Licence

Licence number	L9423/2024/1
Licence holder	Golden Grove Operations Pty Ltd
ACN	114 868 325
Registered business address	Suite 1, 38 Colin Street West Perth WA 6005
DWER file number	DER2023/000822
Duration	28/03/2024 to 27/03/2044
Date of issue	27/03/2024
Date of amendment	04/06/2025
Premises details	Golden Grove Mine YALGOO WA 6635 Legal description – Part of Mining Tenements: M59/3, M59/90, M59/195, M59/227, M59/361, M59/362, G59/19-23, G59/24, L59/22, L59/26 and L59/41 As defined by the premises maps in Schedule 1

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production capacity**
Category 5: Processing or beneficiation of metallic or non-metallic ore	2,100,000 tonnes per annual period
Category 6: Mine dewatering	3,500,000 tonnes per annual period
Category 54: Sewage facility	300 cubic metres (m^3) per day
Category 61: Liquid waste facility	5,000 tonnes per annual period
Category 89: Putrescible landfill site	Not more than 5,000 tonnes per annual period

This licence is granted to the licence holder, subject to the attached conditions, on 04 June 2025 by:

Fiona Westcott

Digitally signed by Fiona Westcott
Date: 2025.06.04 13:29:01 +08'00'

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

Licence history

Reference number	Date	Summary of changes
L9423/2024/1	27/03/2024	Licence issue
L9423/2024/1	04/06/2025	Recommissioning of TSF 2 for the purpose of contingency tailings storage during the construction of a new TSF.

Interpretation

In this licence:

(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 licence requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this licence.

Licence conditions

The Licence holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The licence holder must install and undertake the works for the infrastructure:

(a) specified in Column 1;

(a) to the requirements specified in Column 2;

(b) prior to the date specified in Column 3; and

(c) at the location specified in Column 4 of Table 1 below.

Table 1: Infrastructure and equipment requirements table

Column 1	**Column 2**	**Column 3**	**Column 4**
Infrastructure	**Requirements (design and construction)**	**Completion date**	**Site plan reference**
Clay Borrow Pit Water Storage Dam including discharge and recovery pipelines	• Provided with a skid mounted pump capable of transferring 250 m^3/h of water with a 50 m head • Fitted with a 280 mm PN10 HDPE discharge pipeline from the Lake Wownaminya pipeline to the Clay Borrow Pit • Fitted with a 250 mm PN10 HDPE return pipeline from the skid mounted pump to the process plant water storage pond • Pipelines laid within a v-drain	Not specified	Schedule 1 Figure 2 and Figure 9
Coffer Dam 2 including discharge pipelines	• Constructed with a maximum embankment height of 1.5 m • Upstream embankment must be lined which meets the following properties: - Minimum thickness of 1.5 mm with a tolerance of 5%; - specific gravity of not less than 0.94 (ASTM D1505); - melt index of 0.05–0.30 g/10 minutes (ASTM D1238 condition E 190/2.16); - carbon black content of 2-3% (ASTM D1603); - minimum tensile strength at yield of 16 000 KN/m2 and at break 550 KN/m^2 (ASTM D638 type IV 2); - minimum elongation at yield of 10% and at break 300% (ASTM D638) • The liner must be fixed within an anchor trench at the crest of the dam • The upstream embankment liner must be fabricated to form the shape of excavation. All seams and joints made	Not specified	Schedule 1 Figure 2 and Figure 9 and Schedule 10

Table 1: Infrastructure and equipment requirements table			
Column 1	**Column 2**	**Column 3**	**Column 4**
Infrastructure	**Requirements (design and construction)**	**Completion date**	**Site plan reference**
	on site should be continuous. Panels of the liner should be overlapped by a minimum of 100 mm, prior to heat welding or mechanical jointing. • Designed to provide a minimum storage capacity of 15,000 m^3 • Designed to hold all runoff from the ROM pad for a 1 in 100 year 72 hour storm event while maintaining a minimum freeboard of 300 mm • Fitted with a pump to transfer any excess water to the Evaporation Pond C • The HDPE pipeline from the Coffer Dam 2 to the Evaporation Pond C must be laid within a v-drain and fitted with automatic shutoff valves • Constructed in accordance with the design drawings shown in Schedule 10		
TSF3 embankment raise 5	• A 3 m high upstream embankment raise to RL 384.0 m including: – Crest width of 6 m – Upstream slope of 1V:2.5H – Downstream slope of 1V:2.75H – Cut-off trench beneath the downstream toe of the Stage 5 embankment • Decant return system to incorporate: – Centreline raise of decant tower and decant accessway, including rock filter surrounding decant tower – A dedicated submersible pump installed in the decant tower – Two skid-mounted pumps in a duty / standby configuration at the decant hammerhead ramp end • Designed and constructed to temporarily store rainfall from a 1:100-year AEP, 72 hour storm event while maintaining a minimum total freeboard of 500 mm (combined 300 mm operational freeboard and 200 mm beach freeboard) • Constructed in accordance with the design drawings shown in Schedule 3	Not specified	Schedule 1 Figure 2 and Figure 9 and Schedule 3
TSF1 embankment raise 5	<u>Stage 5A:</u> • A 4 m high upstream raise to RL 376.0 m resulting in a maximum embankment height of 18 m including: – crest width of 19 m	Up to 12 months from 5 August 2021, which	TSF1 as shown in Schedule 1

Table 1: Infrastructure and equipment requirements table			
Column 1	**Column 2**	**Column 3**	**Column 4**
Infrastructure	**Requirements (design and construction)**	**Completion date**	**Site plan reference**
	– upstream slope of 2H:1V – downstream slope of 2.75H:1V – cut-off trench beneath the downstream toe of the Stage 5A embankment • New decant access causeway to RL 376.0 m and width of 10 m with the decant area section having a diameter of 20 m • New decant structure raised to RL 376 m • Tailings discharge points at RL 375.5 m • Storage capacity 386,050 m^3 <u>Stage 5B:</u> • A further raise of 3 m to RL 379 m including: – crest width of 6 m – inclusion of a 2 m wide rock armouring including a geotextile separation layer – upstream slope of 2H:1V – downstream slope of 2.75H:1V • Access decant access causeway to RL 379 m and width 10 m with the decant area section having a diameter of 20 m • Decant structure raised to RL 379 m • Storage capacity 406,790 m^3 <u>Freeboard:</u> • Minimum tailings beach freeboard of 0.5 m <u>Construction material:</u> Stockpile material located on the top of TSF1 will be used to construct the tailings embankments. Stockpile material comprise of predominantly non-acid forming (NAF) waste rock excavated from the Scuddles open pit <u>TSF piezometers:</u> • 10 new vibrating wire piezometers • 8 survey prisms <u>Decant pump:</u> • Flow capacity 832 m^3/h <u>Tailings delivery system and decant return water pipelines:</u> • Tailings deposition ring consisting of 134 spigots approximately 12 m apart	is the date the licence amendment was granted	and Schedule 4 Pipeline corridor in Figure 13

Table 1: Infrastructure and equipment requirements table			
Column 1	**Column 2**	**Column 3**	**Column 4**
Infrastructure	**Requirements (design and construction)**	**Completion date**	**Site plan reference**
	• HDPE tailings slurry and decant return water pipelines – fitted with two flow meters • Bunded pipeline route between process plant and TSF1 <u>Toe drain:</u> • New toe drain to connect to existing toe drain • Toe drain to connect to TSF1 sump		
New Flotation Circuit	• Copper scavenger concentration distribution box -1.6 m^3 capacity • Copper rougher 2 flotation cell - 7 m^3 capacity • Three copper scavenger flotation cell - 70 m^3 capacity each • Copper cleaner flotation cell - 46.5 m^3 capacity • Dextrin storage tank - Ø5.1 m x 4.5 m, 80 kL PE100 HDPE tank (effective capacity 70 kL). Replaces existing CMC Storage Tank. • Copper concentrate surge tank -Ø 6.0 m x 7.6 m H		New Flotation circuit as shown in Schedule 1 and Schedule 5
TSF 2 Cells 1, 2 and 3	<u>Construction of Dividing bunds</u> • Spigot spacing at 12.5 metres. • The Reduced Level (RL) of the dividing bunds to match the RL of the embankment crest at 386.5 metres. • The slopes on both sides of the crest to adhere to a 2 Horizontal: 1 Vertical ratio.	Not specified	TSF2 as shown in Figure 2 and Figure 9 in Schedule 1.

2. The licence holder must:

(a) construct and/or install the infrastructure/equipment;

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

(c) at the corresponding infrastructure/equipment location,

as set out in Schedule 9.

3. The licence holder must design and construct/install new groundwater monitoring wells in accordance with the requirements specified in Table 2.

Table 2: Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design and construction/installation requirements	Monitoring well location(s)	Timeframe
Groundwater monitoring well(s): ROM groundwater monitoring wells: ROM 11, ROM 12, ROM 13, ROM 14, ROM 15 and ROM 16	<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 wells*. 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. <u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining/odours or other indications of contamination must be included in the bore log. <u>Well construction log:</u> Well construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16*. The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, and the 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 monitoring network and their respective identification numbers.	Monitoring wells as shown in Figure 5 of Schedule 1	Must be constructed, developed (purged) and determined to be operational by no later than 15 calendar days prior to the use of the ROM pad expansion area
Clay Borrow Pit Water Storage Dam monitoring bores: MB76, MB77 and MB78			Must be constructed, developed (purged) and determined to be operational by no later than 15 calendar days prior to the use of the Clay Borrow Pit Water Storage Dam

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

Compliance reporting

4. The licence holder must within 60 calendar days of an item of infrastructure or equipment required by conditions 1 and 2 being constructed and/or installed:

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

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

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

(a) certification by a suitably qualified geotechnical engineer 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 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;

(c) evidence that the relocated paste plant and associated infrastructure has been installed as per the manufacturer's design specifications;

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

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

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

(g) a quality assurance/quality control (QA/QC) certificate from an independent third party which demonstrates that the permeability of the Coffer Dam 2 meets the requirements specified in Table 6.

6. The licence 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 3.

Operational requirements

7. The licence holder may only commence operations for an item of infrastructure identified in conditions 1 and 2 where the Environmental Compliance Report as required by condition 4 has been submitted by the licence holder for that item of infrastructure.

8. The licence holder shall only accept waste on to the premises if:

(a) it is of a type listed in Table 3;

(b) the quantity accepted is below any quantity limit listed in Table 3; and

(c) it meets any specification listed in Table 3.

Table 3: Waste acceptance

Waste	Waste code	Quantity limit	Specification[1]
Industrial wash water	L150	5,000 tonnes per annual period	Tankered into the premises and discharged into concrete lined sump in bunded processing plant via an enclosed pipeline.

Note [1]: Additional requirements for the acceptance of controlled waste are set out in the Environmental Protection (Controlled Waste) Regulations 2004.

9. The licence holder shall ensure that where wastes produced on the premises are not taken off-site for lawful use or disposal, they are managed according with the requirements in Table 4.

Table 4: Waste processing

Waste type	Process(es)	Process limits[1]
Inert Waste Type 1 Putrescible waste	Receipt, handling, and disposal by landfilling	<u>All waste types</u> No more than 5,000 tonnes per annual period of all waste types cumulatively shall be disposed of by landfilling. Disposal of waste by landfilling shall only take place within the landfill area shown on the landfill area map defined in Figure 11 Schedule 1. The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3 m. No waste shall be stored/buried within 100 m of any surface water body. <u>Putrescible waste</u> No putrescible waste shall be burnt.
Inert Waste Type 2		<u>Inert Waste Type 2</u> Tyres shall only be landfilled[2]: • in batches separated from each other by at least 100 mm of soil and each consisting of not more than 40 m^3 of tyres reduced to pieces; or • in batches separated from each other by at least 100 mm of soil and each consisting of not more than 1,000 whole tyres.
Special Waste Type 2		<u>Special Waste Type 2</u> • Biomedical and related waste generated on the premises; • Disposal of Special Waste Type 2 shall only take place within the medical waste trench area defined in Figure 12, Schedule 1; • Waste shall not be excavated or uncovered during subsequent landfill operations; and

Table 4: Waste processing		
Waste type	**Process(es)**	**Process limits[1]**
		• Access to the landfill site where the waste is buried shall be restricted to authorised personnel only.
Sewage	Biological, physical and chemical treatment	Not more than 300 m^3 per day. Accepted through sewer inflow only.

Note [1]: Additional requirements for the acceptance of controlled waste (including asbestos and tyres) are set out in the Environmental Protection (Controlled Waste) Regulations 2004.

Note [2]: Requirements for landfilling tyres are set out in Part 6 of the Environmental Protection Regulations 1987.

10. The licence holder shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 5 and that sufficient stockpiles of cover are maintained on site at all times.

Table 5: Cover requirements[1]			
Waste Type	**Material**	**Depth**	**Timescales**
Special Waste Type 2 (Biomedical and related waste)	Clean fill	1000 mm	Immediately
Putrescible waste		200 mm	Weekly

Note [1]: Additional requirements for the covering of tyres are set out in Part 6 of the Environmental Protection Regulations 1987.

11. The licence holder shall ensure that material as specified in Table 6 is only discharged into containment infrastructure with the relevant infrastructure requirements as specified in Table 6 and at the corresponding containment infrastructure location specified in Table 6.

Table 6: Containment infrastructure			
Containment point reference	**Material**	**Infrastructure requirements**	**Containment infrastructure location**
Coffee Dam 2	ROM Pad seepage water and rainfall runoff	Lined to achieve a coefficient of permeability of less than 2 x 10^{-10} m/s	Coffee Dam 2 as shown in Figure 2 and Figure 9 in Schedule 1
Clay Borrow Pit Water Storage Dam	Treated dewatering effluent	None specified	Borrow Pit Water Storage Dam as shown in Figure 2 and Figure 9 in Schedule 1.

Table 6: Containment infrastructure			
Containment point reference	**Material**	**Infrastructure requirements**	**Containment infrastructure location**
TSF3	Tailings	Decant tower fitted with submersible pump for the recovery of water. Two skid-mounted pumps in a duty/standby configuration at the decant hammerhead ramp end for the recovery of water. Cut off trench beneath the downstream toe of the embankment.	TSF3 as shown in Figure 2 and Figure 9 in Schedule 1.
TSF1	Tailings	New decant structure Cut off trench at the base of perimeter embankment New toe drain around TSF1	TSF1 as shown in Figure 2 and Figure 9 in Schedule 1.
TSF2	Reclaimed tailings from TSF2 (tailings deemed not suitable for paste plant)	Requirements as per Schedule 6	TSF2 as shown in Figure 2 and Figure 9 in Schedule 1.
TSF 2	Tailings	<u>TSF Operation</u> • Operation of the decant water recovery system to minimise supernatant ponds. • Seepage collection bores maintained on the perimeter of the embankment. • Water collected from seepage bores to be returned for use within the plant. <u>Dividing Bund Maintenance</u> • A freeboard of 300mm for the Dividing Bunds to be maintained. • Tailings harvesting near dividing bunds 2 and 3 to maintain the recommended batter slopes of the dividing bunds of 2 Horizontal: 1 Vertical ratio.	TSF2 as shown in Figure 2 and Figure 9 in Schedule 1.

Table 6: Containment infrastructure			
Containment point reference	**Material**	**Infrastructure requirements**	**Containment infrastructure location**
Concrete sump (CW1)	Industrial wash water	Contained within concrete plant bunding	CW1 as shown in the site plan and Figure 10 in Schedule 1.
Evaporation pond C and process water pond	• Contaminated water from the storage pond; and • TSF1, TSF2 and/or TSF3: ○ Decant water; ○ Recovered seepage; and ○ Toe drainage water.	Lined to achieve a permeability of at least $<10^{-9}$ m/s or equivalent	Evaporation Pond C as shown in Figure 2 and Figure 9 in Schedule 1. Process Dam and Process Pond as shown in Figure 14 and 15 in Schedule 1.
Reclaimed tailings storage pad	Reclaimed tailings from TSF2	Requirements as per Schedule 6.	Tailings Pad as shown in Figure 15 in Schedule 1.
Storage pond	Contaminated water from the reclaimed tailings storage pad		SWP as shown in Schedule 1.

12. The licence holder shall manage containment infrastructure in Table 6 such that:

(a) a minimum total freeboard of 500 mm (combined 300 mm operational freeboard and 200 mm beach freeboard) is maintained for TSF3;

(b) a minimum operational freeboard of 500 mm is maintained for TSF1;

(c) a minimum operational freeboard of 300 mm is maintained for TSF2;

(d) a minimum top of embankment freeboard of 500 mm is maintained for the concrete sump (CW1), process water pond and evaporation pond C;

(e) stormwater run-off is diverted from the tailings dam/s to prevent flooding or erosion;

(f) a perimeter drain is maintained downstream of the external toe of the tailings dam/s to recover any liquid matter resulting from seepage or breach of the embankment;

(g) a minimum top of embankment freeboard of 500 mm is maintained for the reclaimed tailings storage pad and storage pond;

(h) stormwater diversion bunds and/or culverts are maintained to safely divert surface water flows around the paste plant, reclaimed tailings storage pad and storage pond;

(i) a minimum top of pit embankment freeboard of 6.0 m is maintained for the Clay Borrow Pit Water Storage Dam; and

(j) a minimum top of embankment freeboard of 300 mm is maintained for the Coffer Dam 2.

13. The licence holder shall manage the irrigation of wastewater treated at the wastewater treatment plant (WWTP) such that:

(a) no irrigation generated run-off, spray drift or discharge occurs beyond the boundary of the defined irrigation area;

(b) treated wastewater is evenly distributed over the irrigation area;

(c) no soil erosion occurs;

(d) irrigation does not occur on land that is waterlogged; and

(e) vegetation cover is maintained over the irrigation area.

14. The licence holder shall:

(a) undertake inspections as detailed in Table 7;

(b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and

(c) maintain a record of all inspections undertaken.

