Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6724/2022/1
Works approval holder	Golden Spur Resources Pty Ltd
ACN	161 329 933
Registered business address	Ground Floor, 24 Outram Street WEST PERTH WA 6005
DWER file number	DER2022/000143
Duration	4/11/2022 to 3/11/2027
Date of issue	4/11/2022
Date of Amendment	30/05/2024
Premises details	Bellevue Gold Project - Bellevue Gold Processing Plant Mining tenement M36/25 and M36/24 SIR SAMUEL WA 6437 As defined by the Premises 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	1,000,000 tonnes per year
Category 6: Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore	1,000,000 tonnes per year

This amended works approval is granted to the works approval holder, subject to the attached conditions, on 30 May 2024, by:

Timothy Moran

Digitally signed by Timothy Moran
Date: 2024.05.30 13:02:22 +08'00'

Timothy Moran
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
4/11/2022	W6724/2022/1	Granting of works approval for construction of category 5 ore processing infrastructure– time limited operations restricted to crushing, screening and stockpiling of ore and storage of water in process and raw water dams
1/06/2023	W6724/2022/1	Amendment to add additional mine water storage (Westralia Pit Berm expansion, water storage dam) and the tailings storage facilities (Vanguard Pit in-pit TSF, TSF and integrated landform TSF)
19/02/2024	W6724/2022/1	Amendment to extend duration of time limited operations for items 1 – 5 in condition 12.
30/05/2024	W6724/2022/1	Amendment to extend duration of time-limited operations for items 1 – 5 in condition 12.

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 – non-critical containment infrastructure (non-CCI)

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

Item	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	**Crushing and screening circuit consisting of:** Primary jaw crusher, secondary cone crusher, tertiary cone crusher, a two stage sizing screen and fine ore bin	a) Misting systems and sprinklers to be fitted on crushers. b) Mobile equipment fitted with mufflers and reversing air horns where practical. c) Contained within Catchment Area 1 such that stormwater runoff will be directed to the site drainage pond. d) Any pipelines carrying process or saline water outside of Catchment Area 1 must be: i. situated within secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or ii. buried and equipped with remote monitoring to detect spills; or iii. equipped with remote monitoring to detect spills and sufficient secondary containment to contain potential spill volumes.	Refer to Schedule 1, Figure 2 Infrastructure area labelled: Crushing and Screening Pipelines not depicted in Schedule 1.
	Water storage ponds: Process water pond Raw water pond Water services	e) HDPE lined such that permeability is 1x 10^{-9} ms^{-1} f) Contained within Catchment Area 1 such that spills or overflow from ponds will be directed to the site drainage pond.	Refer to Schedule 1, Figure 2. Infrastructure area labelled: Water process pond, Raw water pond and Water services.
	Surface water drainage infrastructure and site drainage pond	g) Drainage must be constructed such that contaminated water or process material within the Catchment Area 1, and not contained by concrete bunds, reports to the site drainage pond; h) The site drainage pond must have a capacity of 11,850m^3; i) Windrows must be constructed at the position and of the length indicated in Figure 3 of Schedule 1; j) Windrows must be no less than 0.5m in height; k) Trapezoidal diversion drains must be constructed at the position and	Refer to Schedule 1, Figure 3 – Process plant site drainage: Items of infrastructure labelled: Windrow

Item	Infrastructure	Design and construction / installation requirements	Infrastructure location
		of the length indicated in Figure 3 of Schedule 1; l) Surface water from Catchment Area 2 must be diverted from entering Catchment area 1.	Trapezoidal diversion drains. Site drainage pond CSP culverts
2.	**Processing plant consisting of**: Grinding and classification circuit (Ball mill, gravity screen, gravity concentrators and cyclone) Leach and adsorption circuit (trash screen, pre-leach thickener, leach tank, adsorption tanks, barren carbon screen, tailings screen, tailings thickener) Gold recovery and carbon regeneration (intensive cyanidation and electrowinning) Reagent storage	a) Contained within Catchment Area 1 such that spills or overflow of process water, ore slurry and stormwater runoff will be directed to the site drainage pond. b) All infrastructure is positioned within concrete bunding constructed with the following parameters: i. minimum kerb height of 150mm; ii. provided with locally operated permanent sump pumps; iii. where required by dangerous goods safety legislation, sump pumps will be fitted with a level switch for remote starting; iv. where required under the *Dangerous Goods Safety Act 2004* and regulations the bunding will be sized such that it has 110% containment of the largest vessel and constructed to meet AS/NZS 4452 and AS 3780; c) Contained within Catchment Area 1 such that spills or overflow from process tanks and stormwater runoff is directed to the site drainage pond. d) Air emission points constructed as per the following parameters: i. The carbon regeneration kiln stack must be constructed to: i. a height of 17.05m above ground level; ii. a diameter of 300mm; iii. be fitted with a stack monitoring port in accordance with AS 4323.1; iv. be of sufficient diameter to accommodate apparatus used for the monitoring of off-gas; ii. The effluent heater stack must have a height of 10.91m above ground level and a diameter of 400mm; iii. The gold room furnace stack must have a height of 11.46m above ground level and a diameter of 500mm. e) Any pipelines carrying process or saline water outside of Catchment Area 1 must be: i. situated within secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or ii. buried and equipped with remote monitoring to detect spills; or iii. equipped with remote monitoring to detect spills and sufficient secondary containment to contain potential spill volumes. f) Surface water drainage infrastructure and site drainage pond must be constructed as for item 1 above.	Refer to Schedule 1, Figure 2 Infrastructure area labelled: Milling CIL and Thickening Elution and Gold room Reagents Refer to Schedule 1, Figure 4 Infrastructure area labelled: Carbon regeneration kiln stack Elution heater stack Furnace stack Pipelines within footprint of the processing plant, but not depicted in Schedule 1.
3.	Westralia Pit Berm Expansion (WPBE) and monitoring equipment – Phase 1	a) The embankment 'waste stage 1' and zones upstream of this must be constructed to an elevation of RL 475m in accordance with Figure 5 and Figure 7 of Schedule 1, including the installation of the geotextile, low permeability borrow and rip rap. b) A cut-off trench must be constructed beneath the WPBE	Refer to Schedule 1, Figure 6 and Figure 7 MB01 to be

Item	Infrastructure	Design and construction / installation requirements	Infrastructure location
		embankment. c) A clay apron must be constructed across the storage basin from the perimeter embankment to the outside edge of the existing pit, up to an elevation of RL 475m. The clay apron must comprise a minimum of 300mm of compacted low permeability material. d) Install the Westralia Pit groundwater monitoring bore MB01 in accordance with condition 7, and row 1 of Schedule 2.	constructed within the monitoring bore envelope shown in Figure 8.
4.	Westralia Pit Berm Expansion (WPBE) and monitoring equipment – Phase 2	e) The embankment must be raised to an elevation of RL 479.5, in accordance with Figure 6 and Figure 7 of Schedule 1, including the installation of the geotextile, low permeability borrow and rip rap. f) A cut-off trench must be constructed beneath the WPBE embankment where the phase 2 embankment extends beyond the phase 1 starter embankment g) A clay apron must be extended across the storage basin from the perimeter embankment to the outside edge of the existing pit, up to an elevation of RL 479.5. The clay apron must comprise a minimum of 300mm of compacted low permeability material. h) Install WPBE vibrating wire piezometers (VWPs)	Refer to Schedule 1, Figure 6 and Figure 7 As shown as VWP01 and VWP02 in Figure 8.
5.	Vanguard in-pit TSF (Tailings stage 1)	a) A floating pump is to be installed ready to extract decant water when required.	Within 'IP TSF Stage 1' as shown in Schedule 1, Figure 9.
	Tailings and return water pipelines to Vanguard in-pit TSF	b) Pipelines are to be situated within secondary containment adequate to contain any spill for a period equal to the time between routine inspections; or c) Equipped with remote monitoring to detect spills and sufficient secondary containment to contain potential spill volumes.	As shown in Figure 11.

Infrastructure and equipment – critical containment infrastructure (CCI)

2. The works approval holder must:

(a) construct the critical containment infrastructure;

(b) in accordance with the corresponding design and construction requirements; and

(c) at the corresponding infrastructure location,

as set out in Table 2.

Table 2: Critical containment infrastructure design and construction requirements

Item	Infrastructure	Design and construction requirements	Infrastructure location
1.	Water Storage Dam (WSD)	a) Embankments are to be constructed to an elevation of 484.5m RL in accordance with Schedule 1, Figure 13, including the installation of a geotextile and low permeability borrow. b) A cut-off trench must be constructed beneath the WSD embankment. c) The base of the WSD is to be conditioned and compacted to minimise seepage. d) All exploration bores or monitoring bores located within the	WSD location as shown in Schedule 1, Figure 12. Underdrainage system as shown in Schedule 1, Figure 15. VWPs as shown as VWP01 and VWP02 in Figure 18.

Item	Infrastructure	Design and construction requirements	Infrastructure location
		floor / storage area of the WSD must be grouted with a cement or bentonite grout through the upper and lower saprolite zones. e) The underdrainage system is to be constructed in accordance with Schedule 1, Figure 14 (shown in plan in Figure 15) and is to include upstream toe drains and finger drains, graded to a solid underdrainage outlet. Where the outlet goes through the embankment, low permeability material and soil bentonite collars are required in accordance with Figure 14. f) An end cap must be welded on the upstream side of the solid underdrainage outlet line to prevent water egress during use as a WSD. g) TSF vibrating wire piezometers (VWPs) VWP01 and VWP02 are to be installed in the locations shown in Figure 18.	
	WSD pipelines	h) Pipelines are to be: i. situated within secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or ii. buried and equipped with remote monitoring to detect spills; or iii. equipped with remote monitoring to detect spills and sufficient secondary containment to contain potential spill volumes.	Pipeline routes shown in Schedule 1, Figure 12, and continuing to the processing plant as per Figure 17.
2.	WSD to TSF conversion (Stage 2)	a) The underdrainage system as shown in Figure 14 is to be completed by uncapping and connecting the solid underdrainage outlet to a concrete underdrainage collection sump fitted with a pump. b) Underdrainage collection sumps to be fitted with a primary pump, and a backup pump and power generator in case of pump failure, as well as remote monitoring to detect a pump failure or high sump level. c) A floating pump is to be installed ready to extract decant water when required. d) All water is to be drained from the WSD	As shown in Schedule 1, Figure 15.
	Tailings and return water pipelines	e) Installation of tailings delivery pipelines, discharge spigots and decant return lines. f) The spacing between spigots is to be between 20 and 50m. g) Where spills would not report to the TSF, pipelines must be situated within secondary containment adequate to contain any spill for a period equal to the time between routine inspections; or equipped with remote monitoring to detect spills and sufficient secondary containment to contain potential spill volumes.	Pipelines as shown in Schedule 1, Figure 15, connecting to the pipelines installed for the In Pit TSF and running to the processing plant.
	TSF monitoring infrastructure	h) Install TSF groundwater monitoring bores MB02A and MB03A in accordance with Schedule 2.	Refer to Schedule 2.
3.	Integrated waste landform tailings storage facility (IWLTSF) (stage	a) Embankments are to be constructed to an elevation of 484.5m RL in accordance with Figure 16, including the installation of a geotextile and low permeability borrow.	IWLTSF location as shown in Schedule 1, Figure 17.

