Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6665/2022/1
Works approval holder	Venturex Sulphur Springs Pty Ltd
ACN	113 177 432
Registered business address	234 Railway Parade WEST LEEDERVILLE WA 6007
DWER file number	DER2022/000125
Duration	08/09/2022 to 07/09/2026
Date of issue	08/09/2022
Premises details	Sulphur Springs Zinc Copper Project Mining Tenements M45/494, M45/653 and M45/1001 MARBLE BAR WA 6760 As defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	Assessed production capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	1.5 million tonnes per annual period
Category 64: Class II or III putrescible landfill site	700 tonnes per annual period
Category 85: Sewage facility	75 m^3 per day

This works approval is granted to the works approval holder, subject to the attached conditions, on 8 September 2022, by:

Carmen Standring

Digitally signed by Carmen Standring
Date: 2022.09.08 16:05:58 +08'00'

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

Works approval history

Date	Reference number	Summary of changes
08/09/2022	W6665/2022/1	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
ROM	• Constructed on naturally elevated ground with a base of non-acid forming (NAF) waste; • Approximately 250 m long and 150 m (operating stockpile surface of approximately 3.7 ha); • High-density polyethylene (HDPE) lined ROM Pad, graded to report to sumps for the containment of any seepage originating from water percolating through stockpiled material; and • Captured water to transfer to the processing plant water circuit or the water treatment plant.	Schedule 1: Maps: Figure 1 Figure 2
Crushing	• Primary crusher, discharge conveyor, and surge bin; • Toggle jaw crusher; • Crushing circuit to include a dust extraction system that will draw dust from the ore transfer points at the primary crusher discharge; and • Dust suppression sprays to be installed at the primary crusher ROM bin.	Schedule 1: Maps: Figure 1 Figure 2
Grinding	• Semi Autogenous Grinding (SAG) mill in open circuit; • Ball mill in closed circuit with hydrocyclones; • SAG mill feed conveyor and trommel screen; • Cyclone feed hopper; and • Grinding and classification equipment to be contained within a concrete bund.	Schedule 1: Maps: Figure 1
Flotation (Copper and Zinc):	• Two staged flotation circuit; • Bunded concrete floor for each flotation circuit to be sloped to either of two pump sumps; and • High-rate tailings thickener.	Schedule 1: Maps: Figure 2
Concentrate:	• Copper and zinc high-rate thickeners; • All concentrate thickeners to be individually bunded and provided with sump pumps; • Concentrate storage tanks, filter feed pumps and filters;	Schedule 1: Maps: Figure 1

Infrastructure	Design and construction / installation requirements	Infrastructure location
	• Separate copper and zinc concentrate filters to be housed in a fully enclosed shed constructed on a concrete bunded area; • A drive through wheel wash facility to be constructed outside of the shed exit point; and • The wheel wash facility to include a sump pump to discharge to either the copper thickener feed hopper, zinc thickener feed or the flotation feed conditioning tank.	Figure 2
Reagents	• All liquid chemical reagents to be stored within tanks in appropriately bunded facilities whereby 110% of the largest vessel is contained and 25% of the total volume is contained according to AS 1940-2004 and AS 1692-2006; and • Stocks of reagents in solid form to be stored in a designated reagent shed.	Schedule 1: Maps: Figure 2
Workshops, hydrocarbon/fuel storage and refuelling facilities	• Workshops and washdown bays to have concrete floors and sides (as appropriate) and runoff to be directed to oily water separators / clean water recovery systems; • Fuel storage tanks designed, constructed and tested according to AS 1940-2004; • Fuel storage tanks above ground, self bunded or within bunded area/secondarily contained to ensure any spills are contained; • Hydrocarbon storage to be bunded in accord with requirements of AS1940-2004; and • Concrete hardstand installed under fuel storage and facilities where there is potential for hydrocarbon spills.	Schedule 1: Maps: Figure 2
Paste Fill Plant	• Paste Plant Tailings Storage Tank positioned within concrete bunded area and fitted high level alarm; • Paste thickener and filtration area in bunded concrete area graded to a sump equipped with a pump to return tailings to the thickener. Filtration unit constructed in covered area; • Temporary filter cake storage in covered concrete bunker with front end loader access; • Binder storage silo on concrete foundation equipped with dosing system and pneumatic transfer for re-filling; and • Paste mixing feed conveyor is covered, equipped with belt scrapers and constructed over hardstand that facilitates mechanical clean-up and return to filter or paste mixing sumps.	Schedule 1: Maps: Figure 1
Process Water Pond	• Capacity of 3,000 m^3; • Minimum design freeboard of 0.5 m; and • Lined with 1.5mm HDPE.	Schedule 1: Maps: Figure 2
Raw Water Pond	• Capacity of 2,500 m^3; • Minimum design freeboard of 0.5 m; and • Lined with 1.5mm HDPE.	Schedule 1: Maps: Figure 2
Site Runoff Pond	• Plant site drainage directed to HDPE lined stormwater pond (Pond Site Runoff Pond); • Captured stormwater directed to water treatment plant; • Plant site drainage directed to HDPE lined stormwater	Schedule 1: Maps: Figure 2

Infrastructure	Design and construction / installation requirements	Infrastructure location
	pond; • Minimum design freeboard of 0.5 m; and • Capacity for 1 in 100 year, 72 hour event.	
Mine Water Settling Ponds	• Capacity 4,000 m^3; • Minimum Design freeboard 0.5 m; • Lined with 1.5 mm HDPE; and • Provision for two ponds, one built on initial plant construction and the second pond during operational phase if required.	Schedule 1: Maps: Figure 2
South Pond	• Stores excess water which will be drawn back into the process as required; • The pond design has the ability to reclaim water by floating pontoons pumps for use in the process circuit as required; • Lined with 1.5 mm HDPE; • Minimum design freeboard of 0.5 m; • Occupies 16 ha; • maximum storage volume of 1,000,000 m^3; and • Designed and managed with sufficient freeboard to retain incident rainfall from a 72 hour, 1:100 year ARI event and a wave freeboard of 300mm; and • Localised runoff from the hillslopes upgradient of the pond will be diverted around the pond embankments, with provision made to intercept and capture this runoff to supplement the operational water supply if required.	Schedule 1: Maps: Figure 1 Figure 2
Sedimentation Pond	• A sediment pond will be constructed at the northern, downstream end of the mine haul road, outside of plant area, to reduce sediment loads in runoff from the mine haul road; • The pond will have a capacity of 20,000 m^3; and • Minimum design freeboard of 0.5 m	Schedule 1: Maps: Figure 2
Wastewater Treatment Plant (WWTP)	• Maximum design capacity of 75 m^3/day. • To consist of the following: ➢ Influent screening and balance tank; ➢ Anaerobic and aerobic treatment; ➢ Clarification; ➢ Effluent sterilization (chlorination); ➢ Bag filtration (100 micron); ➢ Sludge settling tank; and ➢ Irrigation / treated effluent tank; • Contingency tank storage equivalent to 24 hours (i.e. 2 shift changes) of wastewater throughput will be maintained at the WWTP; • A weather proof control room is part of the WWTP; • Instrumentation will include level sensors on the balance tank and treated effluent tanks and high level audible and visual (flashing light) alarms; • Other sensors will alarm in the event of a transfer pump or blower malfunction. Pressure sensors on the treated effluent pipeline will alarm in the event pressure varies outside expected operating parameters indicative of a possible leak, or less likely, blockage; • Designed to treat effluent to the following quality:	Schedule 1: Maps: Figure 1

Infrastructure	Design and construction / installation requirements	Infrastructure location
	➢ pH 6.5 – 8.5; ➢ BOD <20 mg/L; ➢ TSS <30 mg/L; ➢ Total Nitrogen <40 mg/L; ➢ Total Phosphorus <10 mg/L; ➢ Total Chlorine 0.2 – 2.0 mg/L; and ➢ *E.coli* <1,000 cfu/100 mL. • The WWTP to be installed on a constructed hardstand pad of approximately 0.09 ha mostly proud of the surrounding natural ground; and • An earthen bund and shallow diversion drain will be constructed at the interface with the natural surface on the upgradient edge of the pad to direct any sheet runoff from above the pad around the facility.	
Irrigation Spray Field	• Treated wastewater to be discharged via above ground sprinklers to a fenced, 2.5 ha irrigation spray field area; • Loading rates designed for Total Nitrogen to meet 438 kg/ha/yr and Total Phosphorus to meet 109.5 kg/ha/yr; • An earthen bund and shallow drain will be excavated on the upgradient boundary of the sprayfield area, directing any runoff from upstream either around the sprayfield area, or to a minor ephemeral drainage line that traverses the sprayfield area; and • A 10 metre buffer over a minor ephemeral drainage line will be quarantined from the irrigation area through the design of the sprinkler configuration.	Schedule 1: Maps: Figure 2
Class II putrescible landfill	• To be established within the footprint of the waste rock landform (WRL) initially and then within the overburden deposited on the WRL; • A series of trenches (one trench open at any one time) approximately 30 m long, 10 m wide and 4 m deep; • Maximum quantity of waste to be disposed: 700 tonnes per annum (tpa); • Temporary mesh fencing 2 metres in height will be deployed around the landfill facility to exclude fauna and contain windblown litter; • The initial landfill trenches will be positioned on a natural rise with no upgradient catchment; • Spoil from the excavation of each trench will be positioned on the 'high' side of the trench to divert any immediate, localised runoff around the trench; and • As the WRL is developed the landfill trenches will be constructed in the finished, flat surface of an overburden lift. Waste rock bunds (windrows) will be constructed around the excavated trenches to contain incident rainfall and prevent any surface runoff entering the trenches; • The landfill facility is positioned within the footprint of the WRL upstream of the orebody and within the catchment of the open pit; • Infiltration of rainfall through the completed waste trenches will be minimised by capping the trench with compacted, slightly mounded fill; and • Up to 100 tyres per annum may be disposed within the WRL, in the event a viable recycling or supplier return	Schedule 1: Maps: Figure 1

Infrastructure	Design and construction / installation requirements	Infrastructure location
	option cannot be secured.	
Tailings delivery and water pipelines	Tailings pumped via overland pipeline to the TSF: • Combination of lined steel pipe and HDPE; • Secondary containment such as an earthen bund where practicable and catchment sumps at low elevation points to provide containment capacity and recover material from pipeline leaks or ruptures; and • Monitored electronically via the plant control system for leak detection.	Schedule 1: Maps: Figure 1 Figure 2

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; and

(d) within the corresponding timeframe,

as set out in Table 2.

