



Application for Licence Amendment

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

Licence Number	L9336/2022/1
Licence Holder	Hastings Technology Metals Ltd
ACN	122 911 399
File Number	DER2022/000260
	Legal description – G09/14, M09/158, M09/157, G09/18, G09/17, G09/20, G09/26, L09/69, L09/93, L09/95, M09/161, M09/162, M09/176 and M09/178 WEST LYONS RIVER WA 6705 As defined by the coordinates in Schedule 1 of the Revised Licence
Date of Report	17 May 2024
Decision	Revised licence granted

**SENIOR ENVIRONMENTAL OFFICER, INDUSTRY REGULATION
REGULATORY SERVICES**

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

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1. Decision summary

Licence L9336/2022/1 is held by Hastings Technology Metals Ltd (Licence Holder) for the Yangibana Rare Earths Project (the Premises), located at G09/14, M09/158, M09/157, G09/18, G09/17, G09/20, G09/26, L09/69, L09/93, L09/95, M09/161, M09/162, M09/176 and M09/178, WEST LYONS RIVER WA 6705.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L9336/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Amendment summary

On 02 February 2024, the Licence Holder submitted an application to the department to amend Licence L9336/2022/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Category 12 - installing a new mobile Crushing and Screening Plant and adding Mining Tenements M09/161, M09162 and G09/17 where the plant will be operating;
- Category 54 – addition of the Reverse Osmosis (RO) Plant, Wastewater Treatment Plant (WWTP) and irrigation field (Stage 1 and Stage 2) that were constructed under Works Approval W6158/2018/1 and are currently in Time Limited Operations (TLO); and
- Category 64 - add Mining Tenements M09/178 and G09/26 to include the proposed Auer North Waste Rock Landform Landfill from Works Approval W6208/2019/1.

Table 1 below outlines the proposed changes to the existing Licence.

Table 1: Proposed design or throughput capacity changes

Category	Current design/throughput capacity	Proposed design/throughput capacity	Description of proposed amendment
Category 12: Screening, etc. of material	NA	500,000 tonnes per annum	A mobile Crushing and Screening Plant will be added onsite
Category 54: Sewage facility	NA	148.8 m ³ /day	Including the RO Plant, WWTP and two irrigation fields that are operating under time limited operations across to the licence to allow continued operations The WWTP has an estimated throughput of 98.8 m ³ /day and the RO Plant has an estimated throughput of 50 m ³ /day Transfer of the earthen bund required under Works Approval

			W6158/2018/1 across to this licence
Category 64: Class II or III putrescible landfill site	3,487 tonnes per annual period	NA	Transfer of construction conditions for the Auer North Waste Rock Landform Landfill from the Works Approval W6209/2019/1 The design capacity will not be increased in this amendment

2.2.1 Works Approvals

Licence Holder currently holds Work Approval W6158/2018/1 for categories 12, 54 and 64 and Works Approval W6209/2019/1 for categories 5, 6, 64 and 85. The Licence Holder is seeking to close Works Approval W6158/2018/1 as part of this licence amendment, as infrastructure and requirements are to be transferred across to the amended licence.

Category 12

Category 12 to install a mobile Crushing and Screening Plant to obtain material for road base construction. A Crushing and Screening Plant approved under Work Approval W6158/2018/1 was previously located and operated onsite between 06 January 2023 and 15 May 2023. During TLO approximately 95,524 m³ of material was processed and the plant operated in accordance with Condition 13, Table 5 and did not exceed TLO duration of 210 days. Given the market conditions in 2023, which resulted in delays in commencing further construction activities, the mobile unit was demobilised from site. Therefore, the new Crushing and Screening plant is to be implemented as part of this licence amendment.

Category 54

Category 54 under Work Approval W6158/2018/1 for a RO Plant, WWTP and two irrigation fields to treat sewage and grey water from the accommodation village on site. The treated effluent and RO brine is mixed and disposed of to two fenced irrigation fields. Environmental Compliance Report for the earthen bund around the WWTP. The earthen bund was not able to be completed until the RO Plant installation was finalised. Further Environmental Compliance Report will be submitted.

The WWTP is in an area that has been fully cleared and is away from any vegetation etc. in the event of a minor spill clean-up would require no further disturbance except for collecting and treating impacted soils. The WWTP will not operate at full capacity initially meaning the risk of over topping and high-level issues is minimal. This is to be transferred across to the licence during this amendment.

Category 64

Category 64 for construction of the Auer North Waste Rock Landform Landfill for disposal of Putrescible Waste, Inert Waste Type 1 and Inert Waste Type 2. This Auer North Waste Rock Landform Landfill is now to be transferred from Works Approval W6209/2019/1 to the licence during this amendment.

2.2.2 Category 12

The Licence Holder requested to include Category 12 to install a mobile Crushing and Screening Plant that will be used to obtain material for construction within the premises, included but not limited to processing plant, TSFs, Linear infrastructure, drainage infrastructure, stemming, maintenance/upgrade of linear infrastructure. The TSF and related infrastructure are currently being assessed under Works Approval W6209/2019/1.

The mobile Crushing and Screening Plant will be situated on the upper surface of existing or

proposed borrow pits and Bald Hill WRL (as per locations indicated in Figure 1) and will move across the areas as required (Hastings 2024). The plant has a design capacity of 200 tonnes per hour. The mobile Crushing and Screening will be required for long term use in support of continued mine operations (Hastings 2024c).

2.2.3 Operation Category 54 - Sewage facility

The WWTP was constructed under W6158/2018/1. The Licence Holder was compliant with the installation of WWTP, irrigation fields Stage 1 and 2 and RO brine pipeline (DWER 2023a, DWER 2023b).

The WWTP has currently the following components:

- (a) Sludge tank of 10 kL capacity;
- (b) Two balance tanks;
- (c) Anaerobic treatment tank;
- (d) Anoxic treatment tank;
- (e) Three aeration tanks;
- (f) Two irrigation tanks; and
- (g) Two clarifier tanks.

The RO Plant is producing up to 50 kL per day of reject water, with a total dissolved solids (TDS) concentration of 800 mg/L, that is combined with the treated wastewater from the WWTP and discharged to the irrigation field (DWER 2023c).

WWTP Commissioning phase

During the commissioning phase, a total of 5,065,632 L of blended effluent (average of 22.87m³/day) was processed by the WWTP between 14 April 2023 to 10 January 2024.

