Government of Western Australia
Department of Water and Environmental Regulation

# Works Approval

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| **Works approval number** | W6322/2019/1 |
| **Works approval holder** | IB Operations Pty Ltd |
| **ACN** | 165 513 557 |
| **Registered business address** | Level 2<br>Hyatt Centre<br>87 Adelaide Terrace<br>EAST PERTH WA 6004 |
| **DWER file number** | DER2019/000575 |
| **Duration** | 28/04/2020 to 27/04/2024 |
| **Date of amendment** | 22/06/2022 |
| **Premises details** | Iron Bridge Magnetite Project<br>Mining Tenements M45/1226, L45/293, L45/294, L45/359, L45/360, L45/361, L45/364 and L45/367<br>MARBLE BAR WA 6760<br>As defined by the map in Schedule 1 |

| **Prescribed premises category description** (Schedule 1, ***Environmental Protection Regulations 1987***) | **Assessed design capacity** |
|---|---|
| Category 5: Processing or beneficiation of metallic or non-metallic ore | 72 million tonnes per annum |

This amended works approval is granted to the works approval holder, subject to the attached conditions, on 22 June 2022, by:

**Alana Kidd**
**MANAGER, RESOURCE INDUSTRIES**
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;

(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 1: Design and construction / installation requirements**

| | Infrastructure | Design and construction / installation requirements | Infrastructure location |
|---|---|---|---|
| 1. | Ore Processing Facility (OPF) | Designed to process 72 million tonnes per annum (Mtpa) of magnetite ore, producing up to 25 Mtpa (wet) of concentrate. | Figure 2 and 16 in Schedule 1 |
| | | Comprises the following infrastructure/ equipment:<br>a) Run of Mine (ROM) primary crushing hub<br>b) Mobile crushing facility<br>c) Secondary crushers<br>d) Coarse Ore Stockpile (COS)<br>e) Tertiary high pressure grinding rolls (HPGR) crushing / screening<br>f) HPGR primary grinding / air classification<br>g) Fine grinding with magnetic separation and deslime<br>h) Cleaner wet magnetic separation concentrate upgrade circuit<br>i) Concentrate and tailings thickening<br>j) Process water storage: 170,847 $m^3$ HDPE lined pond with high level detection alarms<br>k) Raw water storage: 63,605 $m^3$ HDPE lined pond with high level detection alarms<br>l) Slurry Pipe to the TSF: above ground steel pipeline nominal 800 mm diameter, with flow measurement at the start (Tailings Transfer Tank at OPF) and at the end of the pipeline (at the TSF), and continuous monitoring of pipeline pressure and pump performance | Figure 2 and 16 in Schedule 1 |

| | Infrastructure | Design and construction / installation requirements | Infrastructure location |
|---|---|---|---|
| | | m) Conveyors (19 enclosed, 6 unenclosed) and enclosed transfer stations<br>n) Mobile conveyor and stacker located on a raised pad<br>o) Concentrate Handling Facility (CHF) located on a raised pad<br>Comprises the following infrastructure/ equipment:<br>i) 4500 tonne day feed stockpile<br>ii) Ore feed hopper<br>iii) Feed conveyor<br>iv) Head chute (new infrastructure)<br>v) Slurry tank (modified) and slurry pump<br>vi) Process water pipelines<br>vii) Slurry pipeline<br>viii) Two 2MVA diesel fueled gensets<br>ix) 2,000L self-bunded diesel fuel tank. | |
| | | Containers for chemicals used in the process, stored in a bunded impermeable area. | Not shown |
| | | All tanks to be installed on concrete ring beams, with concrete bunding and sump system around spillage points (including pump suctions and tank overflows). | Not shown |
| | | OPF supporting infrastructure to comprise the following:<br>a) Light and Heavy Vehicle Workshops<br>b) Heavy Vehicle Tyre change<br>c) Heavy Vehicle welding workshop<br>d) Fixed Plant Workshop<br>e) Fixed Plant Welding Workshop<br>f) Lubricant Storage Facilities<br>g) Light and Heavy Vehicle Wash Bays<br>h) Refuelling Facilities<br>i) Warehouse<br>j) Administration Building and crib room. | Figure 2 in Schedule 1 |
| | | Testing of incomplete infrastructure to validate and check design parameters prior to completion of construction. Testing will use or discharge:<br>• ore to test the infrastructure and equipment used to process ore<br>• raw water for testing of tanks and other infrastructure, discharged to the process water pond<br>• tailings discharged to the tailings storage facility, provided satisfaction of Conditions 6 and 7. | Not shown |
| | | Dust minimisation equipment will be comprised of:<br>• water sprays, fitted and operational: | Not shown |

| | Infrastructure | Design and construction / installation requirements | Infrastructure location |
|---|---|---|---|
| | | o to the crusher hopper and along conveyors (where required)<br>o transfer points within the crushing hubs<br>o dry rejects stacking system and associated mobile conveying system<br>• water trucks:<br>o at the COS<br>o at the ore day feed stockpile<br>• dedicated dust collectors at located within the OPF where dry material is handled; collected dust fines will be slurried with process water and pumped back into the processing circuit. | |
| | | Stormwater infrastructure must be designed and constructed so as to meet the following specifications:<br>• Direct all potentially contaminated stormwater to 4 sedimentation basins sized to a 1 in 2 AEP of 1-hour duration, to remove 80% (by mass) of suspended particles prior to release to the environment<br>• Contaminated Water Storage Ponds (silt trap arrangement): up to 5 ponds up to 4 kL in size, un-lined ponds with freeboard of 1 in 2 AEP of 1-hour duration, with any overflow contained within the sump (apron) catchment<br>• 2 Oily Water Separator (OWS) designed to treat water to a Total Recoverable Hydrocarbon (TRH) concentration of 15 mg/L. | Figure 3 in Schedule 1 |
| 2. | Groundwater monitoring bores | Minimum 6 bores directly downstream of the RWP able to be converted to seepage recovery bores and designed and constructed as per condition 3. | Figure 12 in Schedule 1 |

**Table 2: Critical containment infrastructure design and construction requirements**

| | Infrastructure | Design and construction requirements | Infrastructure location |
|---|---|---|---|
| 1. | RWP | • Located directly downstream of the TSF<br>• Construct two embankments (9.5 m and 16 m)<br>• Embankments made from local borrow, mine waste rock and plant dry rejects, which are not classified as PAF<br>• Bituminous Geomembrane (BGM) liner covering upstream face of the embankments (impermeable)<br>• Embankments to include contingency seepage control:<br>o rockfill seepage collection drain in the base of the embankment foundation discharging into a seepage monitoring sump directly downstream of each embankment<br>o toe drain<br>o seepage monitoring sump (soak well) lined with a geotextile cloth installed in a rock-filled interception trench<br>• Grout curtain to be constructed at the RWP South embankment<br>• 2 pumps mounted on a single mobile pontoon located within a channel excavated to access the central part of the RWP area from its southern perimeter with a maximum combined pumping rate of 1980 $m^3$/hour<br>• Process control for water return pumps to the OPF to include staged levels of alarms to allow appropriate escalation and response<br>• Installed flow meters to continuously monitor water recovery volumes. | Figure 5, Figure 6, Figure 12, Figure 13, Figure 14 and Figure 15 in Schedule 1 |

| | Infrastructure | Design and construction requirements | Infrastructure location |
|---|---|---|---|
| 2. | TSF – Stage 1A | • Construct main embankments A and B to RL 281.6 m, sacrificial bund to RL 276 m and the north decant system<br>• Embankments made from local borrow, mine waste rock and plant dry rejects, which are not classified as PAF<br>• BGM liner covering upstream face of main embankment A (impermeable)<br>• Sacrificial bund of 8 metres to limit the size of the initial TSF catchment area to 12.1 $km^2$, with tailings only deposited into the northern side of the TSF<br>• 1 gravity decant structure designed to ensure and maximise gravity decant via inverted box culverts with segmented stoplogs on top, directed to an outfall pipe constructed through main embankment A<br>• minimum 2 sets of VWP in the foundations of Main Embankment A, comprised of minimum 3 VWP's located within the embankment footprint<br>• Distribution pipeline from OPF to TSF of 7 km made of nominally 800 mm steel adapted into polyethylene pipework and at least 2 spigot discharge points<br>• TSF pipelines to have installed with flow measurement at the start (Tailings Transfer Tank at OPF) and at the end of the pipeline (at the TSF), and continuous monitoring of pipeline pressure and pump performance. | Figure 4, Figure 5, Figure 7, Figure 9, Figure 11 and Figure 15 in Schedule 1 |
| 3. | TSF – Stage 1B | • Main embankments C and D to RL 281.6 m and the south decant system<br>• Embankments are made from local borrow, mine waste rock and plant dry rejects, which are not classified as PAF<br>• BGM liner covering upstream face of embankments (impermeable)<br>• 1 gravity decant structure designed to ensure and maximise gravity decant via inverted box culverts with segmented stoplogs on top, directed to an outfall pipe constructed through main embankment C<br>• minimum 1 set of VWP in the foundation of TSF Main Embankment C, comprised of minimum 3 VWP's located within the embankment footprint<br>• Freeboard designed to store the run-off of a 1:100 AEP, 72 hr storm and the 400 mm decant pond depth<br>• Spillway capacity 1:1,000 AEP with flow and erosion control installed, spillway directed to the RWP<br>• Distribution pipeline and two spigots (if different to Stage 1A). | Figure 4, Figure 6, Figure 8, Figure 9, Figure 10 and Figure 15 in Schedule 1 |

**3.** The works approval holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in **Table 3**.

**Table 3: Infrastructure requirements – groundwater monitoring wells**

| Infrastructure | Design, construction, and installation requirements | Monitoring well location(s) | Timeframe |
|---|---|---|---|
| Groundwater monitoring bores | Well design and construction: designed and constructed in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores*.<br>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 , Figure 12 | Must be constructed, developed (purged), sampled, and determined to be operational by no later than 60 calendar days prior to the commencement of time limited operations under condition 16. |
| | Logging of borehole: soil samples must be collected and logged during the installation of the monitoring wells.<br>A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726.<br>Any observations of staining / odours or other indications of contamination must be included in the bore log. | | |
| | Well construction log: 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 top of casing position to be used as the reference point for water-level measurements, and the elevations of the ground surface protective installations. | | |
| | Well development: 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. | | |
| | Installation survey: the vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor. | | |
| | Well network map: 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. | | |

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

## Environmental compliance reporting

**4.** 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.

**5.** The Environmental Compliance Report required by condition 4 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 condition 1, have or have not been constructed in accordance with the relevant requirements specified in condition 1;

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

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

(d) 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.