Table 2: Critical containment infrastructure design and construction requirements

Infrastructure	Design and construction requirements	Infrastructure location	Timeframe
Tailings Storage Facility (TSF) (Cells 1 and 2)	• Valley-fill TSF constructed within Mining Tenement M45/494; • Storage capacity: 8.8 Mt of tailings; • TSF Cells 1 and 2 to have approximately equal storage capacity: ➢ Cell 1 (north): 2.2 Mm^3 / 4.4 Mt (tailings predominately from underground operations); and ➢ Cell 2 (south): 2.2 Mm^3 / 4.4 Mt (tailings predominately from open pit operations); • Staged construction (lifts) of three embankments as specified on Figure 4, Figure 5, and Figure 6: ➢ Main embankment (initial site construction); ➢ Mid-valley embankment (dividing wall) (initial site construction); and ➢ Southern embankment (nominally year 4 of operations, prior to commissioning Cell 2); • Sub-areal deposition via tailings spigot points at 24 m to 40 m intervals along the northern main (Cell 1) embankment and southern embankment (Cell 2), as shown on Figure 7 and Figure 8; • Installation of four sets of Vibrating Wire Piezometers (VWPs) (two in the main embankment and two in the southern embankment) as specified in Figure 7	Schedule 1: Maps: Figure 1 Figure 3 Figure 4 Figure 5 Figure 6 Figure 7 Figure 8 Figure 9	Prior to the submittal of the Critical Containment Infrastructure required by condition 7

Infrastructure	Design and construction requirements	Infrastructure location	Timeframe
	and Figure 9; • Construction of four minor, secondary saddle dams later in operations of each cell along the eastern and western perimeter of the cells as specified in Figure 5; • Installation of a supernatant (decant) pond pontoon mounted pump system; • Installation of an underdrainage system comprising slotted pipes wrapped in aggregate and geotextile and central drain positioned along the base of the TSF valley and drains located along the upstream toe of the embankments as shown on Figure 7 and Figure 8; • Cut-off trenches under the perimeter embankments, to nominally 1.5 m - 2 m bgl founded on weathered rock; • A bentonite collar to be included at the HDPE pipe opening in the select borrow (upstream) zone; and • A bituminous geomembrane (BGM) liner to be installed on the upstream batter of the main and southern TSF embankments and both faces of the middle (dividing) embankment as specified in Figure 6.		
TSF stormwater capacity (containment) and freeboard	Constructed to meet operational design total freeboard of minimum 1.1 m: • Minimum operational freeboard (vertical height between the tailings beach and embankment crest) of 300 mm; and • Minimum beach freeboard of 200 mm • Allowance for 1:100 yr. AEP 72 hour event of 376 mm.	N/A	Prior to the submittal of the Critical Containment Infrastructure required by condition 7
TSF spillway capacity (operation and closure)	Operation: • Stormwater from large storm events to be disposed of on the surface of the TSF by evaporation and pumping via the decant to the process water circuit. If required, a spillway width of 10 m and a design depth of 1 m. Closure: • Spillway to cater for a probable maximum flood (PMF).	N/A	Closure

3. The works approval holder must design, construct, and install five new 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
Additional Groundwater monitoring wells: CF1 CF2 CF3 SWB70 PPS1	<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*. 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 Schedule 1: Premises Maps: Figure 10 Figure 11	Must be constructed, developed (purged), and determined to be operational by no later than 30 calendar days prior to the commencement of environmental commissioning
	<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 AS 1762:2017. 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 elevations of the ground surface protective installations.		
	<u>Well development:</u> 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.		
	<u>Installation survey:</u> The vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.		
	<u>Well network map:</u> A well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the		

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

4. 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.

Compliance reporting

5. The works approval holder must within 60 calendar days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of conditions 1 and 2; and

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

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

(a) certification by a suitably qualified professional engineer or builder that the items of infrastructure or component(s) thereof, as specified in conditions 1 and 2, have been constructed in accordance with the relevant requirements specified in condition conditions 1 and 2;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in conditions 1 and 2; and

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

7. The works approval holder must within 60 calendar days of the Critical Containment Infrastructure identified by condition 2 being constructed:

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

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

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

(a) certification by a suitably qualified geotechnical engineer 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;

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

(e) monitoring data indicating the baseline ambient environmental conditions at the premises prior to and immediately following construction of the item(s) of infrastructure.

9. The works approval holder must monitor the baseline ambient environmental conditions required under condition 8(e) for concentrations of the identified parameters in accordance with Schedule 3: Monitoring, Table 11.

Environmental commissioning phase

Environmental commissioning requirements and emission limits

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 5 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
Processing Plant	• Record volumes of ore processed during commissioning; • Visual monitoring of airborne dust levels and efficacy of dust extraction and suppression measures; • Monthly inspections of storage and refuelling areas; • Visual monitoring of Plant Site Runoff Pond post runoff events; and • Sampling and analysis of Plant Site Runoff Pond water post significant run-off events.	For a period not exceeding six months
TSF	• Can accept up to 550,000 tonnes of tailings during commissioning; • Record volumes of wet tailings deposited during time limited operations; • Sub-areal deposition via tailings spigot points at 24 m to 40 m intervals along the northern main (Cell 1) embankment and southern embankment (Cell 2), as shown on Figure 7 and Figure 8; • Freeboard total 1.1 m: ➢ Minimum 300 mm operational freeboard (vertical height between the	For a period not exceeding six months

Infrastructure	Commissioning requirements	Authorised commissioning duration
	tailings beach and embankment crest); ➢ Beach freeboard of 200 mm; and ➢ Allowance for 1:100 yr. AEP 72 hour rain event (376 mm); • Minimise decant pond on TSF at all times; • VWPs determined to be operational prior to use; and • Minimum daily (each shift) inspections of: ➢ pipelines, valves, pumps; ➢ initial deposition and behaviour of tailings including dust generation; ➢ decant pond formation, location and size; ➢ return water operations system; ➢ embankment condition; ➢ seepage detection (VWP's) and recovery systems; ➢ to confirm if dust lift-off is occurring from the TSF surface; and ➢ to confirm if fauna are using the TSF / decant pond as a water source.	
Paste Fill Plant	• Record volumes of tailings processed and volume of paste fill delivered to underground mine void; • Monitor volumes of filtercake spillage within paste plant compound and efficacy of solids recovery; • Visual monitoring of airborne dust levels during filling of Binder Silo; and • Inspection of paste delivery pipeline every shift during paste fill operations.	For a period not exceeding six months
Accommodation camp WWTP and pipeline	• The WWTP and treated effluent pipeline will be inspected daily; • Treated effluent will be stored in tanks in this period and recycled through the plant until sampling demonstrates treatment is achieving the required performance; • Spills of wastewater or chemicals outside containment infrastructure must be cleaned up immediately; and • All wastewater storage and treatment tanks, vessels, transfer pipelines and	For a period not exceeding 60 calendar days in aggregate

Infrastructure	Commissioning requirements	Authorised commissioning duration
	conveyance infrastructure must be impermeable and free of leaks or defects.	
WWTP irrigation spray field	• Discharge of effluent to the sprayfield will commence once sample analyses indicate attainment of the plant performance criteria; and • The irrigation spray field area will be inspected daily.	For a period not exceeding eight weeks

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

Table 5: Authorised discharge points during commissioning

	Emission	Discharge point	Discharge point location
1.	Tailings to the TSF	TSF	Schedule 1: Maps: Figure 12
2.	Treated effluent to the WWTP Irrigation Area	Irrigation Area	Schedule 1: Maps: Figure 12

Monitoring during environmental commissioning

13. The works approval holder must monitor emissions during environmental commissioning in accordance with Schedule 3: Monitoring, Table 10.

14. The works approval holder must monitor the groundwater and surface water during environmental commissioning for concentrations of the identified parameters in accordance with Schedule 3: Monitoring, Table 11.

15. The works approval holder must record the results of all monitoring activity required by conditions 13 and 14.

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 4.

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 ore and wastewater processed;

(b) a summary of monitoring parameter results obtained during time limited operations under conditions 24 and 25 with a comparison to trigger values and actions taken where trigger values are breached;

(c) a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed (as applicable), which at minimum includes records detailing the:

(i) commissioning of the infrastructure; and

(ii) testing of the infrastructure;

(d) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(e) 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 condition 1:

(a) where the item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 5 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 16 has been submitted by the works approval holder.

19. 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 16 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 7 meets the requirements of that condition; or

(c) where 45 business days have passed after the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 7 has been submitted to the CEO.

20. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 21 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 18 or 19 (as applicable) 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 20(a).

