Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6641/2022/1
Works approval holder	Iluka Rare Earths Pty Ltd
ACN	654 487 662
Registered business address	Level 17, 240 St Georges Terrace PERTH WA 6000
DWER file number	DER2022/000035~1
Duration	14/06/2022 to 13/06/2027
Date of issue	14/06/2022
Date of amendment	14/02/2023
Premises details	Eneabba Mineral Sands Mine Part of Mining Lease M267SA ENEABBA 6518 As defined by the premises maps attached to the issued works approval

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	Assessed design capacity
Category 44: Metal smelting or refining: premises on which metal ore, metal ore concentrate or metal waste is smelted, fused, roasted, refined or processed.	25,000 dry tonnes per annum of contained rare earth as oxides or carbonates

This works approval is granted to the works approval holder, subject to the attached conditions, on 14 February 2023, by:

Michael Greenslade
Digitally signed by Michael Greenslade
Date: 2023.02.14 14:05:38 +08'00'

MANAGER, PROCESS INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
14/06/2022	W6641/2022/1	Works approval granted.
14/02/2023	W6641/2022/1	Works approval transferred from Iluka Resources Limited to Iluka Rare Earths Pty Ltd. Premises boundary amended to align with a sublease of Part of Mining Lease M267SA.

Interpretation

In this works approval:

(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 in this works approval:

  (i) if dated, refers to that particular version; and

  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(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 works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

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

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct and/or install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location,

as set out in Table 1.

2. The works approval holder must:

(a) construct the critical containment infrastructure;

(b) in accordance with the corresponding design and construction requirements; and

(c) at the corresponding infrastructure location,

as set out in Table 2.

<table>
<tr><th colspan="4">Table 1: Design and construction requirements</th></tr>
<tr><th>Item</th><th>Infrastructure</th><th>Design and construction / installation requirements</th><th>Infrastructure location</th></tr>
<tr><td colspan="4">Eneabba Rare Earth Refinery processing and associated infrastructure</td></tr>
<tr><td rowspan="2">1.</td><td>Off Gas Treatment System</td><td>• Must be designed with an off gas treatment system, which comprises:
- Venturi scrubber system;
- Spray tower;
- Wet Electrostatic Precipitator (WESP);
- Mist Eliminator; and
- Acid recovery tanks,
with gas discharge via a stack with a minimum height of 50m above as-built ground level.
• Off Gas Treatment System must be designed to meet the following emission requirements:
<table>
<tr><th>Parameter</th><th>Unit</th><th>Concentration</th></tr>
<tr><td>NOx (NO_2 equivalent)</td><td rowspan="5">g/s</td><td>2.63</td></tr>
<tr><td>SO_2</td><td>1.02</td></tr>
<tr><td>SO_3</td><td>0.51</td></tr>
<tr><td>H_2SO_4</td><td>0.51</td></tr>
<tr><td>Particulates (PM_{10} and $PM_{2.5}$)</td><td>0.26</td></tr>
</table>
• Off Gas Treatment System must be equipped with monitoring equipment compliant with AS4323.1 to allow periodic stack testing.</td><td>As depicted in Figures 2 and 4 of Schedule 1.</td></tr>
<tr><td>RE concentrate delivery</td><td>• Feed systems constructed to feed concentrate via closed circuit (pipeline) from EP2 directly to the belt filter and mill then into the acid mixing tank.
• Third party concentrate feed hopper must be hooded and equipped with dust extraction such that it can receive third party RE concentrates in rotating/tipping containers or bags without visible dust being generated beyond the hopper.
• Conveyors from the feed hopper to the acid mixing tanks must be enclosed.
• Dust extraction at the feed hopper and conveyors must be constructed to extract air to the Off Gas Treatment System.</td><td>As depicted in Figure 2, of Schedule 1.</td></tr>
</table>

	ERER processing infrastructure: • Acid mixing • Roasting Kiln • Leaching and residue washing • Purification • Solvent extraction • Water, ammonia and magnesia recovery system	• Extracted air from the Acid mixing and Roasting Kiln must be captured and directed into the Off Gas Treatment System prior to release to the environment. • The quench tank, leaching system and solvent extraction surge tanks must be covered and drafted to allow steam release. • Tanks, thickeners and associated pumps must be installed in bunded areas which allow storage of at least 110% of the largest. • Sumps in the bunded areas must be designed to return any collected liquids and slurries back into the process.	As depicted in Figure 2, of Schedule 1.
	Product Finishing	• Bag filters must be installed for the capture and filtering of exhaust gas from the dryers and calciners. • Bagging areas must be constructed with air extraction and venting via bag filters. • Baghouse systems must be installed with broken bag alarms to identify bag filter failure.	As depicted in Figure 2, of Schedule 1.
2.	Conveyors and pipelines	• All conveyors and transfer points for the transport of concentrate feeds, products and reagents must be enclosed. • All pipelines entering and leaving the refinery must be located within existing disturbed areas that are earthen bunds for containment of leaks and ruptures. • All pipelines within the Refinery Plant Area must be located on hardstand areas. • Pipelines carrying ore concentrate, tailings, return water must be fitted with automated cut-outs. • All pipelines must be located to avoid interaction with site vehicles and machinery.	As depicted in Figure 1, of Schedule 1.
3.	Brine Bleed Evaporation Pond	• Pond must be lined with a minimum 1.0mm thick HDPE liner that complies with the requirements specified in condition 3. • Pond will have adequate capacity to ensure a 1:100 rainfall event can be contained and will maintain a minimum freeboard of 500mm.	As depicted in Figure 2, of Schedule 1.

