Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6653/2022/1
Works approval holder	Robe River Mining Co. Pty Ltd
ACN	008 694 246
Registered business address	152-158 St Georges Terrace PERTH WA 6000
DWER file number	DER2022/000033
Duration	11/08/2022 to 10/08/2025
Date of issue	11/08/2022
Date of amendment	24/05/2023
Premises details	Mesa J Hub – TSF8 Mining Lease AML248SA FORTESCUE WA 6716

Prescribed premises category description (Schedule 1, ***Environmental Protection Regulations 1987***)	**Assessed production / design capacity**
Category 5: Processing or beneficiation of metallic or non-metallic ore	20,000,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 24/05/2023 by:

Lauren Edmands
Digitally signed by Lauren Edmands
Date: 2023.05.24 12:31:14 +08'00'

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

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;

(c) at the corresponding infrastructure location; and

(d) within the corresponding timeframe.

as set out in Table 1.

Table 1: Design and construction / installation requirements

Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
Tailings delivery pipelines	4 pipelines: • Constructed of carbon steel, with the carbon steel sections supported on precast concrete plinths at a nominal spacing of 12 m. • Beyond the extents of the carbon steel sections, the pipes will be HDPE, which will be equipped with tees, valves and spigots. • The pipelines will be contained within defined bunded pipeline corridors to contain pipeline leaks and provided with dump ponds at strategic locations for containment of undetected pipe leaks. • The pipelines will be fitted with a telemetry system to monitor pressure deviations and provide early warning of leaks.	At the locations shown in Schedule 1, Figures 2 and 8 'Tailings Slurry Pipelines from PP2' and 'TSF4 Tailings Slurry Pipeline'.	Installed throughout: • Stage 1: Early deposition • Stage 1: Initial construction • Stage 2: Initial construction During Stage 1: Initial construction
Dump ponds	4 dump ponds: • Located along the tailings delivery pipeline route. • Each dump pond will be sized to contain up to six hours of tailings slurry. • Scour valves at each dump pond. • Access ramps constructed at the	At the locations shown in Schedule 1, Figure 8 'Dump Pond 1, Dump Pond 2, Dump Pond 3 and Dump Pond 4'.	During Stage 2: Initial construction

Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
	base of the dump ponds (where required).		
Spigots	• Located along the perimeter embankments. • At a maximum of 48 m centres, except along the northern flank where spacings will be less regular. • Valves on each spigot to allow them to open and close as required.	As shown in Schedule 1, Figure 5 'Boondocks North Excavation and Northern Spigot Dropper'.	Installed throughout: • Stage 1: Early deposition • Stage 1: Initial construction • Stage 2: Initial construction
Return water pipeline	• HDPE pipeline. • Contained in the same pipe corridor as the southern tailings delivery pipeline. • Equipped with pressure sensing and telemetry to activate alarms if a leak were to occur.	As shown in Schedule 1, Figures 2 and 9 'Return water pipeline to PP2'.	During Stage 1: Initial construction
Decant pumping system	• Decant pump intake. • Direct water to the return water pipeline.	Not shown.	During Stage 1: Initial construction
Internal spillway	• Initial construction to 135.5 mRL. • Utilising water holding capacity of cells to provide initial capacity in excess of 2.6 Mm^3 in both cells. • 30 m wide at its base, 0.5 m deep and 1:10 side slopes.	As shown in Schedule 1, Figure 5 'Spillway on Dividing Embankment'.	Not specified
Groundwater and seepage interception system	<u>Blanket drain</u> • Installed where required at the base of the western and southern embankments. • Constructed of pervious mine waste materials. • Direct inflowing groundwater via gravity to perimeter dewatering trenches.	As shown in Schedule 1, Figure 6 'Blanket Drain'.	Northern seepage management system installed as part of the Stage 1: Early deposition Groundwater and seepage interception system installed as part of Stage 2: Initial construction
	<u>Collection trenches</u> • Excavated perpendicular to the embankments. • Spaced at a nominally 50 m intervals under the embankment footprints and extended to the	As shown in Schedule 1, Figures 2, 3, 5, 6 and 7 'Collection Trench'.	

Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
	dewatering trenches. • Constructed of pervious mine waste materials.		
	<u>Collection sump</u> • Include a submersible pump, which will transfer water from the collection sump to the surface of the operational cell.	At the location shown in Schedule 1, Figure 7 'Collection sump'.	
	<u>Dewatering trench</u> • Constructed around the southern and western perimeter of TSF8. • Profiled (at a gradient of 0.4%) to drain to one of the dewatering sumps. • Designed with a flow capacity of approximately 63 L/s (equivalent to a groundwater inflow of 2 GL/a).	As shown in Schedule 1, Figures 2, 3, 6 and 7 'Dewatering Trench'.	
	<u>Dewatering sumps</u> • 3 sumps (north-western, southern and south-western). • Designed to balance groundwater inflow, including storage capacity for groundwater inflow equivalent to 2 GL/a and approximately 10,000 m3 of rainfall (or about 200 mm rainfall, equivalent to approximately 1:100 AEP 8-hour event). • Include a pump which will be able to transfer the full flow via the collection and delivery pipelines to Dan's Dam.	As shown in Schedule 1, Figures 2, 5, 6 and 7 'North-western sump; South-western sump; and Southern sump'.	
	<u>Dewatering pipelines</u> • Constructed of HDPE. • Contained in the same pipe corridor as the return water and southern tailings delivery pipeline. • Pipelines fitted with pressure sensors and telemetry. • Pipelines directed to Dan's Dam.	As shown in Schedule 1, Figures 2 and 9 'Dewatering Pipelines to Dan's Dam'.	

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 2: Critical containment infrastructure design and construction requirements

Infrastructure	Design and construction requirements	Infrastructure location
TSF8	• Storage capacity of 31 Mm^3 of comingled and thickened tailings. • Operational footprint of 160 ha.	As shown in Schedule 1, Figures 1 and 10 'Proposed TSF8'.
TSF8 embankments	• All upstream (interior) batters will be formed at 1V:2H (vertical to horizontal). • The external slope of the starter embankment (crest 141.0 mRL) will be no steeper than 1V:2H. • Embankments constructed with preferred sources of mine waste material. • Installation of a pervious zone of material placed against the inflow zone extending to the collection sump.	As shown in Schedule 1, Figures 3 and 4.

3. The works approval holder is authorised to construct embankment raises for TSF8 to the construction height specified in Table 3.

Table 3: Staged construction heights for TSF8

Stage	Active cell	Perimeter embankment (mRL)	Dividing Embankment (mRL)	Infrastructure location
Stage 1: Early deposition	Eastern	140.0 (South-eastern embankment)	136.0	As shown in Schedule 1, Figures 3 and 4.
Stage 1: Initial construction	Eastern	156.0 (final design elevation)	136.0	
Stage 2: Initial construction	Western	141.0 (downstream raise)	140.3 (centreline raise)	

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

Table 4: Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
Groundwater monitoring wells (MBTSF8e and MBTSF8f)	Two new groundwater monitoring wells to be installed to monitor SWL and water quality: • Designed and constructed 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[1]. Where temporary/seasonal perched features are present, wells must be nested, and the perched features individually screened.	As depicted in Schedule 1, Figure 11 'Groundwater monitoring bore locations'[2].	Must be constructed, developed (purged), and determined to be operational by no later than 30 calendar days prior to Stage 2 – Western cell deposition.

Note 1: Refer to Section 8 of Schedule B2 of the *Assessment of Site Contamination NEPM* for guidance on well screen depth and length.
Note 2: Location of the two new monitoring bores is subject to change.

5. 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 6.

6. The works approval holder must within 30 days of the monitoring bores in Table 4 being constructed, conduct baseline sampling in accordance with Section 8.2.3.5 of *Assessment of Site Contamination NEPM* for parameters outlined in Schedule 2: Monitoring.

Compliance reporting

7. 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.

8. The Environmental Compliance Report required by condition 7, must include as a minimum the following:

(a) certification by a suitably qualified Engineer / geotechnical specialist 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.

