Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6965/2024/1
Works approval holder	Murrin Murrin Operations Pty Ltd
ACN	076 717 505
Registered business address	Level 3, 30 The Esplanade PERTH WA 6000
DWER file number	DER2024/000347
Duration	27/01/2025 to 26/01/2030
Date of issue	24 January 2025
Premises details	Murrin Murrin Operations Laverton -Leonora Road, Laverton Legal description - Parts of Mining tenements M 39/301, 39/342, 39/343, 39/421, 39/424 Lot 57 on Deposited Plan 238200

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

This works approval is granted to the works approval holder, subject to the attached conditions, on 24 January 2025, by:

Alana Kidd
Digitally signed by Alana Kidd
Date: 2025.01.24 12:39:58 +08'00'

Alana Kidd
Manager, Green Energy
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
23/01/2025	W6965/2024/1	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; 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
1.	Tailings and decant pipelines, pipeline corridor, scour sump(s) and bund	(a) Telemetry flow meters must be installed capable of measuring flow and discharge volumes from the decant and tailings pipelines. (b) All pipes must be made of steel or high-density polyethylene (HDPE), capable of containing corrosive liquids. (c) Tailings and decant pipelines must be constructed within a pipeline corridor. (d) Pipeline corridor must be bunded on both sides by a continuous earthen bund that is a minimum of 0.6 metres high. (e) Scour sump(s) must be constructed and capable of holding 360 metres cubed of tailings/wastewater. (f) Design of the pipelines and their discharge must be constructed according to Schedule 1 Figure 3.	As depicted in Schedule 1, Figure 3.
2.	815 in-pit tailing storage facility (TSF) including with ramps, spigots and floating pumps.	(a) Discharge pipeline must have valve(s) that can close the pipeline to prevent spills. (b) Design of the TSF and the discharge must be constructed according to Schedule 1 Figure 3. (c) A ring main with multiple discharge points (spigots) must be installed capable of low velocity discharge. (d) Discharge points locations must be installed to be movable to allow the progress of tailings beach development and supernatant pond formation to optimise water recovery.	As depicted in Schedule 1 Figures 3 and 4

Compliance reporting

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

(a) undertake an audit of their compliance with the requirements of conditions 1 and 5; and

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

3. The Environmental Compliance Report required by conditions 2, must include as a minimum the following:

(a) certification by a suitably qualified engineer that the items of infrastructure or component(s) thereof, as specified in conditions 1 and 4, 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 conditions 1 and 4; and

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

Groundwater – construction

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, constructions, and installation requirements	Monitoring well location (s)	Timeframe
Groundwater monitoring well(s) IP815-1 and IP815-2	<u>Well design and construction:</u> Designed and constructed in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores*. The construction technique for the wells must involve intercepting groundwater capable of determining seepage from the tailing's storage facility	As depicted in Schedule 1, Figure 2: Map of groundwater monitoring well locations and labelled as IP815-1 and IP815-2	Must be constructed, developed (purged), and determined to be operational by no later than 180 calendar days of the date of issue of this works approval.
	<u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining / odours or other indications of contamination must be included in the bore log.		
	<u>Well construction log:</u> 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		

Infrastructure	Design, constructions, and installation requirements	Monitoring well location (s)	Timeframe
	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.		

Groundwater monitoring - construction

5. The works approval holder must monitor the groundwater monitoring wells during construction for concentrations of the identified parameters in accordance with Table 3.

Table 3: Monitoring of ambient concentrations during construction and time limited operation

Monitoring Point	Monitoring location	Parameters	Frequency	Units	Sampling Methods
Groundwater wells 815-1 815-2 905-5 1806-1 1806-2 904-1 904-3	As depicted in Schedule 1, Figure 2 as 815-1 815-2 905-5 1806-1 1806-2	Standing water level	Construction Quarterly commencing within 30 days of groundwater bore installation as required by condition 5.	metres below ground level (mbgl) and metres Australian height datum (mAHD)	AS/NZS 5667.11 and AS/NZS 5667.1
		*pH		-	
		Total dissolved solids		dS/m	

	904-1 904-3	Metals (dissolved) [aluminum (Al), cadmium (Cd), copper (Cu), lead (Pb), mercury (Hg), silicon (Si), zinc (Zn), arsenic (As), sodium (Na), cobalt (Co), nickel (Ni)	Time limited operation Quarterly	mg/L	

NB-* In field measurement acceptable.

