding: The Delegated Officer considers that risks associated with radiation safety are appropriately regulated by other decision-making authorities via their respective legislation. In order to avoid regulatory duplication, radiation safety risks have not been considered further under the works approval. It is the responsibility of the applicant to ensure they have obtained all appropriate approvals regarding radiation safety prior to commencing operations (including commissioning and time limited operations).

Risks associated with radiation contamination resulting in impacts to environmental quality (e.g. groundwater contamination) are considered to be within scope of the Part V assessment.

2.5 Exclusions

The following matters are out of the scope of this assessment and have not been considered within the technical risk assessment detailed in this report:

- Abstraction of groundwater – the applicant intends to expand the existing borefield for supplying water to mine operations. Groundwater abstraction is regulated under the *Rights in Water and Irrigation Act 1914*.
- Construction of a new, or alterations to the existing, water treatment plant(s). This is being considered under works approval W6753/2022/1.
- Tailings lifts beyond the initial starter embankment authorised through the works approval.
- Vehicle movements on public roads including the transport of by-products from Kalgoorlie via road.
- The hybrid power station comprising of solar arrays, wind turbines and battery storage as these do not meet the description of Category 52: Electric power generation under the Environmental Protection Regulations 1987.
- Other mining activities proposed to support the LOM proposal including the extension of mine pits and expansion of waste rock landforms or other temporary stockpiles are outside the scope of this assessment. These activities are regulated by DEMIRS under the *Mining Act 1978*.
- New landfilling and tyre storage/disposal facilities were included in the works approval application. Risks associated with these activities have been excluded from this assessment as they are being considered under an amendment to the existing licence (L8141/2007/2).

The works approval is related to the prescribed activities specified on the works approval only and does not offer the defence to offence provisions in the EP Act (see s.74, 74A and 74B)

relating to emissions or environmental impacts arising from non-prescribed activities, including those listed above.

As the application is related to a proposal that has been referred to the EPA under section 38 of the EP Act, in accordance with section 54(4) of the EP Act the Delegated Officer must not make a decision on the application that is contrary to, or otherwise in accordance with, an implementation agreement or decision.

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.

Emission and discharge management measures/controls are described in sections 2.3.1 to 2.3.4, and Table.

3.1 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 7 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 7: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Mining accommodation camp (GSM Mining Company Pty Ltd – Granny Smith Mine)	10.5 km west of the premises boundary.
Laverton	>20 km away
Mt Margaret Aboriginal Community	>30 km west of the Premises
Environmental receptors	**Distance from prescribed activity**
Groundwater • An unconfined superficial aquifer, of regional extent, formed within surface alluvium, located 20 m below ground level; • A confined/semi-confined weathered carbonatite aquifer, formed by the carbonatite regolith, located to the east of the TSF, located between 42 m and 80 m below ground level; and • A confined/semi-confined regional weathered bedrock/fresh bedrock	Underlying the Premises - groundwater flow towards the open pit due to groundwater drawdown from mine dewatering. Historical flow southwest towards Lake Carey. Groundwater quality in the surficial aquifer is brackish (~2200 – 2500 mg/L) and circum-neutral (pH 6.98 – 7.32: recorded during 2017). Average values for the bedrock aquifer were given as 7.86 pH, salinity at 3275mg/L TDS) (URS 2014). Groundwater use in the general area is assumed to be

aquifer, located below the carbonatite aquifer.	primarily agriculture (livestock watering in adjacent areas to the premises) however there are no receptors identified within the immediate vicinity of the site. The nearest WIN Site (David Well ID 120413421) is located ~4 km south-west of proposed TSF4. The applicant has indicated that the project lease area has been destocked (Lynas 2023).
Native vegetation	Within and surrounding Premises
Surface water bodies (Lake Carey)	~9 km WSW of proposed TSF4 – large playa lake, generally dry most of the year although small pools persist at the lower elevations following rainfall runoff. Important breeding site for water birds at time of flooding. Habitat for aquatic invertebrate species including shrimp.
Threatened/Priority Flora and Fauna	No rare or priority flora recorded within the premises boundary. *Goodenia lyrata* (Priority 3) was previously recorded but the area has since been cleared. There is potential for *Goodenia lyrate* to occur following rainfall. This species is known to occur within multiple bioregions. Long-tailed Dunnart (Priority 4, *Biodiversity Conservation Act 2016*) recorded in the area although habitat restricted to 'stony rise' and 'rocky ridge and outcropping' habitats within L38/224 (situated west and north-west of the premises boundary). Two bird species that are listed as migratory species protected under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) the Wood Sandpiper and Common Sandpiper, have been recorded on the premises within water containment ponds.
Cultural heritage sites	There are five Aboriginal Cultural Heritage places that intersect the proposed development (Figure 9).

Key finding: The Delegated Officer considers that the distance of the prescribed activity to the closest sensitive land use is sufficient and that human receptors are not likely to be impacted during construction or operations. Consequently, impact to human receptors has not been considered further in the risk assessment.

