Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: Mt Weld Mining Pty Ltd

Licence: L8141/2007/2

Registered office: Level 1
7 Tully Road
EAST PERTH WA 6004

ACN: 053 160 400

Premises address: Mt Weld Rare Earths Project
Elora Road
LAVERTON WA 6440
Being mining tenement M38/58 as depicted in Schedule 1.

Issue date: Thursday, 11 April 2013

Commencement date: Tuesday, 16 April 2013

Expiry date: Wednesday, 15 April 2026

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
05	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	242 000 tonnes per annual period
89	Putrescible landfill site	More than 20 but less than 5 000 tonnes per year	300 tonnes per year

Conditions
This Licence is subject to the conditions set out in the attached pages.

Date signed: 7 April 2017
.....
Tim Gentle
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary

Mt Weld Mining Pty Limited (Mt Weld Mining) is a subsidiary company of Lynas Corporation Limited and currently operates a rare earth ore mine and concentrator plant at Mount Weld (Mt Weld), located approximately 35 km southeast of Laverton, Western Australia. The mining, processing activities and related infrastructure are located within the Mt Margaret Mineral Field on mining leases M38/58, M38/59, M38/326, M38/327, L38/58, L38/98, L38/224 and exploration licenses E38/2224, E38/2558 and E38/2359. Concentrate from Mt Weld is shipped to Lynas Advanced Materials Plant in Malaysia. The operational life of the mine at Mt Weld is expected to be 25 years.

The mine is currently operating under Ministerial Statement 476 under Part IV of the *Environmental Protection Act 1986* (EP Act) and Licence L8141/2007/2 issued under Part V of the EP Act.

The Premises is prescribed under category 5 (processing and beneficiation of metallic and non metallic ores) and category 89 (putrescible landfill). Category 85B (water desalination plant: premises at which salt is extracted from water if wastewater is discharged to land or into waters) was previously on the Licence. A review of the engineering documentation of the evaporation pond conducted as part of the amendment to works approval W5533/2013/1 has determined that the evaporation pond cells are an engineered facility. Subsequently the discharge of wastewater to the evaporation pond is considered a discharge to containment infrastructure and not an emission to land, and hence category 85B is not appropriate. Key infrastructure authorised for operation under the Licence includes:

- Rare earths oxide concentrator;
- Waste process water and water treatment plants (clarifiers, ultrafiltration units and reverse osmosis plant);
- Tailings storage facility (TSF 1, an above ground paddock style TSF); and
- Evaporation ponds (8 cells constructed in two phases).

A works approval W5645/2014/1 was granted to construct and commission a new TSF, TSF2. TSF2 is an above ground paddock style TSF with a footprint of approximately 18 ha and is lined with a geosynthetic clay liner (GCL).

Amendment August 2016

This Licence is the result of an amendment sought by the Licensee to increase the authorised production capacity under category 5, consistent with the Phase 2 upgrade works conducted according to Works Approval W5078/2011/1. The Licensee also requested a change to the authorised volume and duration of wastewater discharge to the Premises' evaporation pond. DER has authorised these changes. DER has also added an improvement condition to the licence to review the stormwater management plan for the processing plant to ensure that contaminated stormwater from disturbed areas is contained.

Amendment April 2017

This amendment authorises use of TSF 2, following submission of commissioning and compliance documentation from the Licensee on 16 December 2016. The Licensee submitted an application on 20 December 2016 to operate TSF2 and to also reuse the wastewater discharged to the evaporation pond for dust suppression, following consultation and approval by the Radiological Council under the *Radiation Safety Act 1975.*

A Surface Water Management Plan was submitted on 1 November 2016 in accord with condition 4.1.1. This condition has been removed from the Licence. The inspection regime detailed in condition 1.3.4 of the Licence has been amended to include commitments made by the Licensee in their Surface Water Management Plan.

The licences and works approvals issued for the Premises since 13/04/2007 are:

Instrument log		
Instrument	**Issued**	**Description**
L8141/2007/1	13/04/2007	New licence to operate a mobile crushing and screening unit to process ore.
W4400/2008/1	17/07/2008	Works approval to construct and commission a crushing and grinding plant; rare earth oxide concentrator; tailings storage facility, water treatment plant and evaporation pond (cells 1 -5).
W5078/2011/1	5/01/2016	Works approval to authorise construction and commissioning of Phase 2 works for the Processing Plant to increase processing capacity to 242 000 tpa. Increase to Evaporation Pond cells (cells 6- 8). Second diesel generator to increase site power capacity to 8MW. Doubling of diesel storage to 6 * 94 500 L tanks, upgraded reagent storage.
W5078/2011/1	10/01/2013	Works approval amended to require submission of a commissioning document for Phase 2 works and to require commissioning in accord with the submitted plan.
L8141/2007/2	15/04/2013	Licence re-issue (Phase 2 production capacities not authorised at this re-issue due to works approval construction still occurring at this time)
L8141/2007/2	31/10/2013	Licence amendment to allow for pilot plant trial of tailings dewatering plant (screw press, dewatering system and thickener).
W5533/2013/1	1/05/2014	Works approval to authorise construction and commissioning of plant to treat process water and accompanying construction of additional process water ponds.
W5645/2014/1	18/12/2014	Works approval to authorise design and construction of new TSF2 (dry stacked 50% solids density at deposition), Stormwater Run off Pond (SWROP) and a screw press and thickener for tailings dewatering.
W5645/2014/1	14/03/2016	Works approval amendment to authorise a change to the TSF2 design from a dry stacking TSF to a conventional slurry fed TSF. Geosynthetic clay liner as originally approved for TSF 2 was retained.
W5533/2013/1	5/04/2016	Works approval amendment to change wastewater discharge volumes and allow installation of multiple clarifiers/ ultrafiltration units
L8141/2007/2	19/08/2016	Licence amendment to authorise category 5 production capacity increase consistent with W5078 (Phase 2 tonnages), and increase to authorised amount of wastewater discharged to the evaporation ponds.
L8141/2007/2	07/04/2017	Licence amendment to authorise operation of TSF2 following receipt of commissioning and compliance documentation. The

		amendment also authorises reuse of clarified water for dust suppression. Improvement condition 4.1.1 is removed as the surface water management plan was submitted as required.

Severance
It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'Act' means the *Environmental Protection Act 1986;*

'AHD' means the Australian height datum;

'Annual Audit Compliance Report' means a report in a format approved by the CEO as presented by the Licensee or as specified by the CEO from time to time and published on the Department's website;

annual period' means the inclusive period from 1 January until 31 December in the same year;

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;

Department Administering Div. 3 Pt.V *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Telephone: (08) 9333 7510
Facsimile: (08) 9333 7550
Email: info@der.wa.gov.au

'Department' means the department established under s.35 of the Public Sector Management Act 1994 and designated as responsible for the administration of Division 3 Part V of the *Environmental Protection Act 1986;*

'DMT' means dry metric tonnes;

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'hardstand' means a surface with a permeability of 10^{-9} metres/second or less;

'Licence' means this Licence numbered L8141/2007/2 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'mbgl' means metres below ground level;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'quarterly' means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September, and 1 October to 31 December;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'six monthly' means the 2 inclusive periods from 1 January to 30 June and 1 July to 31 December in the following year;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'USEPA' means United States (of America) Environmental Protection Agency;

'µS/cm' means microsiemens per centimetre.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

1.2 General conditions

1.2.1 The Licensee shall immediately recover, or remove and dispose of spills of saline water, wastewater, process liquors, tailings or hydrocarbons outside an engineered containment system.

1.3 Premises operation

1.3.1 The Licensee shall ensure that waste material is only stored and/or treated within vessels or compounds provided with the infrastructure detailed in Table 1.3.1.

Table 1.3.1: Containment infrastructure

Storage vessel or compound	Material	Requirements
TSF 1	Tailings	HDPE geomembrane liner with permeability of 1 X 10^{-11} m/s
TSF 2	Tailings	Geosynthetic clay liner (GCL) overlain with 300mm compacted colluvium soil.
Evaporation Pond Phase 1, Cells 1- 5	Blend of raffinate from reverse osmosis and clarified TSF supernatant (decant) water.	Clay lined, average permeability of 5.33 x 10^{-9} m/s.

	Combined permitted discharge volume to all evaporation ponds 810 000m^3 per annum.	
Evaporation Pond Phase 2, Cells 6-8	Blend of raffinate from reverse osmosis and clarified TSF supernatant (decant) water. Combined permitted discharge volume to all evaporation ponds 810 000m^3 per annum.	400mm depth soil liner comprising compacted in situ colluvium and lacustrine clay, with 200mm depth of colluvial sand above soil liner. Permeability of less than1 x 10^{-8} m/s.
Return Water Pond	Tailings supernatant from TSF 2	HDPE lined
Plant Run Off Pond	Potentially contaminated stormwater	Compacted earthen basin
Treated Water Pond	Permeate (treated water) from Reverse Osmosis Plant	HDPE lined

1.3.2 The Licensee shall ensure that all pipelines containing environmentally hazardous substances are either:
(a) equipped with telemetry systems and pressure sensors to allow detection of leaks and failures; and/ or
(b) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.3.3 The Licensee shall maintain a minimum top of embankment freeboard of 300 mm in all containment infrastructure on the Premises.

1.3.4 The Licensee shall:
(a) undertake inspections as detailed in Table 1.3.2;
(b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
(c) maintain a record of all inspections undertaken.

