



Licence number L8918/2015/1

Licence holder Keysbrook Leucoxene Pty Ltd

ACN 137 091 297

Registered business address 1391 Hopeland Road
NORTH DANDALUP WA 6207

DWER file number DER2015/001866

Duration 19/11/2015 to 29/06/2023

Date of amendment 24/01/2020

Premises details Keysbrook Mineral Sands Mine
1391 Hopeland Road
NORTH DANDALUP WA 6207

Legal description -

Part of Lot 1 on Diagram 8916, Lots 101, 103, 104 & 105 on Diagram 92169, Lots 111, 112 & 113 on Diagram 94183, Lot 300 on Plan 31012, Lots 31, 32, 33 & 34 on Plan 408493, part of Lot 52 on Plan 739, Lots 56, 57, 59 & 63 on Plan 739 and Lot 6 on Diagram 52395

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production capacity
Category 6: Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore.	150,000 tonnes per annual period
Category 8: Mineral sands mining or processing: premises on which mineral sands ore is mined, screened, separated or otherwise processed.	5,250,000 tonnes per annual period

This licence is granted to the licence holder, subject to the attached conditions, as amended on 24 January 2020, by:

Tim Gentle
MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES

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

Licence history

Date	Instrument	Summary of changes
27/03/2014	W5386/2013/1	Works approval issued to MZI Resources for mine establishment.
19/11/2015	L8918/2015/1	Initial licence issued to Keysbrook Leucoxene Pty Ltd to authorise mining operations.
03/11/2016	L8918/2015/1	Amendment Notice 1 – upgrades to WCP to include additional spiral circuit.
24/01/2020	L8918/2015/1	Licence amendment to expand the premises boundary to align with the approved mining area under MS 810, and other administrative changes (this amendment).

Interpretation

In this licence:

- (a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a condition, each row in a table constitutes a separate condition;
- (d) any reference to an Australian or other standard, guideline, or code of practice means the version of the standard, guideline, or code of practice in force at the time of granting of this licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the licence;
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This licence requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this licence.

Licence conditions

The licence holder must ensure that the following conditions are complied with:

Construction works

1. The licence holder must ensure that where infrastructure listed in Table 1 is required to be constructed, it is done so in a manner that meets or exceeds the design and construction requirements specified in that table.
2. The licence holder must not depart from the requirements specified in Table 1 except:
 - (a) where such departure does not increase risks to public health, public amenity or the environment; and
 - (b) all other conditions in this licence are still satisfied.

Table 1: Works infrastructure requirements table

Infrastructure	Requirements (design and construction)
In-pit tailings storage facilities	<ul style="list-style-type: none"> Must be constructed within previous mine voids or on-mine-path; Embankment walls must be constructed with clayey sand or similar with angle of repose for the outer pond wall being minimum 1:2 (V:H); Height of embankment walls must not exceed 2.0 metres above natural

Infrastructure	Requirements (design and construction)
	ground level;
Pipelines carrying clay slimes, sand tailings and return water	<p>Must be constructed with:</p> <ul style="list-style-type: none"> Automatic cut-outs in the event of a pipe failure; OR Secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; OR Telemetry systems and pressure sensors along pipelines to allow detection of leaks and failures;

Infrastructure and equipment

3. The licence holder must ensure the infrastructure specified in Table 2 is maintained in good working order and operated in accordance with the requirements specified in that table.