9. The works approval holder must within 30 calendar days of the Critical Containment Infrastructure identified by condition 2 being constructed:

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

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

10. The Critical Containment Infrastructure Report required by condition 9 must include as a minimum the following:

(a) certification by a suitably qualified Engineer / geotechnical specialist that each item of critical containment infrastructure or component thereof, as specified in condition 2, has been built and installed in accordance with the requirements specified in condition 2;

(b) 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;

(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.

11. Subject to conditions 7 and 9, where an item of infrastructure or component of infrastructure has been certified as not being constructed, or does not comply with corresponding requirements, or contains material defects, the works approval holder must:

(a) correct the non-compliant or defective works, prior to re-certifying in accordance with conditions 8(a) and 10(a); or

(b) provide to the CEO a description of, and explanation for, any departures from the requirements specified in Table 1 and/or Table 2 that do not require recertification and do not constitute a material defect along with the report required by conditions 8 and 10.

Environmental commissioning phase

Environmental commissioning requirements

12. The works approval holder may only commence environmental commissioning of an item of infrastructure listed in Table 5 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 7 of this works approval.

13. The works approval holder may only commence environmental commissioning of an item of infrastructure identified in condition 2:

(a) once the Critical Containment Infrastructure Report has been submitted for that item of infrastructure in accordance with condition 8 of this works approval; and

(b) the CEO has notified the works approval holder that the Critical Containment Infrastructure Report required by condition 8 meets the requirements of the works approval.

14. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 5 may only be carried out:

(a) in accordance with the corresponding commissioning requirements; and

(b) for the corresponding authorised commissioning duration.

as detailed in Table 5.

Table 5: Environmental commissioning requirements

	Infrastructure	Commissioning requirements	Authorised commissioning duration
1	TSF8	Stage 1: Subject to completing the requirements of conditions 7 and 9.	30 calendar days
2		Stage 2: Subject to completing the requirements of conditions 6, 7 and 9.	
3	Tailings delivery and return water pipelines	Subject to TSF8 completing the requirements of row 1 of this table for Stage 1. Subject to completing the requirements of condition 7 for the pipelines and spigots.	
4	Spigots		

15. During environmental commissioning and time limited operations, the works approval holder must ensure that the emission(s) specified in Table 6, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Table 6: Authorised discharge points during commissioning

Emission	Discharge point	Discharge point location
Thickened[1] tailings from PP2 surge tank to TSF8	TSF8 via spigots located along the perimeter	As shown in Schedule 1, Figure 10.
	Contingency tie-in from existing TSF4 pipeline to eastern cell of TSF8	As shown in Schedule 1, Figure 8 ‘TSF4 tailings slurry pipeline’.

Note 1: Unthickened tailings may be deposited into TSF8 during maintenance activities.

Environmental commissioning reporting

16. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 5.

17. The works approval holder must ensure the Environmental Commissioning Report required by condition 16 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of waste fines deposited;

(b) a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed, which at a 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 and compliance against the conditions of this works approval; 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

18. The works approval holder may only commence time limited operations for an item of infrastructure identified in conditions 1 and 2:

(a) where the item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 7 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 14, the Environmental Commissioning Report for that item of infrastructure as required by condition 16 has been submitted by the works approval holder.

19. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 20:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 18 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 19(a).

Time limited operations requirements

20. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 7 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 7.

Table 7: Infrastructure and equipment requirements during time limited operations

Site infrastructure and equipment	Operational requirement	Infrastructure location
TSF8	• Maintain a freeboard of 0.5 m above the 1:100 AEP 72-hour event. • Target solids concentration by weight between 35% and 50%. • Deposition of comingled and thickened[1] tailings. • Tailings deposited to TSF8 from one of four delivery pipelines in thin layers, nominally 300 mm thick via rotating deposition between spigots. • Decant pond managed to be located near the centre of TSF8. • Decant pond maintained at a nominal depth of 0.5 m, with a target maximum depth of 1 m. • Decant water pumped via the return water pipeline to the process water tank at PP2 for reuse in processing. • Groundwater and seepage water pumped via the collection and delivery pipelines to Dan's Dam.	As shown in Schedule 1, Figures 1 and 11 'Proposed TSF8'.
Internal spillway	• Maintained between the two cells. • Freeboard of 0.5 m above the 1:100 AEP 72-hour event maintained.	As shown in Schedule 1, Figure 5 'Spillway on Dividing Embankment'.

Note 1: Unthickened tailings may be deposited into TSF8 during maintenance activities.

Monitoring during environmental commissioning and time limited operations

21. The works approval holder must monitor emissions during environmental commissioning and time limited operations in accordance with Schedule 2: Monitoring.

Inspections

22. The works approval holder must conduct visual inspections of the infrastructure during commissioning and time limited operations at the frequency specified in Table 8.

Table 8: Inspections of infrastructure

Infrastructure	Type of inspection	Frequency
Tailings delivery pipeline and return water pipeline	Integrity check / loss of containment	Daily
TSF8 embankment freeboard	To confirm required freeboard capacity is available	Daily

Time limited operations - compliance reporting

23. The works approval holder must submit to the CEO a report on the time limited operations within 90 calendar days of the completion of time limited operations.

24. The works approval holder must ensure the report required by condition 23 includes the following:

(a) a summary of the time limited operations, including timeframes;

(b) waste fines density (solid vs water content);

(c) water balance over TSF8 including site rainfall, evaporation rate, decant water recovery volumes, volume of tailings deposited, and calculated seepage.

(d) monitoring results recorded in accordance with condition 21 including an interpretation of these results;

(e) a summary of the environmental performance of all infrastructure as constructed or installed, which includes records detailing the:

(i) operations of the infrastructure; and

(ii) testing of the infrastructure.

(f) a review of performance and compliance against the conditions of the works approval; and

(g) 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)

25. 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.

26. 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 conditions of this works approval;

(c) monitoring programmes undertaken in accordance with condition 21;

(d) visual inspection undertaken in accordance with condition 22; and

(e) complaints received under condition 25.

27. The books specified under condition 26 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 9 have the meanings defined.

Table 9: Definitions

Term	Definition
AEP	Annual Exceedance Probability
annual period	a 12 month period commencing from 1 January until 31 December in the same year
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended from time to time
AS/NZS 5667.1	means the Australian/New Zealand Standard 5667.1:1998 *Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*
AS/NZS 5667.11	means the Australian/New Zealand Standard 5667.11:1998 *Water Quality – Sampling – Guidance on Sampling of Groundwaters*
ASTM D5092/D5092M-16	means the ASTM international standard for *Standard practice for design and installation of groundwater monitoring wells* (Designation: ASTM D5092/D5092M-16), as amended from time to time
bimonthly	means every two months
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

Term	Definition
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
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
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
GL/a	means gigalitre per annum
HDPE	means high-density polyethylene
L/s	means litres per second
mbgl	means metres below ground level
Mm^3	means million cubic metres
PP2	means Process Plant 2
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
Stage 1 and Stage 2	means staged construction heights as defined in Table 3 of this works approval
SWL	means Standing Water Level

Term	Definition
Suitably qualified Engineer / geotechnical specialist	means a person who: (a) holds a tertiary academic qualification in geotechnical science or engineering; and/or (b) is eligible for membership of the Institute of Engineers, Australia; and (c) has a minimum of 5 years of experience working in the field of geoscience
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
TSF8	means Tailings Storage Facility 8
µS/cm	means microsiemens per centimetre
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).