Table 1.3.2: Inspection of infrastructure

Scope of inspection	Type of inspection	Frequency of inspection[1]
Tailings delivery lines	Visual integrity	Daily
Evaporation pond delivery lines		
Return water lines		
Tailings deposition	Visual	
Ponding on the surface of the TSF	Visual to confirm size and location of the pond	
Internal embankment freeboard – TSFs, Return Water Pond, Evaporation Ponds	Visual to confirm required freeboard capacity is available	
External wall of the TSF	Visual integrity	
Stormwater drains and channels (as shown in Figure 3 of Schedule 1)	Visual to ensure that drains/channels are free of accumulated sediment	Quarterly and after significant rainfall events as access permits
Premises' stormwater diversion structures	Visual integrity	
Capacity of the Plant Run off	Visual to confirm capacity is	Prior to forecast storm

Pond	available	event

Note 1: If circumstances at the scheduled time of inspection are identified as immediately hazardous to personnel the inspection should be undertaken as soon as practicable and the reason(s) recorded.

1.3.5 The Licensee shall ensure that where wastes produced on the premises are disposed on site they are only subjected to the processes in Table 1.3.4 and in accordance with the process limits in that table.

Table 1.3.4: Management of waste

Waste type	Process	Requirements
Clean fill Putrescible waste	Storage, handling and disposal of waste by landfilling	**All waste types** • No more than 300 tonnes per year of all waste types cumulatively shall be disposed of by landfilling; • Waste shall be placed in a defined trench, with the active tipping area restricted to a maximum linear length of 30 m; • The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3m; and • Must meet the acceptance criteria for Class II landfills.

1.3.6 The Licensee shall ensure that cover is applied to waste in the tipping area in accordance with Table 1.3.5 and that sufficient stockpiles of cover are maintained on site at all times for the tipping area of the site to be covered, in accordance with this condition, at least twice.

Table 1.3.5: Cover requirements

Waste Type	Material	Depth	Timescales
Clean Fill	No cover required	N/A	N/A
Putrescible waste	Inert Waste Type 1, soil or clay	150mm	To be covered by the end of the week in which the waste was deposited with sufficient quantities of Type 1 inert waste, clean fill or other appropriate cover material to prevent the spread of fire and harbouring of disease vectors.

1.3.7 The Licensee shall ensure that wind-blown waste is contained within the boundary of the landfill and that wind-blown waste is returned to the tipping area on at least a monthly basis.

1.3.8 The Licensee is authorised to use process wastewater for dust suppression in accordance with the water quality limits in Table 1.3.6. The wastewater shall be applied so as to avoid damage to vegetation (such as from overspraying or runoff).

Table 1.3.6: Water quality limit for dust suppression

Description	Parameter	Limit	Units	Permitted Use
Reverse osmosis raffinate water, clarified TSF supernatant or blend of both	Total Dissolved Solids	<5 000	mg/L	Can be used on any disturbed areas
		<17 000		Haul/access roads, concentration plant, approved areas for clearing for construction, open pit, active mining areas

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of this Licence.

3 Monitoring

3.1 General monitoring

3.1.1 The licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured (unless indicated otherwise in the relevant table).

3.1.2 The Licensee shall ensure that :
(a) monthly monitoring is undertaken at least 15 days apart;
(b) quarterly monitoring is undertaken at least 45 days apart;
(c) six monthly monitoring is undertaken at least 5 months apart; and
(d) annual monitoring is undertaken at least 9 months apart.

3.1.3 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications and the requirements of the Licence.

3.1.4 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Process monitoring

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Process monitoring

Monitoring point reference	Parameter[1, 2]	Units	Frequency	Method
Evaporation Ponds	Volume discharged to ponds	m^3	Cumulative Monthly Total	None specified
Combined wastewater (used as dust suppressant and as located in Figure 4 of Schedule 1)	Volume used as dust suppressant	m^3	Cumulative Monthly Total	None specified
	pH	-	Monthly	Spot sample
	Total dissolved solids	mg/L		

	Aluminium Arsenic Cadmium Chromium Copper Iron Manganese Mercury Molybdenum Nickel Selenium Strontium Uranium Thallium Thorium Zinc	mg/L	Quarterly	Spot sample
	Calcium Magnesium Sodium Potassium Carbonate Chloride Sulfate			
TSF1 TSF2	Volume discharged	m^3 (wet) & DMT	Cumulative Monthly Total	None specified

Note 1: In-field non-NATA accredited analysis permitted for pH and TDS.
Note 2: Metals analysis for soluble component only.

3.3 Ambient environmental quality monitoring

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.3.1: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter[1, 2]	Target	Limit	Units	Averaging period	Frequency
LWM1 – LWM13	Standing water level	6	4	mbgl	Spot sample	Quarterly
	pH	-	-	-		
	Electrical conductivity	-	-	µS/cm		
	Total dissolved solids	-	-	mg/L		
	Aluminium	-	-			
	Arsenic	-	-			
	Cadmium	-	-			
	Chromium	-	-			
	Copper	-	-			
	Lead	-	-			
	Mercury	-	-			
	Manganese	-	-			
	Molybdenum	-	-			
	Nickel	-	-			
	Selenium	-	-			
	Strontium	-	-			
	Thallium	-	-			
	Thorium	-	-			
	Uranium	-	-			

	Zinc Iron	-	-			
	Calcium	-	-			
	Magnesium	-	-			
	Sodium	-	-			
	Potassium	-	-			
	Carbonate	-	-			
	Chloride	-	-			
	Sulfate	-	-			

Note 1: In-field non-NATA accredited analysis permitted for pH, EC and TDS.
Note 2: Metals analysis for soluble component only.

3.3.2 The Licensee shall take the specified management action outlined in Table 3.3.2 in the case of an event in Table 3.3.1.

Table 3.3.2: Management actions

Monitoring point reference	Event	Management action
LWM1 – LWM13	Exceedance of the target in Table 3.3.1 for two consecutive quarters.	The Licensee shall design and implement a groundwater recovery plan.
		The licensee shall measure the standing water level in the monitoring bore/s monthly as a minimum until such time as standing water levels in the monitoring bore/s are in excess of the target in Table 3.3.1.

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:
(a) be legible;
(b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
(c) except for records listed in 4.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
(d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
(i) off-site environmental effects; or
(ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee shall ensure that:
(a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
(b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

4.1.3 The Licensee must submit to the CEO an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence for the annual period.

4.1.4 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.2 Reporting

4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report by 31 March after the end of the annual period. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
-	Actual annual throughput per premises category	None specified
Table 3.2.1	Volumes discharged to TSF1, TSF2 and Evaporation Ponds; monitoring of water quality discharged to the Evaporation Ponds	None specified
Table 3.3.1	Ambient groundwater monitoring program	None specified
4.1.3	Compliance	Annual Audit Compliance Report (AACR)
4.1.4	Complaints summary	None specified

4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
(a) any relevant process, production or operational data recorded under Condition 3.1.3; and
(b) an assessment of the information contained within the report against previous monitoring results and Licence limits.

4.2.3 The Licensee shall submit the information in Table 4.2.2 to the CEO according to the specifications in that table.

Table 4.2.2: Non-annual reporting requirements

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form[1]
-	Copies of original monitoring reports submitted to the Licensee by third parties	Not Applicable	Within 14 days of the CEOs request	As received by the Licensee from third parties

Note 1: Forms are in Schedule 2

4.3 Notification

4.3.1 The Licensee shall ensure that the parameters listed in Table 4.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 4.3.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
2.1.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
3.1.4	Calibration report	As soon as practicable.	None

			specified
3.3.1	Breach of target	Notify the CEO within 2 working days of becoming aware of the exceedance of the target	N1

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act

Note 2: Forms are in Schedule 2

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The green line depicts the Premises boundary.