Item	Infrastructure	Design and construction requirements	Infrastructure location
	3)	b) A cut-off trench must be constructed beneath the IWLTSF embankment. c) Construct the remainder of the underdrainage system shown in Figure 11. This is to include upstream toe drains and finger drains, graded to a solid underdrainage outlet. Where the outlet goes through the embankment, low permeability material and soil bentonite collars are required in accordance with Figure 16. d) The outlet shall lead to a concrete underdrainage collection sump. e) Underdrainage collection sumps to be fitted with a primary pump, and a backup pump and power generator in case of pump failure, as well as remote monitoring to detect a pump failure or high sump level. f) The base of the IWLTSF facility is to be conditioned and compacted to minimise seepage. g) A decant causeway and rock ring is to be constructed with channels to drain decant toward the rock ring as shown in Figure 17. The channels will be constructed such that they have a minimum drainage gradient of 0.5% draining toward the rock ring structure. h) Extend the TSF tailings and decant water pipelines to additional discharge points within the IWLTSF. i) All exploration bores or monitoring bores directly underneath the tailings deposition area must be grouted with a cement or bentonite grout through the upper and lower saprolite zones.	
	IWLTSF monitoring infrastructure	j) Install TSF vibrating wire piezometers (VWPs) VWP03, VWP04 and VWP05 k) Install TSF groundwater monitoring bores in accordance with Schedule 2, rows 3 to 4.	VWPs as shown as VWP03, VWP04 and VWP05 in Figure 18. Monitoring bores as described in Schedule 2.

Compliance reporting – non CCI

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

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

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

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

(a) for items 1 and 2, certification by a process engineer with at least 10 years experience, a civil engineer with at least 10 years experience and mechanical engineer with at least 10 years experience that the gold processing plant or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) for items 3-5, certification by a suitably qualified geotechnical engineer that the infrastructure, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

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

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

Compliance reporting – CCI

5. 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.

6. The Critical Containment Infrastructure Report required by condition 5 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) monitoring data required by condition 9, indicating the baseline ambient environmental conditions at the premises prior to and immediately following construction of the item(s) of infrastructure; and

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

Construction and baseline monitoring of groundwater monitoring bores

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

8. The works approval holder must, within 30 calendar days of the monitoring wells being constructed, submit to the CEO a well construction report evidencing compliance with the requirements of condition 7.

9. The monitoring of the baseline ambient environmental conditions required under condition 6(d) must be undertaken in accordance with Table 3.

Table 3: Determination of baseline ambient environmental conditions

Parameter	Monitoring location	Unit	Averaging period / frequency	Method
pH[1]	Existing TSF monitoring bores MB04-MB05 TSF monitoring bores MB02A, MB03A, MB06, MB07; and MB08, MB09, MB10	-	Once off spot sample. Existing bores to be sampled prior to the commencement of time limited operations of the WSD or in-pit TSF	Sampling conducted in accordance with AS/NZS 5667.11. Analysis undertaken by laboratories with current
SWL[1]		mbgl		
TDS		mg/L		
Weak acid dissociable cyanide (WAD CN)				
Total cyanide (CN)				

Parameter	Monitoring location	Unit	Averaging period / frequency	Method
Arsenic	constructed in accordance with Schedule 2.		under condition 10. New bores to be sampled as per the timeframes given in Schedule 2.	accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters.
Antimony				
Bicarbonate				
Calcium				
Carbonate				
Cadmium				
Chloride				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Mercury				
Molybdenum				
Nickel				
Nitrate				
Potassium				
Selenium				
Sodium				
Sulphate				
Thallium				
Zinc				

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

Time limited operations phase

Commencement and duration

10. The work approval holder may only commence time limited operations for an item of infrastructure identified in condition 12:

(a) where the item of infrastructure is not critical containment infrastructure, the Environmental Compliance Report as required by condition 3 has been submitted by the works approval holder for that item of infrastructure; and

(b) where the item of infrastructure is critical containment infrastructure, the CEO has notified the works approval holder that the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 5 meets the requirements of that condition; or

(c) where at least 40 business days has passed after the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 5 has been submitted to the CEO.

11. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 12 (as applicable):

(a) For items 6, 7 and 8 of Table 4, for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 5 for that item of infrastructure and for items 1 – 5 of Table 4, for a period of time until 12 December 2024; 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 periods specified in condition 10(a).

Time limited operations requirements and emission limits

12. 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

Item	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	**Water storage ponds:** Process water pond Raw water pond Water services	a) The HDPE lining is maintained such that permeability is 1x 10^{-9} ms^{-1} b) Ponds and associated infrastructure are inspected at least once every 12 hours.	Refer to Schedule 1, Figure 2 – Process plant layout: Infrastructure area labelled: Water process pond, Raw water pond and Water services.
	Pipelines carrying process or saline water	c) Pipelines in operation must be inspected at least once every 12 hours.	Within footprint of the processing plant. Not depicted in Schedule 1.
	Crushing and screening circuit: Primary jaw crusher Secondary cone crusher Tertiary cone crusher Two-stage sizing screen Fine ore bin	d) Misting systems and sprinklers fitted on crushers are maintained and operated as required to minimise dust.	Refer to Schedule 1, Figure 2 Infrastructure area labelled: Crushing and Screening
	Site drainage pond	e) Maintained such that it retains a capacity of greater than a 72 hour 1 in 5-year rainfall event. f) Water will be removed from the site drainage pond following a rainfall event by pumping the water to the process water pond if required to maintain capacity. g) All contaminated water or process material within the Catchment Area 1, and not contained by concrete bunds, must report to the site drainage pond; h) Surface water from Catchment Area 2 must be diverted and prevented from entering	Refer to Schedule 1, Figure 3 – Process plant site drainage

Item	Site infrastructure and equipment	Operational requirement	Infrastructure location
		Catchment area 1.	
2.	**Processing plant consisting of:** Grinding and classification circuit (Ball mill, gravity screen, gravity concentrators and cyclone) Leach and adsorption circuit (trash screen, pre-leach thickener, leach tank, adsorption tanks, barren carbon screen, tailings screen, tailings thickener) Gold recovery and carbon regeneration (intensive cyanidation and electrowinning) Reagent storage	i) All infrastructure is maintained as specified in condition 1. j) Sump pumps must be available at all times, and operated as required to maintain capacity. k) Spills or overflows from process tanks and stormwater runoff must be directed to the site drainage pond. l) Spills or overflow of process water, ore slurry and stormwater runoff must be directed to the site drainage pond. m) Any pipelines carrying process or saline water outside of Catchment Area 1 must be: i. situated within secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or ii. buried and equipped with remote monitoring to detect spills; or iii. equipped with remote monitoring to detect spills and sufficient secondary containment to contain potential spill volumes.	Refer to Schedule 1, Figure 2; Infrastructure area labelled: Milling CIL and Thickening Elution and Gold room Reagents Refer to Schedule 1, Figure 4; Infrastructure area labelled: Carbon regeneration kiln stack Elution heater stack Furnace stack Pipelines within footprint of the processing plant, but not depicted in Schedule 1.
3.	Westralia Pit Berm Expansion (WPBE) Phase 1	a) Maintain a freeboard of at least 1000 mm below the authorised embankment crest at all times. b) Inspections are to be carried out once every 12 hours, with no more than 15 hours between inspections. Inspections to include freeboard and visual integrity of the berm. c) Records are to be kept of all inspections	Refer to Schedule 1, Figure 6 for detail. Location shown as 'WPBE' in Figure 1.
4.	Westralia Pit Berm Expansion (WPBE) Phase 2		
5.	Vanguard in-pit TSP (tailing stage 1)	a) Tailings to not be left uncovered for more than 3 months. If fresh deposition is not to be within that period, a 1m water cover is required. b) Maintain a freeboard of at least 500 mm below the embankment crest at all times.[1] Maximum tailings level must allow for a 1m water cover below this minimum freeboard if required. c) Floating decant pump to be moved and positioned to effectively remove decant water from the in-pit TSF. d) Inspections are to be carried out twice every 12 hour shift, with no more than 8 hours between inspections. Inspections to include freeboard. e) Records are to be kept of all inspections	Refer to Schedule 1, Figure 9. Location shown as 'WPBE'.
Critical Containment Infrastructure			
6.	Water Storage Dam (WSD)	a) Always maintain a freeboard of at least 1000 mm below the original WSD design height of RL482m. b) Inspections are to be carried out once every 12 hours, with no more than 15 hours between	Refer to Schedule 1, Figure 9. Location shown as 'TSF stage 2'.

Item	Site infrastructure and equipment	Operational requirement	Infrastructure location
		inspections. Inspections to include freeboard and visual integrity of the embankment, and pipeline and bund integrity. c) Records are to be kept of all inspections	
7.	TSF (after conversion from WSD) (tailings stage 2)	a) Always maintain a minimum freeboard of at least 300 mm plus 200mm beach freeboard below the original TSF stage 2 design height of RL 482m. b) Inspections are to be carried out twice every 12 hour shift, with no more than 8 hours between inspections. Inspections to include freeboard and visual integrity of the embankment, pipeline and bund integrity and operation of the underdrainage system including sump pump condition and sump capacity. c) Records are to be kept of all inspections. d) Deposition will occur from the perimeter embankments in layers of not more than 300 mm thickness. e) Floating decant pump will be moved and positioned to effectively remove decant water from the TSF. f) The decant pond will be maintained at the maximum possible distance from the embankment. g) A backup generator and pump must be available for the underdrainage collection sumps in case of pump failure, and remote monitoring must be in place to detect a pump failure or high sump level. h) Tailings to not be left uncovered for more than 3 months.	Refer to Schedule 1, Figure 9. Location shown as 'TSF stage 2'.
8.	Integrated Waste Landform tailings storage facility (IWLTSF) (tailings stage 3)	a) Always maintain a minimum freeboard of at least 300 mm plus 200mm beach freeboard below the embankment crest. b) Inspections are to be carried out twice every 12 hour shift, with no more than 8 hours between inspections. Inspections to include freeboard and visual integrity of the embankment, pipeline and bund integrity and operation of the underdrainage system including sump pump condition and sump capacity. c) Records are to be kept of all inspections. d) Deposition will occur from the perimeter embankments with spigot intervals of between 20 and 50 m. Measures shall be taken to minimise erosion and promote uniform distribution. e) The decant pond shall at all times be at least 100m from the embankment. f) A backup generator and pump must be available for the underdrainage collection sumps in case of pump failure, and remote monitoring must be in place to detect a pump failure or high sump level. g) Tailings to not be left uncovered for more than 3 months.	Refer to Schedule 1, Figure 17 for detail. Location shown as 'IWLTSF' in Figure 1.

Note 1: After time limited operation of the TSF stage 2 is authorised under condition 10, the freeboard requirements for the In-Pit TSF (stage 1) no longer apply, as long as any overflow is diverted to within the TSF stage 2.

Monitoring during time limited operations

13. The works approval holder must monitor emissions during time limited operations in accordance with Table 5.

Table 5: Discharge monitoring during time limited operations

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Trigger Limit
Westralia Pit	Flow meter on Westralia Pit discharge pipe	Volume of water discharged	Continuous	Monthly	kL	-
	Surface of pit lake	Standing water level	Monthly	Spot sample	m RL m AHD	-
Water Storage Dam (WSD)	Flow meter on discharge pipe	Volume of water discharged	Continuous	Monthly	kL	-
	Surface of dam	Standing water level	Monthly	Spot sample	m RL m AHD	-
Vanguard in-Pit TSF (tailings stage 1) TSF (tailings stage 2) IWLTSF (tailings stage 3)	Flow meter on discharge pipe	Volume of tailings discharged	Continuous	Monthly	kL	-
	Surface of decant pond[1]	Weak acid dissociable cyanide (WAD CN)	Monthly	Spot sample	mg/L	50mg/L

Note 1: If safe to do so. If not safe, sample return water at the plant. Sample location must be recorded.

14. If weak acid dissociable cyanide (WAD CN) level exceeds the trigger limit in Table 5, the works approval holder must submit to the CEO within 30 calendar days an analysis of the salinity of the decant pond over time. If the salinity of the decant pond is below 50,000 mg/L, a plan to reduce WAD CN levels within the decant pond and wildlife utilisation monitoring must also be submitted.