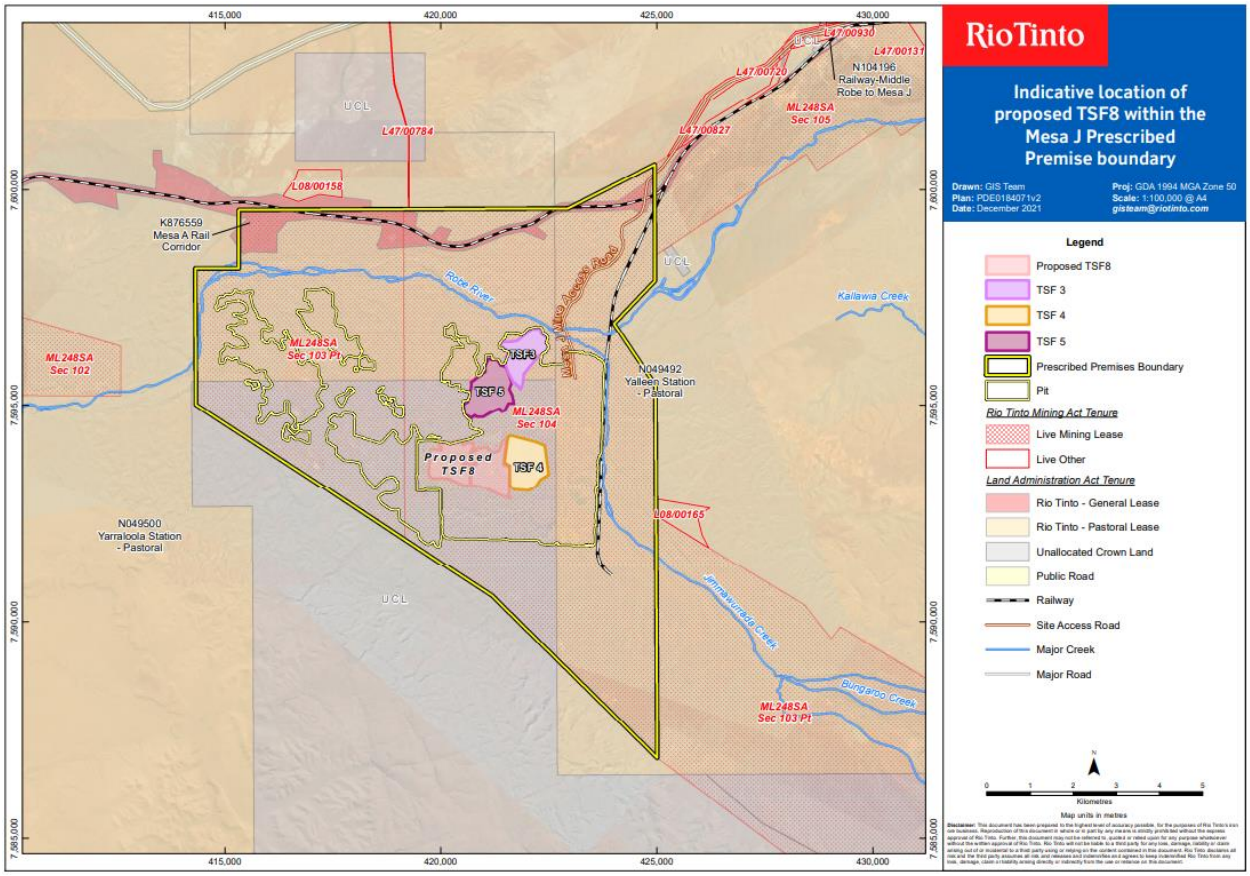

Figure 1: Map of the boundary of the prescribed premises

Infrastructure

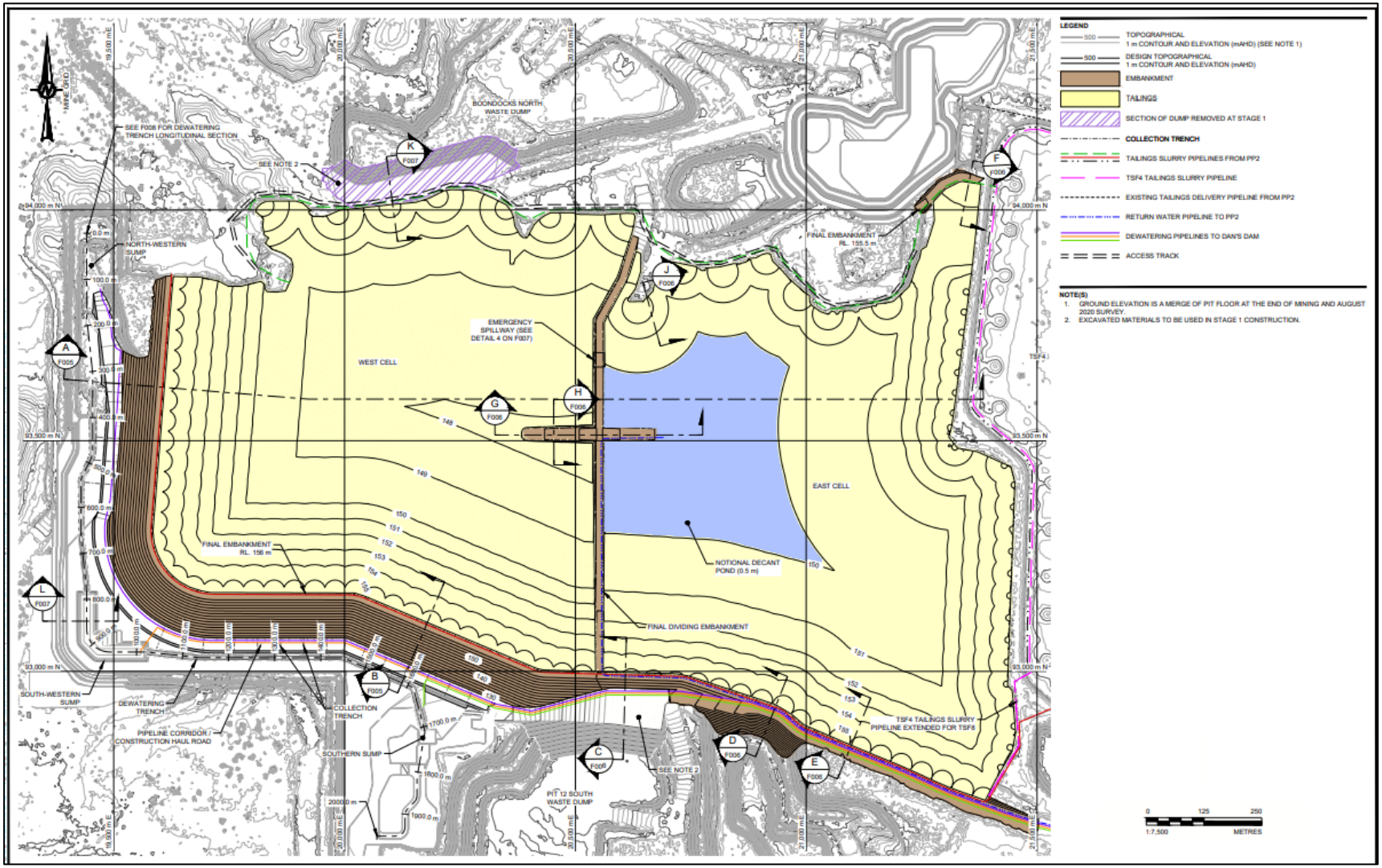

Figure 2: TSF8

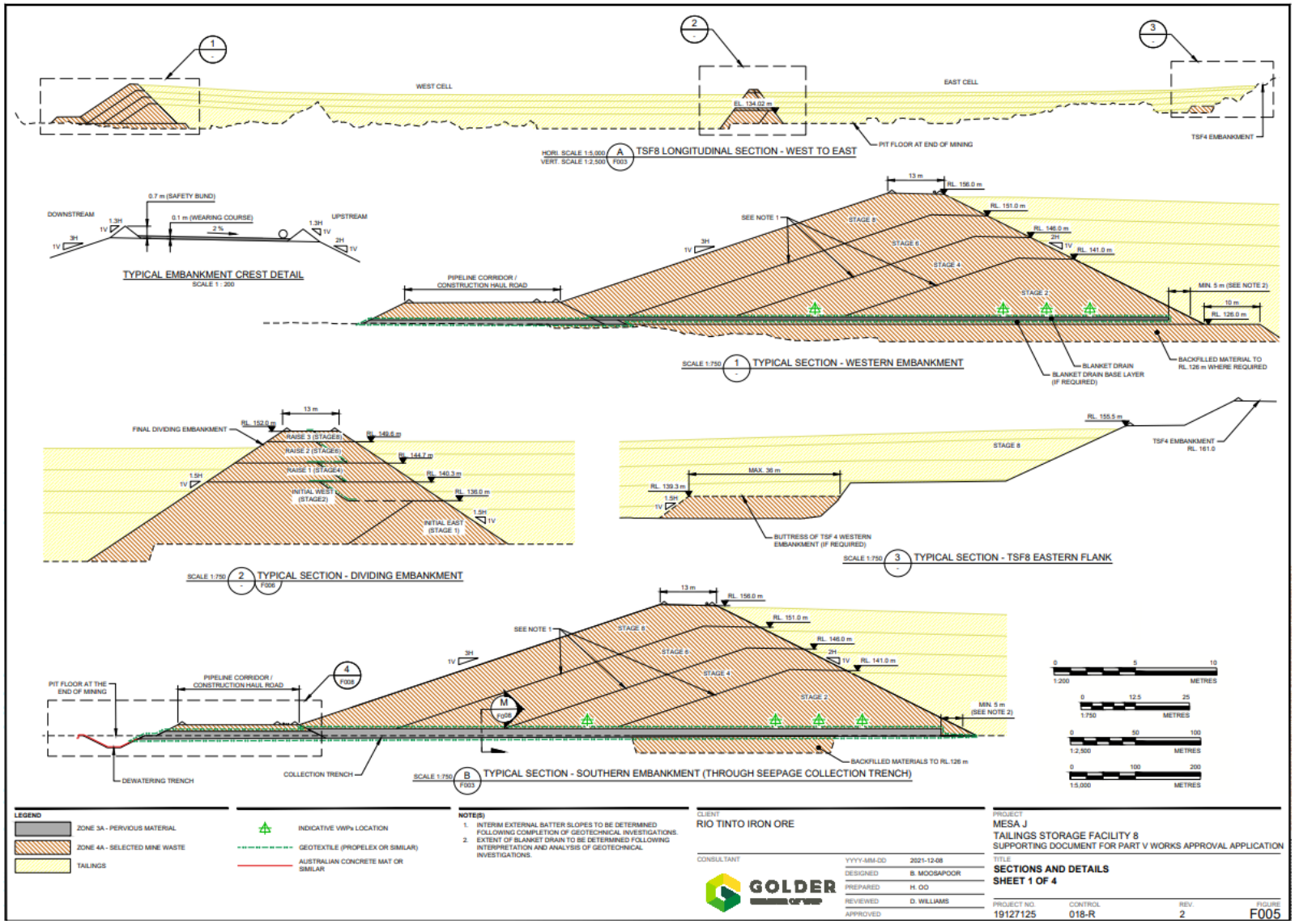

Figure 3: TSF8 design for all lifts (noting only Stage 1 and 2 are approved)

