Decision Report

Application for Licence

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

Licence Number	L9309/2021/1
Applicant	Element 25 Limited
ACN	119 711 929
File number	DER2021/000518
Premises	Butcherbird Manganese Project Mining Tenement M52/1074 MEEKATHARRA WA 6642
Date of report	04 April 2022
Decision	Licence granted

Alana Kidd

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

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1. Decision summary

This Decision Report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the Premises. As a result of this assessment, licence L9309/2021/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary and overview of Premises

On 3 September 2021, the Applicant submitted an application for a licence to the department under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application is to seek a licence relating to operation of a processing facility and a Tailings Storage Facility (TSF) and associated infrastructure for the mining and processing (category 5) of manganese at the Premises (as shown in Figure 1).

The Premises relates to the category and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L9309/2021/1. The infrastructure and equipment relating to the Premises' category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020a) are outlined in licence L9309/2021/1.

2.3 Overview of Premises

The Premises is located approximately 115 kilometres (km) south of the town of Newman in the Shire of Meekatharra. The Applicant plans to develop the Premises in stages with the granted Works Approval (W6455/2020/1) relating to time-limited operations and this application related to operations for stage 1 (L9309/2021/1).

Stage 1 of the Premises, which is expected to have a life of approximately 7 years, will consist of mining of the ore through an open pit method to reach a depth of 17 metres. The manganese mineralisation at the Premises with the most economic value occurs where the manganiferous shales intersect the weathering profile where deep chemical weathering has upgraded the grade of the manganese. This has portioned manganese mineralisation into discrete medium grade manganese bands which only require simple physical beneficiation. No chemicals including flocculants are required for the extraction of the manganese ore.

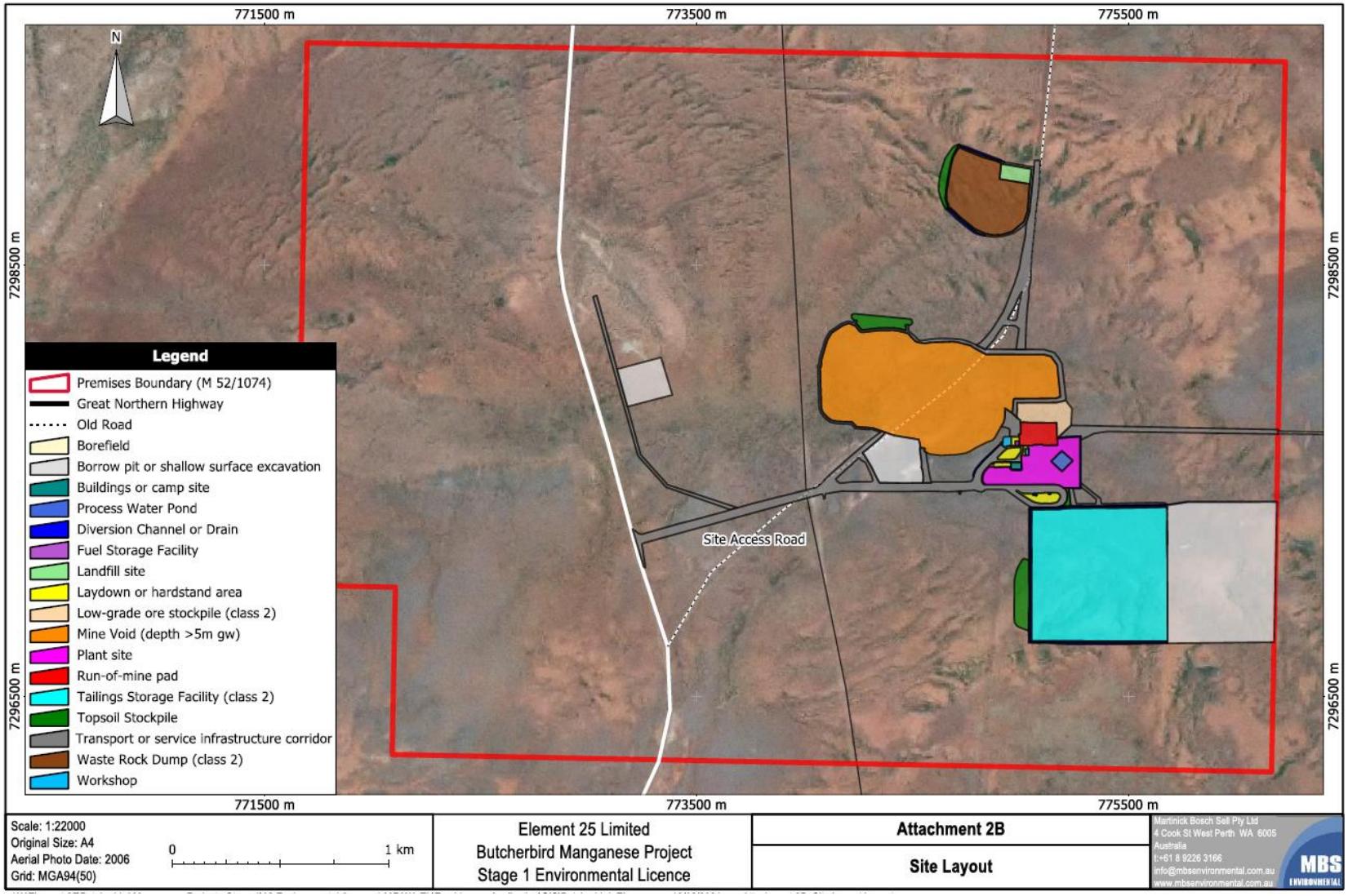


Figure 1: Site layout

2.3.1 Infrastructure and operational aspects

Processing Plant

The processing plant operates 24 hours a day, 7 days a week and mainly consists of mobile or semi-mobile infrastructure to crush, wash and separate manganese ore and waste. The maximum capacity of the processing plant is 1.6 million tonnes per annum (mtpa), with an estimated process rate of approximately 1.2 mtpa (dry) or 1.3 mtp (wet) expected. All stages of the process use physical separation with no chemicals used for extracting the manganese product.

Ore is mined from an open pit then transported to the Run of Mine (ROM) pad for storage before processing through the Processing Plant. Manganese is extracted from the ore by utilising the following methods:

- ROM ore is crushed to less than 60 millimetres (mm);
- Crushed ore is screened to remove any sub 6 mm material;
- Ore greater than 6 mm is fed into a log washer which uses water to remove tough, plastic clay contaminants and other deleterious materials from hard ore and aggregate feeds;
- Water from the log washer which contains reject clays and fine materials is pumped to the TSF. The cleaned ore leaving the log washer is passed over a washing screen to separate the ore into two sized fractions;
- The two ore fractions both pass through separate rising screen feeders into two ore sorters. The ore sorters use a number of sensors (i.e. 3D laser and colour sensors) to separate the product from the waste;
- The waste materials from the ore sorters are stockpiled and used for construction of the outer face of the TSF; and
- Manganese ore from the two ore sorters is stockpiled ready for loading into semi-trailers for export off-site.

Sumps have been incorporated into the design of the wet screening and ore sorter components of the Processing Plant to capture spilt material. The sumps are fitted with appropriately sized pumps to allow reclaim of material back to the processing circuit.

Dust suppression sprays are fitted at dust generating locations of the crushing and screening circuit. Fugitive dust from stockpiles is managed using water carts.

Tailings Storage Facility

The above ground, four-sided paddock style TSF has been constructed from material extracted from the base of the facility, mine waste and process waste. The TSF was constructed in four separate stages commencing with a starter embankment followed by 3 lifts using a downstream construction method. The final height of the TSF is 12.5 metres (m) above ground level which is expected to provide a total of 7 years storage. The final TSF disturbance footprint is approximately 40 hectares (ha) at year 7 with a tailings surface catchment of 18.5 ha. The TSF design storage capacities and timeframes for each staged lift are presented in Table 1 below.

Table 1: TSF design capacities

Parameter	Units	Interim	Starter embankment	Stage 1 lift	Stage 2 lift	Stage 3 lift	Total
Embankment Height	m	3.5	5.5	2.5	2.5	2.0	12.5
Assumed Dry Density	t/m^3	0.6	1.15	1.45	1.45	1.45	-
Storage Capacity	t	97,552	507,623	491,910	536,394	463,474	1,999,400
Storage Capacity	t/m^3	162,587	441,441	339,248	369,927	319,637	1,470,233
Stage Life	months	5	24	23	21	16	84
Stage Rate of Rise	m/yr	6.6	2.8	1.3	1.4	1.5	-

The starter embankment is constructed from material extracted from within the base of the TSF. The staged embankment lifts (stage 1 – 3) of the TSF used the dry undersize waste from the Processing Plant that progressively formed the embankment of each lift. The Ore Sorter waste was then used to cap the perimeter embankment as rock armouring.