15. The works approval holder must monitor the groundwater during time limited operations of the corresponding infrastructure, for the identified parameters in accordance with Table 6.

Table 6: Monitoring of ambient groundwater concentrations during time limited operations

Infrastructure, and related monitoring points	Parameter	Unit	Limit	Frequency	Method
Westralia Pit MB01	Standing water level	mbgl	5 mbgl	Each monthly period	Spot sample, in accordance with AS/NZS 5667.11
	Total dissolved solids	mg/L	-		
Water Storage Dam MB02A, MB03A	Standing water level	mbgl	5 mbgl		
	Total dissolved solids	mg/L	-		
Vanguard In-Pit TSF MB04, MB05[1]	Standing water level	mbgl	5 mbgl		
	pH[2]	-	-		

Infrastructure, and related monitoring points	Parameter	Unit	Limit	Frequency	Method
TSF (stage 2) MB02A, MB03A, MB04, IWLTSF (Stage 3) MB02A, MB03A, MB04, MB05[1], MB06, MB07, MB08, MB09, MB10 (Shown in Figure 18 of Schedule 1)	Total dissolved solids	mg/L	-		
	Total cyanide				
	Weak acid dissociable cyanide				
	Arsenic				
	Antimony				
	Bicarbonate				
	Calcium				
	Carbonate				
	Cadmium				
	Chloride				
	Chromium				
	Cobalt				
	Copper				
	Iron				
	Lead				
	Magnesium				
	Manganese				
	Mercury				
	Molybdenum				
	Nickel				
	Nitrate				
	Potassium				
	Selenium				
	Sodium				
	Sulphate				
	Thallium				
	Zinc				

Note 1: MB05 monitoring may be discontinued when no longer practical due to encroachment of deposited tailings in the TSF stage 3.

Note 2: In-field non-NATA accredited analysis permitted.

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

Compliance reporting

17. 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 for each numbered item of infrastructure or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

18. The works approval holder must ensure the report required by condition 17 includes

the following:

(a) a summary of the time limited operations, including timeframes and amount of material processed and tailings deposited;

(b) a summary of the environmental performance of all infrastructure as constructed or installed (as applicable);

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

(d) results of monitoring required by conditions 13 and 15; 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 (general)

19. 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.

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

(a) the works conducted in accordance with condition 1;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 12; and

(c) complaints received under condition 19.

21. The books specified under condition 20 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 7 have the meanings defined.

Table 7: Definitions

Term	Definition
AS 1726	means the Australian Standard AS1762 Geotechnical site investigations, as amended from time to time.
AS 4323.1	means the Australian standard: *Stationary source emissions: Method 1: Selection of sampling positions and measurement of velocity in stacks.*
AS 3780	means the Australian standard: *The Storage and Handling of Corrosive Substances*
AS/NZS 4452	means the Australian standard: *The storage and handling of toxic substances*
AS/NZS 5667.11	means the Australian Standard *AS/NZS 5667.11 Water quality - sampling - guidance on sampling groundwater*.
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*.
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.
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).

Term	Definition
monthly period	A one month period from the first day of a calendar month to the last day of that calendar month. There must be at least 15 days between the monitoring dates for consecutive months.
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.
suitably qualified geotechnical engineer	means a person who: a) holds a Bachelor of Engineering recognised by the Australian Institute of Engineers; and b) has a minimum of five years of experience working in geotechnical engineering including experience in the design of tailings storage facilities.
suitably qualified hydrogeologist	means a person who holds: a) holds a tertiary qualification specialising in hydrogeology or environmental science or equivalent; and b) has a minimum of five years of experience working in the area of hydrogeology, including investigation and assessment of groundwater and seepage modelling.
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.
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 and Figures

Premises map

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

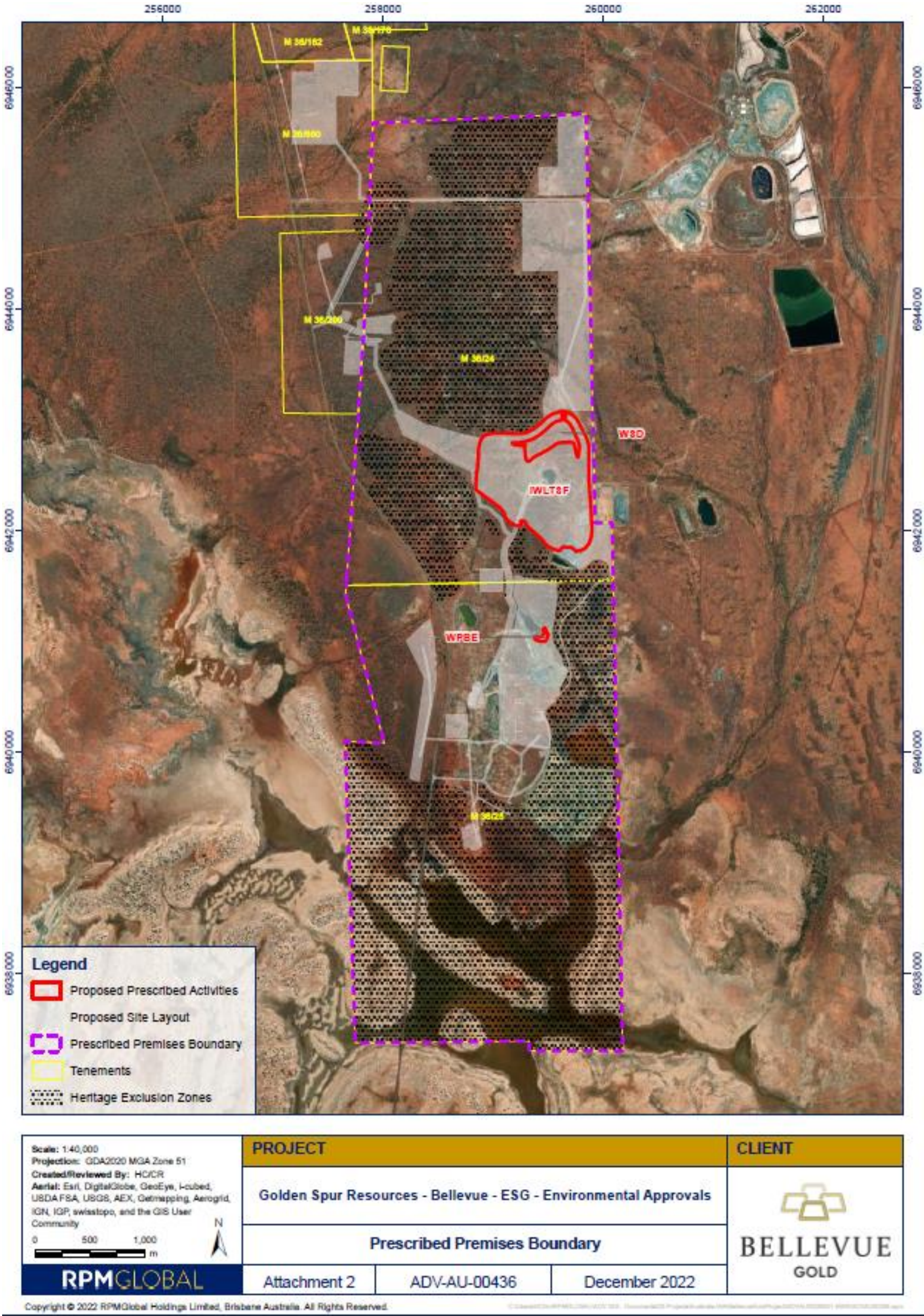

Figure 1: Map of the boundary of the prescribed premises

Processing plant infrastructure

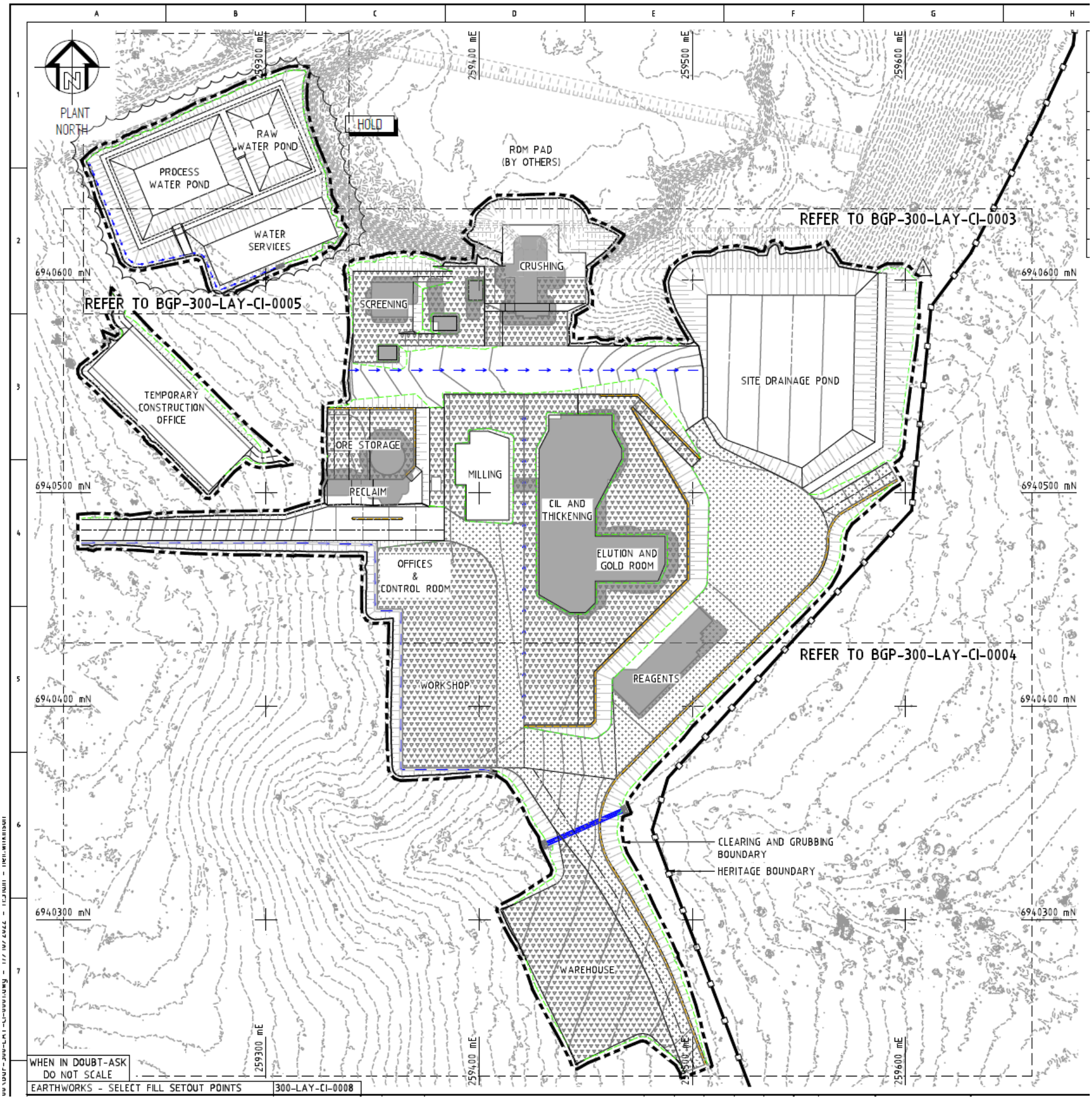

Figure 2: Process plant layout, with authorised emission points during time limited operation of the processing plant