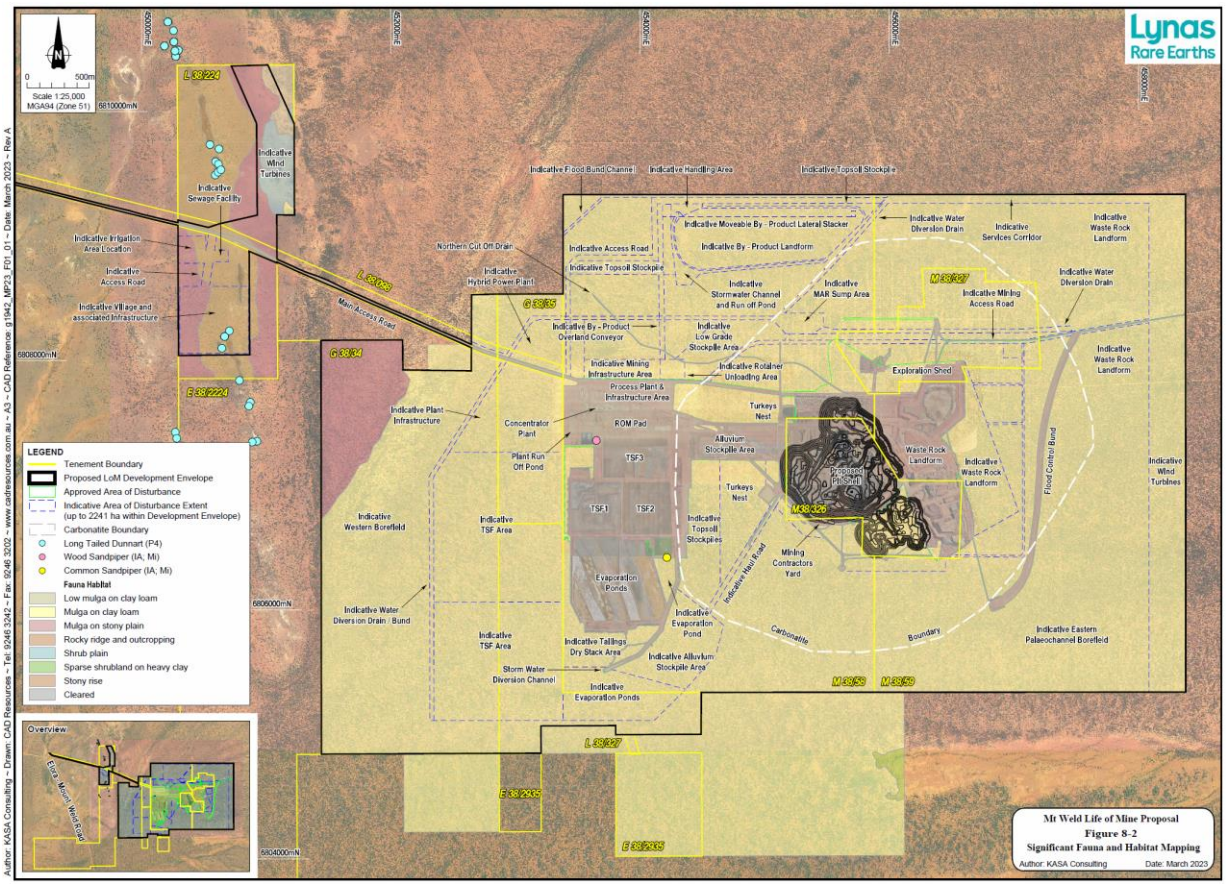

Figure 8: Recorded location of priority fauna species (KASA Consulting 2023)

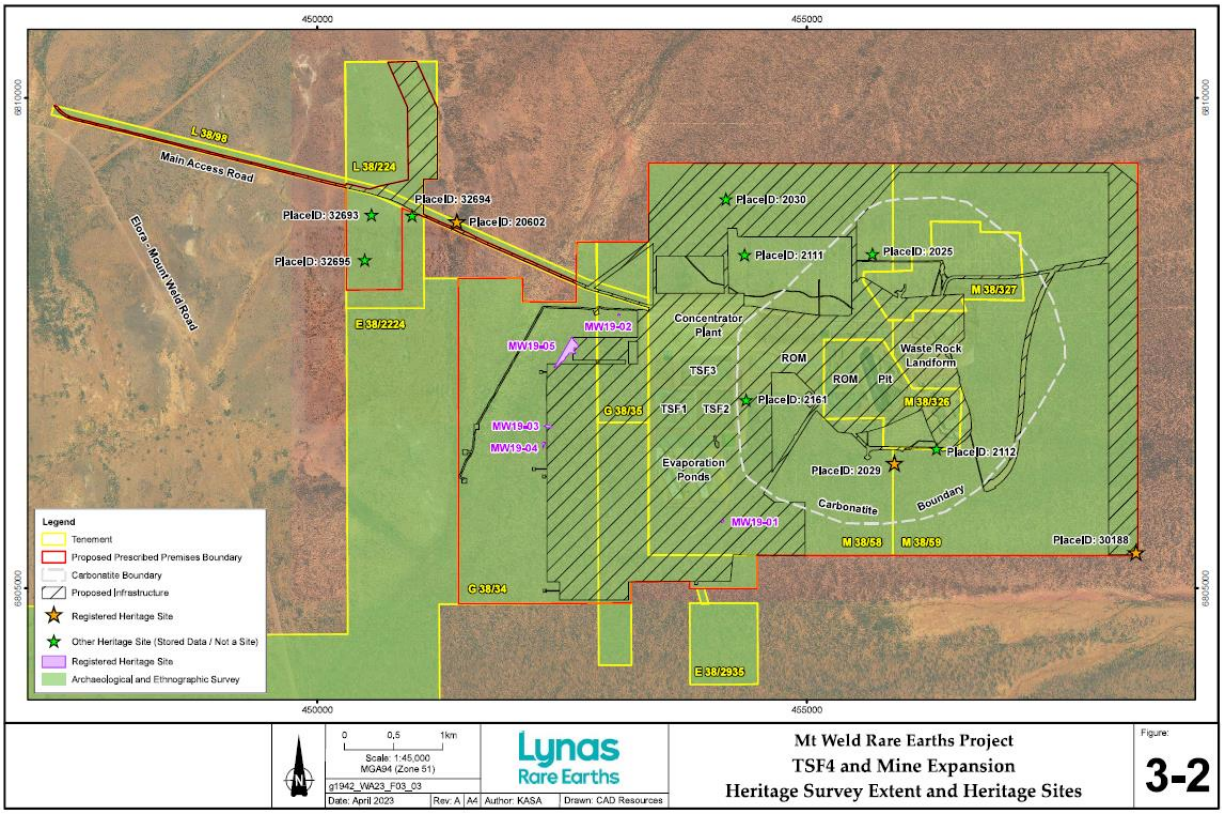

Figure 9: Location of aboriginal heritage sites (registered and other).

