



Works Approval Number	W5650/2014/1
Works Approval Holder	Tronox Management Pty Ltd
ACN	009 343 364
Registered business address	Lot 22, Mason Road KWINANA BEACH WA 6167
File Number	DER2014/000452
Duration	18/08/2014 to 17/08/2024
Date of issue	15/08/2014
Date of amendment	06/08/2019
Prescribed Premises	Category 8: Mineral sands mining or processing
Premises	Dongara Mineral Sands Mine Mt Adams Road MOUNT ADAMS WA 6525 Legal description – Tenements M70/1195, M70/1196, M70/1197, M70/1198, M70/1999 & M70/1200

This Amendment is granted to the Works Approval Holder, subject to the following conditions, on 06/08/2019 by:

Tim Gentle
MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES

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

Explanatory notes

These explanatory notes do not form part of this Works Approval.

Defined terms

Definition of terms used in this Works Approval can be found at the start of this Works Approval. Terms which are defined have the first letter of each word capitalised throughout this Works Approval.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) is established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the *Environmental Protection Act 1986 (WA)* (EP Act). The Department also monitors and audits compliance with licences and works approvals, takes enforcement action and develops and implements licensing and industry regulation policy.

Works Approval

Section 52 of the EP Act provides that an occupier of any premises commits an offence if any work is undertaken on, or in relation to, the premises which causes the premises to become, or to become capable of being, Prescribed Premises, except in accordance with a works approval.

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered or permitted to be altered from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987 (WA)* (EP Regulations).

This Works Approval does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to, the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DWER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007*;
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Works Approval Holder to ensure that any action or activity referred to in this Works Approval is permitted by, and is carried out in compliance with, statutory requirements.

The Works Approval Holder must comply with the Works Approval. Contravening a Works Approval Condition is an offence under s.55 of the EP Act.

Responsibilities of Works Approval Holder

Separate to the requirements of this Works Approval, general obligations of Works Approval Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Works Approval Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under s.61; and
- restrictions on making certain changes to Prescribed Premises unless the changes are in accordance with a Works Approval, Licence, closure notice or environmental protection notice (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Works Approval Holder has a duty to report to the Department all Discharges of Waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)*.
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA)*.

Section 53 of the EP Act provides that a Works Approval Holder commits an offence if Emissions are caused, or altered, from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a closure notice or an environmental protection notice.

Defences to certain offences may be available to a Works Approval Holder and these are set out in the EP Act. Section 74A(b)(iii) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Works Approval Holder can prove that an Emission or Discharge occurred in accordance with a Works Approval.

This Works Approval specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The specified and general Emissions and Discharges from the Works authorised through this Works Approval are authorised to be conducted in accordance with the Conditions of this Works Approval.

Amendment of Works Approval

The Works Approval Holder can apply to amend the Conditions of this Works Approval under s.59 of the EP Act. An application form for this purpose is available from DWER.

The CEO may also amend the Conditions of this Works Approval at any time on the initiative of the CEO without an application being made.

Duration of Works Approval

The Works Approval will remain in force for the duration set out on the first page of this Works Approval or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

Suspension or revocation

The CEO may suspend or revoke this Works Approval in accordance with s.59A of the EP Act.

Definitions and interpretation

Definitions

In this Works Approval, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
AHD	Australian Height Datum
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 5667.11	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
BCM	Bank Cubic Metres
Books	has the same meaning given to that term under the EP Act
CEO	means Chief Executive Officer 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
Commissioning	means a period of time to allow for stabilisation and optimisation of the process following input of raw materials under operation conditions (including emissions) on the Works Approval for the limited period of operations required
Condition	means a condition to which this Works Approval 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
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or CEO to the Works Approval Holder in writing and sent to the Works Approval's address for notifications, as described at the front of this Works Approval, in relation to: a) compliance with the EP Act or this Works Approval; b) the Books or other sources of information maintained in accordance with this Works Approval; or c) the Books or other sources of information relating to Emissions from the Premises
Discharge	has the same meaning given to that term under the EP Act
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environmental Regulation
Emission	has the same meaning given to that term under the EP Act
Environmental Harm	has the same meaning given to that term under the EP Act
Environmental	means a report to satisfy the CEO that Works have been constructed in