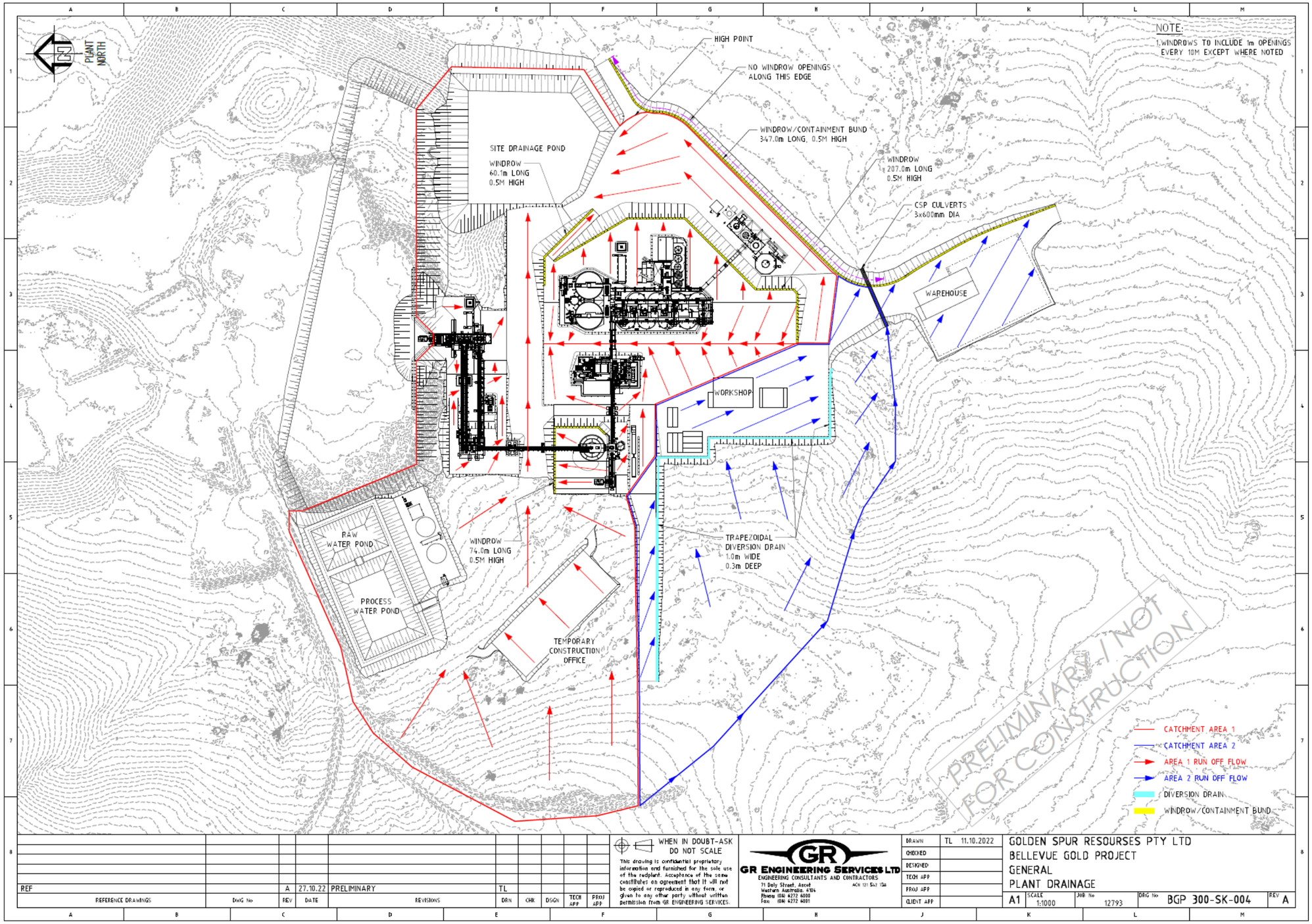

Figure 3: Process plant site drainage

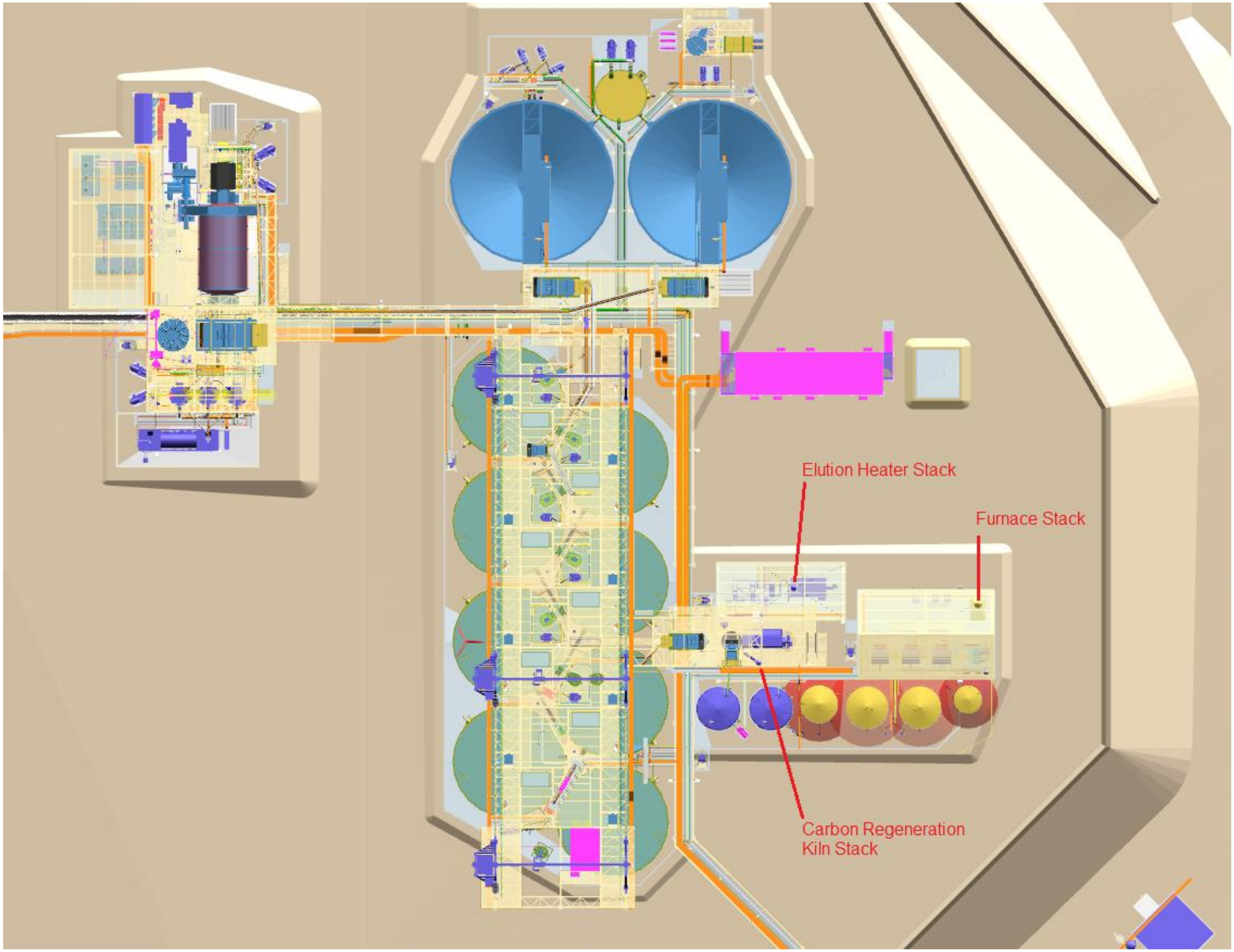

Figure 4: Position of stacks for authorised point source air emissions during time limited operations

Westralia Pit berm expansion (WPBE)