3.2 Seepage assessment

A numerical groundwater flow model was developed to allow assessment in context with predevelopment baseline, impact of local open pit dewatering and estimated seepage rates and measured groundwater levels (AECOM 2023). The modelling considered various scenarios that considered seepage from TSF4, the Evaporation Pond and the by-products landform.

The modelling predicts that discharge of tailings and excess water to the TSF and Evaporation Pond are predicted to result in local groundwater mounding. It was however identified that a groundwater sink has developed due to nearby open pit dewatering and water supply abstraction. The groundwater capture zone of the sink is approximately 5km south-west of the open pit (2.5km south-west of the TSF area) and may propagate further as dewatering increases throughout the life of the mine.

Estimated seepage rates from the Evaporation Pond, TSF4 and by-products landform used in the assessment are provided in Table 8.

Table 8: Summary of seepage rates (AECOM 2023).

Facility	Estimated Total Seepage Rate	Estimated Recharge Flux
	(kL/day)	(kL/day/m^2)
TSF1	5	0.00003
TSF2	5	0.00003
TSF3	70	0.00039
TSF4	430	0.00021
Evaporation Pond 1	43	0.00010
Evaporation Pond 2	43[1]	0.00010
By Product Landform	0.1 to 68	1.66 x 10^{-7} – 8.64 x 10^{-5}
[1] *Assumed to be same as Evaporation Pond 1*		

3.2.1 TSF4 and Evaporation Ponds

Current groundwater levels at the site are recorded to be approximately 16 mbgl. The seepage assessment indicates that mounding will be localised in the vicinity of TSF4, dissipating with distance, due to relatively higher seepage volumes from TSF4 compared with existing TSFs, associated with the greater surface area.

While most of the seepage entering the groundwater table is expected to be captured by the hydraulic sink, modelling shows that groundwater flow west of TSF4 may propagate outside the influence of the hydraulic sink. As mining continues to deeper elevations, the open pit capture zone is expected to expand and may propagate further west to capture all mounding from the TSF and Evaporation Pond facilities.

3.2.2 By-products landforms

Seepage modelling considered two scenarios for the by-products landform; likely and worse-case.

Seepage rates of 68kL/day represent the worst-case conditions assuming a clay liner permeability of 10^{-9} m/s equivalent to that outlined in WQPN 26, as it was assumed that the liner for the by-products landform would comply with this as a minimum.

The alternative seepage rate (0.1 kL/day) is based on assumptions that the facility will be underlain by alluvial and weathered kaolinite-rich soils.

Similar to TSF4 and the Evaporation Ponds, seepage from the By-product Landform is also predicted to be influenced by the groundwater capture zone associated with mine dewatering and contained within the cone of depression created by the open pit. Under normal operating conditions seepage mounding of 1.3 m is expected to occur (maximum 2.1 m under worst case conditions) and will be localised in the vicinity of the By Product Landform.

Recommended actions

The report provides recommendations relating to groundwater monitoring associated with seepage from the TSF, Evaporation Pond and by-product landform being:

- existing groundwater monitoring bores situated within the proposed footprint of TSF4 are decommissioned in accordance with *Minimum Construction Requirements for water Bores in Australia* (NUDLC 2020) to minimise the potential flow path through the upper sediments;
- Additional groundwater monitoring bores are installed around the proposed infrastructure (LMW17 – LMW26); and
- Noting that existing bore LMW02 is dry (cased to 50m depth) because of ongoing mine dewatering, it is recommended that monitoring bore LWM19 is installed near the TSF to a depth of 80m.

The Delegated Officer notes that while there are no existing groundwater monitoring bores within the proposed footprint of the TSF, Monitoring bores LMW04 and LMW05 are sited within the Evaporation Pond expansion footprint and will be decommissioned.

3.3 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. 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 above and summarised below), 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 9.

Works approval W6816/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 9 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 9: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and operation

Risk events					**Risk rating [1]** **C = consequence** **L = likelihood**	**Reasoning**	**Regulatory controls**
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**			
Construction							
Site preparation and clearing works. Construction of TSF, Evaporation Ponds and stormwater infrastructure. Earthworks and vehicles movements.	Dust	Air / windborne pathway causing impacts to health and amenity	Adjacent vegetation associations/ communities	Cleared areas will be limited during construction. Dust lift-off will be monitored during construction and dust suppression applied when dust lift-off observed. Regular dust suppression of roads and hardstand areas will be applied using water carts. Stripping and movement of topsoil not to be undertaken in windy conditions.	C = Slight L = Rare **Low Risk**	The Delegated Officer considers that the risk of dust emissions from construction activities will be acceptably low and does not warrant specific regulatory controls. General provisions of the EP Act apply relating to causing pollution and environmental harm.	N/A
Operation (including commissioning and time-limited-operations operations)							
Handling and storage of tailings	Dust	Air/windborne pathway causing health impacts to nearby vegetation	Adjacent vegetation associations/ communities	Tailings has a high moisture content and therefore limited dust is expected. Maintain regular tailings deposition cycle of wet tailings. High-volume dust monitoring undertaken in accordance with the Radiation Management Plan.	C = Slight L = Rare **Low Risk**	The Delegated Officer considers that the risk of dust emissions from storage and handling of tailings will be acceptably low and does not warrant specific regulatory controls. General provisions of the EP Act apply relating to causing pollution and environmental harm.	N/A
	Loss of containment of from TSF: seepage	Infiltration to soils and groundwater causing contamination and groundwater mounding	Depth to groundwater ~15mbgl Groundwater used for livestock drinking water. Vegetation for grazing animals	Decant pond maintained as small as possible via decant pump. Mud-farming of tailings to encourage tailings consolidation. TSF inspected daily to identify seepage from embankments and determined decant pond size. TSF embankment foundations comprise of compacted clay over ferricrete hardpan achieving a low permeability of between 1 x 10^{-8} and 1 x 10^{-9} m/s. Groundwater monitoring network expanded to include TSF4. Network of standing and vibrating wire piezometers to be installed around the TSF perimeter. REO Flotation tailings contain low levels of radiation (slightly above radioactive threshold of 1Bq/g) and apatite streams are below the threshold. Daily inspections of TSF embankments. Vegetation health monitoring to continue in accordance with the Flora Management Plan. Staged commissioning (i.e. deposition of REO tailings to form a 1m low permeability layer) will occur. The perimeter embankments of adjoining cells will be installed prior to deposition to provide containment of	C = Moderate L = Unlikely **Medium Risk**	Seepage modelling indicated that seepage entering groundwater from the TSF will be captured in the groundwater sink created by mine dewatering activities indicating that any impacts will be localised on the premises. The Delegated Officer notes that there are limits on the existing licence relating to groundwater levels which can be applied to the expanded groundwater monitoring network. The results of leaching tests indicates that concentrations of metals and metalloids in leachate from the tailings streams are below the levels of concern for livestock drinking water however further testing is required to verify geochemical composition of tailings. Lanthanum, which is considered a potential contaminant of concern associated with rare earth operations, was not considered in the leaching tests. In addition to comprehensive leach testing, groundwater monitoring for Lanthanum is conditioned to observe the potential generation and fate of Lanthanum in seepage. The works approval limits construction of the TSF to Cells 1 to 4 only noting limitations under Part IV of the EP Act. Commissioning of Cells 1 and 4 has been authorised under the works approval to the extent of establishing a low permeability layer within the cells using REO Flotation tailings. Requirements for staged construction are also specified on the conditions to ensure perimeter embankments and or containment bunds are constructed to contain any lateral seepage within the footprint of the TSF.	Construction and limited commissioning authorised for Cells 1 – 4 only. Infrastructure specifications relating to embankment / foundation permeability. Further leaching testing will be required under works approval W6753/2022/1 to verify potential leachate and which includes an assessment of Lanthanum in leachate. Test methods and sample sizes have been specified to ensure that representative samples are collected and appropriate test methods used. Noting that this approval does not authorise the deposition of apatite tailings, further testing and submission of results as required by works approval W6753/2022/1 will be required as part of the licence amendment application to ensure that the proposed TSF4 design is suitable to receive this waste stream on an ongoing basis. The works approval requires installation of additional groundwater monitoring bores with Lanthanum included in the sampling suite. The volume of tailings deposited into the TSF is required to be monitored and recorded. The Delegated Officer notes that existing licence conditions requiring groundwater