4.	Sulfate Waste Dam	• A sulfate waste dam/pond must be constructed to a nominal size of 10,000 m^3 to contain sulfate waste that has been recycled through magnesia recovery system. • Pond must be lined with a minimum 1.0mm thick HDPE liner that complies with the requirements specified in condition 3. • Pond will have adequate capacity to ensure a 1:100 rainfall event can be contained and will maintain a minimum freeboard of 500mm.	As depicted in Figure 2, of Schedule 1.
5.	Reagents	• The reagent receival facilities must be designed in accordance with AS1940 and to allow handling in accordance with Material Safety Data Sheets, where applicable. • Where pneumatic transfer systems are used, bag filters will be installed to clean the conveying air before venting to atmosphere. • Bunded areas must be constructed with a collection sump for recovering spilled liquid and stormwater.	As depicted in Figure 2, of Schedule 1.
6.	Bulk fuel storage (diesel)	• One 110,000 L self-bunded, horizontal above-ground tank must be installed on a compacted earthen or concrete pad. • Tank must be designed and manufactured to AS1692 and AS1940.	As depicted in Figure 2, of Schedule 1.
Stormwater infrastructure			
7.	Bunding, stormwater diversion and hardstands	• The site must be designed to divert uncontaminated surface water runoff away from ERER operational areas and direct to natural downstream drainage. • A 1km-long drain must be installed to the east of the ERER facility to convey runoff to the south and into the South Depression. The drain must be constructed with the following dimensions: - Bottom width of at least 1.0 m; - Top width of at least 5.0 m; - Depth of at least 0.5 m; and - Batters shaped to a ratio of approximately 1V:4H. • ERER processing and storage areas must be constructed to contain and divert surface water runoff to the stormwater dams described in row 8 of this table. • Earthen bund wall/s must be constructed around the Yellow Dam TSF to keep stormwater from contacting embankment walls in the event of a >1% Annual Exceedance Probability flood level.	Not shown.

8.	Stormwater dams	• Stormwater dams with the capacity to store at least 13,000 m^3 of rainwater runoff from the ERER. • Stormwater dams must be lined with a minimum 1.0mm thick HDPE liner that complies with the requirements specified in condition 3. • Dams must have adequate capacity to ensure a 1:100 rainfall event can be contained and will maintain a minimum freeboard of 500mm. • Water captured in the dams will be returned to the process to maintain the dams at a low level.	Not shown – located within the footprint of the Refinery Plant Area, depicted in Figure 1 of Schedule 1.
Groundwater monitoring bores			
9.	Groundwater monitoring bores	• Groundwater monitoring bores installed at the locations referenced in Table 7 and depicted in Figure 4, of Schedule 1. • Well design and construction must be in accordance with ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores. • Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination. • The bores must be logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with Australian Standard AS 1726. • Must be constructed, developed (purged), sampled for the parameters listed in Table 7, and determined to be operational at least 12 months prior to deposition of tailings material into the Yellow Dam TSF.	As depicted in Figure 4, of Schedule 1.

Table 2: Design and construction requirements for critical containment infrastructure			
	Infrastructure	**Design and construction requirements**	**Infrastructure location**
1.	Yellow Dam TSF	Construction must be supervised by an engineering/geotechnical specialist to ensure construction satisfies design intent. Supervision must be documented in accordance with condition 8. The Yellow Dam TSF must be constructed with the following characteristics: • In-pit facility capable of permanently storing of tailings from the ERER facility. • Embankment walls, structural and general fill compacted to achieve a dry density of greater than 95% standard maximum dry density. • Pit slope of 1V:3H with an average north to south fall of 0.5% to direct seepage and supernatant water to a leakage collection sump and floating turret decant pump. • A low permeability compacted clay layer (or equivalent) which is used as a HDPE liner foundation and to provide an additional low permeability barrier should the geosynthetic liner system leak. • A geosynthetic liner system (HDPE 1.5 mm (primary layer), geofabric (protection layer, BIDIM A24 or similar), Flownet, or equivalent leakage detection and collection layer, geofabric (protection layer) and HDPE 1.5 mm (secondary layer). • Fenced to prevent access by unauthorised persons and terrestrial fauna.	As depicted in Figures 1 and 3, of Schedule 1.
2.	Decant infrastructure	• Pipelines carrying tailings and return water must installed in accordance with requirements of row 2 of Table 1. • Decant infrastructure must include a floating 'turret' intake pipe with minimum pumping capacity to remove 2,500m^3 per day, with return water to report back into the process via pipeline to the ERER Return Water Tank. • The ERER Return Water Tank must be installed with high-level alarms to prevent overtopping.	As depicted in Figure 3, of Schedule 1.

3. The works approval holder must ensure all HDPE geomembrane liners comply with the properties listed in Table 3, and are constructed in accordance with the requirements specified in that table.

Table 3: HDPE liner installation requirements

	Item	Property/construction requirement
1	Liner properties	HDPE liners must have the following properties: • Specific gravity of 0.94 or more; • Melt index of 0.05 g to 0.30 g in 10 minutes; • Carbon black content of 2-3%; • Minimum tensile strength at yield of 16,000 kN/m^2; • Minimum tensile strength at break of 550 kN/m^2; and • Minimum elongation at yield of 10%, and at break 300%
2	Liner fabrication	• Liners must be fabricated to form the shape of the pond embankments; • All seams and joins made on the premises must be continuous; and • Panels of the liner must be overlapped by a minimum of 100 mm, prior to heat welding or mechanical joining
3	Welding materials	• Membrane welding materials must be supplied by the liner manufacturer, and be identical with the liner membrane
4	Seams and joins	• All welded seams and joins are tested at selected locations using a vacuum box test, air pressure test, or similar, as per manufacturers QA/QC procedures.
5	Shear resistance	• Shear resistance must be tested in accordance with ASTM D5321

4. The works approval holder must operate water carts/sprays when visible dust is generated from ground disturbing activities.