6. The works approval holder must record the results of all monitoring activity required by Condition 5.

7. The works approval holder must ensure that all non-continuous sampling and analysis undertaken pursuant to Conditions 5, and 12 is undertaken by a holder of a current accreditation from the National Association of Testing Authorities (NATA) for the methods of analysis and undertake all sampling to Australian standards relevant to the corresponding analytical/sampling parameter.

Time limited operations phase

Commencement and duration

8. The works approval holder may only commence time limited operations for items of infrastructure identified in condition 1 where:

(a) the Environmental Compliance Report as required by condition 2 has been submitted by the works approval holder for the items of infrastructure; and

(b) initial baseline groundwater monitoring required by condition 5 has been performed.

9. The works approval holder may conduct time limited operations for the items of infrastructure specified in condition 10 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 8 for that item of infrastructure; or

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

Time limited operations requirements and emission limits

10. 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 requirement set out in Table 4.

Table 4: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Requirements	Authorised duration	Infrastructure location
1	Tailings and decant pipelines, pipeline corridor, scour	(a) Valves within pipelines must be maintained to be capable of preventing spills. (b) Bunding around the tailings and decant pipelines must be maintained and capable of capturing all pipeline spills and leaks.	For a period not exceeding 180 calendar	As shown with Schedule 1, Figure 1, labelled as tailings

	Site infrastructure and equipment	Requirements	Authorised duration	Infrastructure location
	sump(s) and bund	(c) Pipeline spills must be directed to the scout sump. (d) The bunding, pipelines, valves, pumps and associated infrastructure must be inspected at a minimum daily for leaks, and ruptures. (e) All contaminated stormwater must be directed to the diversion drains and trenches.	days in aggregate.	pipeline, decant pipeline
2	815 in-pit tailing storage facility (TSF) including with ramps, spigots and floating pumps	(f) TSF must maintain a minimum pit wall freeboard of 0.5 metres (vertical height between the stormwater and minimum pit rim levels). (g) Minimum daily inspection of TSF freeboard, decant pumps, pit wall integrity, spigots and associated infrastructure. (h) During high rainfall events inspection frequency for the freeboard and supernatant pond must be increased to prevent spills and overtopping. (i) Any overtopping or defects to the TSF pit walls must be reported within 24 hours to the CEO in writing. (j) A water balance must be collated daily from the water discharge to the TSF and water withdrawn to process and evaporation ponds. (k) Flushing of discharge points must be undertaken so discharge is directed away from the pit wall and must be monitored to prevent the pit wall scouring or eroding. (l) Under normal operating conditions the supernatant pond must keep no greater than 25% of the tailings surface area to reduce seepage. (m) All contaminated stormwater must be directed to the diversion drains and trenches		As shown with Schedule 1, Figure 1, labelled as 815 In-pit TSF
3	Groundwater monitoring bores	(n) Maintain in operable condition to allow groundwater samples to be taken.		As shown with Schedule 1, Figure 2, labelled as 815-1, 815-2, 905-5, 1806-1, 1806-2, 904-1, 904-3

Time limited operations – ambient groundwater quality limits

11. During time limited operations, the works approval holder must ensure that the ambient groundwater quality from the sample point listed in Table 5 does not exceed the corresponding limit when monitored in accordance with condition 12.

Table 5:Emission and discharge limits during time limited operation

Discharge point	Parameter	Limit
815 in-pit TSF monitoring bores As shown with Schedule 1, Figure 2, labelled as 815-1, 815-2, 905-5, 1806-1, 1806-2, 904-1, 904-3	pH	> 3.5

Monitoring during time limited operations

12. The works approval holder must monitor the groundwater monitoring wells during time limited operation for concentrations of the identified parameters in accordance with Table 3.

Compliance reporting

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

14. The works approval holder must ensure the report required by condition 14 includes the following:

(a) a summary of the time limited operations, including the volume of tailings discharged to the inpit TSF, the amount of supernatant wastewater recircled into the process or disposed into the evaporation pond from the in pit TSF;

(b) results of monitoring undertaken as required in conditions 12, including comparison to any limits specified in this works approval;

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

(d) where the engineering 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)

15. 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.