The WWTP discharges were not within the specifications of the discharge design and some parameters were not monitored monthly in accordance with the monitoring requirements specified in W6158/2018/1, as per Table 2. This issue was because of “*lack of personnel onsite to allow for enough feed into the system is the cause for the monitoring parameters not consistently being achieved at this initial stage of on-site activities. These exceedances are expected to resolve with the ramp up to major construction scheduled for early Q2, 2024. The projected increase in village personnel will provide more feed and nutrient balances into the system*” (Hastings 2024a). Additionally, the samples preservation had issues due to freighting delays. The Licence Holder acknowledged this issue and proposed actions to correct current protocols/logistics.

Table 2: Emissions and discharge monitoring results during Environmental Commissioning

Date	BOD ₅	Total Nitrogen	Total Phosphorous	TSS	TDS	Total Coliforms	E. Coli	Chemical Oxygen Demand ^a
	mg/L	mg/L	mg/L	mg/L	mg/L	CFU/100mL	CFU/100mL	mg/L
WWTP design parameter	<20	<30	<8	<30	<1000	NA	<1000	< 20
Apr 2023	18	26.70	1.62	5	NI	1	1	47
May 2023	18	32.60	2.09	13	NI	60000	4100	NA
May 2023	8	19.40	1.39	5	NI	670	4	NA
May 2023	3	22.90	1.51	5	NI	1000	8	NA

May 2023	5	24.90	2.27	5	NI	6200000	130000	NA
May 2023	42	43.30	5.76	41	NI	5400000	620000	NA
Jun 2023	30	49.3	3.81	65	NI	31000000	7200000	NA
Jun 2023	14	37.50	4.37	34	NI	2600000	140000	NA
Jun 2023	14	32.5	4.7	25	NI	250000	1100	NA
Jun 2023	13	25.8	4.13	13	NI	150000	1500	NA
Jul 2023	11	28.9	2.17	6	NI	65000000	1600	18
Jul 2023	11	37.70	21.42	5	NI	110000	790	NA
Jul 2023	19	41.20	4.54	5	NI	640000	9500	NA
Jul 2023	11	33	1.45	8	NI	31000	2400	NA
Jul 2023	6	37.9	2.9	16	NI	53000	3500	NA
Aug 2023	21	22.7	7.32	204	NI	440	1	NA
Aug 2023	3	38.8	2.99	31	NI	2700000	1	NA
Aug 2023	15	56.1	7.43	170	2880	30	1	NA
Aug 2023	6	38.5	1	34	2200	1	1	NA
Sep 2023	2	30.4	1.21	16	1790	29	1	NA
Sep 2023	2	30.6	1.28	22	2190	31	1	NA
Sep 2023	4	37.1	2.34	62	1840	25000000	1	NA
Sep 2023	9	37.6	2.15	45	1680	20000000	10	NA
Oct 2023	2	33.8	0.89	10	1490	6	1	55
Oct 2023	6	39.1	1.43	48	1600	9000000	6700	NA
Oct 2023	8	31.6	1.42	43	1280	1	1	NA
Oct 2023	7	88.2	2.24	103	NI	1	1	NA
Oct 2023	5	40	1.15	26	1780	35	13	NA
Nov 2023	6	39	1.08	14	1430	1	1	NA
Nov 2023	20	42.5	1.1	5	2350	1	1	NA
Nov 2023	6	39.50	0.82	11	2120	600	5600	NA
Nov 2023	9	29.4	0.66	11	1600	50000	4500	NA
Dec 2023	6	22.40	0.63	17	1560	72000	22000	NA
Dec 2023	6	23.7	0.49	11	1270	8500	240	NA
Dec 2023	8	25.4	0.54	5	1560	320000	150000	NA

Note^a: Only quarterly monitoring required
 Note: Chlorine residual was 7.6 mg/L on average
 NI: no data provided

Under Works Approval W6158/2018/1, the department requested the Licence Holder to monitor the quality of the WWTP effluent during the commissioning phase, which includes the blended effluent from the WWTP and RO brine. This monitoring was requested to verify that water quality is acceptable as the groundwater within the premises does not exceed of the recommended water quality trigger values for heavy metals and metalloids in livestock drinking water as outlined in the ANZECC guidelines (DWER 2023c). The results received are provided in Table 3.

Table 3: Emissions and discharge monitoring results during Environmental Commissioning quarterly sampling

Parameters (mg/L)		ANZECC guidelines	April 2023	July 2023	October 2023
Mayor ions	Calcium	1000 ^a mg/L	78	98	112
	Carbonate	ND	NI	NI	1
	Potassium	ND	16	26	20
	Magnesium	2000 ^a mg/L	61	66	62
	Sodium	ND	269	298	245
	Sulfate	1000 ^a mg/L	146	128	131

Metals and Metalloids	Aluminium	5 ^a mg/L	0.10	0.85	8.45
	Antimony	ND	0.001	0.001	0.001
	Arsenic	0.5 - 5 ^a mg/L	0.001	0.001	0.001
	Beryllium	ND	0.001	0.001	0.001
	Boron	5 ^a mg/L	0.57	0.67	0.63
	Cadmium	0.01 ^a mg/L	0.0001	0.0001	0.0001
	Chromium	1 ^a mg/L	0.001	0.001	0.002
	Copper	0.4 - 5 ^a mg/L	0.127	0.046	0.024
	Iron	NA	0.11	0.11	0.37
	Manganese	1200 ^b µg/L	0.011	0.017	0.010
	Mercury	0.002 ^a mg/L	0.0001	0.0001	0.0001
	Molybdenum	0.15 ^a mg/L	0.034	0.040	0.037
	Nickel	1 ^a mg/L	0.012	0.004	0.002
	Lead	0.1 ^a mg/L	0.005	0.002	0.001
	Selenium	0.02 ^a mg/L	0.01	0.01	0.01
	Silicon (as SiO ₂)	ND	69.9	85.6	85.5
	Silver	0.02 ^b µg/L ⁻¹	0.001	0.001	0.001
	Strontium	ND	0.680	0.717	0.697
	Thorium	ND	0.001	0.001	0.001
	Tin	ND	0.003	0.001	0.002
Titanium	ND	0.01	0.01	0.01	
Uranium	0.2 ^a mg/L	0.037	0.040	0.037	
Zinc	20 ^a mg/L	0.215	0.146	0.080	
Others	Fluoride	2 ^a mg/L	2.9	2.9	2.8
	Nitrite as N	3.29 ^a mg/L	0.11	0.01	0.01
	Nitrate as N	4.43 ^a mg/L	15.1	30.4	25.6

Note^a: Recommended water quality trigger values (low risk) for heavy metals and metalloids in livestock drinking water from ANZECC 2000 (Section 4.3)

Note^b: Recommended water quality trigger values (low risk) for trigger values for freshwater from ANZECC 2000 Table 3.4.1

ND = not determined, insufficient background data to calculate

NI: no data provided

The results from Table 3 shows that the WWTP discharges are within the ANZECC guidelines, except for Nitrate. The department will review the TLO Report to confirm the discharge quality has been maintained, once TLO phase has been completed.