Table 2: Infrastructure and equipment controls table

	Infrastructure / equipment	Operational requirements
Mining infrastructure and equipment		
1	Process plant / WCP	<ul style="list-style-type: none"> Design capacity of plant – 600 tph; Cladding must be maintained to ground level on all facades; All pumps must be enclosed;
2	Mining unit / MUP	<ul style="list-style-type: none"> None specified;
3	Pipelines carrying HMC	<ul style="list-style-type: none"> Must be equipped with telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures;
4	Process water pond(s)	<ul style="list-style-type: none"> Must be lined to achieve a permeability of at least 1×10^{-9} m/s (or equivalent); pH and EC probes must be installed on overflow point; and flow metering device must be installed on overflow point;
5	HMC stockpile pad	<ul style="list-style-type: none"> Must be constructed with compacted overburden or similar; Drainage must be designed to divert surface water runoff for collection and return to the process water pond.
Tailings infrastructure		
1	In-pit tailings storage facilities	<ul style="list-style-type: none"> Supernatant water must be collected and pumped to the process water pond(s); Water levels must be maintained at least 500 mm below the top of the wall; and Must maintain a safety bund around the perimeter of active pits being tailed, as containment redundancy;
2	Pipelines carrying tailings and return water	<ul style="list-style-type: none"> Must be equipped with telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures;
Stormwater infrastructure		
1	Diversion channels and drains	<ul style="list-style-type: none"> Must maintain a network of diversion channels and drains to divert all stormwater runoff from disturbed areas within the Premises to allow for collection and reuse in processing;
Rehabilitation		
1	Overburden/topsoil stockpiles	<ul style="list-style-type: none"> Must be stabilised to prevent dust lift-off where there is a risk of dust affecting sensitive receptors.

4. The licence holder must undertake inspections of the scope and type and at the corresponding frequency specified in Table 3.
5. Where any inspection required by condition 4 identifies that an appropriate level of environmental protection is not being maintained, the licence holder must:
 - (a) take corrective action to mitigate adverse environmental consequences as soon as practicable; and
 - (b) maintain a written log of all inspections undertaken, with each inspection signed off by the person who conducted the inspection.

Table 3: Inspection of infrastructure requirements table

Column 1	Column 2	Column 3
Scope of inspection	Type of inspection	Frequency of inspection
Pipelines carrying HMC and tailings	Visual integrity and leak assessment	Daily whilst operating; Monthly if not operating
Return water pipelines		
In-pit tailings storage facilities	Visual integrity, leak assessment and freeboard capacity	

Disposal of mine tailings

6. The licence holder must ensure that tailings are deposited in accordance with the requirements and at the location(s) specified in Table 4.

Table 4: Tailings disposal requirements table

Emission	Disposal requirements
Sand tailings from the WCP	Must be: <ul style="list-style-type: none"> deposited directly into mined pits using cyclone stackers; or blended with clay slimes and pumped as a wet slurry to mined pits;
Clay slimes from the thickener	Must be: <ul style="list-style-type: none"> thickened and blended with sand tailings and pumped as a wet slurry to mined pits; or used as dust suppressant on exposed areas within the Premises;
Picton tails	Must be blended with WCP tailings for disposal in mined pits as a wet slurry.

7. The licence holder must ensure the radioactivity of tailings deposited in accordance with condition 6, as averaged over each processing campaign at Picton, does not exceed the following:
 - (a) 244 ppm Thorium; and
 - (b) 79 ppm Uranium.

Disposal of process water

8. The licence holder must ensure that where excess mine water is required to be discharged to the environment, it is done so in accordance with the requirements specified in Table 5.

Table 5: Process water disposal requirements table

Source	Emission point ref	Description	Discharge limit
Process water pond(s)	W1 – overflow point from process water pond(s)	Water flows into Balgobin Brook South, via a lined spillway	150,000 tonnes per annual period

Monitoring (general)

9. The licence holder must ensure that:
 - (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
 - (b) all surface water sampling is conducted in accordance with AS/NZS 5667.6;
 - (c) all groundwater sampling is conducted in accordance with AS 2531 and AS/NZS 5667.11; and
 - (d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless indicated otherwise in the relevant table.
10. The licence holder must ensure that:
 - (a) weekly monitoring is undertaken at least 5 days apart;
 - (b) monthly monitoring is undertaken at least 15 days apart;
 - (c) quarterly monitoring is undertaken at least 45 days apart;
 - (d) 6-monthly monitoring is undertaken at least 4 months apart; and
 - (e) annual monitoring is undertaken at least 9 months apart.
11. The licence holder must ensure that all monitoring equipment used on the premises to comply with the conditions of this licence is calibrated in accordance with the manufacturer's specifications.