Time limited operations requirements

21. 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.	Processing Plant	• Record volumes of ore processed during time limited operations; • Visual monitoring of airborne dust levels and efficacy of dust extraction and suppression measures; • Monthly inspections of storage and refuelling areas; • Visual monitoring of Plant Site Runoff Pond post runoff events; and • Sampling and analysis of Plant Site Runoff Pond water post significant run-off events.	Schedule 1: Maps: Figure 1 Figure 2
2.	Process Water Pond	• Freeboard to accommodate normal pond depth 500 mm; • Minimum daily (each shift) inspections of: ➢ to confirm required freeboard capacity is available; and ➢ to confirm if fauna are using the Process Water Pond as a water source.	Schedule 1: Maps: Figure 2
3.	TSF	• Can accept up to 550,000 tonnes of tailings during time limited operations; • Record volumes of wet tailings deposited during time limited operations; • Sub-areal deposition via tailings spigot points at 24 m to 40 m intervals along the northern main embankment (Cell 1) and southern embankment (Cell 2), as shown on Figure 7 and Figure 8; • Freeboard total 1.1 m: ➢ Minimum 300 mm operational freeboard (vertical height between the tailings beach and embankment crest); ➢ Beach freeboard of 200 mm; ➢ Allowance for 1:100 yr. AEP 72 hour rain event (376 mm); • Minimise decant pond on TSF at all times; • Minimum daily (each shift) inspections of:	Schedule 1: Maps: Figure 1 Figure 3 Figure 4 Figure 5 Figure 6 Figure 7 Figure 8 Figure 9

	Site infrastructure and equipment	Operational requirement	Infrastructure location
		➢ pipelines, valves, pumps; ➢ initial deposition and behaviour of tailings including dust generation; ➢ to confirm required freeboard capacity is available; ➢ decant pond formation, location and size; ➢ return water operations system; ➢ embankment condition; ➢ seepage detection (VWP's) and recovery systems; ➢ to confirm if dust lift-off is occurring from the TSF surface; and ➢ to confirm if fauna are using the TSF / decant pond as a water source.	
4.	Paste Fill Plant	• Record volumes of tailings processed and volume of paste fill delivered to underground mine void; • Clean up/recovery of spilled filtercake as necessary to ensure no accumulations of process solids within paste fill plant compound; and • Inspection of paste delivery pipeline every shift during paste fill operations.	Schedule 1: Maps: Figure 1
5.	Accommodation camp WWTP and pipeline	• The WWTP and treated effluent pipeline will be inspected daily; • Spills of wastewater or chemicals outside containment infrastructure must be cleaned up immediately; and • All wastewater storage and treatment tanks, vessels, transfer pipelines and conveyance infrastructure must be impermeable and free of leaks or defects.	Schedule 1: Maps: Figure 1
6.	WWTP irrigation spray field	• The irrigation spray field area will be inspected daily.	Schedule 1: Maps: Figure 2
7.	Landfill	• Temporary mesh fencing 2 metres in height will be deployed around the landfill facility to exclude fauna and contain windblown litter; and • Waste in the active trench will be covered by earth and waste rock at fortnightly intervals.	Schedule 1: Maps: Figure 1

22. 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.	Tailings to the TSF	TSF	Schedule 1: Maps: Figure 12
2.	Treated effluent to the WWTP Irrigation Area	Irrigation Area	Schedule 1: Maps: Figure 12

23. During time limited operations, the works approval holder must record the following data monthly for the site water balance:

(a) site rainfall;

(b) evaporation rate;

(c) tailings return water recovery volumes;

(d) seepage recovery volumes;

(e) estimate of seepage losses; and

(f) volumes of tailings deposited.

Monitoring during time limited operations

24. The works approval holder must monitor emissions during time limited operations in accordance with Schedule 3: Monitoring, Table 10.

25. The works approval holder must monitor the groundwater and surface water during time limited operations as per Schedule 3: Monitoring, Table 11.

26. The works approval holder must record the results of all monitoring activity required by condition 24 and 25.

Compliance reporting

27. 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.

28. The works approval holder must ensure the report required by condition 27 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of material processed (i.e. tailings deposited, volume of tailings produced, deposited waste, wastewater processed);

(b) a summary of monitoring parameter results obtained during time limited operations under conditions 24 and 25 with a comparison to trigger values and actions taken where trigger values are breached;

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

(i) copper and zinc bearing ore processed; and

(ii) copper and zinc concentrate produced;

(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.

Monitoring requirements

29. The works approval holder must ensure that all monitoring required by conditions 13, 14, 24 and 25 is undertaken, where relevant:

(a) monitoring is undertaken in each weekly period such that there are at least 4 days in between the days on which samples are taken in successive weeks;

(b) monitoring is undertaken in each monthly period such that there are at least 15 days in between the days on which samples are taken in successive months;

(c) monitoring is undertaken in each quarterly period such that there are at least 45 days in between the days on which samples are taken in successive quarters;

(d) monitoring is undertaken in each six-monthly period such that there are at least 5 months in between the days on which samples are taken in successive periods of six months;

(e) monitoring is undertaken in each annual period such that there are at least 9 months in between the days on which samples are taken in successive years.

30. The works approval holder must ensure that, for sampling required by conditions 13, 14, 24 and 25:

(a) all water samples are collected and preserved in accordance with *Australian Standard 5667.1:1998 Water Quality – Sampling*;

(b) all groundwater sampling is conducted in accordance with *Australian Standard 5667.11:1998 Water Quality – Sampling Guidance on sampling of groundwaters* 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 10 and/or Table 11.

Records and reporting (general)

31. 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.

32. 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 24 and 25; and

(d) complaints received under condition 31.

33. The books specified under condition 32 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

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

Definitions

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

Table 8: Definitions

Term	Definition
annual period	a 12 month period commencing from 1 January until 31 December of the immediately following year
AS 1726:2017	means the Australian Standard AS 1762:2017 Geotechnical site investigations, as amended from time to time
AS 1940-2004	Means the Australian Standard AS 1940-2004 *The Storage and Handling of Flammable and Combustible Liquids - Western Australia*
AS 1692-2006	means the Australian Standard AS 1692-2006 *Steel tanks for flammable and combustible liquids*
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.*
AS/NZS 5667.10	Means the Australian Standard AS/NZS 5667.10:1998 *Water quality - Sampling Guidance on sampling of waste waters.*
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 *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

Term	Definition
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended from time to time
BGM	bituminous geomembrane
BOD	Biological oxygen demand
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
cfu	colony-forming unit
critical containment infrastructure	means the items of infrastructure listed in condition 2.
Critical Containment Infrastructure Report	means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
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.

Term	Definition
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	Environmental Protection Regulations 1987 (WA).
Freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point
HDPE	high-density polyethylene
m	means metres
mbgl	means metres below ground level
NAF	non-acid forming
NATA	means the National Association of Testing Authorities, Australia
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis
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
suitably qualified geotechnical engineer	means a person who: • holds a Bachelor of Engineering recognised by the Australian Institute of Engineers; and • has a minimum of five years of experience working in geotechnical engineering including experience in the design of tailings storage facilities.
SWL	means standing water level
t	tonne
TSF	Tailings Storage Facility
TSS	Total suspended solids
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.

Term	Definition
VWP	Vibrating Wire Piezometers
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: Premises Maps

The boundary of the prescribed premises is shown on Figure 1 below.

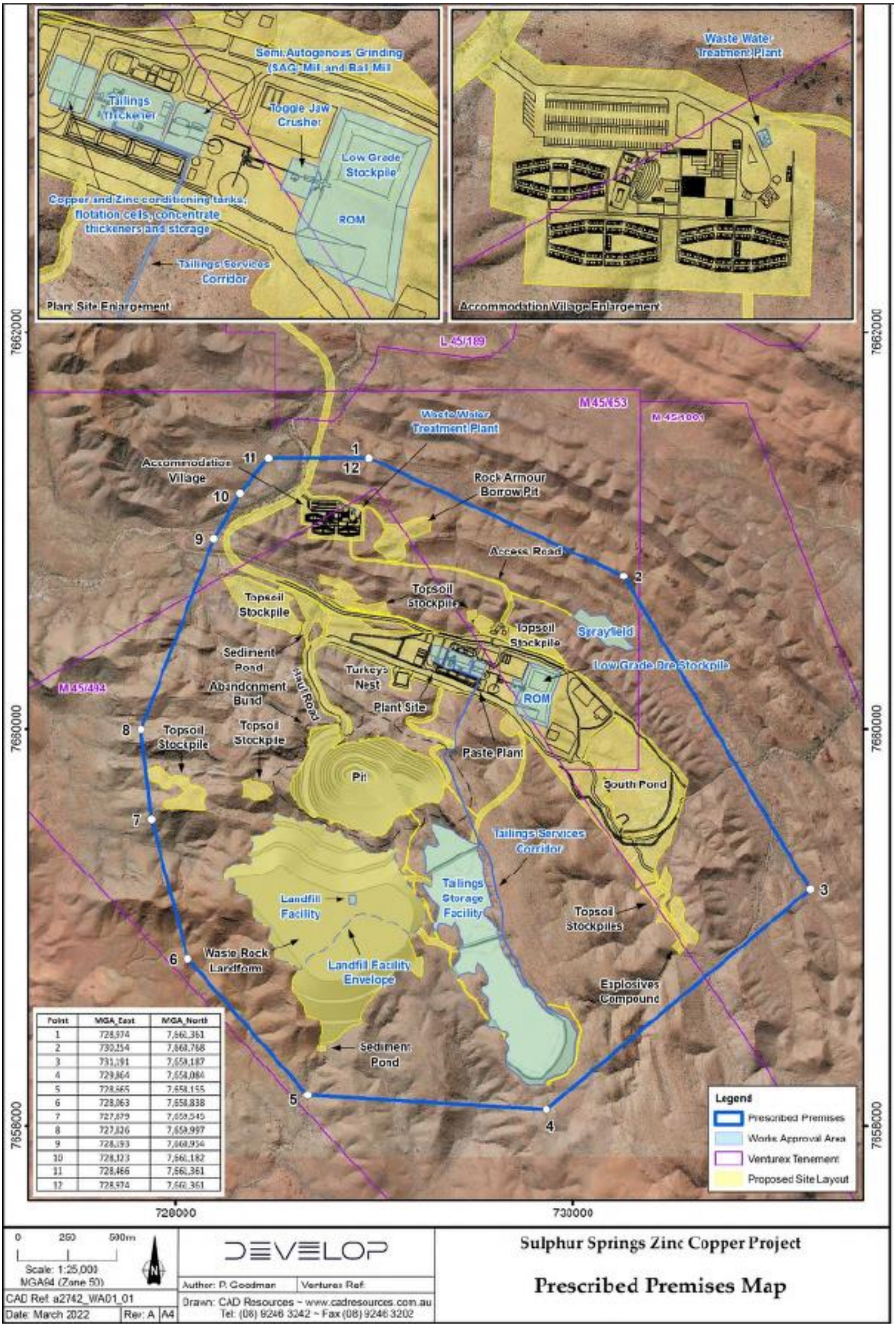

Figure 1: Map of the boundary of the prescribed premises

The plant site layout is shown on Figure 2 below.