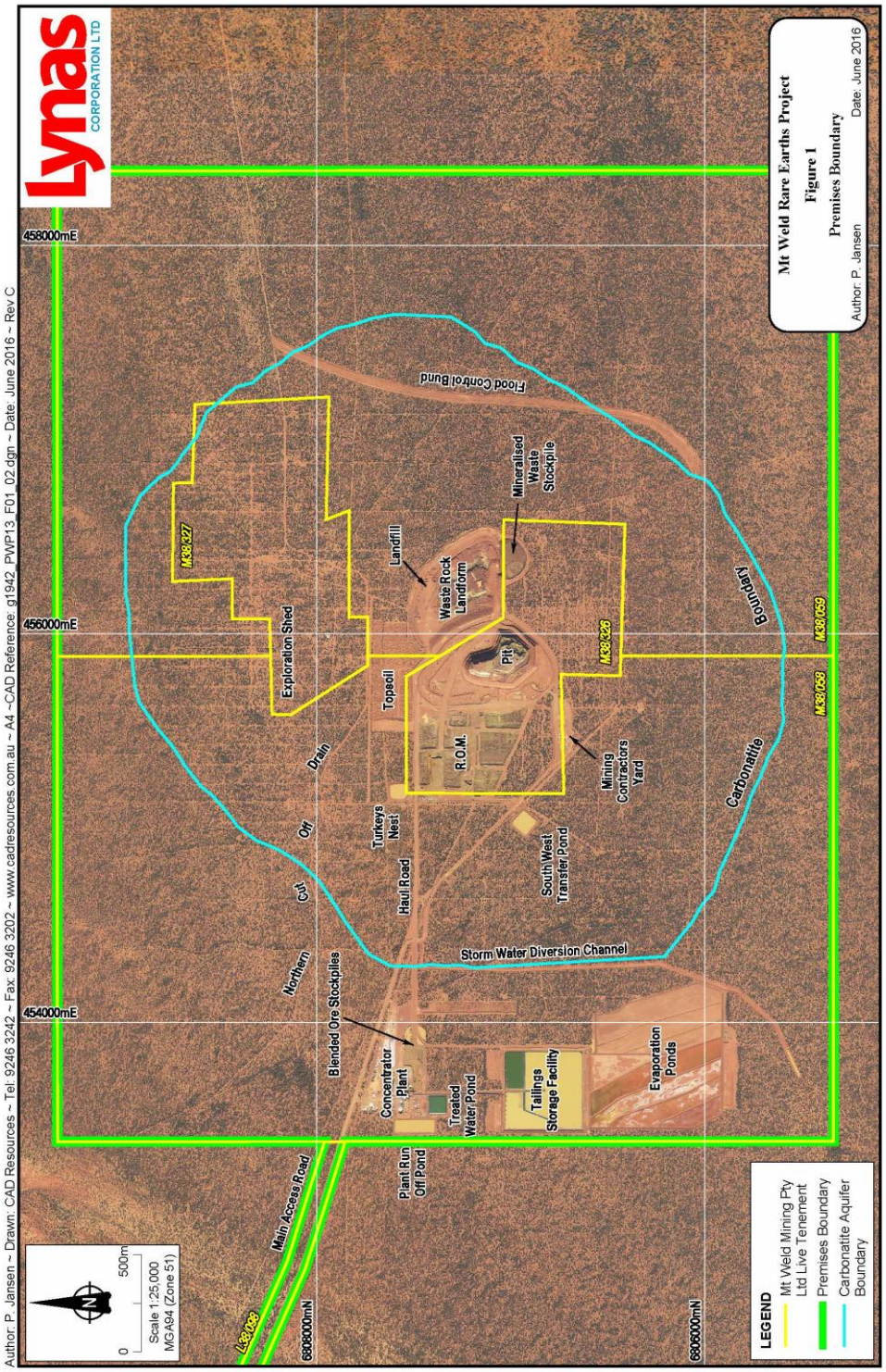

Figure 1: Premises boundary.

Map of monitoring and storage locations

The locations of the storages defined in Table 1.3.1 and monitoring points defined in Table 3.4.1 are shown below. Detail of the drainage layout for the concentrator follows in Figure 3. Figure 4 shows the location of the monitoring point for measuring volumes of wastewater used as dust suppressant.

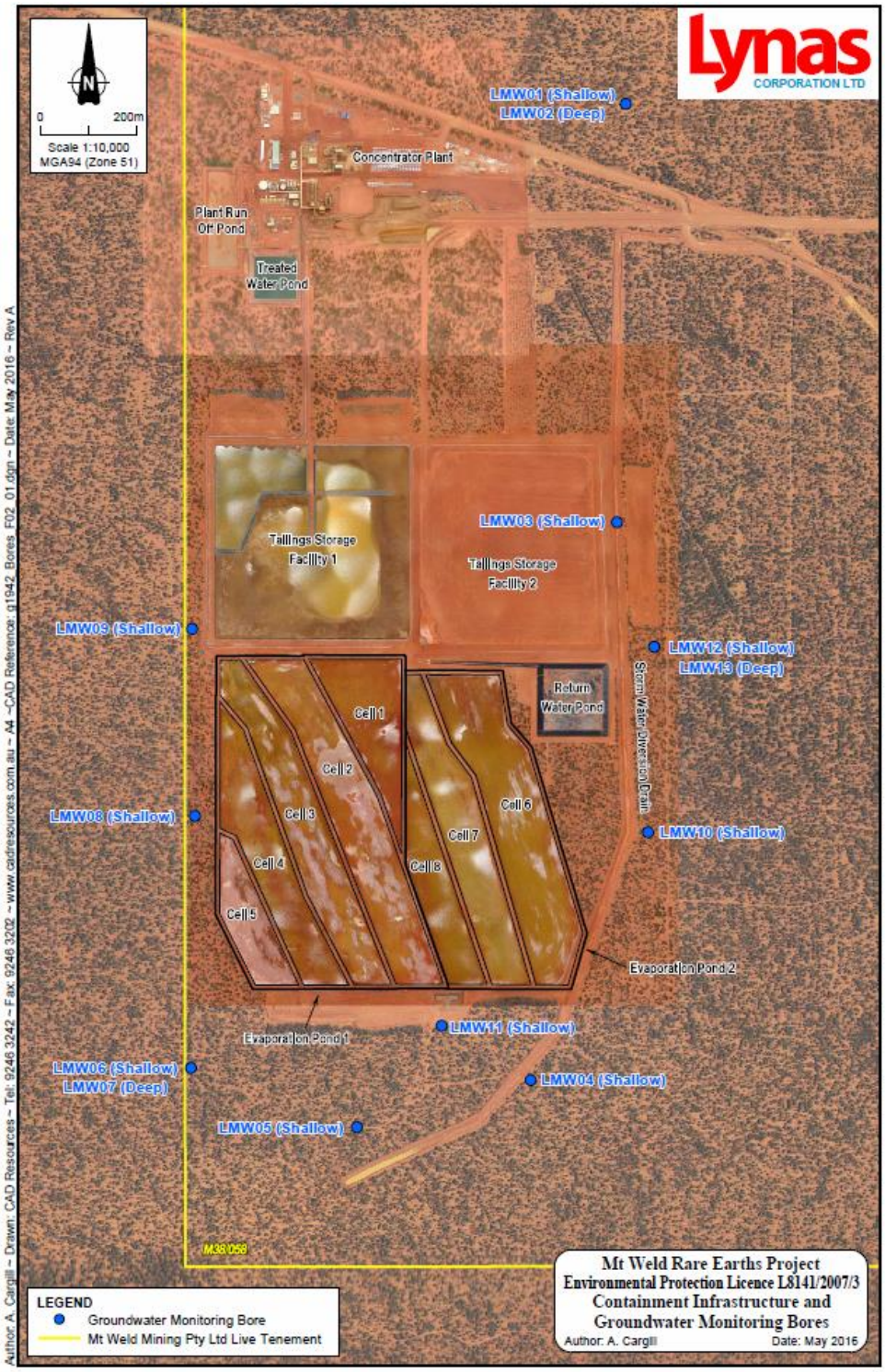

Figure 2: Premises containment infrastructure and groundwater monitoring sites.

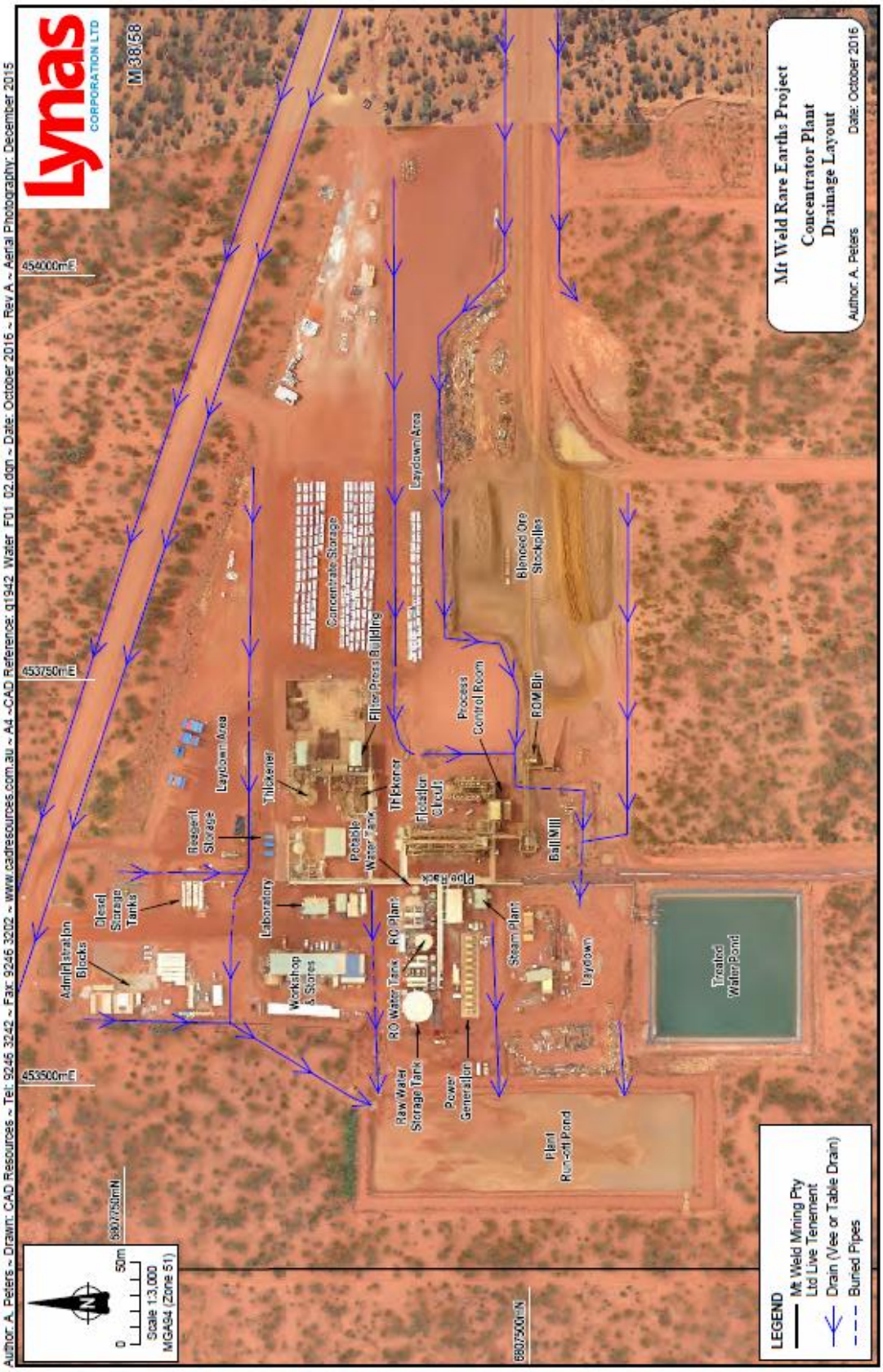

Figure 3: Concentrator (processing plant) containment infrastructure and stormwater drainage layout.