Risk events					Risk rating [1] C = consequence L = likelihood	Reasoning	Regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**			
				lateral seepage within the TSF footprint. A 1m high earthen bund will be installed to prevent lateral seepage from Cells 3 and 4 migrating outside of the TSF footprint during initial tailings deposition.			monitoring, and that limits for groundwater mounding also exist on the Licence. This existing groundwater monitoring will be reviewed and updated to include the expanded groundwater network in due course.
	Loss of containment of from TSF: Overtopping	Direct discharge/overland flow contaminating soils/infiltrating to groundwater Direct impact on vegetation health	Adjacent vegetation associations/ communities Depth to groundwater ~15 mbgl Groundwater used for livestock drinking water.	Site wide stormwater management includes series of containment and diversion bunds to divert surface water flow away from site infrastructure. Diversion bunds north and east sides of the TSF divert surface flows around the TSF. Decant pond maintained as small as possible. Decant pump adequately sized (265 m^3/hr). Tailings deposition reduced/ceased if water ponding against perimeter embankment. 300mm freeboard maintained plus allowance for 1:1,000 year, 72 hour event. TSF inspected tailings for decant pond size and to ensure decant system operating effectively.	C = Moderate L = Rare **Medium Risk**	The Delegated Officer considers that the design and operational controls proposed by the Applicant are acceptable for managing the risk of overtopping from the tailings facility and has applied these controls to the works approval. It is noted that the works approval only authorises construction of Cells 1 – 4 and limited commissioning of Cells 1 – 4 to allow the establishment of the low permeability layer using REO Flotation tailings. A condition has been applied limiting the volume of tailings deposited into Cells 1 & 4 which will reduce the risk of overtopping.	Infrastructure requirements have been specified relating to: • Storage capacity; • Stormwater diversion; • Decant system. Limited tailings deposition during commissioning of Cells 1 & 4. Daily inspections will be required during commissioning. Freeboard requirements will be applied through the future works approval amendment authorising further tailings deposition.
	Pipeline failure			Inspected daily as part of routine inspection schedule. Tailings and decant pipelines shall be located within bunded corridors and be fitted with telemetry systems and pressure sensors to allow detection of leaks and failures.	C = Minor L = Unlikely **Medium Risk**	The Delegated Officer considers that the controls proposed by the Applicant are sufficient for managing the risk of pipeline failures or spills and has applied these controls to the works approval.	Infrastructure requirement ensuring that pipelines are fitted with telemetry and situated within bunded corridors for the collection of spills. Requirements to conduct daily inspection of pipelines during commissioning.
Storage of process water include RO rejects and supernatant water in the Evaporation Ponds	Loss of containment from evaporation pond: seepage	Infiltration to soils and groundwater causing contamination and groundwater mounding	Depth to groundwater ~15 mbgl Groundwater used for livestock drinking water	Base of Evaporation Ponds will achieve a low permeability of 1.65 x 10^{-9} m/s. Groundwater monitoring network expanded to include new Evaporation Ponds. Site wide stormwater management includes series of containment and diversion bunds to divert surface water flow away from site infrastructure. Diversion bunds to be installed south and east sides of the Evaporation Pond to divert surface flows.	C = Moderate L = Unlikely **Medium Risk**	Trends for TDS within groundwater monitoring data will continue to be monitored to determine if any broadscale impact is occurring. Noting there are no receptors in the immediate area of the premises (e.g. livestock or groundwater dependent vegetation), the Delegated Officer considers that risks associated with seepage from the Evaporation Ponds can be managed to an acceptable level. In order to determine if there is a change in the rate of seepage over time, the Delegated Officer has included a requirement to undertake seepage tests on each cell of the Evaporation Pond using the pond drop method outlined in the *Practice Note 21: Farm Dairy Effluent Ponds* (IPENZ 2017). As recommended in *Practice Note 21: Farm Dairy Effluent Ponds*, the works approval requires that testing is only carried out once ponds reach 75% of their design depth. Noting that radium is often contained in reverse osmosis rejects, the Delegated Officer determined it appropriate to include radium isotopes in the groundwater monitoring suite so that risks associated with radium in groundwater can be monitored. To ensure that an acceptable low permeability of the pond floor is maintained, groundwater monitoring bores LMW04 and LMW05 to are required to be decommissioned in accordance with *Minimum Construction Requirements for water Bores in Australia* (NUDLC 2020).	Existing Licence condition requiring groundwater monitoring. Groundwater monitoring network expanded to include the additional Evaporation with radium isotopes added to the groundwater monitoring suite. Condition for monitoring and recording the volume of wastewater discharged into the Evaporation Ponds consistent with existing Licence conditions. Limits for groundwater mounding exist on the Licence and to be updated to included expanded groundwater network. Amended works approval to limit the quantity of tailings and other waste (e.g. by-products wash water) deposited into the TSF. Conduct seepage assessment using pond drop method once pond cells reach 75% of their design depth. Groundwater monitoring bore decommissioning requirements.
	Loss of containment of from evaporation pond: Overtopping	Direct discharge/overland flow contaminating soils/infiltrating to groundwater Direct impact on vegetation health	Adjacent vegetation associations/ communities Depth to groundwater ~15mbgl Groundwater used for livestock drinking water.	Designed a minimum freeboard of 300 mm. Regular inspections of the infrastructure will be undertaken to assess freeboard capacity.	C = Moderate L = Rare **Medium Risk**	Noting the Applicant's controls for maintaining stormwater diversion bunds and pond freeboard, the Delegated Officer considers that overtopping will only occur under exceptional circumstances, and the controls proposed are sufficient to manage the risk.	Infrastructure controls specifying pond design capacity and freeboard to be maintained. Regular inspections of the pond to ensure freeboard is being maintained applied during time limited operations consistent with existing licence conditions.
	Pipeline failure			Inspected daily as part of routine inspection schedule. Pipelines shall be located within bunded corridors and be fitted with telemetry systems and pressure sensors to allow detection of leaks and failures.	C = Minor L = Unlikely **Medium Risk**	The Delegated Officer considers that the controls proposed by the Applicant are sufficient for managing the risk of pipelines failures or spills and has applied these controls to the works approval.	Infrastructure requirement ensuring that pipelines are fitted with telemetry and situated within bunded corridors for the collection of spills. Requirements to conduct daily inspection of pipelines during time limited operations.

