



<b>Works approval number</b>	W6595/2021/1
<b>Works approval holder</b>	Roy Hill Iron Ore Pty Ltd
<b>ACN</b>	123 722 038
<b>Registered business address</b>	4/28-42 Ventnor Ave WEST PERTH WA 6005
<b>DWER file number</b>	DER2021/000494
<b>Duration</b>	28/07/2022 to 27/07/2025
<b>Date of issue</b>	<b>27/07/2022</b>
<b>Premises details</b>	Roy Hill Iron Ore Mine Mining tenements M46/518 and M46/519 NEWMAN WA 6753 As defined by the coordinates in Schedule 1

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i> )	Assessed production / design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	86,000,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 27 July 2022, by:

**Sonya Poor**

**A/MANAGER, RESOURCE INDUSTRIES**

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

## Works approval history

Date	Reference number	Summary of changes
27/07/2022	W6595/2021/1	Works approval granted.

## 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.

**Table 1: Design and construction / installation requirements**

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Zulu 6 IPTSF decant and return pipeline	<p>Installation of dual tailings delivery lines from a tie-in location downstream of the existing process plant (PS1) to the pit perimeter.</p> <p>Extension of an existing mine access ramp to the pit base to facilitate water return.</p> <p>Installation of new decant pumping infrastructure and pipework to tie-in to the existing return water pipelines to the Process Water Pond, Above Ground TSF and/or the Central Transfer Pond</p> <p>Tailings delivery pipelines must have magnetic flowmeters installed at the pit perimeter.</p> <p>HPDE piping must be installed with burst disc alarm.</p> <p>Dust emissions must be minimised during the construction through the application of water for dust suppression.</p>	Schedule 1 – Figure 2
2.	Zulu 6 pit	Placement of mine waste backfill	Figure 2
		<p>Zulu West Levee</p> <p>Safety bund along the perimeter</p>	Figure 3
		<p>Installation of survey instrumentation and four shallow groundwater monitoring bores</p> <p>500 mm total freeboard (comprising operational freeboard and beach freeboard) at 437 mRL</p>	Figure 4

### Compliance reporting

2. The works approval holder must within 60 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.
3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:
- (a) certification by a suitably qualified professional engineer or builder that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;
  - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1;
  - (c) photographic evidence of the installation of the infrastructure; and
  - (d) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

### Construction of groundwater monitoring wells

4. The works approval holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in Table 2.

**Table 2: Infrastructure requirements – groundwater monitoring wells**

Infrastructure	Design, construction, and installation requirements	Monitoring well locations	Timeframe
Groundwater monitoring network for Zulu 6 IPTSF:  Install 4 monitoring/recovery bores at shallow alluvial layer with short screened interval (less than 6 m long) constructed within this layer.	<p><u>Well design and construction:</u></p> <p>Designed and constructed in accordance with ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores.</p> <p>Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination<sup>1</sup>. Where temporary/seasonal perched features are present, wells must be nested, and the perched features individually screened.</p> <p><u>Logging of borehole:</u></p> <p>Soil samples must be collected and logged during the installation of the monitoring wells.</p> <p>A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726.</p> <p>Any observations of staining / odours or other indications of contamination must be included in the bore logs.</p> <p><u>Well construction log:</u></p> <p>Well construction details must be documented within a well construction log to demonstrate compliance with ASTM D5092/D5092M-16. The construction logs shall include elevations of the</p>	Schedule 1: Maps, Premises map, Figure 4	Must be constructed, developed (purged), sampled and determined to be operational by no later than 30 calendar days prior to the commencement of time limited operations

Infrastructure	Design, construction, and installation requirements	Monitoring well locations	Timeframe
	<p>top of casing position to be used as the reference point for water-level measurement, and the revelations of the ground surface protective installations.</p> <p><u>Well development:</u></p> <p>All installed monitoring wells must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the well screen to ensure the hydraulic functioning of the well. A detailed record should be kept of well development activities and included in the well construction log.</p> <p><u>Installation survey:</u></p> <p>The vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.</p> <p><u>Well network map:</u></p> <p>A well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network and their respective identification numbers.</p>		

Note 1: Refer to Section 8 of Schedule B2 of the Assessment of Site Contamination NEPM for guidance on well screen depth and length.

5. Baseline ambient groundwater condition must be undertaken according to Table 5 for the new bores: The results must compare against 95% level of species protection - ANZG 2018 criteria.
6. The works approval holder must, within 60 calendar days of the monitoring wells being constructed, submit to the CEO a well construction report evidencing compliance with the requirements of conditions 4 and 5.