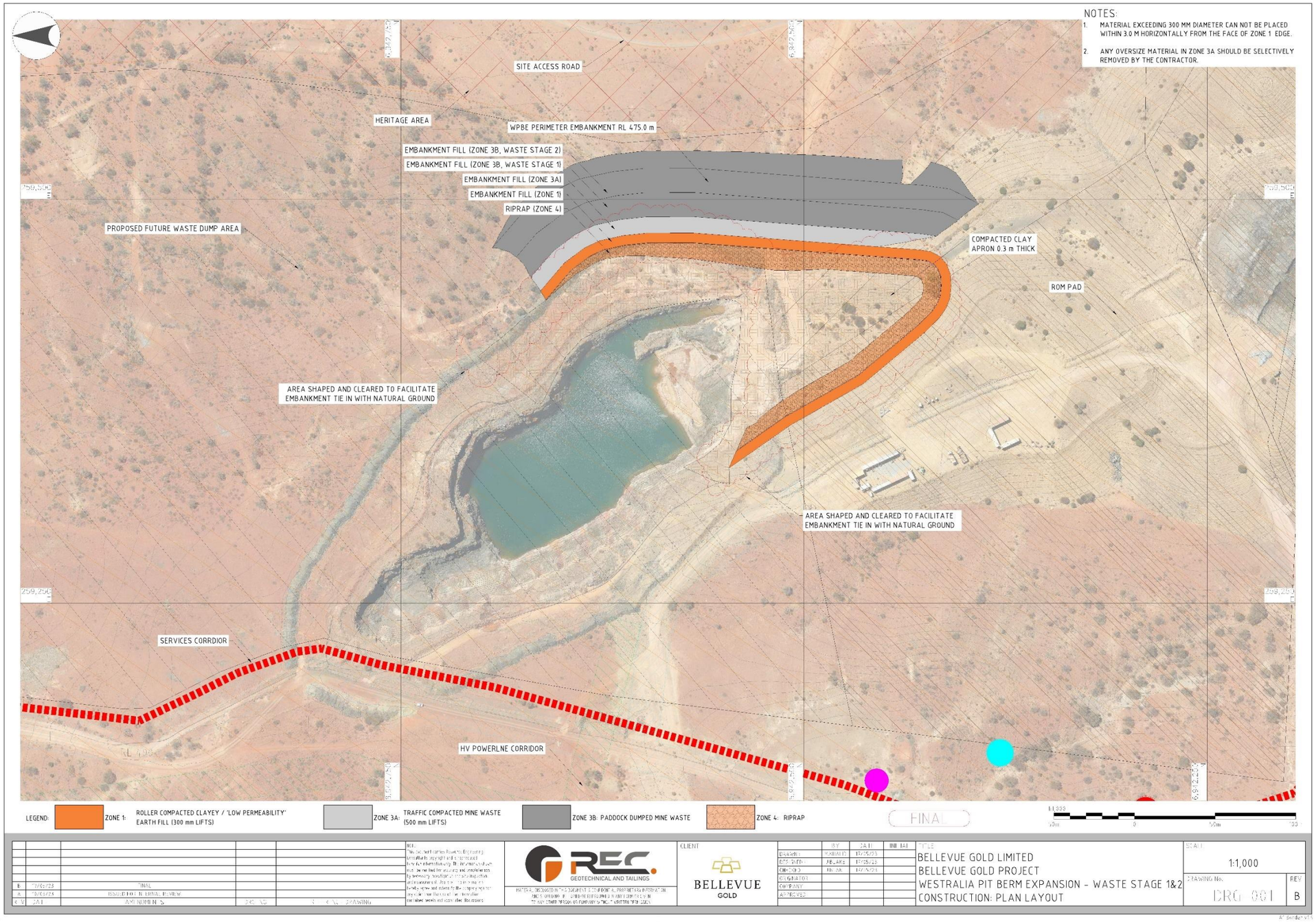

Figure 5: Plan view of Westralia Pit berm expansion – Phase 1

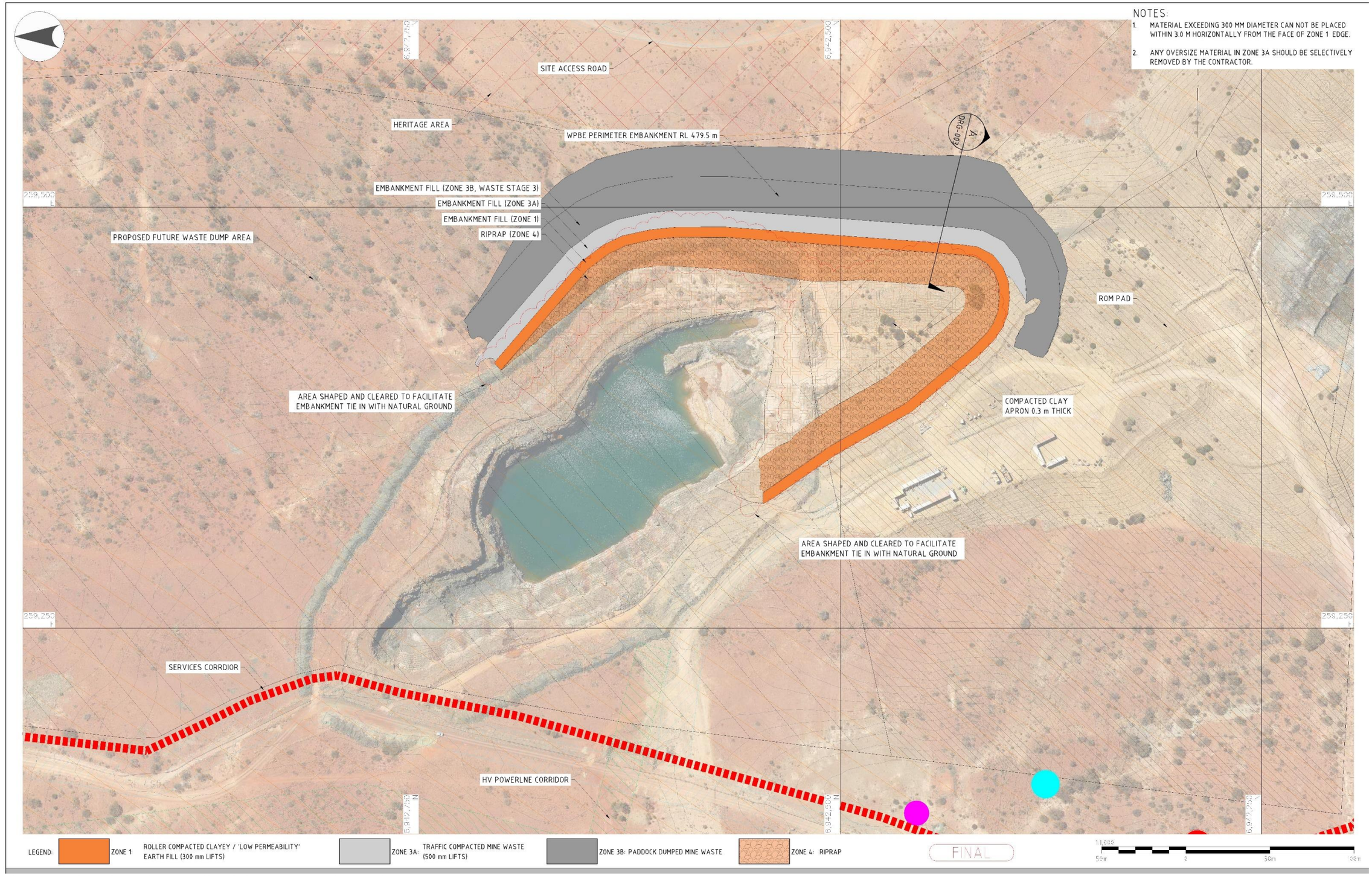

Figure 6: Plan view of Westralia Pit berm expansion – Phase 2

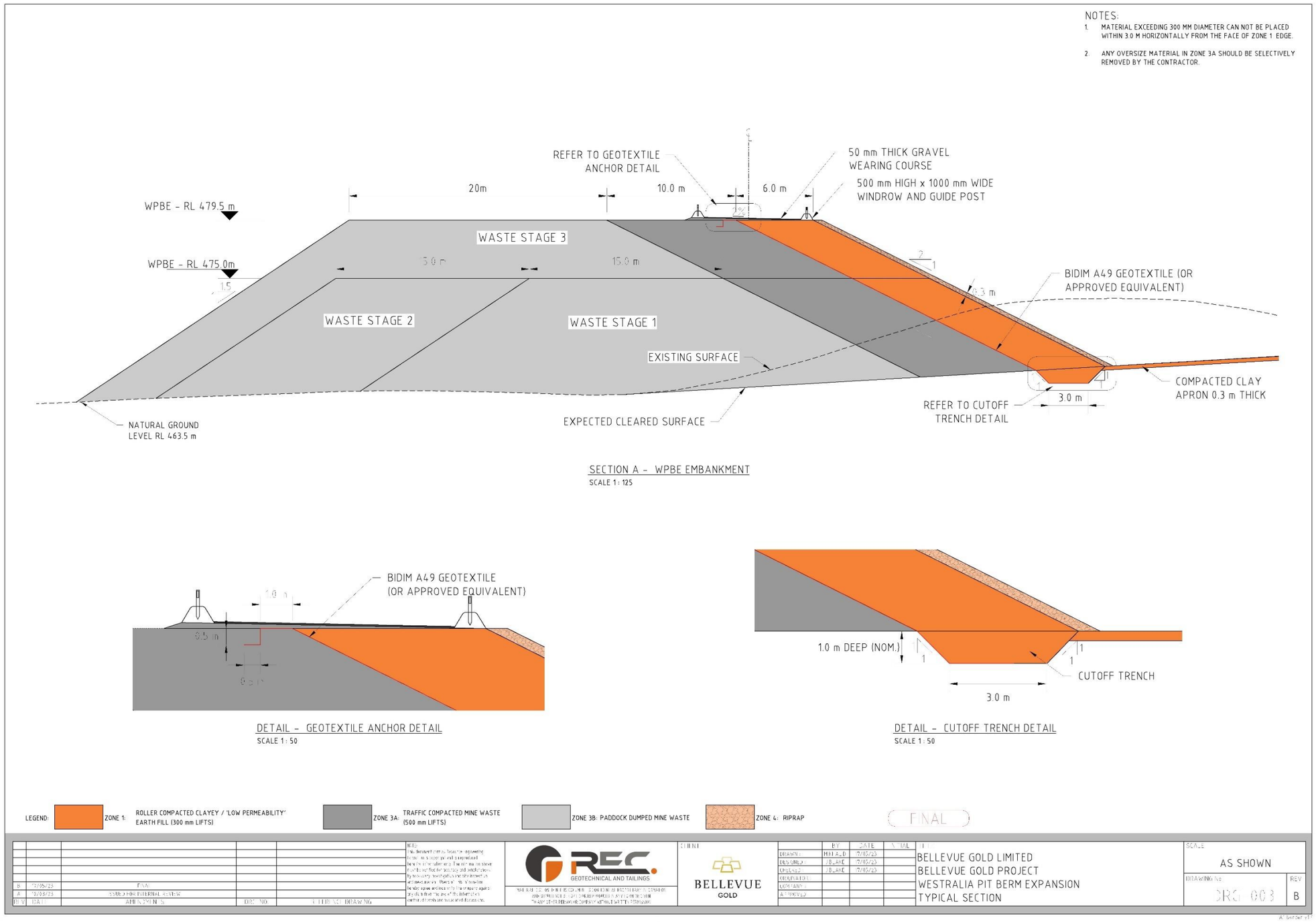

Figure 7: Section view of Westralia Pit berm expansion embankment (Phase 1 includes waste stage 1 and all materials upstream of waste zone 1).

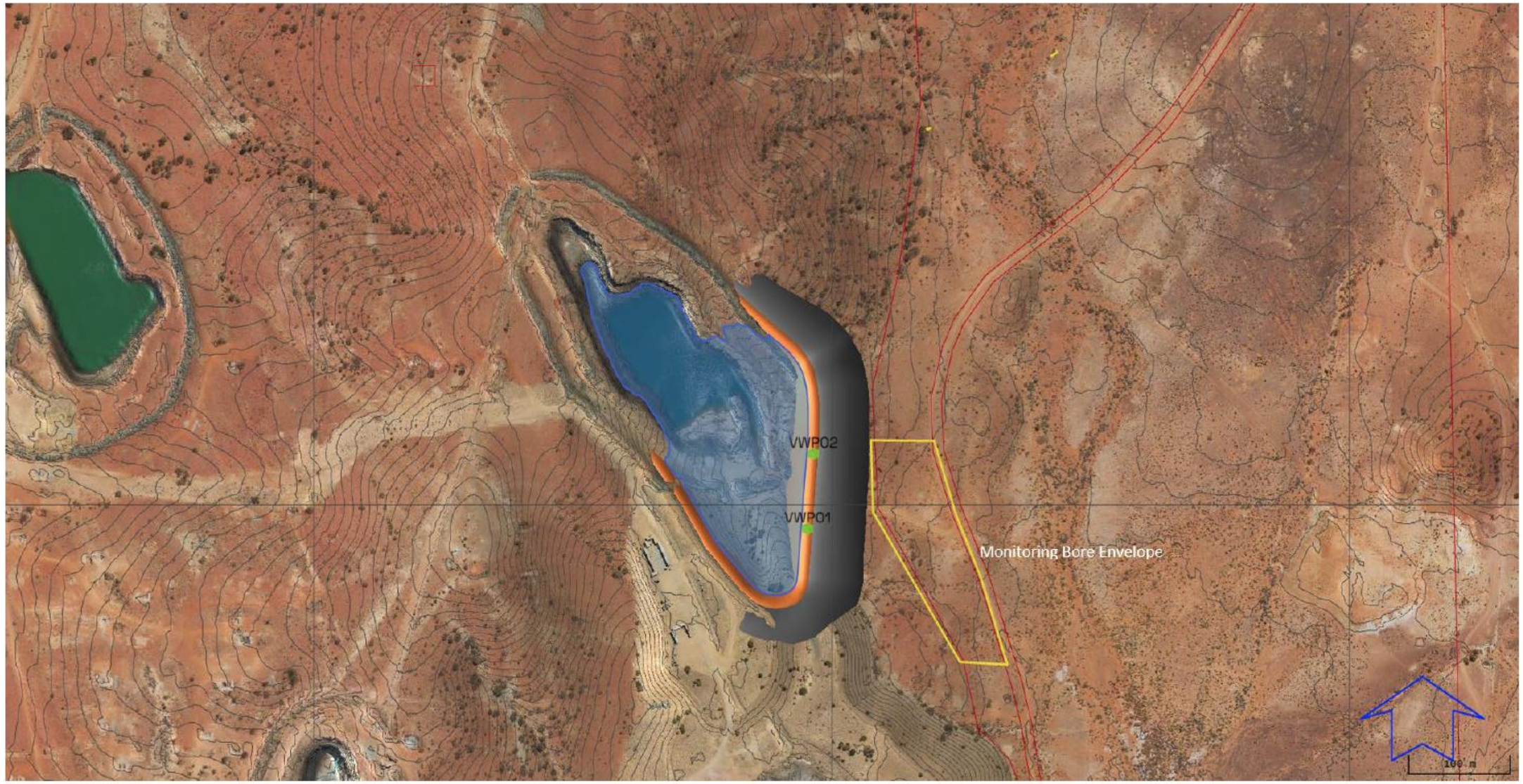

Figure 8: Westralia Pit, showing proposed berm expansion and monitoring locations.