Compliance reporting

5. The works approval holder must within 30 calendar days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 1; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

6. The Environmental Compliance Report/s required by condition 5, must include as a minimum the following:

(a) certification by a suitably qualified and experienced Engineer (eligible for membership of the Institute of Engineers, Australia) that the items of infrastructure or component(s) thereof, as specified in rows 1 to 8 (inclusive) of Table 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) certification by a person authorised to represent the works approval holder that the items of infrastructure or component(s) thereof, as specified in row 9 of Table 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(c) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1;

(d) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person; and

(e) where an item of infrastructure has been certified as not being located or constructed, or does not comply with the corresponding requirements, the works approval holder must correct the non-compliant or defective works, prior to re-certifying, or provide to the CEO a description of, and explanation for, any departures from the requirements specified in Table 1 that do not require relocation or rectification and do not constitute a material defect along with the Environmental Compliance Report.

Compliance reporting – Critical Containment Infrastructure

7. The works approval holder must, within 60 calendar days of the critical containment infrastructure identified by condition 2 being constructed:

(a) undertake an audit of compliance with the requirements of condition 2; and

(b) prepare and submit to the CEO a Critical Containment Infrastructure Report on that compliance.

8. The Critical Containment Infrastructure Report/s required by condition 7 must include as a minimum the following:

(a) certification by a suitably qualified Tailings Dam Design Engineer or their delegate such that each item of critical containment infrastructure or component thereof, as specified in row 1 of Table 2, has or has not been built and installed in accordance with the requirements specified in condition 2, satisfies the design intent and is fit for its intended purpose;

(b) certification required by condition 8(a) must attach:

(i) records of all construction quality control testing, the basis of any method specification adopted, and any significant modifications to the original design together with the reasons why the modifications were necessary;

(ii) as-constructed plans and a detailed site plan showing the location and dimensions for each item of critical containment infrastructure or component thereof, as specified in condition 2;

(iii) as-built drawings for the embankment earthworks and pipework; and

(iv) as-constructed permeability of the embankment, foundation, liner around each decant structure;

(c) certification by a suitably qualified and experienced Engineer (eligible for membership of the Institute of Engineers, Australia) that the items of infrastructure or component(s) thereof, as specified in row 2 of Table 2, have been constructed in accordance with the relevant requirements specified in condition 2;

(d) photographic evidence of the installation of the infrastructure;

(e) baseline ambient groundwater results according to row 8 of Table 1;

(f) where an item of infrastructure has been certified as not being located or constructed, or does not comply with the corresponding requirements, the works approval holder must correct the non-compliant or defective works, prior to re-certifying, or provide to the CEO a description of, and explanation for, any departures from the requirements specified in Table 2 that do not require relocation or rectification and do not constitute a material defect, along with the Critical Containment Infrastructure Report; and

(g) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Environmental commissioning phase

Environmental commissioning plan

9. The works approval holder must, at least 3 months prior to the commencement of environmental commissioning, provide to the CEO an environmental commissioning plan.

10. The plan required by condition 9 must include, but not be limited to:

(a) the stages, processes and expected timeframes of environmental commissioning;

(b) how accidents or malfunctions will be managed;

(c) start up and shut down procedures and how emissions will be managed during start up and shut down; and

(d) procedures for monitoring and managing emissions and discharges during environmental commissioning including, but not limited to:

(i) details of parameters to be included in any monitoring programs;

(ii) targets and/or trigger levels for each parameter; and

(iii) contingency actions to be implemented if target and/or trigger levels are exceeded.

Environmental commissioning requirements

11. The works approval holder may only commence environmental commissioning once all reports required by conditions 5, 7 and 9 have been submitted by the works approval holder.

12. The works approval holder must conduct environmental commissioning in accordance with the plan submitted in accordance with condition 9.

13. The works approval holder must notify the CEO:

(a) at least 7 days prior to, the commencement date of environmental commissioning; and

(b) within 7 days after, the completion date of environmental commissioning.

14. The works approval holder must monitor emissions during environmental commissioning in accordance with Table 4.

Table 4: Monitoring of point source emissions to air

Emission	Emission point	Units	Averaging Period	Method
Off-Gas Treatment System Stack	Volumetric flow rate	m^3/s	Stack test (minimum 60 minute average) at least once during commissioning	USEPA Method 2
	Stack temperature	°C		
	Carbon Monoxide (CO)	mg/m^3		USEPA Method 10
	Oxides of Nitrogen (NO_x)			USEPA Method 7, 7A, 7B, 7C, 7D
	Sulfur Dioxide (SO_2)			USEPA Method 6
	Sulfuric Acid Mist (H_2SO_4) or Sulfur Trioxide (SO_3)			USEPA Method 8
	PM_{10}			USEPA Method 201, 201A
	$PM_{2.5}$			

Emission	Emission point	Units	Averaging Period	Method
	Metals (As, Be, Ce, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Th, U, Zn)			USEPA Method 29

Environmental commissioning reporting

15. The works approval holder must, within 60 calendar days of the completion of environmental commissioning, submit to the CEO an Environmental Commissioning Report.