The TSF has been designed to contain rainfall associated with a 1 in 100-year, 72-hour storm event whilst maintaining a 500 mm freeboard. The TSF does not receive rainfall run-off from an upstream catchment.

A 300 mm thick clay liner was installed at the starter embankment of the TSF which is compacted to achieve a minimum 95% Standard Maximum Dry Density in accordance with AS 1289.5.1.1. A cut-off trench is beneath the TSF embankment to key the TSF into the natural ground and to restrict lateral seepage beneath the embankment.

Tailings are pumped to the TSF via a tailings pipeline which is located within an earthen bunded corridor with a capacity to ensure any lost tailings are captured for a period equal to the time between routine inspections. The Applicant expects to pump between 237,000 to 311,000 tonnes (average 275,000 tonnes) of solids to the TSF per year. The tailings are deposited into the TSF sub-aerially from multi spigots located on the perimeter embankment. Tailings are deposited in layers not exceeding 300 mm in thickness to assist drying.

A decant rock ring is at the centre of the TSF for the recovery of supernatant water. The TSF is designed such that tailings material are discharged from the embankment and beach towards the decant rock ring. A decant pond is expected to form at the decant rock ring where a submerged pump will pump supernatant water via a return water pipeline to the Process Water Pond for use in the Processing Plant. The Process Water Pond is a HDPE lined facility and located adjacent to the Processing Plant.

Four groundwater monitoring bores have been installed at the TSF to monitor groundwater levels and groundwater quality against background levels.

Tailings waste characteristics

The applicant proposes to deposit waste fines (wet tailings) into the TSF at a slurry density of approximately 22% solids.

The wet tailings waste, which is segregated from dry wastes (hardpan, coarse/fine rejects and

dry screen fines), consists of scrubbed fines from the log washing step in the process and are less than 6 mm in size.

56 tailings samples were collected and generated by ALS Metallurgy during programs in 2019 and 2020. The samples collected and analysed for geochemical characterisation are expected to represent waste to be generated at the prescribed premises for the first 7 years of the mine life (Stage 1).

Particle size data is available for wet tailings for composite tailings only (2019 scrubbed wet tailings) in which all particles greater than 1 mm were screened out. The particle sizing date indicates the following:

- Contained a moderate clay content consisting of 24 to 36% less than 2 mm fraction and slightly higher silt content at 30 to 49%; and
- Particle size distribution was variable between samples.

The tailings are considered geochemically benign. Total sulfur was very low due to the highly weathered and oxic nature of the ore with no potential for acid production. Environmentally significant metals and metalloids are expected to be below the level of detection or at very low water-soluble concentrations.

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 2020a).

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 operation which have been considered in this decision report are detailed in Table 2 below. Table 2 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 2: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
Dust generated from crushing and screening, ore, and stockpiles (including fugitive dust from stockpiles)	Operation of ore processing plant	Air/windborne pathway Smothering of vegetation causing impacts to vegetation health Phytotoxicity effects from excess expose to Manganese	• Material handling with be restricted during high winds if dust cannot be adequately controlled • Water carts and watering will be used for the ROM pad, loading, material movements, crushing and screening, and stockpiling of materials • Dust suppression sprays are fitted to the crusher and dry screen to minimise dust generation • TSF will be operated using sub-aerial deposition methodology
Discharge of contaminants to land (e.g., hydrocarbon spillage from filling)		Seepage/ spillage potentially causing ecosystem disturbance/ soil contamination	• All hydrocarbon storages are to be constructed in accordance with Australian Standards (AS)1940 and AS1692, i.e., secondary containment and purpose built up to 110 kL diesel storage and refueling facility and stored in impermeable bunds • Static diesel fuel tanks associated with equipment are to be self-bunded where possible or located in bunding areas • All hydrocarbon storages will drain to a sump to allow removal of spilt material • Water that includes hydrocarbon contaminants will be directed to an oil water separation system • Immediate cleanup of minor spillage due to accidents / breakdowns will be undertaken and will be reported through the incident report procedure • Spill kits will be placed at strategic locations on the premises and employees will be trained in their use • A register will be maintained for all hazardous materials used and stored on the premises including the safety data sheets • All vehicles will be washed down in a purpose-built washdown facility where sediments are to be collected in a line sump and washdown water

Emission	Sources	Potential pathways	Proposed controls
			treated via a process to separate solids and hydrocarbons from water • Daily inspection of the integrity of fuel tanks, process liquor, water conveyance lines/pipelines, tanks, and bunds
Accidental discharge of product and tailings to land	Operation of wet processing plant and pipelines	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function Smothering of vegetation with tailings slurry	• Stormwater drains adjacent to hardstand areas are to direct stormwater around processing infrastructure • Captured spilt material and stormwater from the processing plant hardstand will be directed to a sump and sent back to the processing circuit via a pump system • Inspections of drainage structures and monitoring of surface water are to be undertaken after heavy rainfall • Inspections of collection sump and dome shelter from the processing plant hardstand to ensure capture of spilt materials and to prevent water ingress • HDPE tailings pipelines contained in earthen sumps with sufficient capacity to contain leaks and spills • Slurry pipelines located within open bunded trenches with sufficient capacity to ensure any discharges are captured and are not released to the environment • Pipelines will incorporate isolation valves at appropriate intervals and daily visual inspections will be undertaken • Tailings and return water pipelines fitted with flow meters to record tailings and return water discharged (volumes) • All pipelines are to be monitored with pressure gauge alarms • Immediate cleanup of minor spillage due to accidents / breakdowns will be undertaken • Minor spillages will be reported through the incident report procedure • Spill kits will be placed at strategic locations on the premises

Emission	Sources	Potential pathways	Proposed controls
			• Employees will be trained in the use of spill kits
Seepage from storage of tailings	Discharge of tailings into the TSF	Seepage through embankment walls and base resulting in a change in the groundwater chemistry Localised surface expression of groundwater causing detrimental effects on native vegetation	• TSF Operation Manual will be used for the direction on the appropriate operation and monitoring, including daily inspections • Daily inspections will include; – pumps, valves – tailing lines – water return lines – discharge points and beaching performance – general integrity of embankment and perimeter containment embankment – seepage downstream of main embankment – diversion drains for integrity and damage • Quarterly sampling of tailings will be undertaken as per the parameters required in Table 5 and • • Table 6 • Groundwater Operation Strategy will be implemented to monitor groundwater supply and quality in accordance with water abstraction licence GWL205470 under the *Rights in Water and Irrigation Act 1914* (RIWI Act 1914) • Monthly monitoring of SWL, pH, and TDS (in-field non-accredited non-NATA laboratory analysis) as required in Table 5 and • • Table 6 from the groundwater monitoring bores VWP09 (MB01), MB02, MB03, and MB04 around the TSF (see Figure 2) • Quarterly monitoring of water quality as per the parameters required in Table 5 and •

Emission	Sources	Potential pathways	Proposed controls
			• Table 6 from the groundwater monitoring bores • Annual auditing of TSFs will be undertaken by a suitably qualified geotechnical engineer • Operate decant pumping system to recover supernatant water
Tailings overtopping the TSF embankment		Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function Smothering of native vegetation	• Sufficient freeboard will be maintained in the TSF to capture rainfall from a 1% AEP 72-hour event • TSF Operation Manual will be used for the direction on the appropriate operation and monitoring, including daily inspections (as indicated under 'seepage from storage of tailings') • Surface water diversion drains and bunds will be maintained to divert flood water flow away from the faces of the TSF (see Figure 2) • Daily inspections to assess freeboard and supernatant pond capacity is available
Overtopping of the pond embankment	Storage of return water in the Process Water Pond	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function Detrimental effects on vegetation due to erosion and inundation	• Sufficient freeboard will be maintained which also allows storage of rainfall from a 1% AEP 72-hour event • Daily inspections of the Process Water Pond will be undertaken to monitor operations, including the freeboard, water levels, and HDPE liner integrity/damage where visible
Contaminated stormwater	Stockpiling Manganese concentrate	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function	• Stormwater drains adjacent to hardstand areas are to direct stormwater around processing infrastructure • Visual inspections of stormwater drainage around the processing plant hardstand for any damage • Drainage structures will be inspected after heavy rainfall events • Opportunistic monitoring of surface

Emission	Sources	Potential pathways	Proposed controls
			waters will be undertaken following heavy rainfall events