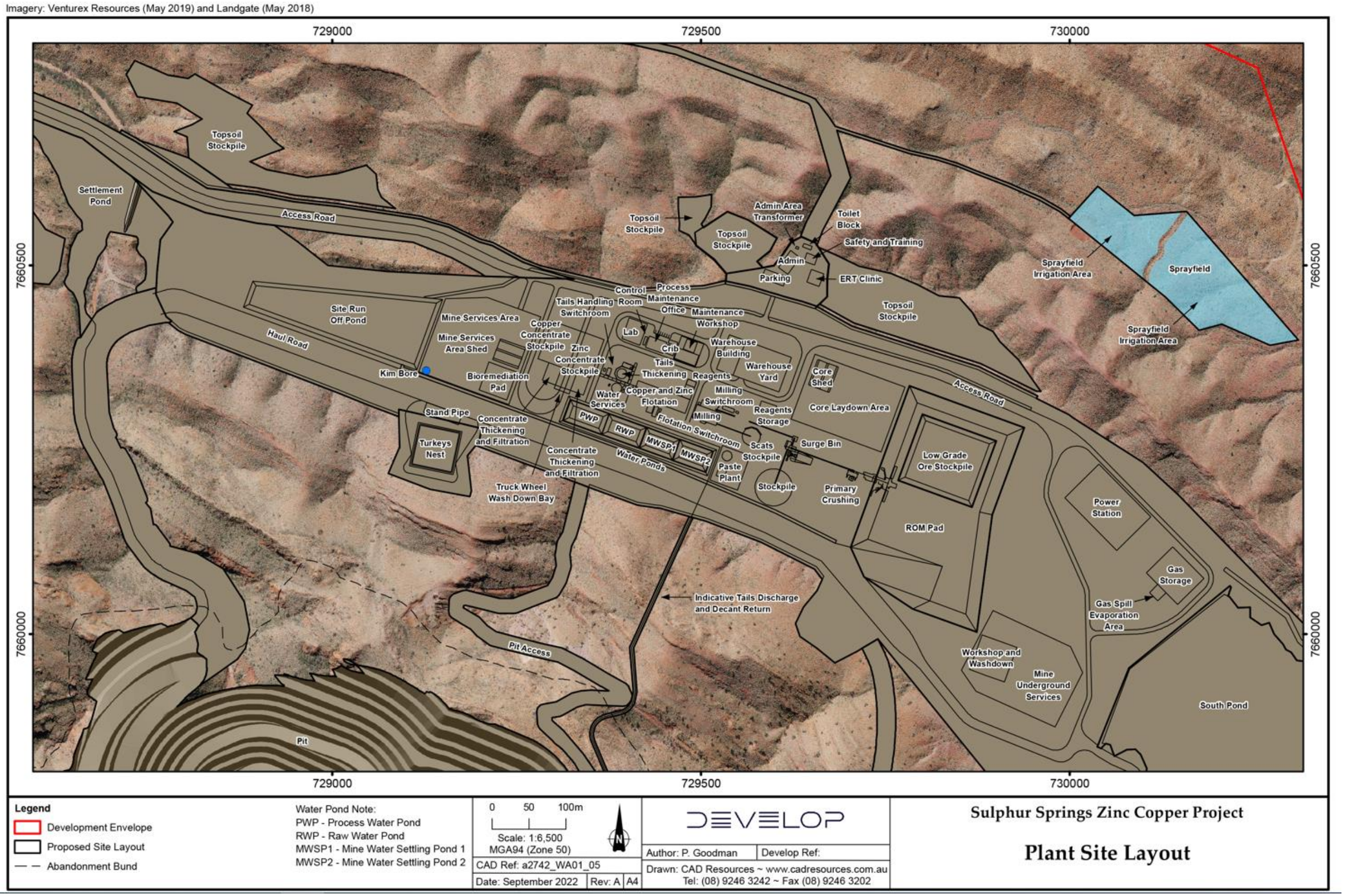

Figure 2: Plant site layout

The general arrangement of the TSF is shown on the drawing below (Figure 3).

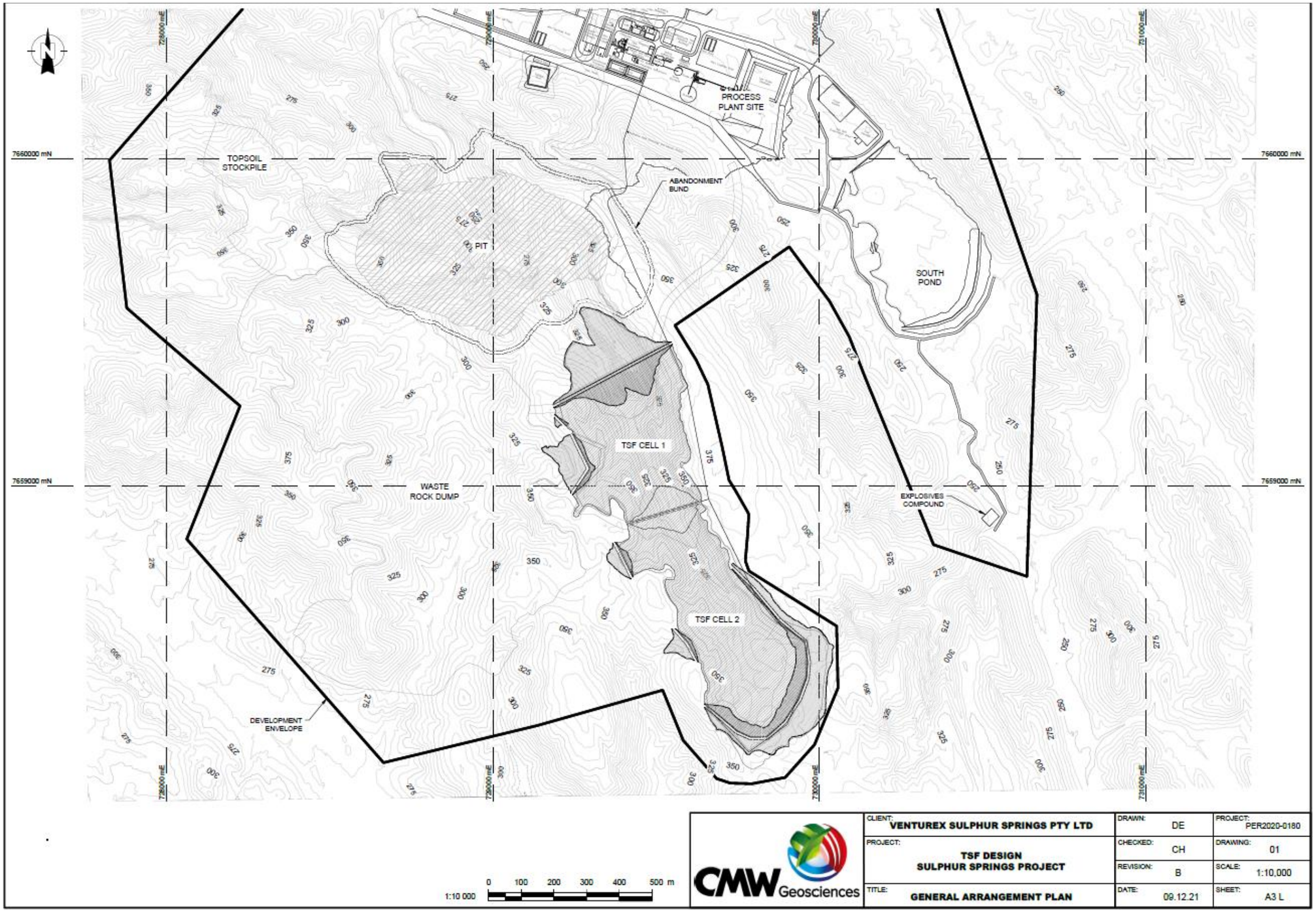

Figure 3: TSF general arrangement plan

The TSF plan (Stage 1) is shown on the drawing below (Figure 4).