16. The report required by condition 15 must include, but not be limited to:

(a) a summary of environmental commissioning activities undertaken, including timeframes and the amount of RE concentrate processed, RE oxides and carbonate produced, and volumes of by-products produced (tailings waste and brine);

(b) a summary of the environmental performance of all plant and equipment as installed, including air emissions monitoring conducted on all point sources;

(c) a review of the plant's performance against the design specifications; and

(d) where they have not been met, measures proposed to meet the design specification, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

17. The works approval holder may only conduct time limited operations for the infrastructure and equipment specified in condition 18:

(a) for a period not exceeding 180 calendar days from the completion date of environmental commissioning; or

(b) until such a time as a licence is granted for that infrastructure in accordance with Division 3, Part V of the Environmental Protection Act 1986,

whichever is sooner.

Infrastructure and equipment

18. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in that table.

Table 5: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Off Gas Treatment System	• Operated to extract and clean air from the following closed infrastructure: - Acid mixing - Roasting Kiln • Acid produced by the waste gas circuit must be returned to acid recovery tanks.	As depicted in Figure 1 of Schedule 1

		• Cleaned gas released via stack.	
2.	RE concentrate delivery	• Feed concentrate must be received from EP2 and via closed circuit (pipeline) from EP2 directly to the belt filter and mill then into the acid mixing tank. • Delivery and handling of feed concentrates from third parties must only be undertaken when: - feed concentrate chemical characteristics are understood and recorded; and - dust extraction is operational. • Record tonnes of concentrate accepted for processing during time limited operation.	As depicted in Figure 1 of Schedule 1
3.	ERER processing infrastructure	• All spilt, leaked or discharged liquid and/or slurry material collected within sumps in the bunded areas must be returned back into the process. • Any spilt chemicals, including reagents and hydrocarbons, must be contained and either returned to the ERER facility or removed offsite by licensed controlled waste contractor. • Vented air must be filtered or cleaned via scrubber or baghouse filter prior to release at the emission points detailed in Table 6.	As depicted in Figure 1 of Schedule 1
4.	Products	• Conveying air must be cleaned in individual bag filters and collected solids returned to the product streams. • Baghouse systems must operate with working broken bag alarms when handling RE oxides and carbonates. • Collected solids must be returned to the processing circuit or product streams. • Packaged products must be stored in an existing storage shed on the Eneabba Mineral Sands Mine storage area, operated under licence L5646/1994/10.	As depicted in Figure 1 of Schedule 1
5.	Brine Bleed Evaporation Pond and Sulfate Waste Dam	• Minimum freeboard of 500mm must be maintained. • Maintain sufficient capacity in the pond to accommodate a 1 in 100 year rainfall event.	As depicted in Figure 1 of Schedule 1
6.	Reagents and bulk fuel storage	• Reagents in quantities less than 100 tonnes must be stored in bulk boxes/bags within hardstand bunded areas in accordance with AS1940, AS3833 or AS3780. • Reagents in quantities greater than 100 tonnes must be stored within purpose built bunded tanks in accordance with AS1940, AS3833 or AS3780. • Ammonia deliveries must be separated from other reagents as far as practicable. • Reagents that may impact adversely with each other must be separated. • Baghouse systems must operate with working broken bag alarms when operating pneumatic transfer systems. • Spill kits must be available for immediate clean up	As depicted in Figure 1 of Schedule 1

		in the event of a spill at any chemical storage area.	
7.	Yellow Dam TSF	• The in-pit tailings facility shall be checked on a regular basis by site personnel during periods of deposition to ensure that appropriate levels of dewatering are occurring concurrently with tailings deposition. • Slurry nominal beach slope of approximately 1V:200H. • Tailings discharged sub-aerially and cyclically into the facility in thin discrete layers. • Maintain minimum operational freeboard of 500 mm to supernatant pond, and allowance for a 1% AEP storm event. • Record tonnes of wet tailings deposited during time limited operations. • Monitor the measured flow rate on the outflow of the underdrainage system to monitor the performance of the underdrains. • Monitor the measured decant flow rate and estimate the volume of water on the decant pond. • Water from the TSF must be decanted and returned to the process. • Tailings must remain moist or covered by shallow supernatant pond for the purpose of preventing dust emissions from tailings within the facility. • Yellow Dam TSF must be inspected twice daily for fauna presence and/or entrapment. All incidence of fauna interaction with the Yellow Dam TSF must be recorded.	As depicted in Figure 3 of Schedule 1
8.	Tailings and return water pipelines	• Inspected daily to confirm integrity. • Record spills location and volume.	As depicted in Figure 1 of Schedule 1

Authorised emission points to air

19. During time limited operations, the works approval holder must ensure the emissions listed in Table 6 are only emitted from the corresponding emission point and location specified in that table.

Table 6: Authorised emission points to air

Parameter	Emission point	Minimum stack height (m)[1]	Maximum stack internal diameter (mm)[2]	Emission point location[3]
NO_X (NO_2 equivalent), CO, Particulates (PM_{10} and $PM_{2.5}$)	Off-Gas Treatment System Stack	50	750	A1
	La_2O_3 calciner	12	1250	A2
	Pr_6O_{11} calciner	12	700	A3
	Nd_2O_3 calciner	12	1250	A4
	Didymium (NdPr Oxide) calciner	12	1250	A5
	SEGHY dryer	12	1250	A6

Parameter	Emission point	Minimum stack height (m)[1]	Maximum stack internal diameter (mm)[2]	Emission point location[3]
NH_3	Ammonia scrubber	5	500	A7
NO_X (NO_2 equivalent)	Boiler stack	15	800	A8
H_2SO_4, SO_2, SO_3	Off-Gas Treatment System Stack	50	750	A1
Metals (As, Be, Ce, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Th, U, Zn)				

Note 1: Height from ground level to emission exit point of stack.
Note 2: Inner diameter of discharge point.
Note 3: Emission point location reference Figure 2 of Schedule 1.