## Environmental commissioning phase

### Environmental commissioning requirements and emission limits

7. The works approval holder may only commence environmental commissioning of an item of infrastructure identified in condition 8 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 2 of this works approval.
8. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 3 may only be carried out:
  - (a) in accordance with the corresponding commissioning requirements; and
  - (b) for the corresponding authorized commissioning duration.

**Table 3: Environmental commissioning requirements**

	Infrastructure	Commissioning requirements	Authorised commissioning duration
1	New pipeline to Zulu 6 IPTSF	Daily inspections of pipelines.	Two weeks
2	Z6 IPTSF	Subject to completing the requirements of conditions 2 and 6	Six weeks

### Monitoring during environmental commissioning

9. The works approval holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning for the infrastructure specified in Table 3.
10. The works approval holder must ensure the Environmental Commissioning Report required by condition 9 of this works approval includes the following:
  - (a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of tailings deposited
  - (b) a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed (as applicable), which at minimum includes records detailing the:
    - (i) commissioning of the infrastructure; and
    - (ii) testing of the infrastructure.
  - (c) a review of the works approval holder's performance against manufacturer design and specifications; and
  - (d) where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

## Time limited operations phase

### Commencement and duration

11. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1:
  - (a) where the item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 2 has been submitted by the works approval holder for that item of infrastructure; and
  - (b) where the item of infrastructure is authorised to undertake environmental commissioning under condition 7, the Environmental Commissioning Report for that item of infrastructure as required by condition 9 has been submitted by the works approval holder.
12. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 13 (as applicable):
  - (a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 11 for that item of infrastructure; or

- (b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*, if one is granted before the end of the period specified in condition 12(a).

### Time limited operations requirements and emission limits

13. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 4 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirements set out in Table 4.

**Table 4: Infrastructure and equipment requirements during time limited operations**

	Site infrastructure and equipment	Operational requirements	Infrastructure location
1	Zulu 6 pipeline	Daily inspections of pipelines.	Schedule 1: Maps, Premises map, Figure 2
2	Zulu 6 IPTSF	<p>General:</p> <ul style="list-style-type: none"> <li>Freeboard of 500mm maintained</li> </ul> <p>Daily inspection logs of the following:</p> <ul style="list-style-type: none"> <li>Decant pumps</li> <li>Delivery pipeline</li> <li>Discharge locations</li> <li>Location of decant pond</li> <li>Freeboard</li> </ul> <p>Monthly records of:</p> <ul style="list-style-type: none"> <li>Volume of tailings discharged</li> <li>Volume of decant recovered</li> </ul> <p>Quarterly records of the following:</p> <ul style="list-style-type: none"> <li>Location and size of decant pond</li> </ul>	Schedule 1: Maps, Premises map, Figure 1

### Monitoring during time limited operations

14. The works approval holder must monitor emissions and ambient groundwater during time limited operations in accordance with Table 5.

**Table 5: Emissions, discharge and ambient monitoring during time limited operations**

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method
Zulu 6 IPTSF	Discharge pipeline	Cumulative volumetric flow rate	Daily or continuous online	N/A	m <sup>3</sup> /day	-
	New monitoring bores (if water is present)	Surface water level	Monthly	Spot sample	mbgl	AS/NZS 5667.1
		pH			pH units	
		Electrical Conductivity			µS/cm	

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method
	and decant water	Total Dissolved Solids			mg/L	AS/NZS 5667.11  In field
		Alkalinity CaCO <sub>3</sub>	Bimonthly	Spot sample	mg/L	AS/NZS 5667.1 AS/NZS 5667.11  By a NATA accredited laboratory
		Nitrate, Nitrite and Ammonia				
		Major Ions: Ca, Cl, F, K, Mg, Na and SO <sub>4</sub>				
		Metals / metalloids: Aluminium Arsenic Barium Boron Cadmium Cobalt Chromium Copper Iron Mercury Manganese Molybdenum Nickel Lead Antimony Selenium Silicon Tin				
		Acrylamide				

### Compliance reporting

15. The works approval holder must submit to the CEO a report on the time limited operations within 60 calendar days of the completion date of time limited operations or 180 calendar days before the expiration date of the works approval, whichever is the sooner.
16. The works approval holder must ensure the report required by condition 15 includes the following:
  - (a) a summary of the time limited operations, including timeframes and volume of tailings deposited per month;
  - (b) the emissions, discharge and ambient groundwater monitoring results obtained during time limited operations under Table 5;
  - (c) a summary of the environmental performance of Zulu 6 IPTSF as constructed or installed (as applicable), which includes records detailing the:
    - (i) volume of tailings deposited;
    - (ii) tailings density (monthly average);