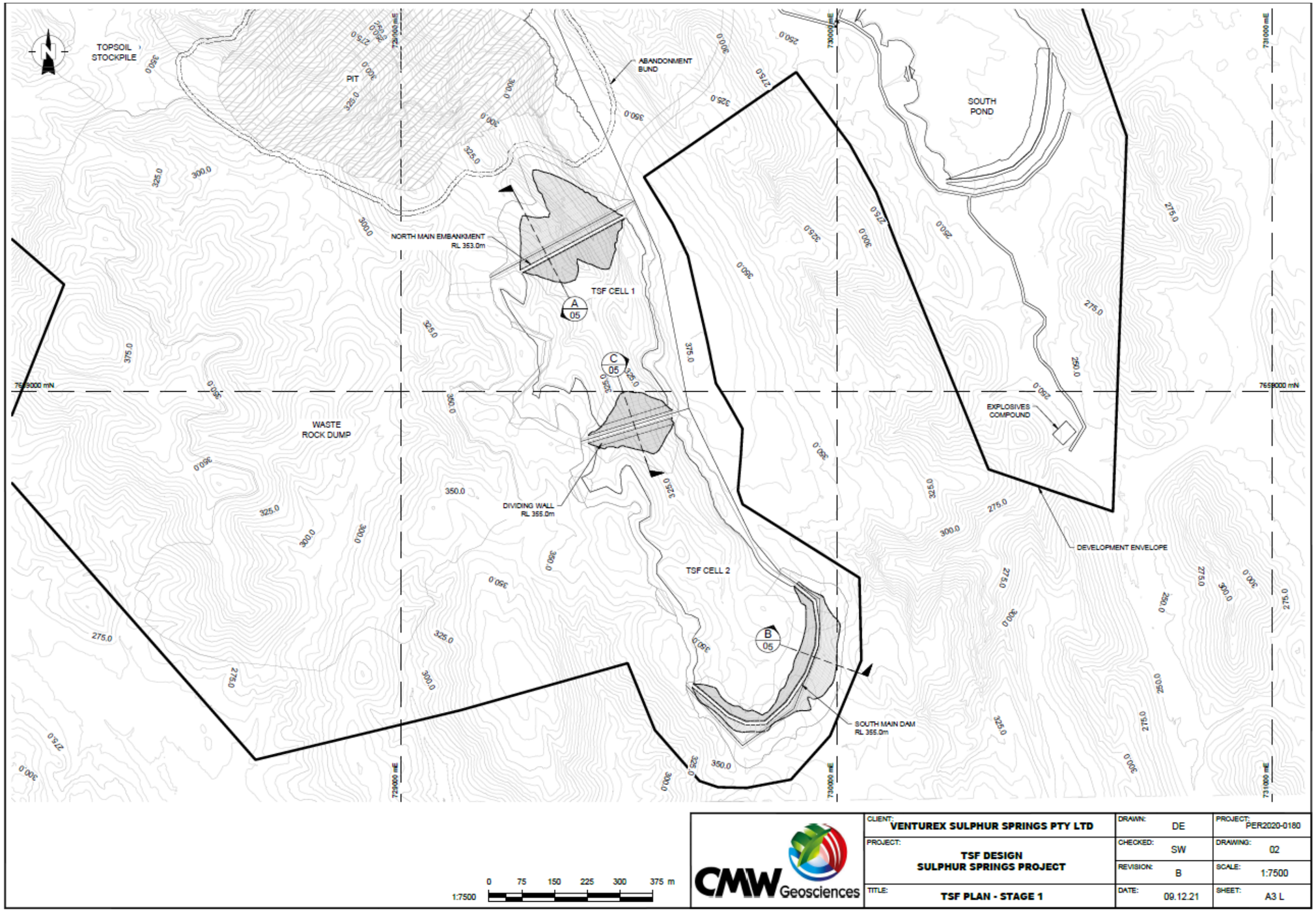

Figure 4: TSF Plan – Stage 1

The TSF plan (Final Stage - 8.8 Mt) is shown on the drawing below (Figure 5).

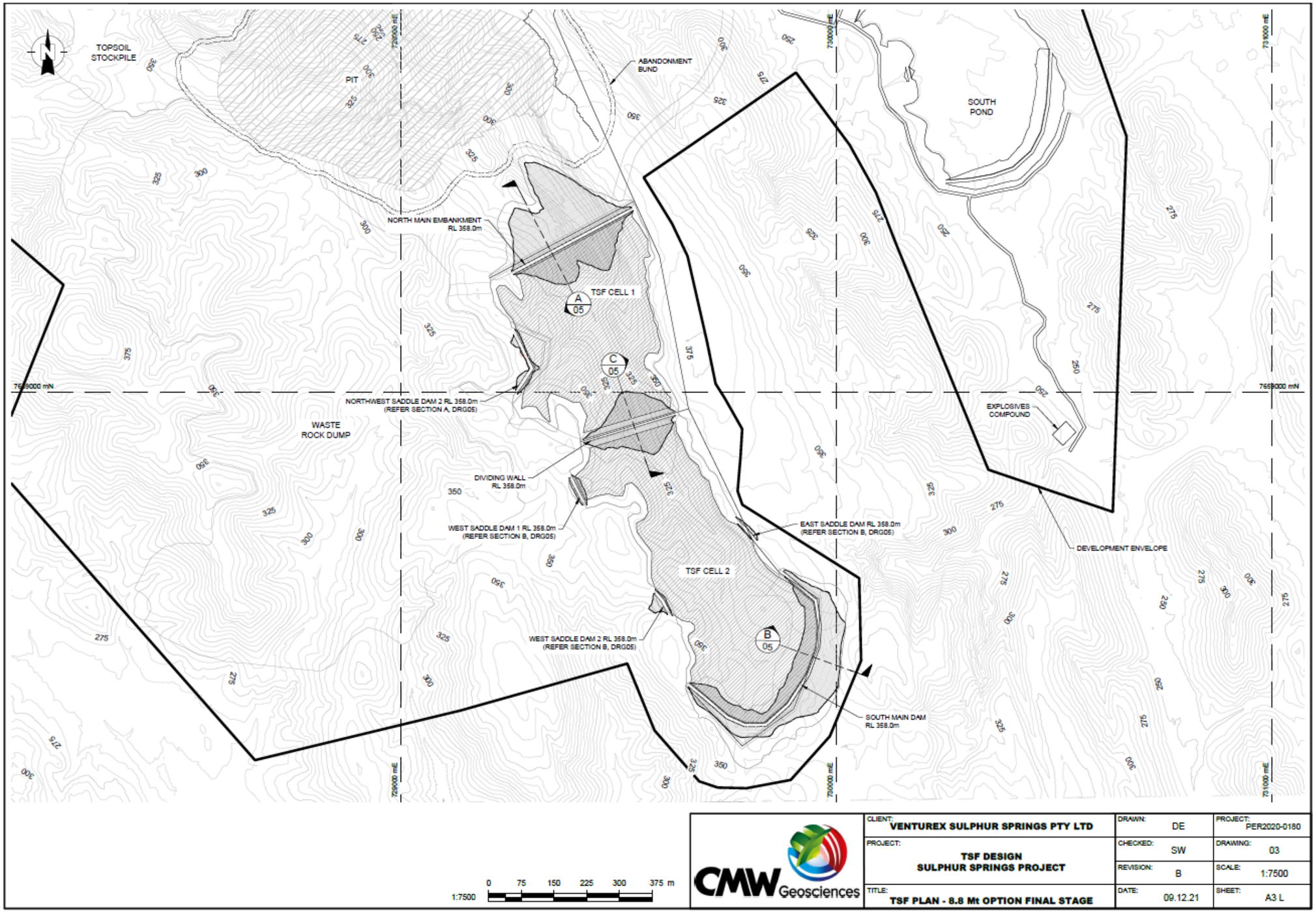

Figure 5: TSF Plan – Final Stage

The TSF design and cross sections are shown on the drawing below (Figure 6).