Table 7: Inspection of infrastructure

Scope of inspection	Type of inspection	Frequency of inspection
Clay Borrow Pit Water Storage Dam	Visual integrity and to confirm required freeboard capacity is available	Daily
Coffer Dam 2	Visual integrity and to confirm required freeboard capacity is available	Daily

Table 7: Inspection of infrastructure		
Scope of inspection	**Type of inspection**	**Frequency of inspection**
Coffer Dam 2 pipeline to Evaporation Pond C (when in use)	Visual integrity	Daily
Tailings pipelines	Visual integrity	Daily
Return water pipelines	Visual integrity	Daily
TSF1, TSF 2 and TSF3 embankment freeboard and decant pond	Visual to confirm required freeboard capacity is available	Daily
Seepage collection trenches/sumps	Visual to confirm capacity is available	Daily
Mine dewater pipelines	Visual integrity	Daily
Discharge pipeline to lake	Visual integrity	Weekly
Controlled waste concrete sump (CW1)	Visual integrity and to confirm required freeboard capacity is available	Daily during periods of discharge
Reclaimed tailings storage pad	Visual integrity and to confirm required freeboard capacity is available	Daily
Storage pond	Visual integrity and to confirm required freeboard capacity is available	Daily
Evaporation pond C and process water pond	Visual integrity and to confirm required freeboard capacity is available	Daily

15. The licence holder shall ensure that all pipelines containing environmentally hazardous substances are equipped with:

(a) telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures; and/or

(b) automatic cut-outs in the event of a pipe failure; and/or

(c) secondary containment sufficient to contain any spill for a period equal to the time between inspections.

16. The licence holder must effectively wet down:

(a) reclaimed tailings prior to transportation; and

(b) dust generating areas as required.

17. The licence holder must ensure that the premises infrastructure and equipment listed in Table 8 is maintained and operated in accordance with the corresponding operational requirements set out in Table 8.

Table 8: Infrastructure and equipment requirements during operations		
Item	**Infrastructure and equipment**	**Operational requirements**
1.	Mobile equipment (e.g. vehicles, screening plant, haulage trucks	• Maintain all mobile equipment as per manufacturer's

Table 8: Infrastructure and equipment requirements during operations		
Item	**Infrastructure and equipment**	**Operational requirements**
	and dewatering pumps etc.)	design specifications; and • Keep suitably stocked spill response equipment close to where spills may occur;
2.	Reclaimed tailings storage pad – automatic dust suppression system	Automatic dust suppression system must be: • available and operational to effectively wet down dust generating areas within the reclaimed tailings storage pad as required; and • serviced regularly by on site technician.

18. The licence holder shall operate all TSF's in accordance with the conditions of this licence, following submission of the construction compliance reports required under condition 4.

19. The licence holder shall undertake a monthly water balance for TSF 1, TSF 2 and TSF 3. The water balance shall as a minimum record the following:

(a) Site rainfall;

(b) Volume of tailings deposited;

(c) Evaporation rate;

(d) Decant water recovery volumes;

(e) Seepage recovery volumes;

(f) Estimate of seepage losses;

(g) toe drainage recovery volumes;

(h) Tailings level (RL) start of the month and end of the month; and

(i) Tailings solid content (w/w%) and density.

Emissions and discharges

General

20. The licence holder shall record and investigate the exceedance of any descriptive or numerical limit specified within this licence.

Point source emissions to surface water

21. The licence holder shall ensure that where waste is emitted to surface water from the emission points in Table 9 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this licence.

Table 9: Emission points to surface water			
Emission point reference	**Emission point reference on Map of emission points**	**Description**	**Source including abatement**
D1	D1	Discharge to Lake Wownaminya	Treated dewatering effluent

22. The licence holder shall not cause or allow point source emissions to surface water that do not comply with the limits listed in Table **10**.

Table 10: Point source emission limits to surface water			
Emission point reference	**Parameter**	**Limit (including units)**	**Averaging period**
D1	Arsenic	<0.5 mg/L	Monthly
	Cadmium	<0.01 mg/L	
	Chromium	<1.0 mg/L	
	Copper	<0.4 mg/L	
	Lead	<0.1 mg/L	
	Mercury	-	
	pH[1]	≥ 6.0 ≤ 9.0	
	Selenium	<0.02 mg/L	
	Sulphate	<3800 mg/L	
	Total recoverable hydrocarbons (TRH)	<15 mg/L	
	Total suspended solids	<100 mg/L	
	Total acidity ($CaCO_3$)	<40 mg/L	
	Zinc	<20 mg/L	

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

Emissions to land

23. The licence holder shall ensure that where waste is emitted to land from the emission points in Table 11 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this licence.

Table 11: Emissions to land		
Emission point reference on Map of emission points	**Description**	**Source including abatement**
L1	Effluent irrigation area	WWTP treated effluent.
L2	Dewatering discharge to clay borrow pit	Treated dewatering effluent

24. Decant water, recovered seepage and toe drainage water from TSF1, TSF2 and/or TSF3 shall be collected and transferred to evaporation pond C and/or process water pond.

Monitoring

General monitoring

25. The licence holder shall ensure that:

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

(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;

(c) all surface water sampling is conducted in accordance with AS/NZS 5667.4;

(d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and

(e) all laboratory samples are submitted to and tested by a laboratory with current National Association of Testing Authorities (NATA) accreditation for the parameters being measured unless indicated otherwise in the relevant table.

26. The licence holder shall ensure that:

(a) monthly monitoring is undertaken at least 15 days apart;

(b) quarterly monitoring is undertaken at least 45 days apart;

(c) six monthly monitoring is undertaken at least 5 months apart; and

(d) annual monitoring is undertaken at least 9 months apart.

27. The licence holder shall ensure that all monitoring equipment used on the premises comply with the conditions of this licence and is calibrated in accordance with the manufacturer's specifications.

Monitoring of point source emissions to surface water

28. The licence holder shall undertake the monitoring in Table 12 according to the specifications in that table.

Table 12: Monitoring of point source emissions to surface water

Emission point reference	Parameter	Units	Averaging period	Frequency
D1	Volumetric flow rate	m^3/day	-	Continuous
	pH[1]	pH units	Spot sample	Monthly
	Electrical Conductivity (EC)	µS/cm		
	Total aluminium	mg/L		
	Arsenic			
	Cadmium			
	Chromium			
	Copper			
	Total iron			
	Lead			
	Manganese			
	Mercury			
	Nickel			
	Total Nitrogen (as N)			

Table 12: Monitoring of point source emissions to surface water				
Emission point reference	**Parameter**	**Units**	**Averaging period**	**Frequency**
	Nitrate (as NO_3)			
	Total Phosphorus (as P)			
	Selenium			
	Sulphate			
	TRH			
	Total suspended solids			
	Total dissolved solids			
	Total acidity ($CaCO_3$)			
	Zinc			

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

Monitoring of emissions to land

The licence holder shall undertake the monitoring in Table 13 according to the specifications in that table.

Table 13: Monitoring of emissions to land				
Emission point reference	**Parameter**	**Units**	**Averaging period**	**Frequency**
L1	Volumetric flow rate	m^3/day	-	Continuous
	Biochemical oxygen demand	mg/L	Spot sample	Quarterly
	Total suspended solids	mg/L		
	pH[1]	pH units		
	Total nitrogen	mg/L		
	Total phosphorus	mg/L		
	E.coli	cfu/100 mL		
L2	Volumetric flow rate	m^3/day	-	Continuous
	pH[1]	pH units	Spot sample	Monthly
	Electrical Conductivity (EC)	µS/cm		
	Total aluminium	mg/L		
	Arsenic			
	Cadmium			
	Chromium			
	Copper			
	Total iron			
	Lead			
	Manganese			
	Mercury			

Table 13: Monitoring of emissions to land				
Emission point reference	**Parameter**	**Units**	**Averaging period**	**Frequency**
	Nickel			
	Total Nitrogen (as N)			
	Nitrate (as NO_3)			
	Total Phosphorus (as P)			
	Selenium			
	Sulphate			
	TRH			
	Total suspended solids			
	Total dissolved solids			
	Total acidity ($CaCO_3$)			
	Zinc			

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

Monitoring of inputs and outputs

29. The licence holder shall undertake the monitoring in Table 14 according to the specifications in that table.

Table 14: Monitoring of inputs and outputs

Input/Output	Parameter	Units	Averaging period	Frequency
Controlled waste	Industrial wash water	Metric tonnes	Month	Monthly
Waste inputs	Inert Waste Type 1 Putrescible waste Inert Waste Type 2 Special Waste Type 2	m^3 (where no weighbridge is present)	N/A	Each load disposed at the premises
Processing of reclaimed tailings	• Volumes of tailings reclaimed from TSF2; • Volumes of screened material (reclaimed tailings from TSF2); • Volumes of material (reclaimed tailings from TSF2) used within the paste plant; and • Volumes of material (reclaimed tailings deemed unsuitable for the paste plant) disposed back into TSF2.	Metric tonnes	Month	Monthly
Recovery of stored dewatering effluent	Volumes of dewatering effluent recovered from the Clay Borrow Pit Water Storage Dam	Metric tonnes	Month	Continuous

Ambient environmental quality monitoring

30. The licence holder shall undertake the monitoring specified in Table 15 and Table 16 and record and investigate the exceedance of any limit or trigger specified.

Table 15: Monitoring of ambient groundwater quality			
Emission point reference	**Parameter**	**Limit (including units)**	**Monitoring period**
MB11, MB13, MB16, MB18, MB19, MB21, MB22, MB23, MB24, MB46, MB47, GGW50, MB58, MB64, MB65, MB67, MB68A, MB69, MB70A, MB71A, MB73A, MB74 PP01 MB76, MB77 and MB78	Arsenic	0.5 mg/L	Quarterly
	Cadmium	0.01 mg/L	
	Chromium	1.0 mg/L	
	Copper	0.4 mg/L	
	Lead	0.1 mg/L	
	Mercury	-	
	Total nitrogen (as N)	-	
	Nitrate (as NO_3)	-	
	pH[1]	≥ 6.0 ≤ 9.0	
	Selenium	0.02 mg/L	
	Standing water level (SWL)	5 mbgl	Monthly
	Sulphate	1000 mg/L	Quarterly
	Total dissolved solids	5,000 mg/L	
	Total acidity (CaCO3)	40 mg/L	
	Zinc	20 mg/L	
ROM11, ROM12, ROM13, ROM14, ROM15 and ROM16	Standing water level (SWL)	5 mbgl	Monthly
	Arsenic	0.5 mg/L	Quarterly
	Cadmium	0.01 mg/L	
	Chromium	1.0 mg/L	
	Copper	0.4 mg/L	
	Lead	0.1 mg/L	
	Mercury	-	
	Total nitrogen (as N)	-	
	Nitrate (as NO_3)	-	
	pH[1]	≥ 6.0 ≤ 9.0	
	Selenium	0.02 mg/L	
	Sulphate	3,000 mg/L	
	Total dissolved solids	5,000 mg/L	
	Total acidity (CaCO3)	40 mg/L	
	Zinc	20 mg/L	

Table 16: Monitoring of ambient groundwater quality			
Emission point reference	**Parameter**	**Trigger value (including units)**	**Monitoring period**
ROM9	Standing water level (SWL)	5 mbgl	Monthly
	Arsenic	0.5 mg/L	Quarterly
	Cadmium	-	
	Chromium	1.0 mg/L	
	Copper	0.4 mg/L	
	Lead	0.1 mg/L	
	Mercury	-	
	Total nitrogen (as N)	-	
	Nitrate (as NO_3)	-	
	pH[1]	≥ 6.0 ≤ 9.0	
	Selenium	0.02 mg/L	
	Sulphate	3,000 mg/L	
	Total dissolved solids	-	
	Total acidity (CaCO3)	40 mg/L	
	Zinc	20 mg/L	

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

31. The licence holder must monitor the parameters in Table 15 and in the event of SWL exceeding the limit in Table 15, undertake the management action(s) as specified in Table 17 and provide a report including the investigation conducted to the CEO within 6 months of the initial notification.

Table 17: Management actions required for SWL exceedances		
Parameter	**Trigger**	**Management actions**
Vegetation health; efflorescence 5 fixed point vegetation photos – taken monthly	vegetation stressed or dying; or signs of stress in many individuals or several species.	Notify the CEO immediately and provide: – photographic evidence – size of area affected – historical SWL logs for the monitoring bore(s) in the vicinity of the affected area Within three months, a qualified botanist must investigate and assess the area to determine if vegetation health decline around monitoring bore is related to SWL exceedance. If mounding is confirmed to be causing vegetation decline, immediately adjust seepage recovery until improvement in vegetation health is evident. Continue to assess vegetation health against groundwater level and maintain a record of all management actions.

32. During the first 30 days after the new flotation plant reached steady state, the licence holder must collect at least 10 individual representative tailings samples to determine the geotechnical behaviour of the tailings, and may include, but not be limited to:

- geotechnical characterisation of tailings including: particle size distribution, volume of solids, settling test (drained and undrained), air drying test and hydraulic conductivity.

All test results shall be collated and provided in a report to the CEO after laboratory results are available.

Records and reporting

Records

33. All information and records required by the licence shall:

(a) be legible;

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

(c) except for records listed in 33(d) be retained for at least 6 years from the date the records were made or until the expiry of the licence or any subsequent licence; and

(d) for those following records, be retained until the expiry of the licence and any subsequent licence:

(i) off-site environmental effects; or

(ii) matters which affect the condition of the land or waters.

34. The licence holder must submit to the CEO within 90 days after the end of the annual period, an Annual Audit Compliance Report (AACR) indicating the extent to which the licence holder has complied with the conditions in this licence for the annual period.

35. The licence holder shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the premises and any action taken in response to the complaint.

Reporting

36. The licence holder shall submit to the CEO an Annual Environmental Report within 90 calendar days after the end of the annual period. The report shall contain the information listed in Table 18 in the format or form specified in that table.

Table 18: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
Table 12	Specified monitoring of point source emissions and limit exceedances to surface water	WR1
Table 13	Monitoring of emissions to land	LR1 and LR2
Table 14	Monitoring of inputs and outputs	None specified

Table 18: Annual Environmental Report		
Condition or table (if relevant)	**Parameter**	**Format or form**
Table 15	Monitoring of ambient groundwater quality and limit exceedances	GR1
Table 17	Vegetation health monitoring	None specified
Condition 34	Compliance	AACR
Condition 35	Complaints summary	None specified
Conditions 27 and 30	Calibration information, data comparison against previous monitoring results and licence limits	None specified

37. The licence holder shall ensure that the Annual Environmental Report also contains:

(a) any relevant process, production or operational data recorded under conditions 8, 9 and 10;

(b) an assessment of the information contained within the report against previous monitoring results and licence triggers and limits;

(c) water balance data required under condition 19;

(d) a review of the conceptual hydrogeological model for the site with an assessment of the potential impacts of TSF3 and the Clay Borrow Pit Water Storage Dam on groundwater within and outside of the premises boundary; and

(e) a monthly water balance for the Clay Borrow Pit Water Storage Dam. The water balance shall as a minimum record the following:

(i) rainfall at the Premises;

(ii) volume of dewatering effluent discharged;

(iii) volume of water recovered;

(iv) volume of water used onsite for dust suppression and processing;

(v) evaporation rate;

(vi) estimate of seepage losses; and

(vii) stored water level (RL) start of the month and end of the month.

Notification

38. The licence holder shall ensure that the items listed in Table 19 are notified to the CEO in accordance with the notification requirements of the table.

Table 19: Notification requirements

Condition or table (if relevant)	Item	Notification requirement[1]	Format or form[2]
31 table 15	Breach of any limit specified in the licence	Part A: As soon as practicable but no later than 5pm of the next usual working day.	N1
		Part B: As soon as practicable	
–	Production ceasing for an unspecified period of time	As soon as practicable after the decision has been made	None Specified
–	Production recommencing	At least 28 days prior to production recommencing	None specified

Note [1]: Notification requirements in the licence shall not negate the requirement to comply with s72 of the EP Act

Note [2]: Forms are in Schedule 2

Definitions

In this licence, the terms in Table 20 have the meanings defined.

Table 20: Definitions

Term	Definition
ACN	Australian Company Number
Annual Audit Compliance Report (AACR)	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the department's website).
annual period	a 12 month period commencing from 1 January until 31 December in that year.
AS1726	means the Australian Standard AS1726 *Geotechnical Site Investigations.*
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.*
AS/NZS 5667.4	means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made.*
AS/NZS 5667.10	means the Australian Standard AS/NZS 5667.10 *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*
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999.*
ASTM D638	means the ASTM international standard for *Standard Test Method for Tensile Properties of Plastics*
ASTM1238	means the ASTM international standard for *Standard Test Method for Melt Flow Rates of Thermoplastics*
ASTM D1505	means the ASTM international standard for *Standard test method for density of plastics by the density-gradient technique*
ASTM1603	means the ASTM international standard for *Standard test method for evaluating Carbon Black Content in Olefinic Materials*
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).*
ASTM D5299/D5299M-18	means the ASTM international standard for *Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities (Designation: D5299/D5299M–18).*
books	has the same meaning given to that term under the EP Act.
Category / categories	categories of prescribed premises as set out in Schedule 1 of the *Environmental Protection Regulations 1987* (WA) (EP Regulations).