- (iii) tailings solid content (monthly average);
  - (iv) Zulu 6 IPTSF water balance; and
  - (v) monthly records of tailings level at Zulu 6 IPTSF in mRL.
- (d) Where modifications of Zulu 6 IPTSF 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)

- 17.** 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.
- 18.** 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 condition 1;
  - (b) any maintenance of infrastructure that is performed in the course of complying with condition 1;
  - (c) monitoring programmes undertaken in accordance with condition 14; and
  - (d) complaints received under condition 17.
- 19.** The books specified under condition 18 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 6 have the meanings defined.

**Table 6: Definitions**

Term	Definition
ANZG	Means Australian and New Zealand Guidelines for Fresh and Marine Water Quality
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 <i>Water Quality – Sampling – Guidance of 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>
ASTM D5092/D5092M-16	means ASTM D5092/D5092M: Standard Practice for Design and Installation of Groundwater Monitoring Wells
Australian Standard Geotechnical Site Investigations AS1726	Means the Australian Standard AS 1726 – 1993 <i>Geotechnical site investigations.</i>
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 <a href="mailto:info@dwer.wa.gov.au">info@dwer.wa.gov.au</a>
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.
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	means a report on any commissioning activities that have taken

Term	Definition
Commissioning Report	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.
EP Act	<i>Environmental Protection Act 1986 (WA).</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA).</i>
IPTSF	In-Pit TSF
mg/L	milligrams per litre
NATA	means 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
premises	the premises to which this works approval applies, as specified at the front of this works approval 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.
mRL	metres Reference Level
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
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.
µS/cm	means microseimens per centimetre

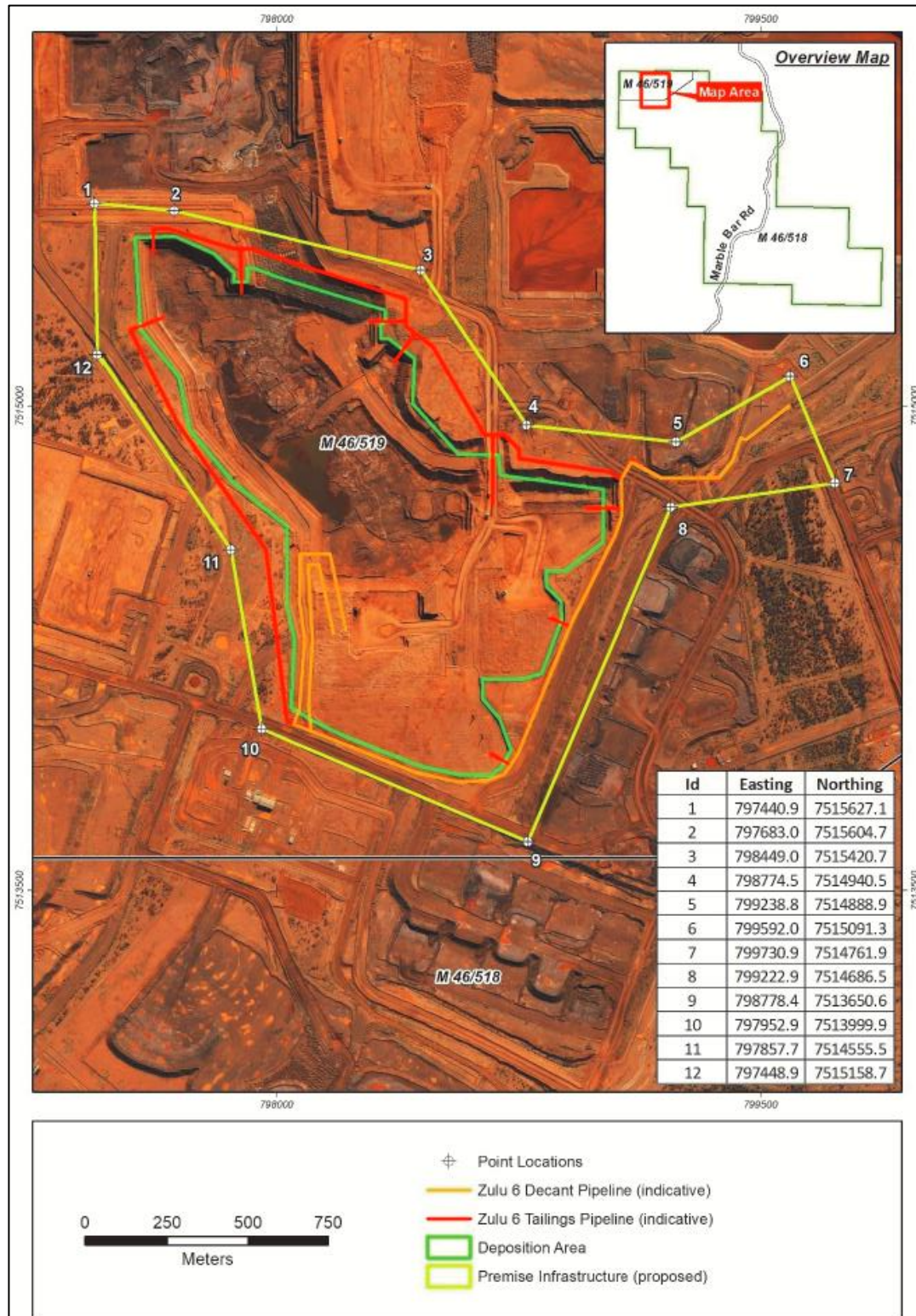
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## END OF CONDITIONS