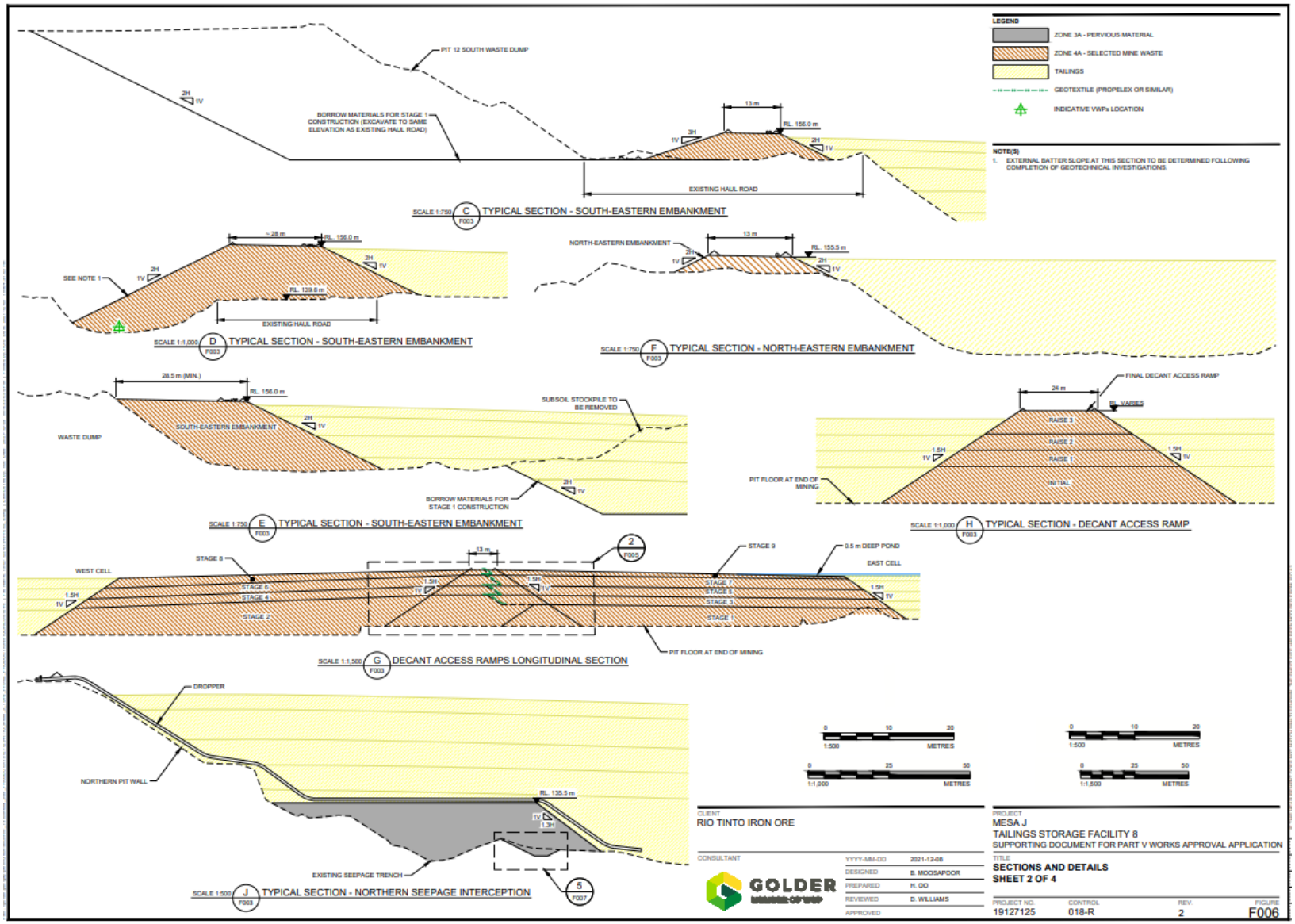

Figure 4: TSF8 design

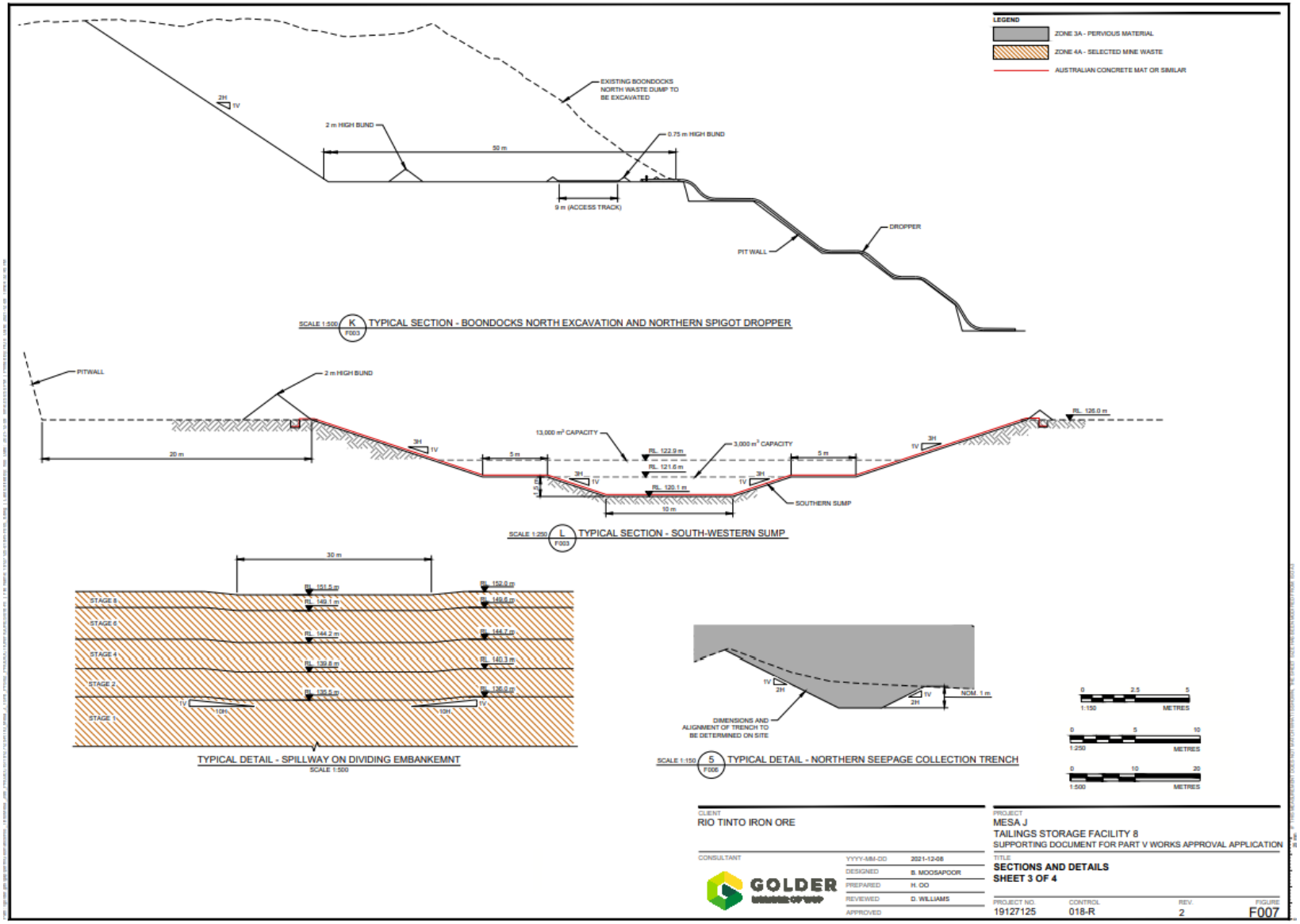

Figure 5: TSF8 design

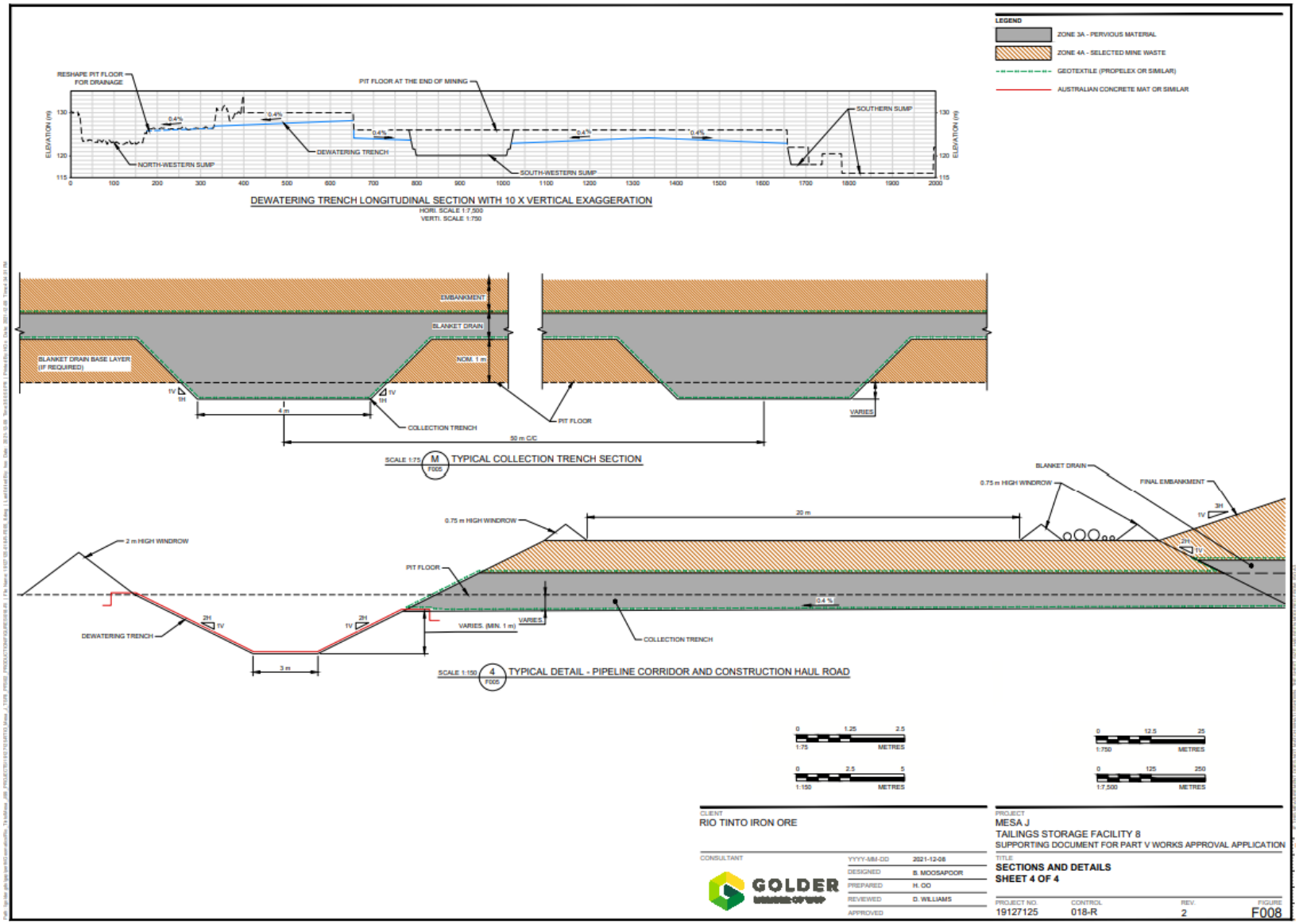