Term	Definition
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
cfu/100 mL	number of colonies counted per 100 millilitres
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
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.
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Guideline: Assessment and management of contaminated sites	means the document titled *Assessment and management of contaminated sites, Contaminated sites guidelines* (Department of Environment Regulation, December 2014), as amended from time to time.
HDPE	High Density Poly Ethylene
kL	kilolitre
licence	refers to this document, which evidences the grant of a licence by the CEO under section 57 of the EP Act, subject to the specified conditions contained within.
licence holder	refers to the occupier of the premises, being the person specified on the front of the licence as the person to whom this licence has been granted.
m	metre
mbgl	Metres below ground level
mg/L	milligrams per litre
m^3	cubic metre
m^3/day	cubic meter per day
m^3/h	cubic meter per hour
mm	millimetre
µS/cm	microsiemens per centimetre

Term	Definition
m/s	metres per second
N/A	Not applicable
NAF	non-acid forming
NATA	National Association of Testing Authorities
NATA accreditation	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.
quarterly period	means the 4 inclusive periods from 1 April to 30 June, 1 July to 30 September, 1 October to 31 December and in the following year, 1 January to 31 March.
premises	refers to 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 licence.
prescribed premises	has the same meaning given to that term under the EP Act.
QA/QC	quality assurance/quality control
RL	reduced level
suitably qualified geotechnical	means a person who: (a) holds a Bachelor of Engineering recognised by the Institute of Engineers; and (b) has a minimum of five years of experience working in the area of geotechnical engineering or is otherwise approved by the CEO to act in this capacity.
suitably qualified surveyor	means a surveyor licenced through the Land Surveyors Licensing Board of Western Australia.
SWL	standing water level
TSF1	Tailings storage facility 1
TSF2	Tailings storage facility 2
TSF3	Tailings storage facility 3
waste	has the same meaning given to that term under the EP Act.
WWTP	wastewater treatment plant

END OF CONDITIONS

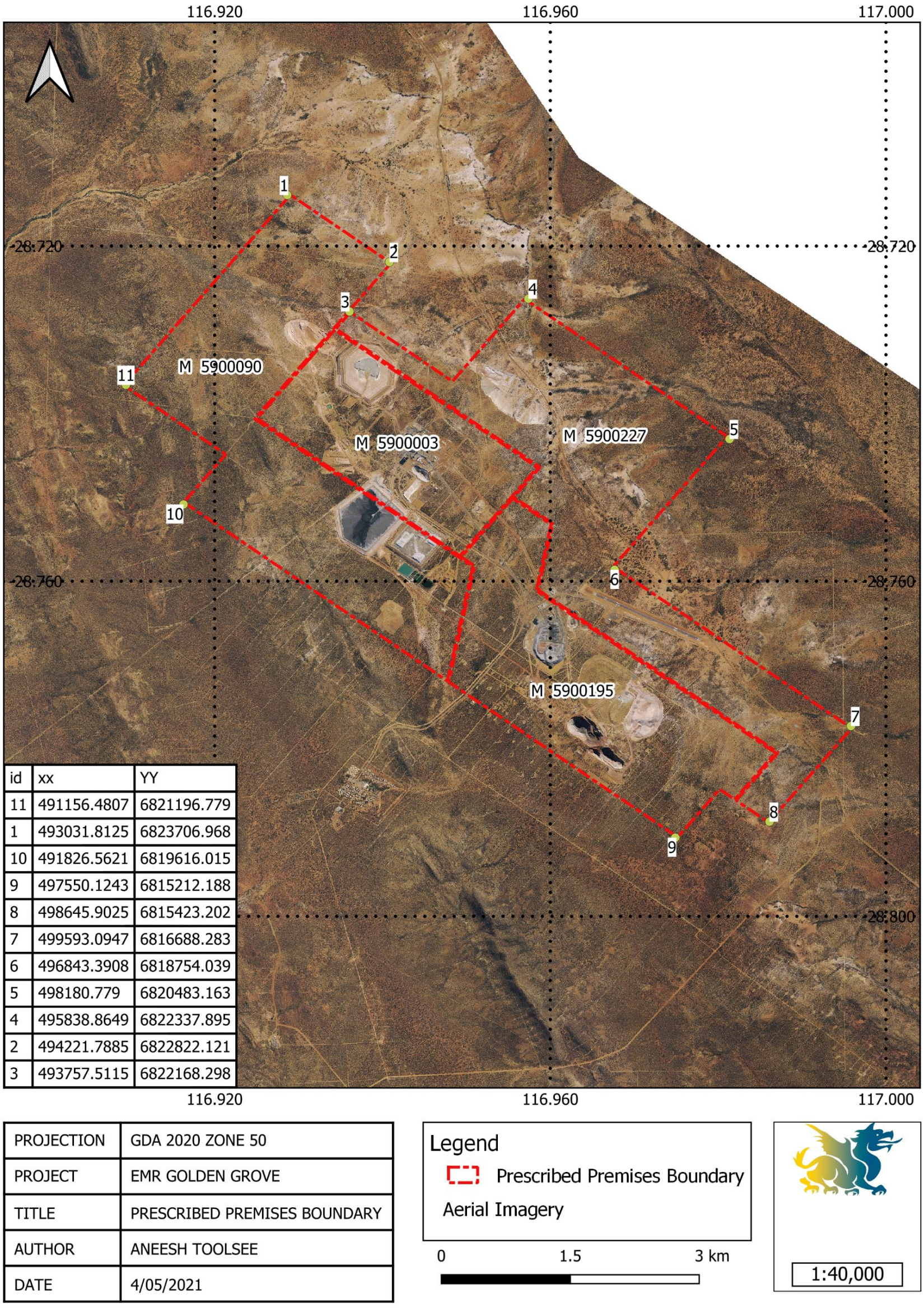
Schedule 1: Maps

Premises map

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

M59/3, M59/90, M59/195, M59/227, M59/361, M59/362, G59/19-23, G59/24, L59/22, L59/26 and L59/41.

The premises is shown in the map below. The red line depicts the premises boundary.



id	xx	YY
11	491156.4807	6821196.779
1	493031.8125	6823706.968
10	491826.5621	6819616.015
9	497550.1243	6815212.188
8	498645.9025	6815423.202
7	499593.0947	6816688.283
6	496843.3908	6818754.039
5	498180.779	6820483.163
4	495838.8649	6822337.895
2	494221.7885	6822822.121
3	493757.5115	6822168.298

PROJECTION	GDA 2020 ZONE 50
PROJECT	EMR GOLDEN GROVE
TITLE	PRESCRIBED PREMISES BOUNDARY
AUTHOR	ANEESH TOOLSEE
DATE	4/05/2021

Figure 1: Map of the boundary of the prescribed premises

Site plan

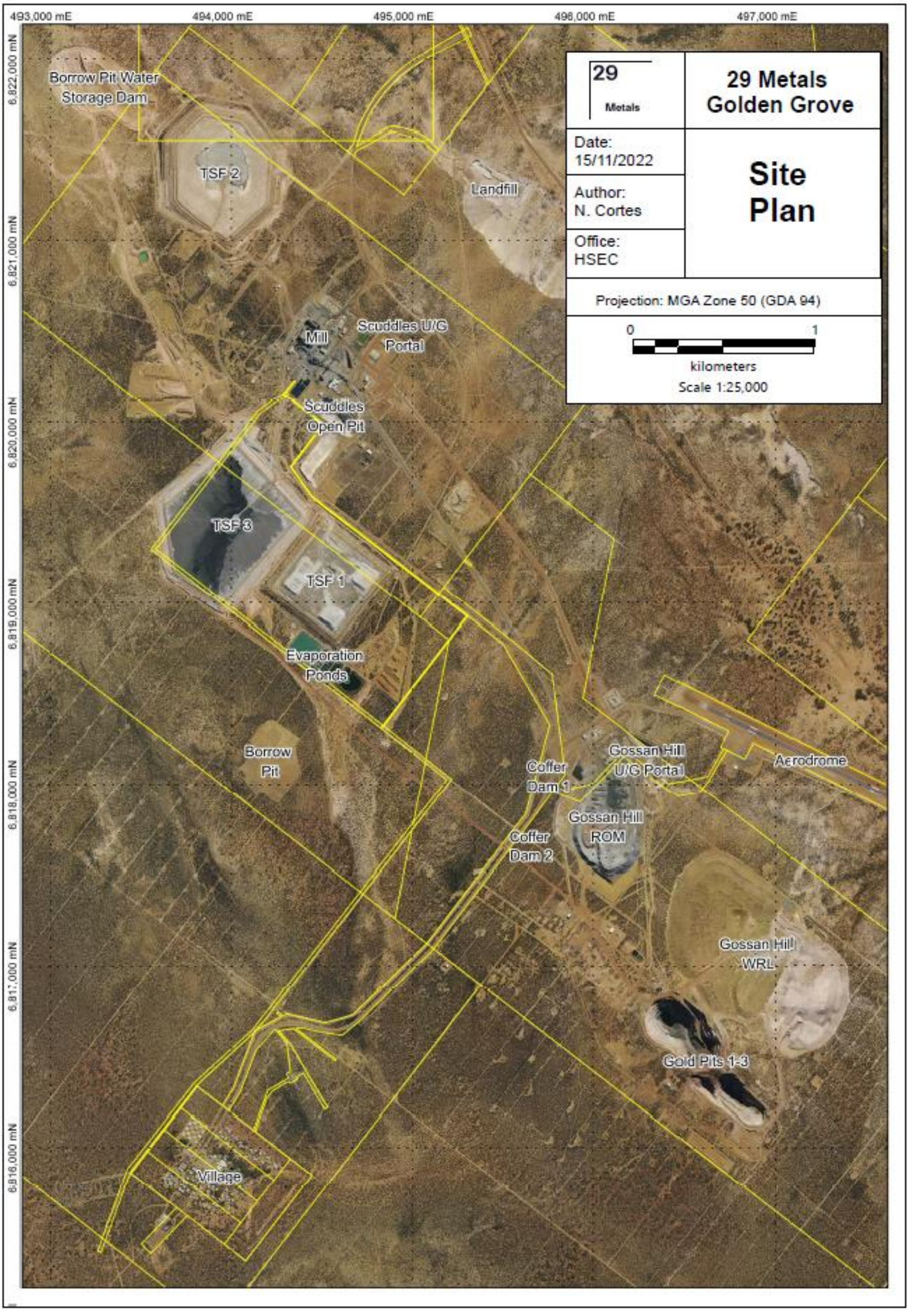


Figure 2 – Site plan

Map of emission points and monitoring locations

The locations of the emission points defined in Table 9 and Table 11, and the monitoring points defined in Table 12 and Table 13 are shown in the maps below.

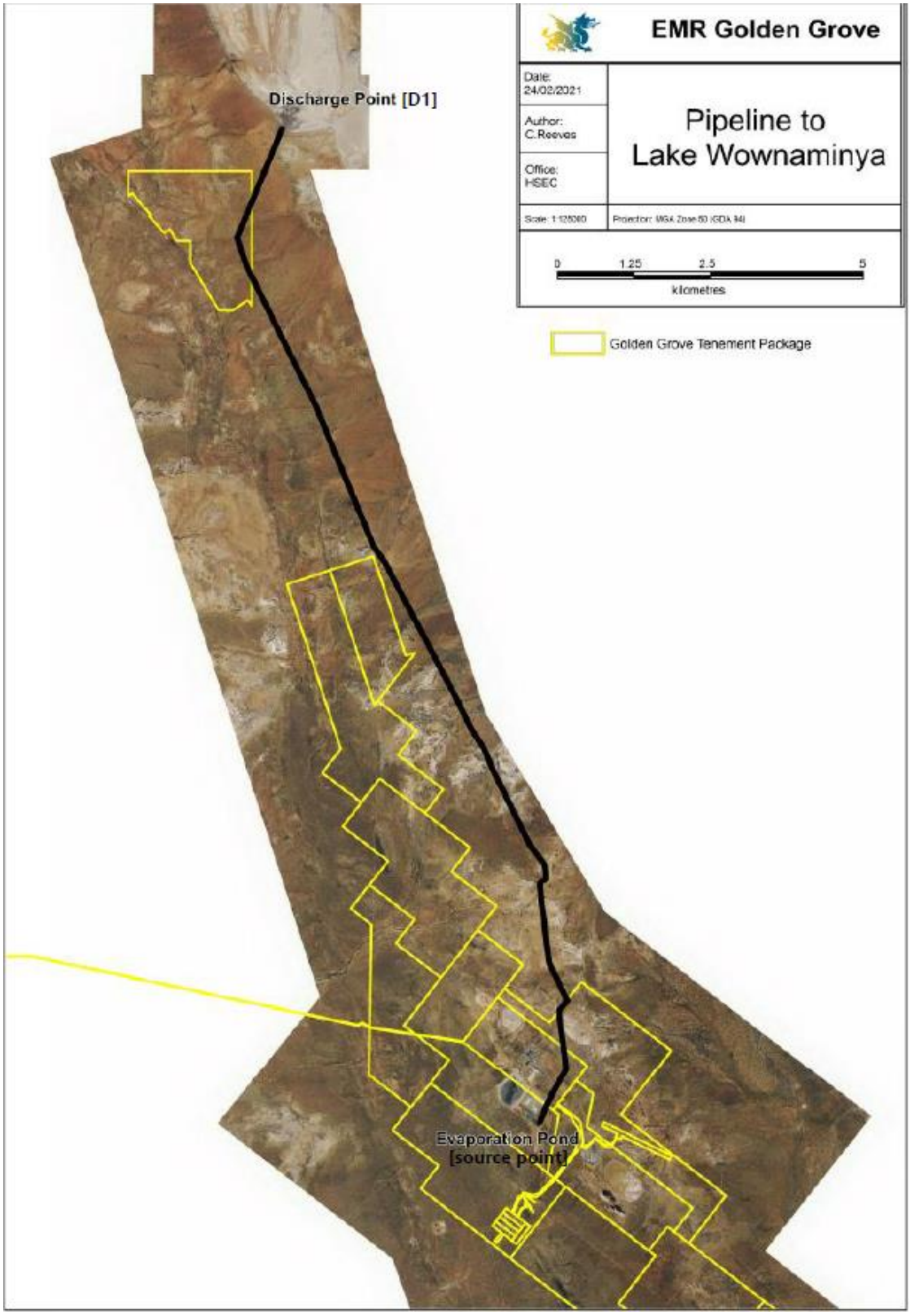


Figure 3 – Emission point to surface water (D1). Monitoring location D1

Figure 4 – Emission point to land (L1). Monitoring location L1

Figure 4A – Emission point to land (L2). Monitoring location L2

Map of ambient groundwater monitoring locations

The locations of the ambient groundwater monitoring points defined in Table 15 are shown below.

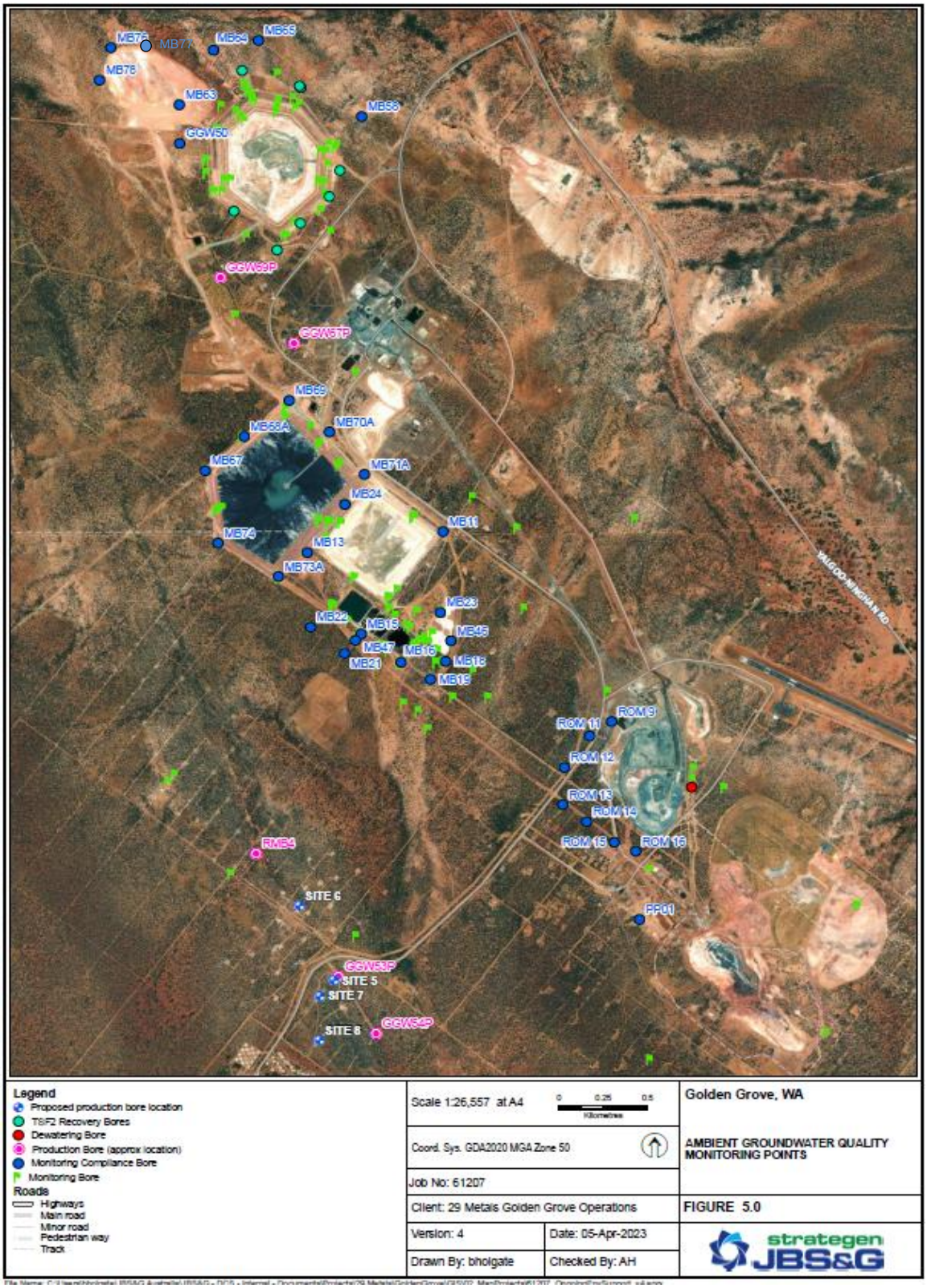


Figure 5 – Ambient groundwater quality monitoring points

Figure 6 - Locations of existing ROM seepage monitoring wells

Figure 7 - Locations of proposed ROM monitoring bores

Figure 8 – Ambient groundwater quality monitoring point – paste plant facility and associated infrastructure

Map of containment infrastructure locations

The location of the containment infrastructure areas defined in Table 6 are shown below.