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

(a) any maintenance of infrastructure that is performed in the course of complying with condition 10;

(b) monitoring programmes undertaken in accordance with condition 12; and

(c) complaints received under condition 15.

17. The books specified under condition 16 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
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 Water Quality — Sampling — Guidance on sampling of groundwaters.
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 Water Quality— Sampling — Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples.
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
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 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).
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.
quarterly	means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September, 1 October to 31 December.

Term	Definition

suitably qualified engineer	In relation to:
	• TSF, means a suitably qualified civil or structural engineer who:
	  ○ Holds a Bachelor of Engineering recognised by Engineers Australia,
	  ○ Has a minimum of five years' experience working in a supervisory area of civil engineering.
	• Installation of bores, means a suitably qualified technician who has a minimum of 5 years' experience installing monitoring bores to ASTM international standard for Standard practice for design and installation of groundwater monitoring bores (Designation ASTM D5092/D5092M-16).

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	means tailings storage facility, an engineered containment pond or dam used to store tailings.
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 and site layout map

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

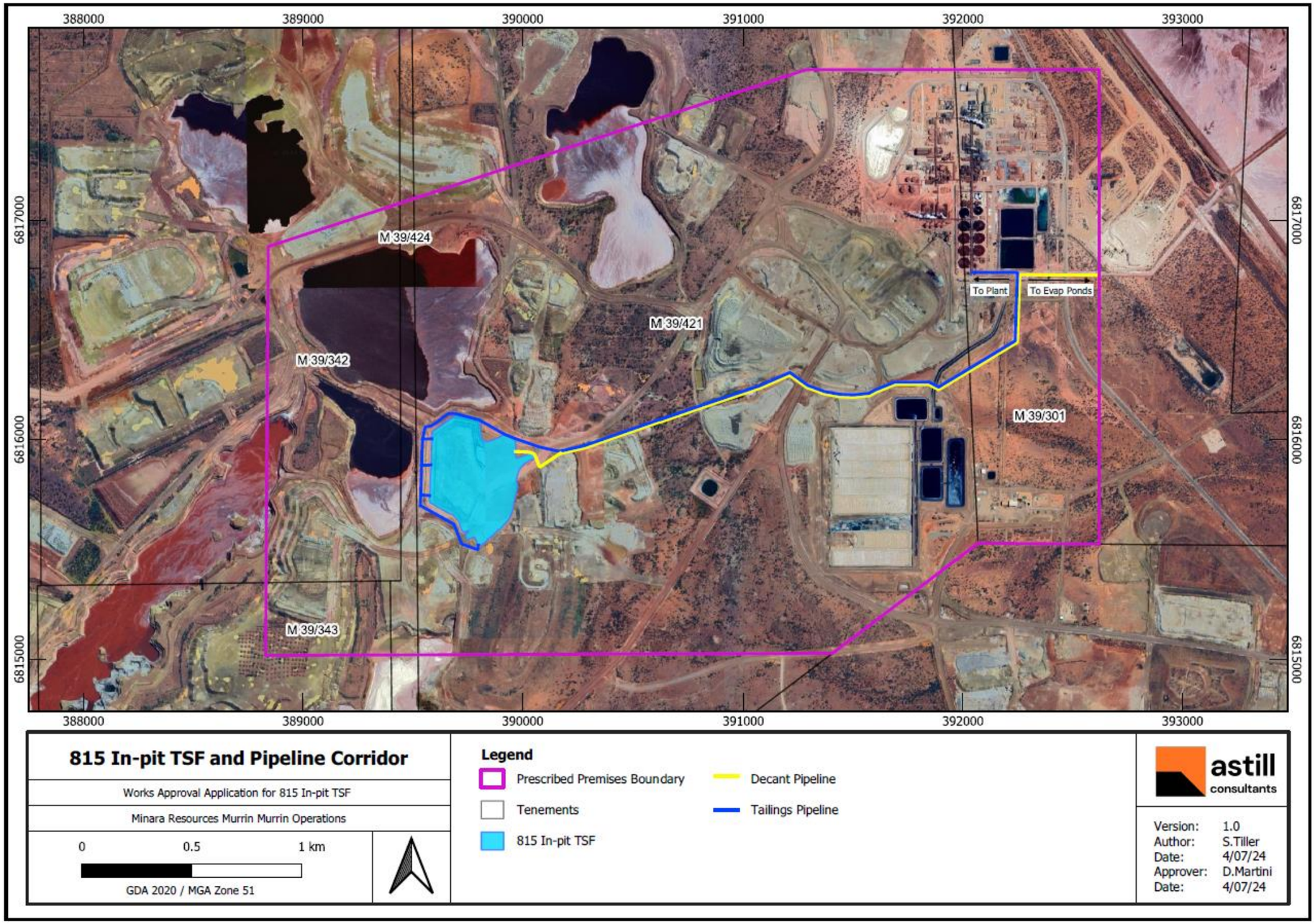

Figure 1: Map of the boundary of the prescribed premises outlined in pink, and site layout of TSF infrastructure

Monitoring bore layout map

The monitoring bore locations is shown in the map below (Figure 2)

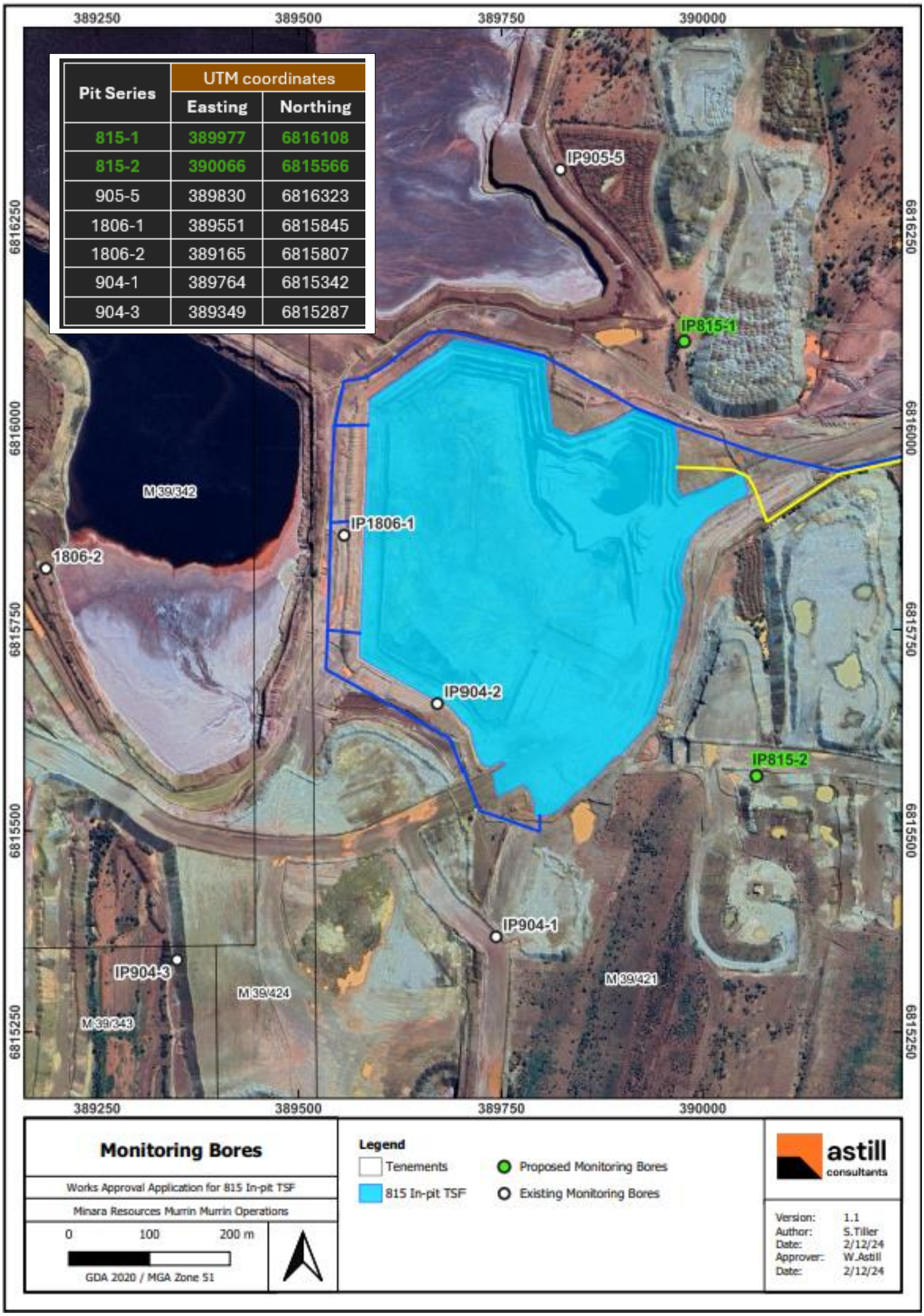

Figure 2: Map of the monitoring point locations within the prescribed premises

Pipeline and scour sump design

The pipeline, scour sump, discharge and spigot design drawings are shown in the map below (Figure 3)