Compliance Report	accordance with the Works Approval
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment and other environmental factors
EP Act	means the <i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	means the <i>Environmental Protection Regulations 1987 (WA)</i>
Implementation Agreement or Decision	has the same meaning given to that term under the EP Act
HMC	Heavy Mineral Concentrate
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act
Licence	has the same meaning given to that term under the EP Act
Material Environmental Harm	has the same meaning given to that term under the EP Act
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
Pollution	has the same meaning given to that term under the EP Act
Premises	refers to the premises to which this Works Approval applies, as specified at the front of this Works Approval and as shown on the map in Schedule 2 to this Works Approval
Prescribed Premises	has the same meaning given to that term under the EP Act
Professional Engineer	means a person holding current certification from the Institution of Engineers Australia (IEAust)
Serious Environmental Harm	has the same meaning given to that term under the EP Act
Spot sample	means a discrete sample representative of the time and place at which the sample is taken
Time Limited Operational Phase	means full mining and processing operations permitted under this Works Approval, subject to the Conditions, whilst an application for licence amendment is being processed
TSF	Tailings Storage Facility; includes in-pit TSFs and solar drying ponds
tph	tonnes per hour
Unreasonable Emission	has the same meaning given to that term under the EP Act
Waste	has the same meaning given to that term under the EP Act
WCP	Wet Concentrator Plant
Works	refers to the Works described in Schedule 1, at the locations shown in Schedule 1 of this Works Approval to be carried out at the Premises, subject to the Conditions
Works Approval	refers to this document, which evidences the grant of the works approval by the CEO under s.54 of the EP Act, subject to the Conditions
Works Approval Holder	refers to the occupier of the Premises being the person to whom this Works Approval has been granted, as specified at the front of this Works Approval

Interpretation

In this Works Approval:

- (a) the words 'including', 'includes' and 'include' will be read as if followed by the words 'without limitation';
- (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 in this Works Approval means the version of the standard, guideline or code of practice in force at the time of granting of this Works Approval and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Works Approval; and
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act.

Conditions

Construction phase

Infrastructure

1. The Works Approval Holder must install and undertake the Works for the infrastructure:
 - (a) specified in Column 1; and
 - (b) to the requirements specified in Column 2; of Table 2 below.
2. The Works Approval Holder must not depart from the requirements specified in Column 2 of Table 2 except:
 - (a) where such a departure does not increase risks to public health, public amenity or the environment; and
 - (b) all other Conditions in this Works Approval are still satisfied.
3. Within 28 days of the completion of the Works specified in Column 2 of Table 2 the Works Approval Holder must provide to the CEO an Environmental Compliance Report.
4. The Works Approval Holder must ensure the report required by Condition 3 includes, but is not limited to, the following:
 - (a) certification by an independent Professional Engineer that each item of infrastructure or component of infrastructure specified in Column 1 of Table 2 has been constructed with no material defects and to the requirements specified in Column 2 of Table 2;
 - (b) contains 'as constructed' plans for each item of infrastructure or component of infrastructure specified in Column 1 of Table 2;
 - (c) where a departure from the requirements specified in Column 2 of Table 2 occurs and is of a type allowed by Condition 2, the Works Approval Holder must provide to the CEO a description of, and explanation for, the departure along with the report required by Condition 2; and
 - (d) be signed by a person authorised to represent the Works Approval Holder and contains the printed name and position of that person within the company.

Table 2: Infrastructure requirements table

	Column 1	Column 2
	Infrastructure/ Equipment	Requirements (design and construction)
1	Mining unit (dozer trap)	<ul style="list-style-type: none"> Design capacity: 1,200 tph
2	Process water pond	None specified
3	HMC stockpile area	<ul style="list-style-type: none"> Pad must be sloped to allow the collection of water runoff, including diversion drain(s) and sump(s) that are sufficient for containing collected water
4	Wet Concentrator Plant	<ul style="list-style-type: none"> Design capacity: 1,000 tph
5	Sand tailings storage area	<ul style="list-style-type: none"> Must be constructed with overburden material or similar and track rolled with a dozer; Pad must be sloped to allow the collection of supernatant water and surface water runoff.
6	Solar drying ponds	<ul style="list-style-type: none"> Must be constructed with overburden material or similar and track rolled with a dozer, with angle of repose for the outer pond wall being at least 1:2 (V:H); Cell wall height must not exceed 5 m above natural ground level; Pond floors must be sloped to a single point or level to allow the collection of supernatant water
7	Pipelines carrying ore, clay slimes, sand tailings and vehicle washbay 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 the detection of leaks and failures.