# 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**



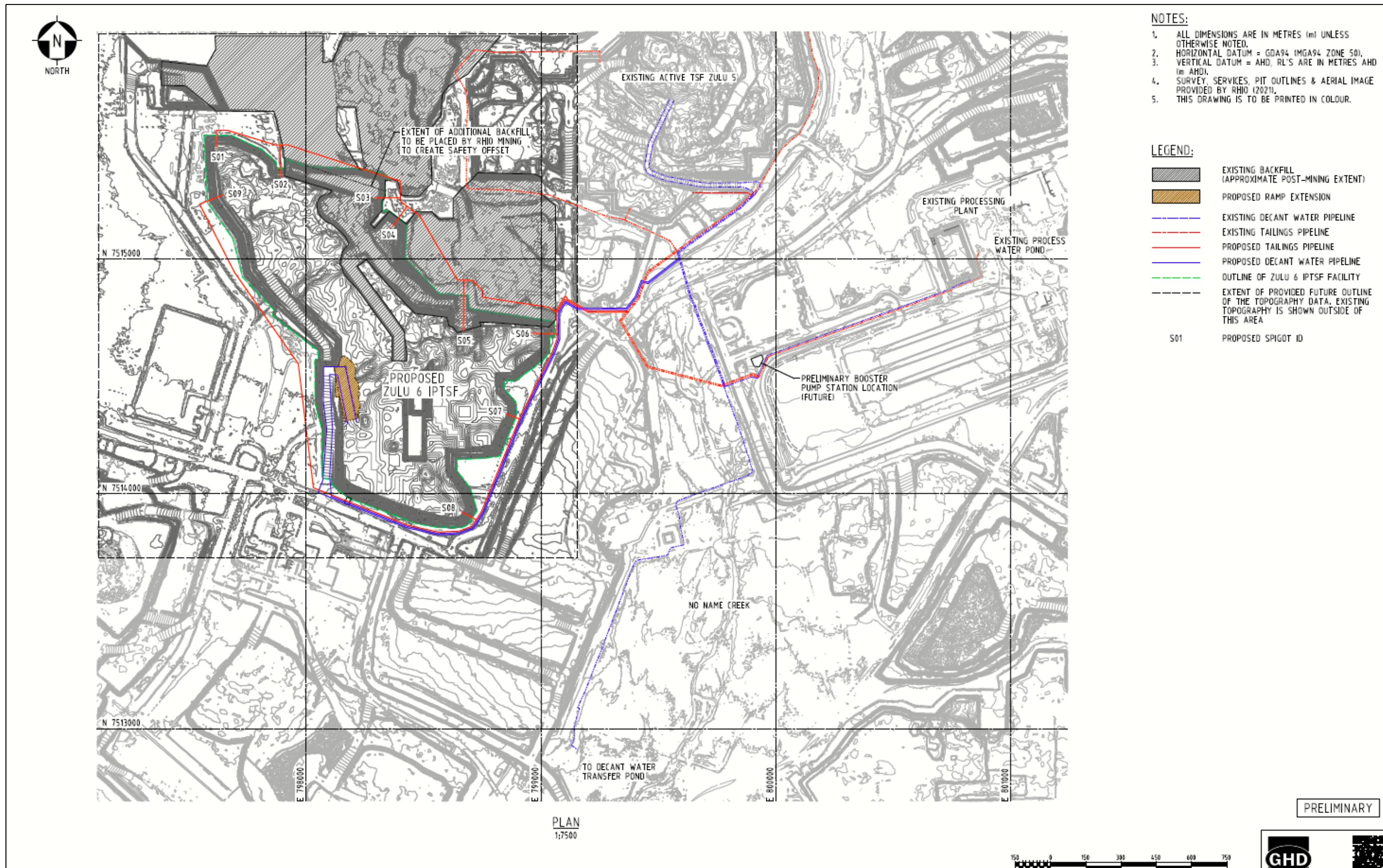
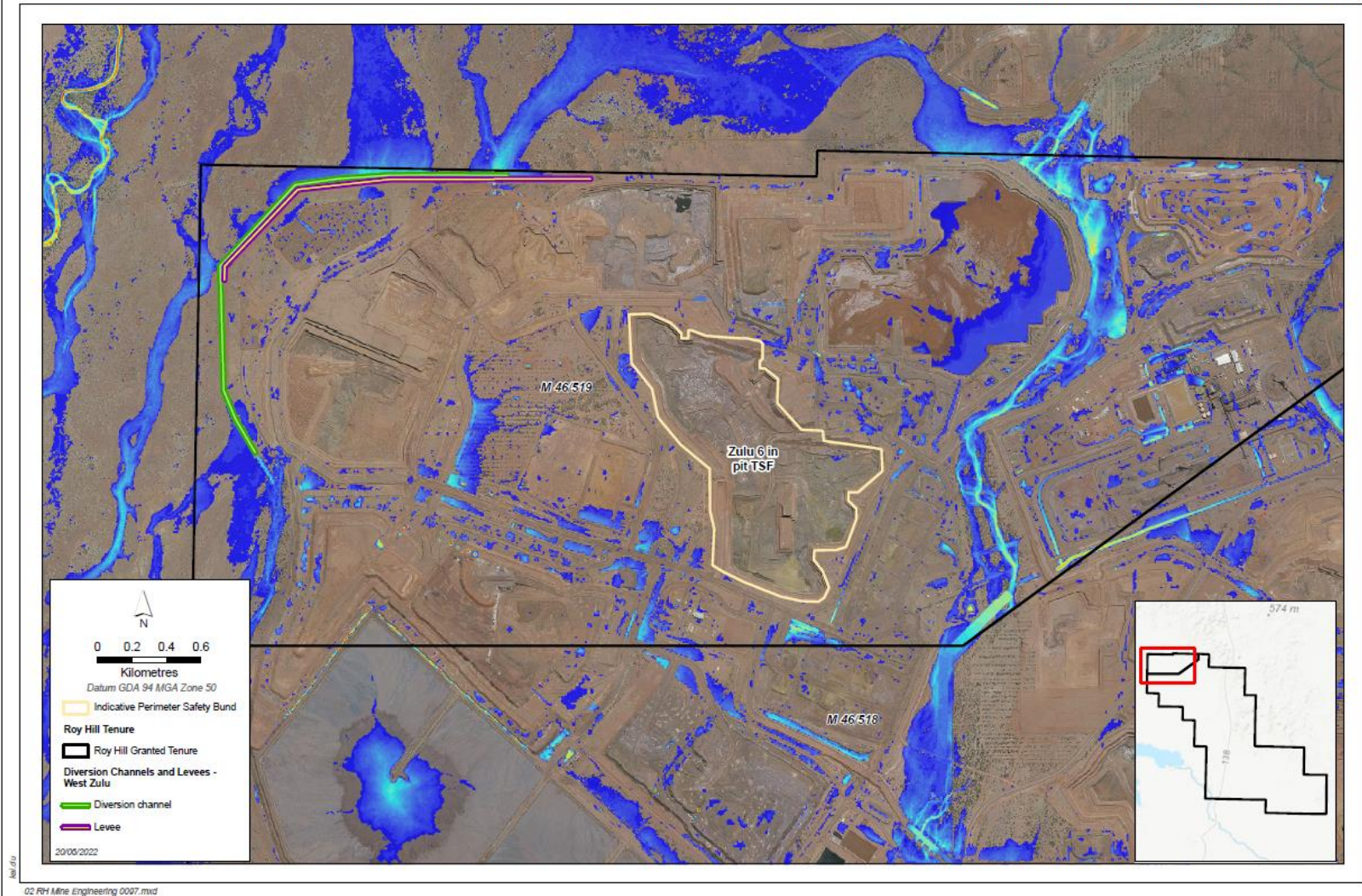