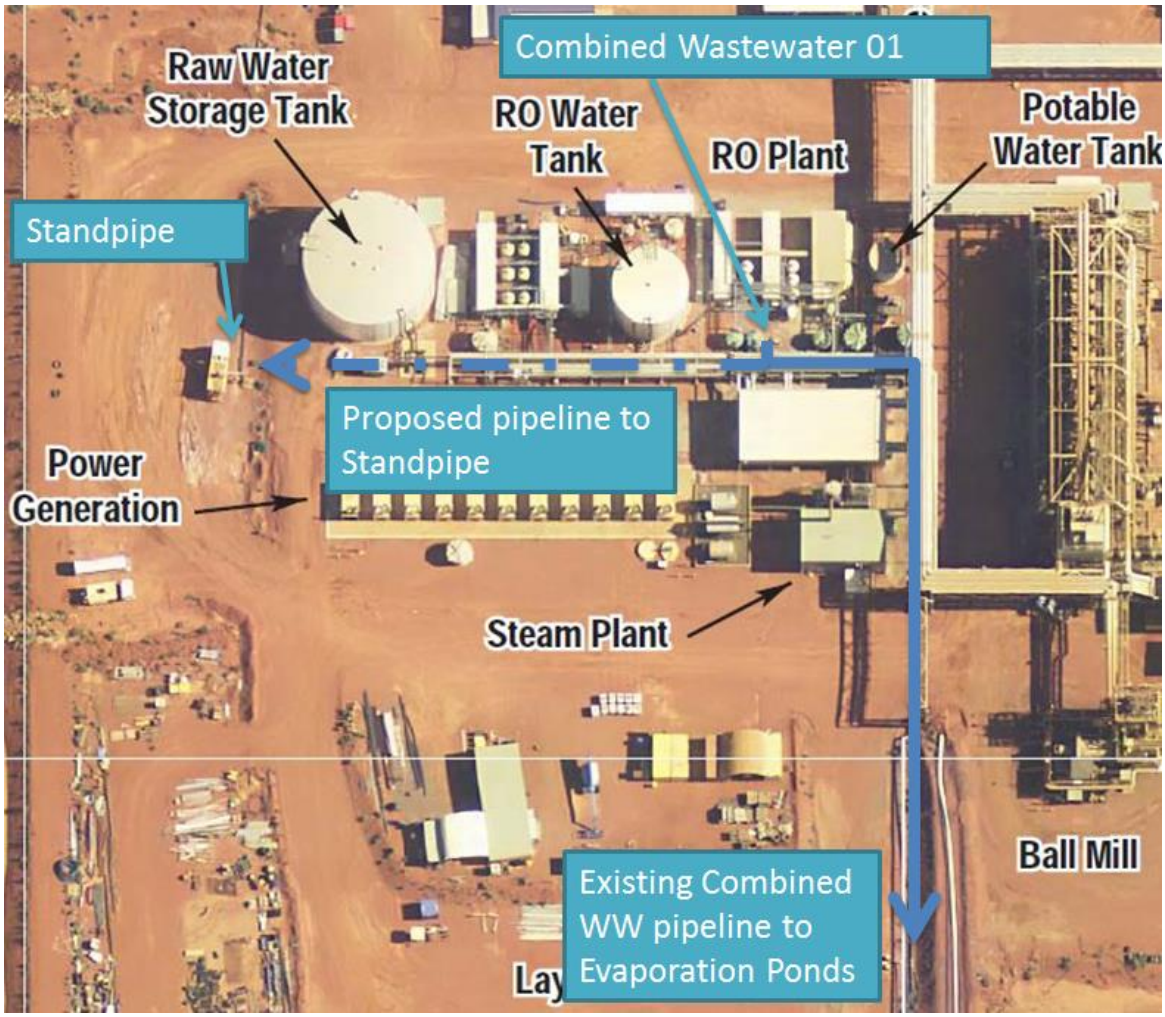

Figure 4: Monitoring point to measure wastewater used for dust suppressant as per Table 3.2.1 (Combined Wastewater 01).

Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

Licence: L8141/2007/2 Licensee: Mt Weld Mining Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Mt Weld Mining Pty Ltd	
Date	

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Mt Weld Mining Pty Ltd

Licence: L8141/2007/2

Registered office:	Level 1 7 Tully Road EAST PERTH WA 6004
ACN:	053 160 400
Premises address:	Mt Weld Rare Earths Project Elora Road LAVERTON WA 6440 Being mining tenement M38/58 as depicted in Schedule 1.
Issue date:	Thursday, 11 April 2013
Commencement date:	Tuesday, 16 April 2013
Expiry date:	Wednesday, 15 April 2026

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue an amended licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by:	Louise Lavery Licensing Officer
Decision Document authorised by:	Tim Gentle Delegated Officer

Contents

1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986.* Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval ☐ New Licence ☐ Licence amendment ☐ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	5	242 000 tonnes per annual period
	89	Approximately 300 tonnes per year
Application verified Application fee paid	Date: Date: N/A	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes☐ No☐	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the	Yes☐ No☒	Referral decision No:

Environmental Protection Act 1986?		Managed under Part V ☐ Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes☒ No☐	Ministerial statement No: 476 EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☐ No☒ Department of Water consulted Yes ☐ No ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒ If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes☐ No☒ If Yes, include details here, eg Site is subject to SO_2 requirements of Kwinana EPP.		

3 Executive summary of proposal and assessment

Mt Weld Mining Pty Limited (Mt Weld Mining) is a subsidiary company of Lynas Corporation Limited and currently operates a rare earth ore mine and concentrator plant at Mount Weld (Mt Weld), located approximately 35 km southeast of Laverton, Western Australia. The mining, processing activities and related infrastructure are located within the Mt Margaret Mineral Field on mining leases M38/58, M38/59, M38/326, M38/327, L38/58, L38/98, L38/224 and exploration licenses E38/2224, E38/2558 and E38/2359. Concentrate from Mt Weld is shipped to Lynas Advanced Materials Plant in Malaysia. The operational life of the mine at Mt Weld is expected to be 25 years.

The mine is currently operating under Ministerial Statement 476 under Part IV of the *Environmental Protection Act 1986* (EP Act) and Licence L8141/2007/2 issued under Part V of the EP Act.

The Premises is prescribed under category 5 (processing and beneficiation of metallic and non metallic ores) and category 89 (putrescible landfill). Category 85B (water desalination plant: premises at which salt is extracted from water if wastewater is discharged to land or into waters) was previously on the Licence. A review of the engineering documentation of the evaporation pond conducted as part of the amendment to works approval W5533/2013/1 has determined that the evaporation pond cells are an engineered facility. Subsequently the discharge of wastewater to the evaporation pond is considered a discharge to containment infrastructure and not an emission to land, and hence category 85B is not appropriate. Key infrastructure authorised for operation under the Licence includes:

- Rare earths oxide concentrator;
- Waste process water and water treatment plants (clarifiers, ultrafiltration units and reverse osmosis plant);
- Tailings storage facility (TSF 1 and TSF 2, above ground paddock style TSFs); and
- Evaporation ponds (8 cells constructed in two phases).

Amendment August 2016

This Licence is the result of an amendment sought by the Licensee to increase the authorised production capacity under category 5, consistent with the Phase 2 upgrade works conducted

according to Works Approval W5078/2011/1. The Licensee also requested a change to the authorised volume and duration of wastewater discharge to the Premises' evaporation pond. DER has authorised these changes. DER has also added an improvement condition to the licence to review the stormwater management plan for the processing plant to ensure that contaminated stormwater from disturbed areas is contained.

Amendment April 2017

This amendment authorises use of TSF 2, following submission of commissioning and compliance documentation from the Licensee on 16 December 2016. The Licensee submitted an application on 20 December 2016 to operate TSF2 and to also reuse the wastewater discharged to the evaporation pond for dust suppression, following consultation and approval by the Radiological Council under the *Radiation Safety Act 1975.*

A Surface Water Management Plan was submitted on 1 November 2016 in accord with condition 4.1.1. This condition has been removed from the Licence. The inspection regime detailed in condition 1.3.4 of the Licence has been amended to include commitments made by the Licensee in their Surface Water Management Plan.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number** **W = Works Approval** **L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Prescribed Premises Categories	Category 05 Removal of category 85B	**August 2016 Amendment** The capacity of category 05 has been increased to 242 000 tpa in line with the compliance document submitted 14/10/2015 for W5078/2011/2. As a result of a review of the engineering design information for the evaporation ponds conducted as part of the 5/04/16 amendment to W5533/2013/1, DER has determined that the evaporation ponds constitute 'engineered containment infrastructure' so that the previous classification of the discharge of wastewater from the RO plant and clarifiers is not a discharge to land; rather a discharge to approved containment infrastructure. Accordingly category 85B has been removed from the Licence. Discharges to evaporation ponds are authorised as per Licence condition 1.3.1.	*Environmental Protection Regulations 1987*
General conditions	L1.2.1	**August 2016 Amendment** Standard general condition is included on the Licence. This condition replaces previous licence condition 2b.	General provisions of the *Environmental Protection Act 1986*
Premises operation	Previous licence conditions 3, 4, 5	**August 2016 Amendment** Conditions 3, 4, and 5 related to authorisation of, notification and reporting requirements for a pilot plant trial of the screw press, Genesis dewatering system and FLSmidth pilot thickener. The trial was conducted from 21 November – 28 November 2013, with a notification made to the DER on 14 November 2013 in	N/A