WWTP Time Limited Operations phase

The department requested that the Licence Holder provide the current results for the TLO phase to confirm the parameters are within the design parameters (Hastings 2024c). There is an improvement for some parameters including BOD, Total Phosphorous and TSS, which were within the design parameters targets. The WWTP is still having issues maintaining Total Nitrogen, TDS and *E. Coli* within the targets, which is likely due to the currently low operating rates. This will continue to be regulated under the amended licence via regular monitoring.

The TLO phase was running between 02 February 2024 until 02 May 2024 and part of the monitoring results are provided in Table 4. The Licence Holder will need to implement measures to maintain the parameters within the WWTP quality design parameters.

Table 4: Monitoring during time limited operations

Date	BOD ₅	Total Nitrogen	Total Phosphorous	TSS	TDS	Total Coliforms	<i>E. Coli</i>	Chemical Oxygen Demand ^a
	mg/L	mg/L	mg/L	mg/L	mg/L	CFU/100mL	CFU/100mL	mg/L
WWTP design parameter	<20	<30	<8	<30	<1000	NA	<1000	< 20
11/01/2024	8	19.8	0.48	5	1310	8300	4700	NA
18/01/2024	6	26.1	0.83	5	1600	47000	10000	NA

25/01/2024	4	29.7	0.76	9	1630	880	4700	NA
01/02/2024	2	28.5	0.43	5	1580	17	570	NA
8/02/2024	2	36	0.54	8	2020	1000	54	13
15/02/2024	5	36.3	1.77	5	1920	1	1	NA
22/02/2024	2	35.1	0.49	5	2360	1	1	NA
29/02/2024	2	35.4	0.5	8	1840	260	140	NA
7/03/2024	2	31.6	0.65	6	1670	54	1	NA
14/03/2024	3	42.8	0.85	14	2220	2	1	NA
21/03/2024	2	40.9	0.59	5	2260	31	4	NA
28/03/2024	3	35.7	0.66	5	1870	1	1	NA
4/04/2024	2	3.9	0.56	5	1780	580	110	NA
11/04/2024	3	25	0.51	5	1480	100000	22000	NA
18/04/2024	4	25.8	0.53	5	1420	11000	920	NA

Note^a: Only quarterly monitoring required

2.2.4 Category 64

The Licence Holder proposes to install the 27 ha Auer North Waste Rock Landform Landfill of as per Figure 1. The Auer North Waste Rock Landform Landfill will be near to a tributary of Frasers Creek, because of this, the Licence Holder proposed a 200m buffer zone from the closest point of the creek and outside the 1% AEP flood zones. Bunding and drainage channels will be used to reduce risk of stormwater contamination.

2.3 Part IV of the EP Act

The Yangibana Rare Earths Project was assessed by the Environmental Protection Agency (EPA) where the Ministerial Statement 1110 (MS1110) was granted.

The EPA (2019) report states that “*the proponent must obtain a bed and banks’ permit under the RIWI Act to ensure surface water flow is maintained and erosion is minimised for all river, creek and drainage channel crossings. Industry-standard management measures will be undertaken to divert overland flow around mine pits, the TSF, Waste Rock Landforms (WRLs) and infrastructure so that surface water regimes are maintained*”.

Additionally, the Licence Holder must “*ensure that impacts on the local calcrete outcrop associated with the Gifford Creek Calcrete PEC are not significant*” (EPA 2019).

2.4 Rights in Water and Irrigation Act 1914 (RIWI Act)

The Licence Holder will be using groundwater for dust suppression. Groundwater extraction volume is regulated under two groundwater licences GWL183285 and GWL203347. Additionally, the groundwater extraction volume is regulated under MS1110.

The proposed licence amendment includes four Crushing and Screening areas. Mobile Crushing and Screening activities will not be located within 50 m (100 m buffer) of watercourses.

2.5 Clearing

Clearing of vegetation will be undertaken in accordance with MS1110 for the construction of crushing and screening areas, WWTP area and proposed Auer North Waste Rock Landform Landfill.

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction/operation which have been considered in this Amendment Report are detailed in Table 5 below.

Table 5 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 5: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Crushing of material, vehicle movements, lift-off from stockpiles and/or stored product, earthworks etc.	Air/windborne pathway	Using water sprays to water down dust particles on road and soil surfaces. Drainage and diversion channels will be constructed at appropriate locations at borrow pits to manage stormwater. Visual monitoring of dust generation. Adherence to speed limits and driving to road and weather conditions to reduce potential dust impacts on vegetation and fauna.
Operation			
Category 12			
Dust	Crushing of material, vehicle movements, lift-off from stockpiles and/or stored product, earthworks etc.	Air/windborne pathway	Using water sprays to water down dust particles on road and soil surfaces. Wetting of feed materials. Dust suppression sprays operating on the mobile Crushing and Screening Plant crusher discharge and conveyor discharge point. Visual monitoring of dust generation. Adherence to speed limits and driving to road and weather conditions to reduce potential dust impacts on vegetation and fauna.

Emission	Sources	Potential pathways	Proposed controls
Contaminated stormwater – hydrocarbons and sediment	Overland runoff	Direct discharges to land	<p>Mobile crushing and screening activities will not be located within 50m (100m buffer) of watercourses or sensitive receptors.</p> <p>Where drainage channels are within 100 m of the borrow pits, diversion channels will be constructed, to ensure surface water drainage is unimpeded and unaffected by the borrow pits.</p> <p>Rocks will be used to disperse the kinetic energy of surface water draining from the borrow pit.</p> <p>Infrastructure will be inspected following heavy rainfall for evidence of erosion, which will be rectified immediately if identified.</p> <p>Spills are to be cleaned up immediately with spill kits available</p> <p>Transfer of diesel to occur at designated transfer points with spill protection and containment available.</p> <p>Use of drip trays in the event that a leak is detected.</p> <p>Any contaminated material (e.g., hydrocarbon contamination soil) will be removed and disposed of at licensed facilities or within the site bioremediation pad.</p>
Category 54			
Sewage / treated effluent	Leak and/or spill from WWTP/pipelines/ over topping	Leaks and spills from ruptures of the pipelines	<p>All sewage and storage treatment tanks, vessels transfer pipelines and conveyance infrastructure are impermeable and free of leaks or defects.</p> <p>Alarms within systems when set levels are exceed or failure of equipment occurs.</p> <p>Flow meters are maintained on the WWTP inlet and outlet to the irrigated discharge area.</p> <p>Spills of wastewater or chemicals outside of a vessel / container are cleaned up immediately.</p> <p>Earthen bunding to be constructed around perimeter of the WWTP.</p> <p>Chemicals are stored separately with an above ground vessel/s located on a hardstand enclosed by bunds in accordance with Australian Standard AS3780.</p>
	Overtopping	Overfilling of tanks	<p>Earthen bunding to be constructed around perimeter of the WWTP.</p> <p>Alarms within systems when set levels are exceed or failure of equipment occurs.</p>