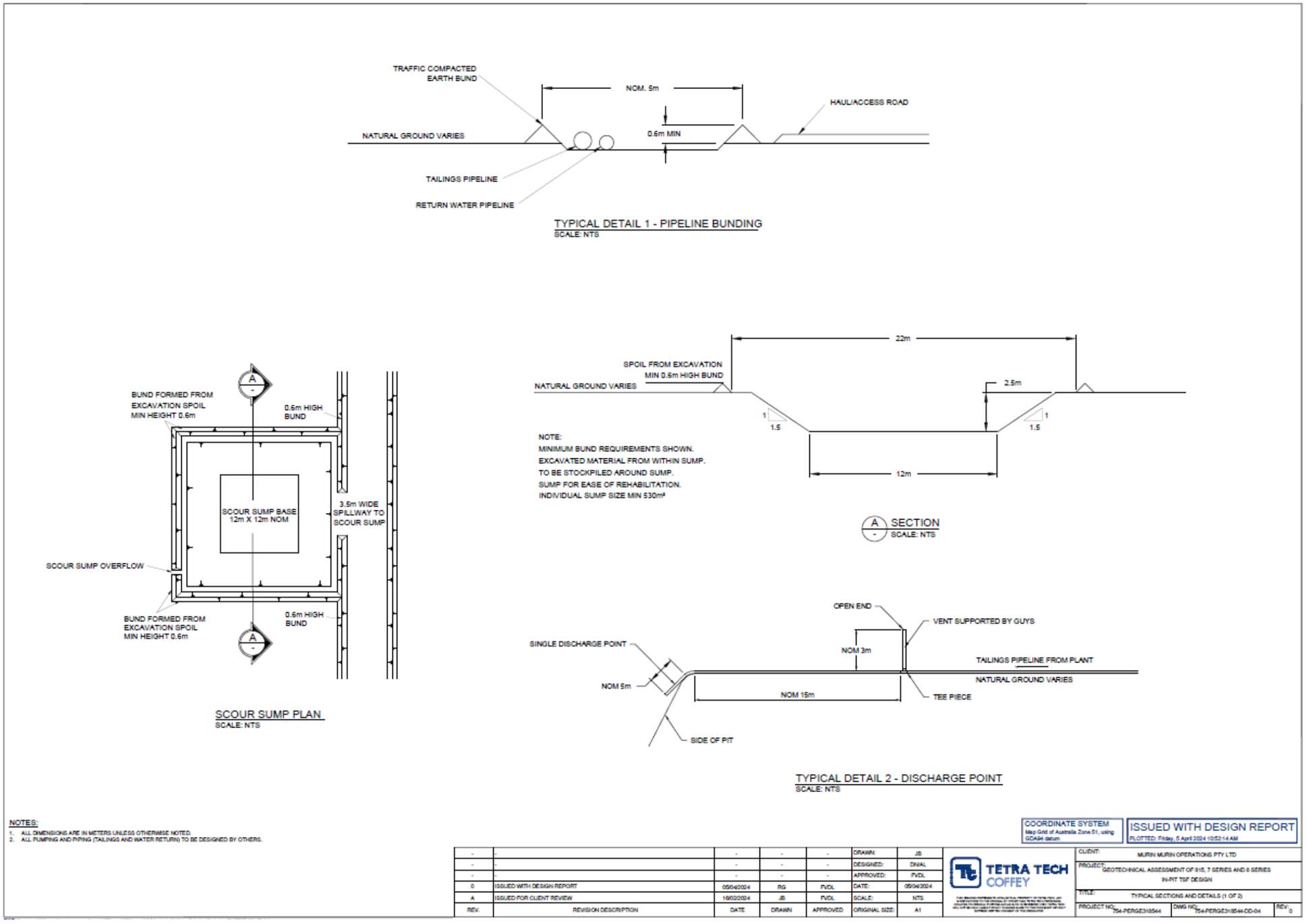

Figure 3 Design for proposed pipelines, scour sump, spigot and discharge details

TSF design

The TSF design drawings are shown in the map below (Figures 4)