Emissions monitoring

12. The licence holder must undertake monitoring of discharges to surface water at the locations and for the parameters listed in Table 6, in the corresponding units, over the averaging period and at the frequency specified in that table.

Table 6: Mine dewatering monitoring table

Monitoring point reference	Parameter	Units	Frequency ¹
SW1 – process water pond(s) overflow point	Volumetric flow rate ²	m ³ /d	Daily when discharging ³
	pH ²	-	Weekly when discharging
	Total dissolved solids ²	mg/L	
	Total suspended solids		
	Total titratable acidity		
	Sulfate		
	Aluminium, arsenic, chromium, copper, lead, manganese, nickel, zinc, total recoverable hydrocarbons, ammonium		

Note 1: Sampling must occur on the first day of discharge, then weekly/monthly thereafter.

Note 2: In-field, non-NATA accredited analysis permitted.

Note 3: Availability ≥90% of the measurement intervals on a monthly basis.

Process monitoring

13. The licence holder must undertake monitoring of the parameters for the process listed in Table 7, in the corresponding units and the frequency specified in that table.

Table 7: Process monitoring table

Process description	Parameter	Units	Frequency
Disposal of Picton tails	Amount and location of Picton tails disposed on the Premises	Wet tonnes	Monthly

Ambient environmental monitoring

- 14.** The licence holder must undertake monitoring of ambient surface water quality at the locations and for the parameters listed in Table 8, in the corresponding units, over the averaging period and at the frequency set out in that table.

Table 8: Surface water monitoring table

Monitoring point and reference location	Parameter	Units	Averaging period	Monitoring frequency
WQ1 ² WQ2 WQ3 ³	pH ¹	-	Spot sample	Monthly, when flowing
	Electrical conductivity @ 25°C ¹	µS/cm		
	Total dissolved solids ¹	mg/L		
	Total suspended solids			
	Sulfate			

Note 1: In-field, non-NATA accredited analysis permitted.

Note 2: Upstream of the discharge location W1.

Note 3: Downstream of the discharge location W1.

- 15.** The licence holder must undertake monitoring of ambient groundwater at the locations and for the parameters listed in Table 9, in the corresponding units, over the averaging period and at the frequency set out in that table.

Table 9: Groundwater monitoring table

Monitoring point and reference location	Parameter	Units	Averaging period	Monitoring frequency
KS1 – KS26	Standing Water Level ¹	mbgl	Spot sample	Quarterly
	pH ¹	-		
	Electrical conductivity @ 25°C ¹	µS/cm		
	Total dissolved solids ¹	mg/L		6-monthly
	Total titratable acidity			
	Sulfate			
	Aluminium, arsenic, chromium, copper, lead, manganese, nickel, zinc, total recoverable hydrocarbons, ammonium			Annual
	Gross alpha activity, gross beta activity	Bq/L		

Note 1: In-field, non-NATA accredited analysis permitted.

Note 2: Must be monitored in bores where total titratable acidity exceeds 40 mg/L.

Records and reporting

- 16.** The licence holder must maintain accurate and auditable books including the following records, information, reports, and data required by this licence:
- the calculation of fees payable in respect of this licence;
 - any maintenance of infrastructure that is performed in the course of complying with condition 3 of this licence;
 - monitoring programmes undertaken in accordance with conditions 12, 13, 14 and 15 of this licence; and
 - complaints received under condition 18 of this licence.