Monitoring during time limited operations

20. The works approval holder must monitor groundwater in accordance with AS5667.11 during time limited operations for concentrations of the identified parameters, and at the frequencies in accordance with Table 7.

Table 7: Monitoring of groundwater during time limited operations

Monitoring location	Parameter	Unit	Frequency	Averaging period
EM78 EM83 EM84 EM90 EM91 EM94S/EM94D EM95S/EM95D EM96 EM97S/EM97D EM98S/EM98D EM99S/EM99D EM100S/EM100D EM101 EM102S/EM102D EM103S/EM103D, as depicted in Figure 4 of Schedule 1	Standing water level[1]	mbgl	Quarterly from date of commencement of time limited operations in accordance with condition 17.	Spot sample
	pH[1]	-		
	Electrical Conductivity, EC	µS/cm		
	Total Dissolved Solids, TDS	mg/L		
	Major ions (Na^+, K^+, Ca^{2+}, Mg^{2+}, HCO_3^-, Cl^-, SO_4^{2-}, NO^{3-}, NO^{2-} and NH_4)	mg/L		
	Aluminium	mg/L	At least once during time limited operations, from date of commencement in accordance with condition 17.	
	Arsenic	mg/L		
	Barium	mg/L		
	Boron	mg/L		
	Cadmium	mg/L		
	Chromium, (CrIII and CrIV)	mg/L		
	Cobalt	mg/L		
	Copper	mg/L		
	Iron	mg/L		
	Lead	mg/L		
	Manganese	mg/L		

	Mercury	mg/L		
	Nickel	mg/L		
	Radium (R-226 and R-228)	mg/L		
	Radon	mg/L		
	Selenium	mg/L		
	Thallium	mg/L		
	Thorium (Th-228 and Th-232)	mg/L		
	Uranium-238	mg/L		
	Zinc	mg/L		

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

Compliance reporting

21. The works approval holder must submit to the CEO a tailings deposition report on tailings discharged during time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

22. The tailings deposition report required by condition 21 must include:

(a) a complete audit and review of the active tailing storage facility by a third-party engineering/geotechnical specialist and include:

(i) a review of tailing deposition performance to achieve targeted beach slope;

(ii) validation of the design;

(iii) examination of the tailings management;

(iv) ambient groundwater monitoring results obtained during time limited operations in accordance with condition 20;

(v) a recent survey pick-up of the facility, and updated tailings storage data sheets for each cell.

(b) a summary of the time limited operations, including timeframes and volume of tailings deposited per month; and

(c) a summary of the environmental performance of TSF as constructed or installed (as applicable), which includes records detailing:

(i) volume of tailings deposited;

(ii) tailings density;

(iii) tailings solids density;

(iv) TSF water balance where the rate of evaporation is not assumed to be the same as the pan evaporation rate;

(v) monthly records of tailings level at TSF in mRL;

(vi) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and

(vii) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

23. The works approval holder must record the following information in relation to complaints received by the works approval 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 works approval holder to investigate or respond to any complaint.

24. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with conditions 1 and 2;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 18;

(c) any records of third-party feed concentrate chemical characteristics in the course of complying with condition 18;

(d) monitoring programmes undertaken in accordance with conditions 14 and 20; and

(e) complaints received under condition 23.

25. The books specified under condition 24 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 works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 8 have the meanings defined.

Table 8: Definitions

Term	Definition
ACN	Australian Company Number
AEP	Annual Exceedance Probability
annual period	a 12 month period commencing from 1 January until 31 December in the same year.
AS1692	Refers to Australian Standard *AS1692: Steel tanks for flammable and combustible liquids.*
AS1940	Refers to Australian Standard *AS1940: The storage and handling of flammable and combustible liquids.*
AS3780	Refers to Australian Standard *AS3780: The storage and handling of corrosive substances.*
AS3833	Refers to Australian Standard *The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers.*
AS4323.1	Refers to Australian Standard *AS 4323.1-1995 Stationary Source Emissions - Selection of Sampling Positions.*
AS5667.11	Refers to Australian Standard *AS/NZS 5667.11 Water Quality – Sampling – Guidance on sampling of groundwaters*
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 *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
critical containment infrastructure	means the items of infrastructure listed in condition 2.
Critical Containment Infrastructure Report	means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval.
Department	means the department 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 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.
Eneabba Mineral	Refers to the operations authorised under Part V licence

Term	Definition
Sands Mine	L5646/1994/10.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
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.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP2	refers to Eneabba Project – Phase 2, authorised for construction under Part V works approval W6458/2020/1.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
HDPE	High Density Polyethylene
monthly period	means a one-month period commencing from the first day of a month until the last day of the same month.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
SEGHY	Samarium, Europium, Gadolinium, Heavy Rare Earth Elements and Yttrium
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
TSF	Tailings storage facility
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 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.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).