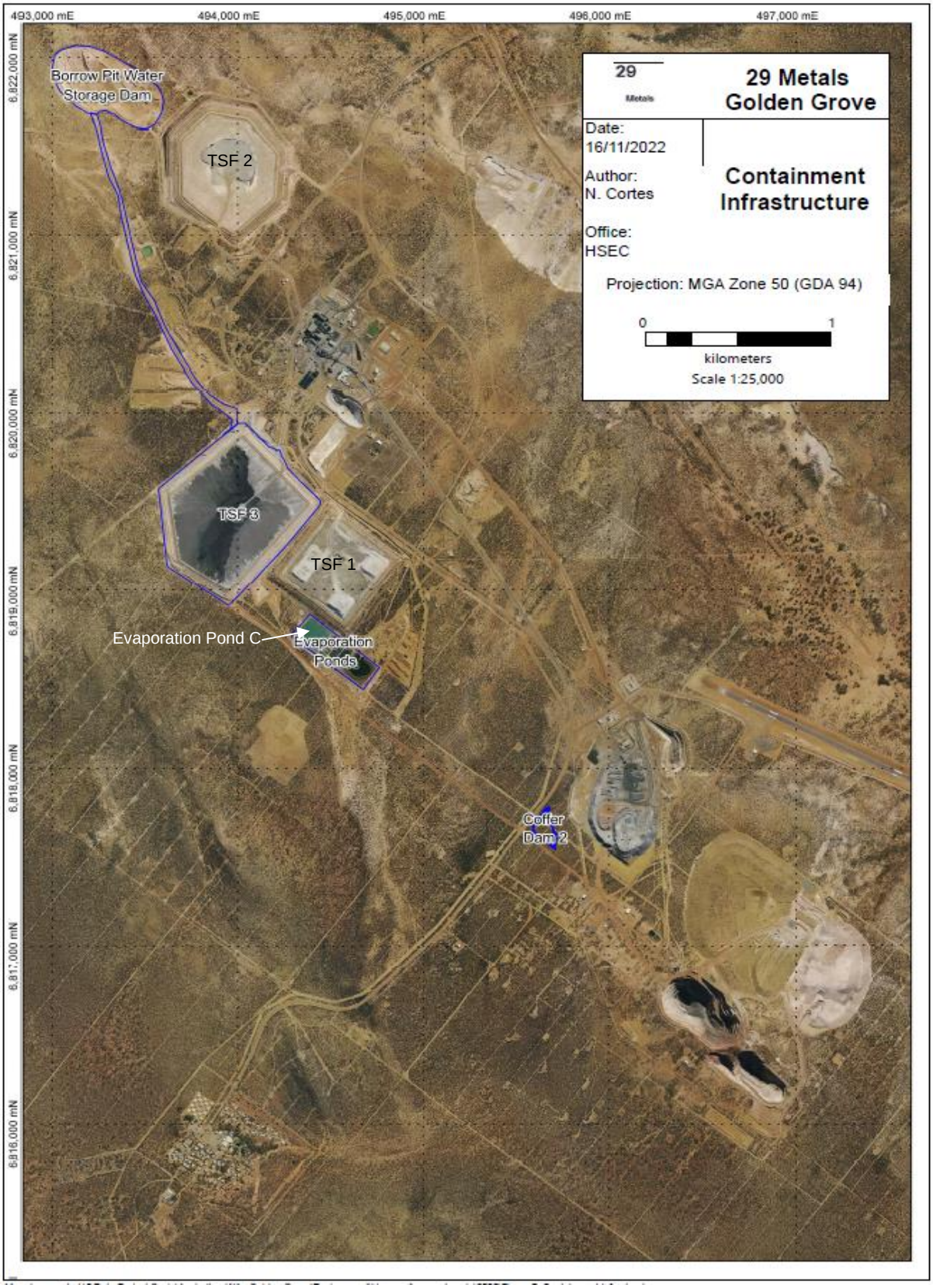


Figure 9 – Containment infrastructure

Figure 10 – Containment infrastructure – concrete sump (CW1)

Landfill area maps

The location of the landfill areas referred to in Table 4 are shown below.

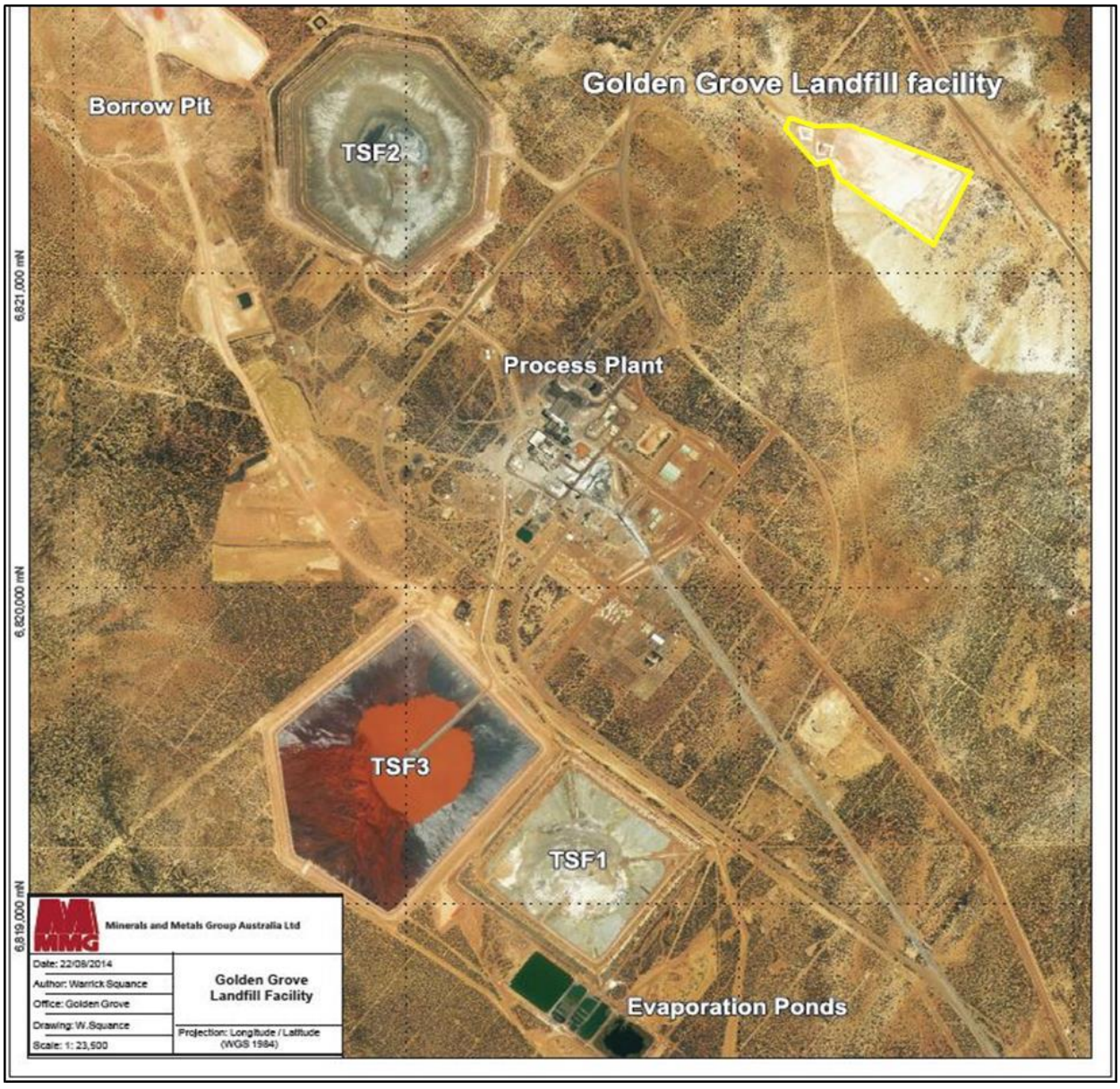


Figure 11– Landfill area map

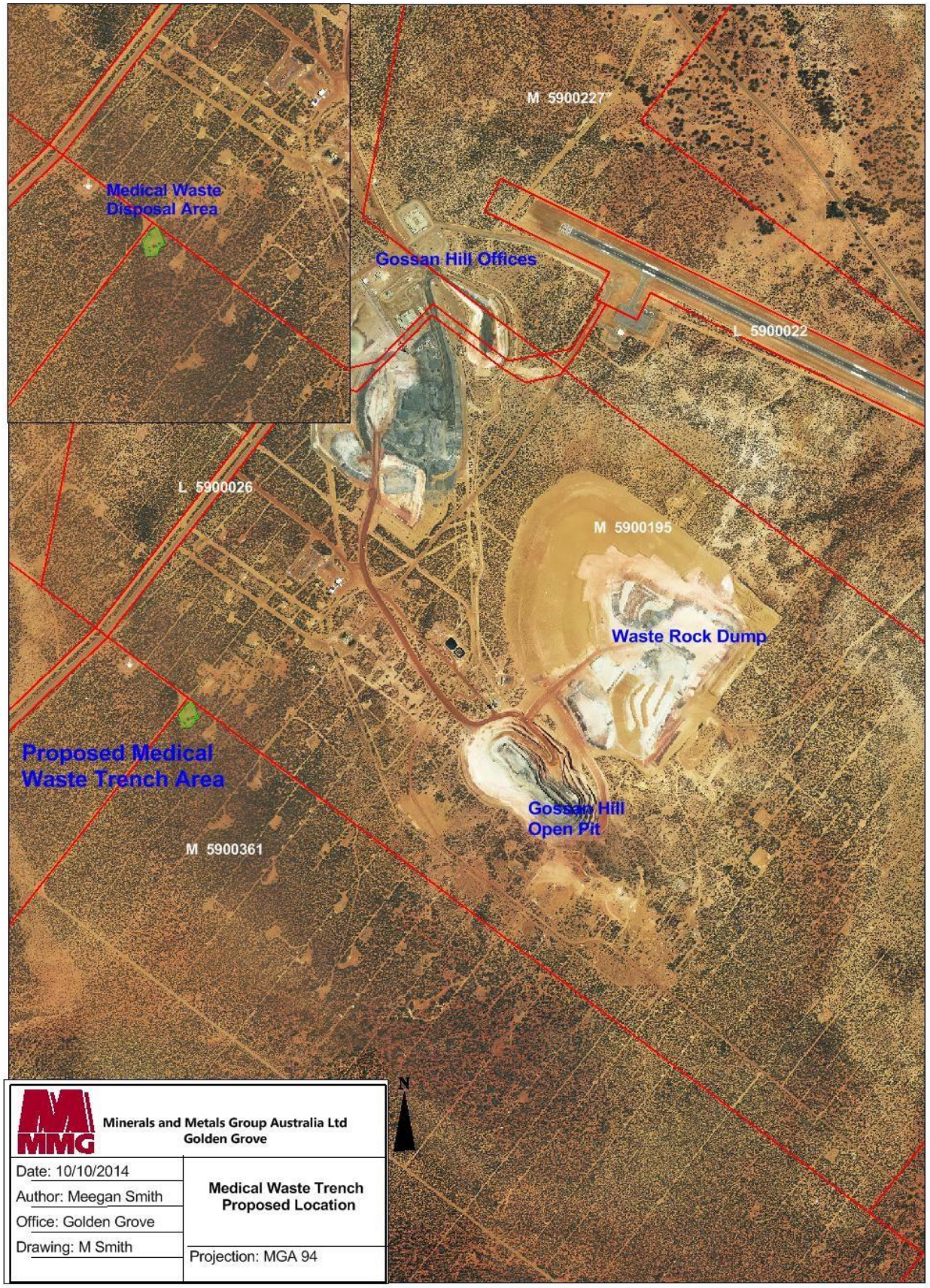


Figure 12 – Medical waste trench location

Pipeline arrangements

Pipeline arrangements are shown below.

Figure 13 – TSF1 new pipeline corridor

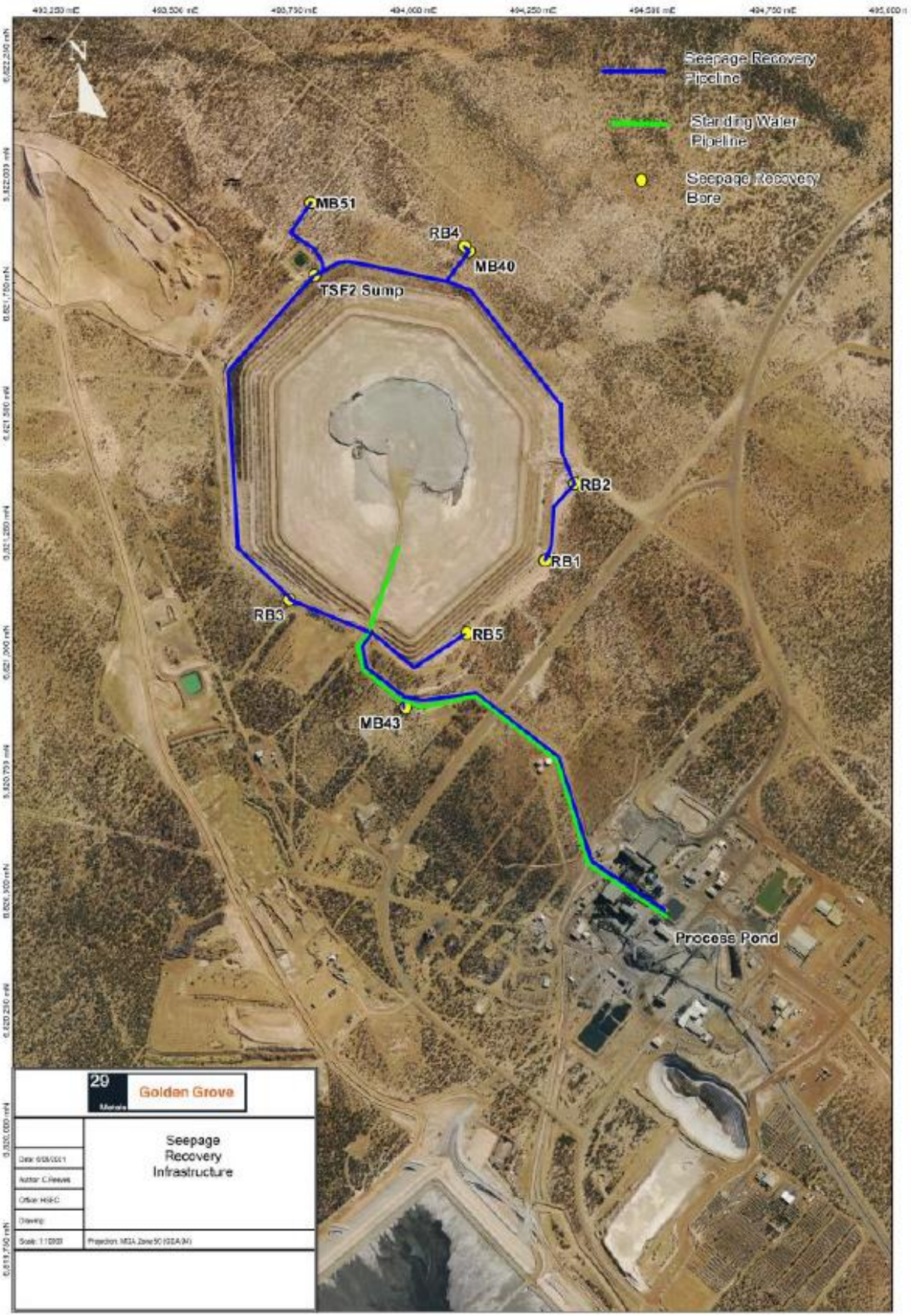


Figure 14 – Existing TSF2 seepage recovery infrastructure

Paste plant facility and associated infrastructure map

The location of the paste plant and associated infrastructure (including the reclaimed tailings storage pad and storage pond) are shown in the map below (Figure).

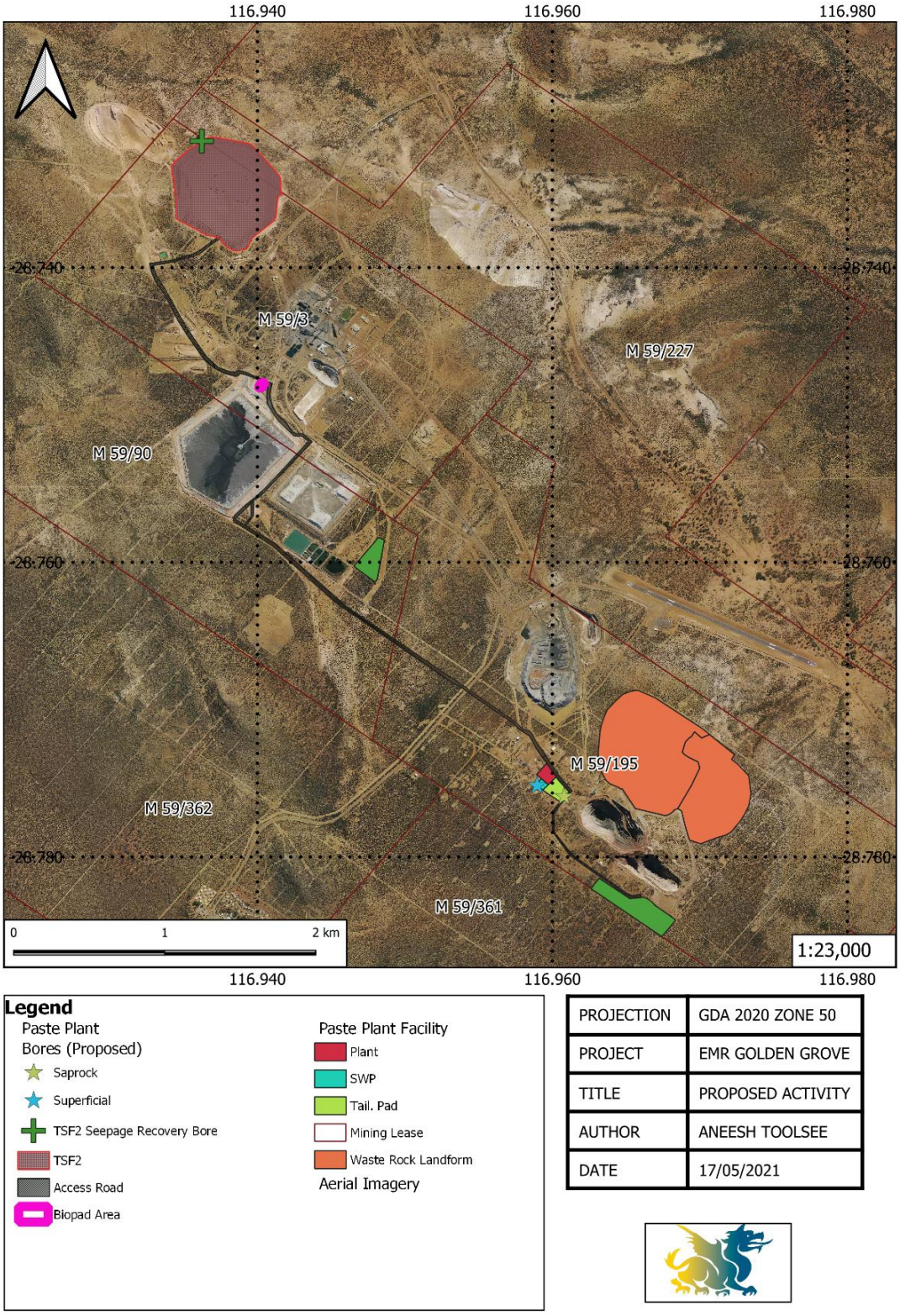


Figure 15 – Paste plant facility and associated infrastructure

Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the licence. They can be requested in an electronic format.