- 17.** The books specified under condition 16 must:
- (a) be legible;
 - (b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
 - (c) be retained by the licence holder for the duration of the licence; and
 - (d) be available to be produced to an inspector or the CEO as required.
- 18.** The licence holder must record the following information in relation to complaints received by the licence holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:
- (a) the name and contact details of the complainant, (if provided);
 - (b) the time and date of the complaint;
 - (c) the complete details of the complaint and any other concerns or other issues raised; and
 - (d) the complete details and dates of any action taken by the licence holder to investigate or respond to any complaint.
- 19.** The licence holder must:
- (a) undertake an audit of their compliance with the conditions of this licence during the preceding annual period; and
 - (b) prepare and submit to the CEO, by no later than 1 March in each year, an Annual Audit Compliance Report in the approved form.

Annual environmental report

- 20.** The licence holder must submit to the CEO, no later than 1 March in each year, an annual environmental report which includes, but is not limited to:
- (a) details of the calculation of fees payable in respect of this licence;
 - (b) a summary of the amount of topsoil removed, ore processed, HMC produced, tailings returned to mine voids, and Picton tails returned to the mine for blending and disposal;
 - (c) a summary of maintenance of infrastructure performed in the course of complying with condition 3;
 - (d) monitoring reports required by conditions 12, 13, 14 and 15 for the preceding annual period;
 - (e) a summary of any complaints received and management actions taken for each complaint; and
 - (f) a summary of any environmental incidents and any action(s) taken.
- 21.** The licence holder must ensure the report required by condition 20 includes an appraisal and trend analysis of the results against any baseline data and previous monitoring results.

Definitions

In this licence, the terms in Table 10 have the meanings defined.

Table 10: Definitions

Term	Definition
Annual Audit Compliance Report (AACR)	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the Department's website).
ACN	Australian Company Number
AHD	Australian Height Datum
annual period	means a 12 month period commencing from 1 January until 31 December in the same year
AS 2531	means the Australian Standard AS 2531 <i>Waters – Determination of gross alpha and gross beta activities</i>
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 <i>Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples</i>
AS/NZS 5667.6	means the Australian Standard AS/NZS 5667.6 <i>Water Quality – Sampling – Guidance on sampling of rivers and streams</i>
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 <i>Water Quality – Sampling – Guidance on sampling of groundwaters</i>
averaging period	means the time over which a limit is measured or a monitoring result is obtained
books	has the same meaning given to that term under the EP Act
Bq/L	Bequerels per litre
CEO	means Chief Executive Officer of the Department. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 JOONDALUP DC WA 6919 info@dwer.wa.gov.au
condition	means a condition to which this licence is subject under s.62 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act
discharge	has the same meaning given to that term under the EP Act
emission	has the same meaning given to that term under the EP Act
EP Act	means the <i>Environmental Protection Act 1986</i> (WA)
EP Regulations	means the <i>Environmental Protection Regulations 1987</i> (WA)
freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point.
HMC	Heavy Mineral Concentrate
licence	refers to this document, which evidences the grant of a licence by the CEO under s.57 of the EP Act, subject to the Conditions
licence holder	refers to the occupier of the premises being the person to whom this licence has been granted, as specified at the front of this licence

NATA	National Association of Testing Authorities, Australia
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis
Picton tails	means 'trash' material (gangue) from secondary off-site processing at the Picton mineral separation plant
Premises	refers to the premises to which this licence applies, as specified at the front of this licence and as shown on the map in Schedule 1 to this licence
prescribed premises	has the same meaning given to that term under the EP Act
quarterly	means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December in the same year
6-monthly	means the two inclusive periods from 1 January to 30 June and 1 July to 31 December in the same year
spot sample	means a discrete sample representative of the time and place at which the sample is taken
WCP	Wet Concentrator Plant

END OF CONDITIONS

Schedule 1: Maps

Premises map and map of emission points

The boundary of the prescribed premises is shown in the map below (Figure 1). The locations of the emission points defined in Tables 2.2.1 and 2.3.1 are also shown below. The orange shaded areas depict the mine voids.