**6.** 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 their compliance with the requirements of condition 2; and

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

**7.** The Critical Containment Infrastructure Report required by condition 6 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 condition 2, has or has not been built and installed in accordance with the requirements specified in condition 2, and is fit for its intended purpose;

(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) as-constructed permeability of the embankments;

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

(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 2** that do not require relocation or rectification and do not constitute a material defect, along with the Critical Containment Infrastructure Report; and

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

**8.** 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 condition 3.

**9.** The works approval holder must, within 30 days of the submission of the Critical Infrastructure Containment Report in conditions 6 and 7, submit a Seepage Monitoring Plan. The plan must aim to establish background groundwater data of the local area, and must contain, but not be limited to:

(a) Bore locations (lateral and further downstream of the TSF and RWP);

(b) Groundwater quality analysis after initial bore construction;

(c) Identification of groundwater and other sensitive receptors;

(d) Triggers and limits based on the background groundwater data of the local area;

(e) Sampling frequency and parameters;

(f) Reporting of results of monitoring such as standing levels of bores, piezometer readings, quality of groundwater and direction of groundwater flow; and

(g) Review of the plan.

## Environmental commissioning phase

### Environmental commissioning requirements

**10.** The works approval holder may only commence environmental commissioning of an item of infrastructure listed in condition 11 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 4 of this works approval.

**11.** Any environmental commissioning activities undertaken for an item of infrastructure specified in **Table 4** may only be carried out:

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

(b) for the corresponding authorised commissioning duration.

**Table 4: Environmental commissioning requirements**

| Infrastructure | Commissioning requirements | Authorised commissioning duration |
|---|---|---|
| Comprises the following infrastructure/ equipment:<br>a) ROM primary crushing hub<br>b) Mobile crushing facility<br>c) Secondary crushers<br>d) COS<br>e) Tertiary HPGR crushing / screening<br>f) HPGR primary grinding / air classification<br>g) Fine grinding with magnetic separation and deslime<br>h) Cleaner wet magnetic separation concentrate upgrade circuit<br>i) Concentrate and tailings thickening<br>j) Process water storage ponds<br>k) Raw water storage ponds<br>l) Slurrying pumps<br>m) Slurry Pipes and flow meters<br>n) Conveyors and enclosed transfer stations<br>o) Mobile conveyor and stacker<br>p) CHF day feed stockpile<br>q) CHF ore feed hopper and 100 mm grizzly (if installed)<br>r) CHF slurry tank and agitator<br>s) CHF head chute | Environmental commissioning to validate and check design parameters of facilities with water, ore and slurry.<br>Environmental commissioning requires the ore and slurry throughput to be increased over a period until stable operations are achieved. | For a period not exceeding 10 calendar months in aggregate. |

**12.** During environmental commissioning, the works approval holder must ensure that the emission specified in **Table 5**, are discharged only from the corresponding discharge point and only to the corresponding discharge point location.

**Table 5: Authorised discharge points during commissioning**

| | Emission | Discharge point | Discharge point location |
|---|---|---|---|
| 1. | Dry Rejects | Spreader discharge and emergency stacker discharge | Dry Rejects Spreader, Dry Rejects Emergency Stacker |
| 2. | Oily water | Compressors/Dryers Oil/Water discharge points | Compressed Air Station |

## Environmental commissioning reporting

**13.** 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 each item of infrastructure specified in **Table 4**.

**14.** The works approval holder must ensure the Environmental Commissioning Report required by condition 13 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of ore processed;

(b) a summary of the environmental performance of each item of infrastructure as constructed or installed;

(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 of time limited operations

**15.** 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 4 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 11, the Environmental Commissioning Report for that item of infrastructure as required by condition 13 has been submitted by the works approval holder.

**16.** The works approval holder may only commence time limited operations for an item of critical containment infrastructure identified in condition 2:

(a) where the infrastructure does require commissioning, the Environmental Commissioning Report for that item of infrastructure as required by condition 13 has been submitted to the CEO; and

(b) where the CEO has notified the works approval holder that the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 6 meets the requirements of that condition; or

(c) where at least 45 business days have passed after the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 6 has been submitted to the CEO.

**17.** The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 18 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 15 or 16 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*.

### Time limited operations requirements and emission limits

**18.** During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in **Table 6** and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in **Table 6**.

**Table 6: Infrastructure and equipment requirements during time limited operations**

| | Site infrastructure and equipment | Operational requirement | Infrastructure location |
|---|---|---|---|
| 1. | OPF | • Record volumes of wet ore concentrate produced during time limited operation<br>• Ensure dust minimisation and stormwater management is undertaken. | Figure 2 in Schedule 1 |
| 2. | Groundwater bores | • Monitor groundwater in accordance with condition 28 | Figure 12 in Schedule 1 |
| 3. | RWP | • Pump water only to the OPF for re-processing<br>• Regular inspections | Figure 5 and Figure 6 in Schedule 1 |
| 4. | TSF Stage 1A and Stage 1B | • Can accept up to 7.975 Mt (wet) of tailings per quarter<br>• Record volumes of wet tailings produced during time limited operation<br>• Freeboard of 1:100 AEP, 72 hour rainfall event and normal operating (decant) pond depth of 400 mm (for Stage 1B)<br>• Water balance<br>• Regular inspections | Figure 5 and Figure 6 in Schedule 1 |
| 5. | CHF | • Record volumes of ore concentrate processed through the CHF<br>• Ensure stormwater management is undertaken. | Figure 16 in Schedule 1 |

**19.** During time limited operations, the works approval holder must ensure that the emission(s) specified in **Table 7**, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

**Table 7: Authorised discharge points**

| | Emission | Discharge point | Discharge point location |
|---|---|---|---|
| 1. | Water from sedimentation basins or sediment traps | L1: basins/traps | Figure 3 in Schedule 1 |
| 2. | Treated water from the OWS | L2: OWS | Figure 3 in Schedule 1 |
| 3. | Contaminated Water | L3: Contaminated Water Storage Ponds | Figure 3 in Schedule 1 |
| 4. | Seepage downstream of the RWP and TSF | L4: Groundwater monitoring bores | Figure 12 in Schedule 1 |
| 5. | RWP decant water | L5: RWP emergency spillway | Figure 14 in Schedule 1 |

**20.** During time limited operations, the works approval holder must ensure that the emissions from the discharge point listed in Table 8 do not exceed the corresponding limit when monitored in accordance with condition 19.

**Table 8: Emission and discharge limits during time limited operations**

| | Discharge point | Parameter | Limit |
|---|---|---|---|
| 1. | L2: OWS | Total Reportable Hydrocarbons | 15 mg/L |

**21.** During time limited operations, the works approval holder must record all applicable data monthly for the site water balance.

**22.** During time limited operations, the works approval holder must provide to the CEO results of at least 40 individual representative tailings samples, including pore water for disposal characterisation studies / investigations, within 60 days of tailings deposition to the TSF commencing, to determine the likely behaviour of elements under a range of leaching conditions, and may include, but not be limited to:

(a) testing using the LEAF 1313 pH-dependent leaching test coupled with geochemical modelling (US EPA, 2017); and

(b) geotechnical characterisation of tailings including: particle size distribution, volume of solids, settling test (drained and undrained), air drying test and hydraulic conductivity of the same tailings tested in 22(a); and

(c) the contaminants listed in **Table 9**.

**Table 9: Tailings characterisation parameters**

| Stream | Contaminants | | |
|---|---|---|---|
| Tailings leachate (mg/L) | Ag - Silver | Fe – Iron | Sb – Antimony |
| | Al – Aluminium | Hg – Mercury | Se – Selenium |
| | As – Arsenic | K – Potassium | Si - Silicon |
| | Ba – Barium | Mg – Magnesium | Sn - Tin |
| | Bi – Bismuth | Mn - Manganese | Sr - Strontium |
| | C total – Carbon total | Mo – Molybdenum | Tl - Thallium |
| | C carbonate – Carbon carbonate | Na – Sodium | Ti - Titanium |
| | Ca – Calcium | Ni – Nickel | V – Vanadium |
| | Cd – Cadmium | P – Phosphorus | U – Uranium |
| | Co - Cobalt | Pb – Lead | Zn – Zinc |
| | Cr – Chromium | S total – Sulfur total | TDS (total dissolved solids) |
| | Cu – Copper | S sulfide – Sulfur sulfide | |
| Tailings leachate (-) | pH | | |

**23.** During time limited operations, the Works Approval Holder shall sample monthly the composition of the tailings decant water (if available) to the TSF for the parameters in **Table 9**. A minimum of 5 samples shall be analysed.

**24.** During time limited operations, the works approval holder must conduct visual inspections of the infrastructure specified in **Table 10**.

**Table 10: Inspections of infrastructure**

| | Infrastructure | Type of inspection | Frequency |
|---|---|---|---|
| 1. | Tailings delivery pipelines | To confirm integrity | Twice daily |
| 2. | RWP water return pipelines | To confirm integrity | Twice daily |
| 3. | Tailings storage facility embankment freeboard | To confirm required freeboard capacity is available | Daily |

## Monitoring during time limited operations

**25.** The works approval holder must monitor emissions during time limited operations in accordance with **Table 11**.

**Table 11: Emissions and discharge monitoring during time limited operations**

| Discharge point | Monitoring location | Parameter | Frequency | Averaging Period | Unit |
|---|---|---|---|---|---|
| L1: Basins/ traps | Discharge point at basins/traps | Total Suspended Solids | During discharge | Spot sample | mg/L |
| L2: OWS | OWS | Total Reportable Hydrocarbons | Monthly | Spot sample | mg/L |
| L3: Contaminated Water Storage Ponds | Contaminated Water Storage Ponds overflow | Total Reportable Hydrocarbons | During discharge (when overflowing) | Spot sample | mg/L |
| L4: Groundwater monitoring bores | Groundwater monitoring bores downstream of the RWP and TSF | Groundwater level | Monthly | Spot sample | mbgl m RL |
| L5: RWP emergency spillway | At RWP emergency spillway | Quality and estimate of volume | During discharge | Spot sample | N/A |

**26.** The works approval holder must record the results of all monitoring activity required by condition 25.

**27.** The Works Approval Holder must ensure that, for condition 25, monthly monitoring is undertaken at least 15 days apart.

**28.** The works approval holder must monitor the groundwater during time limited operations for concentrations of the identified parameters in accordance with **Table 12**.