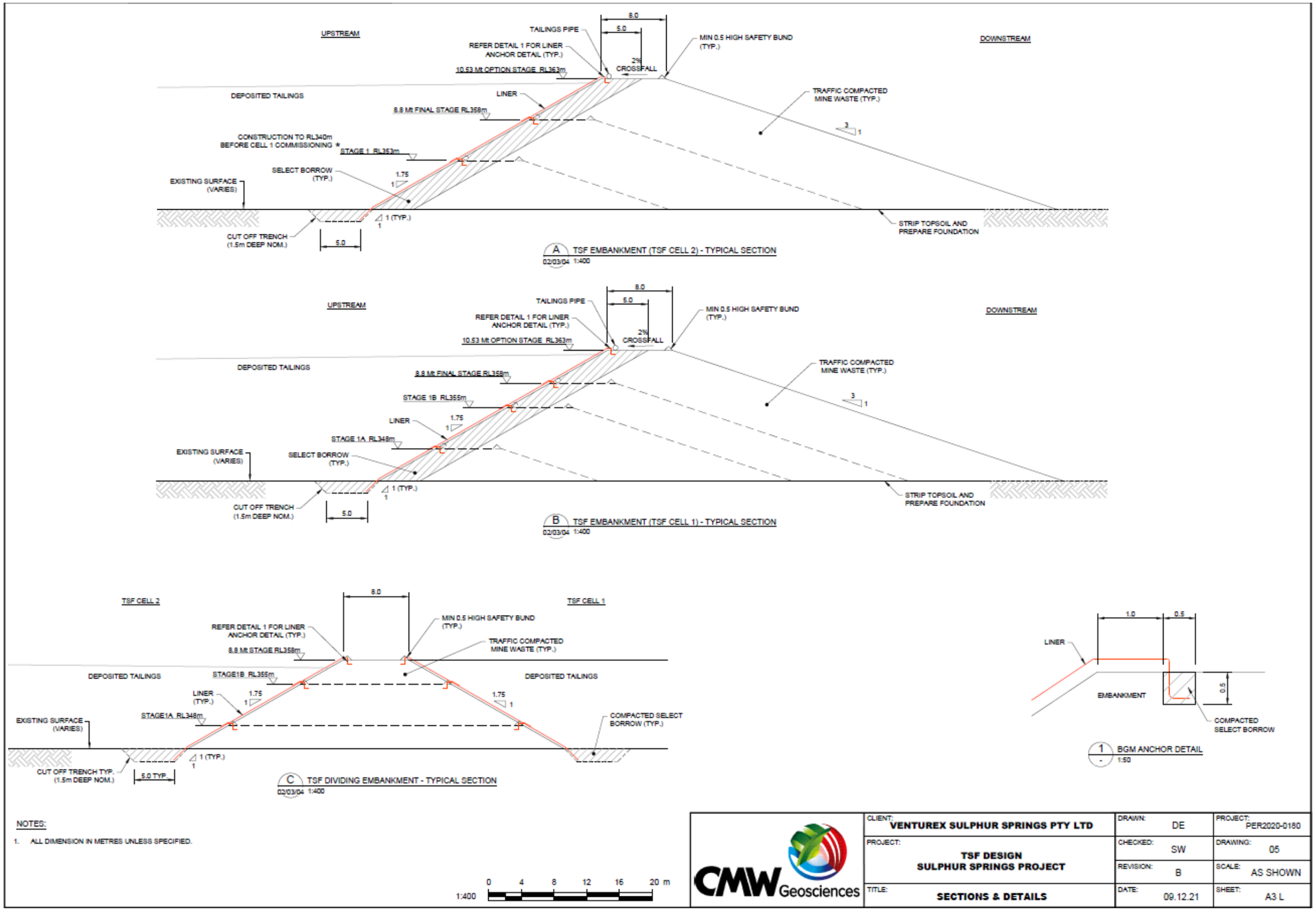

Figure 6: TSF cross sections

The TSF underdrainage plan and VWPs are shown on the drawing below (Figure 7).

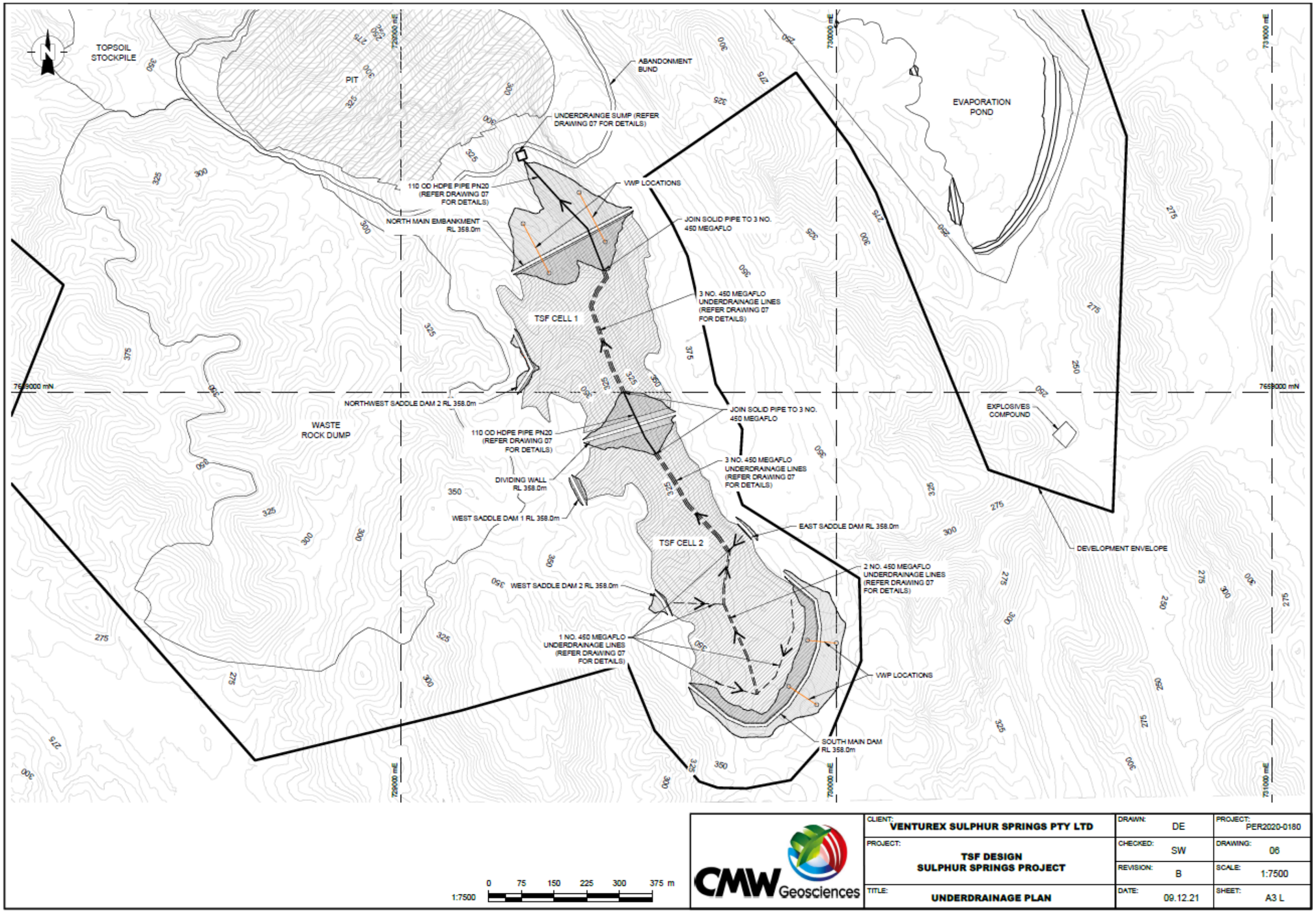

Figure 7: TSF underdrainage plan and VWPs

The TSF underdrainage and spigot details are shown on the drawing below (Figure 8).

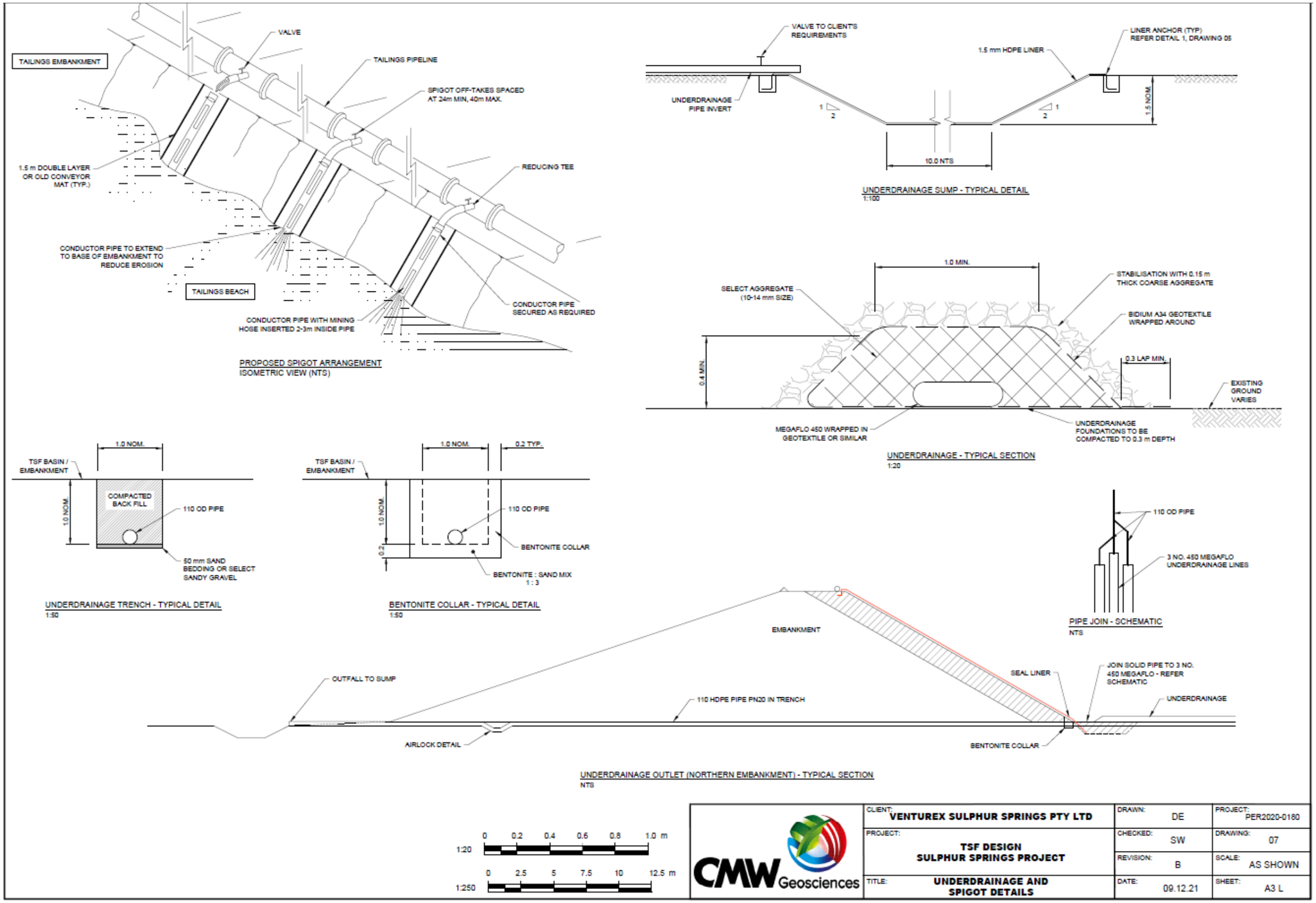

Figure 8: TSF underdrainage and spigot details

The TSF instrumentation (VWPs) details are shown on the drawing below (Figure 9).