Risk events					Risk rating [1] C = consequence L = likelihood	Reasoning	Regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**			
Unloading, transfer and storage of by-products	Dust	Air/windborne pathway causing health impacts to nearby vegetation	Adjacent vegetation association/ communities	Water cars will be used to manage dust from by-product stockpiles. Hopper will be hooded. Conveyors will be covered (roof only). By-products have a high moisture content. Transfer point to the lateral stacker will be enclosed. Water cart or sprays bars fitted to the stacker will be used to control dust from stacking. Moisture content in by-products is expected to be 37% (IP) and 40.5% (gypsum) Stockpiles remain for a few days only before being transferred to the hopper. Stockpiles limited to 5,000 m^3 Dust monitoring in accordance with the Radiation Management Plan.	C = Minor L = Unlikely **Medium Risk**	The Delegated Officer considers that high moisture content of by-products combined with proposed dust controls will ensure that the risk of dust emissions associated with handling and storage of by-products will be managed to an acceptable level.	Applicant controls relating to dust suppression/covers have been applied to the works approval.
	Seepage from by-product landform	Infiltration to soils and groundwater causing contamination and groundwater mounding	Depth to groundwater ~15mbgl Groundwater used for livestock drinking water.	IP is dry stacked in fingers that are encapsulated with gypsum outer layer and capped with a final layer of alluvium. Permeability of base layer to comply with *Water Quality Protection Note 27: Liners for containing pollutants, using engineered soils* (DoW 2013)	C = Moderate L = Unlikely **Medium Risk**	Similar to tailings from rare earth mines, the Delegated Officer notes that it is likely that the gypsiferous wastes stored in the by-products landform would also contain elevated concentrations of lanthanum, as this and other rare-earth elements are commonly co-precipitated in gypsum that is produced as an industrial waste by-product (Dutrizac, 2017). As gypsum has a high solubility in water, there would therefore be a risk that runoff and seepage from the proposed by-product landform would also contain elevated concentrations of dissolved lanthanum. Seepage modelling indicated that seepage entering groundwater from the by-products landform will be captured in the groundwater sink created by mine dewatering activities indicating that any impacts will be localised on the premises. The delegated officer notes that there are limits on the existing licence relating to groundwater levels which can be applied to the expanded groundwater monitoring network.	Groundwater monitoring network expanded to include the by-products landform (LMW23 – LMW26). Monitoring suite to include lanthanum to monitor potential seepage from by-products storage. Infrastructure requirements are specified on the works approval relating to low permeability of the base of the Landform, and general storage arrangements to ensure appropriate capping is applied.
	Contaminated surface water runoff from operational areas	Direct discharge/overland flow contaminating soils/infiltrating to groundwater Direct impact on vegetation health	Adjacent vegetation associations/ communities. Depth to groundwater ~15mbgl Groundwater used for livestock drinking water.	Unloading of rotainers will occur within a concrete apron with a perimeter lip and graded to a sump for collection of spills. The northern overland flow bund will divert stormwater flows from the north around the facility. Stormwater will be directed into a stormwater run off pond via surface water drains on the south and western side. Stormwater run-off pond sized to accommodate a 1:100 72 hour AEP rainfall event. Wash water from the cleaning of rotainers drains to a sump and transferred to the water treatment plant for reuse in the processing plant or discharge to the TSF (future). The sump is fitted with a level sensor to ensure capacity is maintained.	C = Moderate L = Unlikely **Medium Risk**	The Delegated Officer considers the most significant potential exposure pathway for emissions from the by-product landform is likely to be from surface runoff during rainfall events. The chemical constituent of most concern in runoff is likely to be lanthanum, and the principal environmental receptors for contamination in surface runoff would be nearby vegetation, ecological communities and fauna (refer to section 2.3.1 for details of impacts associated with lanthanum). The Delegated Officer therefore considers it important that all surface runoff from these landforms is captured and diverted to storage ponds to reduce the risk of adverse environmental impacts taking place from this pathway. Noting the infrastructure controls proposed by the Applicant including the installation of stormwater diversion bunds/drains and stormwater containment infrastructure, the Delegated Officer determined that risks associated with run off from the by-product landforms can be managed to an acceptable level. Noting DEMIRS concerns regarding the transfer of wash water to the TSF (refer to section 2.4.2, the Delegated Officer considers it appropriate to limit the amount of water deposited in the TSF.	Infrastructure controls relating to containment of spills and stormwater management. As this works approval only authorises the partial construction of TSF4, the works approval does not authorise the discharge of any waste to TSF4 apart from the initial deposition of tailings to form the low permeability layer. The Applicant intends to apply to amend the works approval to authorise discharge to the TSF. This is understood to also include the approval to discharge of wash water. This component will be assessed at that time, with appropriate controls considered in due course.
	Spillage of material			Unloading of rotainers will occur within a concrete apron with a perimeter lip and graded to a sump for collection of spills. Spillage from the conveyor corridor will be collected regularly (at least monthly) and transferred to hopper for delivery to the landform.	C = Minor L = Unlikely **Medium Risk**		