Emission	Sources	Potential pathways	Proposed controls
			<p>WWTP is not operated to full capacity to reduce risk of over topping and high-level issues until earthen bunding is constructed (DWER 2023a).</p> <p>All sewage and storage treatment tanks, vessels transfer pipelines and conveyance infrastructure are impermeable and free of leaks or defects.</p> <p>Chemicals are stored separately with an above ground vessel/s located on a hardstand enclosed by bunds in accordance with Australian Standard AS3780.</p>
<p>Discharges of treated effluent and brine from spills</p>	<p>Operation of WWTP and RO Plant irrigation fields</p>	<p>Direct discharge, spills, runoff from irrigation fields and spray drift</p>	<p>The system is designed to treat effluent to Western Australian Class C standards and will be managed in accordance with <i>AS/NS 1547:2012 On-site Domestic Wastewater Management</i>.</p> <p>Fencing has been installed and signage is in place.</p> <p>Treated wastewater and RO brine is blended prior to irrigation.</p> <p>148.8 m³ /day of blended effluent (50 m³/day of RO brine) will be applied per day to the irrigation fields. This has been transferred across from Works Approval W6158/2018/1.</p> <p>Daily and weekly inspections of the WWTP infrastructure, tank levels and irrigation field equipment.</p> <p>Spills of wastewater or chemicals outside of a vessel / container are cleaned up immediately.</p> <p>Bunding around facility to protect from flood waters and contain leaks and spills.</p> <p>Alarms within systems when set levels are exceeded or failure of equipment occurs.</p> <p>HDPE pipelines will convey wastewater, treated wastewater and reverse osmosis reject water.</p> <p>No blended effluent is permitted to enter any watercourse.</p> <p>Irrigation fields are fenced, and safety signage erected.</p> <p>Sludge is contained within sealed sludge tanks prior to removal by a licensed waste carrier for disposal to an appropriately authorised facility.</p> <p>Wastewater will be treated and blended prior to discharged to designated irrigation field.</p> <p>Volumetric flow meters are maintained to monitor daily volume of RO brine delivered to</p>

Emission	Sources	Potential pathways	Proposed controls
			<p>the WWTP irrigation storage tanks.</p> <p>Flow meters will be maintained on the WWTP inlet and outlet to the irrigated discharge area.</p> <p>Effluent discharge will be managed to ensure there is no surface ponding or runoff from the irrigation fields.</p>
Category 64			
Windblown waste from Auer North Waste Rock Landform Landfill	Wind blowing waste out of bunkers	Air/windborne pathway	<p>Daily inspections of the tipping faces and housekeeping.</p> <p>Waste is compacted as soon as practicable, following placement, to reduce the potential for windblown litter.</p> <p>Auer North Waste Rock Landform Landfill to be fenced.</p> <p>Putrescible waste covered with soil on a weekly basis.</p> <p>Daily collection of windblown litter.</p>
Leachate from Auer North Waste Rock Landform Landfill	Rainfall falling within the bunkers	Seepage through the bunkers	<p>Stormwater diversion drainage earthen bunding must be constructed surrounding the landfill trenches to prevent the ingress of stormwater.</p> <p>Leachate is contained in the waste bunker until it is evaporated.</p> <p>3m separation maintained between the base of the Auer North Waste Rock Landform Landfill cells and groundwater.</p> <p>Drainage around bunkers redirects surface water flow away from bunkers.</p>
Contaminated stormwater runoff from Auer North Waste Rock Landform Landfill	Rainfall falling within the bunkers	Contaminated water flowing out of landfilling area	<p>Stormwater diversion drainage earthen bunding must be constructed surrounding the landfill trenches to prevent the ingress of stormwater.</p> <p>Drainage around bunkers redirects surface water flow away from bunkers.</p> <p>Landfill site located at least 200m from the closest point of the creek and outside the 1% AEP flood zones.</p> <p>Depth of bunkers is maintained to contain rainfall.</p> <p>Bunkers located at least 250m from Frasers Creek.</p>
Hydrocarbons and Chemicals			
Spillage,	Operation of	Direct	Any contaminated material (e.g., hydrocarbon

Emission	Sources	Potential pathways	Proposed controls
leakage, and seepage of hydrocarbon contaminants	machinery	discharge, overland runoff and seepage	contamination soil) will be removed and disposed of at licenced facilities or within the site bioremediation pad. Transfer of diesel to occur at designated transfer points with spill protection and containment available. Use of drip trays in the event that a leak is detected. Spill kits available in area.