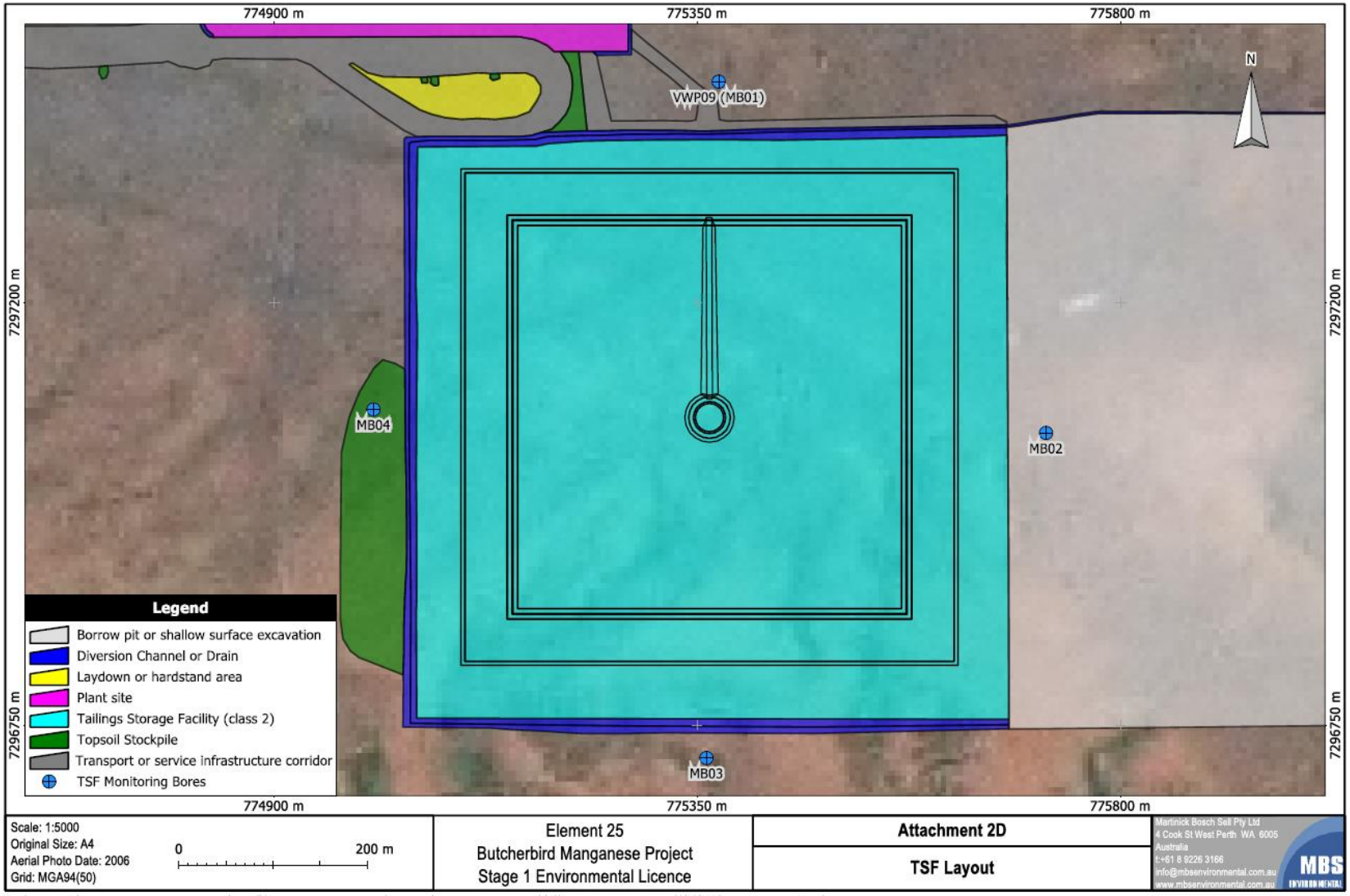


Figure 2: TSF layout

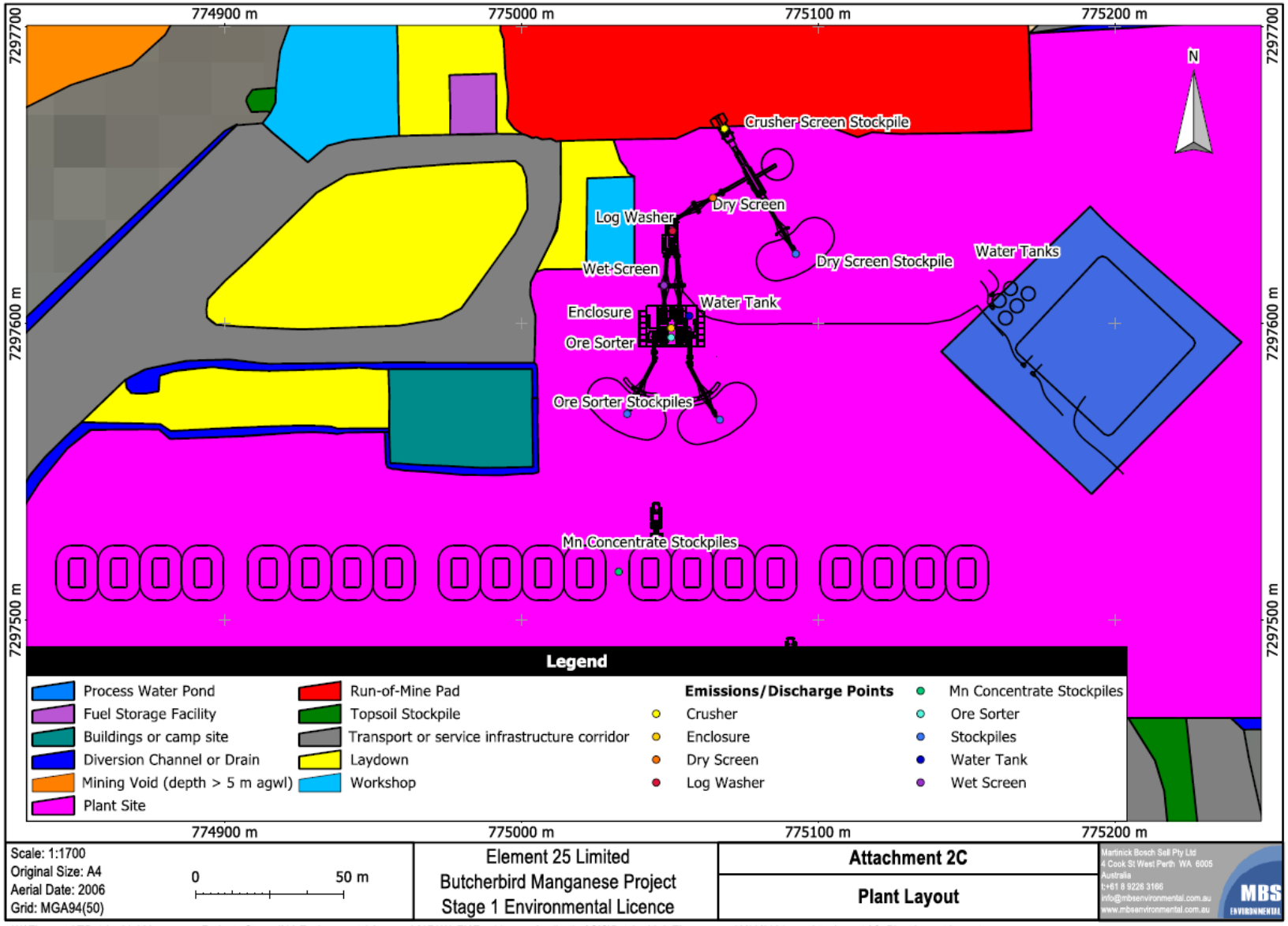


Figure 3: Plant layout

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020a), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation. Occupational hygiene requirements for dust, heavy machinery and plant with air-conditioned cabins fitted with high-efficiency particulate arrestance (HEPA) filters and personal protective equipment (PPE) will be regulated by Worksafe under *Occupational Safety and Health Act 1984* (OSH Act).

Table 3 and Figure 4 and Figure 5 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020b)).