In-pit tailings storage facility

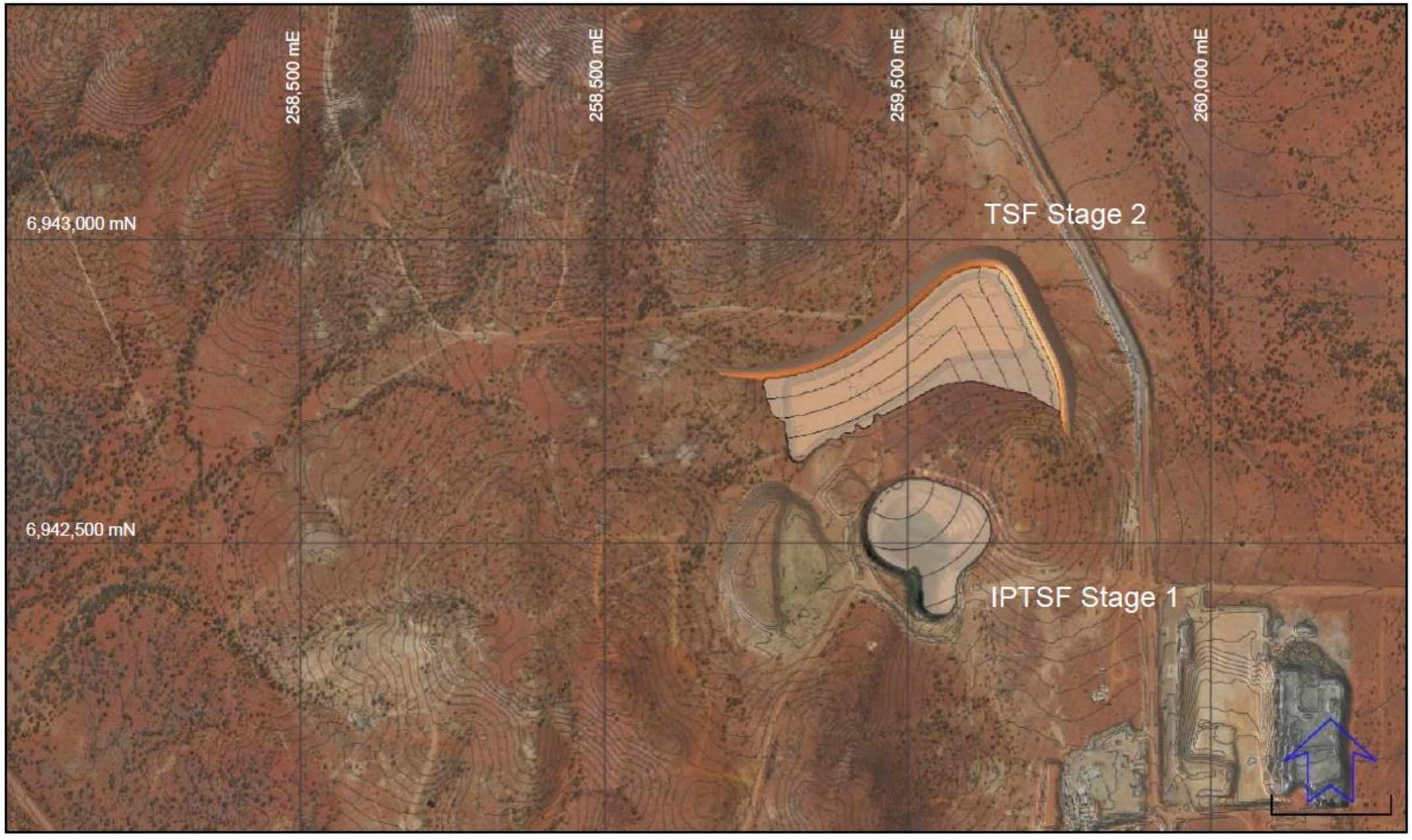

Figure 9: Location of in-pit TSF (stage 1) and TSF (Stage 2)

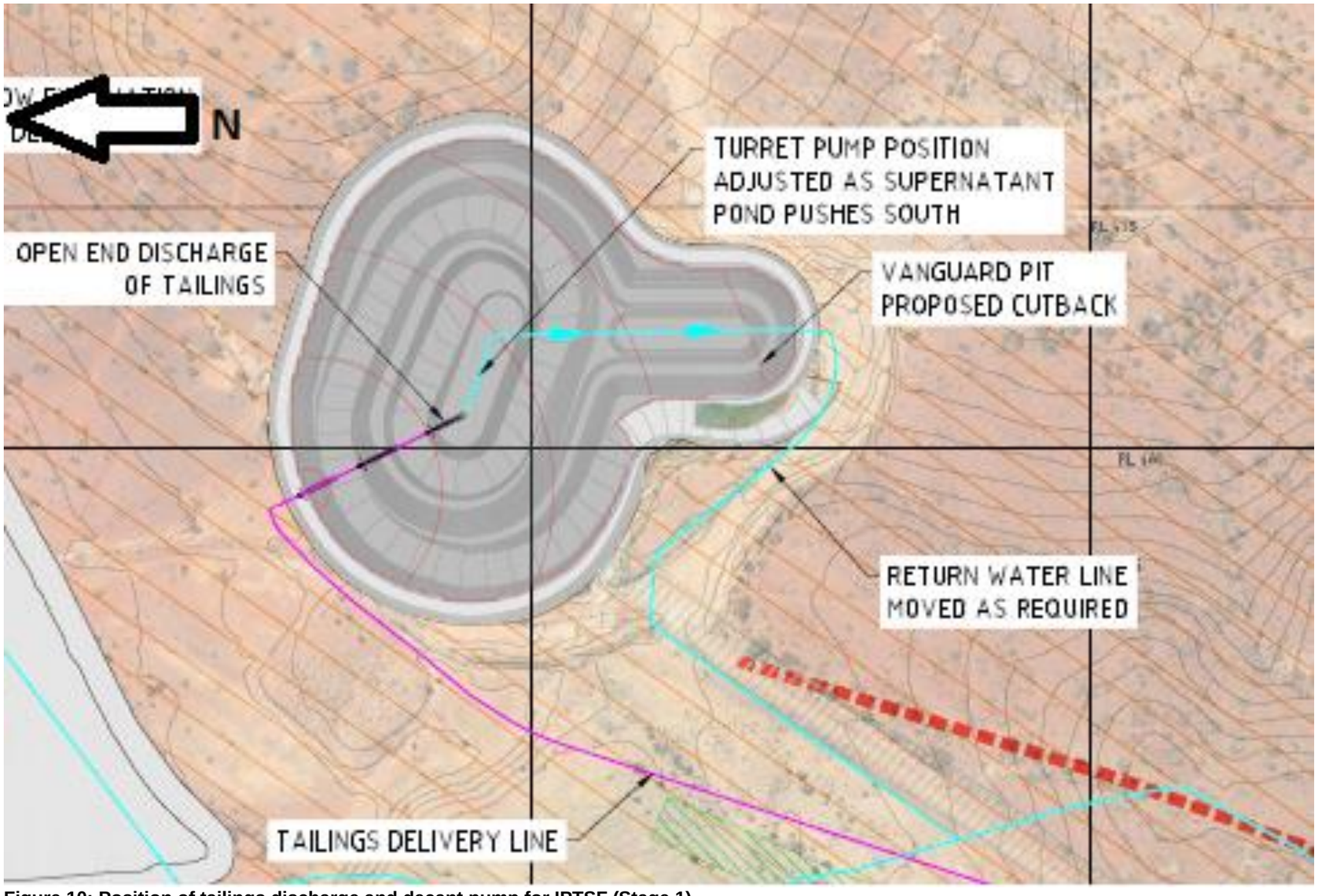

Figure 10: Position of tailings discharge and decant pump for IPTSF (Stage 1)

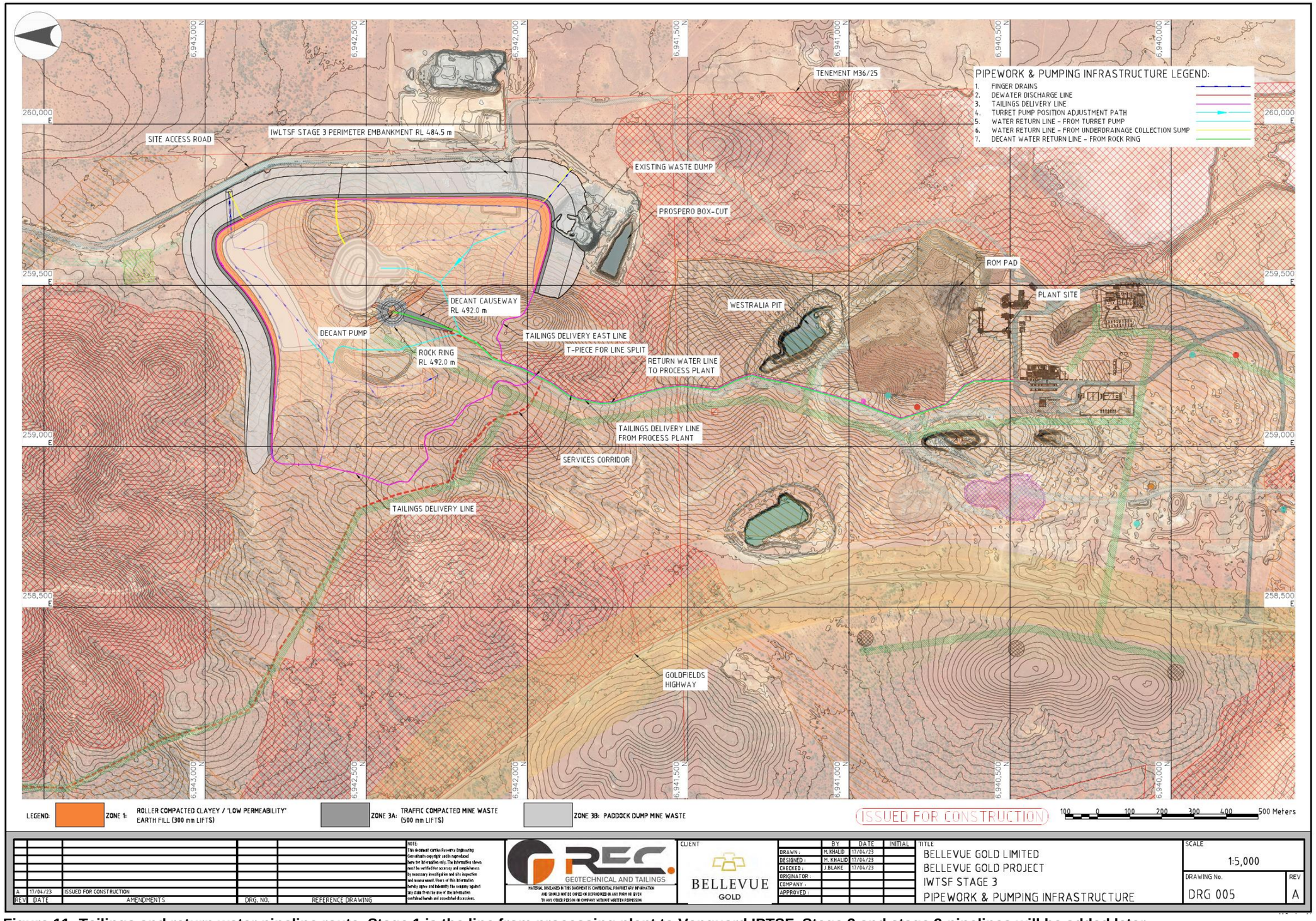

Figure 11: Tailings and return water pipeline route. Stage 1 is the line from processing plant to Vanguard IPTSF. Stage 2 and stage 3 pipelines will be added later.