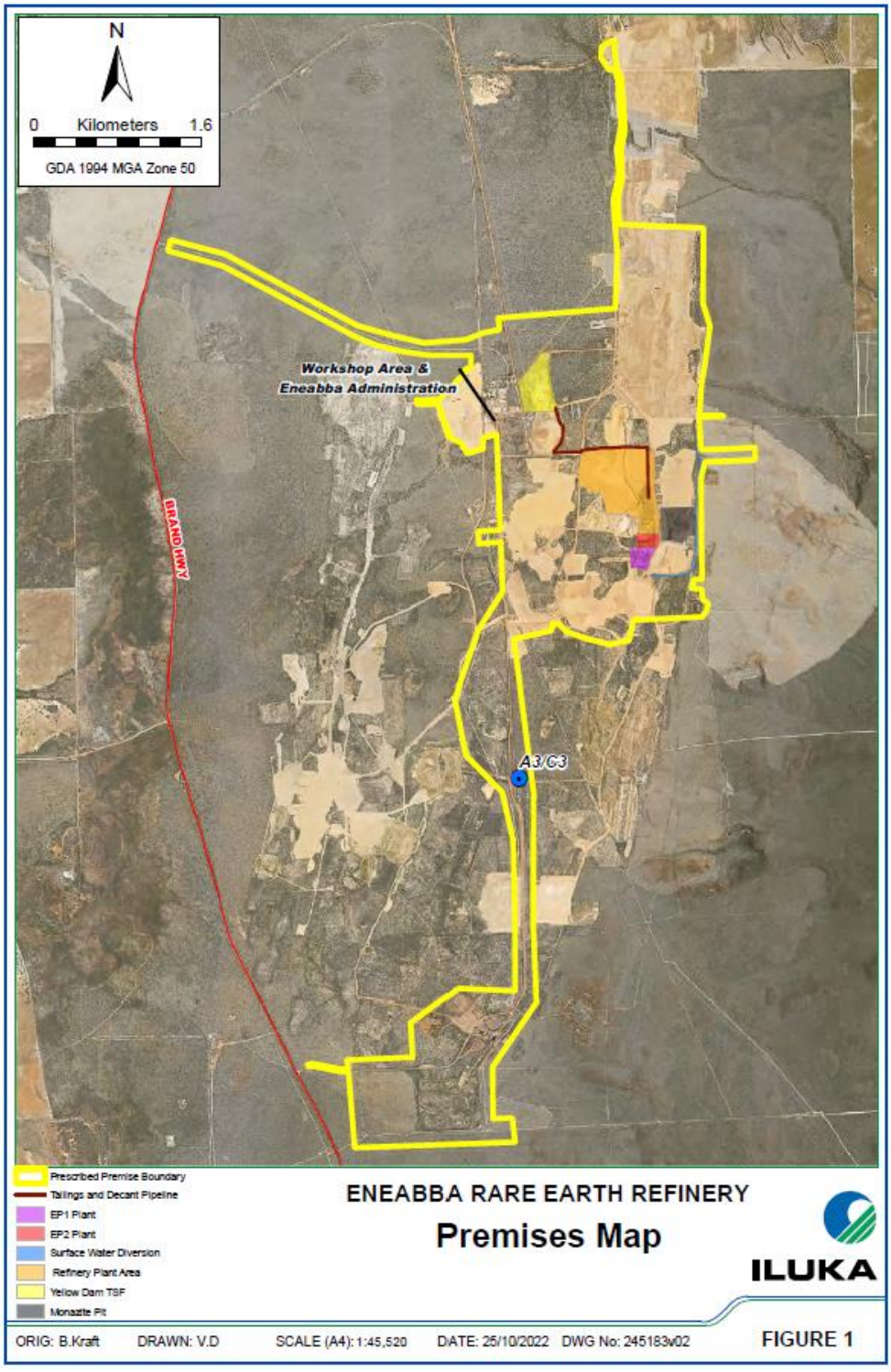

Figure 1: Map of the boundary of the prescribed premises

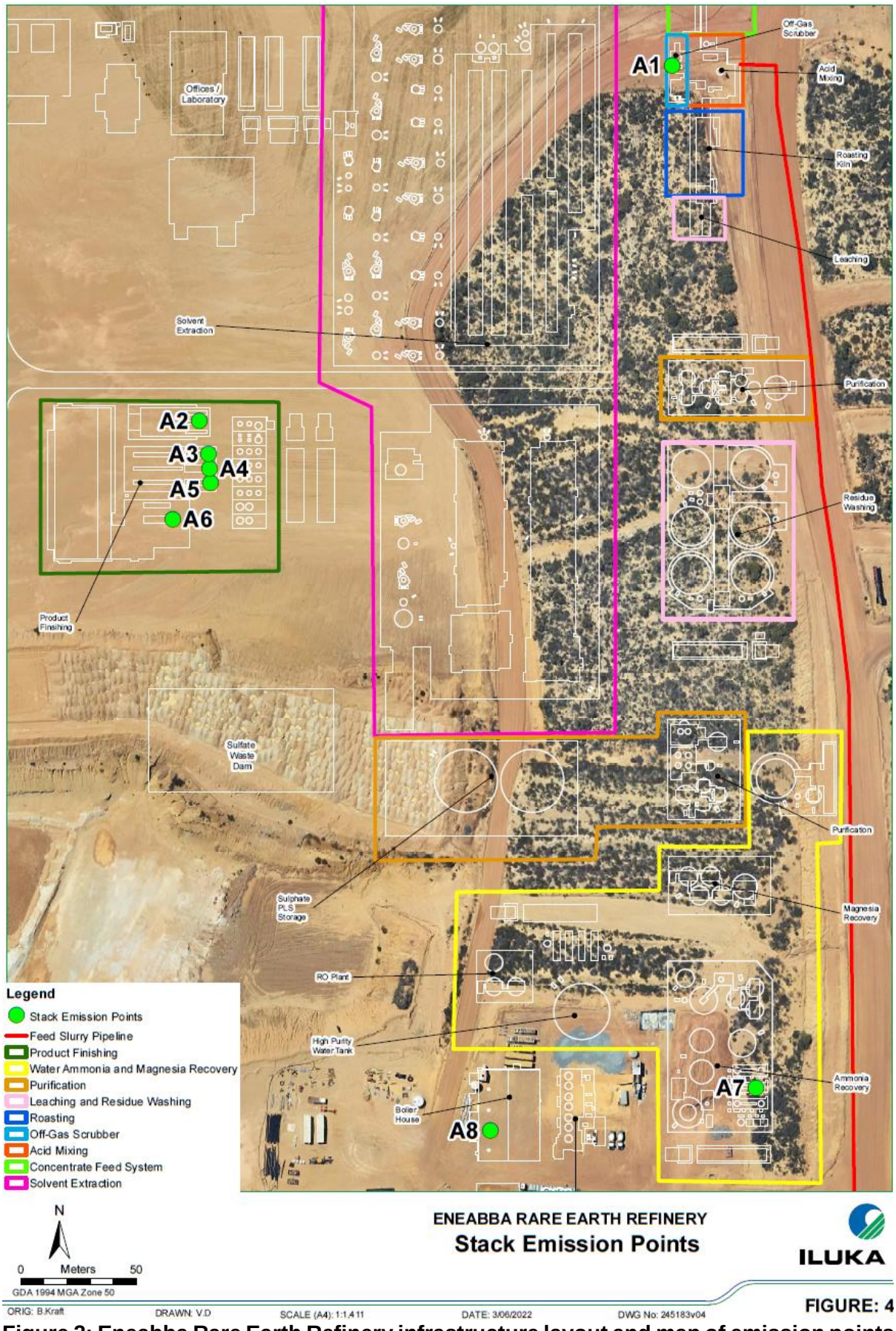

Figure 2: Eneabba Rare Earth Refinery infrastructure layout and map of emission points