3.1.2 Receptors

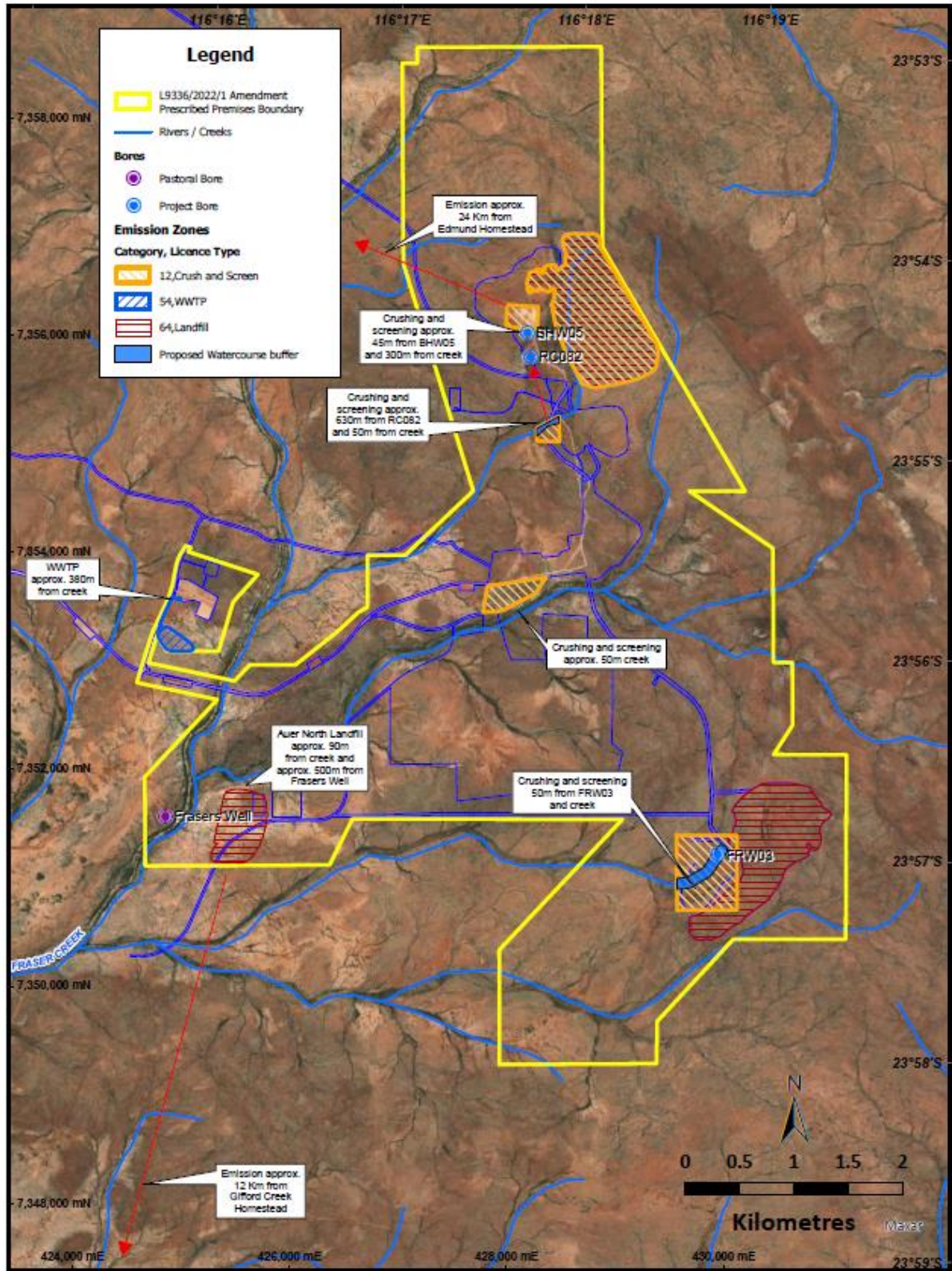
In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under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

Table 6 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 6: Sensitive human and environmental receptors and distance from prescribed activity

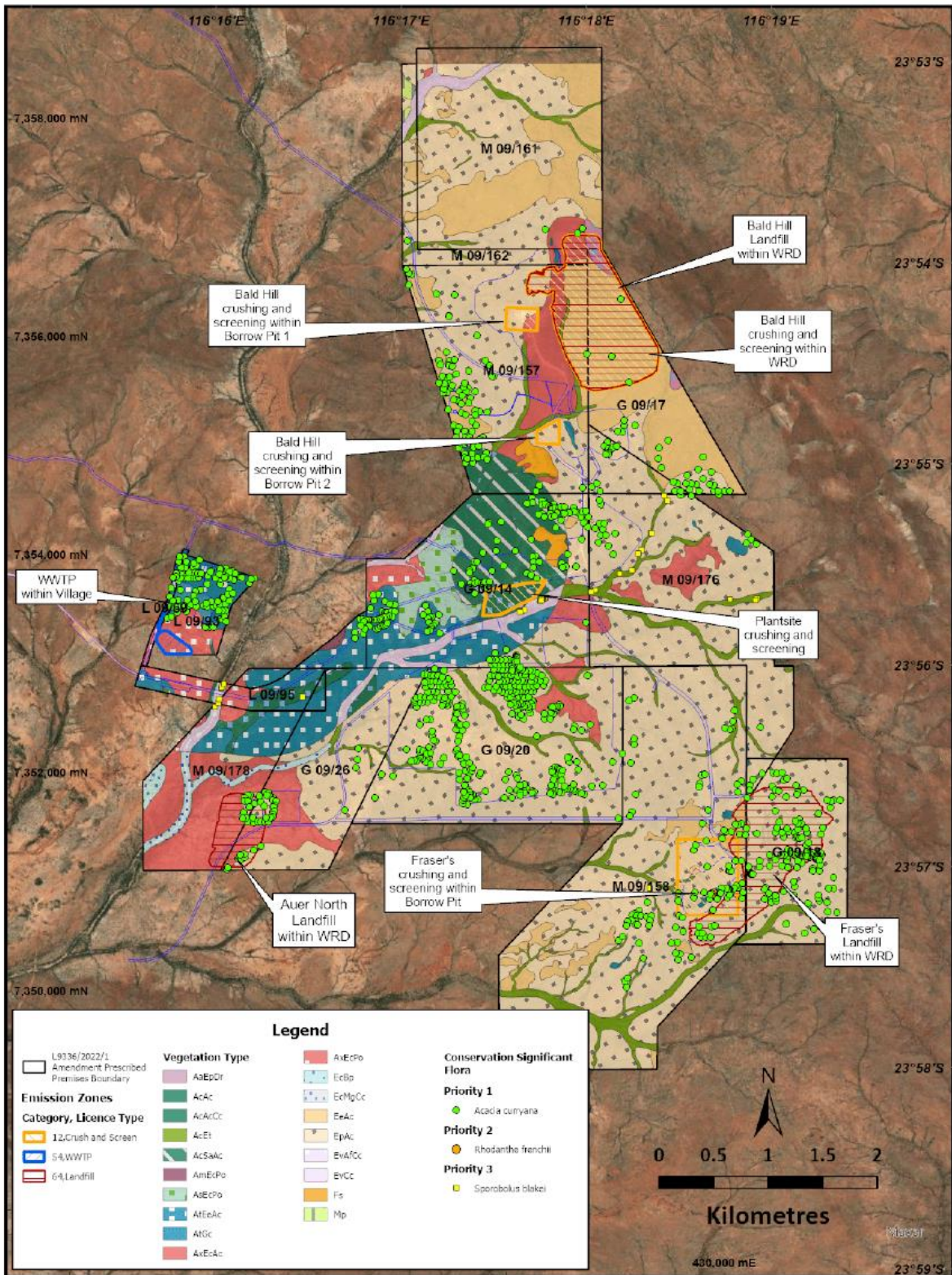
Human receptors	Distance from prescribed activity
No near human receptors within 2km	NA
Environmental receptors	Distance from prescribed activity
Priority Ecological Community (P1)	Gifford Creek, Mangaroon, Wanna calcrete groundwater assemblage type on Lyons palaeodrainage on Gifford Creek, Lyons and Wanna Stations P1. The PEC is located within the premises. This PEC comprises unique assemblages of invertebrates (stygo fauna) that have been identified in the network of groundwater calcretes. Stygo fauna occur within both the fractured rock aquifers across the broader Project area as well as the calcrete aquifers within the PEC footprint. The nearest calcrete is approximately 6 km from the WWTP and irrigation area (DWER 2021).
Priority fauna	Eastern Great Egret (<i>Ardea modesta</i>) – Marine (EPBC Act) Grey Falcon (<i>Falco hypoleucos</i>) – Vulnerable (BC Act, EPBC Act) Golden Gudgeon (<i>Hypseleotris aurea</i>) – Priority 2 Fork-tailed Swift (<i>Apus pacificus</i>) – Migratory (BC Act, EPBC Act), Marine (EPBC Act) Long tailed Dunnart (<i>Sminthopsis longicaudata</i>) - Priority 4 Peregrine Falcon (<i>Falco peregrinus</i>) – Specially Protected (BC Act) Rainbow Bee-eater (<i>Merops ornatus</i>) - Marine (EPBC Act) Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>) – Priority 4 Yinnietharra Rock Dragon (<i>Ctenophorus yinnietharra</i>) – Vulnerable (BC Act, EPBC Act)