Licence:	L9423/2024/1	Licence Holder:	Golden Grove Operations Pty Ltd
Form:	WR1	Period:	
Name:	Monitoring of point source emissions to surface water		

Form WR1: Monitoring of point source emissions to surface water

Emission point	Parameter	Limit	Result	Sample date & times
D1	Volumetric flow rate	Not specified		
	pH[1]	≥ 6.0 ≤ 9.0		
	Electrical Conductivity	N/A		
	Total aluminium	N/A		
	Arsenic	<0.5 mg/L		
	Cadmium	<0.01 mg/L		
	Chromium (Total)	<1.0 mg/L		
	Chromium III	N/A		
	Chromium VI	N/A		
	Copper	<0.4 mg/L		
	Total iron	N/A		
	Lead	<0.1 mg/L		
	Manganese	N/A		
	Mercury	-		

	Nickel	N/A		
	Selenium	<0.02 mg/L		
	Total Nitrogen (as N)	N/A		
	Nitrate (as NO_3)	N/A		
	Total phosphorus (as P)	N/A		
	Sulphate	<3800 mg/L		
	TRH	<15 mg/L		
	Total suspended solids	<100 mg/L		
	Total dissolved solids	N/A		
	Total acidity ($CaCO_3$)	<40 mg/L		
	Zinc	<20 mg/L		

Signed on behalf of Golden Grove Operations Pty Ltd: …….. Date: …….

Licence: L9423/2024/1 Licence Holder: Golden Grove Operations Pty Ltd

Form: LR1 Period:

Name: Monitoring of emissions to land

Form LR1: Monitoring of emissions to land					
Emission point	**Parameter**	**Result[1]**	**Averaging period**	**Method**	**Sample date & times**
L1	Volumetric flow rate	m^3/day	-	-	
	pH	mg/L	Spot sample	AS/NZS 5667.10	
	Biochemical oxygen demand	mg/L			
	Total suspended solids	pH units			
	Total nitrogen	mg/L			
	Total phosphorus	mg/L			
	E.coli	cfu/100 mL			

Signed on behalf of Golden Grove Operations Pty Ltd: …….. Date: …….

Licence: L9423/2024/1 Licence Holder: Golden Grove Operations Pty Ltd

Form: LR2 Period:

Name: Monitoring of emissions to land

Form LR2: Monitoring of emissions to land					
Emission point	Parameter	Result[1]	Averaging period	Method	Sample date & times
L2	Volumetric flow rate	m^3/day	-	-	
	pH[1]		Spot sample	AS/NZS 5667.10	
	Electrical Conductivity (EC)				
	Total aluminium				
	Arsenic				
	Cadmium				
	Chromium				
	Copper				
	Total iron				
	Lead				
	Manganese				
	Mercury				

	Nickel				
	Total Nitrogen (as N)				
	Nitrate (as NO_3)				
	Total Phosphorus (as P)				
	Selenium				
	Sulphate				
	TRH				
	Total suspended solids				
	Total dissolved solids				
	Total acidity ($CaCO_3$)				
	Zinc				

Signed on behalf of Golden Grove Operations Pty Ltd: …….. Date: ……..

Licence: L9423/2024/1 Licence Holder: Golden Grove Operations Pty Ltd

Form: GR1 Period:

Name: Monitoring of groundwater

Emission point	Parameter	Limit	Result	Averaging period	Method	Sample date & times
MB11, MB13, MB16 MB18, MB19, MB21 MB22, MB23, MB24 MB46, MB47, GGW50, MB58, MB63, MB64, MB65, MB67,MB68A, MB69, MB70A, MB71A, MB73A, MB74, MB76, MB77 and MB78 PP01	Arsenic	0.5 mg/L			AS/NZX 5667.11	
	Cadmium	0.01 mg/L				
	Chromium	1.0 mg/L				
	Copper	0.4 mg/L				
	Lead	0.1 mg/L				
	Mercury	-				
	Total nitrogen (as N)	-				
	Nitrate (as NO_3)	-				
	pH[1]	≥ 6.0 ≤ 9.0				
	Selenium	0.02 mg/L				
	Sulphate	1000 mg/L				
	Total dissolved solids	5000 mg/L				
	Total acidity ($CaCO_3$)	40 mg/L				
	Zinc	20 mg/L				

Signed on behalf of Golden Grove Operations Pty Ltd: …….. Date: ……..

Department of Water and Environmental Regulation

Licence: L9423/2024/1 Licence Holder: Golden Grove Operations Pty Ltd

Form: GR2 Period:

Name: Monitoring of groundwater

Emission point	Parameter	Limit	Result	Averaging period	Method	Sample date & times
ROM11, ROM12, ROM13, ROM14, ROM15 AND ROM16	Arsenic	0.5 mg/L			AS/NZX 5667.11	
	Cadmium	0.01 mg/L				
	Chromium	1.0 mg/L				
	Copper	0.4 mg/L				
	Lead	0.1 mg/L				
	Mercury	-				
	Total nitrogen (as N)	-				
	Nitrate (as NO_3)	-				
	pH[1]	≥ 6.0 ≤ 9.0				
	Selenium	0.02 mg/L				
	Sulphate	3,000 mg/L				
	Total dissolved solids	5,000 mg/L				
	Total acidity ($CaCO_3$)	40 mg/L				
	Zinc	20 mg/L				

(continued over page)

Emission point	Parameter	Trigger level	Result	Averaging period	Method	Sample date & times
ROM9	Arsenic	0.5 mg/L			AS/NZX 5667.11	
	Cadmium	-				
	Chromium	1.0 mg/L				
	Copper	0.4 mg/L				
	Lead	0.1 mg/L				
	Mercury	-				
	Total nitrogen (as N)	-				
	Nitrate (as NO_3)	-				
	pH[1]	≥ 6.0 ≤ 9.0				
	Selenium	0.02 mg/L				
	Sulphate	3,000 mg/L				
	Total dissolved solids	-				
	Total acidity ($CaCO_3$)	40 mg/L				
	Zinc	20 mg/L				

Signed on behalf of Golden Grove Operations Pty Ltd: …….. Date: …….

Government of Western Australia
Department of Water and Environmental Regulation

Licence:	Licence holder:
Form: N1	Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence number	
Name of operator	
Location of premises	
Time and date of the detection	

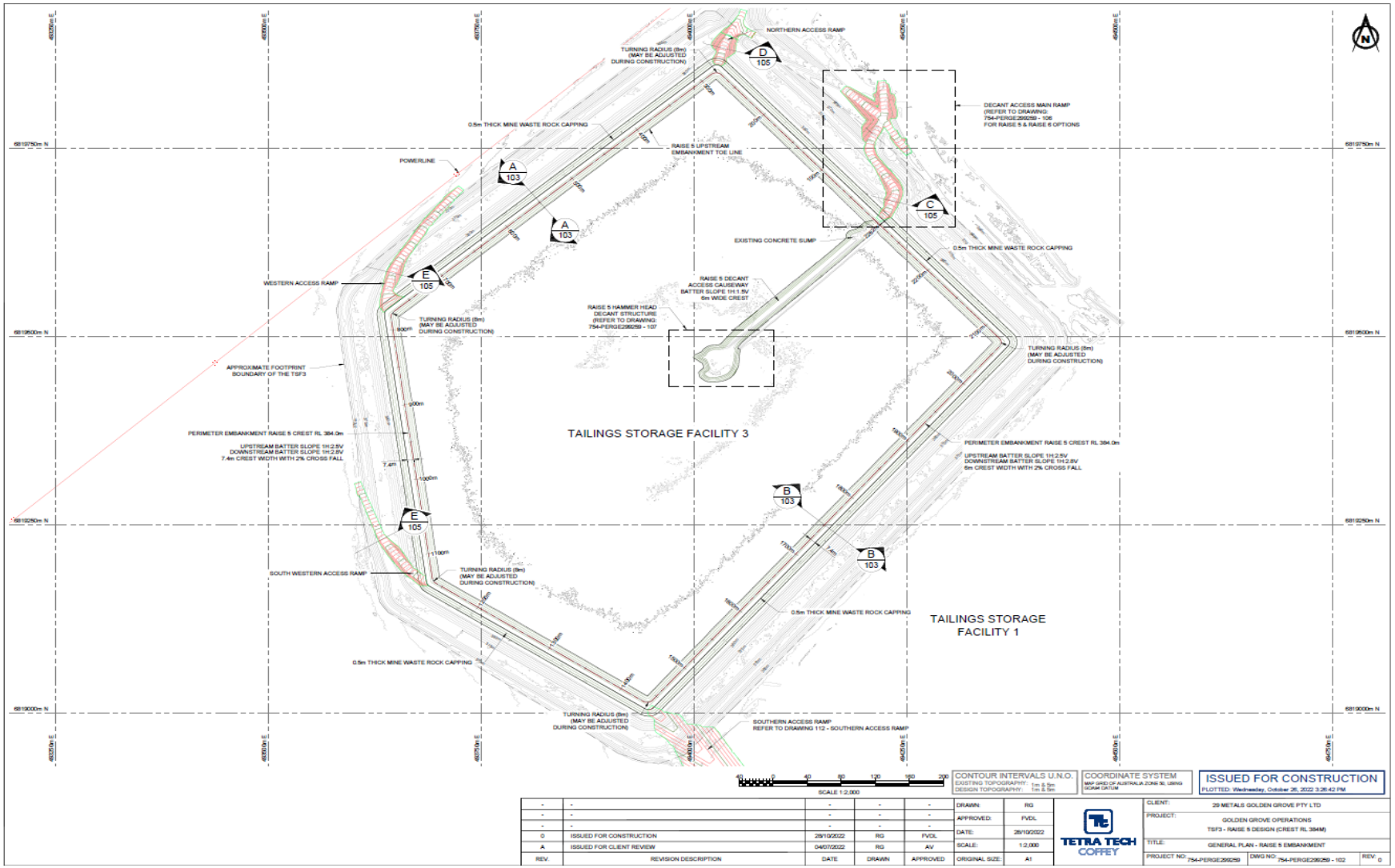
Notification requirements for the breach of a limit	
Emission point reference/source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

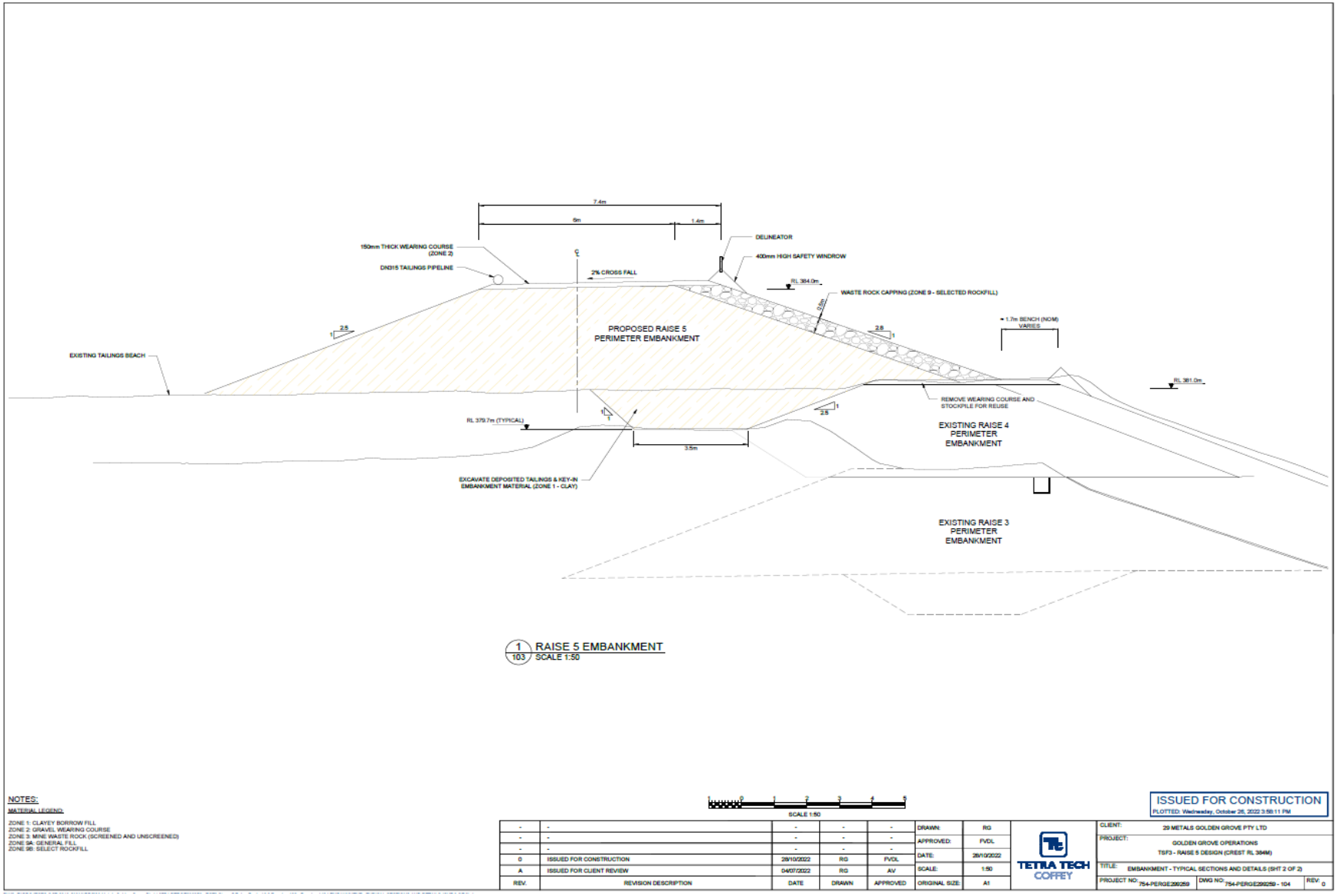
Part B

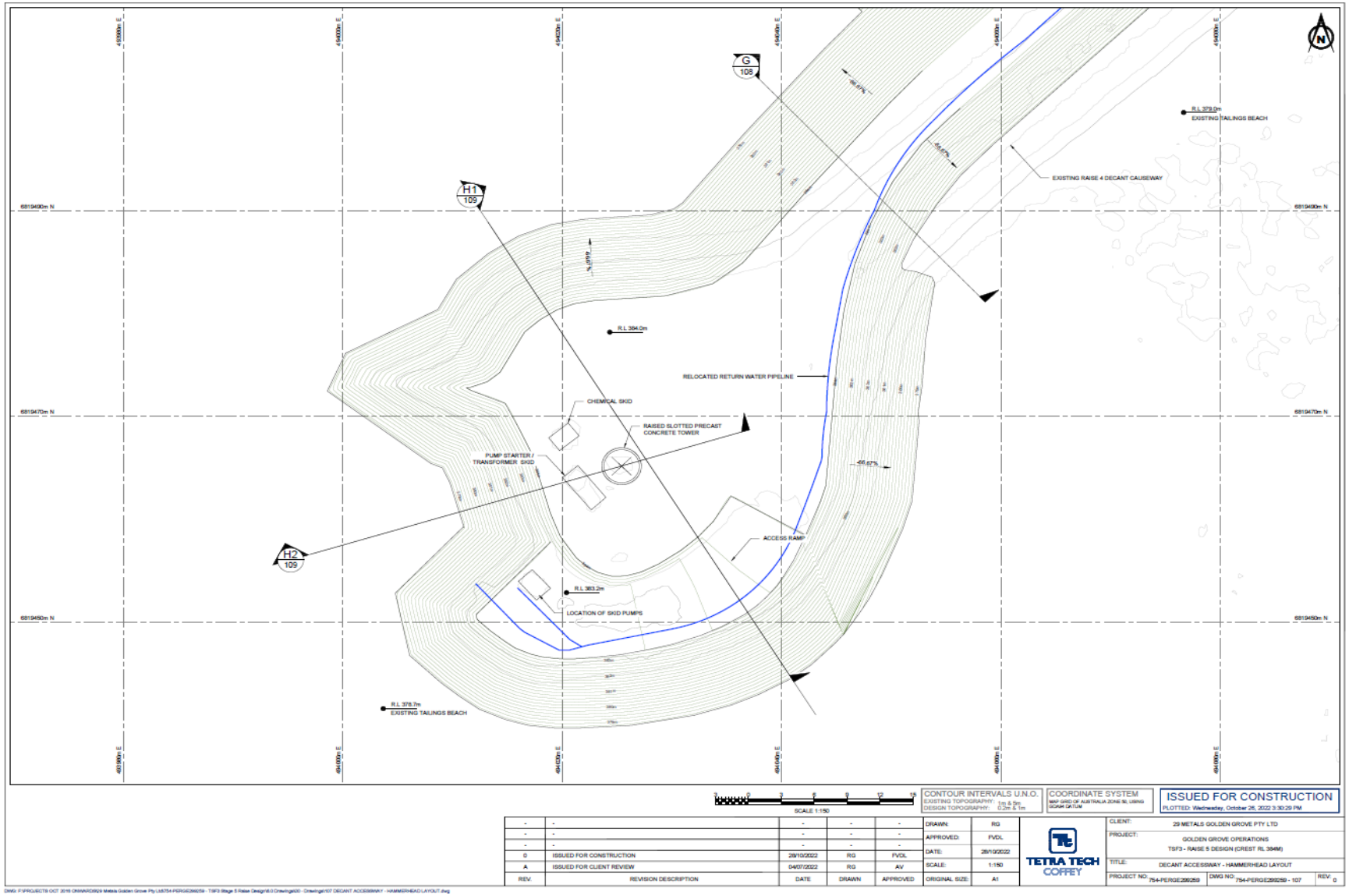
Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of licence holder	
Date	