Figure 6: TSF8 design

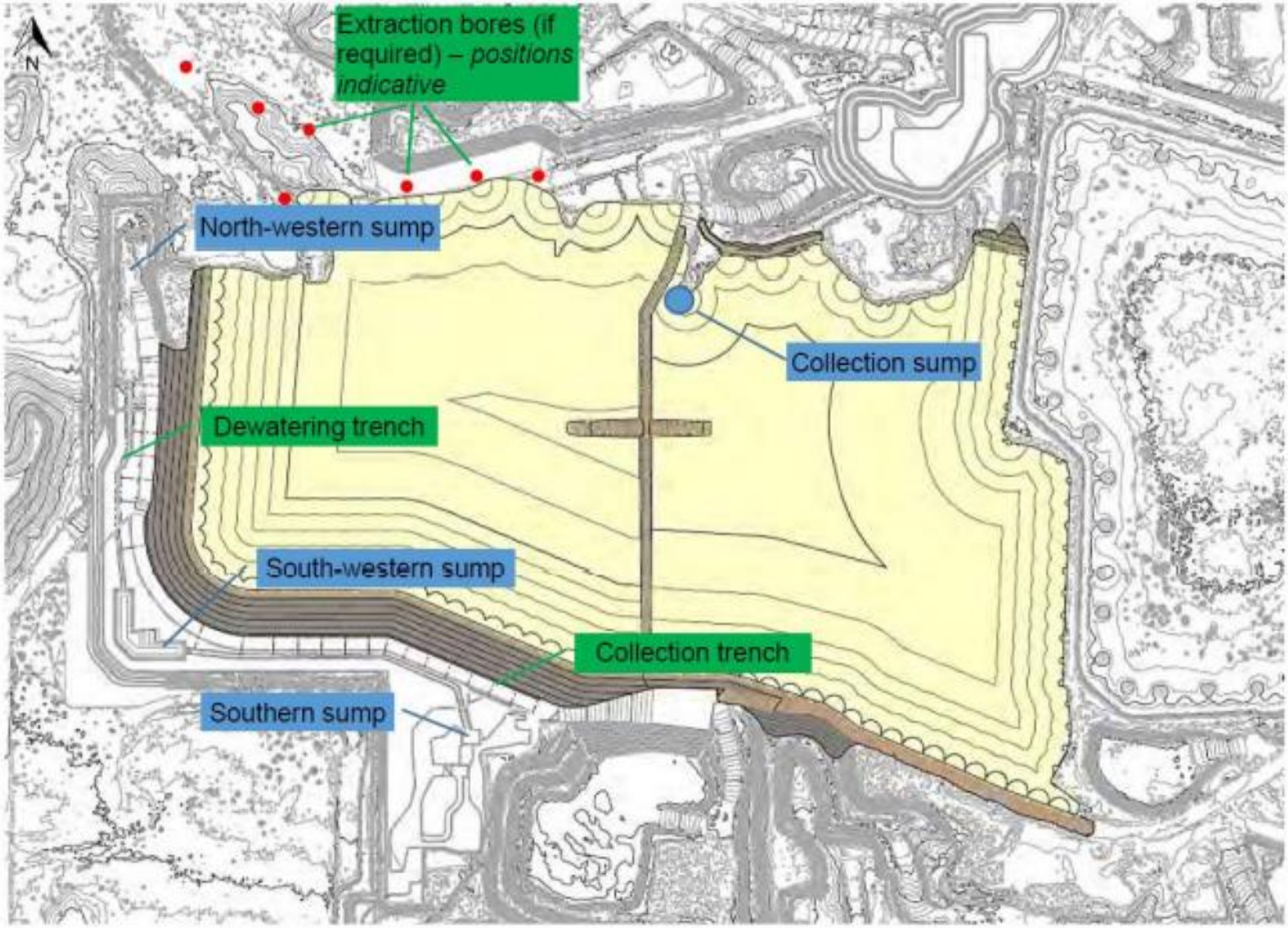

Figure 7: Groundwater and seepage interception system

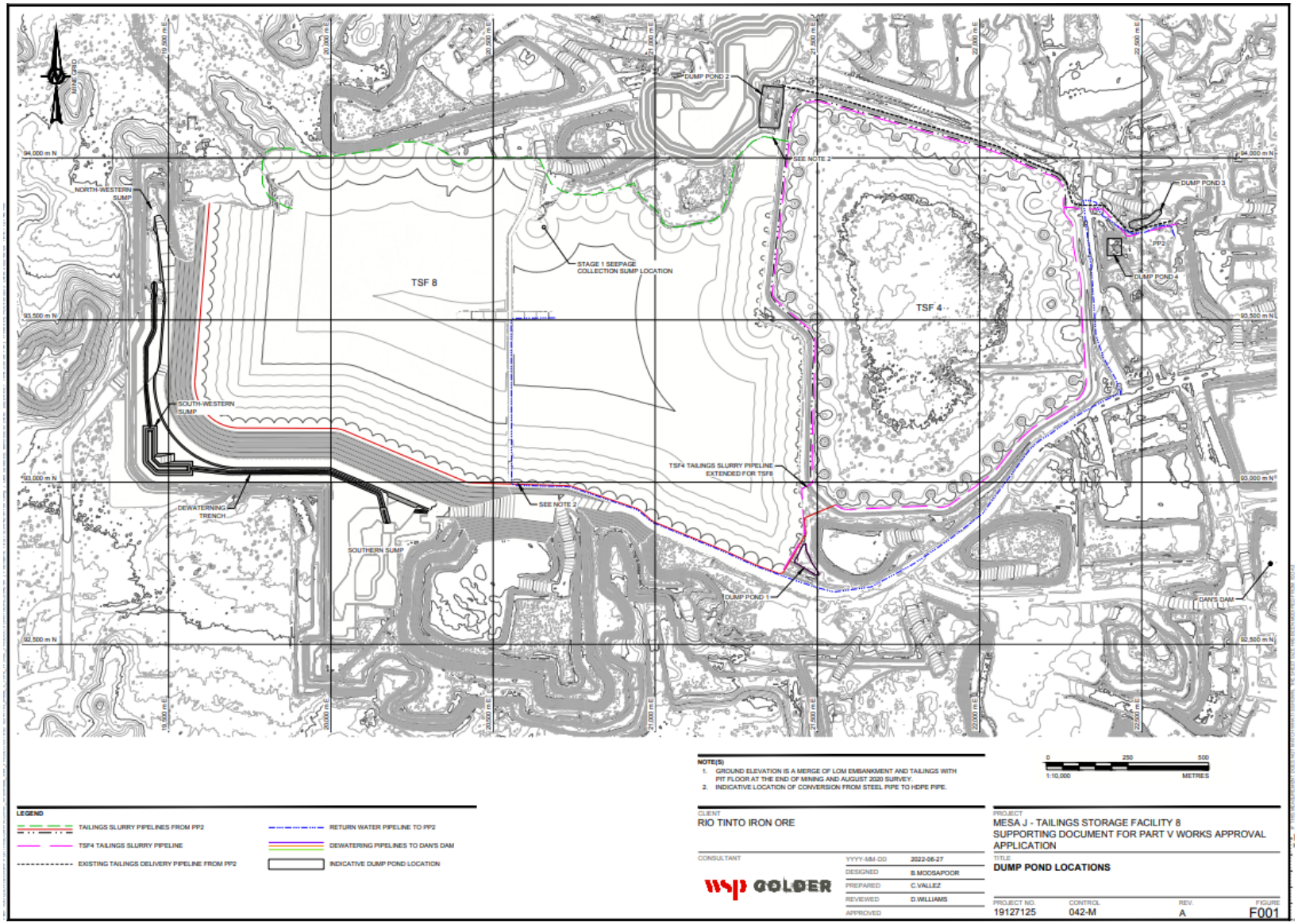