<p>Conservation significant flora (Figure 2)</p>	<p>Biodiversity Conservation Act (2016): <i>Acacia curryana</i> (Priority 1) <i>Acacia sp. Yinnietharra</i> (Priority 1) <i>Elacholoma sp.</i> (Priority 1) <i>Isotropis forrestii</i> (Priority 1) <i>Rhodanthe frenchii</i> (Priority 2) <i>Solanum octona</i> (Priority 2) <i>Wurmbea fluviatilis</i> (Priority 2) <i>Acacia atopa</i> (Priority 3) <i>Gymnanthera cunninghamii</i> (Priority 3) <i>Sporobolus blakei</i> (Priority 3) <i>Goodenia berringbinensis</i> (Priority 4)</p>
<p>Groundwater dependent ecosystem</p>	<p>EvCc and EvReMg, characterised by <i>Eucalyptus victrix</i>. AcEt and AcAsCc, which have occasional <i>Eucalyptus victrix</i>.</p>
<p>Groundwater</p>	<p>The depth to groundwater ranges from 26.25 - 33.8 mBGL. Depth to groundwater may be as shallow as 10 mBGL or less in creeks and the Lyons River, where shallow calcrete aquifers are known to exist.</p> <p>The depth to groundwater in the palaeochannel tributary is between 90 - 120 mBGL (Hastings 2024b).</p>
<p>Superficial water (Figure 1)</p>	<p>Frasers Creek and associated tributaries/drainage lines pass along side and within the western side of the Project.</p> <p><u>Crushing/screening activities</u> - Mobile crushing and screening activities will not be located within 50 m (100 m buffer) of watercourses.</p> <p><u>WWTP</u> - 380 m from creek</p> <p><u>New Auer North Waste Rock Landform Landfill</u> - 250 m from creek</p>
<p>Aboriginal Cultural Heritage (Figure 3)</p>	<p>Site ID – 36977 - Plant 2016/01 (Artefacts / Scatter, Grinding Patches / Grooves) - G 09/14 (within premises boundary).</p> <p>Site ID – 36975 - Auer 2016/01 (Camp) - M 09/178 and M 09/177 (within premises boundary).</p> <p>Site ID – 36979 - SF West 2016/01(Artefacts / Scatter, Grinding Patches / Grooves, Water Source) - M 09/176 (within premises boundary).</p> <p>Site ID – 36976 - Bald Hill North 2016/01 (Artefacts / Scatter, Camp) - E 09/1943 (190 m– west from premises boundary).</p> <p>Site ID – 36978 - Frasers Creek 2016/01 (Artefacts / Scatter, Grinding Patches / Grooves, Camp) – 416 m north-east from premises.</p>



YANGIBANA RARE EARTHS PROJECT			Licence L9336/2022/1 Amendment	
Company Doc No.: nyk	Print Date: 15 May 2024		Siting and Location of Premises	
Rev : 001	Application: Am225-Pro	Project: L9336-2022-1_Amendment	Layout: PE 7 Siting	Copyright © Intellectual property of Hastings Technology Metals Limited. This document must not be copied or reproduced in any form or used for any purpose other than originally intended without written approval of Hastings Technology Metals Limited.
A4	Scale: 1:45,000	Special reference: GDA 1994 MGA Zone 50		
			Attachment 7	

Figure 1: Distance to sensitive receptors



YANGIBANA RARE EARTHS PROJECT			Licence L9336/2022/1 Amendment
Company Doc No: 114	Print Date: 07 February 2024		Conservation Significant Flora and Vegetation Communities
Rev: 001	Application No: 19336-2022-1	Project: L9336-2022-1_Amendment	
A4	Scale: 1:45,000	Spatial reference: GDA 1984 MGA Zone 50	