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		accordance with condition 4 on the impending trial and the follow up report submitted to DER on 19 December 2013 in accord with condition 5. Accordingly these conditions have now been removed from the licence.	
	L1.3.1 L1.3.3 L1.3.4	**August 2016 Amendment** An increase of the permitted discharge capacity to the evaporation ponds is approved to 810 000 m^3 as per condition 1.3.1. The capacity of the evaporation pond was conservatively calculated as 827 000 m^3 (Kasa Consulting 2016); conservative in that it underestimates the evaporation rate due to an overestimation of total dissolved solids in the evaporation liquor. The limit of 810 000 m^3 is less than the capacity of 827 000m^3. Refer to Appendix A for DER's assessment and decision making in respect to the operation of the TSF1 and to Appendix B for evaporation pond operation. **April 2017 Amendment** Table 1.3.1 of condition 1.3.1 has been amended to authorise operation of TSF2. Appendix C provides the assessment and decision making for TSF2. Table 1.3.2 of condition 1.3.4 has been amended to include regular inspections of key stormwater infrastructure as per the submitted Surface Water Management Plan. Refer also to the entry under 'Improvements' in this table.	Kasa Consulting (2016) *Mt Weld Rare Earths Project: Application for Licence Amendments Mt Weld Mining Pty Limited*, January 2016 Appendix A Appendix B Appendix C Mt Weld Mining Pty Ltd (2016) *Mt Weld Surface Water Management Plan, MTW-EN-PLA-0007_0*, 1 November 2016 DER document reference: zA103213
	L1.3.5 - L1.3.7	**August 2016 Amendment** Previous licence conditions 9 and 10 have been replaced by condition L1.3.5 – L1.3.7 and have not been reassessed as part of this amendment.	General provisions of the *Environmental Protection Act 1986*

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Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
	L1.3.8	**April 2017 Amendment** **Normal Operations – Use of Wastewater for Dust Suppression** The Licensee has requested approval to use wastewater currently discharged to the evaporation ponds (a blend of clarified supernatant and raffinate water from reverse osmosis) as dust suppressant in lieu of using groundwater obtained from the carbonatite aquifer. *Emission*: Release of wastewater to adjacent vegetation. *Impact:* The blended wastewater is saline (up to 17 000 mg/L total dissolved solids (TDS)) (P Jansen 2016). There is also a potential radiological risk from using the wastewater in dust suppression. It is noted that there is a positive impact in regard to reducing use of the undApril erlying aquifer; however the risk assessment below relates to the potential negative risk of using the wastewater. *Controls*: The Licensee has given an undertaking that where the TDS of the wastewater is between 5 000 and 17 000 mg/L, the water is only to be applied to the haul/access roads, active cleared mining areas, approved areas for clearing for construction and within the concentration plant. The Licensee will also monitor the water quality on a monthly basis in the field and conduct quarterly laboratory analysis of metals/metalloids and major anions and cations. <u>Residual Risk</u> *Consequence*: Minor *Likelihood:* Possible *Risk Rating:* Moderate <u>Regulatory Controls</u> Radiological risks associated with the use of the wastewater as dust suppressant	Email from P Jansen to DER dated 12 July 2016, 3:28 PM (Response to Draft Decision Document L8141/2007/2) Letter from the Ms H Upton, Radiological Council of Western Australia, to Lynas Corporation Ltd – Mt Weld Mining, dated 10 October 2016 (Included as Appendix 2 to Application for Amendment to L8141/2007/2 dated 20 December 2016)

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Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		were considered at the 238th meeting of the Radiological Council of Western Australia. The risk was deemed 'minimal' and use approved (H Upton, 2016). Given use is approved by the Radiological Council under the *Radiation Safety Act 1975*, DER has approved the use of wastewater for dust suppression. Condition 1.3.8 requires the application of saline wastewater to be done so as to not impact on adjacent vegetation. Condition 3.2.1 requires the volumes discharged as dust suppressant to be recorded and reported in the Annual Environmental Report. <u>Residual Risk</u> *Consequence*: Minor (impact by saline water on vegetation). *Likelihood:* Possible *Risk Rating:* Moderate	
Emissions general	L2.1.1	Descriptive limits will be set through condition 3.3.1 of the licence and therefore condition regarding recording and investigation of exceedances of limits has been included.	N/A
Point source emissions to air including monitoring	N/A	**Normal operation** No significant point source air emissions are expected from the Mt Weld operation. No conditions are required.	General provisions of the *Environmental Protection Act 1986* Application supporting documentation
Point source emissions to surface water including monitoring	N/A	**Normal operation** No significant point source emissions to surface water are expected from Mt Weld's operation. The nearest surface water body is Lake Carey which is located approximately 8 km away south-west from the project site. No specified conditions relating to point source emissions to water or the monitoring of such emissions are required to be added to the Licence.	General provisions of the *Environmental Protection Act 1986* Application supporting documentation
Point source	N/A	**Premises construction, commissioning and normal operation**	General provisions of

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emissions to groundwater including monitoring		No significant point source emissions to groundwater are expected from the construction, commissioning or operation. No conditions are required.	the *Environmental Protection Act 1986* Application supporting documentation
Emissions to land including monitoring	N/A Previous category 85B	**August 2016 Amendment** With a refinement of the new licence template since the time of the previous licence amendment of 31/10/13, the risks associated with the operation of the process water circuit and evaporation pond are now considered Premises Operation risks, and conditions relating to infrastructure operation are included in this section of the Licence (conditions L1.3.1, L1.3.3, L1.3.4).	Knight Piesold (2011) *Mt Weld Rare Earths Project: TSF Raise and Evaporation Pond Expansion (Phase 2) Design Summary*, September 2011
Fugitive emissions	N/A	**August 2016 Amendment** As the TSF2 proposal has been changed to a conventional above ground slurry fed TSF, in which the surface is wet, significant dust emissions from the TSF2 are not expected. Hence conditions are not required for managing dust emissions from the TSF2 or supporting infrastructure.	General provisions of the *Environmental Protection Act 1986* Application supporting documentation
Odour	N/A	**Premises construction, commissioning and normal operation** No significant odour emissions are expected from the construction, commissioning or operation. No conditions are required.	General provisions of the *Environmental Protection Act 1986* Application supporting documentation
Noise	N/A	**Normal operation** No significant noise emissions are expected from operations. The nearest sensitive receptor is 10km away from the Premises; therefore noise emissions are low risk. No conditions are required.	*Environmental Protection (Noise) Regulations 1997*
Monitoring	L3.1.1 – L3.1.4	General monitoring conditions are included in the licence to ensure ambient	AS/NZS 5667.1

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general		environmental monitoring specified in condition 3.3.1 of the licence is carried out in accordance with the relevant standards and at appropriate intervals.	AS/NZS 5667.10 AS/NZS 5667.11
Monitoring of inputs and outputs	N/A	**Construction, commissioning and normal operation** No monitoring of inputs or outputs is required under the Licence.	N/A
Process monitoring	L3.2.1	**August 2016 Amendment** Recording of discharge volumes to the evaporation pond and TSF1 is required by condition L3.2.1. This data provides a check that deposition rates are not in excess of the permitted discharge volumes under category 5 and condition L1.3.1. Monitoring of water quality to the evaporation pond is also required as a check against potential seepage impacts. Thallium has been added to the list of parameters for analysis in Tables 3.2.1 and 3.3.1. Information provided by Smith (2007) suggests that thallium could be a contaminant of concern in leachate from ore processing and in groundwater due to the potential for this element to be mobile in groundwater under a wide range of geochemical conditions. Thallium is also potentially more toxic to humans and many environmental receptors than mercury, cadmium and lead and is commonly found in elevated concentrations in drainage from mine sites (Peter and Viraraghavan, 2005). Refer to Appendix B for further detail of DER's decision making and assessment in regard to the evaporation pond operation.	General provisions of the *Environmental Protection Act 1986* Smith, K.S., 2007. Strategies to predict metal mobility in surficial mining environments. *Geological Society of America Reviews in Engineering Geology,* **Vol XVII**, 25-45 Peter, A.L. and Viraraghavan, T., 2005. Thallium: a review of public health and environmental concerns. *Environment International*, **31**, 493-501
Ambient quality	L3.3.1 L3.3.2	**August 2016 Amendment**	General provisions of the *Environmental*

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monitoring		**TSF1 and Evaporation Pond - Normal operation** Refer to the risk assessment carried out in Appendix A and B in regard to assessment of seepage impacts from the TSF1 and evaporation pond respectively. Previous licence condition 11 and 14 has been replaced by L3.3.1 which requires ambient groundwater monitoring for standing water level, pH, electric conductivity and total dissolved solids on a quarterly basis. Total hardness, total alkalinity, metals, anions and cations and nutrients were previously required to be monitored annually but have been changed to quarterly basis. Note Thallium has been added to the monitoring suite as per the detail provided above for condition L3.2.1. Two new monitoring bores installed as part of the construction works for TSF2 have been added to Table 3.3.1. These bores require monitoring from the date of the amendment so as to provide background information pre TSF2 operation commencing. L3.3.2 replaces conditions 16 and 17. In the event of an exceedance of the standing water level target over a period of two consecutive quarters, the management actions in L3.3.2 must be completed. Notification requirements are as per L5.3.1. **April 2017 Amendment** Operation of TSF2 has been added to the Licence. Appendix C provides the assessment and decision making for TSF2, including specifying the requirement for monitoring of ambient groundwater quality.	*Protection Act 1986* Australian Standard AS/NZS 5447.1 – Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation of handling samples. Application supporting documentation Appendix C
Meteorological monitoring	N/A	**Normal operation** The risk assessment of dust emissions and odour emissions has been assessed in other sections of this table. No meteorological monitoring will be required during operations.	Application supporting document

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Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Improvements	L4.1.1	**August 2016 Amendment** L4.1.1 has been added to require the Licensee to review current stormwater management infrastructure at the Premises with respect to the disturbed areas of the Processing Plant, Blended Ore Stockpiles, Concentrate Storage and Laydown areas so as to confirm sufficient capture capability exists for a 1 in 100 AEP, 72 hour event. In the event that it does not, the Licensee shall identify additional infrastructure and or operational controls to be implemented such that potentially contaminated stormwater from disturbed areas for a 1 in 100 year, 72 hour event can be contained. **April 2017 Amendment** L4.1.1 has been removed from the Licence as the required submission was made on 1 November 2016. Table 1.3.2 of condition 1.3.4 has been amended to include regular inspections of key stormwater infrastructure as per the submitted Surface Water Management Plan.	General provisions of the *Environmental Protection Act 1986* Mt Weld Surface Water Management Plan, MTW-EN-PLA-0007_0, 1 November 2016 DER document reference: zA103213
Information	L5.1.1 – L5.3.1	**Normal operation** Standard recording, reporting and notification requirements are included on the Licence.	General provisions of the *Environmental Protection Act 1986*
Licence Duration		The Licence expiry date has been extended to 15 April 2026 by CEO amendment notice issued 29/04/2016.	