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

Human receptors	**Distance from prescribed activity**
Vehicle movement on the Great Northern Highway.	Highway passes through the Premises. Project/infrastructure footprint located approximately 1-1.5 km west of the highway. **This receptor has been screened out due to separation distance.**
Gas pipeline	Approximately one kilometre to the west of the TSF and processing plant. **This receptor has been screened out.**
Environmental receptors	**Distance from prescribed activity**
Premises is situated in the East Murchison Groundwater Proclamation Area under Section 26B (1) of the *RIWI Act 1914.* Groundwater at the Premises is of reasonable quality with an average concentration for Total Dissolved Solids of 1,600 mg/L. Groundwater in this area is used for livestock watering.	Groundwater levels have been monitored with the installation of monitoring bores at the TSF. Depth to groundwater was found to vary across the four monitoring bores with depths between 5.6 to 13.2 metres below ground level (mbgl). Depth to groundwater at the area of the Processing Plant and Process Water Pond is expected to be greater than 15 mbgl. Nearest stock watering bore (Yanneri Well) is located greater than 4 km away. **This receptor is screened out due to the separation distance.**
There are no permanent surface water bodies or watercourses within the Premises boundary. The mine pit, processing plant and laydown area are centered on a ridge with no upstream catchment. The TSF will be located in a broad valley that will carry overland sheet flows in heavy rainfall events. Water will be present only as shallow sheet flow during and immediately after rainfall events. Although there are no defined channels, flood modelling indicates surface water flow is expected to be in an easterly direction.	Ilgarari Creek is located over 4 km away at the closest point to the Premises (southeast from the TSF).

The closest surface water body to the Premises is the Ilgarari Creek which is located outside of the Premises boundary. Ilgarari Creek drains east past Woolbunna Pool (17 km away) to Yanneri Lake in the Little Sandy Desert (80km east of the Premises.	
Four DBCA listed Priority Flora species were identified at the Premises. 1. *Eremophila appressa* P1 2. *Eremophila rigida* P3 3. *Rhagodia* sp.Hamersley (M. Trudgen 17794) P3 4. *Goodenia nuda* P4	Only a small number of species occur within the project/infrastructure footprint with a majority being located outside of this area.
One DBCA listed Priority Fauna species occurs within the Premises. Brush tailed Mulgara (*Dasycercus blythi*) P4	Habitat for this species makes up a minor portion (1.1%) of the project/infrastructure footprint. Impacts to habitat from clearing were assessed by DMIRS as part of the Native Vegetation Clearing Permit application CPS 8991/1. **This receptor has been screened out.**

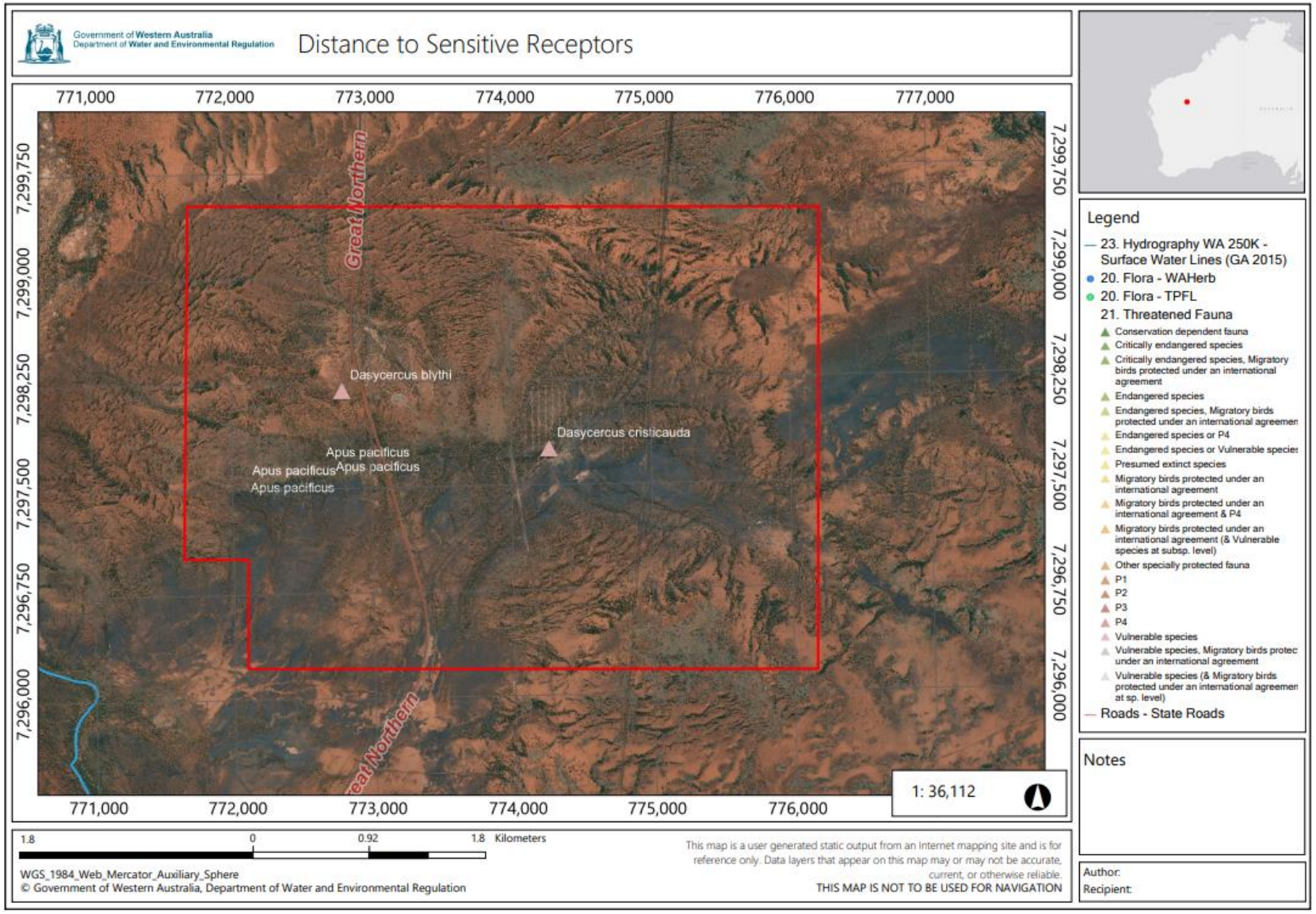


Figure 4: Distance to sensitive receptors

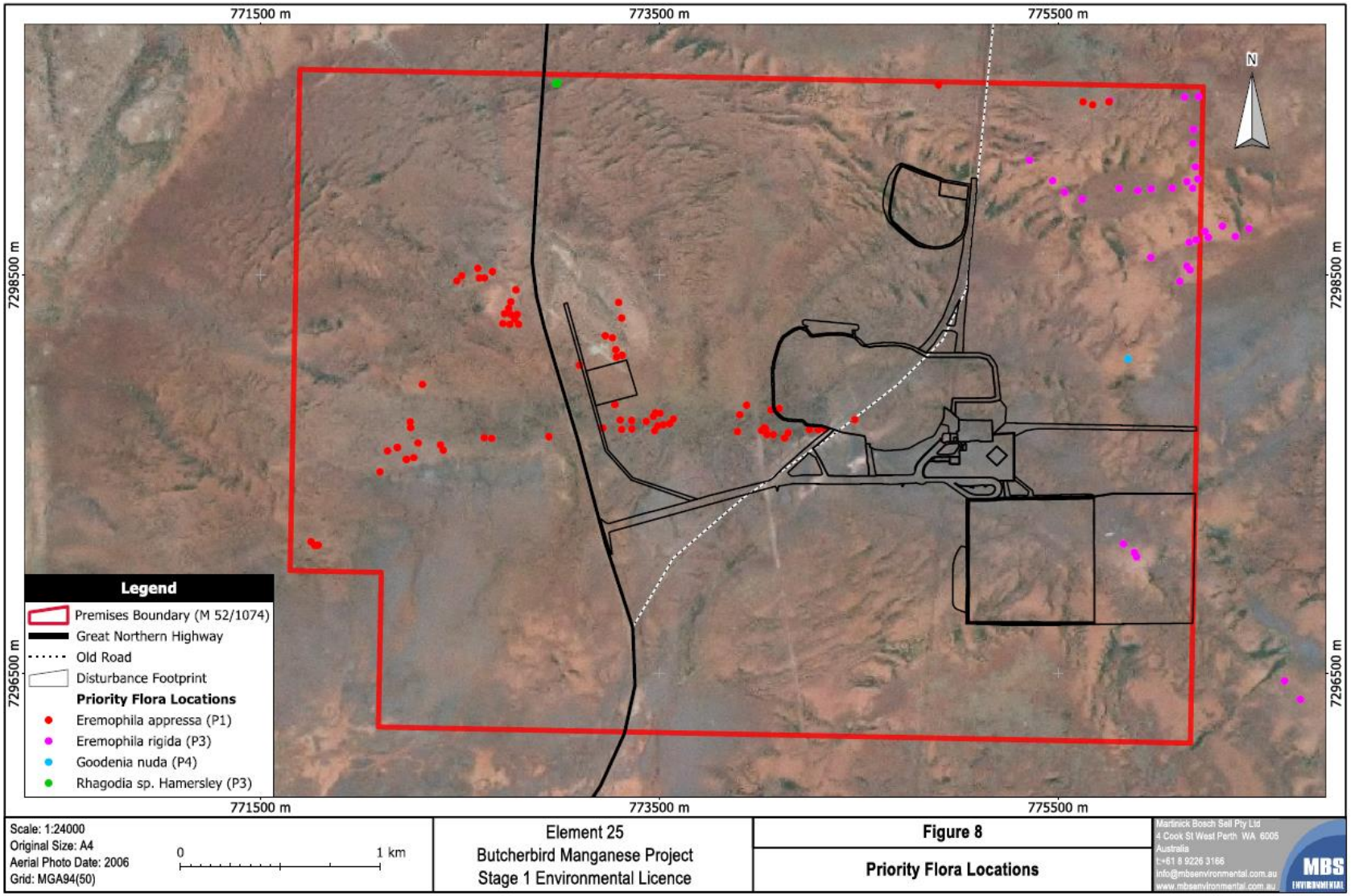


Figure 5: Priority flora locations

3.2 Risk ratings

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

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

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

Licence L9309/2021/1 that accompanies this decision report authorises emissions associated with the operation of the premises i.e., category 5 activities.