Figure 2: Conservation significant flora and vegetation community

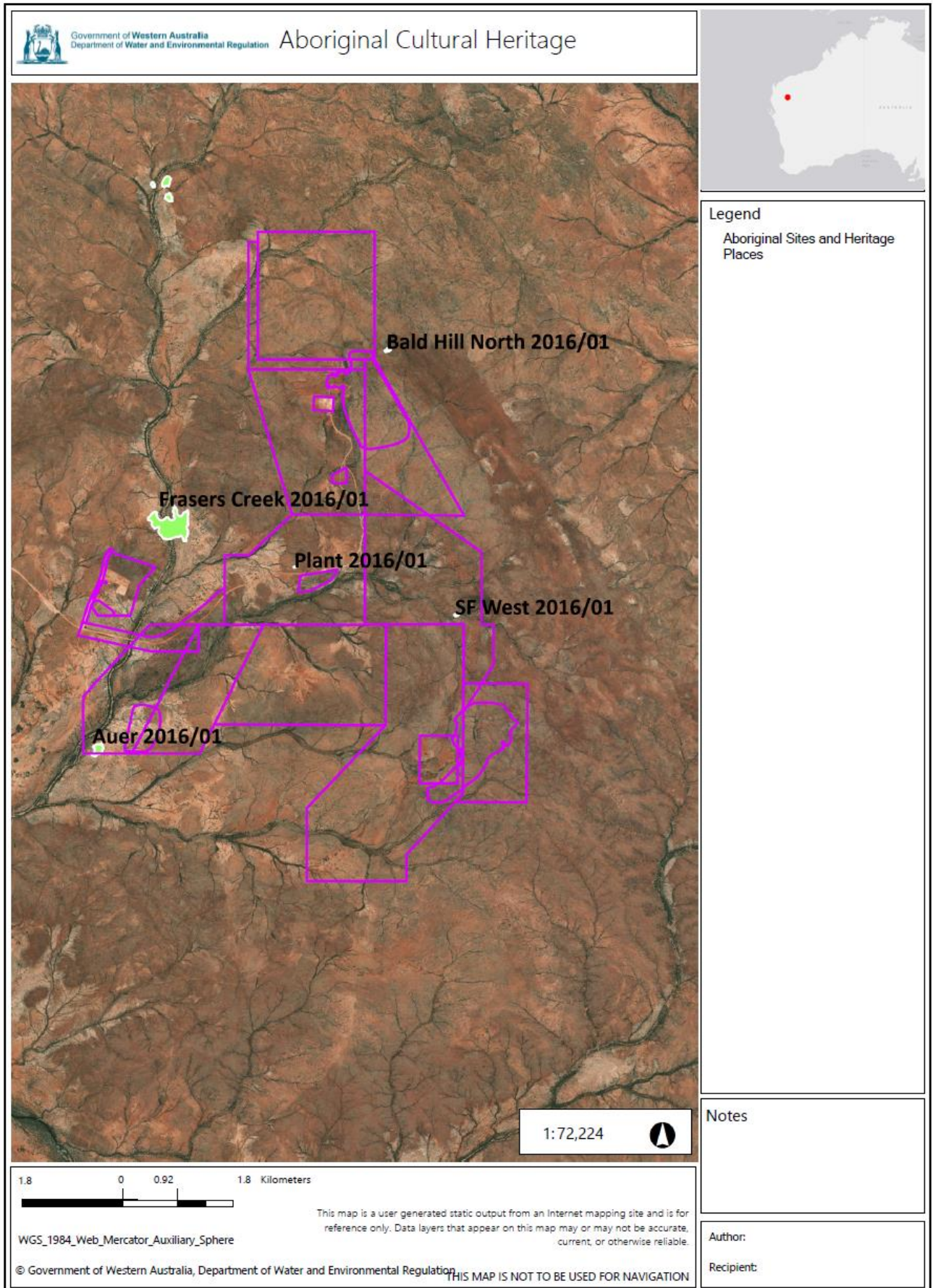


Figure 3: Mapped Aboriginal heritage places or registered sites (DPLH)

3.2 Risk ratings

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

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

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 7.

The Revised Licence L9336/2022/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 12 activities.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 7. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Construction								
Placement of Crushing and Screening Plant and associated equipment including vehicle movements	Dust	Air windborne pathway causing impacts to health, environment and/or amenity	Priority flora	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	NA	NA
Construction of Auer North Waste Rock Landform Landfill Construction of stormwater diversions	Sediment laden and/or contaminated stormwater to surface water	Overland runoff potentially causing ecosystem disturbance or impacting surface water and or groundwater quality	Frasers Creek tributaries.	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	NA	NA
Operation								
Category 12								
Movement of material through the Crushing and Screening Plant, unloading,	Dust	Air windborne pathway causing impacts to health,	Priority flora Frasers Creek	Refer to Section 3.1	C = Minor	Y	Condition 1, Table 1 Infrastructure and equipment operation	NA

Licence: L9336/2022/1

Risk Event					Risk rating ¹	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
loading and storage of material Vehicle movements		environment and/or amenity	tributaries.		L = Likely Medium Risk		requirements Requires maintenance of suppression sprays Condition 2, Table 2 Installation requirements Requires installation of dust suppression sprays	
	Sediment laden stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Frasers Creek and tributaries Priority flora	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	Condition 1, Table 1 Infrastructure and equipment operation requirements Requires maintenance of stormwater diversions Condition 2, Table 2 Installation requirements Requires construction of stormwater diversions Condition 10 requires maintenance of a surface water management system	NA
Category 54								
Operation of WWTP RO Plant Irrigation fields	Sewage / treated effluent	Leak and/or spill from WWTP/pipelines	Creeks Priority flora Land/soils	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	Condition 1, Table 1 Infrastructure and equipment operation requirements Requires pipelines and conveyance infrastructure be maintained, alarm systems and discharge targets for treated effluent / RO brine Condition 2, Table 2 Installation requirements Requires earthen bunding	NA

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							be constructed around the perimeter of the WWTP Condition 14, Table 7 Emissions and discharges monitoring Requires monitoring of treated effluent / RO brine disposed of to irrigation fields Condition 15, Table 8 Monitoring of inputs and outputs Requires monitoring of inflow and outflow	
		Overtopping of tanks	Creeks Priority flora Land/soils	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	Condition 1, Table 1 Infrastructure and equipment operation requirements Requires maintenance, flow meters, alarm systems Condition 2, Table 2 Installation requirements Requires earthen bunding be constructed around the perimeter of the WWTP	NA
	Treated effluent (mixed with RO brine)	Direct discharges to irrigation fields Runoff from irrigation field spray drift	Creeks Priority flora Land/soils	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	Condition 1, Table 1 Infrastructure and equipment operation requirements Requires discharge targets for treated effluent / RO brine, limit volume to irrigation fields, prevention of ponding and pooling of effluent Condition 9, Table 6	NA

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							Emissions to land Requires discharge point location for treated effluent / RO brine Condition 14, Table 7 Emissions and discharges monitoring Requires monitoring of treated effluent / RO brine disposed of to irrigation fields Condition 10 requires maintenance of a surface water management system Condition 15, Table 8 Monitoring of inputs and outputs Requires monitoring of inflow and outflow	
Category 64								
Operation new Auer North Waste Rock Landform Landfill	Windblown waste from Auer North Waste Rock Landform bunkers/transfer of waste	Air/wind dispersion	Frasers Creek (250m) tributary from landfill) Land/soils	Refer to Section 3.1	C = Slight L = Possible Low Risk	Y	Condition 1, Table 1 Infrastructure and equipment operation requirements Requires inspections and collection of windblown litter Condition 2, Table 2 Installation requirements Requires bunkers dimensions, fencing Condition 7, Table 5 Cover requirements Requires regular waste covering	NA