Figure 2: Proposed Zulu 6 IPTSF – tailings deposition, decant recovery and backfill areas

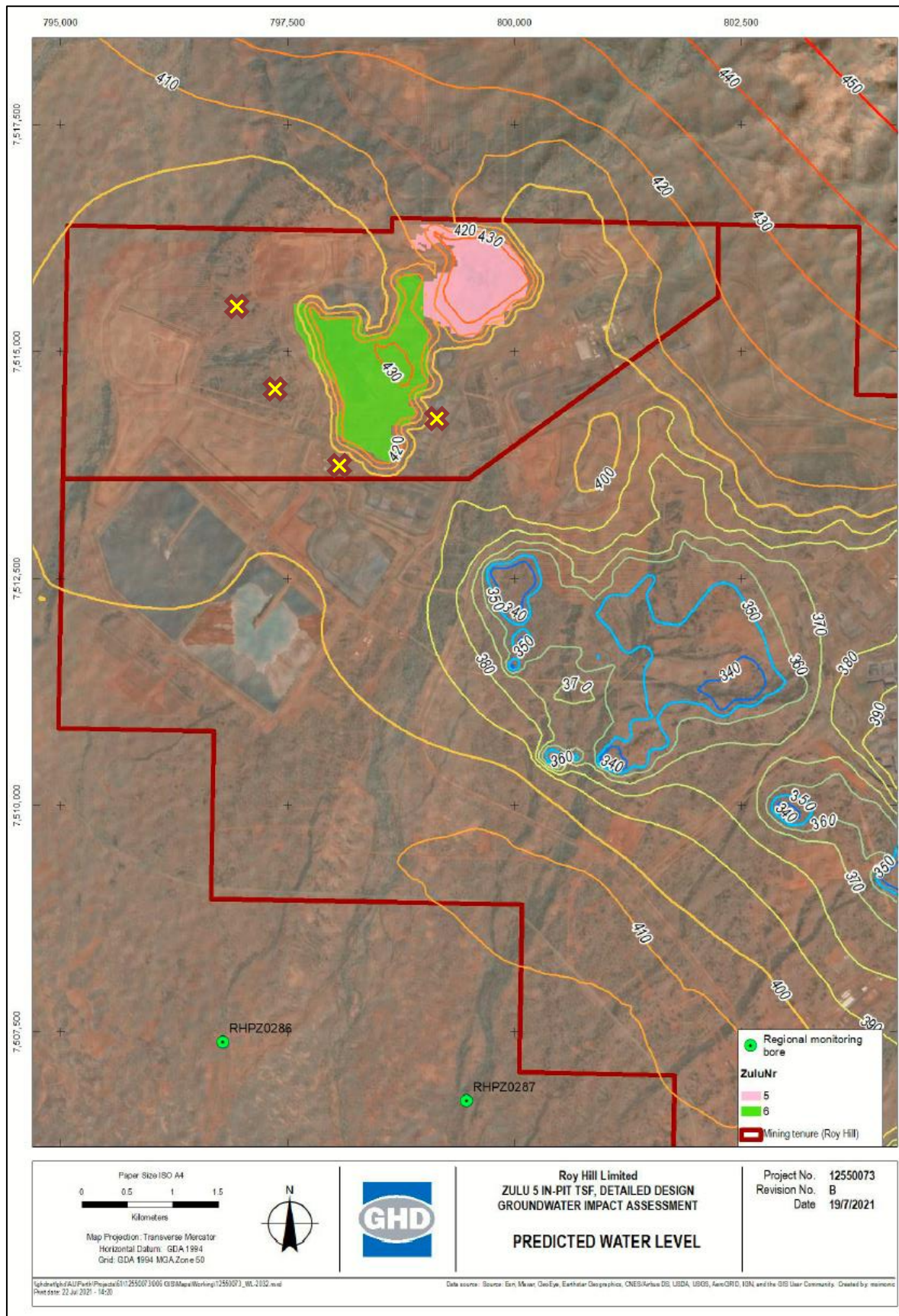


**ROY HILL OPERATIONS**  
**Zulu West Levee and Perimeter Bund**



**Figure 3: Zulu West Levee and perimeter bund**





**Figure 4: New shallow monitoring bores indicative locations – marked as X**