Schedule 3: TSF3 Raise 5 design upgrade drawings and specifications




7.4m
6m
1.4m
DELINEATOR
150mm THICK WEARING COURSE (ZONE 2)
400mm HIGH SAFETY WINDROW
DN315 TAILINGS PIPELINE
2% CROSS FALL
RL 384.0m
WASTE ROCK CAPPING (ZONE 9 - SELECTED ROCKFILL)
2.5
PROPOSED RAISE 5 PERIMETER EMBANKMENT
2.5
1.7m BENCH (NOM) VARIES
EXISTING TAILINGS BEACH
RL 381.0m
REMOVE WEARING COURSE AND STOCKPILE FOR REUSE
RL 379.7m (TYPICAL)
2.5
EXISTING RAISE 4 PERIMETER EMBANKMENT
3.5m
EXCAVATE DEPOSITED TAILINGS & KEY-IN EMBANKMENT MATERIAL (ZONE 1 - CLAY)
EXISTING RAISE 3 PERIMETER EMBANKMENT
1/103 RAISE 5 EMBANKMENT
SCALE 1:50
NOTES:
MATERIAL LEGEND:
ZONE 1: CLAYEY BORROW FILL
ZONE 2: GRAVEL WEARING COURSE
ZONE 3: MINE WASTE ROCK (SCREENED AND UNSCREENED)
ZONE 9A: GENERAL FILL
ZONE 9B: SELECT ROCKFILL
SCALE 1:50
ISSUED FOR CONSTRUCTION
PLOTTED: Wednesday, October 26, 2022 3:58:11 PM
REV. REVISION DESCRIPTION DATE DRAWN APPROVED
0 ISSUED FOR CONSTRUCTION 28/10/2022 RG FVDL
A ISSUED FOR CLIENT REVIEW 04/07/2022 RG AV
DRAWN: RG
APPROVED: FVDL
DATE: 28/10/2022
SCALE: 1:50
ORIGINAL SIZE: A1
TETRA TECH COFFEY
CLIENT: 29 METALS GOLDEN GROVE PTY LTD
PROJECT: GOLDEN GROVE OPERATIONS
TSF3 - RAISE 5 DESIGN (CREST RL 384M)
TITLE: EMBANKMENT - TYPICAL SECTIONS AND DETAILS (SHT 2 OF 2)
PROJECT NO: 754-PERGE290259
DWG NO: 754-PERGE290259 - 104
REV: 0


G
108
H1
109
H2
109
R.L 379.0m
EXISTING TAILINGS BEACH
EXISTING RAISE 4 DECANT CAUSEWAY
R.L 384.0m
RELOCATED RETURN WATER PIPELINE
CHEMICAL SKID
RAISED SLOTTED PRECAST CONCRETE TOWER
PUMP STARTER / TRANSFORMER SKID
ACCESS RAMP
R.L 383.2m
LOCATION OF SKID PUMPS
R.L 378.7m
EXISTING TAILINGS BEACH
6819490m N
6819470m N
6819450m N
SCALE 1:150
CONTOUR INTERVALS U.N.O.
EXISTING TOPOGRAPHY: 1m & 5m
DESIGN TOPOGRAPHY: 0.2m & 1m
COORDINATE SYSTEM
MAP GRID OF AUSTRALIA ZONE 50, USING GDA94 DATUM
ISSUED FOR CONSTRUCTION
PLOTTED: Wednesday, October 26, 2022 3:30:29 PM
REV. REVISION DESCRIPTION DATE DRAWN APPROVED
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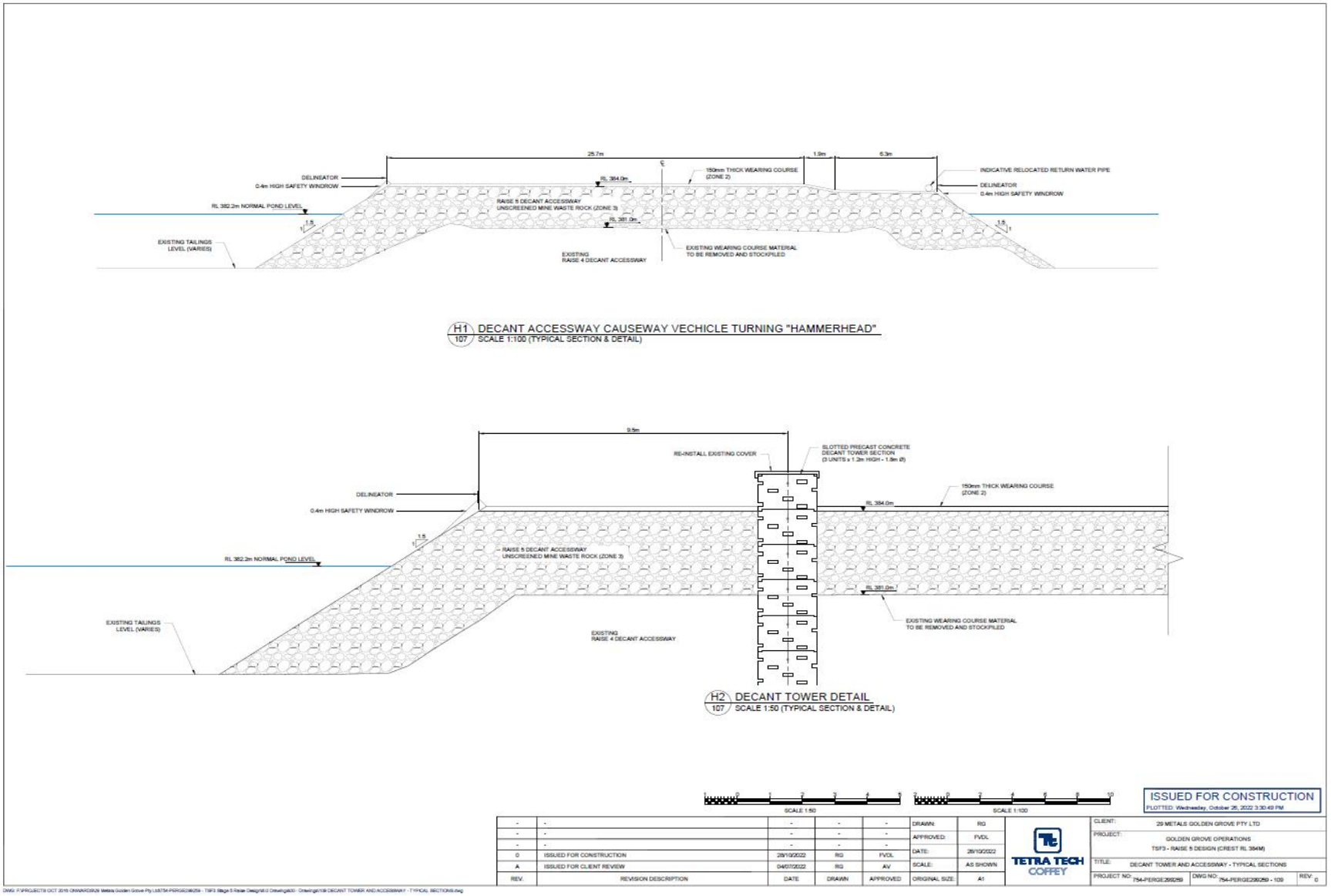
A ISSUED FOR CLIENT REVIEW 04/07/2022 RG AV
DRAWN: RG
APPROVED: FVDL
DATE: 26/10/2022
SCALE: 1:150
ORIGINAL SIZE: A1
TETRA TECH COFFEY
CLIENT: 29 METALS GOLDEN GROVE PTY LTD
PROJECT: GOLDEN GROVE OPERATIONS
TSF3 - RAISE 5 DESIGN (CREST RL 384M)
TITLE: DECANT ACCESSWAY - HAMMERHEAD LAYOUT
PROJECT NO: 754-PERGE266259
DWG NO: 754-PERGE266259 - 107
REV: 0


25.7m
1.9m
6.3m
DELINEATOR
0.4m HIGH SAFETY WINDROW
RL 384.0m
150mm THICK WEARING COURSE (ZONE 2)
INDICATIVE RELOCATED RETURN WATER PIPE
DELINEATOR
0.4m HIGH SAFETY WINDROW
RL 382.2m NORMAL POND LEVEL
RAISE 5 DECANT ACCESSWAY UNSCREENED MINE WASTE ROCK (ZONE 3)
RL 381.0m
1.5
1
EXISTING TAILINGS LEVEL (VARIES)
EXISTING RAISE 4 DECANT ACCESSWAY
EXISTING WEARING COURSE MATERIAL TO BE REMOVED AND STOCKPILED
H1 107 DECANT ACCESSWAY CAUSEWAY VECHICLE TURNING "HAMMERHEAD"
SCALE 1:100 (TYPICAL SECTION & DETAIL)
9.9m
RE-INSTALL EXISTING COVER
SLOTTED PRECAST CONCRETE DECANT TOWER SECTION (3 UNITS x 1.2m HIGH - 1.8m Ø)
DELINEATOR
0.4m HIGH SAFETY WINDROW
150mm THICK WEARING COURSE (ZONE 2)
RL 384.0m
RL 382.2m NORMAL POND LEVEL
RAISE 5 DECANT ACCESSWAY UNSCREENED MINE WASTE ROCK (ZONE 3)
RL 381.0m
EXISTING TAILINGS LEVEL (VARIES)
EXISTING RAISE 4 DECANT ACCESSWAY
EXISTING WEARING COURSE MATERIAL TO BE REMOVED AND STOCKPILED
H2 107 DECANT TOWER DETAIL
SCALE 1:50 (TYPICAL SECTION & DETAIL)
SCALE 1:50
SCALE 1:100
ISSUED FOR CONSTRUCTION
PLOTTED: Wednesday, October 26, 2022 3:30:49 PM
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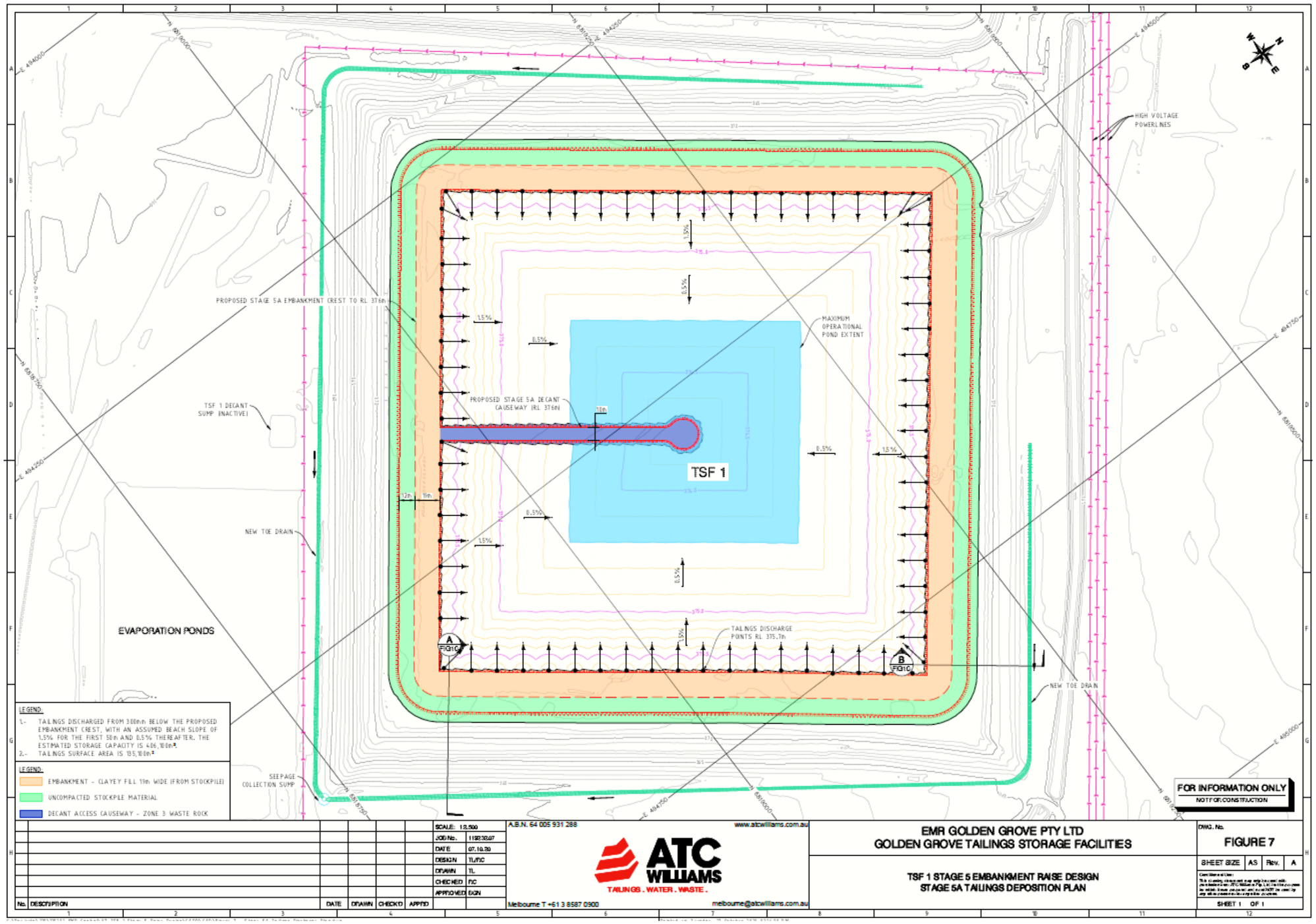
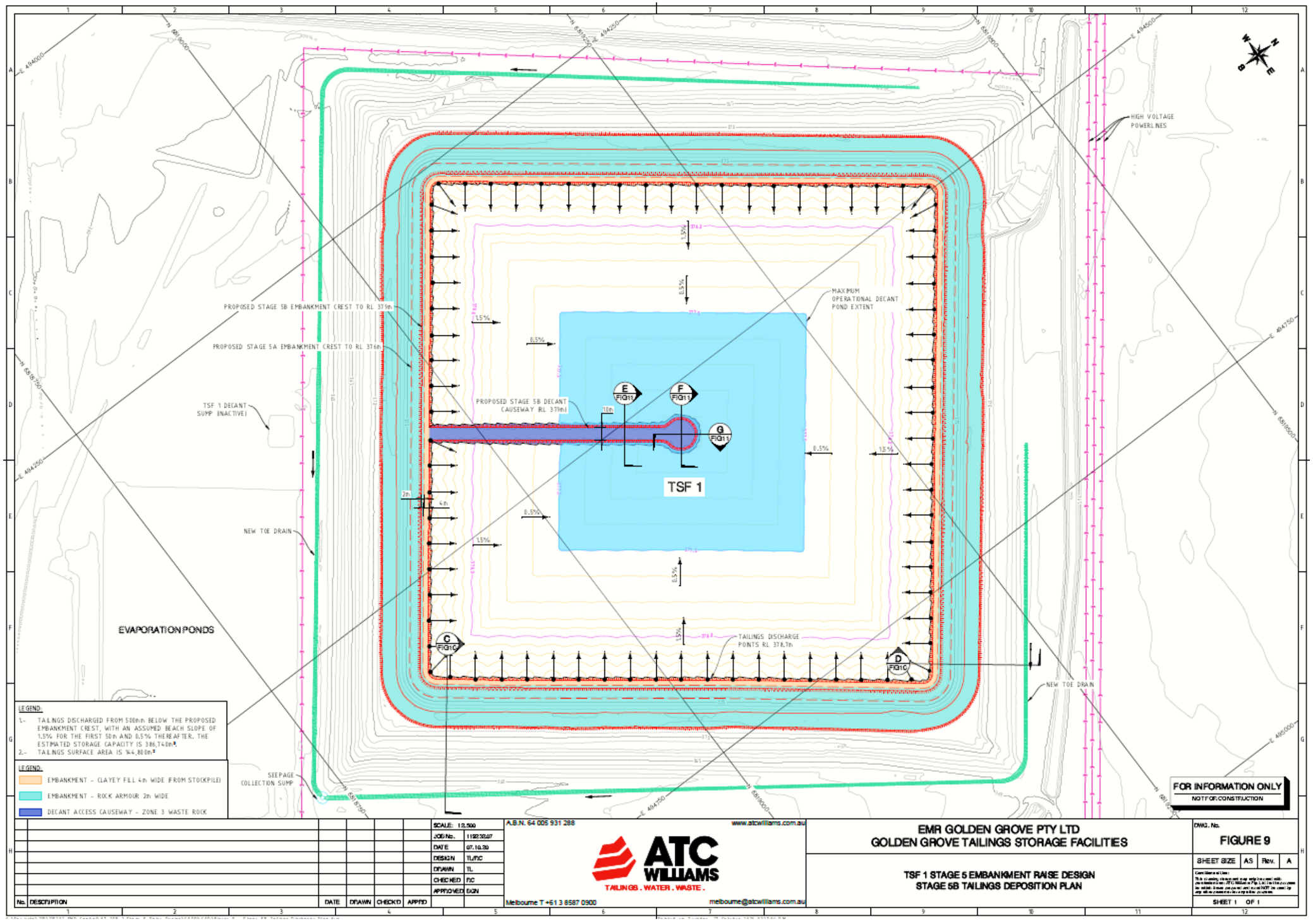
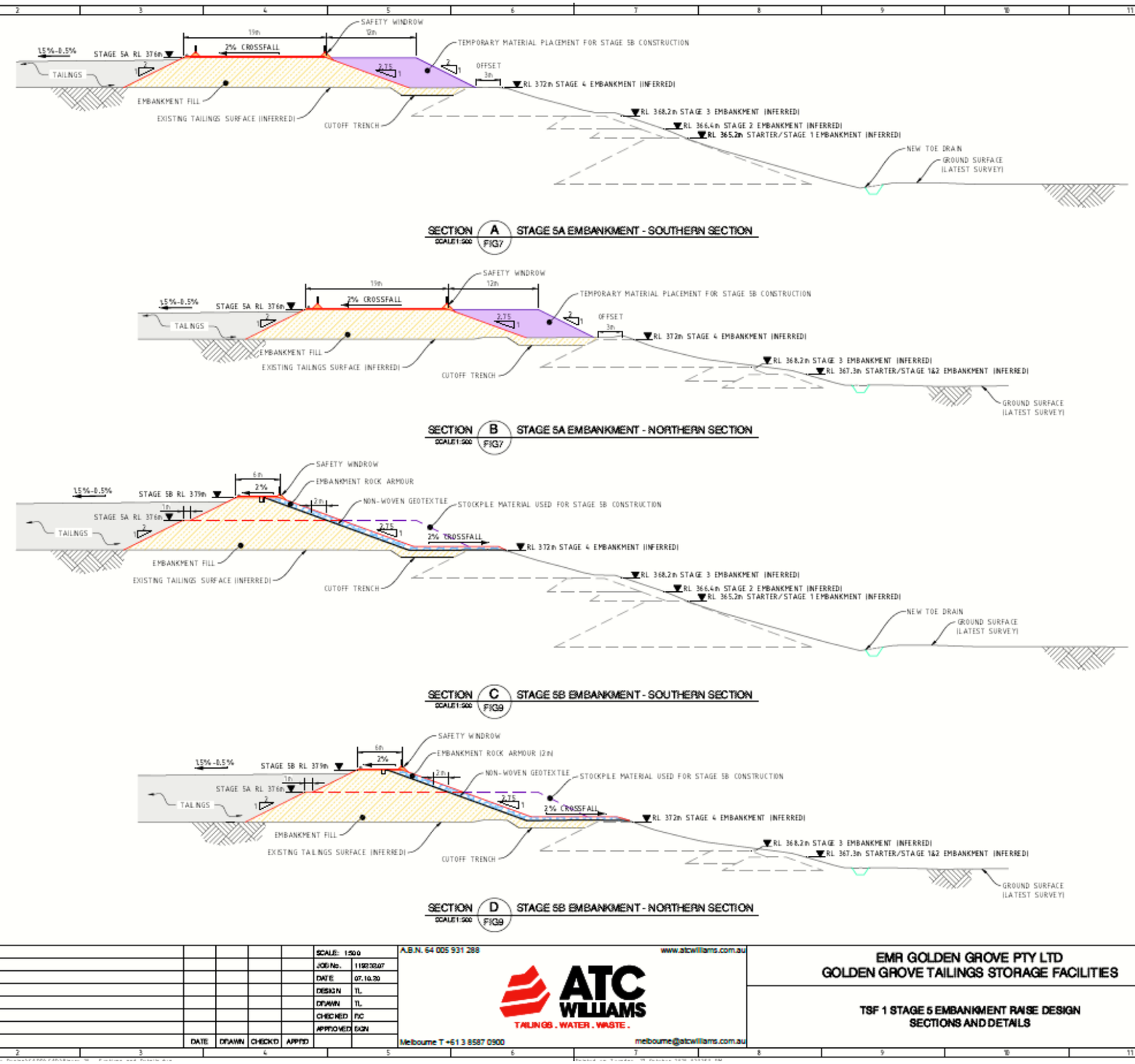
A ISSUED FOR CLIENT REVIEW 04/07/2022 RG AV
DRAWN: RG
APPROVED: FVDL
DATE: 26/10/2022
SCALE: AS SHOWN
ORIGINAL SIZE: A1
TETRA TECH COFFEY
CLIENT: 29 METALS GOLDEN GROVE PTY LTD
PROJECT: GOLDEN GROVE OPERATIONS TSF3 - RAISE 5 DESIGN (CREST RL 384M)
TITLE: DECANT TOWER AND ACCESSWAY - TYPICAL SECTIONS
PROJECT NO: 754-PERGE295259
DWG NO: 754-PERGE295259 - 109
REV: 0