Figure 8: Tailings delivery pipeline routes and dump pond locations

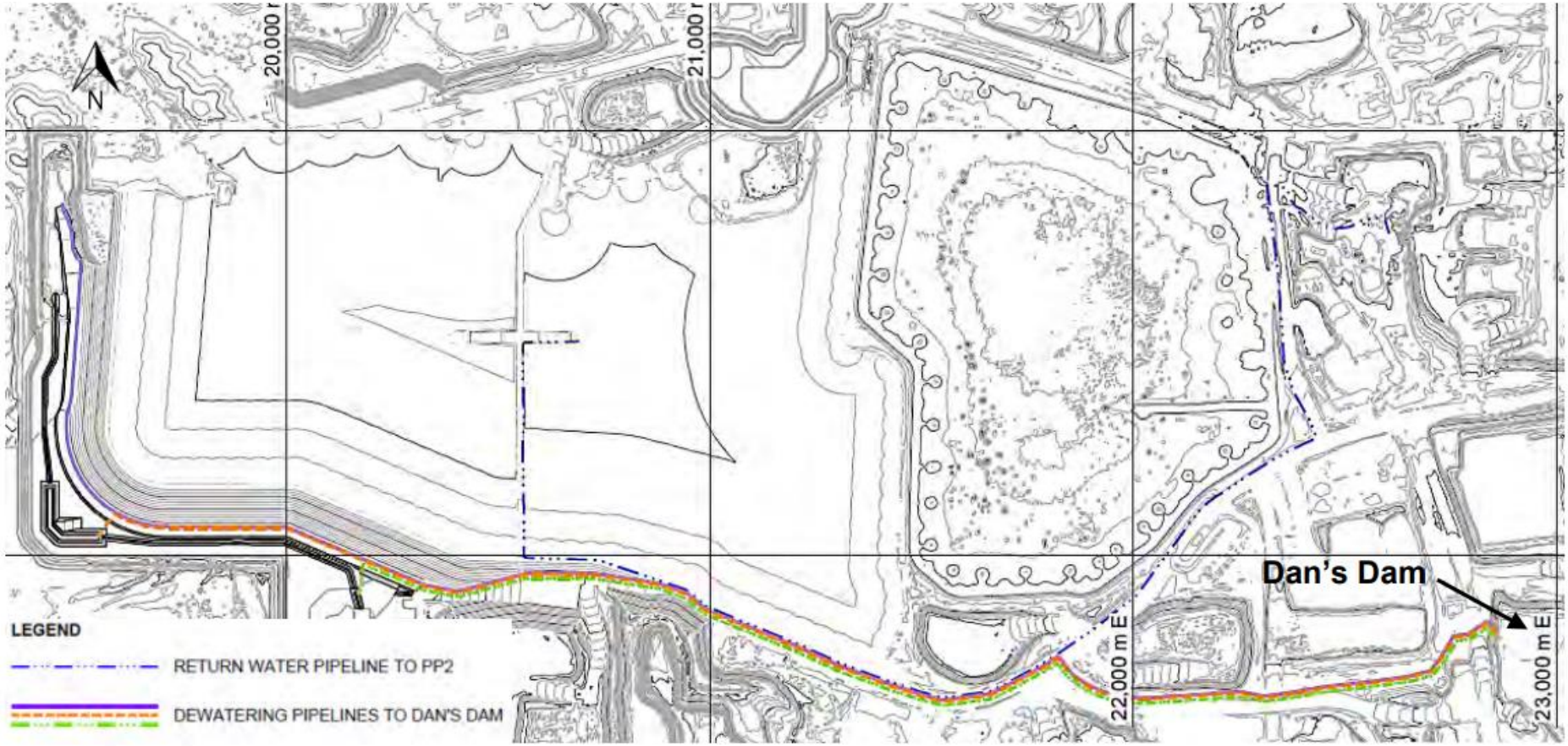

Figure 9: Return water pipeline and groundwater interception system pipeline route