The conditions in the issued licence, as outlined in Table 4 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 4: Risk assessment of potential emissions and discharges from the premises during operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Operation								
Operation of ore processing plant	Dust generated from crushing and screening of ore and stockpiles	Air/windborne pathway Smothering of vegetation causing impacts to vegetation health Phytotoxicity effects from excess expose to Manganese	Native vegetation	Refer to Section 3.1	C = Minor L = Unlikely **Low Risk**	Y	Condition 1	N/A
	Discharge of contaminants to land (e.g., hydrocarbon spillage from filling)	Seepage/ spillage potentially causing ecosystem disturbance/ soil contamination	Soils Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Minor L = Unlikely **Low Risk**	Y	Condition 1	In addition to the infrastructure and operation requirements, provisions of the Environmental Protection (*Unauthorised discharges*) *Regulations 2004* apply for certain discharges to the environment, such as hydrocarbons.
Operation of wet processing plant and pipelines	Accidental discharge of product and tailings to land	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function Smothering of vegetation with tailings slurry	Soils Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Conditions 1, 3, 4, 5, 9 and 10	N/A
Discharge of tailings into the TSF	Seepage from storage of tailings	Seepage through embankment walls and base resulting in a change in the groundwater chemistry and water level Localised surface expression of groundwater causing detrimental effects on native vegetation	Soils Native vegetation Groundwater	Refer to Section 3.3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1 2, 3, 4, 5, 9 and 10	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	Tailings overtopping the TSF embankment	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function Smothering of native vegetation	Soils Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1, 3, 4, 5, 9 and 10	Due to the TSF and borrow pit occurring within a broad valley that carries overland sheet flows in heavy rainfall additional control measure of undertaking monthly monitoring of the water balance for the TSF and additional parameters are required
Storage of return water in the Process Water Pond	Overtopping of the pond embankment	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function Detrimental effects on vegetation due to erosion and inundation	Soils Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1, 3, 4, 5, 9 and 10	Due to sheet flows in heavy rainfall additional control measure of undertaking monthly monitoring of the water balance for the TSF and additional parameters are required
Stockpiling Manganese concentrate	Contaminated stormwater	Direct discharge Increased concentration of certain elements (including manganese) in soils causing disruption of normal ecosystem function	Soils Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1, 4, 5, 9 and 10	N/A

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

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

3.3 Detailed risk assessment – seepage from the TSF

3.3.1 General characterisation

Deposition of tailings material into the TSF can result in seepage impacting the groundwater, which is considered suitable for stock watering purposes. Mounding outside of the containment structure footprint resulting in surface expression causing impacts to a Priority 3 flora species and native vegetation may also occur.

Seepage analyses modelling was undertaken in 2020 (Resource Engineering Consultants Pty Ltd (REC) 2020) to determine the estimated volume of seepage through the embankment walls. The analysis determined a volume of 0.7 m^3/day at the starter embankment and 3.6 m^3/day for the Stage 3 embankment. These results were considered conservative upper bound estimates as the model considered the most critical section. A localised groundwater mound can likely be anticipated beneath the TSF during its operating life.

Leachate testing in accordance with the Australian Standard Leaching Procedure (ASLP) was undertaken on the scrubbed ore tailings in 2019 and 2020. The Applicant determined the more accurate LEAF test work in accordance with USEPA Methods 1313 and 1314 was unnecessary for Stage 1 as the tailings' characteristics were sufficiently understood. A summary of the results undertaken in accordance with ASLP is presented below:

- No risk of producing acid drainage due to highly weathered and oxic nature of the manganese deposit (maximum mine depth is 17 metres below ground level for stage 1);
- Geochemically enriched in several elements, including manganese and tellurium, which indicates the geological nature of the deposit. Thallium, tungsten, selenium and silver were other key enriched elements; however, these elements are expected to be strongly bound to hydrous iron and manganese oxide surfaces and present low potential for leaching and uptake by vegetation;
- Very low concentrations of uranium and thorium naturally occurring radioactive materials elements;
- Geochemically benign with very low water-soluble concentrations predicted for environmentally significant metals and metalloids;
- Slightly to moderately alkaline and expected to be non-saline if non-saline process water remains unchanged. Groundwater sampling indicated marginal to brackish with an average Total Dissolved Solids (TDS) of 2,300 mg/L; and
- Found suitable for rehabilitation purposes.

The results from the test work demonstrated that the potential for significant release of metals, metalloids and salts from the tailings is low and the use of the LEAF testing method is unlikely to change the outcomes.

Further laboratory test work was undertaken in 2021 during commissioning of the tailings' characteristics, which were similar or below the 2019 and 2020 results. The sampling data from the 2021 test work is presented in Table 8.

3.3.2 Potential adverse impact from the emission

Seepage from the TSF may result in localised groundwater mounding adjacent to the TSF. This mounding could result in surface expression causing an increase in salts in the soil and water logging causing impacts to native vegetation and a small group of priority 3 flora. No threatened flora exists on the Premises.

The seepage is expected to be low in salinity as a result of the use of low saline water for processing (average 2,300 mg/L), contain very low/insoluble concentrations for environmentally significant metals and metalloids and moderately alkaline. Groundwater at the TSF is similar

with low salinity levels (2,760 mg/L, 2019) and circum-neutral to slightly alkaline.

Relevant water quality criteria used for assessment of sampling from bores are the Australian and New Zealand Guidelines (ANZECC) for Fresh and Marine Water Quality, *Livestock drinking water quality* (ANZECC 2000) and are presented in Table 5 and Table 6.

Table 5: Ambient groundwater quality and water level monitoring

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method	
						Sampling	Analysis
Seepage from TSF	Groundwater monitoring bores (VWP09 (MB01), MB02, MB03, and MB04)	Standing water level (SWL)	Monthly (in field) Quarterly (NATA accredited laboratory)	Spot sample	Metres below ground level (mbgl)	AS/NZS 5667.1 AS/NZS 5667.11	In field non-NATA accredited analysis permitted
		pH			pH units		
		Total dissolved solids (TDS)			mg/L		
		Aluminium Arsenic Antimony Barium Boron Cadmium Chromium Cobalt Copper Iron Lead Manganese Mercury Molybdenum Nickel Selenium Tin Vanadium Zinc	Quarterly (NATA accredited laboratory)				By a NATA accredited laboratory

Table 6: Emissions water quality monitoring

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method	
						Sampling	Analysis
Tailings to TSF	Supernatant pond	pH	Quarterly	Spot sample	pH units		In field non-NATA accredited analysis permitted
		Aluminium Arsenic Antimony Barium Boron Cadmium Chromium Cobalt Copper Iron Lead Manganese Mercury Molybdenum Nickel Selenium Tin Vanadium Zinc			mg/L		By a NATA accredited laboratory
		Total dissolved solids					

Sampling of groundwater bores at the Premises and nearby pastoral leases in May 2019 showed the water quality was marginal to brackish in salinity (2,760 mg/L at the TSF) with low level dissolved metals and major ions. The groundwater is suitable for livestock drinking in accordance with the ANZECC water quality guidelines (ANZECC 2000). The groundwater pH was found to be generally neutral to slightly alkaline with a range of 6.3 to 8.45. Results from sampling of the two groundwater bores located at the Premises (BBGW00013 and BBRC00215) are shown in Table 8 and these bores location are shown in Figure 6 below.