Schedule 4: TSF1 Raise 5 design drawings




PROPOSED STAGE 5B EMBANKMENT CREST TO RL 379m
PROPOSED STAGE 5A EMBANKMENT CREST TO RL 376m
TSF 1 DECANT SUMP (INACTIVE)
PROPOSED STAGE 5B DECANT CAUSEWAY (RL 379m)
MAXIMUM OPERATIONAL DECANT POND EXTENT
HIGH VOLTAGE POWERLINES
TSF 1
TAILINGS DISCHARGE POINTS RL 378.7m
NEW TOE DRAIN
EVAPORATION PONDS
SEEPAGE COLLECTION SUMP
LEGEND:
1.- TAILINGS DISCHARGED FROM 500mm BELOW THE PROPOSED EMBANKMENT CREST, WITH AN ASSUMED BEACH SLOPE OF 1.5% FOR THE FIRST 50m AND 0.5% THEREAFTER. THE ESTIMATED STORAGE CAPACITY IS 386,740m³.
2.- TAILINGS SURFACE AREA IS 344,800m²
LEGEND:
EMBANKMENT - CLAYEY FILL 4m WIDE (FROM STOCKPILE)
EMBANKMENT - ROCK ARMOUR 2m WIDE
DECANT ACCESS CAUSEWAY - ZONE 3 WASTE ROCK
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
SCALE: 1:2,500
JOB No. 119232.07
DATE 07.10.20
DESIGN TL/TC
DRAWN TL
CHECKED TC
APPROVED BGN
No. DESCRIPTION DATE DRAWN CHECKD APPRD
A.B.N. 64 005 931 288
www.atcwilliams.com.au
ATC WILLIAMS
TAILINGS . WATER . WASTE .
Melbourne T +61 3 8587 0500
melbourne@atcwilliams.com.au
EMR GOLDEN GROVE PTY LTD
GOLDEN GROVE TAILINGS STORAGE FACILITIES
TSF 1 STAGE 5 EMBANKMENT RAISE DESIGN
STAGE 5B TAILINGS DEPOSITION PLAN
DWG. No.
FIGURE 9
SHEET SIZE A3 Rev. A
SHEET 1 OF 1


SECTION A STAGE 5A EMBANKMENT - SOUTHERN SECTION
SCALE 1:500
FIG7
SAFETY WINDROW
12m
19m
2% CROSSFALL
TEMPORARY MATERIAL PLACEMENT FOR STAGE 5B CONSTRUCTION
1.5%-8.5%
STAGE 5A RL 376m
TAILINGS
2.75
OFFSET
3m
EMBANKMENT FILL
EXISTING TAILINGS SURFACE (INFERRED)
CUTOFF TRENCH
RL 372m STAGE 4 EMBANKMENT (INFERRED)
RL 368.2m STAGE 3 EMBANKMENT (INFERRED)
RL 366.4m STAGE 2 EMBANKMENT (INFERRED)
RL 365.2m STARTER/STAGE 1 EMBANKMENT (INFERRED)
NEW TOE DRAIN
GROUND SURFACE (LATEST SURVEY)
SECTION B STAGE 5A EMBANKMENT - NORTHERN SECTION
SCALE 1:500
FIG7
SAFETY WINDROW
12m
19m
2% CROSSFALL
TEMPORARY MATERIAL PLACEMENT FOR STAGE 5B CONSTRUCTION
1.5%-8.5%
STAGE 5A RL 376m
TAILINGS
2.75
OFFSET
3m
EMBANKMENT FILL
EXISTING TAILINGS SURFACE (INFERRED)
CUTOFF TRENCH
RL 372m STAGE 4 EMBANKMENT (INFERRED)
RL 368.2m STAGE 3 EMBANKMENT (INFERRED)
RL 367.3m STARTER/STAGE 1&2 EMBANKMENT (INFERRED)
GROUND SURFACE (LATEST SURVEY)
SECTION C STAGE 5B EMBANKMENT - SOUTHERN SECTION
SCALE 1:500
FIG9
SAFETY WINDROW
EMBANKMENT ROCK ARMOUR
6m
2%
1.5%-8.5%
STAGE 5B RL 379m
1m
STAGE 5A RL 376m
TAILINGS
2m
NON-WOVEN GEOTEXTILE
STOCKPILE MATERIAL USED FOR STAGE 5B CONSTRUCTION
2.75
2% CROSSFALL
EMBANKMENT FILL
EXISTING TAILINGS SURFACE (INFERRED)
CUTOFF TRENCH
RL 372m STAGE 4 EMBANKMENT (INFERRED)
RL 368.2m STAGE 3 EMBANKMENT (INFERRED)
RL 366.4m STAGE 2 EMBANKMENT (INFERRED)
RL 365.2m STARTER/STAGE 1 EMBANKMENT (INFERRED)
NEW TOE DRAIN
GROUND SURFACE (LATEST SURVEY)
SECTION D STAGE 5B EMBANKMENT - NORTHERN SECTION
SCALE 1:500
FIG9
SAFETY WINDROW
EMBANKMENT ROCK ARMOUR 12m
6m
2%
1.5%-8.5%
STAGE 5B RL 379m
1m
STAGE 5A RL 376m
TAILINGS
2m
NON-WOVEN GEOTEXTILE
STOCKPILE MATERIAL USED FOR STAGE 5B CONSTRUCTION
2.75
2% CROSSFALL
EMBANKMENT FILL
EXISTING TAILINGS SURFACE (INFERRED)
CUTOFF TRENCH
RL 372m STAGE 4 EMBANKMENT (INFERRED)
RL 368.2m STAGE 3 EMBANKMENT (INFERRED)
RL 367.3m STARTER/STAGE 1&2 EMBANKMENT (INFERRED)
GROUND SURFACE (LATEST SURVEY)
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
SCALE: 1:500
JOB No. 119839.07
DATE 07.10.20
DESIGN TL
DRAWN TL
CHECKED FJC
APPROVED EGN
No. DESCRIPTION DATE DRAWN CHECKED APPRD
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melbourne@atcwilliams.com.au
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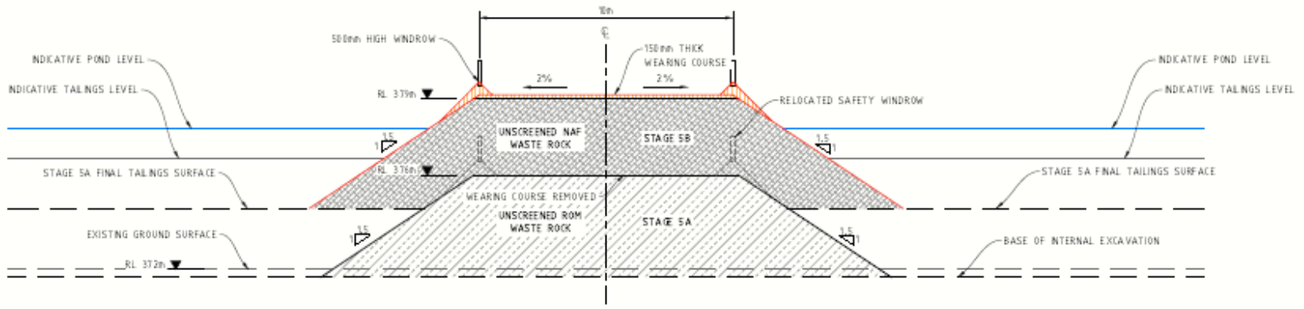
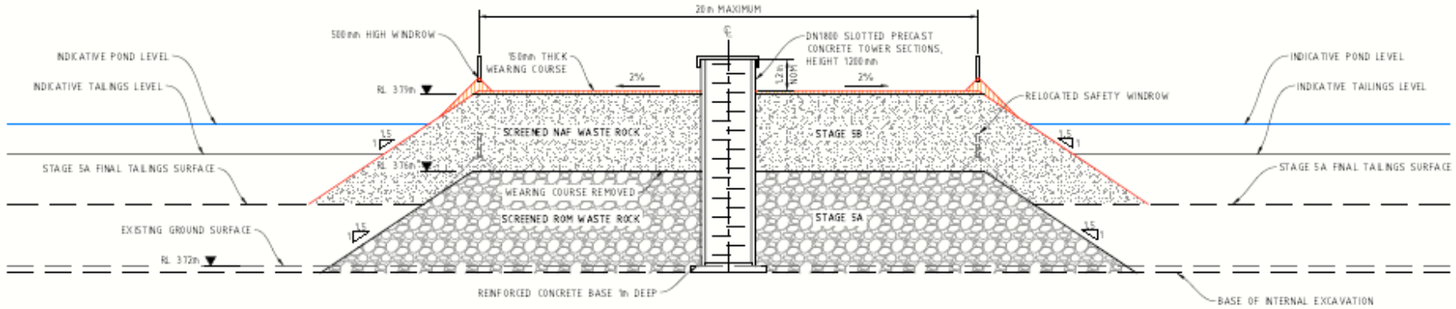
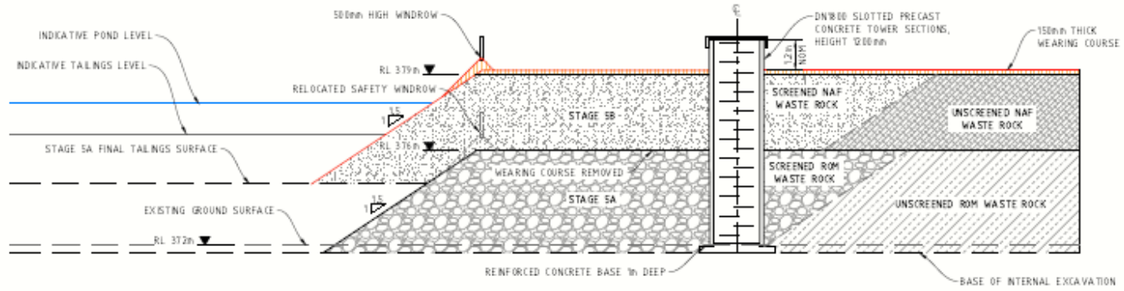
GOLDEN GROVE TAILINGS STORAGE FACILITIES
TSF 1 STAGE 5 EMBANKMENT RAISE DESIGN
SECTIONS AND DETAILS
DWG. No.
FIGURE 10
SHEET SIZE A3 Rev. A
SHEET 1 OF 1



SECTION E DECANT ACCESS CAUSEWAY
SCALE 1:200 FIG9



SECTION F DECANT TOWER DETAILS
SCALE 1:200 FIG9



SECTION G DECANT ACCESS CAUSEWAY VEHICLE TURNING "HAMMERHEAD"
SCALE 1:200 FIG9

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NOT FOR CONSTRUCTION

No.	DESCRIPTION	DATE	DRAWN	CHECKED	APPTD

SCALE: 1:200
JOB No.: 115232.07
DATE: 07.10.20
DESIGN: TL
DRAWN: TL
CHECKED: FJC
APPROVED: SJN

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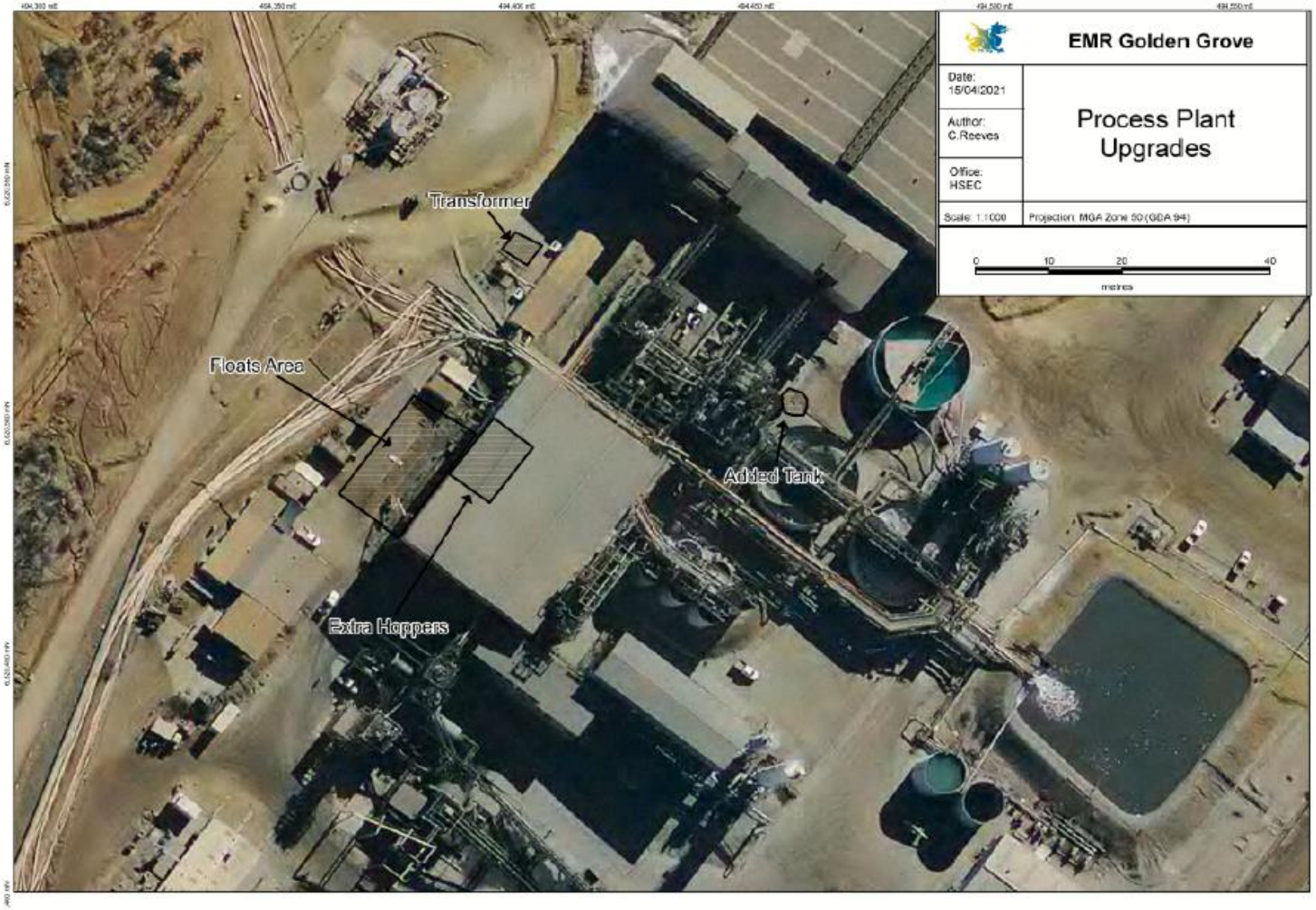
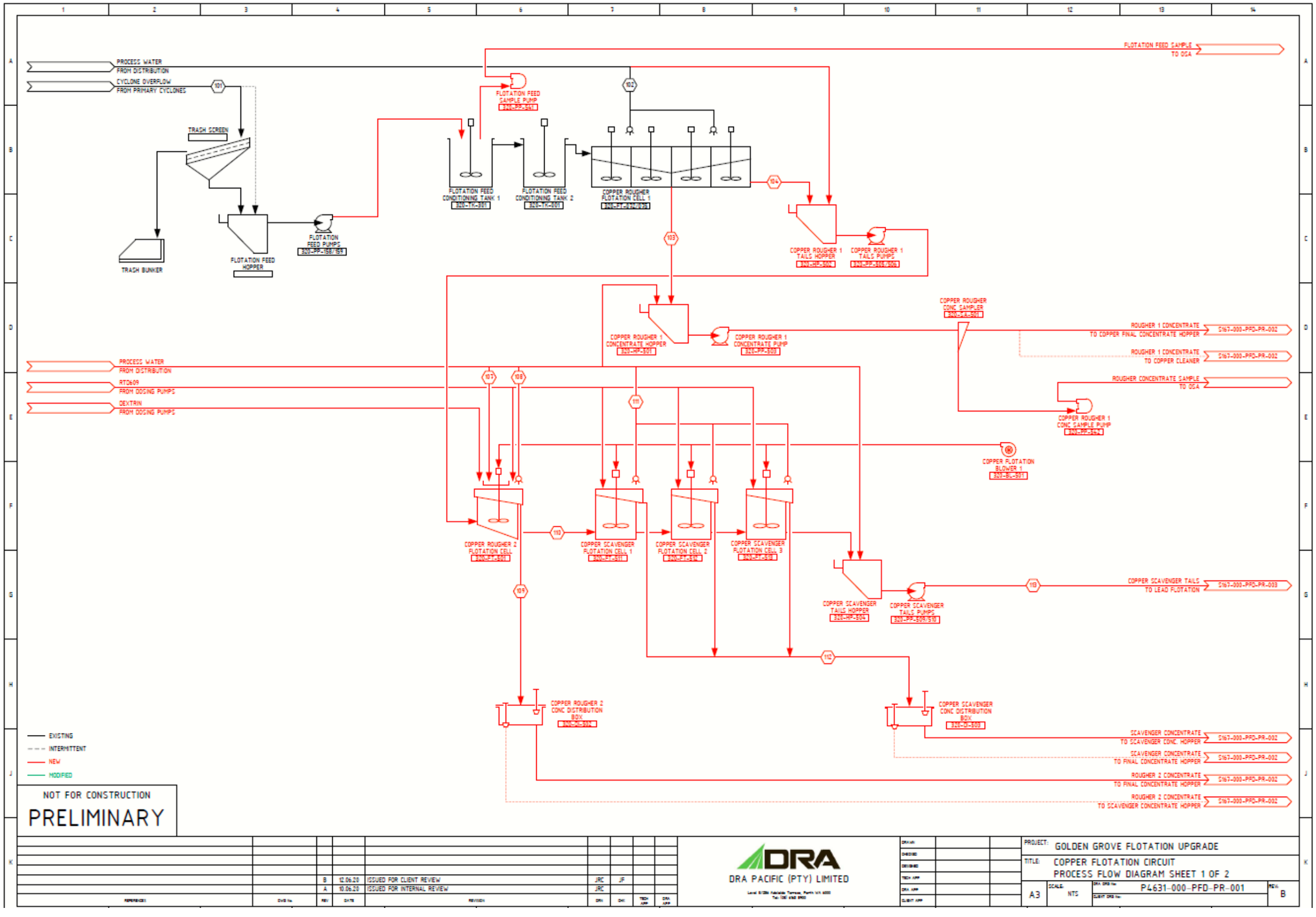
EMR GOLDEN GROVE PTY LTD
GOLDEN GROVE TAILINGS STORAGE FACILITIES