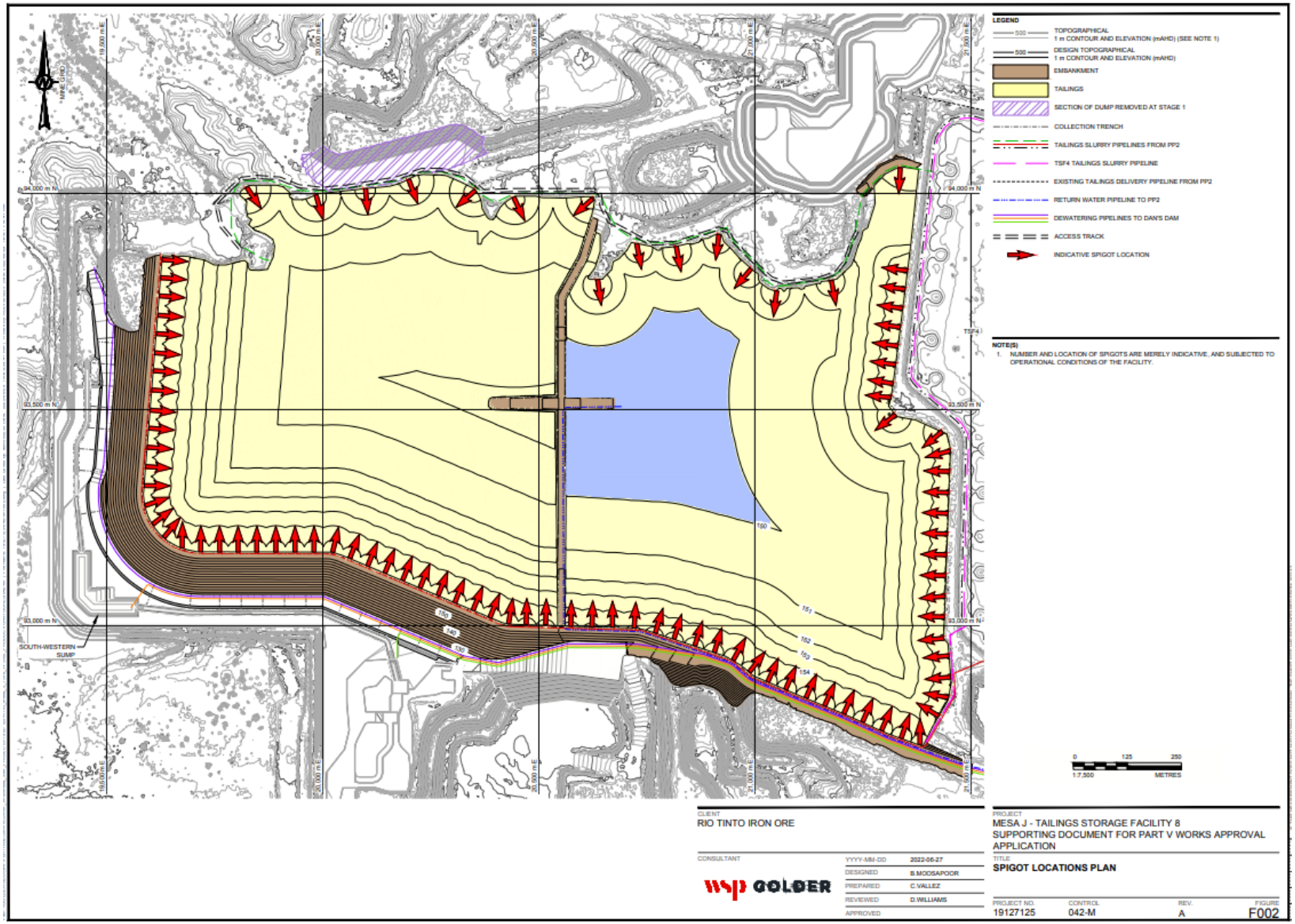

Figure 10: Indicative spigot locations

Monitoring

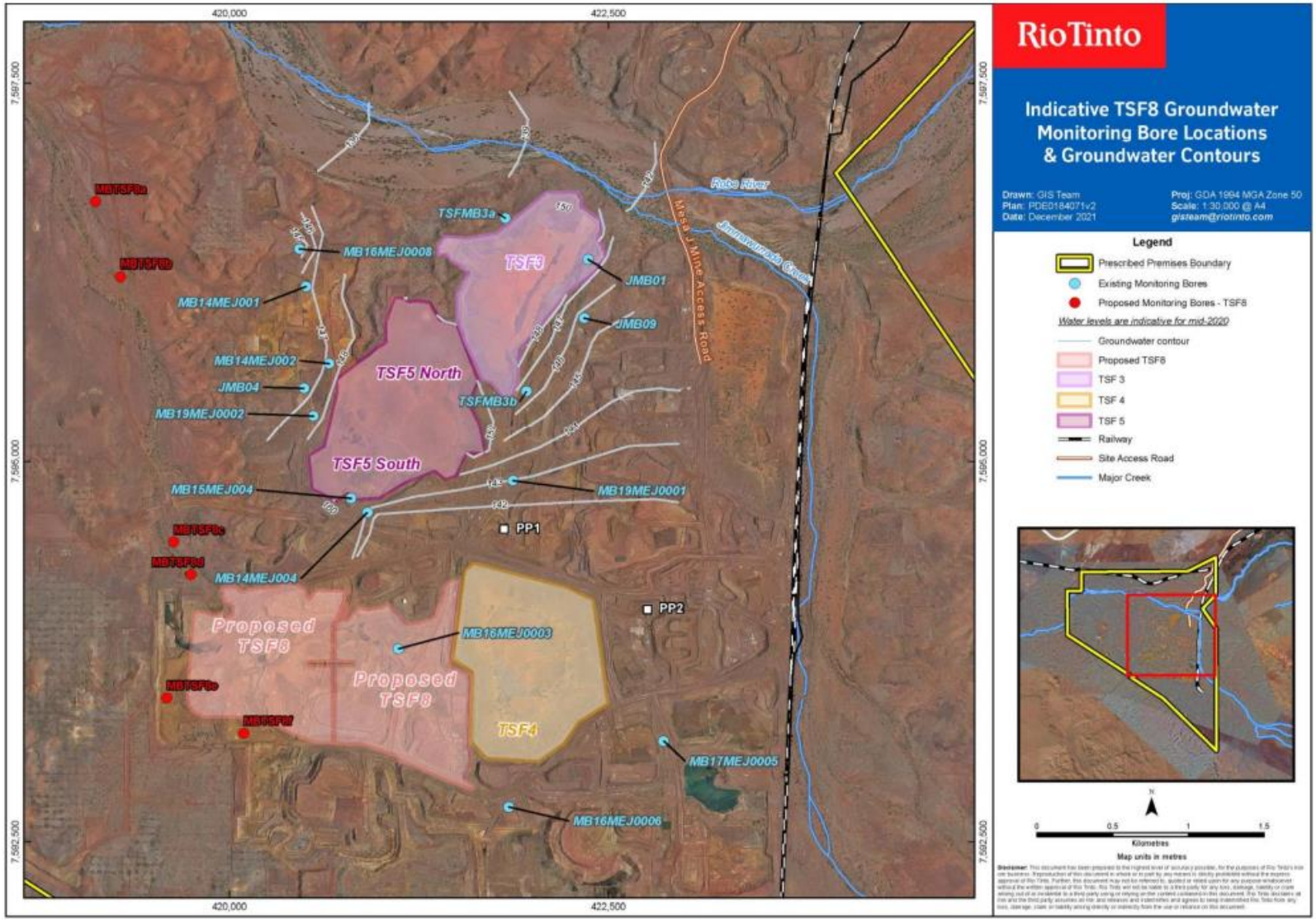

Figure 11: Groundwater monitoring bore locations

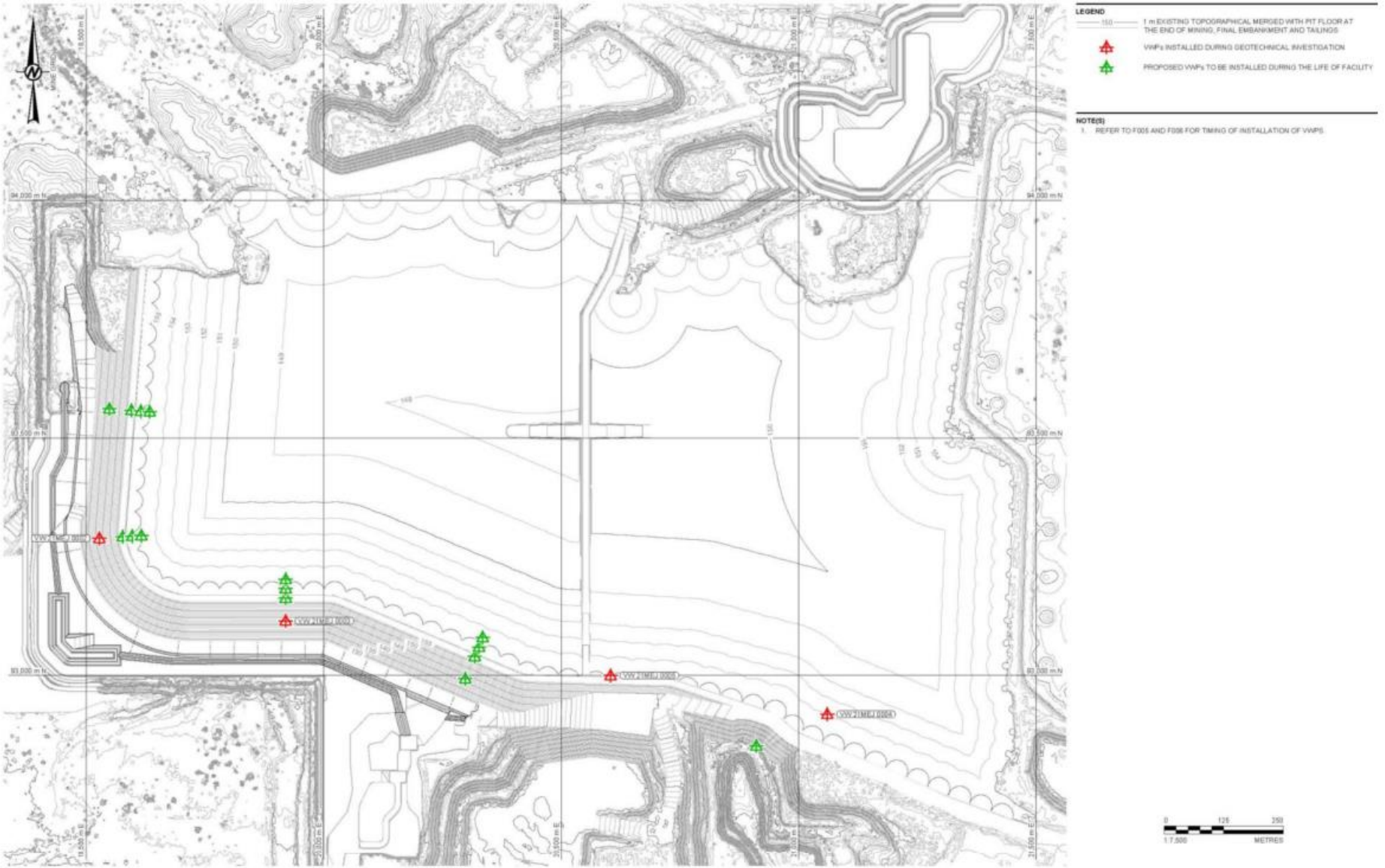

Figure 12: Vibrating Wire Piezometer locations

Schedule 2: Monitoring

Monitoring location[2]	Parameter	Unit	Frequency	Averaging period	Method
New bores MBTSF8e MBTSF8f Existing bores MBTSF8a MBTSF8b MBTSF8c MBTSF8d as depicted in Schedule 1, Figure 11	SWL	mbgl	At least once prior to environmental commissioning Monthly during environmental commission and time limited operations	Spot sample	AS/NZS 5667.1 AS/NZS 5667.11
	pH[1]	pH units			
	Electrical conductivity[1]	µS/cm			
	Dissolved Oxygen[1]	mg/L			
	Total Dissolved Solids	mg/L	At least once prior to environmental commissioning Bimonthly during environmental commission and time limited operations		
	Alkalinity ($CaCO_3$)				
	Nitrate				
	Nitrite				
	Ammonia				
	Acrylamide				
	Calcium				
	Chloride				
	Fluoride				
	Potassium				
	Magnesium				
	Sodium				
	Sulphate				
	Aluminium				
	Arsenic				
	Barium				
	Boron				
	Cadmium				
	Cobalt				
	Chromium				
	Copper				
	Iron				
	Mercury				
	Manganese				
	Molybdenum				
	Nickel				
	Lead				

Monitoring location[2]	Parameter	Unit	Frequency	Averaging period	Method
	Antimony				
	Selenium				
	Strontium				
	Thallium				
	Zinc				
Vibrating Wire Piezometer VW21MEJ0002 VW21MEJ0003 VW21MEJ0004 VW21MEJ0005 as depicted in Schedule 1, Figure 12	Phreatic surface	mbgl	Monthly	Spot sample	AS/NZS 5667.1 AS/NZS 5667.11

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

Note 2: Monitoring bore names are subject to change