**Table 12: Monitoring of ambient concentrations during time limited operations**

| Parameter | Monitoring location[2] | Unit | Frequency | Averaging period |
|---|---|---|---|---|
| pH[1] | Groundwater monitoring bores downstream of the RWP as shown in Figure 12 in Schedule 1 | pH units | Quarterly | Spot sample |
| Electrical Conductivity, EC | | µS/cm | | |
| Total Dissolved Solids, TDS<br>Sulfate, $SO_4$<br>Ammonia, $NH_3$<br>Nitrite, $NO_2$<br>Nitrite + Nitrate, $NO_3$<br>Total Kjeldahl Nitrogen, N<br>Total Nitrogen, TN<br>Total Phosphorus, TP<br>Reactive Phosphorus, P<br>Total CN<br>WAD CN<br>Aluminium, Al<br>Arsenic, As<br>Boron, B<br>Barium, Ba<br>Beryllium, Be<br>Cadmium, Cd<br>Calcium, Ca<br>Chloride, Cl<br>Chromium, Cr<br>Cobalt, Co<br>Copper, Cu<br>Fluoride, F<br>Iron, Fe<br>Lead, Pb<br>Magnesium, Mg<br>Manganese, Mn<br>Mercury, Hg<br>Molybdenum, Mo<br>Nickel, Ni<br>Selenium, Se<br>Strontium, Sr<br>Uranium, U<br>Vanadium, V<br>Zinc, Zn | | mg/L | | |
| Stranding Water level (SWL) | | mbgl | | |

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: No sample required if bore is dry, this should be recorded.

**29.** The works approval holder must record the results of all monitoring activity required by condition 28.

**30.** The works approval holder must ensure that all monitoring required by condition 28 is undertaken monthly such that there are at least 15 days in between the days on which samples are taken in successive months.

**31.** The works approval holder must ensure that, for sampling required by condition 28:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;

(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11 as amended from time to time; and

(c) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless indicated otherwise in Table 12.

## Compliance reporting during time limited operations

**32.** 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 60 calendar days before the expiration date of the works approval, whichever is the sooner.

**33.** The works approval holder must ensure the report required by condition 32 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of ore concentrate produced by the OPF, amount of ore concentrate processed through the CHF and tailings deposited into TSF;

(b) a summary of monitoring results obtained during time limited operations under condition 25 and 28;

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

(i) tailings density (solid vs water content);

(ii) emission and discharge limits as per condition 20;

(iii) TSF and RWP water balance(s) as conducted in condition 21;

(iv) results of characterisation studies/investigations as conducted under condition 22 and 23; and

(v) confirmation of visual inspections as conducted under condition 24.

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

(e) 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

**34.** 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.

**35.** 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 1 and 2;

(c) monitoring programmes undertaken in accordance with conditions 25 and 28; and

(d) complaints received under condition 34.

**36.** The books specified under condition 35 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 13 have the meanings defined.

**Table 13: Definitions**

| Term | Definition |
|---|---|
| AEP | annual exceedance probability |
| BGM | Bituminous Geomembrane |
| books | has the same meaning given to that term under the EP Act. |
| CEO | means Chief Executive Officer.<br>CEO for the purposes of notification means:<br>Director General<br>Department administering the *Environmental Protection Act 1986*<br>Locked Bag 10<br>Joondalup DC WA 6919<br>info@dwer.wa.gov.au |
| CHF | Relocated Concentrate Handling Facility |
| COS | Coarse Ore Stockpile |
| critical containment infrastructure | means the items of infrastructure listed in condition T2. |
| 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. |
| DRL | Dry Rejects Landform |
| 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. |

| Term | Definition |
|---|---|
| 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). |
| HPGR | high pressure grinding roll |
| LEAF | Leaching Environmental Assessment Framework |
| mg/L | milligrams per litre |
| mm | millimetre |
| Mtpa | million tonnes per annum |
| mbgl | Metres below ground level |
| m RL | Metres at relative level |
| NATA | National Association of Testing Authorities |
| NEPM | National Environment Protection Measure |
| OPF | Ore Processing Facility |
| OWS | Oily Water Separator |
| PAF | Potentially Acid Forming |
| 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. |
| ROM | Run of Mine |
| RWP | Return Water Pond |
| 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. |
| TRH | Total Recoverable Hydrocarbon |

| Term | Definition |
|---|---|
| TSF | Tailings Storage Facility |
| VWP | Vibrating Wire Piezometers |
| 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. |