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
16/06/2016	Licensee sent a copy of draft instrument	Comments received for condition 1.3.2, Table 1.3.4 (increase capacity under category 89 to 300 tonnes per annum), footnotes requested for Tables 3.2.1 and 3.3.1. Proposed approach for improvement condition 4.1.1 detailed. Minor errors identified. Updated Premises map provided.	Comments adopted and errors corrected. Premises map updated.
18/08/2016	Licensee request	Licensee requests that the proposal to reuse wastewater as dust suppressant be removed from this amendment.	Dust suppression proposal removed from amendment.
19/08/2016	DER modification to condition 4.1.1.	Following Licensee consultation, DER adds the words 'operational controls' to the condition. Due to the time elapsed since the proposed amendment was issued, an extension to the due date to 01/11/2016 was made. A copy of the draft condition was forwarded to the Licensee.	Licensee notes and accepts changes.
15/03/2017	Licensee sent a copy of draft instrument	Comments received in relation to: • requesting that the requirement for inspections of the treated water pond be removed as this pond's volume is already monitored using telemetry fitted with alarms to the process control system; • new proposed frequency of inspections for the stormwater infrastructure, arising from previous condition 4.1.1 IR1; • clarification of the monitoring point for wastewater used in dust suppression; • Units to be used for reporting tailings discharge volumes;	Comments adopted.

Date	Event	Comments received/Notes	How comments were taken into consideration
		• clarification of iron parameter as soluble fraction not total iron in Table 3.3.1; and • minor edits	

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

Premises operation of TSF1 including ambient groundwater monitoring

The information following relates to the operation and management of TSF1.

TSF1 was originally commissioned in 2009, authorised by works approval W4400/2008/1. Seepage rates were subsequently determined to be larger than forecast and in the period from March – September 2011 the facility was progressively lined with a HPDE geomembrane liner of permeability of 1 X 10^{-11} m/s.

TSF1 consists of three cells, A, B and C. Cell A is in the north east of the facility, Cell B in the north west and Cell C the largest cell is in the southern part of the facility.

Normal Operation

Emission Description

Emission: Seepage from tailings deposited into TSF1 migrating into groundwater.
Impact: Potential vegetation death from water inundation of rootzones from seepage. Dispersion of metals, metalloids and radionuclides through groundwater systems above background has the potential for environmental impact where third party users access the groundwater resource. However no other beneficial uses of groundwater, apart from Mt Weld and adjacent gold mine Granny Smith, exist at the present.

Controls: Testing has shown the tailings have very low permeability and the TSF location is underlain by high plasticity, low permeability, lacustrine clays which impede the vertical movement of seepage from the facility. Following a period of poor seepage performance, TSF1 was lined in 2011 with a HDPE geomembrane liner of permeability of 1 X 10^{-11} m/s. A cut off trench has also been installed.

TSF1 also has an underdrainage system installed, consisting of collector drains and finger drains. The collector drains transport seepage from the finger drain extents to the sump and transporting seepage within the underdrainage extents. The collector drains are laid on HDPE geomembrane consisting of 160mm and 100 mm diameter draincoil pipes surrounded by 300mm thick sand layer and enveloped in geotextile.

The finger drains are 63mm diameter draincoil pipes surrounded by a 300mm thick sand layer and completely enveloped in geotextile.

In addition to the engineering controls (HDPE geomembrane liner, cut off trench, underdrainage) Mt Weld also indicated its intent to minimise the risk of seepage by:

- Developing and implementing a comprehensive QA/QC program;
- Operating the TSF1 in accordance with a Tailings Operating Manual;
- Continuing annual monitoring of groundwater levels and chemical composition;
- Complying with existing conditions from Licence L8141/2007/2; and
- If any limits triggered, implementing a Groundwater Recovery Plan.

Mt Weld has also identified contingency measures to be employed in the event that existing seepage control measures are not performing adequately:

- Downstream seepage interception trench; and
- Water recovery bores (Lynas Corporation, 2014)

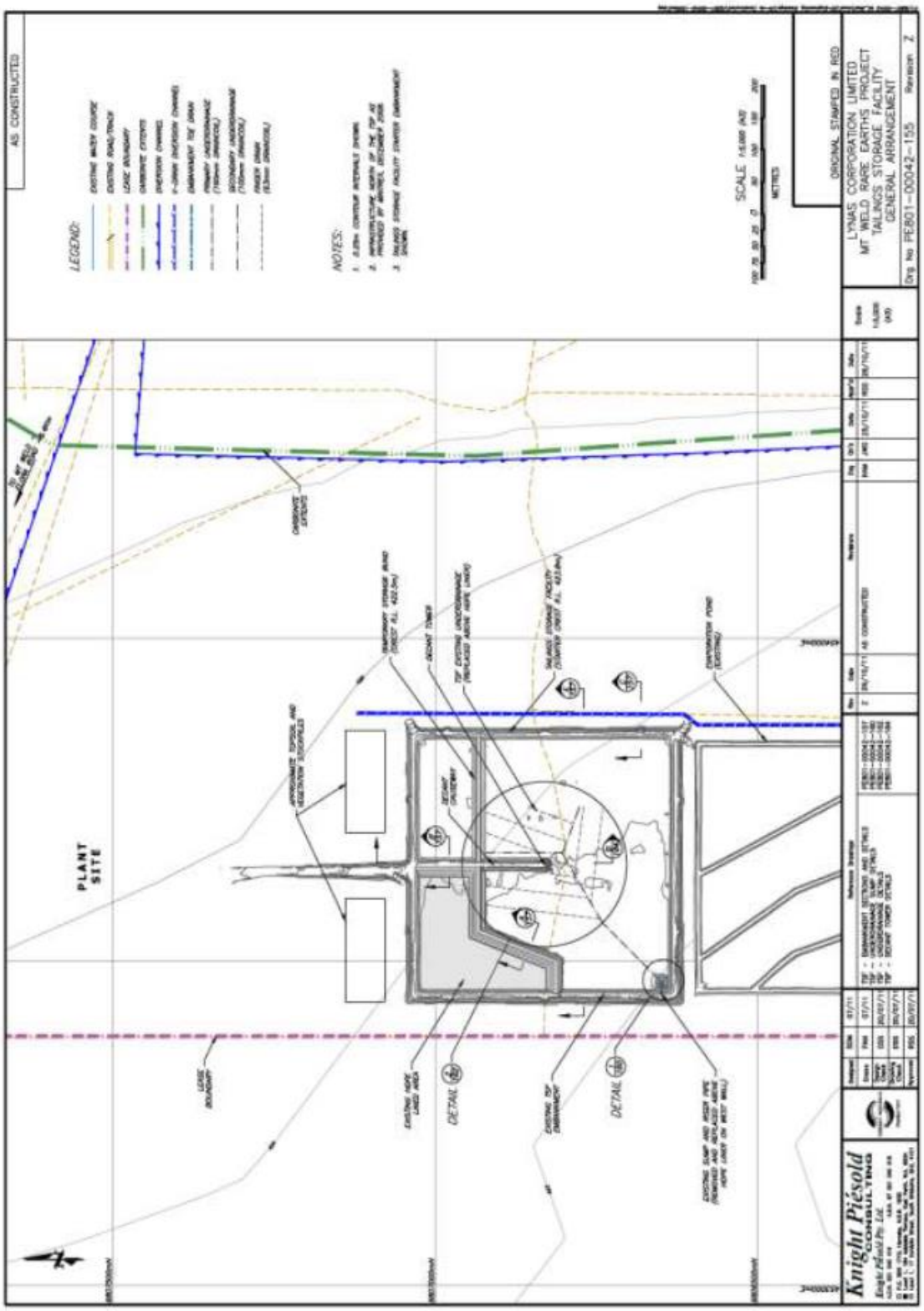

Figure 3: As built drawing of TSF 1 (Lynas Corporation, 2014)

Risk Assessment
Consequence: Moderate
Likelihood: Rare (the liner system and underdrainage should result in a high degree of protection)
Risk Rating: Moderate

Regulatory Controls
Condition 1.3.1 (replacing previous condition 6) is included in the amended licence to ensure containment infrastructure is used for the manner as authorised by previous works approvals. Daily visual inspections have been specified as condition 1.3.4 (replacing previous conditions 18 and 19) to check the integrity of tailings pipelines, pond size and external walls of the TSF.

Monitoring of ambient groundwater quality and depth is required by condition 3.3.1. This monitoring program specifies a limit and target for standing water levels surrounding the TSF and evaporation pond.