Figure 3: Yellow Dam TSF design

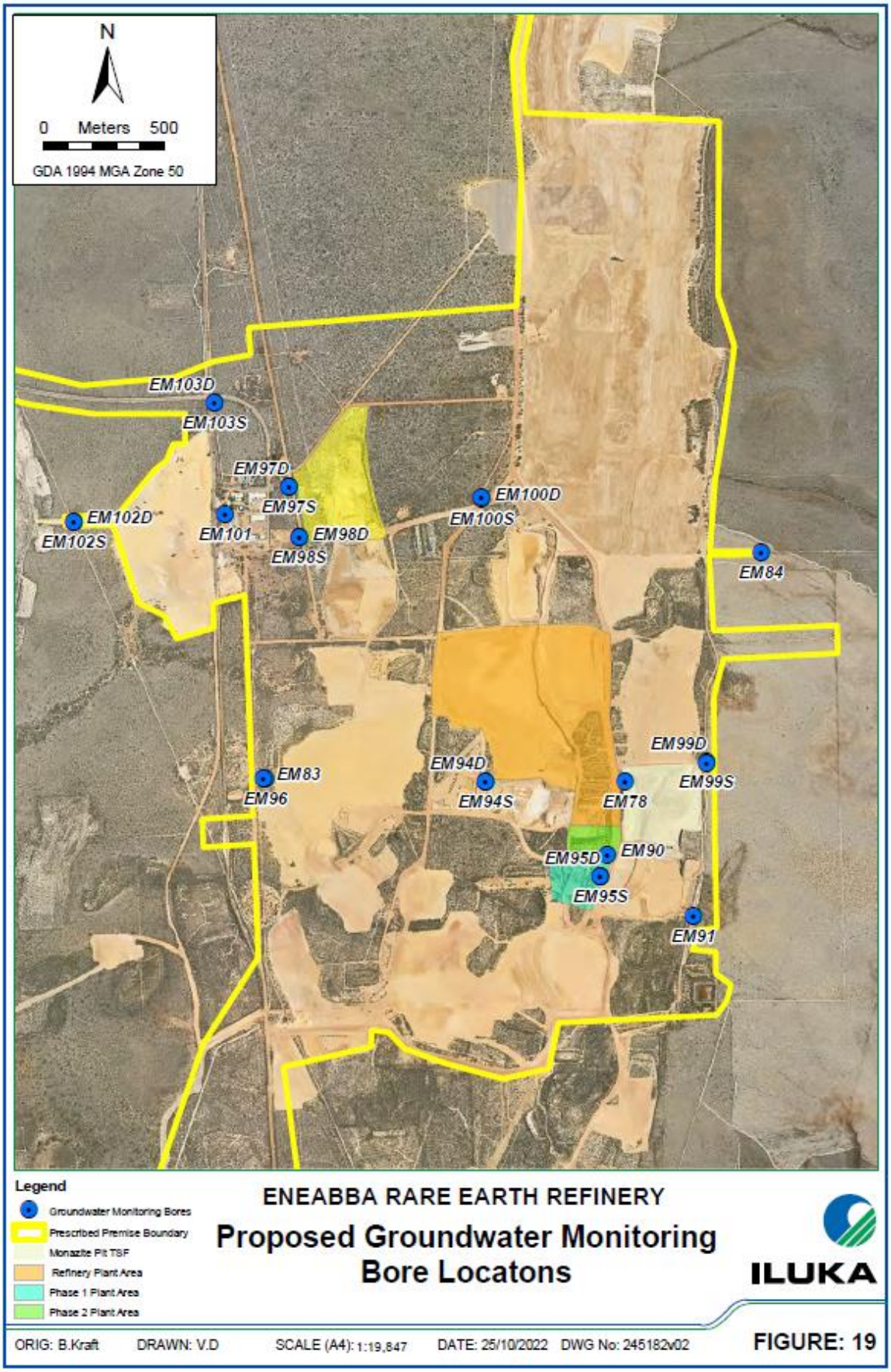

Figure 4: Groundwater monitoring bore locations

Schedule 2: Premises boundary

The corners of the premises boundary are the coordinates listed in Table 9.

Table 9: Premises boundary coordinates

	Easting	Northing
0.	334290.902	6694193.866
1.	334447.2207	6694222.895
2.	334438.7915	6694336.126
3.	335555.8423	6694425.729
4.	335573.7629	6694954.387
5.	335552.8556	6695229.169
6.	335535.3733	6695462.785
7.	335588.8558	6695707.973
8.	335572.0448	6695950.531
9.	335610.4698	6696176.278
10.	335576.848	6696613.362
11.	335543.2261	6696711.826
12.	335495.1948	6696704.621
13.	335415.9433	6696819.896
14.	335425.5495	6696930.368
15.	335545.6277	6696995.21
16.	335552.8323	6696841.51
17.	335572.0448	6696721.432
18.	335615.273	6696618.165
19.	335648.8948	6696123.443
20.	335612.8714	6695972.145
21.	335622.4776	6695674.351
22.	335576.848	6695455.809

23.	335588.8558	6695230.062
24.	336397.484	6695195.417
25.	336393.8951	6694654.808
26.	336392.3076	6694473.833
27.	336460.5702	6694259.52
28.	336412.9451	6693903.919
29.	336379.6076	6693701.195
30.	336358.2875	6693404.135
31.	336582.9216	6693404.936
32.	336584.718	6693391.848
33.	336357.205	6693389.053
34.	336355.795	6693369.407
35.	336373.2575	6693074.29
36.	336887.625	6693095.718
37.	336890.052	6692979.564
38.	336414.5326	6692956.815
39.	336374.845	6692809.177
40.	336378.0201	6692224.976
41.	336387.0215	6691840.725
42.	336306.5989	6691835.001
43.	336286.756	6691752.021
44.	336383.1378	6691744.833
45.	336384.1186	6691652.807
46.	336445.1297	6691606.084
47.	336428.1423	6691539.973
48.	336385.9576	6691480.278
49.	335728.99	6691448.911

50.	335687.4562	6691256.44
51.	335496.9558	6691215.165
52.	335252.4803	6691280.253
53.	335087.38	6691340.578
54.	335019.1173	6691410.428
55.	334950.8547	6691416.778