Tailings Storage Facilities

5. Prior to the construction of TSFs on the Premises, the Works Approval Holder must submit to the CEO the following information:
 - (a) tailings data sheets (as required by DMIRS);
 - (b) schematic of the proposed locations of TSFs and disposal strategy that demonstrates the offset between operating and tailings disposal areas, including distances and volumes;
 - (c) a description of the material(s) to be used for pit wall construction for in-pit TSFs, including details on consolidation and materials, wall stability and water management of tailings; and
 - (d) details on the standards for in-pit TSF construction, including plans and cross-sections.

Commissioning phase

6. The Works Approval Holder must notify the CEO, at least 7 days prior to, the commencement date of Commissioning.
7. The Works Approval Holder must conduct Commissioning of the WCP and associated infrastructure for a period not exceeding 6 months.
8. The Works Approval Holder must conduct Commissioning of the WCP and associated infrastructure with not more than 400,000 tonnes of ore.
9. The Works Approval Holder must notify the CEO, within 7 days after, the completion date of Commissioning.

10. The Works Approval Holder must provide to the CEO an Environmental Commissioning Report within 3 months of the completion date of Commissioning.
11. The Works Approval Holder must ensure the report required by Condition 10 of this Works Approval includes:
 - (a) a summary of the commissioning activities undertaken, including timeframes and amount of ore processed;
 - (b) a summary of groundwater monitoring results obtained under Condition 19;
 - (c) a summary of the environmental performance of all plant and equipment as installed, including but not limited to:
 - (i) hydro-testing of pipelines and pump system functions testing;
 - (ii) commissioning of the raw water system;
 - (iii) dry commissioning of the WCP circuit and thickener;
 - (iv) wet commissioning of the WCP circuit and thickener;
 - (v) testing the clay and sand tailings systems; and
 - (vi) commissioning of the process control system;
 - (d) a review of performance against the manufacturers design specification; and
 - (e) where they have not been met, measures proposed to meet the manufacturer's design specification and Conditions of this Works Approval, together with timescales for implementing the proposed measures.

Time limited operational phase

12. The Works Approval Holder may conduct full mining and processing operations for a period not exceeding 90 days from the completion date of Commissioning, or until such time as a Licence for the same is granted.

Emissions

13. The Works Approval Holder must not cause any Emissions from the Works authorised through this Works Approval, and during the Time Limited Operational Phase, except for specified Emissions and general Emissions described in Column 1 of Table 3, subject to the exclusions, limitations or requirements specified in Column 2 of Table 3.

Table 3: Authorised Emissions table

Column 1	Column 2
Emission type	Exclusions/Limitations/Requirements
Specified Emissions	
Disposal of mine tailings	Subject to compliance with Condition 14
Indirect emissions to groundwater	Only from seepage of water entrained within sand and clay tailings, deposited in accordance with Condition 14
General Emissions	
Emissions which arise from undertaking the Works	<p>Emissions excluded from General Emissions are:</p> <ul style="list-style-type: none"> • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy or a prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or

Column 1	Column 2
Emission type	Exclusions/Limitations/Requirements
	<ul style="list-style-type: none"> Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.

Disposal of mine tailings

14. Following construction of the 'sand tailings storage area' and the initial 'solar drying pond', the Works Approval Holder must ensure that all tailings produced during the Time Limited Operational Phase are deposited in accordance with the requirements specified in Table 4.