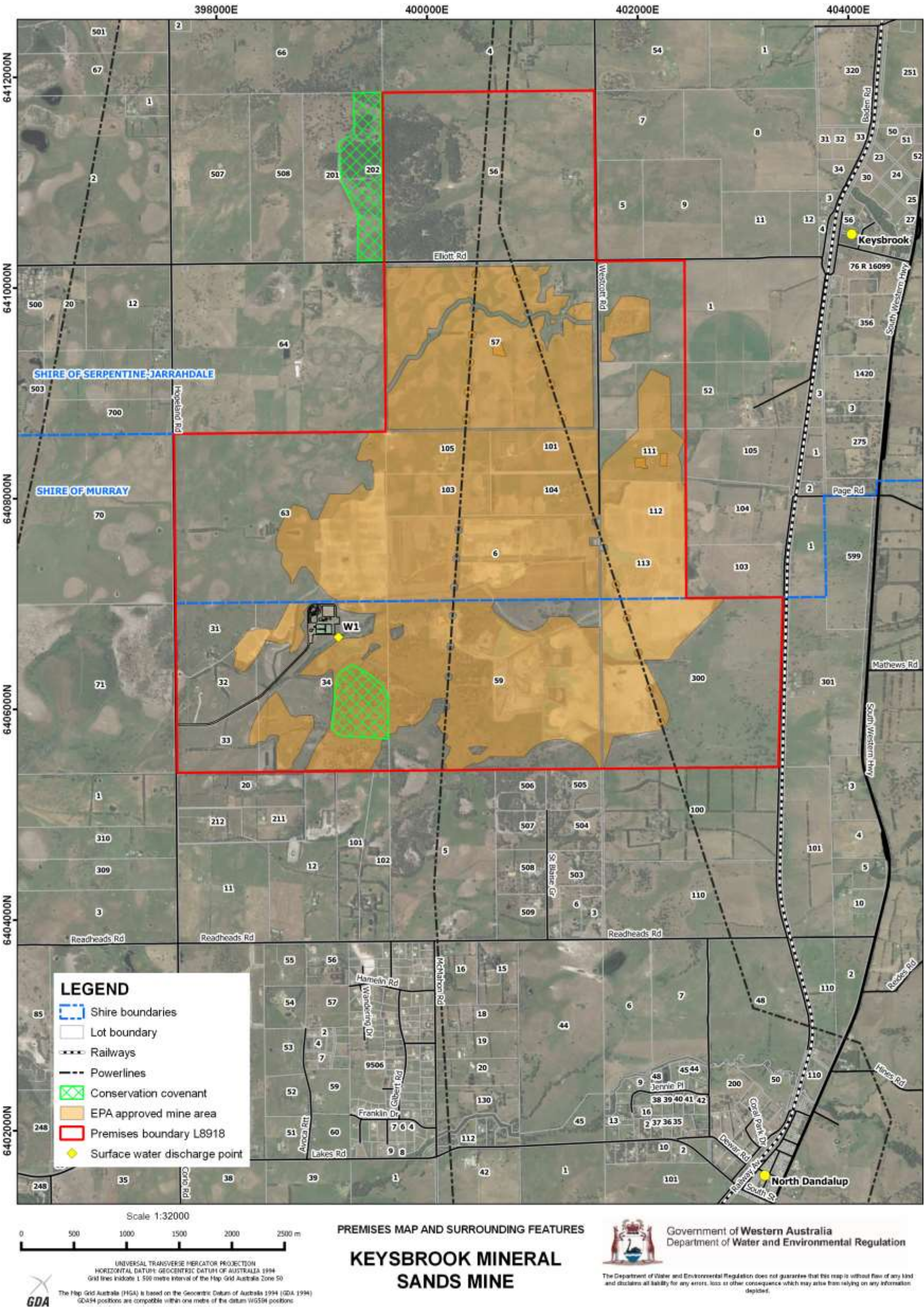


Figure 1: Map of the boundary of the prescribed premises

Schedule 1: Maps

Monitoring locations

The surface and groundwater monitoring locations are shown in the map below (Figure 2).