Critical containment Infrastructure - Water Storage Dam

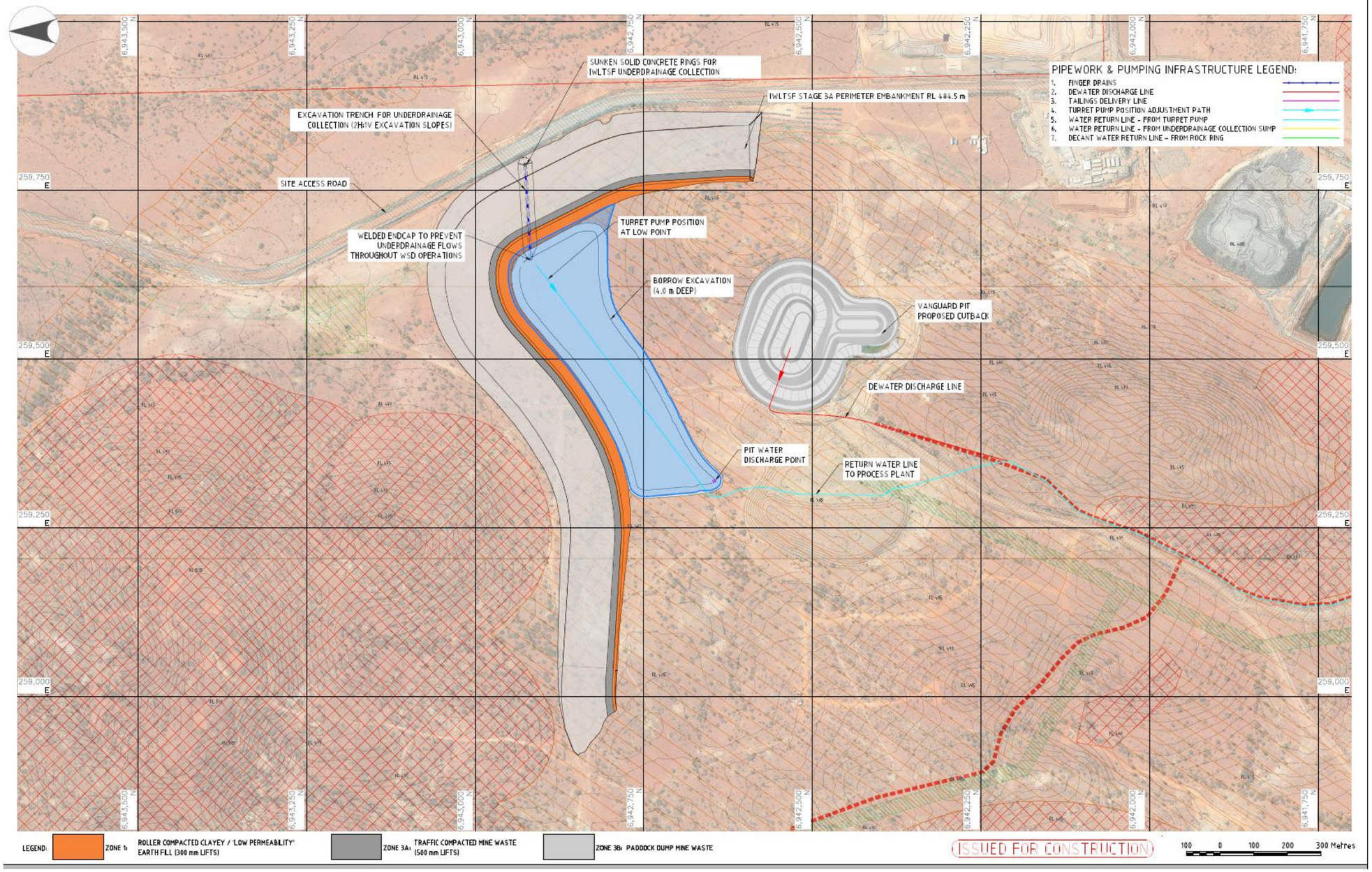

Figure 12: WSD and dewater pipelines

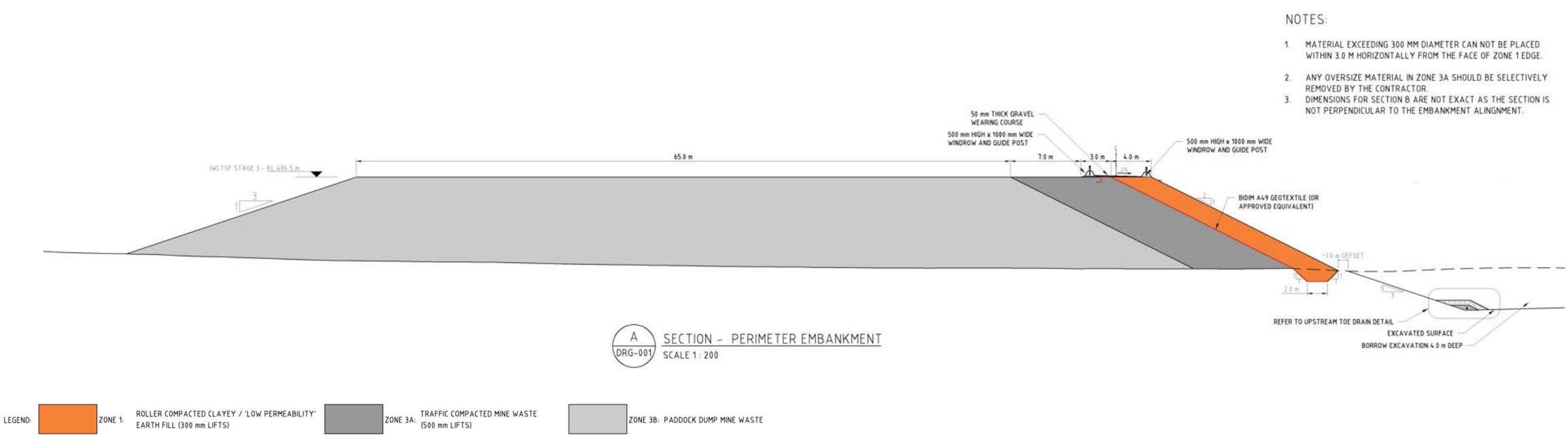

Figure 13: Cross section of water storage dam (WSD)

(WA holder note: I have removed 'tailings level' from Figures 12 and 13 as they are for the WSD (embankment the same as for TSF, but no tailings).

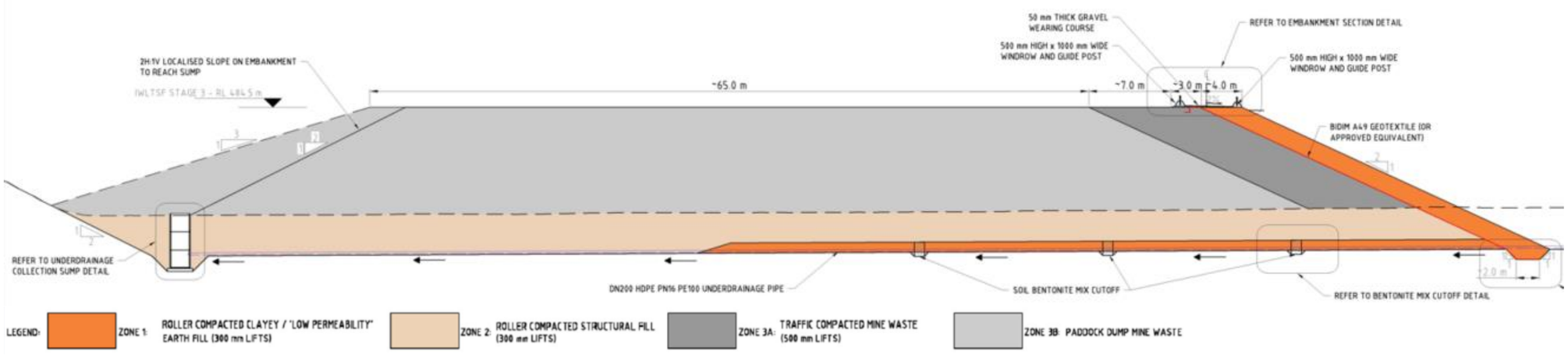

Figure 14: Proposed underdrainage outlet under WSD wall (low permeability material and soil bentonite collars also apply to the outlet in the south east corner under the IWLTSF)

Critical containment infrastructure - TSF (Tailings storage stage 2)

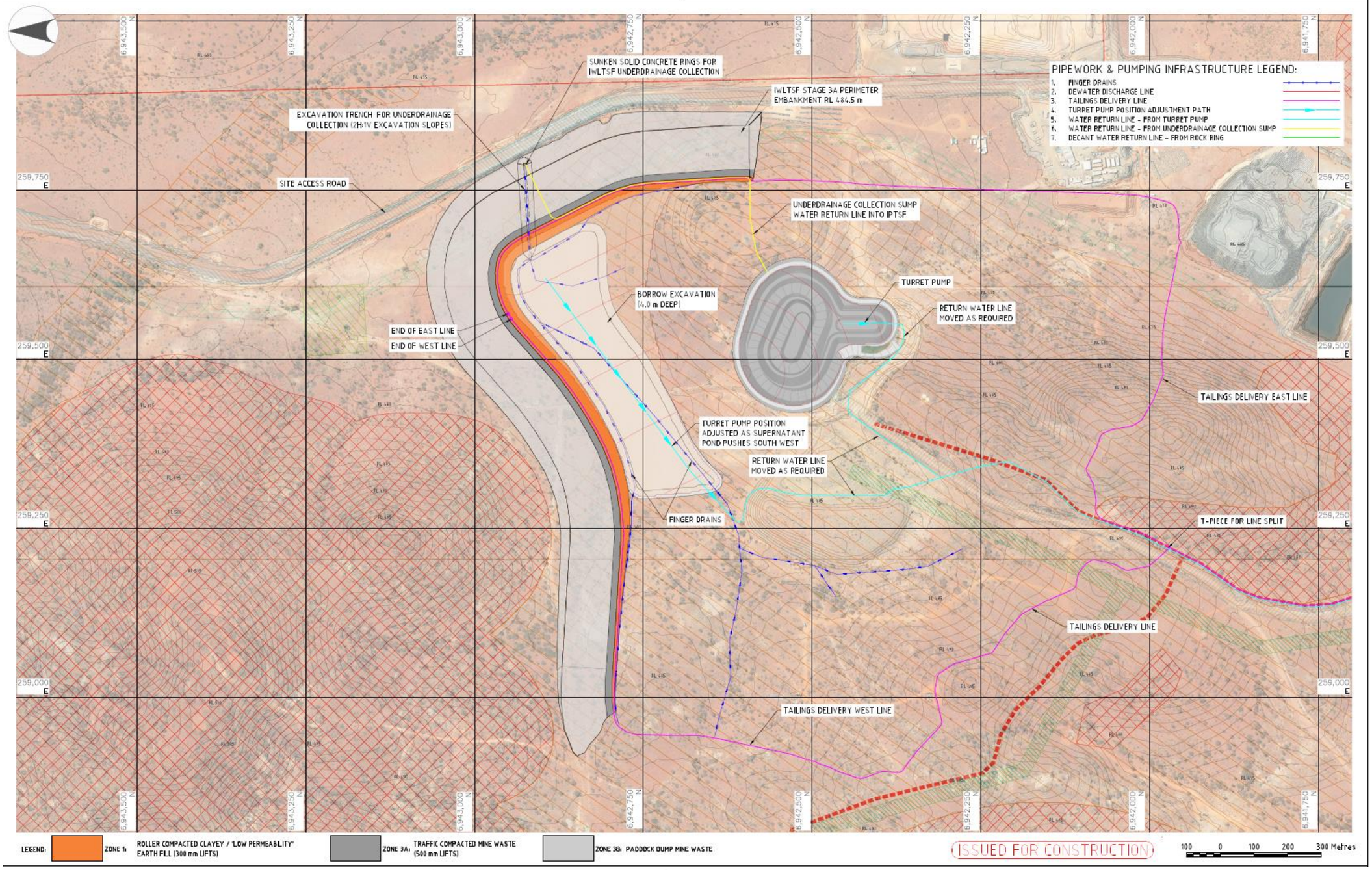

Figure 15: Underdrainage, pipelines and pumps positions for TSF (Tailings storage stage 2)