Table 4: Tailings disposal requirements table

Column 1	Column 2	Column 3
Type	Requirements	Site plan reference
Sand tailings from the WCP	Must be: <ul style="list-style-type: none"> temporarily stockpiled at the sand tailings storage area; OR deposited directly into mined voids using cyclone stackers 	'Sand tailings storage area' and 'mine voids', as shown in Schedule 1
Clay slimes from the thickener	Must be pumped as a thickened slurry to: <ul style="list-style-type: none"> solar drying dams; OR used as dust suppressant on exposed areas within the Premises 	'Solar drying dam', as shown in Schedule 1

Monitoring general

15. The Works Approval Holder must ensure that:
- all water samples are collected and preserved in accordance with AS/NZS 5667.1;
 - all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
 - 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.
16. The Works Approval Holder must ensure that monthly monitoring is undertaken at least 15 days apart.
17. The Works Approval must ensure that all monitoring equipment used on the Premises to comply with the Conditions of this Works Approval is calibrated in accordance with the manufacturer's specifications.

Process monitoring

18. During the Time Limited Operational Phase, the Works Approval Holder must undertake process monitoring:
- of the process specified in Column 1 of Table 5;
 - for the parameters specified in Column 2 of Table 5; and
 - in the units specified in Column 3 of Table 5.

Table 5: Process monitoring requirements table

Column 1	Column 2	Column 3
Process description	Parameter	Units
Overburden removal	Amount of overburden removed	BCM
Processing of ore	Amount of ore processed through the mineral recovery plant	Wet tonnes
	Amount of mineral concentrate produced	
Disposal of tailings	Amount and location of sand tailings and clay slimes disposed on the Premises	

Ambient environmental monitoring

19. The Works Approval Holder must undertake ambient groundwater quality monitoring:

- (a) at the locations specified in Column 1 of Table 6;
- (b) for the parameters specified in Column 2 of Table 6;
- (c) in the units specified in Column 3 of Table 6;
- (d) over the averaging period specified in Column 4 of Table 6; and
- (e) at the frequency specified in Column 5 of Table 6.

Table 6: Groundwater monitoring table

Column 1	Column 2	Column 3	Column 4	Column 5
Monitoring point reference	Parameter	Units	Averaging Period	Frequency
<i>Superficial:</i> DOB01, DOB02, DOB04, DOB05B, DOB05C, DOB06B, DOB07B, DOB08A, DOB10A, DOB10B, DOB11A, DOB12A, DOB13A, DOB14B, DOB15B, DOB15C, GDV17	Standing water level (SWL) ^{1,2}	m AHD	Spot sample	Quarterly
	pH ¹	-		
	Electrical conductivity @ 25°C ¹	µS/cm		
	Redox potential ¹	mV		
	Titratable acidity (TA)	mg/L		
	Total alkalinity (TALK)			
	Major ions: bicarbonate, calcium, chloride, magnesium, potassium, sodium, sulfate, total dissolved solids			At least once throughout the duration of this Works Approval
	Metals and metalloids: aluminum, arsenic, cadmium, chromium (as CrVI and total Cr), cobalt, copper, iron, mercury, nickel, selenium, uranium, zinc			

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

Note 2: SWL to be determined prior to the collection of other samples.

Record-keeping

20. The Works Approval Holder must maintain accurate Books including information, reports and data in relation to the Works and the Books must:

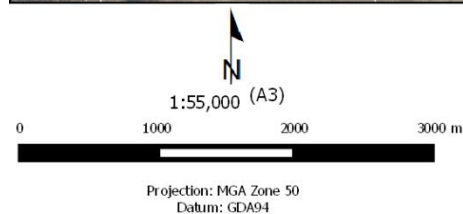
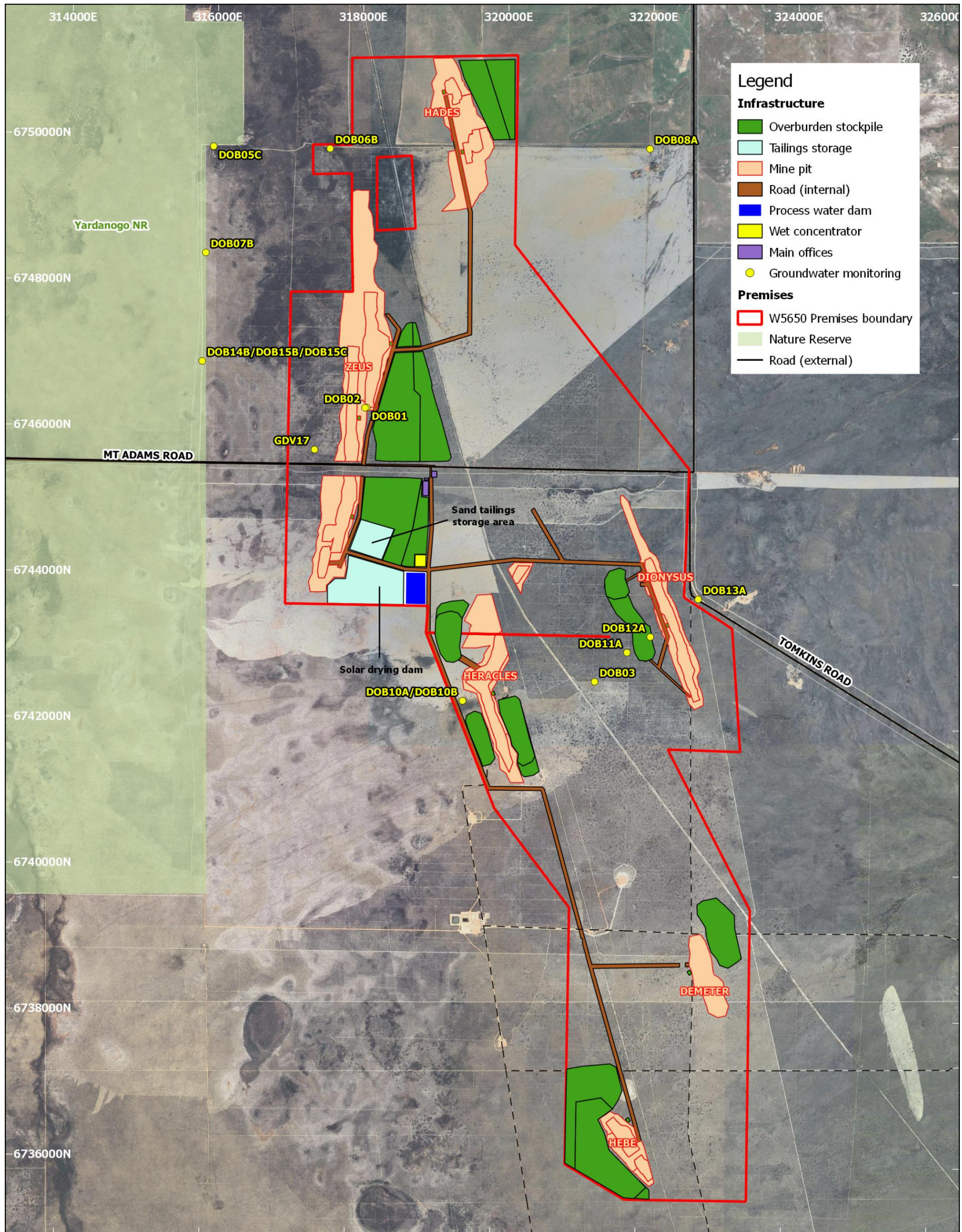
- (a) be legible;
- (b) if amended, be amended in such a ways that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) be retained for at least 3 years from the date the Books were made;

- (d) be available to be produced to an Inspector or the CEO.
- 21.** The Works Approval Holder must comply with a Department Request within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Schedule 1: Maps

Premises map and map of monitoring locations

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



DONGARA MINERAL SANDS MINE Premises map and infrastructure

Government of Western Australia
Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

Schedule 2: Works

At the time of assessment, Emissions and Discharges from the Works listed in Table 7 were considered in the determination of the risk and related Conditions for the Works Approval.

Table 7: Authorised Works

Works
Civil excavation and earthworks, including clearing of native vegetation
Road construction
Construction and commissioning of WCP, including thickener and associated infrastructure (not more than 400,000 tonnes of ore)
Construction of process water system, including pumps and pipelines
Construction of process water pond
Construction of sand tailings storage area
Construction of initial solar drying pond
Stripping of overburden and topsoil, and stockpiling
Development of starter pit
Disposal of sand tailings to sand tailings storage area
Disposal of clay slimes to solar drying pond