Sampling of the newly installed groundwater bores around the TSF was undertaken during the months of March and July 2021 pre-commissioning and during time limited operations with the results presented in Table 8. The data indicates similar results to that of the sampling of the pastoral bores in 2019 and 2020 indicating no seepage from the TSF during this time period. The Applicant has noted that the frequency in monitoring during 2021 was undertaken quarterly; however, the requirements under the works approval (W6455/2020/1) was to be monthly. In addition, the element Molybdenum was not included in the testing during April and July 2021 from the monitoring bores as well as for the TSF supernatant during July 2021 due to human error. Sampling of this element will be undertaken from here on in. Under this licence, monitoring at the groundwater bores for SWL, pH, and TDS will be monthly as in-field non-NATA accredited sampling. Monitoring for all water quality parameters as indicated in Table 5 and

Table 6 will be undertaken quarterly and analysed by a NATA accredited laboratory.

Seepage from the TSF may also alter the quality of the groundwater in this area which is considered of reasonable quality. Depth to groundwater at the centre of the mining lease is generally more than 20 metres with depths at the TSF expected to be greater than 10 metres when compared to nearby bore depths.

The newly installed groundwater bores measured downstream groundwater levels up to July 2021 indicates groundwater depth below ground level (bgl) to range from 5.6 mbgl at MB02 to 12.11 mbgl at MB04 (Table 7). Groundwater level was recorded from March to July 2021 that indicated a slight increase ranging from 0.59 Reduced Level metre (RL m) at VWP09 (MB01) to 3.74 RL m at MB04.

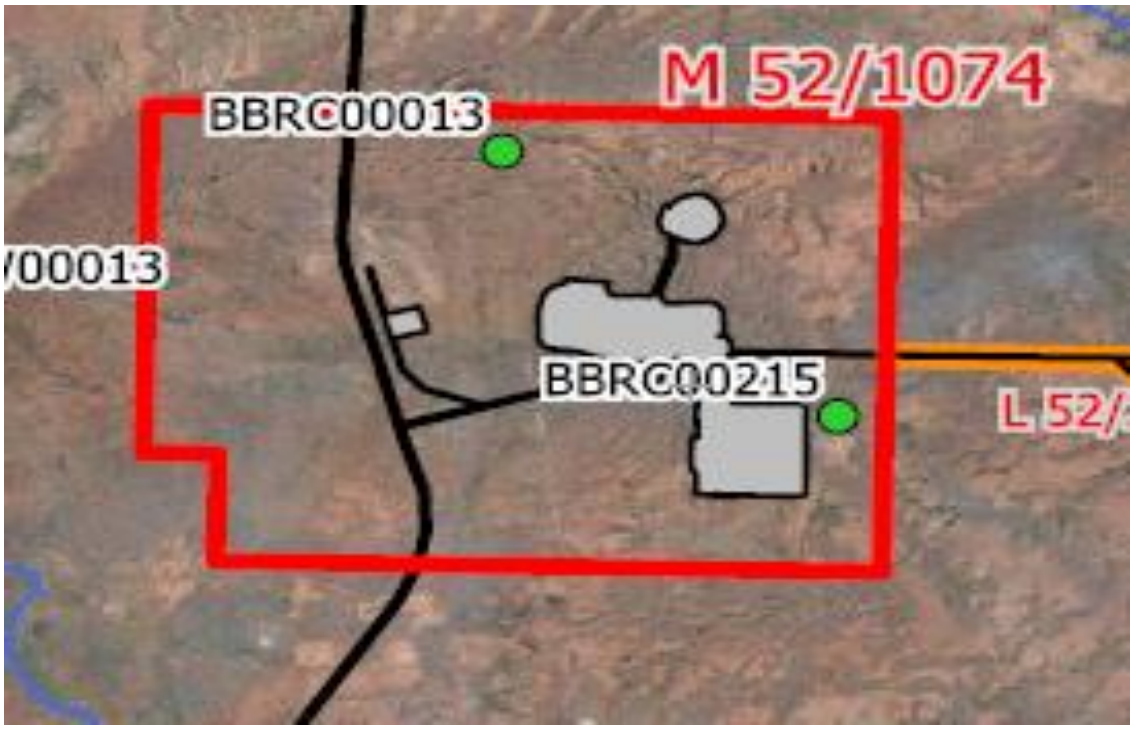
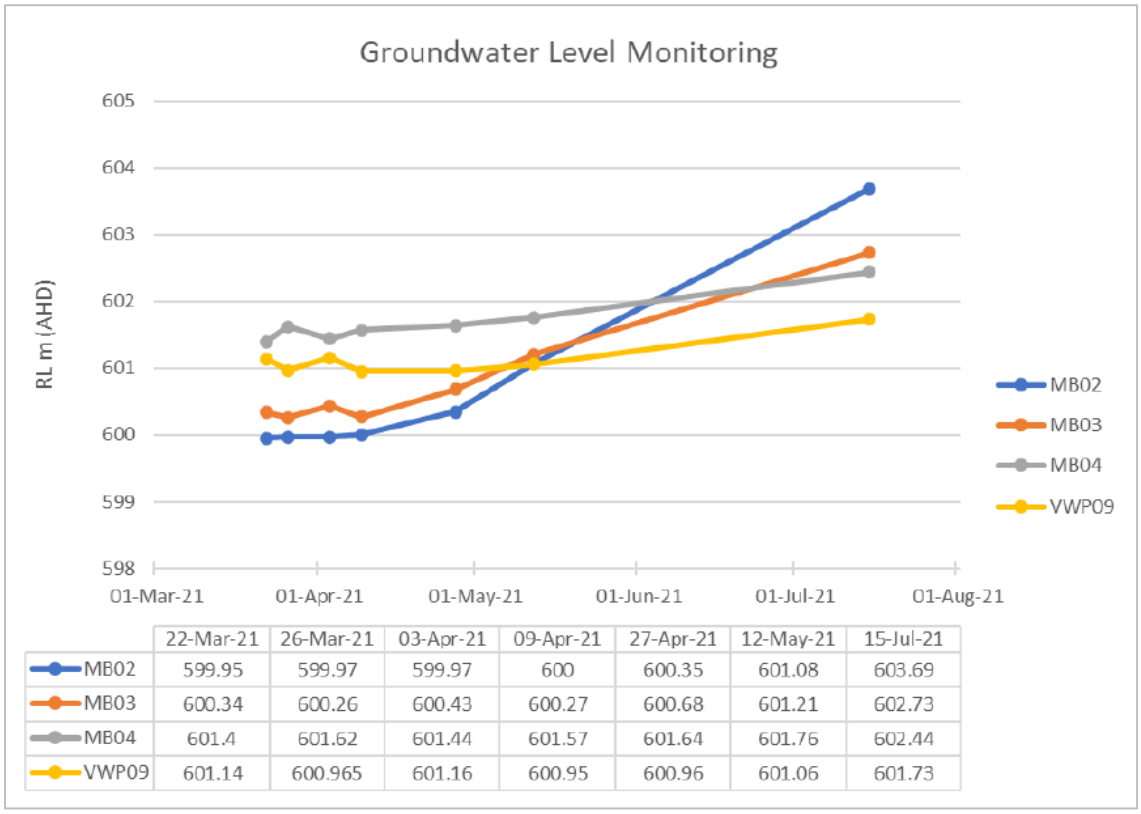


Figure 6: Location of groundwater bores BBGW00013 and BBRC00215

Table 7: Measured downstream groundwater levels of the groundwater bores

Groundwater bore ID	Height of casing (m)	Measured groundwater depth to top of casing (m)	Measured groundwater depth below ground level (m)	Approximate RL of groundwater (m)
VWP09 (MB01)	0.74	11.48	10.74	601.73
MB02	0.90	6.50	5.6	603.69
MB03	0.82	9.90	9.08	602.73
MB04	0.94	13.05	12.11	602.44



	22-Mar-21	26-Mar-21	03-Apr-21	09-Apr-21	27-Apr-21	12-May-21	15-Jul-21
MB02	599.95	599.97	599.97	600	600.35	601.08	603.69
MB03	600.34	600.26	600.43	600.27	600.68	601.21	602.73
MB04	601.4	601.62	601.44	601.57	601.64	601.76	602.44
VWP09	601.14	600.965	601.16	600.95	600.96	601.06	601.73