Critical containment IWLTSF (Tailings storage stage 3)

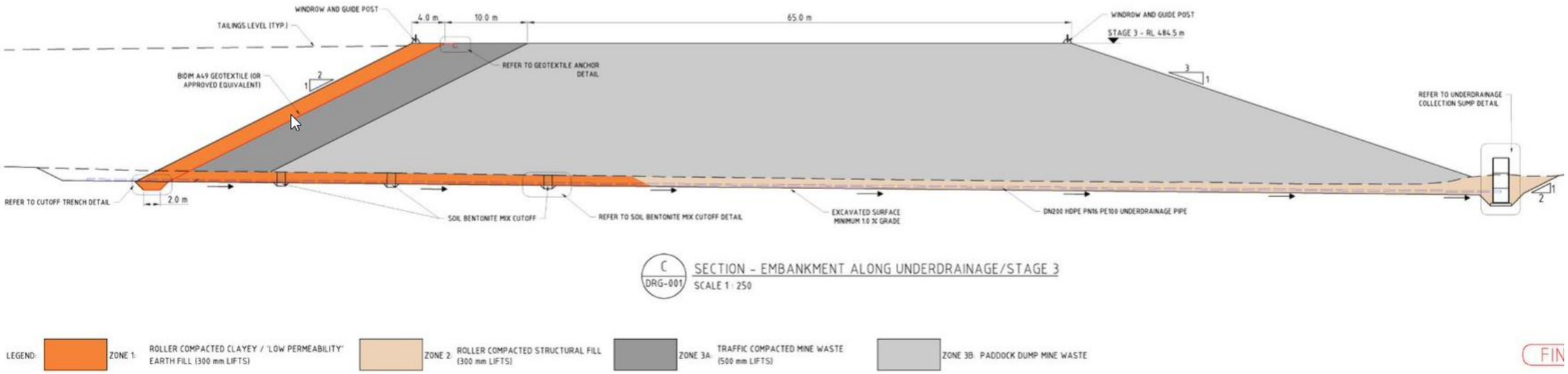

Figure 16: Embankment wall construction for stage 3 IWLTSF, showing underdrainage. At other points it is the same construction except that base is in situ materials

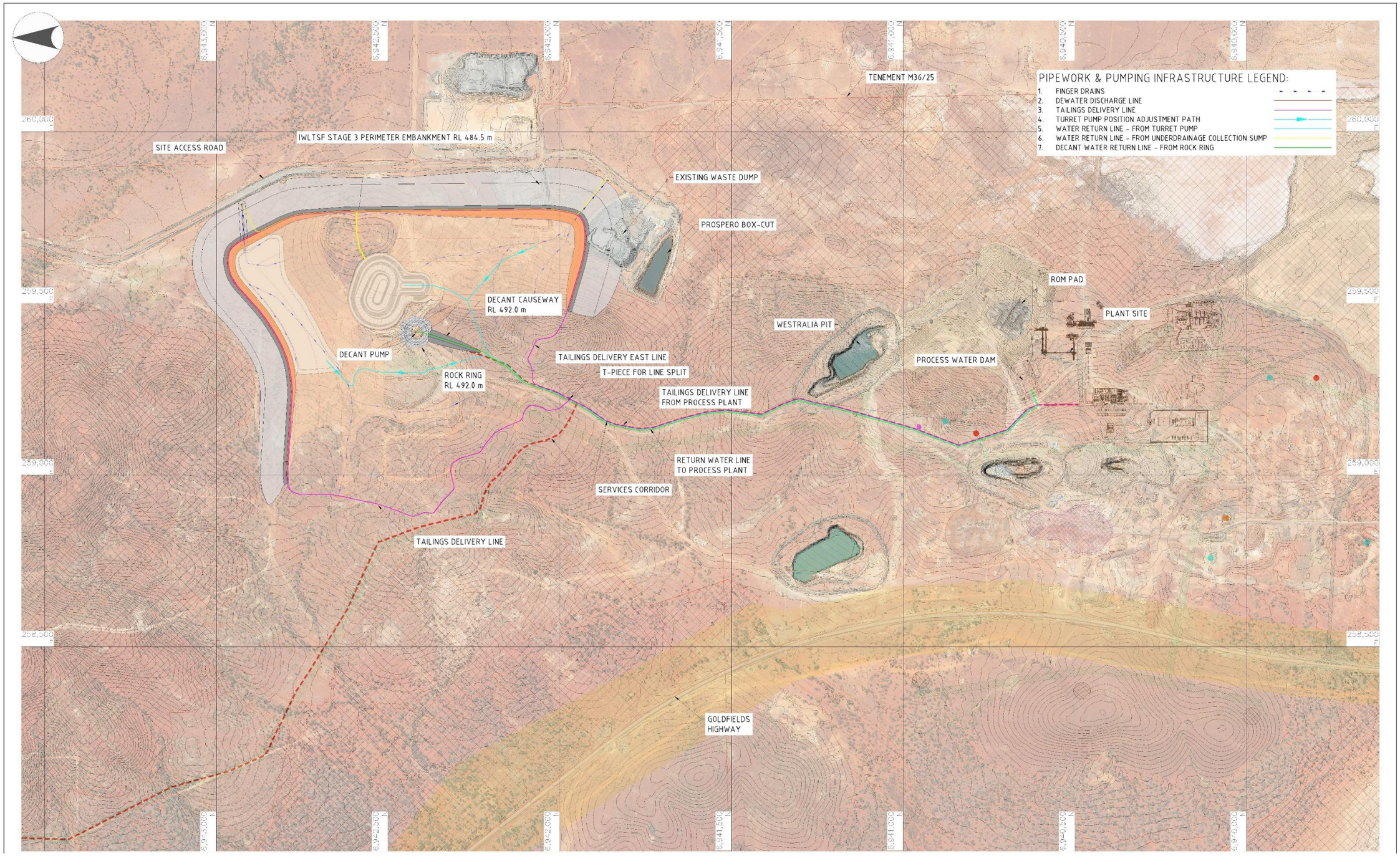

Figure 17: Underdrainage, pipelines, decant pump positions and final rock ring decant position for IWLTSF (Stage 3)

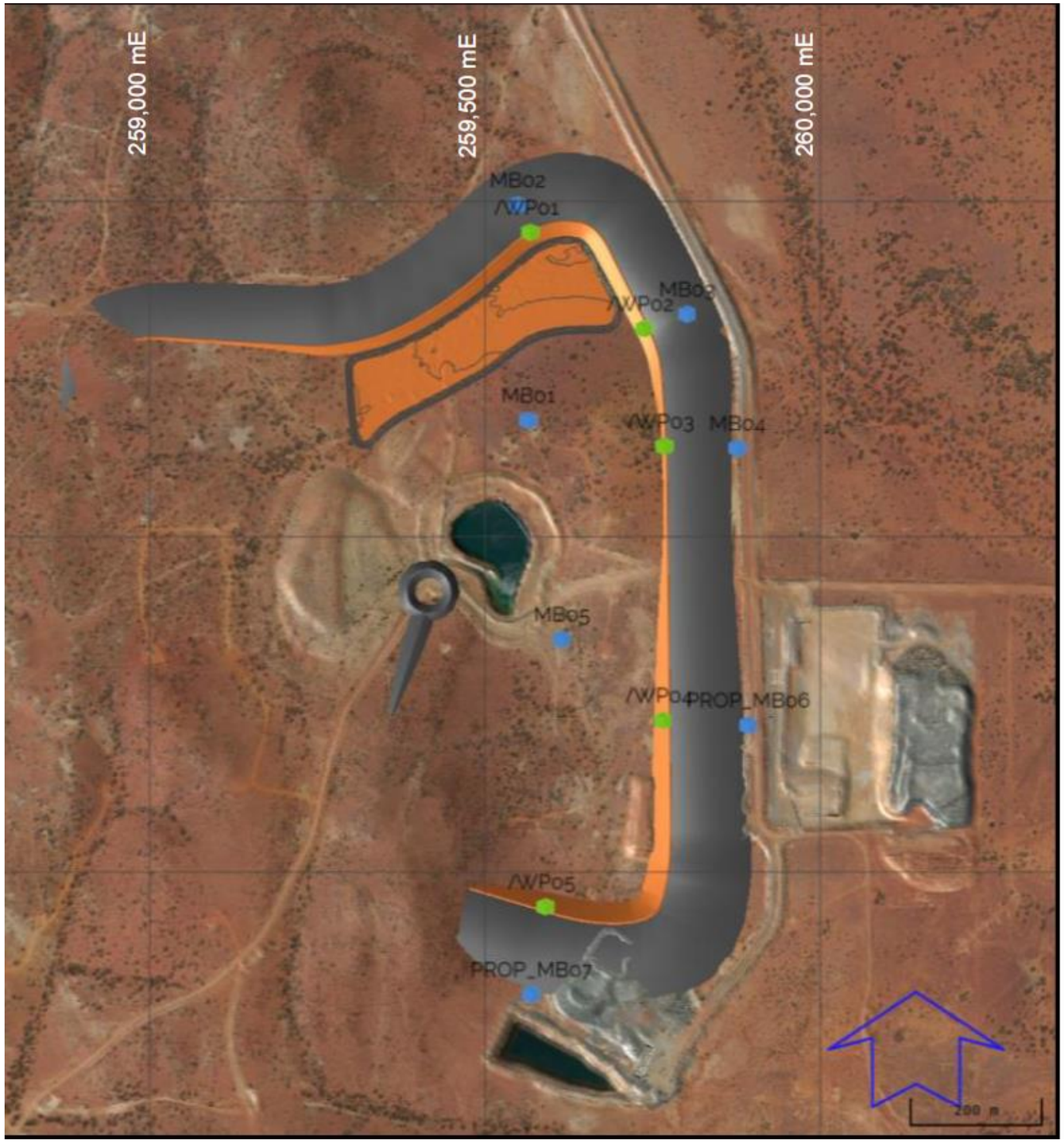

Figure 18: Monitoring bores and vibrating wire piezometer locations for the tailings storage infrastructure

Schedule 2: Construction of monitoring wells

Table 8: Infrastructure requirements – groundwater monitoring wells

	Containment Infrastructure	Bores	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
1	Westralia Pit berm expansion	MB01	Well design and construction: 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. Logging of borehole: 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. 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.	To be located within the envelope depicted in Schedule 1 Figure 8. Precise location to be determined by a suitably qualified hydrogeologist	Must be constructed, developed (purged), and baseline samples taken prior to the commencement of time limited operations of the WPBE Phase 1 under condition 10.
2	Water storage dam (WSD)	Replacement monitoring wells MB02A and MB03A		To replace MB02 and MB03 as shown in Schedule 1, Figure 18. To be moved approximately radially outward to outside the IWLTSF footprint. Precise locations be determined by a suitably qualified hydrogeologist.	Must be constructed, developed (purged), and baseline samples taken prior to the commencement of time limited operations of the WSD under condition 10.
3	Integrated waste landform tailings storage facility (IWLTSF) (stage 3)	MB06 and MB07		To be located south and east outside the IWLTSF footprint. Approximate locations depicted as PROP_MB06 and PROP_MB07 in Schedule 1, Figure 18. Precise locations be determined by a suitably qualified hydrogeologist.	Must be constructed, developed (purged), and baseline samples taken prior to the commencement of time limited operations of the IWLTSF (stage 3) under condition 10.
4		MB08, MB09, MB10 - Three additional groundwater monitoring wells sited hydraulically upgradient of the IWLTSF to enable the radial extent of groundwater mounding to be determined.		Well locations to be determined by a suitably qualified hydrogeologist	

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