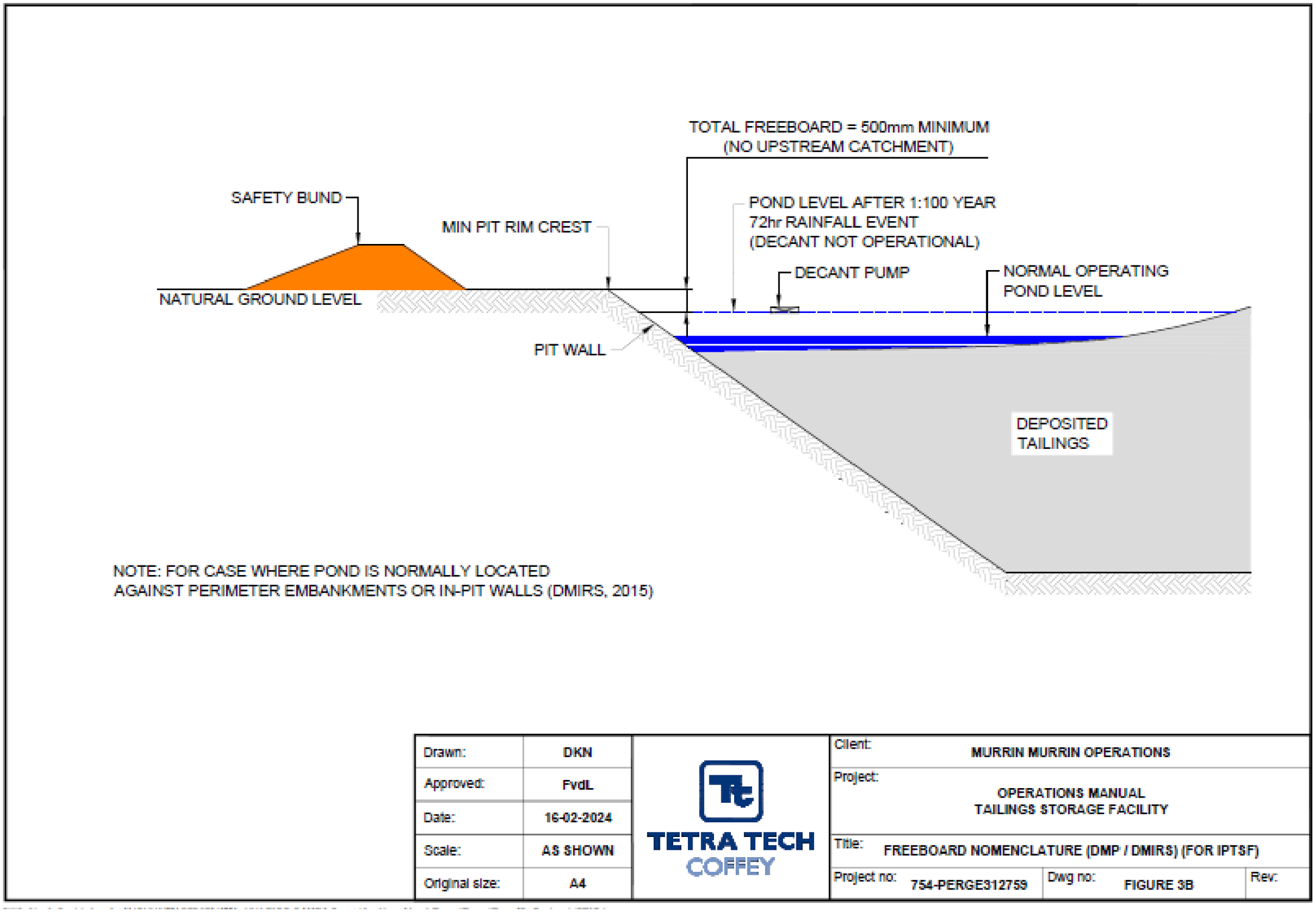

Figure 4: Freeboard and TSF and in-pit wall design