Figure 7: Groundwater bores standing groundwater level readings

Table 8: Groundwater level and water quality data

Compound	Unit	ANZECC DGV[3] (2000)	BBGW00013[1]	BBRC00215	VWP09 (MB01)[2]			MB02			MB03			MB04			TSF Supernatant		
			2019	2019	23/03/2021	23/03/2021[4]	20/07/2021	23/03/2021	23/03/2021	20/07/2021	23/03/2021	23/03/2021	20/07/2021	23/03/2021	23/03/2021	20/07/2021	27/04/2021	27/04/2021	20/07/2021
pH value	pH unit		8.45	8.17	7.6	7.5	7.8	7.4	7.4	7.4	7	7	6.8	7.6	7.6	7.6	8.5	8.4	8.3
Electrical Conductivity @ 25°C	µS/cm		3,290	4,540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids @ 180°C	mg/L		2,060	2,760	2600	2600	2500	650	640	1600	640	670	710	470	540	590	2800	2800	3000
Chloride		NA[3]	656	1,010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium		NA	92	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		NA	75	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium		NA	418	568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		NA	53	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum		5	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Antimony		no DGV	<0.001	0.006	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Arsenic		0.5	0.003	0.007	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001
Boron		5	2.18	2.69	0.32	0.33	0.38	0.38	0.4	0.46	0.21	0.2	0.22	0.32	0.3	0.3	1.6	1.5	1.5
Barium		no DGV	0.08	0.048	0.053	0.052	0.071	0.01	0.01	0.029	0.081	0.079	0.12	0.004	0.003	0.002	0.001	0.001	0.001
Beryllium		NA	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		0.001	<0.0001	<0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Cobalt		1	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Chromium		1	0.003	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.004	0.007
Copper		0.5	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Manganese		0.001-0.6	0.001	0.871	0.12	0.11	0.15	0.008	0.008	0.018	0.021	0.01	0.014	0.01	0.011	0.005	0.005	0.005	0.005
Nickel		1	0.001	0.005	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.005
Lead		0.1	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Selenium		0.01	<0.01	<0.01	0.008	0.008	0.01	0.003	0.003	0.01	0.002	0.002	0.002	0.003	0.003	0.003	0.007	0.006	0.008
Vanadium		0.001	0.01	<0.01	0.013	0.013	0.019	0.001	0.001	0.005	0.001	0.001	0.001	0.023	0.024	0.026	0.006	0.004	0.001
Zinc		20	<0.005	<0.005	0.01	0.01	0.003	0.005	0.005	0.002	0.014	0.013	0.008	0.004	0.004	0.003	0.001	0.017	0.003
Silver		NA	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin		no DGV	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Iron		no DGV	<0.05	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Mercury		0.002	<0.0001	<0.0001	0.00005	0.00005	NT	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Molybdenum		0.15	NT[3]	NT	0.002	0.002	NT	0.001	0.001	NT	0.001	0.001	NT	0.001	0.001	NT	NT	NT	NT
Nitrite + Nitrate as N (NO_x)		NA	26.8	19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen as N		NA	5.3	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen as N (TKN + NO_x)		NA	32.1	24.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note[1]: Baseline groundwater quality data collected during 2019 at pastoral bores, BBGW0013 and BBRC00215.

Note[2]: Groundwater quality data collected prior to the commissioning phase in 2021 at newly installed bores, VWP09 (MB01), MB02, MB03, and MB04 and from the TSF supernatant pond.

Note[3]: NA – not applicable, NT – not tested during monitoring, DGV – default guideline value (ANZECC 2000).

Note[4]: Duplicate sampling was undertaken.

3.3.3 Applicant controls

The controls to reduce and/or prevent seepage at the TSF have been constructed and in operation, which are set out in Table 9 below.

Table 9: Applicant's controls for seepage at the TSF

Site infrastructure	Description	Operation details	Location
Controls for seepage			
TSF	Low permeable clay liner	A low permeability 300 mm thick clay material liner was constructed for the starter embankment of the TSF. Liner was compacted to achieve a minimum 95% Standard Maximum Dry Density (AS 1289.5.1.1). The compacted clay layer provided a maximum hydraulic conductivity of $5x10^{-8}$ m/s.	Figure 2
	Decant system	Central decant rock ring system removes supernatant water and returns the water directly to the Process water Pond. The water recovery system has a minimum capacity of not less than 96 m^3/hr.	
	Tailings discharge	Spigotting sequence has been formulated so the supernatant water pond is always maintained around the decant rock ring structure to increase water recovery and keep water away from the embankment walls. Sub-areal deposition of tailings in thin lifts (300 mm) promotes. air-drying. Perimeter cut-off trench restricts lateral seepage.	

3.3.4 Consequence

Seepage resulting in groundwater impacts

If seepage is able to migrate to groundwater at the Premises, then the impacts may result in low level onsite impacts due to seepage water quality expected to be of similar quality to the groundwater at the Premises which is suitable for stockwatering. Therefore, the Delegated Officer considers the consequence to be **Minor**.

Seepage causing groundwater mounding resulting in surface impacts

If seepage causes mounding beneath the TSF which results in surface water expression outside of the TSF footprint, then the impacts may result in mid-level onsite impacts from water logging of Priority 3 flora species and native vegetation. Therefore, the Delegated Officer considers the consequence to be **Moderate**.

3.3.5 Likelihood

The site-specific permeability behaviours and confirmation of pathways at the new TSF location are assumed to be represented by data obtained from tests undertaken at the adjacent previous proposed TSF location. Therefore, in the absence of site-specific permeability behaviours, the Delegated Officer considers the likelihood of seepage to groundwater and groundwater mounding causing surface expression as **possible.**

3.3.6 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix detailed in the *Guidance Statement: Risk Assessments* (DWER 2020b) and determined that the overall rating for the risks from seepage at the TSF as **Medium**.

3.3.7 Regulatory Controls

Operational requirements

Maintenance and operation requirements have been included for the Processing Plant, TSF, Process Water Pond, and tailings discharge and return pipelines.

Monitoring requirements

The licence requires the following monitoring requirements:

- Monthly monitoring in field for SWL, TDS, and pH at the four groundwater monitoring bores around the TSF;
- Quarterly monitoring of groundwater quality at the four groundwater monitoring bores around the TSF;
- Quarterly monitoring of wet tailings fines during operations;
- The volume of tailings discharged to the TSF; and
- The volume of water recovered from the TSF.

Justification:

Monitoring of ambient groundwater levels and quality is required to determine if the standing water level is changing or water quality is deteriorating indicating seepage from the TSF.

Monitoring of the waste fines is required to indicate potential changes in quality that may result in downstream impacts.

Monitoring of tailings discharged and volume of water returned for determining the water balance and for comparison with seepage modelling provided in the application.

During groundwater level and quality monitoring, if any changes are detected, the Applicant may be required to install seepage recovery bores and develop trigger values for the water quality parameters.

Inspections

The licence requires the following inspection procedures:

- Tailing lines, pumps, and valves;
- Tailings waste delivery pipelines;
- Tailings decant water return pipelines;
- Tailings discharge outlets and beaching performance;
- General integrity of the embankment and perimeter containment embankment;
- Seepage downstream of the main embankment; and
- Freeboard at the TSF and Process Water Pond.

Justification:

Daily visual inspections of containment infrastructure and pipelines are required during operations and the applicant is required to keep records of visual monitoring undertaken.

Reporting

The licence requires the following reports be submitted:

- Annual Environmental and Annual Audit Compliance reports providing ore processed, product produced, tailings waste deposited, tailings return water covered, tailings waste fines density (solid vs water content), water balance for the TSF including calculated seepage, summary of monitoring results obtained and environmental performance.

Justification:

Reporting requirements are necessary for the administration of the licence and the ongoing acceptability of the operations.

4. Consultation

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

Table 10: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 22 November 2021	None received	N/A
Local Government Authority advised of proposal on 6 December 2021	None received	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of 6 December 2021	None received	N/A
Applicant was provided with draft documents on 14 March 2022	Applicant has provided comments on 25 March 2022 The summarised applicant comments are provided in Appendix 1.	DWER response to the applicant comments are provided in Appendix 1.

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a licence will be granted for 20 years, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements. It is the responsibility of the Licence Holder to ensure other approvals are in place.

References

1. Australian and New Zealand Environment and Conservation Council (ANZECC) 2000, *Australian and New Zealand guidelines for fresh and marine water quality.* Volume 3, Primary industries / ANZECC, Agriculture and Resource Management Council of Australia and New Zealand.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.

4. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
5. Resource Engineering Consultants Pty Ltd (REC) 2020, *Tailings Storage Facility Design Report,* Butcherbird Manganese Project Western Australia, Element 25 Ltd.

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

<table>
<tr><th>Condition / Section</th><th>Summary of applicant's comment</th><th>Department's response</th></tr>
<tr><td colspan="3">DRAFT Licence</td></tr>
<tr><td>Cover page
Condition 1
Table 1, item 1</td><td>Element 25 are requesting the following change to the Category 5 - Production/Design Capacity Table (Draft Licence cover page) based on the information previously supplied in Part 4 of the Licence application form

Whilst rates of 1.2Mtpa(dry) and 1.3Mtpa(wet) were provided in the license application, these are estimated throughputs, the intention is that the maximum throughput rates of 1.6 million tonnes per annum (dry) (Mtpa) 1.75 (wet) (also provided in the application) are the specified figures for the Assessed production / design capacity limits and are to replace the estimated figures detailed in the Draft Licence table (Pg1).