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

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

4. Consultation

Table 10 provides a summary of the consultation undertaken by the department.

Table 10: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 19 July 2023.	One submission was received requesting that the applicant be encouraged to consider tyre recycling.	Disposal of tyres is outside the scope of this application.
Shire of Laverton advised of proposal on 19 July 2023	No comment	N/A
Department of Mines, Energy Industry Regulation and Safety (DEMIRS) advised of proposal 19 July 2023	MWM submitted a Mining Proposal and Mine Closure Plan (Registration ID 117820) on 14 April 2023 for the expansion of the Mt Weld mine and construction of a new Tailing Storage Facility (TSF4). The Mining Proposal is generally in alignment with the Works Approval application. DEMIRS confirmed that aspects relating to stability and closure including matters associated with the TSF, Evaporation Ponds and by-product landforms, could be regulated under the Mining Proposal. To avoid regulatory duplication, DEMIRS indicated that it relied on DWER for regulating emissions and discharges during operation. A concern was raised that the infrastructure used to transfer wash water from washing of by-products rotainers to the TSF may be used to transfer larger volumes of water than initially proposed, which may impact the geotechnical stability of the TSF. DEMIRS indicated that its preferences is that no wash water is transferred to the TSF.	The Delegated Officer has considered from DEMIRS in applying appropriate regulatory controls that avoid regulatory duplication. Noting comments regarding potential risks to TSF stability, the Delegated Officer has limited the disposal of wastewater to the TSF (for enhanced tailing deposition to establish the initial 1m tailings layer) and considers that the ongoing discharge of wastewater will be further assessed as part of ongoing operation of the TSF.
	It is noted that tails are stated to contain a high percentage of Rare Earth Oxide (6-8%) and the applicant wishes to store them for future recovery. DEMIRS noted that this material has been subject to significant processing and any remaining Rare Earth Oxide is unlikely to be recovered unless a significant new mineral processing technique is developed. It was suggested then that the material should be treated as "waste" not a "future recoverable mineral".	Refer to section 2.4.3.
Radiological Council advised of the proposal on 19 July 2023	Risks associated with radiation are regulated by the Radiation Council under the *Radiation Safety Act 1975* and its regulations. The proposal can be managed under the Radiation Management Plan and Radioactive Waste Management Plan which will need to be updated as and where necessary.	
DPLH advised of proposal on 19 July 2023	It was noted that there are five Aboriginal Cultural Heritage places that intersect with the proposed development. These were identified through surveys conducted in consultation with the Nyalpa Pirniku Native Title Claim Group. A Section 18 Notice was submitted by the Applicant under the *Aboriginal Heritage Act 1972* (AH Act) and	Noting comments provided, the Delegated Officer considers that risks to heritage are appropriately regulated through the AH Act

	conditional approval has been granted to the Applicant for the expansion project. The Applicant has engaged in a consultative process with the Nyalpa Pirniku Native Title Claim Group regarding the impacts to the Aboriginal sites. The Applicant has also committed to developing a Social Surrounds and Cultural Heritage Management Plan in consultation with Nyalpa Pirniku Native Title Claim Group which will be implemented to ensure future best-practice management of heritage sites across the project area and that risks to heritage sites are minimised.	
Nyalpa Pirniku Native Title Claim Group advised of proposal on 19 July 2023	There is no objection to the Application on the basis that the conditions set out in the Social Surrounds and Cultural Heritage Management Plan are followed. It was noted that the final version of the Plan had not yet been received by Nyalpa Pirniku Native Title Claim Group for their review.	Noted.
Applicant was provided with draft documents on 21 December 2023	Refer to Appendix 1	

5. Decision

The Delegated Officer has determined that the risks associated with the proposal are acceptable and can be managed through the application of appropriate regulatory controls as discussed in Table 9.

This assessment report has considered environmental risks associated with the construction, commissioning and operation of TSF to its full extent. Noting that construction of the TSF to its full extent is limited to a 170ha footprint under MS 1216, this works approval only authorises the construction of Cells 1 – 4 of TSF 4. Limited commissioning of each cell using REO Flotation tailings is also allowed to establish a low permeability layer on the cells. No deposition of apatite tailings steams to the TSF is authorised under this works approval. Commissioning of the constructed cells may only commence following the submission of a Critical Containment Infrastructure Report confirming that the cells have been constructed in accordance with the works approval conditions. Other infrastructure specifications have been included to ensure appropriate containment of lateral seepage during commissioning of the cells. This includes the construction of adjoining perimeter embankments prior to deposition in Cells 1 and 2, and installation of a containment bund prior to deposition within Cells 3 and 4.