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**END OF CONDITIONS**

## Schedule 1: Maps

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

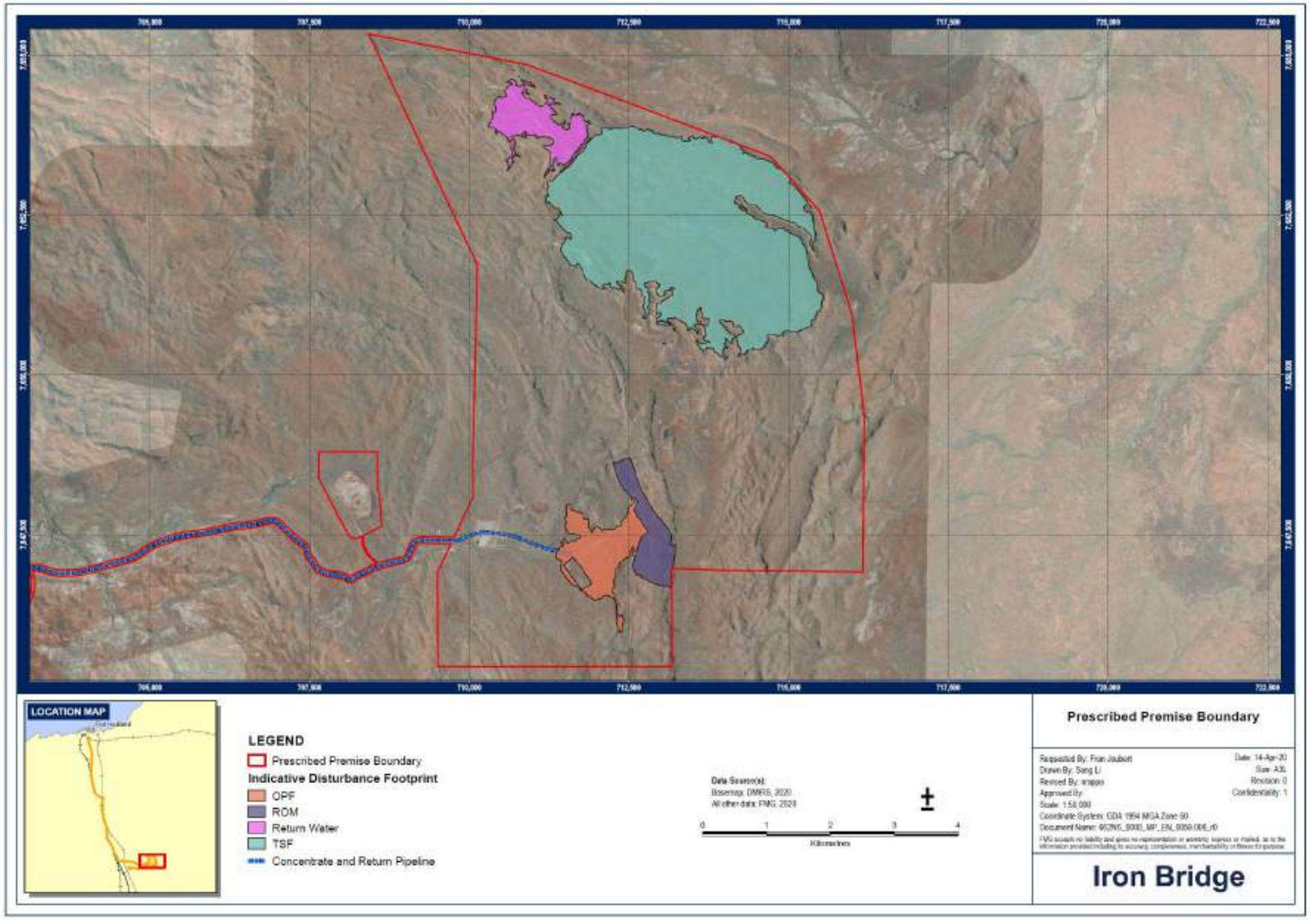


**Figure 1: Map of the boundary of the prescribed premises**

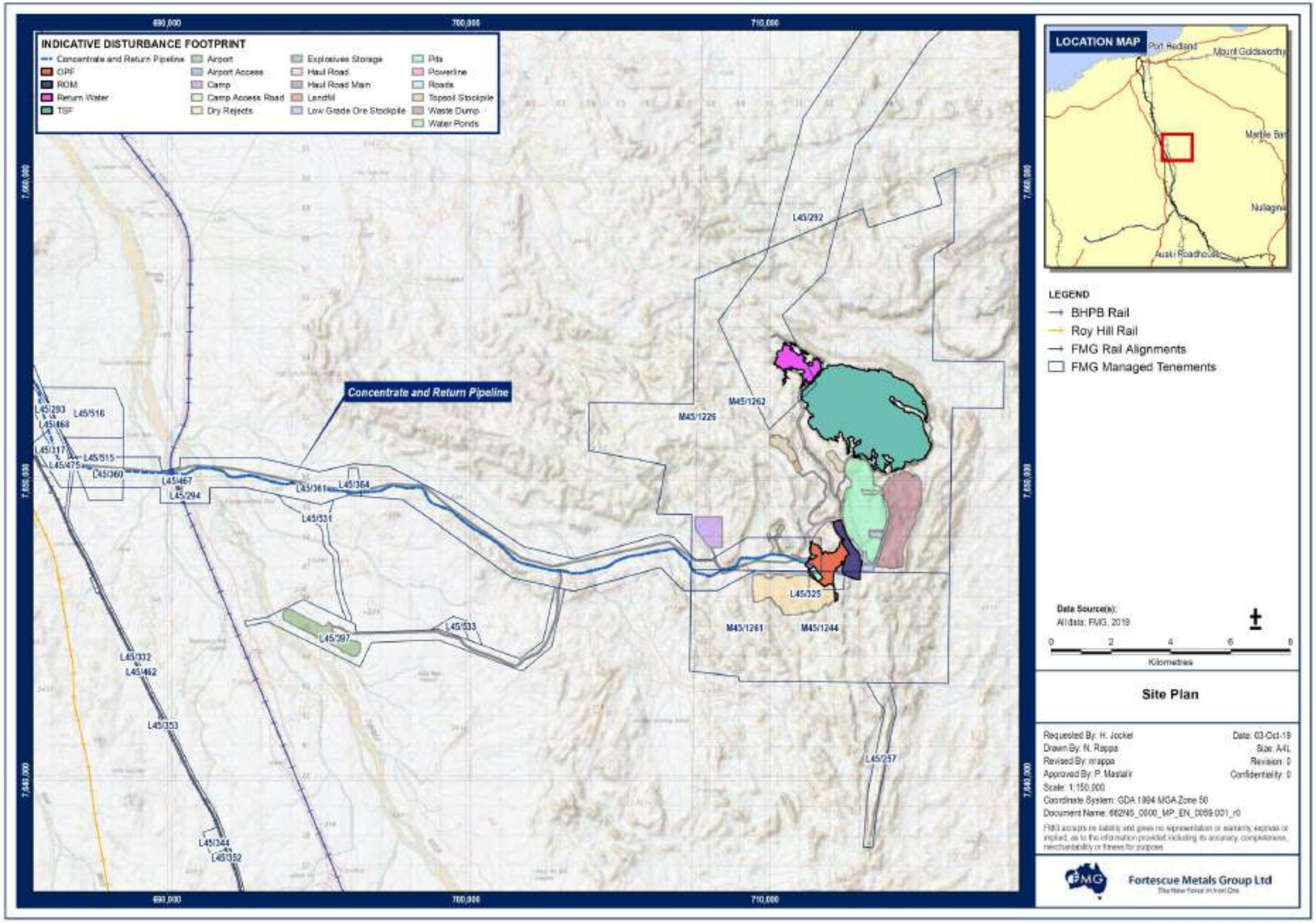