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							Condition 8 requires fencing Condition 11 requires management of windblown waste	
	Leachate from Auer North Waste Rock Landform Landfill	Seepage, potentially causing ecosystem disturbance or impacting surface water and groundwater quality	Frasers Creek tributary (250m from landfill) Priority flora Land/soils	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	Condition 1, Table 1 Infrastructure and equipment operation requirements Refers to other conditions for operational management Condition 2, Table 2 Installation requirements Requires slope in bunkers, stormwater diversions, location of bunkers outside flood zones and away from Frasers Creek, earthen bunding around landfill, distance from groundwater Condition 3, Table 3 Waste acceptance Requires only certain waste types be accepted to landfills Condition 7, Table 5 Cover requirements Requires regular waste covering Condition 10 requires maintenance of a surface water management system	NA
	Contaminated stormwater runoff	Overland runoff	Frasers Creek tributary (250m)	Refer to	C = Minor	Y	Condition 1, Table 1 Infrastructure and	N/A

Licence: L9336/2022/1

Risk Event					Risk rating ¹	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
	from Auer North Waste Rock Landform Landfill		from landfill) Priority flora Land/soils	Section 3.1	L = Possible Medium Risk		equipment operation requirements Refers to other conditions for operational management Condition 2, Table 2 Installation requirements Requires slope in bunkers, stormwater diversions, location of bunkers outside flood zones and away from Frasers Creek, earthen bunding around landfill Condition 10 requires maintenance of a surface water management system	
Hydrocarbons and Chemicals								
Operation of machinery	Spillage, leakage, and seepage of hydrocarbon contaminants associated with fuel transfer, accidents, breakdowns or malfunctions from surface mobile equipment and vehicles	Soil and vegetation adjacent to the area of spill or breach Groundwater, depending on volume discharged and depth to groundwater	Frasers Creek and tributary (250m from creek) Priority flora Land/soils	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Y	NA	NA

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

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

4. Consultation

Table 8 provides a summary of the consultation undertaken by the department.

Table 8: Consultation

Consultation method	Comments received	Department response
Department of Mines, Industry Regulation and Safety (DEMIRS) advised of proposal on 12/03/2024	No comments received	NA
Licence Holder was provided with draft amendment on 10/05/2024	Refer to Appendix 1	Refer to Appendix 1

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 9 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 9: Summary of licence amendments

Condition no.	Proposed amendments
1, Table 1	New condition for infrastructure and equipment operation requirements added.
2, Table 2	New condition for installation requirements added.
3, Table 3	Modification of wording from "shall" to "must".
9, Table 6	Emission to land condition added for treated effluent / RO brine to irrigation fields.
12	Monitoring condition standards added.
13	Condition for calibration of monitoring equipment added.
14, Table 7	Monitoring of treated effluent / RO brine condition added.
15, Table 8	Inflow of sewage and RO brine and outflow of treated effluent / RO brine to irrigation fields.
18	Auditable books condition added regarding information to maintenance and regarding construction / installation works.
20, Table 9	Notification condition added for installation requirements.
21, Table 10	Annual Environmental Report condition added.

Definitions	Inclusion of relevant definitions.
Figure 1	Map of premises boundary updated.
Figure 3	Map of WWTP and irrigation fields added.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2021, *W6158/2018/1 Amendment Report 22 November 2021*, Perth, Western Australia.
5. DWER 2023a, *WWTP construction assessment* (REF: A2176144).
6. DWER 2023b, *WWTP, irrigation field stage 2 and RO brine pipeline* (REF: A2209375).
7. DWER 2023c, *W6158/2018/1 Decision Report 29 November 2018*, Perth, Western Australia.
8. Environmental Protection Agency 2019, *Report and recommendations of the Environmental Protection Authority: Yangibana Rare Earths Project, Report 1642*.
9. Hastings Technology Metals Limited 2024a, *Environmental Commissioning report_ YB-1-4100-HE-EN-REP-00001* (REF: DWERDT904612).
10. Hastings Technology Metals Limited 2024b, RE: L9336 - Hastings Technology Metals Ltd - Amendment Application - missing form 21/02/2024, Perth, Western Australia, *Email for clarification of information* (REF: DWERDT908819).
11. Hastings Technology Metals Limited 2024c, RE: L9336 - Hastings Technology Metals Ltd - Amendment Application - missing form 01/05/2024, Perth, Western Australia, *Time Limited Operations information* (REF: DWERDT942179).
12. Hastings Technology Metals Limited, CM: RE: NOTIFICATION : PROPOSED AMENDMENT TO LICENCE L9336/2022/1 L9336/2022/1 - Response 16/05/2024, Perth Western Australia, *21 days comments* (REF: A2279114).

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

Condition	Summary of Licence Holder's comment	Department's response
Premises details, Cover page	Please amend legal description to include L09/69 and L09/95.	Updated as requested.
Licence History, Page 2	Request amendment to "Category 54 – addition of the RO Plant, WWTP and Irrigation field that were constructed under Works Approval W6158/2018/1 and are currently under TLO"	Updated as requested.
Condition 1, Table 1, 1(f), Page 3	Mobile crushing and screening activities will not be located within 50 m (100 m buffer) of watercourses.	Updated as requested.
Condition 2, a and b, Page 4	Please confirm if 2(a) and (b) should be combined as a single line to read "(a) construct and/or install the infrastructure and equipment, in accordance with the corresponding design and construction / installation requirements".	Standard condition.
Condition 14, Table 7, Page 8	Request frequency of pH and Residual Chlorine to be "Continuous or Daily", as per current Works Approval	Updated as requested.
Condition 21, Table 10, c, Page 11	Irrigation fields to be combined and reported as one. In practical terms this is a singular irrigation field.	Updated as requested.
Schedule 1 Maps: Prescribed premises (Figure 1), Page 15	Updated map provided to show 100 m buffer within crushing and screening emission areas.	Updated as requested.
Section 2.2 Amendment summary, Page 4	Request amendment to "Category 54 – addition of the Reverse Osmosis (RO) Plant, Wastewater Treatment Plant (WWTP) and Irrigation field that were constructed under Works Approval W6158/2018/1 and are currently in Time Limited Operations (TLO)"	Updated as requested.
Section 2.2.3, Table 2, Note, Page 7	Minor amendment request – "Chlorine", cf chlorine	Updated as requested.
Section 2.4, Page 9	Mobile crushing and screening activities will not be located within 50 m (100 m buffer) of watercourses. Activities will not be within any creek line. A Beds and Banks Permit will not be required.	Updated as requested.
Section 3.1.1, Table 5, Page 11	Mobile crushing and screening activities will not be located within 50 m (100 m buffer) of watercourses.	Updated as requested.

Condition	Summary of Licence Holder's comment	Department's response
Section 3.1.2, Table 6 – superficial water, Page 15	Mobile crushing and screening activities will not be located within 50 m (100 m buffer) of watercourses. Location 2 – 50 m Location 5 – 50 m	Updated as requested.
Figure 1: Distance to sensitive receptors, Page 16	Updated map to show 100 m buffer within crushing and screening emission areas.	Updated as requested.