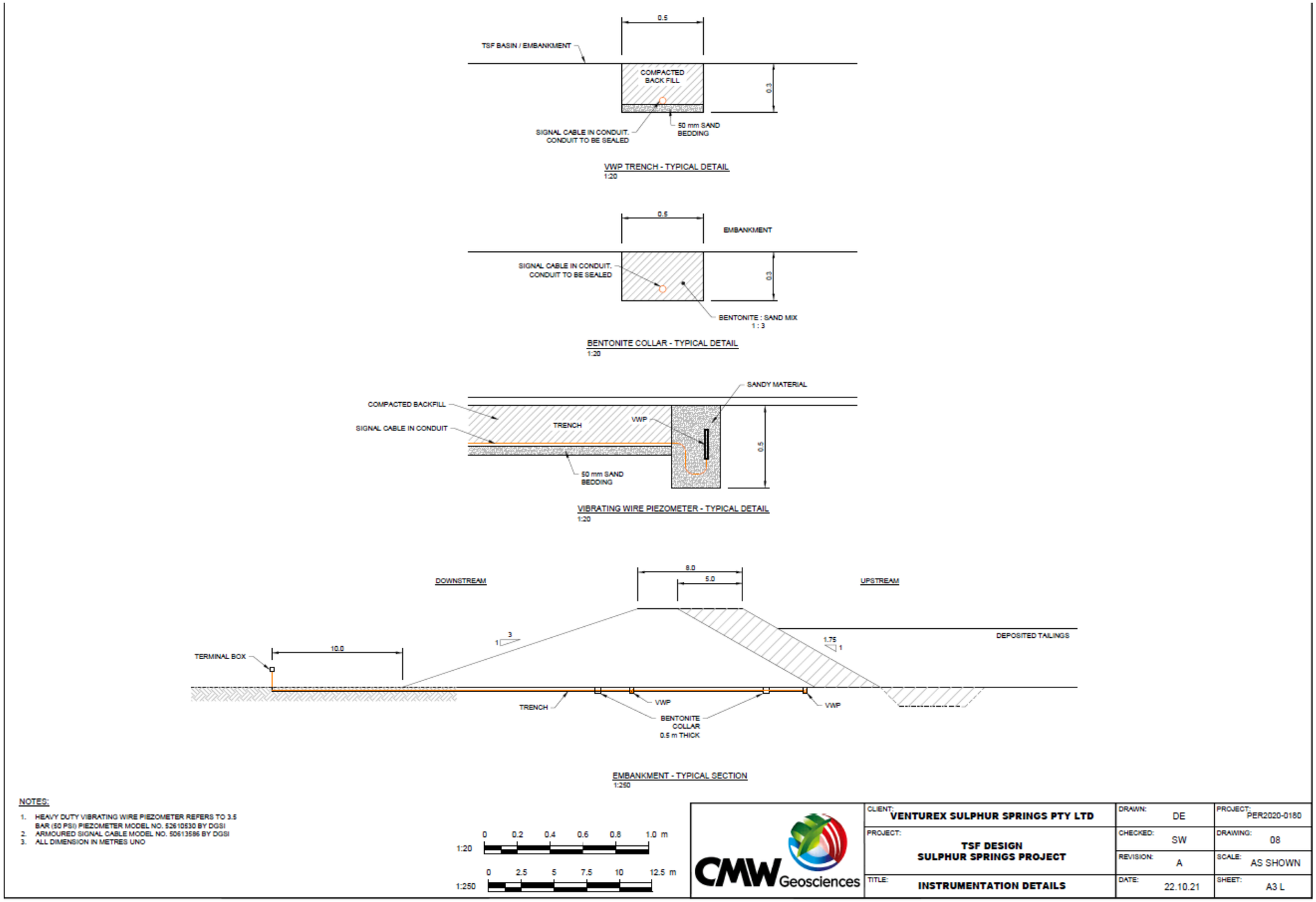

Figure 9: TSF instrumentation (VWPs) details

The water monitoring locations are shown on Figure 10 below.

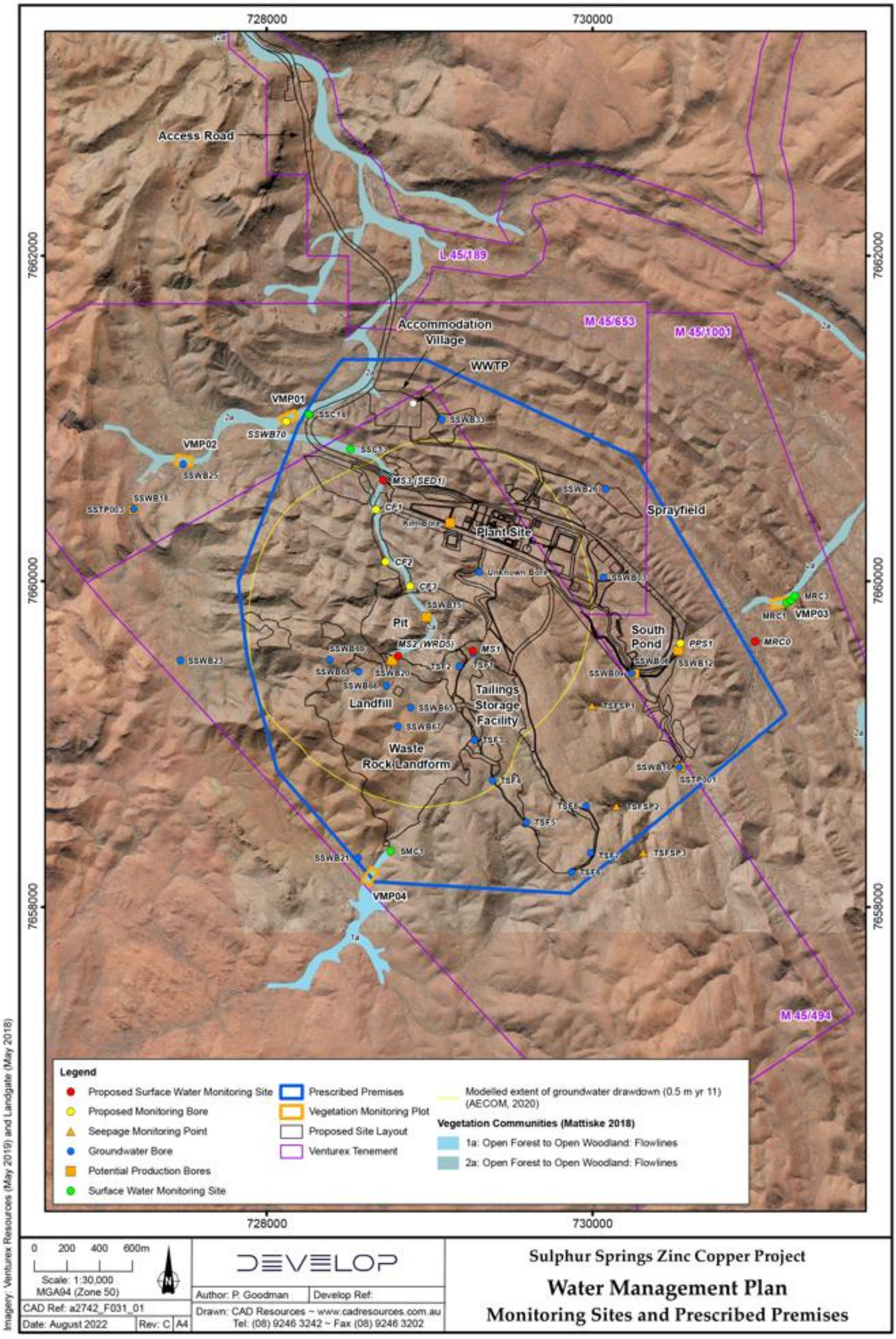

Figure 10: Water monitoring locations

The TSF and seepage monitoring locations are shown on Figure 11 below.