**Figure 2: Map of the activities within the prescribed premises**

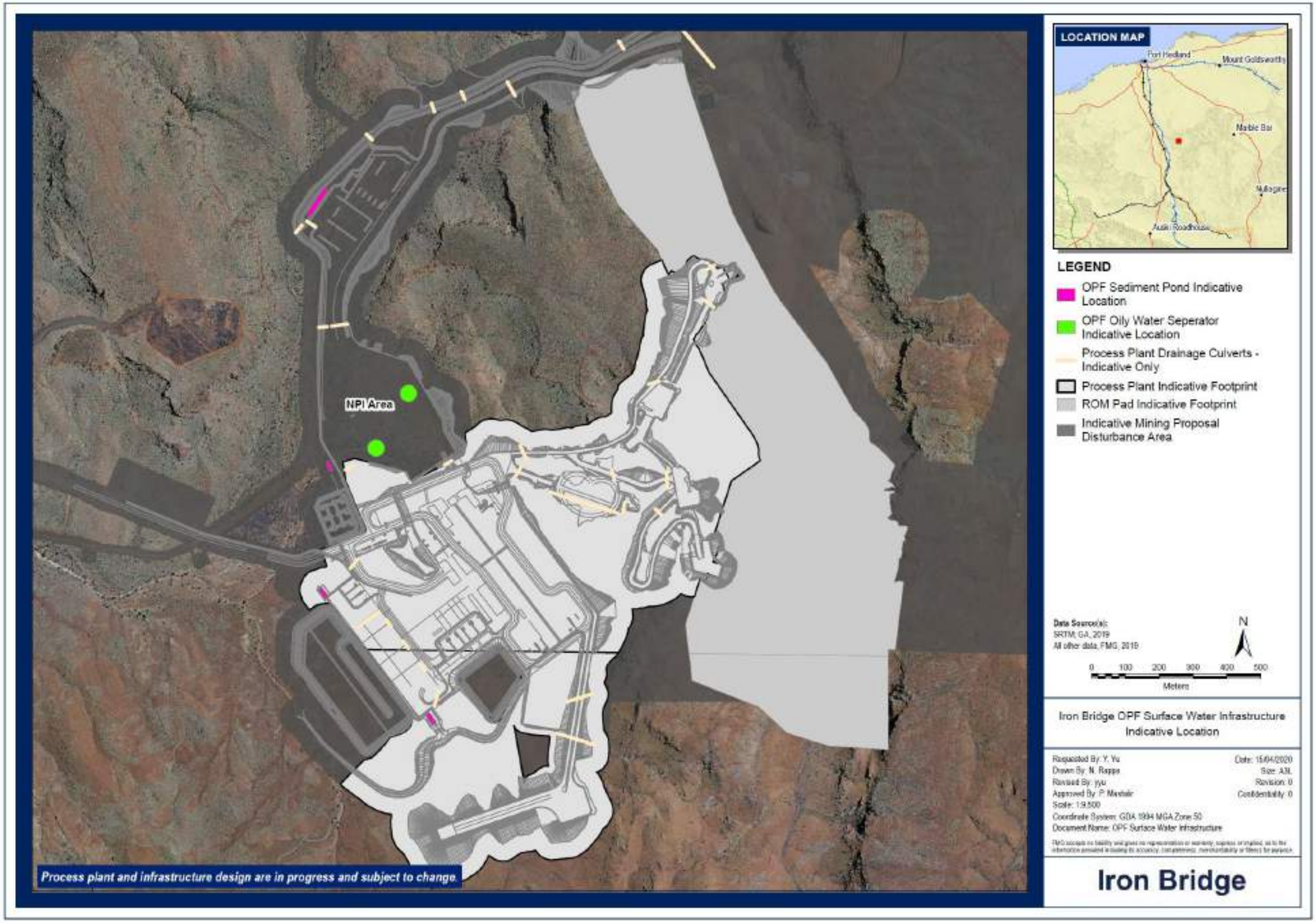


**Figure 3: Map of sedimentation basins and OWS infrastructure (indicative)**

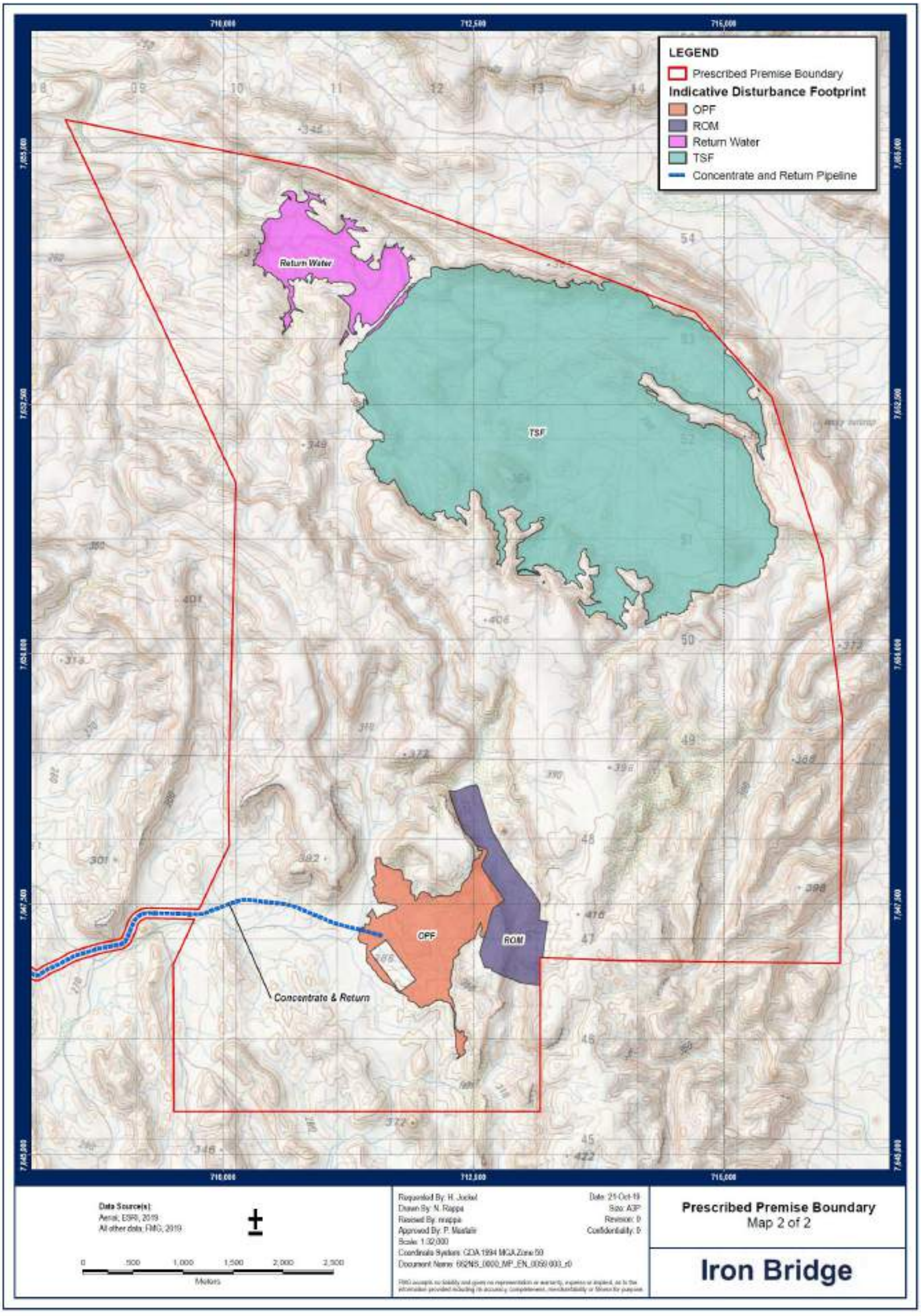


**Figure 4: Map of the proposed activities in this works approval**

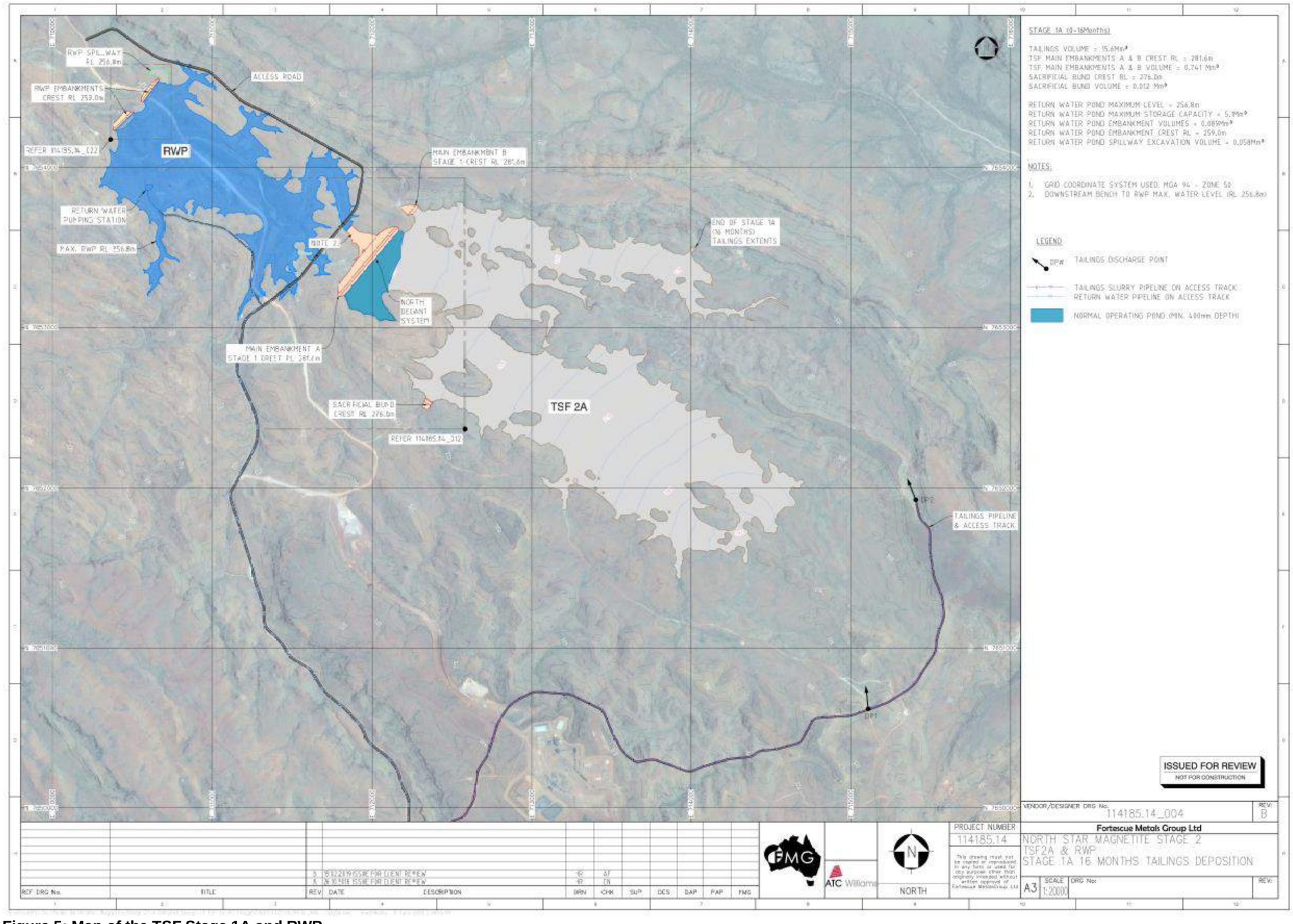


**Figure 5: Map of the TSF Stage 1A and RWP**

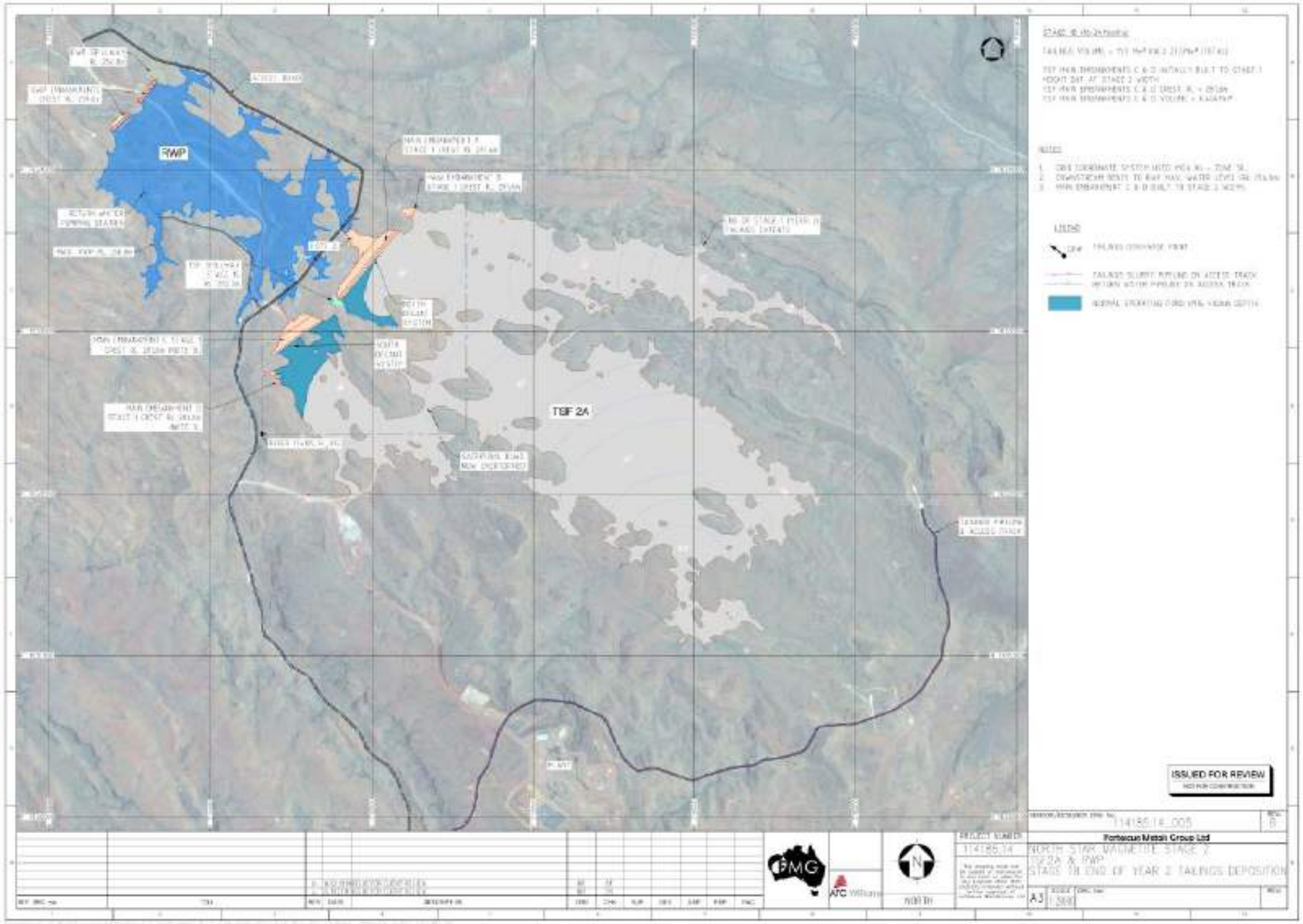