An amendment to this approval is required for the construction of the remaining cells (Cells 5 – 8) and any additional tailings deposition. Additional conditions may be applied at the time of amendment including:

- Conditions limiting the quantity of waste (e.g. tailings, by-products wash water, etc.) deposited into TSF4;
- Requirements to undertake further testing of tailings material and submit results.

Co-disposal of multiple tailings streams into single cells and the transfer of wastewater to TSF4 is also not authorised under this works approval. These activities will be subject to further assessment via subsequent applications under Part V of the EP Act.

Construction and time limited operations of the Evaporation Ponds and By-Product handling and storage infrastructure is authorised under the works approval. An Environmental Compliance Report, or Critical Containment Infrastructure Report, is required to be submitted prior to the commencement of time limited operations.

The works approval has been issued for approximately three years to align with tenure which expires on 25 November 2026. The Applicant may submit an application to extend the duration of the works approval once longer term tenure is secured.

6. 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.

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

Section / Condition Reference	Summary of applicant's comment	Department's response
Decision Report (Section 2.3.1 - Table 1)	The Applicant corrected the flowrate of the Apatite Leach Circuit By-Products from 24.5m^3//hr to 255m^3/hr.	The Delegated Officer notes that the flowrate of 24.5m^3/hr was a typographical error and has updated the information noting that the proposed rate of 255m^3/hr does not represent a significant increase from that specified in the application of 245m^3/hr (REE 2023).
Decision Report (Section 2.3.1)	The Applicant indicated that results of decant water testing show a pH of 8 – 11 (rather than "about 10"). The Applicant also indicated pH for the apatite tailings streams are: • Apatite Prefloat Concentrate pH 9 – 11; and • Apatite Leach Circuit By-product pH 8 – 9.	Noted. The Delegated Officer considers that this information does not alter the outcome of the risk assessment. As outlined in section 2.3.1, results of leach testing provided indicate that testing was undertaken at pH 5, which may not be reflective of *in situ* conditions. Further leach testing of tailings is required to understand leachability of tails material under a range of conditions.
Decision Report (Section 2.3.1) Works Approval (Condition 11)	The Applicant noted that in order to demonstrate wastewater equipment such as pumps and pipe infrastructure is performing per design, some wastes will require disposal into the TSF. To support commissioning of the water treatment facilities, the Applicant requested that the works approval allow disposal of wastes produced from the water treatment system into Cells 1 and 2 of the TSF during the authorised environmental commissioning period. No wash water associated with by-products handling will require disposal at this time as by-products handling infrastructure is not anticipated to be required until 2026. The Applicant advised that raffinate from the water treatment system is used for the purpose of Enhanced Tailings Deposition (ETD). Raffinate acts as a coagulant to promote electrostatic attraction of the tailings particles. This is an existing operational process that replaces the use of chemicals for coagulation such as lime/gypsum. Only a small volume of wastewater from the water treatment system will be directed to the TSF to support ETD.	The Delegated Officer has determined to allow the deposition of wastewater to Cells 1 and 2 during commissioning noting that the risk profile of the premises will not change as a result of this activity. In making this determination, the Delegated Officer has considered the following: • limited volumes of water will be discharged for the purpose of ETD; • that discharge of wastewater to the TSF is in line with existing operational processes associated with improving tailings consolidation; • deposition into the TSF cells is limited under existing conditions, i.e. only sufficient quantities to establish a 1m deep low permeability layer which is a design requirement for managing seepage from the TSF long term; • deposition is expected to be short term (up to 4 months) and only to establish the 1m low permeability foundation; and • the Applicant has proposed additional controls for managing lateral seepage from internal embankments

Section / Condition Reference	Summary of applicant's comment	Department's response
		(see responses below). A requirement to monitor the volume of water directed to the TSF has been included on the works approval with results reported in the Environmental Commissioning Report. Ongoing disposal of wastewater to the TSF will be considered further under subsequent works approval and licence amendments in consultation with DEMIRS.
Decision Report (Section 2.3.1) Works Approval (Condition 11)	In relation to commissioning of Cells 1A, 1B, 2A and 2B, the Applicant provided additional clarification. Upon completing construction of each cell's impoundment area, whereby the embankment is built to design along with tailings pipelines and spigots, each cell will receive REO tailings to develop the 1m low permeability. This means, that whichever cell is constructed first, may accept REO tailings prior to construction of the remaining cells being completed. The Applicant indicated that this schedule is critical to ensure continued operation of the mine. The Applicant indicated that in order to prevent lateral seepage outside of the TSF footprint during commissioning, the adjacent perimeter embankments will be installed prior to deposition of REO tailings commencing. Figure 1 demonstrates the extent of perimeter embankment construction prior to REO tailings deposition in a completed cell (in this case Cell 2B). The Applicant indicated that deposition of tailings to establish the 1m low permeability layer will occur over a number of deposition cycles to ensure that design permeability and thickness is achieved. This is anticipated to take over four (4) months.	The Delegated Officer has considered information provided the Applicant and determined to allow staged construction and commissioning of the tailings cells as requested by the Applicant. Key to this decision is recognising that limited tailings deposition is necessary to achieve the design requirements of the TSF associated with the foundation permeability. The Delegated Officer notes that the Applicant proposes additional controls to mitigate lateral seepage migrating outside of the TSF footprint. Construction of the cells will be staged so that perimeter embankments in adjacent cells are constructed prior to deposition which will provide a barrier for the migration of lateral seepage. Considering that deposition of tailings will short term (4 months maximum) to establish the low permeability foundation layer, the Delegated Officer considers that limited lateral seepage is anticipated during and therefore, that the Applicant's controls for managing potential seepage are appropriate. Noting the limited tailings deposition, short-term duration of deposition of tailings and Applicant's controls, the Delegated Officer considers that the risk profile will not be significantly altered by the proposed staged construction approach. Limitations regarding the quantity of tailings authorised to be discharged to the TSF have already been applied to the works approval (i.e. only sufficient quantities to establish a 1m deep low permeability layer). A condition specifying the stages of construction have been included on the works approval to ensure that appropriate barriers are in place for protection against lateral seepage beyond the TSF footprint.
Decision Report (Section	The Applicant requested that the condition be modified to allow deposition of REO tailings into Cells 3 and 4 to establish the 1m low permeability	Similar to above, the Delegated Officer notes that deposition into Cells 3 and 4 is limited to the amount required to develop