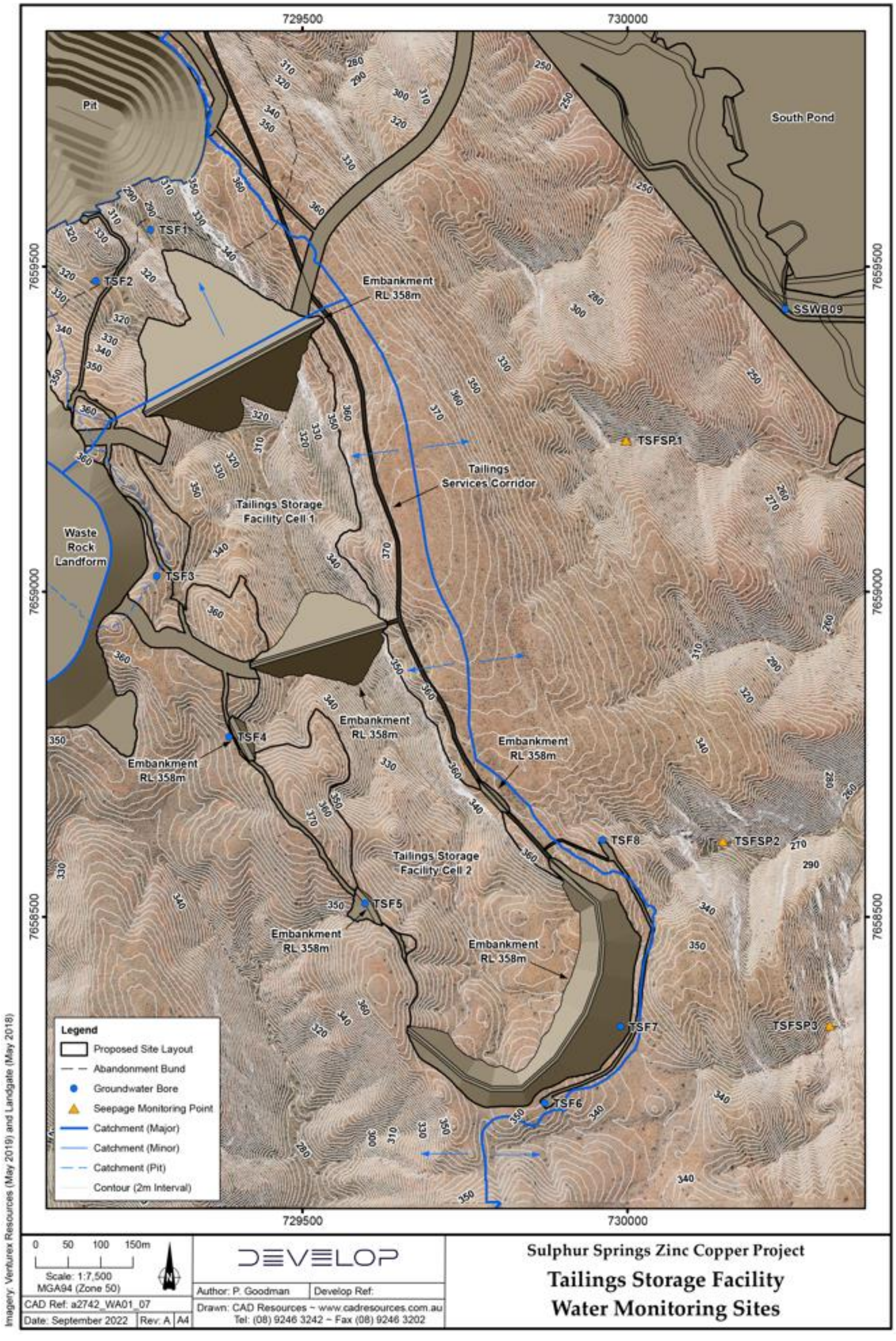

Figure 11: TSF and seepage monitoring locations

Discharge point locations at the TSF and Sprayfield Irrigation Area are shown in Figure 12 below.

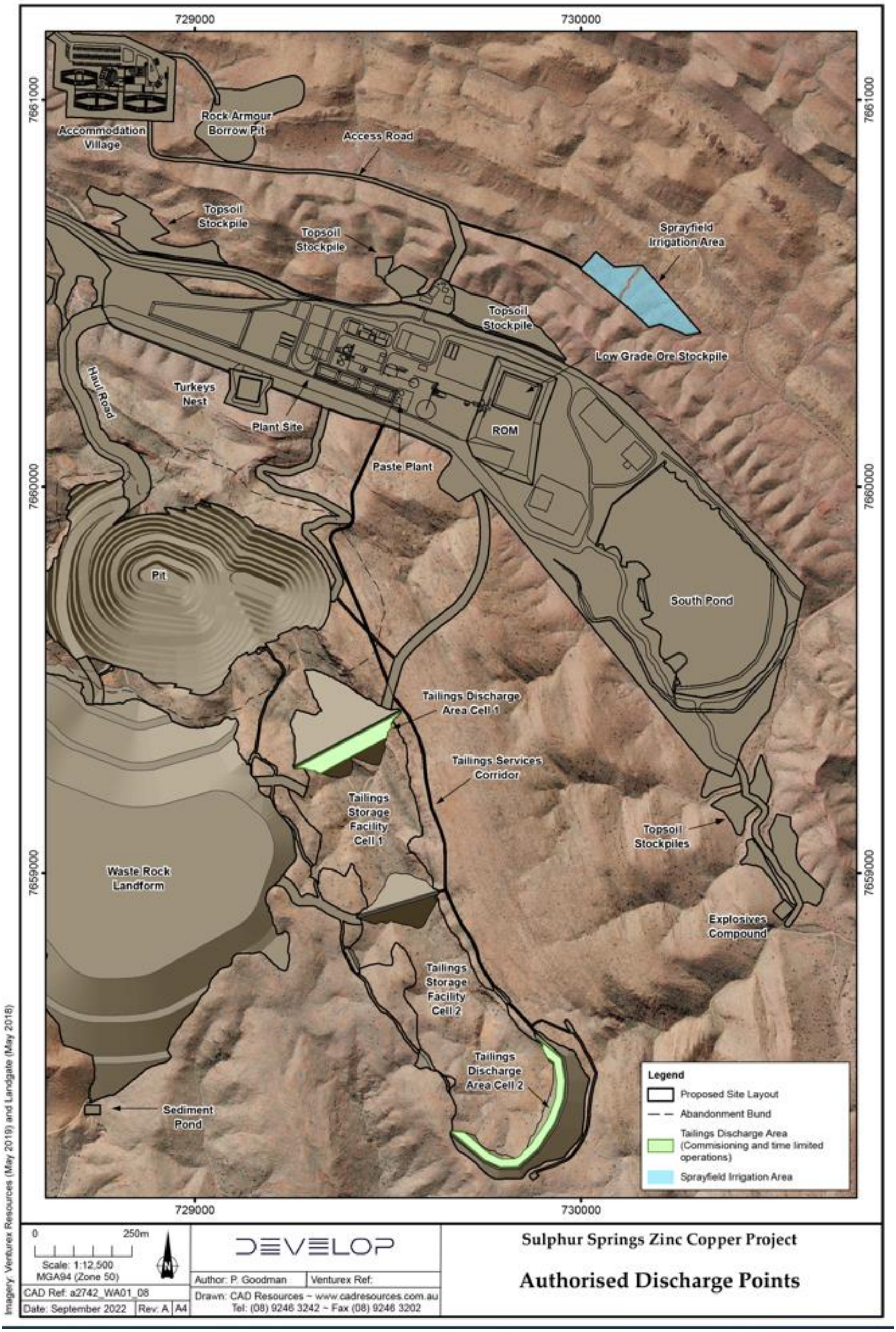

Figure 12: Authorised discharge points

Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 9.

Table 9: Premises boundary coordinates – MGA Zone 51

Easting	Northing
728,974	7,661,361
730,254	7,660,768
731,191	7,659,187
729,864	7,658,084
728,665	7,658,155
728,063	7,658,838
727,879	7,659,545
727,826	7,659,997
728,193	7,660,954
728,323	7,661,182
728,466	7,661,361
728,974	7,661,361

Schedule 3: Monitoring

Table 10: Emissions and discharges monitoring during environmental commissioning and time limited operations

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method
Irrigation spray field	Final Irrigation Tank	*E. coli*	Weekly during commissioning Quarterly during Time Limited Operations	Spot sample	cfu / 100mL	AS/NZS 5667.1 AS/NZS 5667.10
		BOD			mg/L	
		TSS				
		Total nitrogen				
		Total phosphorus				
		Total chlorine				
		pH[1]	Daily or continuous	N/A	pH units	
		Residual chlorine[1]			mg/L	
		Cumulative flow volume	Continuous		m^3	
TSF Decant Pond	Tailings Storage Facility Spigot Outlet Decant Water to Processing Plant	pH	One sample on the commencement of commissioning and monthly thereafter	Spot sample	pH units	AS/NZS 5667.1 AS/NZS 5667.10
		Sulfate (SO_4)			mg/L	

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

Table 11 : Monitoring of ambient concentrations during environmental commissioning and time limited operations

Parameter	Monitoring location	Unit	Frequency	Averaging period	Method
SWL	**Groundwater Sites** <u>Mine</u> SSWB66 SSWB67 SSWB68 SSWB69 Unknown CF1 CF2 CF3 <u>TSF</u> TSF1 TSF2 TSF3 TSF4 TSF5 TSF6 TSF7 TSF8 <u>Processing Plant</u> Kim Bore PPS1 SSWB33 <u>Regional</u> SSWB18 SSWB21 SSWB22 SSWB23 SSWB25 <u>Additional Groundwater</u>	mbgl	**Groundwater Sites** Baseline monitoring of the <u>Additional Groundwater monitoring wells</u> should be conducted Prior to the commencement of commissioning of the TSF <u>TSF, Processing Plant</u> Quarterly (except SWL monthly) <u>Mine, Regional</u> Annually (at least once during commissioning and time limited operations periods) (except SWL monthly) Establish initial groundwater level triggers after 12 months of quarterly monitoring **Surface Water Sites** Six-monthly subject to water availability	Spot sample	AS/NZS 5667.1 AS/NZS 5667.11
pH[1]		pH units			
EC		mS/cm			
TDS		mg/L			
Acidity		mg/L			
Total Alkalinity		mg/L			
Hardness		mg/L			
Sodium (Na)		mg/L			
Potassium (K)		mg/L			
Calcium (Ca)		mg/L			
Magnesium (Mg)		mg/L			
Bicarbonate (HCO_3)		mg/L			
Carbonate (CO_3)		mg/L			
Chlorine (Cl)		mg/L			
Sulfate (SO_4)		mg/L			
Nitrate (NO_3)		mg/L			
Silicon (Si)		mg/L			
Aluminium (Al)		mg/L			
Arsenic (As)		mg/L			
Cadmium (Cd)		mg/L			
Chromium (Cr) total		mg/L			
Copper (Cu)		mg/L			
Iron (Fe)		mg/L			
Lead (Pb)		mg/L			
Manganese (Mn)		mg/L			
Mercury (Hg)					
Nickel (Ni)		mg/L			
Selenium (Se)		mg/L			

Parameter	Monitoring location	Unit	Frequency	Averaging period	Method
Thallium (Tl)	monitoring wells CF1 CF2 CF3 SWB70 PPS1 **Surface Water Sites** Sulphur Springs & Six Mile Creeks SSC14 SSC20 SMC1 Minnieritchie Creek MRC2 MRC4	mg/L			
Tellurium (Te)		mg/L			
Zinc (Zn)		mg/L			

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