**Figure 6: Map of the TSF Stage 1B and RWP**

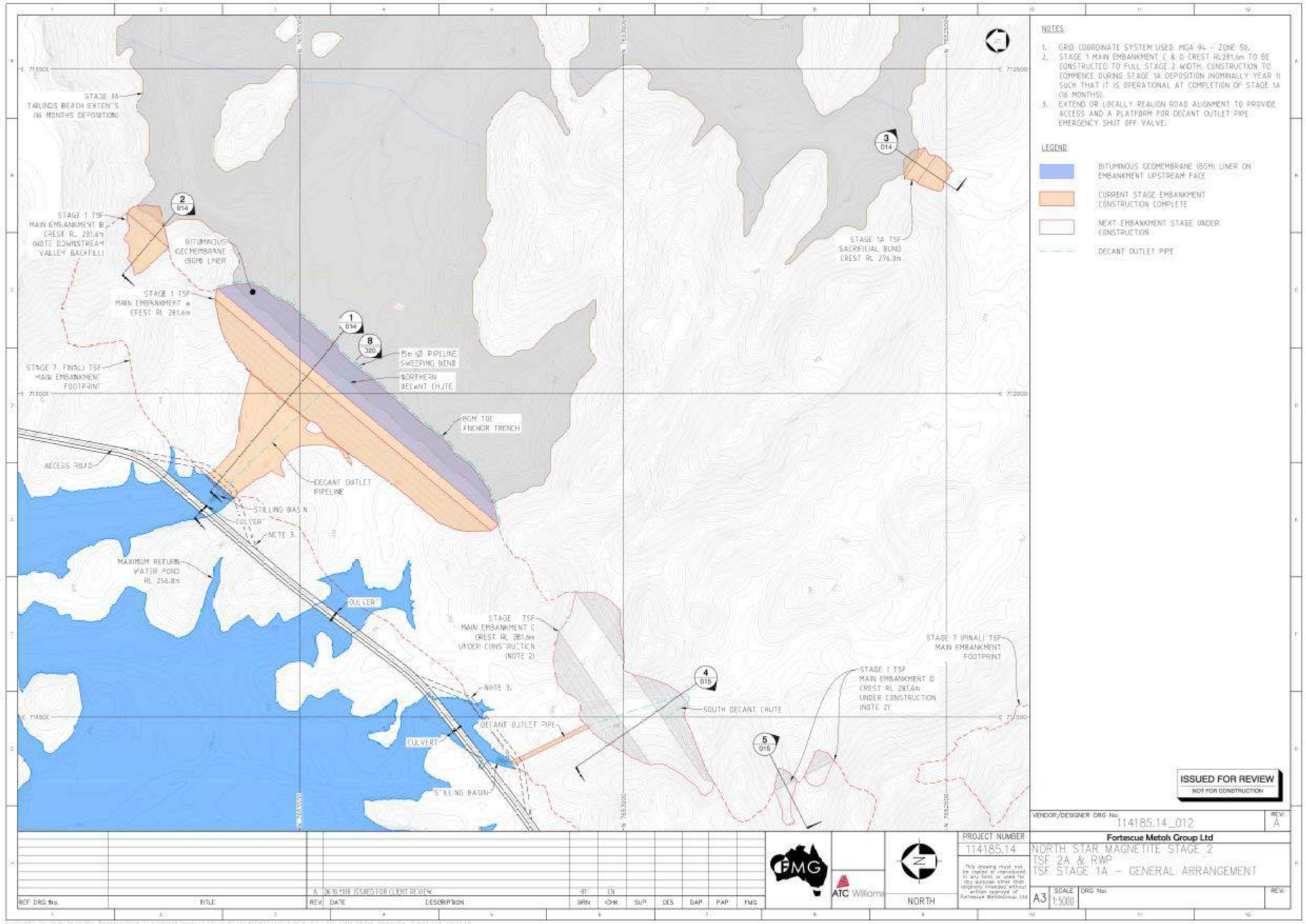


**Figure 7: TSF Stage 1A embankments**

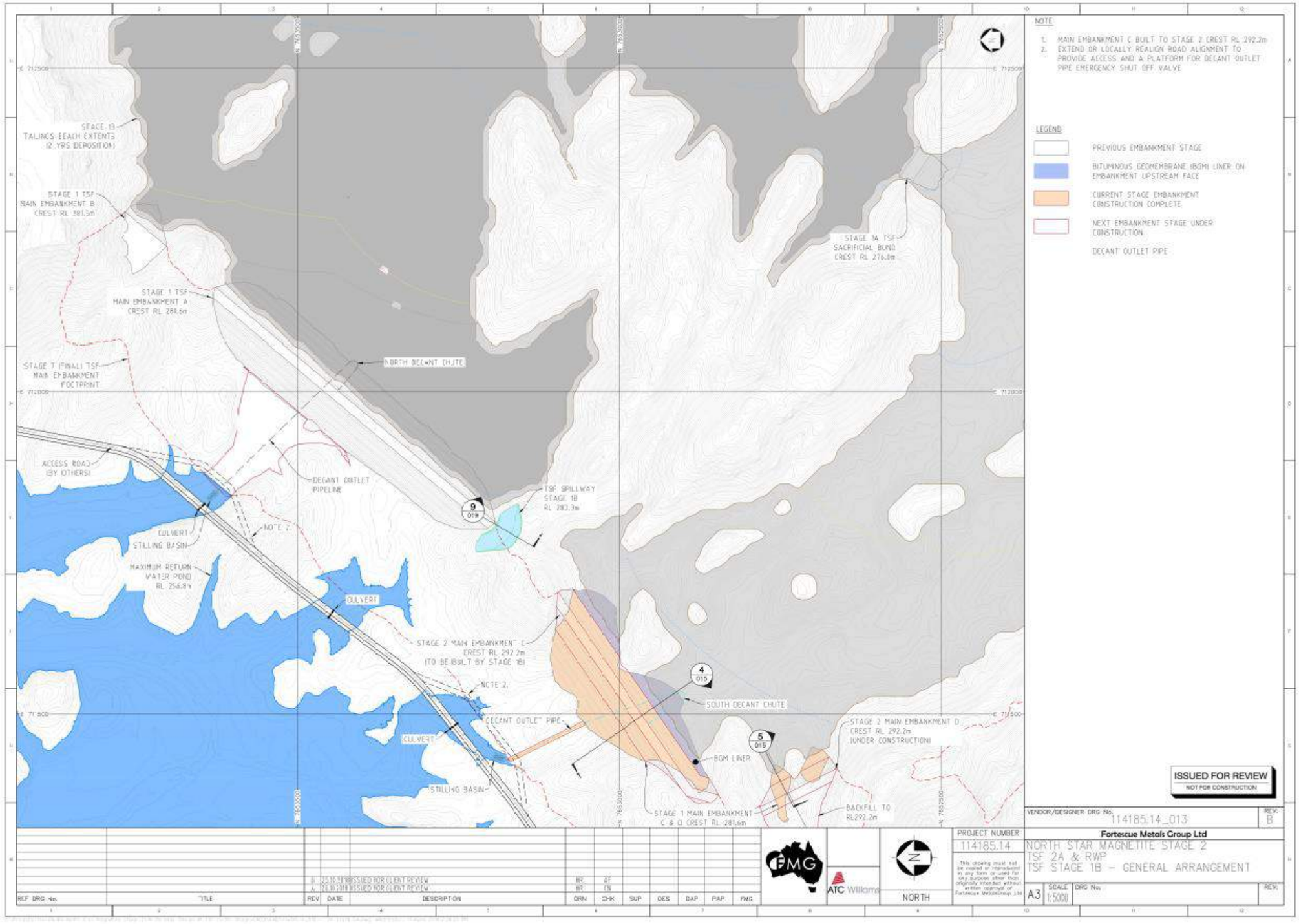


**Figure 8: TSF Stage 1B embankments**

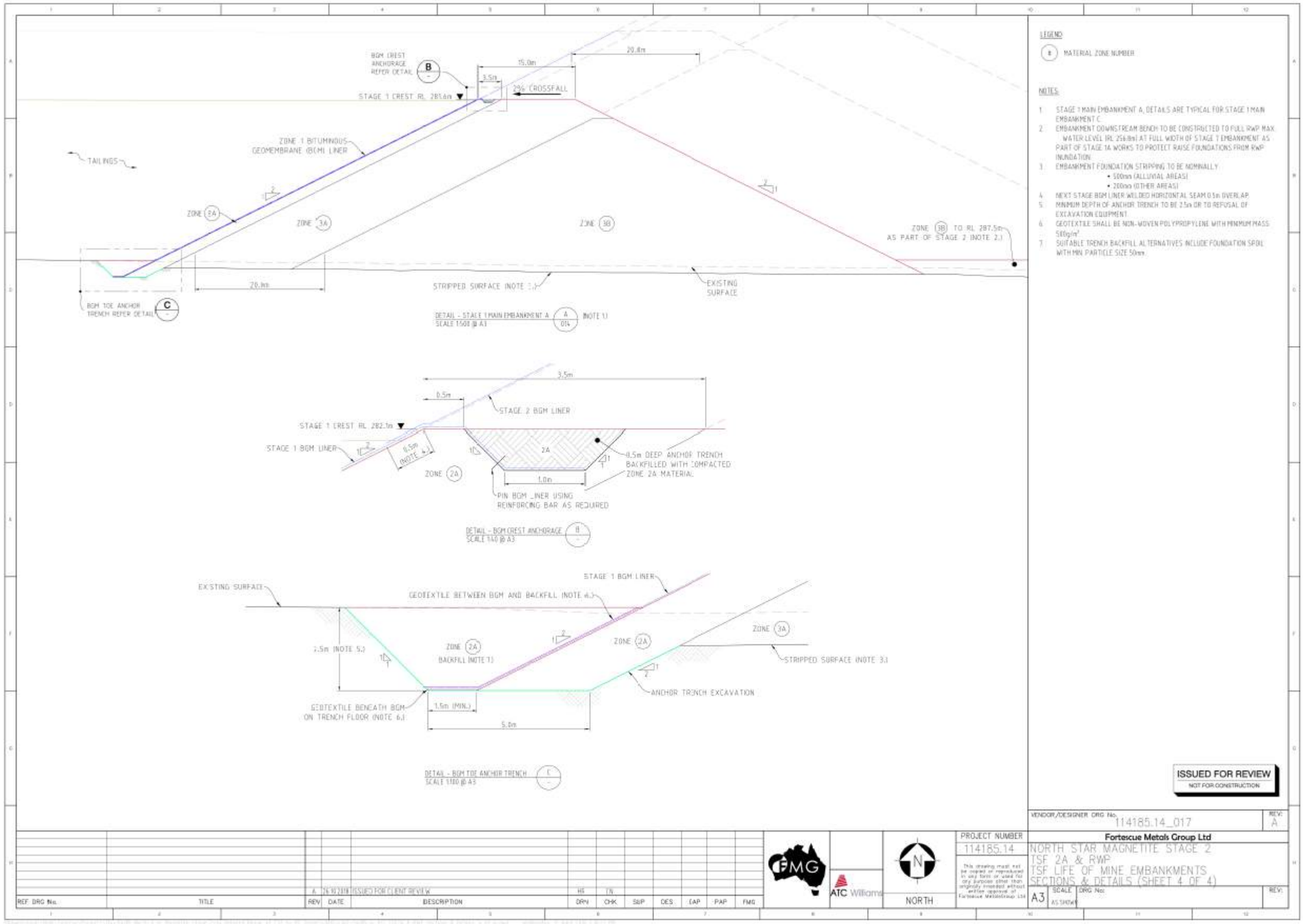


**Figure 9: TSF Stage 1 embankment A construction