Residual Risk
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Emergency Operation – Operations
Emission Description
Emission: Overtopping of TSF1 and release of tailings and/or tailings supernatant.
Impact: Contamination of land and adjacent surface water systems with tailings containing metals, metalloids and radionuclides. Impacts to native fauna and vegetation. The land at the Premises has a gradual gradient to the west and south west towards Lake Carey. There are no drainage lines on the Premises and the area is subject to sheet flow following significant rainfall events.
Controls: TSF1 has been designed to accommodate a 1 in 100 year, 72 hour event. TSF1 is also designed to operate with a 500mm freeboard. This capacity is based on an ANCOLD risk rating of significant and/or high C.

An external diversion drain runs to the east of TSF2, and would restrict flow of any released tailings from an overtopped facility.

Risk Assessment
Consequence: Moderate
Likelihood: Unlikely (Potential for operator error to result in overtopping)
Risk Rating: Moderate

Regulatory Controls
The Licence includes condition 1.3.4 (replacing previous conditions 18 and 19) specifying field inspections of freeboard of TSF1 and condition 1.3.3 specifying the minimum operational freeboard of at least 300mm (replacing previous condition 7) to be maintained at all times.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

References

Lynas Corporation Ltd (2014) *Tailings Storage Facility and Evaporation Pond Operating Manual*, Document no: MTW-PR-MAN-0002_0, 31 October 2014

Appendix B

Premises operation of the evaporation pond including ambient quality monitoring

Discharges to the evaporation pond at the Mt Weld Rare Earths Project were previously considered an emission to land. Prior to the works approval issue of W5533/2013/1 in May 2014, the evaporation pond previously received only RO raffinate (remaining brine from purifying the carbonatite groundwater). The discharge of clarified TSF supernatant into evaporation pond was approved with W5533/2013/1 for a fixed period. The recent April 2016 amendment to W5533/2013/1 has removed the restriction on timing for deposition, given a review of the risks associated with the discharge and the better than forecast water quality of the combined raffinate and clarified supernatant discharge.

With a refinement of the new licence template since the time of the original works approval, the discharge is to what is now considered an engineered containment infrastructure (an in situ colluvium/ clay lined evaporation pond). Consequently the operation of the process water circuit and the pond are now considered Premises Operation risks, and conditions relating to infrastructure design, construction and operation are included in this section of the Licence L8141/2007/2.

Normal Operation
Emission Description
Emission: Seepage from evaporation pond cells to groundwater.

Impact: Impact on drinking water quality for livestock. Inundation of vegetation rootzones by rising groundwater is considered an unlikely secondary impact. Evaporation pond seepage analysis conducted for the Phase 2 evaporation pond cells built in 2012 predicted a maximum seepage rate of 6 L/s at the maximum operating pond level (Knight Piesold, 2011), equating to 189 ML per year. The seepage modelling predicted that the maximum pond level, seepage will result in a mound of up to 13.5 m maximum height under the pond (approximately 7.8 m below ground surface). This does not reach the target or limit values that are currently set in licence L8141/2007/2.

The seepage values are influenced by the permeable alluvium layer 5 m below the base of the evaporation ponds. Losses through the basin are moderated by the low permeability basin soil liner and the relatively low permeability of the upper horizons of the in situ soil profile (above the gravelly alluvium).

Metals and metalloids in the wastewater blend are in low concentrations and where there are ANZECC low risk trigger values for livestock available, concentrations are well below these guideline values.

The wastewater blend also has low levels of naturally occurring radionuclides. Leach tests conducted on Mt Weld tailings at pH 7 indicated that concentrations of metals and radionuclides in tailings seepage (as an analogue for evaporation pond seepage) were well below ANZECC livestock drinking water trigger levels (Kasa Consulting 2013a).

Controls: The three cells constructed during the Phase 2 works in 2012 have a 400mm deep liner comprising a mixture of compacted in situ colluvium and lacustrine clays. A 200mm layer of colluvial sand was placed on top to protect the liner from erosion and desiccation cracking. The hydraulic conductivity of the Phase 1 cells was estimated to be 5.33×10^{-9} m/s, whilst for the three Phase 2 cells the hydraulic conductivity is 1×10^{-8} m/s.

Due to groundwater abstraction from the carbonatite aquifer, the dominant groundwater pathway is towards the east, away from Lake Carey. A fate and transport model undertaken as a part of the supporting documents for this works approval indicated that potential contaminants of concern (lead, thorium, uranium arsenic, chromium and nickel) are predicted to reach groundwater in approximately

19 years and bore LMW10 in approximately 20 years (AECOM 2014). This scenario is conservative and would not result in unacceptable risk to the identified receptors. This conclusion is also considered to be conservative as it does not account for the likely decrease in concentrations of supernatant that would be treated in the clarifier prior to the discharge to the evaporation pond, however it should also be noted that the model assumed that the evaporation source would contain a maximum of 200 000m^3 of supernatant discharged over a 24 month period. In contrast, 350 000m^3 of clarified supernatant has been discharged to the evaporation pond on annual basis since the commencement of the works approval period in May 2014. This change is not considered significant however, as the clarified supernatant is better quality than the RO plant discharge and the seepage modelling was completed using a total combined (supernatant and RO plant) discharge amount of 736 000 m^3 per year.

An assessment was also undertaken based on decreasing the permeability of the clay/colluvium liner of the evaporation pond from 1 x 10^{-8} m/s to 1 x 10^{-6} m/s. Results of the fate and transport modelling showed that this would not have a significant impact on the time taken for contaminants to reach groundwater/LMW10 or on the concentrations at these points with predicted concentrations below the relevant guidelines (AECOM 2014).

Risk Assessment
Consequence: Minor, low level naturally occurring radionuclides in seepage with elevated salinity. Predicted concentrations at the receptor (bore LWM10) are well below the ANZECC trigger values for livestock drinking water.
Likelihood: Unlikely, AECOM modelling indicates that unretarded transport of contaminants (a conservative approach) would take approximately 20 years to reach groundwater bore LMW10. At that time deposition to the evaporation pond would have ceased so no further transport of contaminants would occur.
Risk Rating: Moderate

Regulatory Controls
Routine groundwater monitoring will continue to occur as per licence L8141/2007/2. The current licence lists bores LMW1-9, however, four new bores have since been installed, LMW10 – LWM13. The licence was updated in August 2016 to include the new bores. Figure 2 shows the location of all the monitoring bores.

Monitoring requirements are specified by condition L3.2.1 at the discharge point to the evaporation ponds from the process water treatment (ultrafiltration units and clarifiers) to ensure the quality is as predicted and no significant detrimental variations in water quality occur over time. Monthly monitoring of pH and total dissolved solids is required and other parameters (consistent with the ambient groundwater quality program) on a quarterly basis.

Residual Risk
Consequence: Minor
Likelihood: Rare
Risk Rating: Low

References

AECOM (2014) *Groundwater Risk Assessment – Evaporation Pond Mt Weld*, 10 March 2014

ANZECC/ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3*, October 2000

Kasa Consulting (2013a) *Mt Weld Rare Earths Project. Assessment of Water Quality and Radiological Effects of Process Water Discharges*, August 2013

Kasa Consulting (2013b) *Mt Weld Rare Earths Project. Works Approval Supporting Document: Process Water Pond Facility and Modifications to Process Water Management,* October 2013

Kasa Consulting (2015) *Mt Weld Rare Earths Project. Works Approval Amendment Supporting Documentation: Improvements to Process Water Management*, December 2015

Knight Piesold (2011) *Mt Weld Rare Earths Project: TSF Raise and Evaporation Pond Expansion (Phase 2) Design Summary*, September 2011

Emergency operation

Emission Description

Emission: Overtopping of the evaporation pond cells and release of clarified supernatant and RO plant raffinate to land either during extreme rainfall event or due to operator error.

Impact: The salinity of the blend of clarified tailings supernatant liquor and raffinate would cause some vegetation impact, however in the event of a release from a rainfall event it would be expected that the salinity concentration would be diluted and reduced.

Metals and metalloids in the wastewater blend are in low concentrations and where there are ANZECC low risk trigger values for livestock available, concentrations are well below these guideline values.

The wastewater blend also has low levels of naturally occurring radionuclides. Analysis of radionuclides in supernatant and raffinate in 2013 indicated that the concentrations of 0.29 Bq/L (raffinate) and supernatant (0.86 Bq/L) exceeded the ANZECC low risk trigger value of 0.2 Bq/L for Uranium 238 for livestock drinking water and irrigation waters, whilst the Radium 226 and Radium 228 concentrations recorded concentrations an order of magnitude lower than the low risk trigger values of 5 Bq/L (^{226}Ra) and 2 Bq/L (^{228}Ra). It is noted that risks from ionising radiation associated with mining activities is a matter to be addressed in the Premises' Radiation Management Plan in accord with the *Radiation Safety Act 1975*.

Controls: The evaporation pond cells have been designed with a freeboard of approximately 0.4 m and a maximum operating level of 0.8 m, however each cell also has a spillway at 1m to protect the integrity of the embankments in the event of a large rainfall event. The freeboard with the spillway is sufficient to provide storage for a 1 in 100 year AEP (annual exceedance probability), 72 hour rainfall event. Mt Weld operates the evaporation pond in accordance with a Tailings and Evaporation Pond Manual, which prescribes regular inspections of the freeboard and evaporation pond infrastructure, plus provides procedures for use in the event of an emergency (such as an extreme rainfall event).

Risk Assessment

Consequence: Minor, total dissolved solids (TDS) concentration for raffinate is above the ANZECC low risk trigger value for livestock drinking water for beef cattle and may also cause some impact to vegetation if released. Whilst the uranium 238 values are above the low risk trigger value, it is not considered likely that livestock would have access to the wastewater for drinking in the event of a release.