Section / Condition Reference	Summary of applicant's comment	Department's response
2.3.1, 3.3 and 5) Works Approval (Condition 11)	layer. To minimise the risk of lateral seepage outside of the TSF footprint, the Applicant proposes to extend the perimeter embankments of Cells 3 and 4 by installing a 1m high bund. The Applicant expects that any seepage that occurs will be contained within Cells 5 and 6, evaporate or will be pumped off using on-site pumps.	the required low permeability foundation layer. The Applicant has proposed additional controls for managing lateral seepage associated with tails deposition into Cells 3 and 4 in the form of a 1m high earthen bund positioned along the perimeter of the future Cells 5 and 6. Recognising that drainage flow is generally to the southwest, the western bund wall will be extended to prevent surface seepage flow beyond the footprint of the TSF. Noting that deposition will be short term (up to 4 months) prior to final consolidation of the 1m low permeability later, the Delegated Officer considers that lateral seepage through the Cell 3 and 4 internal embankments will be limited. Considering the short-term duration of seepage, and Applicant controls in place to mitigate lateral seepage beyond the TSF footprint, the Delegated Officer has determined that temporary deposition of tailings into Cells 3 and 4 will not alter the risk profile of the premises and has amended the conditions accordingly. Deposition will be allowed subject conditions specifying the stages of construction of the TSF cells to ensure that bund walls for preventing seepage flow outside of the TSF footprint are installed.
Decision Report (Section 2.3.2 and 3.3) Works Approval (Conditions 6, 7 and 9)	The Applicant noted that the HDPE lined proposed on the perimeter embankments of the Evaporation Pond is a provisional item and that during construction of the Evaporation Ponds, the geotechnical engineer may determine that the HDPE liner is not essential for managing stability of the embankments. The removal of the HDPE is considered by the Applicant not to change the environmental risk or outcomes of the design noting that the liners relates to the geotechnical stability of the embankments rather than preventing seepage impacts to groundwater.	Noted. The Delegated Officer accepts that the HDPE liner is a provisional item associated with the management of embankment stability and does not alter risk associated with seepage from the Evaporation Ponds. On this basis, and considering that risks associated with stability are appropriately regulated via the Mining Proposal under the *Mining Act 1978*, the delegated officer has determined to remove this requirement from the works approval.
Decision Report (Section 2.3.2) Works Approval (Conditions 16 and 27)	The Applicant indicates that historical monitoring of radium Ra226 and Ra228 has not shown any increase of these parameters over the course of 10 years. Furthermore, the Applicant suggested that low seepage rates mean that monthly samples of radium will not yield any more data than what can be obtained from six monthly sampling. Noting the above information, and for consistency with the Radiation Management Plan, the Applicant requested that the frequency of monitoring radium in groundwater be amended to six monthly.	Accepted noting that frequency of monitoring may be reconsidered under any future works approval or licence applications.
Decision Report (Section 5)	The design specifications within the current conditions required that the	Noting that deposition of REO tailings within the cells is part of

Section / Condition Reference	Summary of applicant's comment	Department's response
Works Approval (Condition 10)	TSF foundations shall achieve a permeability of 1 x 10^{-8} m/s. Evidence of this requirement is to be submitted within the Critical Containment Infrastructure Report (CCIR). Submission of the CCIR is required prior to the commencement of commissioning during which time the Applicant proposes to deposit 1m of REO tailings into the cells to establish the low permeability layer. The Applicant noted that the draft conditions limit the ability for the Applicant to deposit REO tailings within the cells to form the 1m low permeability layer. The Applicant has therefore requested that the conditions be revised noting that deposition of REO tailings within the cells provides the material to achieve a permeability of 1 x 10^{-8} m/s.	the overall TSF design to establish a 1m low permeability layer, the Delegated Officer has elected to amend the conditions to allow further flexibility to achieve this outcome. The Applicant will be required to submit an initial Critical Containment Infrastructure Report (CCIR) demonstrating that the TSF cells are constructed appropriately to receive the 1m of REO tailings. Following completion of the 1m of REO tailings, the Applicant will be required to submit a Commissioning Report demonstrating that the deposited tailings achieves the designed permeability of 1 x 10^{-8} m/s. For quality control purposes, the report will require certification from a geotechnical specialist.
Decision Report (Section 3.1)	The Applicant noted that the Carbonatite aquifer is no longer used for mine processing purposes. The previous arrangement between the Applicant and the adjacent mine (Granny Smith Mining Pty Ltd) to share water abstraction from the Carbonatite Aquifer lapsed in 2023. Granny Smith Mining Pty Ltd no longer have abstraction rights and therefore are no longer an environmental receptor. The Applicant also noted that there are no pastoral bores within the immediate proximity of Mt Weld operations and therefore unlikely that seepage from containment facilities would be abstracted for pastoral use.	Noted. Information contained within the report has been updated.
Decision Report (Section 3.3)	Noting the above information regarding livestock water bores, the Applicant requested that "Groundwater used for livestock drinking water" and "Groundwater used for livestock drinking water (off premises)".	The Delegated Officer considers that impacts to livestock watering off premises is a potential risk that requires consideration under this risk assessment. In determining the level of risk, the Delegated officer has had consideration for the distance to these receptors, the Applicant's controls and outcomes of seepage modelling.
Works Approval (Condition 6)	The Applicant indicated that Stage 2 Evaporation Ponds may be constructed first following by Stage 1 and therefore requests flexibility within the conditions to construct stages in either order.	Noted. Condition 6 has been amended to allow stages to be constructed in any order.