cross-section**

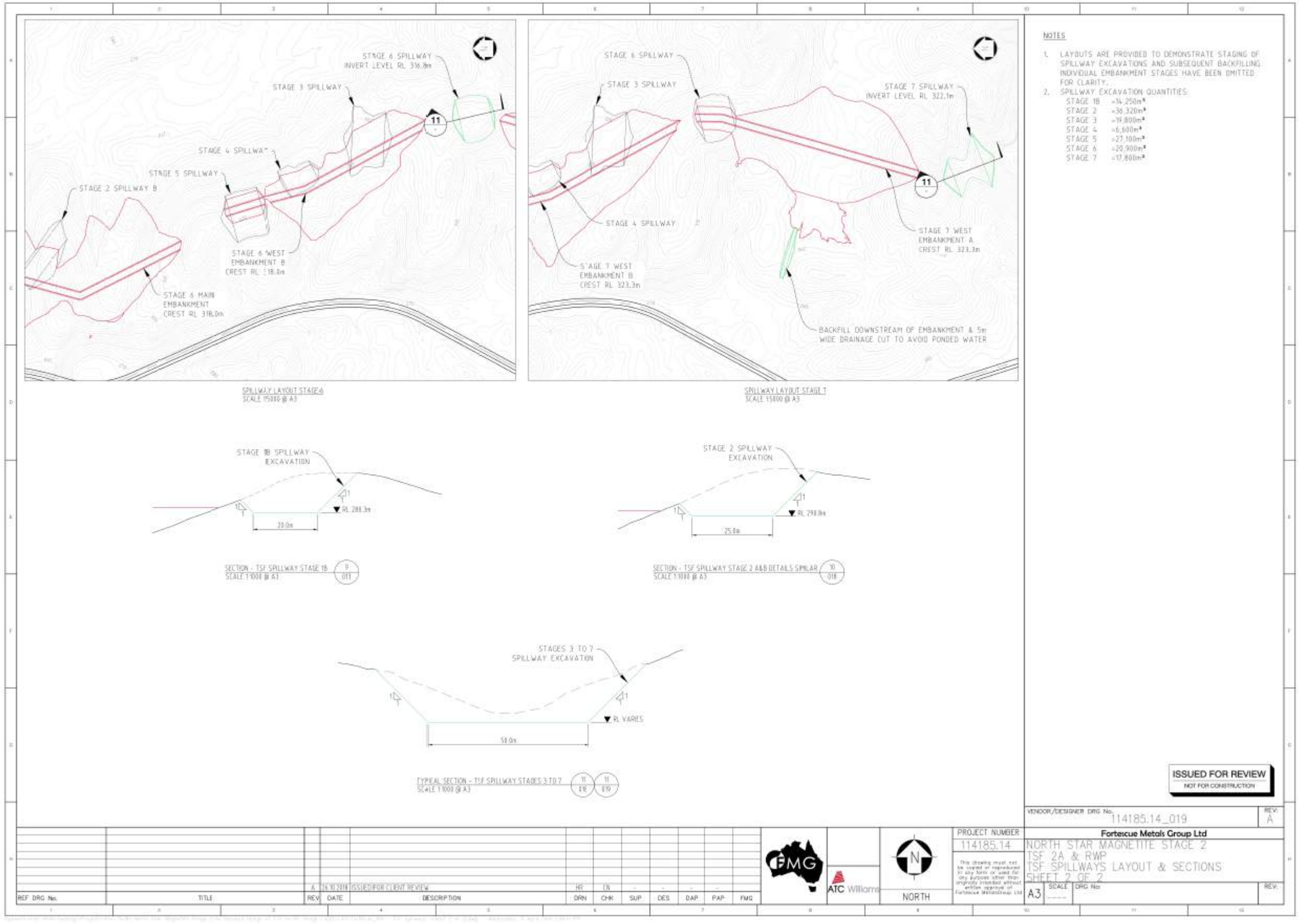


**Figure 10: TSF Stage 1B spillway design cross-section**

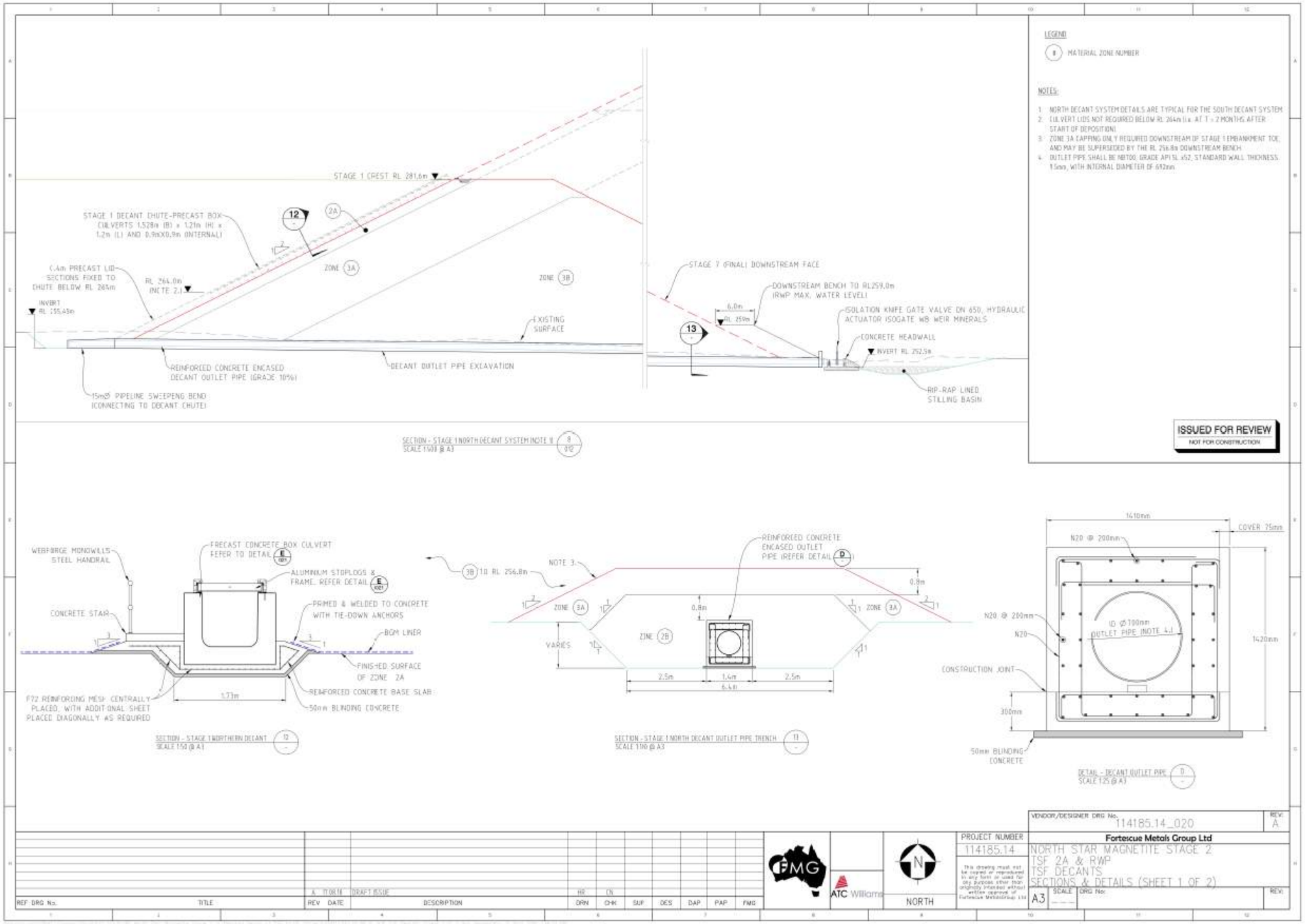


**Figure 11: TSF northern decant cross-section**

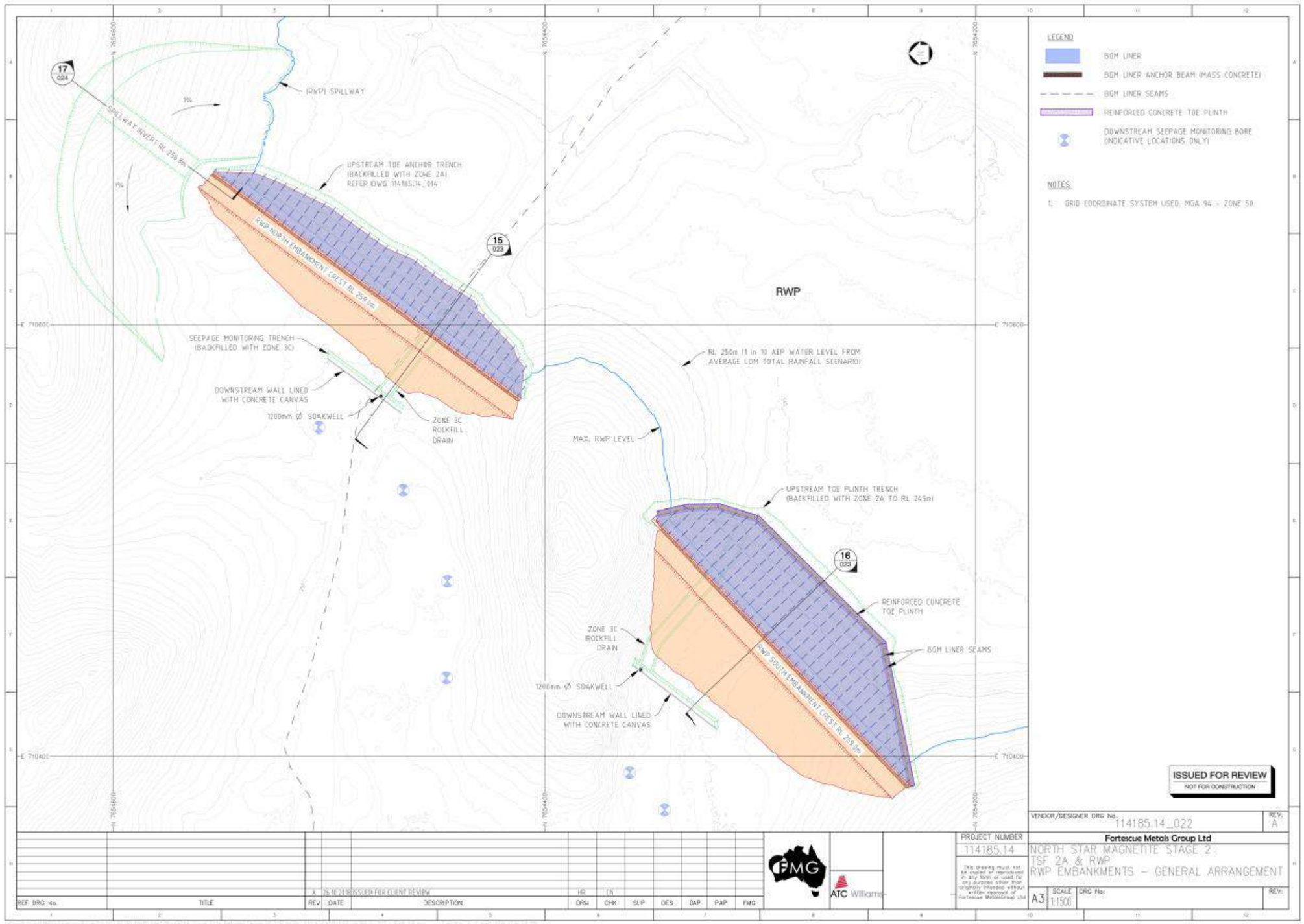


**Figure 12: RWP embankments, bore locations (indicative) and emergency spillway**

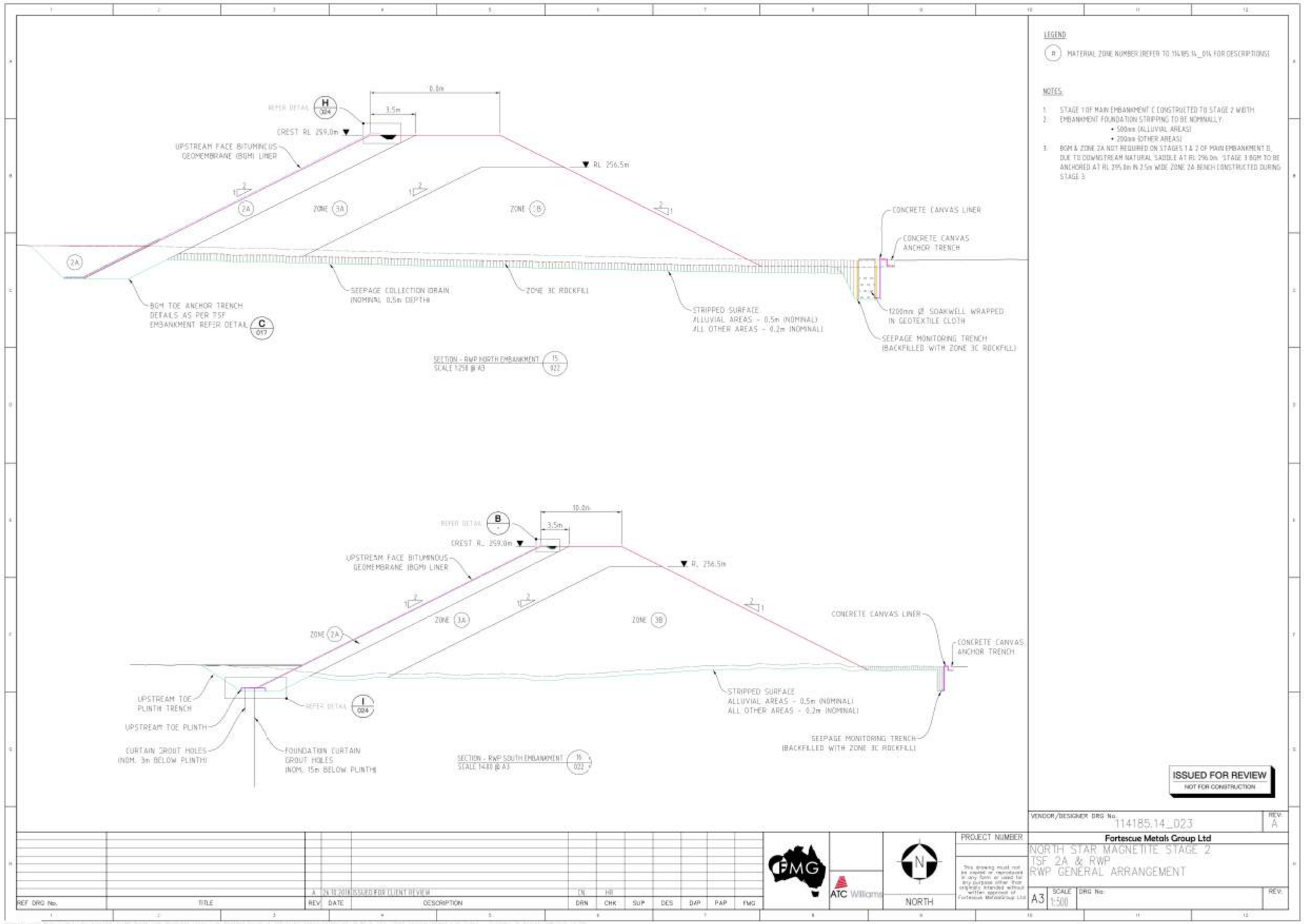