<table>
<tr><th>Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987)</th><th>Assessed production / design capacity</th></tr>
<tr><td>Category 5: Processing or beneficiation of metallic or non-metallic ore</td><td><s>1.2 million tonnes per annum (Mtpa) (dry)
1.3 Mtpa (wet)</s>

1.6 million tonnes per annum (dry) (Mtpa) 1.75 (wet)</td></tr>
</table>
</td><td>Throughput amounts have been amended.</td></tr>
<tr><td>Table 6
Definitions</td><td>Element 25 request the annual period to be changed as per table below, this will align with other Element 25 annual reporting commitments.

<table>
<tr><th>Term</th><th>Definition</th></tr>
<tr><td>annual period</td><td><s>a 12-month period commencing from 1 July until 30 June of the immediately following year.</s>

A 12 month period commencing from 1 December until 30 November of the immediately following year.</td></tr>
</table>
</td><td>Annual period dates have been updated.</td></tr>
<tr><td colspan="3">DRAFT Decision Report</td></tr>
<tr><td>Section 3.1.1
Table 2
"Please provide additional controls for seepage mitigation, monitoring assists in identifying seepage, but does not minimise or prevent seepage] recovery etc. if required?"</td><td>The TSF has been designed in accordance with Code of Practice for Tailings Storage Facilities in Western Australia (DMP 2013) and ANCOLD Guidelines on Tailings Dam Planning, Design, Construction, Operation and Closure (ANCOLD 2019). As part of the TSF construction several design measures have been implemented (Table 1) in order to minimise seepage. in addition to this, several operational controls (Table 2) also assist in minimising seepage and also allow prompt identification of any potential seepage issues. The current design measures and routine monitoring requirements are considered sufficient controls for seepage mitigation. An underdrainage system is not proposed due to the settling tailings characteristics and modelled effectiveness of a decant rock ring for water recovery as outlined in the table below.

<table>
<tr><th colspan="3">Table 1: Design Measures</th></tr>
<tr><td>1</td><td>Low Permeability Floor</td><td>Initial geotechnical investigations conducted by REC indicated the in-situ TSF floor material is of low permeability. A 300 mm compacted clay liner on the base of the TSF enables reduction of seepage through the floor of the TSF which is the primary seepage mitigation measure in addition to the in-situ self-sealing low permeability clay-silt liner at the base of the TSF formed by tails discharge.</td></tr>
<tr><td>2</td><td>Cut-off Trench</td><td>A cut-off trench has been constructed beneath the TSF embankment. This trench acts to key the embankment into the natural ground and restrict lateral seepage beneath the embankment wall.</td></tr>
<tr><td>3</td><td>Diversion Drains</td><td>Diversion drains are proposed on the downstream toe of each stage raise. The drains act to manage surface water runoff and prevent ponding on the downstream toe of the embankment.</td></tr>
<tr><td>4</td><td>Decant Rock Ring</td><td>The TSF is designed such that tailings will be discharged from the embankment and beaching towards the rock ring installed in the centre of the facility. This will facilitate the decant pond being located substantially away from the embankment, reducing the potential for phreatic conditions (pore pressures) from developing beneath and within the main embankment.</td></tr>
<tr><td>5</td><td>Rate of Rise</td><td>The TSF benefits from a low rate of rise (RoR) of <1.5 m/yr. which allows for deposition of tailings in thin lifts. Sub-aerial deposition in thin lifts promotes consolidation through air-drying resulting in reduced permeability of the deposited tailings and thus reduced seepage potential.</td></tr>
</table>
</td><td>Applicant has provided further clarification on the design measures required during the TSF construction phase and monitoring measures to assist in operational controls.

Additional proposed controls have been included under Seepage from storage of tailings:

• diversion drains for integrity and damage
• operate decant pumping system to recover supernatant water</td></tr>
</table>

Condition / Section	Summary of applicant's comment	Department's response
	Table 2: Monitoring Measures 1 — Sub-aerial Deposition — Sub-aerial deposition in thin lifts serve to increase evaporative losses (reducing water available for seepage) and decrease permeability of the deposited tailings. 2 — Decant Pond Management — To mitigate seepage rate, the decant pond is managed to keep its size to a minimum (under normal operating conditions). Maintaining a small decant pond away from the embankment reduces (if not eliminates) the potential for embankment seepage, a small decant pond both in depth and areal extent also minimises hydraulic head driven seepage. The decant pond is monitored through daily inspections and if required the rate of decant recovery is adjusted to assist with maintaining its size. Furthermore, in the event of unusually large precipitation events decant return water is used as a priority in preference to groundwater derived from the borefield. 3 — Monitoring — Vibrating Wire Piezometers (VWP) within the TSF enable monitoring of the phreatic surface and pore pressures within the deposited tailings. Groundwater Monitoring Bores installed downstream of the TSF enable seepage beneath the perimeter embankment to be identified and actioned if required.	
Section 3.1.1 Table 2 *"Please provide additional controls specific to manganese stockpiles"*	Project design has considered local topography and the locations of drainage lines and flood levels to minimise disturbance of these. Given the reasonably remote location of the project and the 3 km separation from the nearest sensitive receptor (Ilgarari creek), current management and monitoring measures implemented are considered appropriate to achieve a low risk of significant impact to local land and surface water quality. Management and monitoring measures implemented include: • Stormwater drains are constructed adjacent to the raised hard stand areas to direct stormwater around processing infrastructure. • Drainage structures are inspected after heavy rainfall events. • Opportunistic monitoring of surface waters is undertaken following heavy rainfall events. Furthermore, in 2021 Element 25 commissioned Jenike & Johanson Pty Ltd (J&J) to perform flow characterisation testing to inform material handling of its Manganese lump product. The product was found to be geochemically benign, with very low/insoluble water-soluble concentrations predicted for environmentally significant metals and metalloids in seepage and/or runoff from above-ground waste landforms/stockpiles.	Additional proposed controls have been included under *Contaminated stormwater*: • Drainage structures will be inspected after heavy rainfall events • Opportunistic monitoring of surface waters will be undertaken following heavy rainfall events
Section 3.3.2 Table 8 *"Applicant to clarify the highlighted dates in the above table. Were two samples taken on the same day or should this be another sample undertaken in a different month?"*	Element 25 can confirm that the dates provided in Table 8 are correct and that duplicate sampling was conducted for bores VWP09(MB01), MB02, MB03 and MB04 on 23/03/2021 and TSF Supernatant on 27/04/2021. Please include a Note4: Duplicate Sample, to the duplicate dates within the table.	Noted. Updated table as per applicant's response.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	☐				
Licence	☒	Relevant works approval number:	W6455/2020/1	None	☐
		Has the works approval been complied with?		Yes ☒ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☒ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☒ No ☐	
		Date Report received: Compliance Report 9/4/21 & CCIR 14/4/21			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☐	Current licence number:			
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		3 September 2021			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Element 25 Limited			
Premises name		Butcherbird Manganese Project			
Premises location		M52/1074, Meekatharra			
Local Government Authority		Shire of Meekatharra			
Application documents					
HPCM file reference number:		DER2021/000518			
Key application documents (additional to application form):		- Butcherbird Manganese Project – Stage 1, *Environmental Licence Application, Attachment 3B – Project Activities*, August 2021. - Butcherbird Manganese Project – Stage 1, *Environmental Licence Application, Attachment 6A – Emissions and Discharges,* August 2021. - Butcherbird Manganese Project – Stage 1, *Environmental Licence Application Attachment 7 – Sitting*, August 2021.			
Scope of application/assessment					

Summary of proposed activities or changes to existing operations.	Operation of a category 5 prescribed activity. Works Approval W6455/2020/1 was granted for the construction and commissioning of the following infrastructure: - Processing Plant including crushing, log-washing, screening and ore sorting. - Process Water Pond. - Tailings discharge pipeline and return water pipelines. - Tailings Storage Facility. These works have now been completed and the infrastructure commissioned. The applicant is now seeking approval to operate the infrastructure.

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore.	1,600,000 tonnes per annum	

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ Expiry: 28/06/2041 Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: 8991/2

Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☒ No ☐	Application reference No: Licence/permit No:GWL205470
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☒ No ☐	Name: East Murchison Groundwater Proclamation Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes ☒ No ☐ N/A ☐ Regional office: Mid-West Gascoyne office – Water Licensing Officer, Mick Major
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☐	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	*Dangerous Goods Safety Act 2004* *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulation 1974*
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Classification: N/A Date of classification: N/A