56.	334949.2672	6691348.515
57.	334585.1431	6691265.73
58.	334774.2279	6689808.785
59.	334770.8477	6688561.479
60.	334802.9213	6687808.052
61.	334382.7806	6687194.241
62.	334388.0165	6686695.976
63.	334573.1797	6686704.191
64.	334598.4557	6686472.493
65.	333080.7303	6686421.79
66.	333026.6465	6687087.696
67.	333020.2203	6687148.288
68.	332948.6914	6687147.711
69.	332683.3424	6687200.781
70.	332641.8095	6687192.128
71.	332631.4262	6687214.048
72.	332680.4581	6687224.431
73.	332952.1525	6687170.785
74.	333017.9129	6687171.938
75.	333008.1302	6687257.489
76.	333634.649	6687284.829

77.	333615.9067	6687614.382
78.	334061.0371	6687943.934
79.	334597.0902	6687920.551
80.	334597.0902	6688568.679
81.	334579.1696	6689360.172
82.	334474.6327	6689817.148
83.	334128.1678	6690166.6
84.	334023.6309	6690701.231
85.	334250.2915	6691360.313
86.	334478.4138	6691719.991
87.	334460.7572	6692191.884
88.	334250.2915	6692178.33
89.	334245.8395	6692296.591
90.	334456.3225	6692310.406
91.	334451.7437	6692432.78
92.	334429.5187	6693029.84
93.	334422.6835	6693222.823
94.	334292.3532	6693188.819
95.	334294.0385	6693086.013
96.	334137.3019	6693040.509
97.	334091.7978	6693134.888
98.	333980.5654	6693190.504
99.	333882.1483	6693492.36
100.	333873.7342	6693513.433
101.	333677.2806	6693509.861
102.	333672.915	6693549.945
103.	333894.7686	6693556.295

104.	334051.3496	6693746.666
105.	334098.5391	6693780.373
106.	334123.8192	6693849.472
107.	334175.24	6693852.828
108.	334175.6243	6693977.557
109.	333797.3401	6693976.615
110.	333526.6844	6694016.944
111.	333279.0339	6694077.269
112.	333082.7515	6694157.324
113.	331815.2212	6694835.624
114.	331295.1322	6694976.833
115.	331322.9527	6695080.242
116.	331843.7691	6694945.248
117.	333107.8737	6694262.381
118.	333429.5887	6694168.991
119.	333746.6365	6694094.923
120.	334130.6451	6694128.37
121.	334290.902	6694193.866