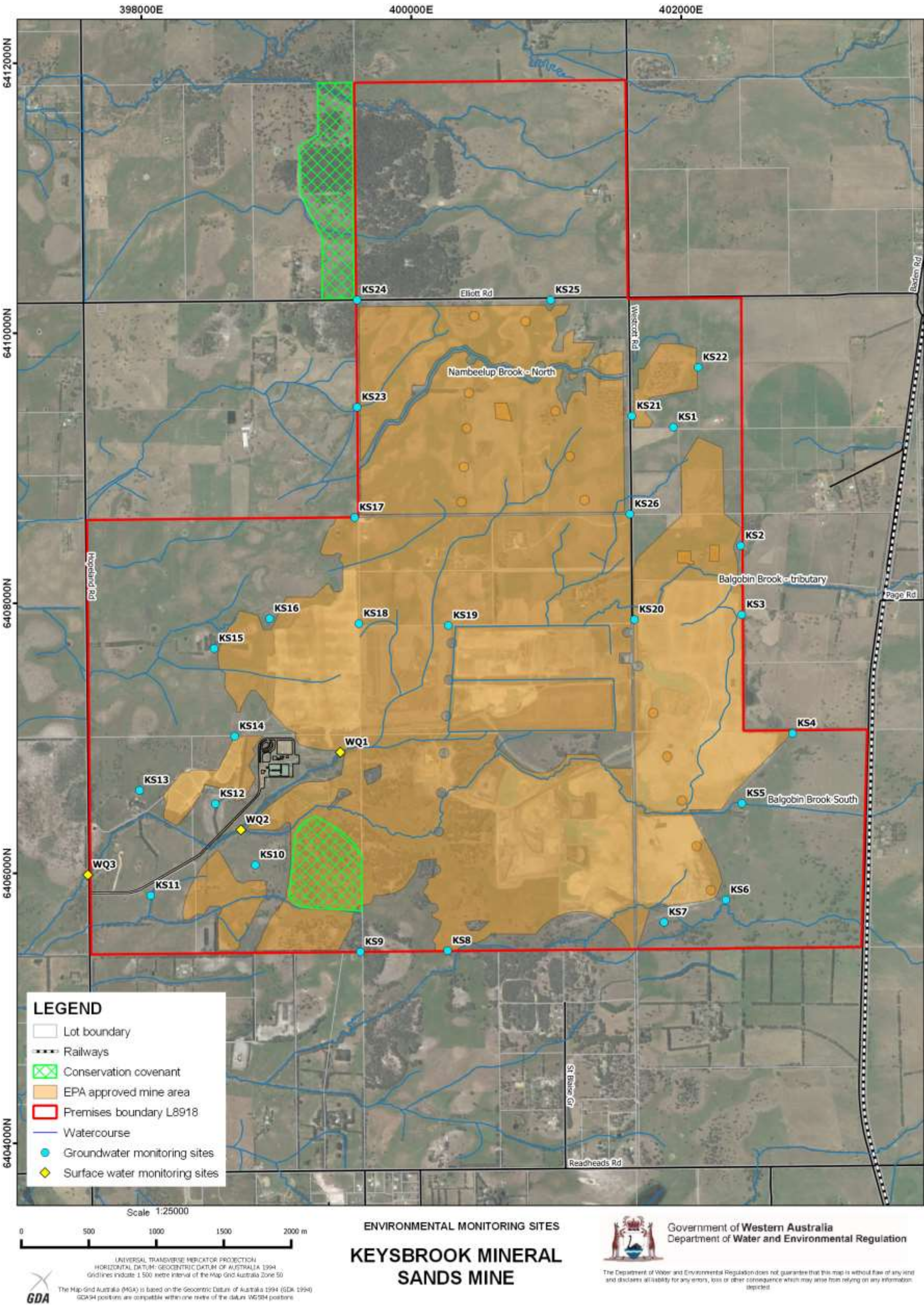


Figure 2: Monitoring locations