Likelihood: Unlikely

Risk Rating: Moderate

Regulatory Controls

An infrastructure containment condition has been added to the licence (L1.3.1) to ensure the Licensee uses the evaporation pond in the manner authorised. This replaces previous condition 6. L1.3.3 replaces previous condition 7 and there is no change to the requirement to maintain 300mm freeboard on the evaporation pond to prevent overflows during extreme weather events (1 in 100

AEP, 72 hour event). Daily visual inspections (including of embankment freeboard) of the evaporation pond are required by condition L1.3.4 (replacing previous conditions 18 and 19).

Residual Risk
Consequence: Minor
Likelihood: Rare
Risk Rating: Low

References

Kasa Consulting (2013a) *Mt Weld Rare Earths Project. Assessment of Water Quality and Radiological Effects of Process Water Discharges*, August 2013

Kasa Consulting (2015) *Mt Weld Rare Earths Project. Works Approval Amendment Supporting Documentation: Improvements to Process Water Management*, December 2015

Knight Piesold (2011) *Mt Weld Rare Earths Project: TSF Raise and Evaporation Pond Expansion (Phase 2) Design Summary*, September 2011

Appendix C

Premises operation of TSF2 including ambient groundwater monitoring

TSF2 is an above-ground paddock style TSF, fully lined with a geosynthetic clay liner achieving a maximum permeability of 1 x 10^{-9} m/s.

Tailings delivery infrastructure is comprised of a 250 mm polyethylene (PE) pipeline with spigots every 25 m around the entire crest of TSF2, decant return pump (RWP decant well) and 250 mm PE pipeline transferring return water back to the plant for subsequent water treatment.

Slurry deposition into TSF2 will occur via multiple discharge spigots located around the crest of TSF2. Approximately 4 to 6 spigots are expected to be open during deposition. The discharge location will be progressively moved around the crest of TSF2 to evenly spread the solids around the TSF area in deposition layers of 200-300 mm. To assist operators manage the deposition layers, a number of flood gauges (markers indicating depth of tailings) will be installed within the TSF area prior to the initial deposition, so that accurate measurements can be made during operations to maximise evaporative drying of each layer. Supernatant liquor will drain towards the south-west corner of TSF2 and form a small decant pond near the decant tower. Supernatant liquor collected by the decant tower will drain into the RWP. The tailings slurry, initially ~11.6% w/w solids, is expected to consolidate to a density of approximately 35% w/w solids due the addition of coagulant and flocculant.

TSF2 will provide approximately 3 years of storage based on current production rates and allowing for the prescribed freeboard and beach angle.

The TSF shall be checked twice daily by site personnel during deposition periods to ensure the facility is functioning as per the design intent. The TSF will be managed by a designated member of the Operations Team who will be responsible for the following:

- Managing operations and staff, including ancillary contractors, to ensure tailings deposition and decant removal is performed in accordance with the deposition plan and the operations manual;
- Monitoring the TSF (ensuring daily, weekly, monthly and annual inspections are conducted and document) and implementation of response plans in the event of any adverse findings;
- Managing TSF short, medium and long-term planning;
- Managing survey controls and systems; and
- Ensuring adherence to the TSF Operations Manual, Occupation Health and Safety, Quality Assurance and Quality Control (QA/QC) processes.

Normal Operation

Emission Description

Emission: Seepage from tailings deposited into TSF2 migrating into groundwater.
Impact: Potential vegetation death from water inundation of rootzones from seepage. Dispersion of metals, metalloids and radionuclides through groundwater systems above background has the potential for environmental impact where third party users access the groundwater resource. However no other beneficial uses of groundwater, apart from Mt Weld and adjacent gold mine Granny Smith, exist at the present.

Controls: The proponent has lined the TSF with a GCL (geosynthetic clay liner). Testing has shown the tailings have very low permeability and the TSF location is underlain by high plasticity, low permeability, lacustrine clays which impede the vertical movement of seepage from the facility. Seepage flow rates are therefore anticipated to be low. Contingency measures and further information on the GCL are as detailed in Works Approval W5645/2014/1.

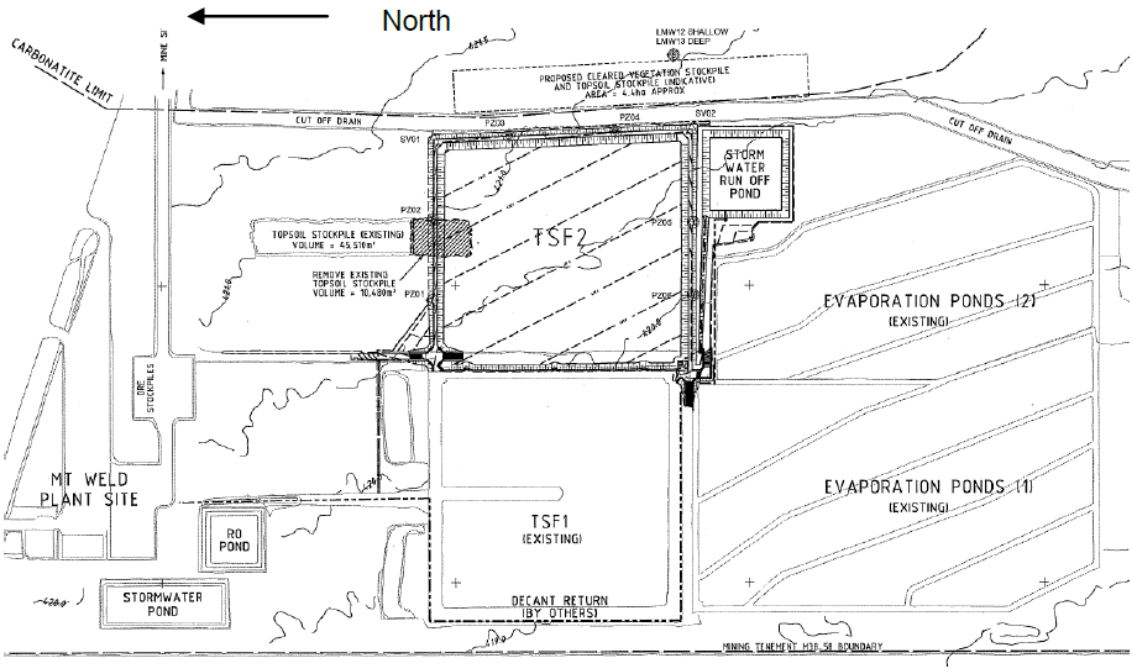

Figure 4: Site layout showing TSF2 and Return Water Pond (referred to here as the Stormwater Run Off Pond) (Hatch 2016)

In addition to the engineering controls (GCL and a HDPE lined Return Water Pond) Mt Weld will also minimise the risk of seepage by:

- Developing and implementing a comprehensive QA/QC program;
- Installing two new groundwater monitoring bores downstream of TSF2;
- Continuing annual monitoring of groundwater levels and chemical composition;
- Complying with existing conditions from Licence L8141/2007/2; and
- If any limits triggered, implementing a Groundwater Recovery Plan.

Risk Assessment

Consequence: Moderate

Likelihood: Rare. The submitted construction close out report detailed the quality controls undertaken to ensure that the GCL was installed as per the required specifications (Hatch 2016). Any defects arising from handling and/or transport were fixed before installation. The GCL was again inspected after installation but before installation of the 300mm cover material to make repairs. These inspections were signed off by the installer, the Contractor's supervisor and the site supervisor (Hatch 2016).

Risk Rating: Moderate

Regulatory Controls

Monitoring of ambient groundwater quality and depth is required by condition 3.3.1. Two new monitoring bores LWM12 and LWM13 are located downstream of TSF2 and are slotted to detect any seepage in the underlying surficial aquifer (LWM12) or in the bedrock aquifer (LWM13) (Hatch 2016). The monitoring program specifies a limit and target for standing water levels surrounding the TSF and evaporation pond.

Residual Risk
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Emergency Operation – Commissioning and Operations

Emission Description
Emission: Overtopping of TSF2 and/or Return Water Pond and release of tailings and/or tailings supernatant.
Impact: Contamination of land and adjacent surface water systems with tailings containing metals, metalloids and radionuclides. Impacts to native fauna and vegetation. The land at the Premises has a gradual gradient to the west and south west towards Lake Carey. There are no drainage lines on the Premises and the area is subject to sheet flow following significant rainfall events.
Controls: The TSF2 has been designed to accommodate a 1 in 100 year, 72 hour event The return water pond has been sized to contain a 1 in 100 year, 72 hour duration rainfall event has been designed to capture runoff from TSF 1 and TSF 2. This capacity is based on an ANCOLD risk rating of significant and/or high C (ANCOLD 2012).
The maintenance of TSF storm capacity on the Return Water Pond and TSF2 is dependent on closure of manual decant valves in the field prior to the storm event to prevent release of decant water. The TSF Manual will be updated to include a contingency plan for TSF2 management in adverse weather, including actions and processes for management of the decant valves.
An external diversion drain runs to the east of TSF2, and would restrict flow of any released tailings from an overtopped facility

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory Controls
Condition 1.3.4 has been amended to include the field inspections of TSF2 and the Return Water Pond. TSF2 is now authorised for operation by condition 1.3.1. Both the TSF2 and the Return Water Pond are covered by condition 1.3.3, specifying the minimum operational freeboards to be maintained at all times.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

References

ANCOLD (Australian National Committee on Large Dams Incorporated) GCL (2012) *Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure*. May 2012.

Hatch (2015) *Design of TSF and Process Ponds. Design Report - Mt Weld TSF2. H343736-0000-10-124-0001*. Prepared for Mt Weld Mining Pty Ltd, 2 December 2015.

Hatch (2016) *TSF2 Construction Close Out Report, H349653-00000-400-066-0016*. Unpublished report prepared for Mt Weld Mining Pty Ltd, 2 March 2016.

Mt Weld Mining Pty Ltd (2016*) Mt Weld Rare Earths Project TSF2 Commissioning Report*. Unpublished report, 5 December 2016.