**Figure 13: RWP embankments cross-section**

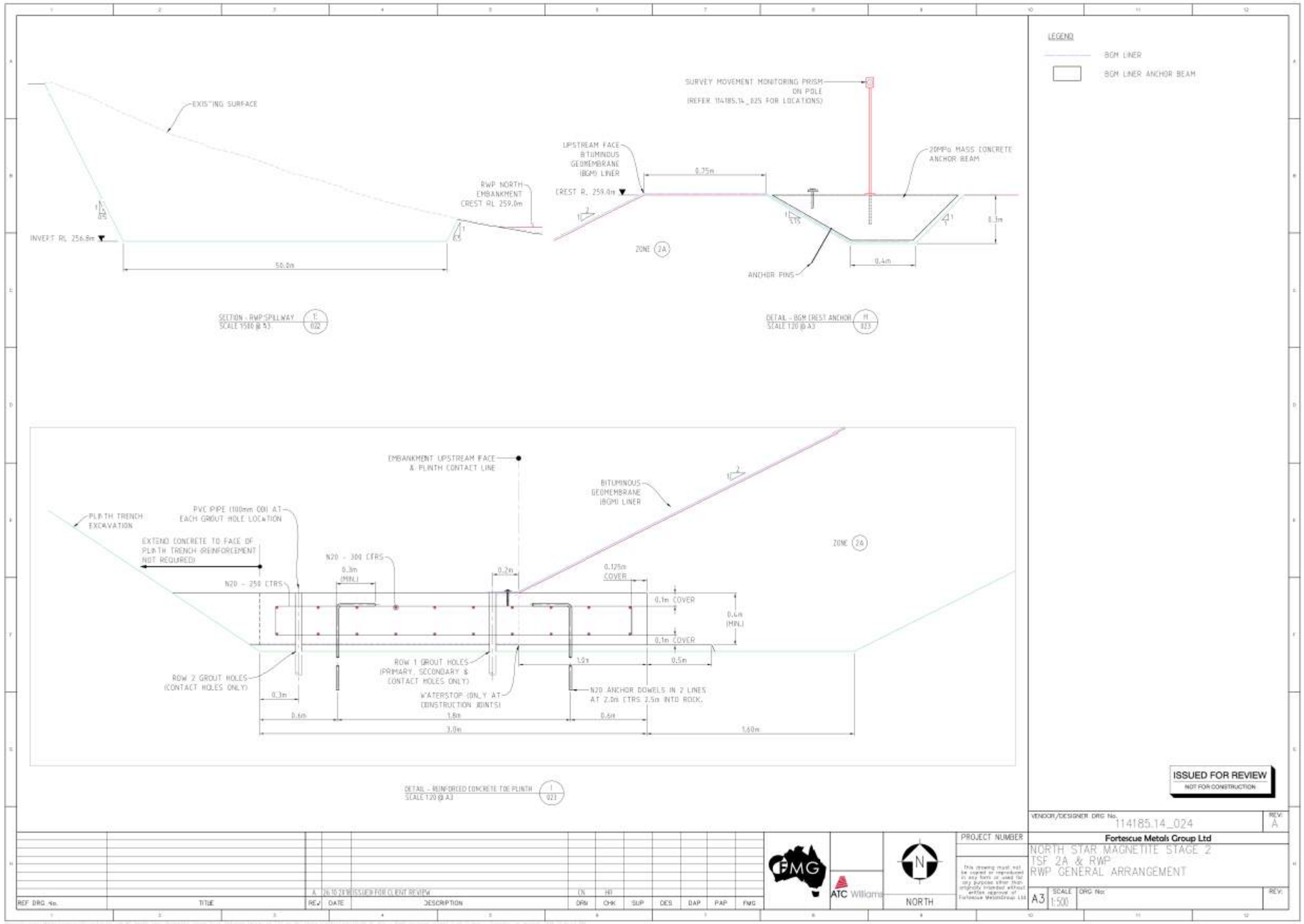


**Figure 14: RWP emergency spillway cross-section and toe plinth**

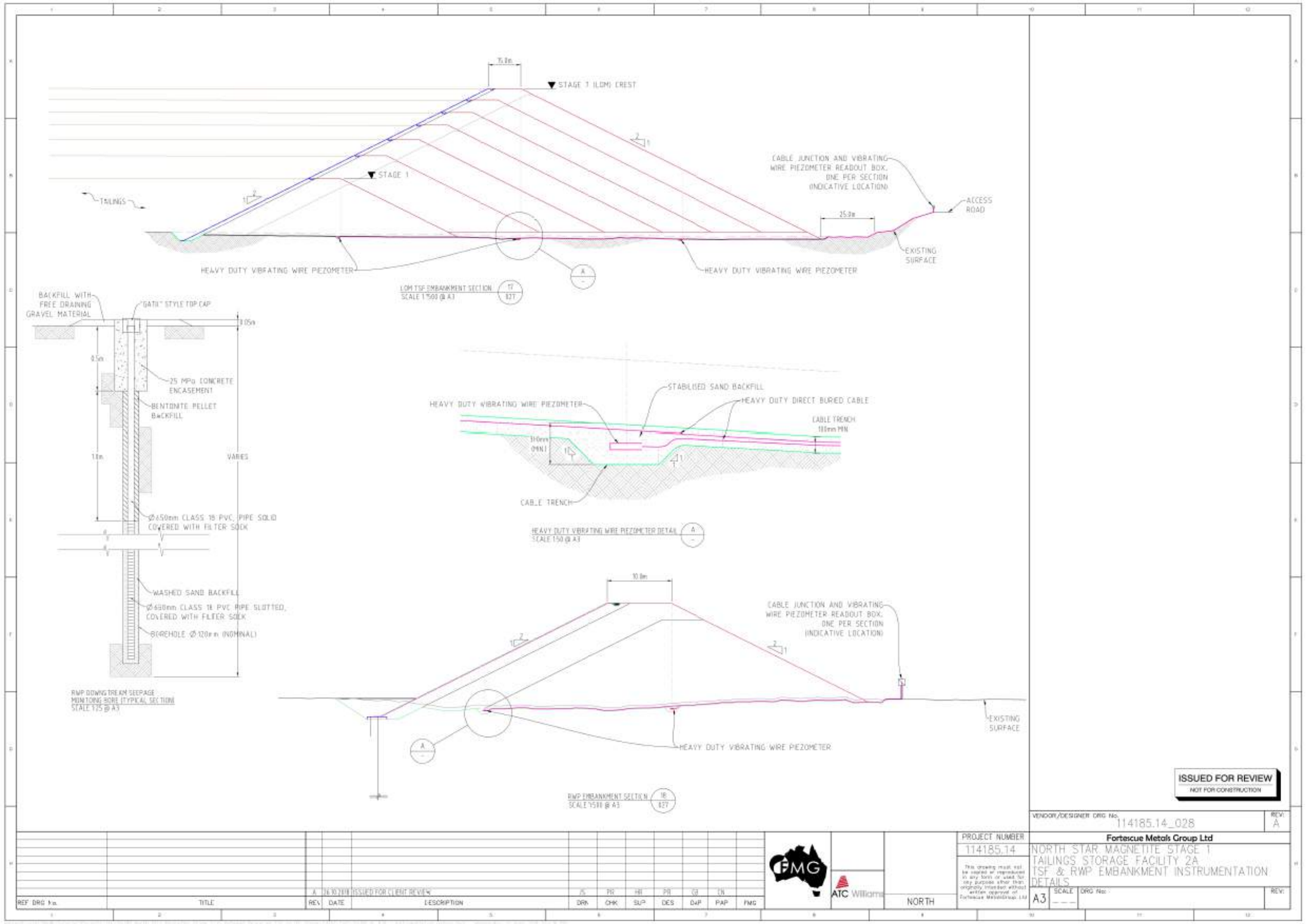


**Figure 15: Construction of TSF and RWP embankments**

Figure16 : Location of Concentrator Handling Facility infrastructure