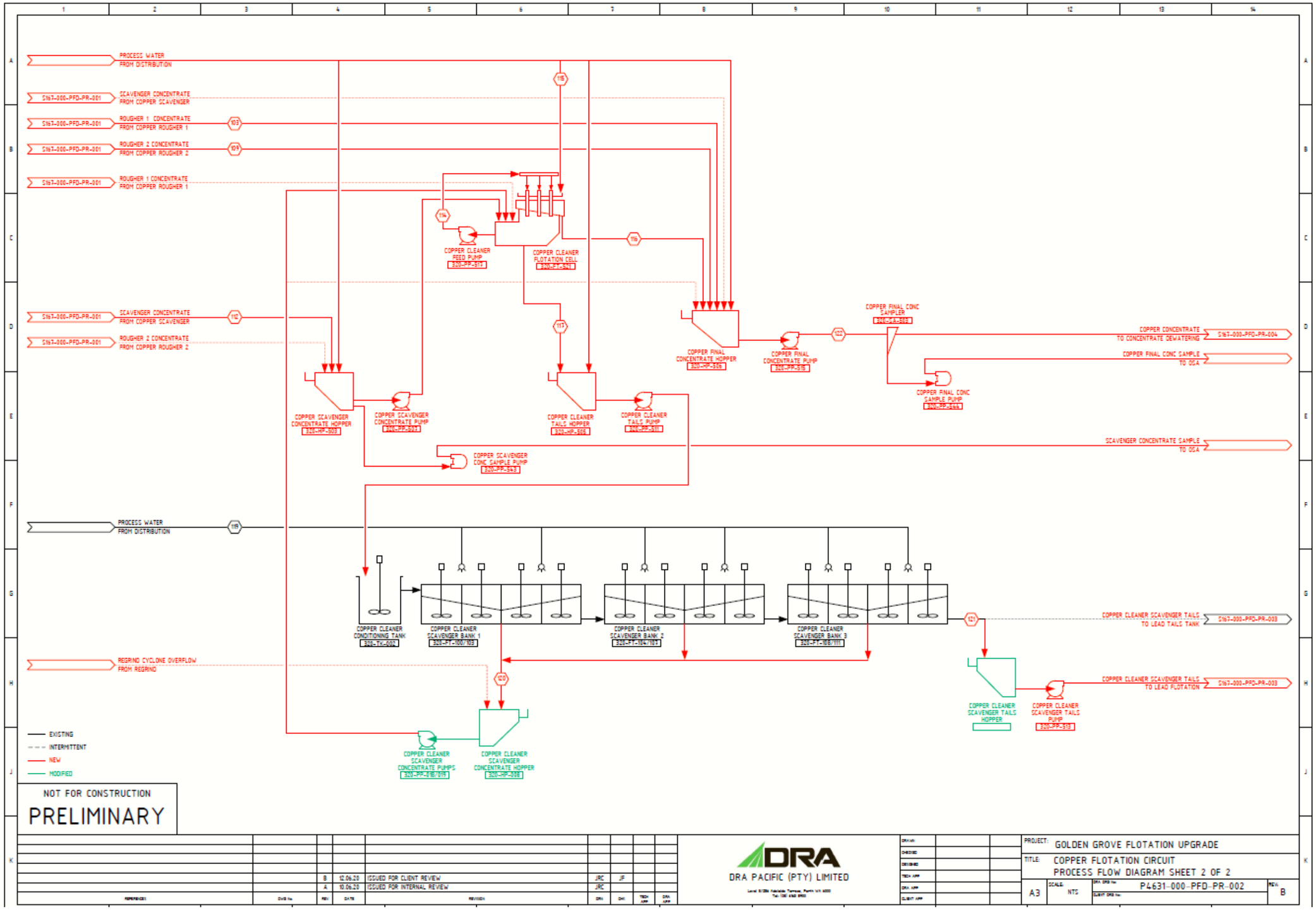
TSF 1 STAGE 5 EMBANKMENT RAISE DESIGN
DECANT SECTIONS AND DETAILS

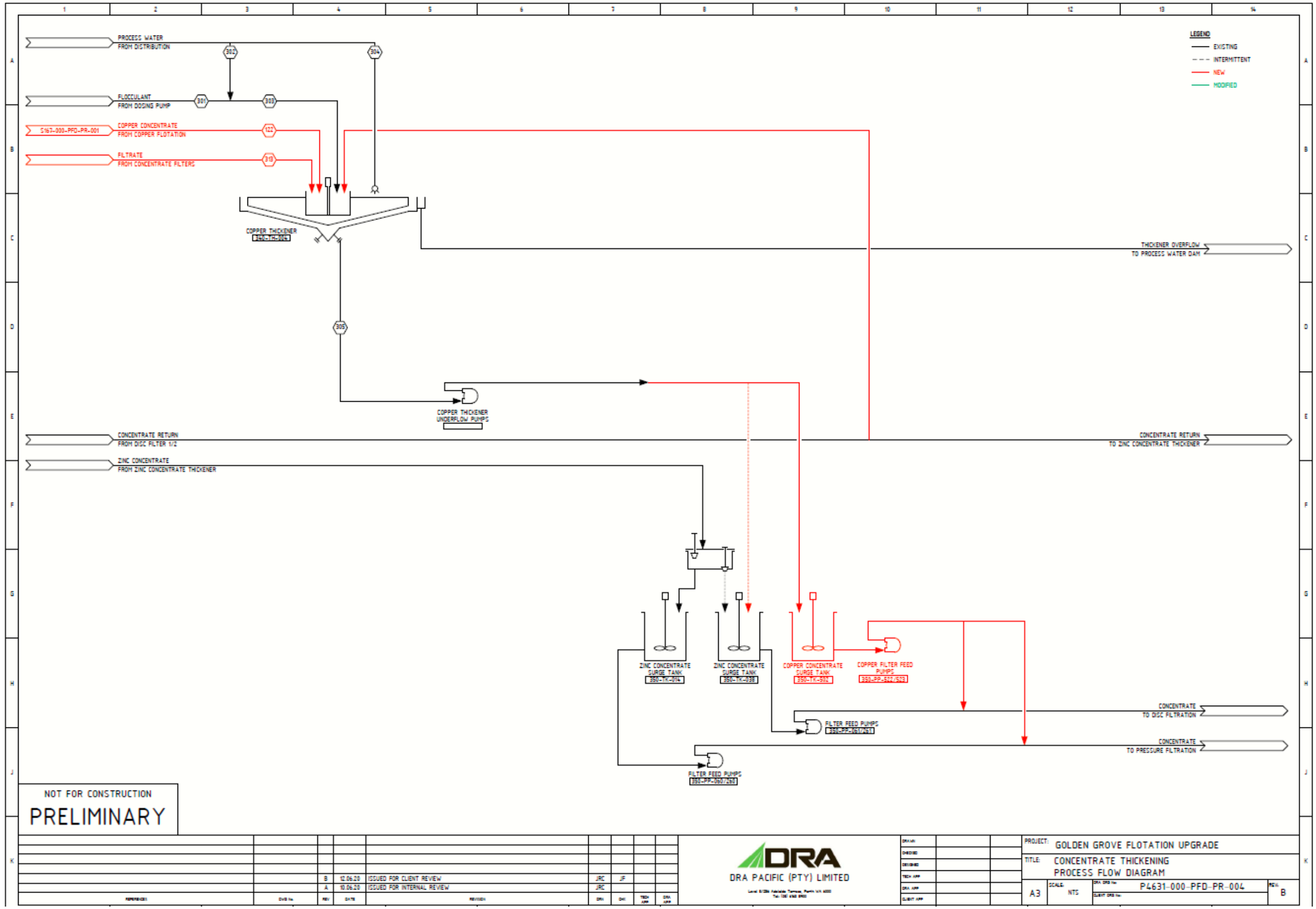
DWG. No. FIGURE 11
SHEET SIZE A3 Rev. A
SHEET 1 OF 1

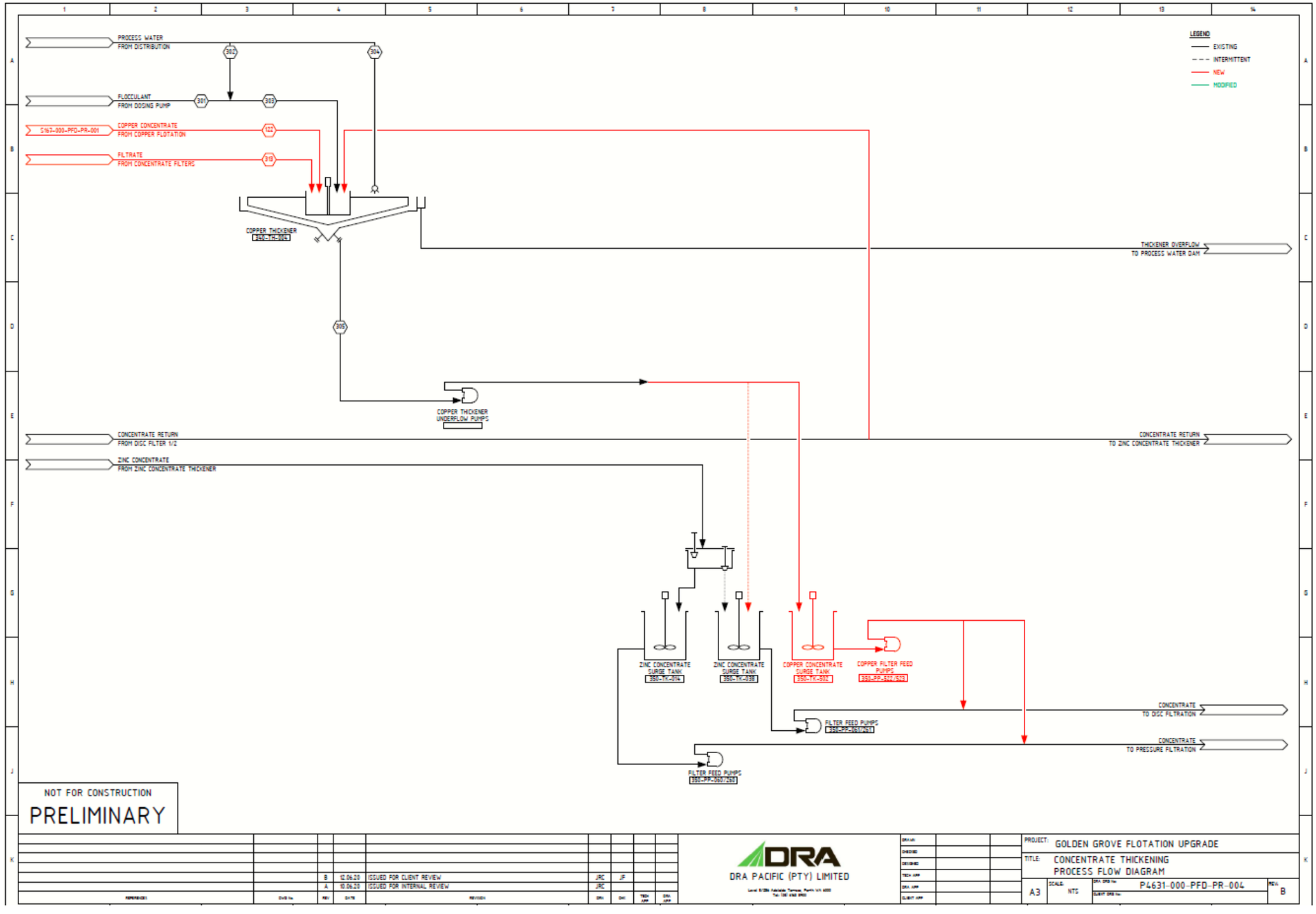
Schedule 5: Process plant design drawings



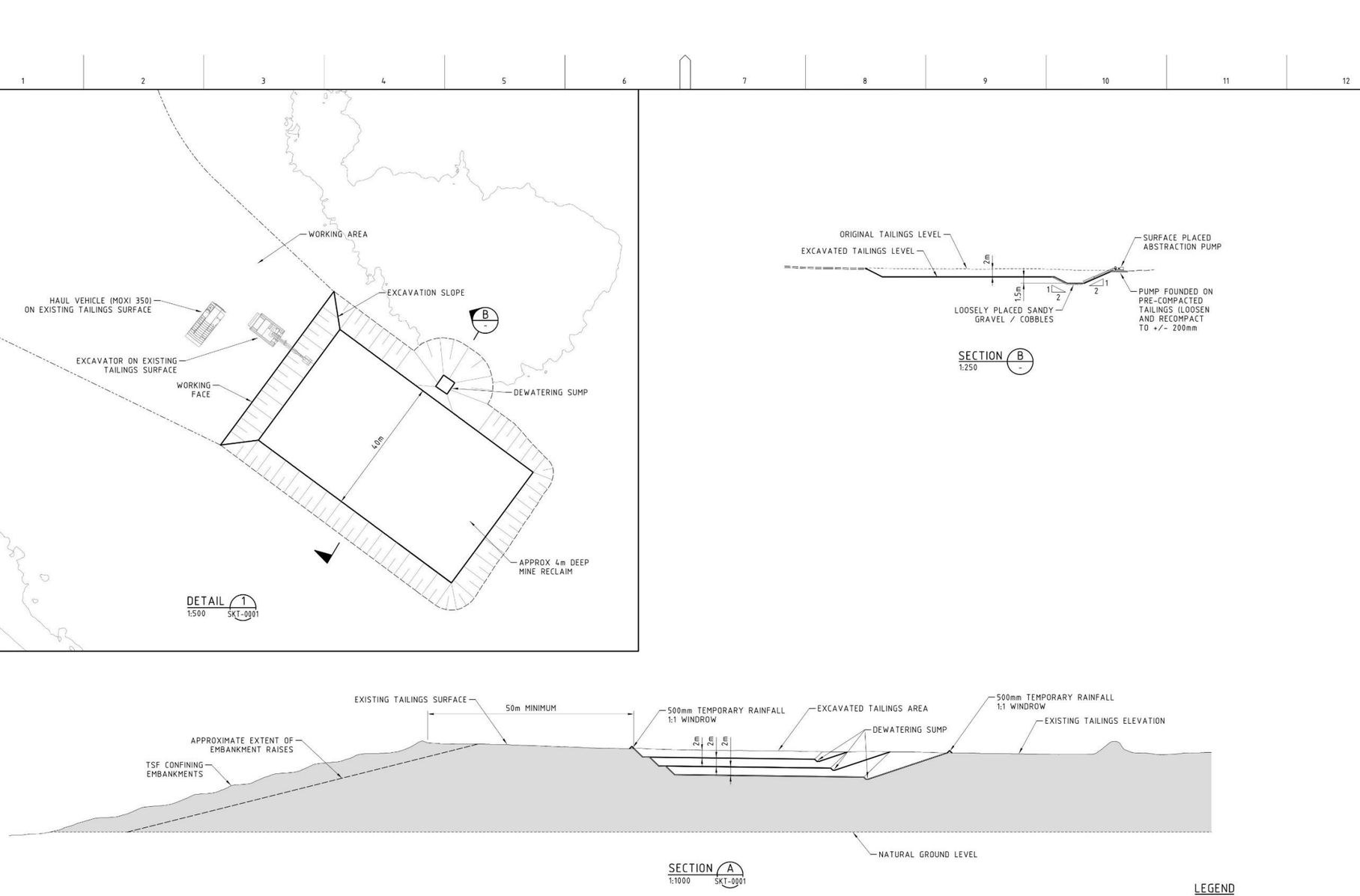

PROCESS WATER FROM DISTRIBUTION
CYCLONE OVERFLOW FROM PRIMARY CYCLONES
101
TRASH SCREEN
TRASH BUNKER
FLOTATION FEED HOPPER
FLOTATION FEED PUMPS 320-PP-158/159
FLOTATION FEED SAMPLE PUMP 320-PP-541
FLOTATION FEED CONDITIONING TANK 1 320-TK-501
FLOTATION FEED CONDITIONING TANK 2 320-TK-502
COPPER ROUGHER FLOTATION CELL 1
102
104
103
COPPER ROUGHER 1 TAILS HOPPER 320-HP-504
COPPER ROUGHER 1 TAILS PUMPS 320-PP-544/545
FLOTATION FEED SAMPLE TO OSA
COPPER ROUGHER 1 CONCENTRATE HOPPER 320-HP-501
COPPER ROUGHER 1 CONCENTRATE PUMP 320-PP-503
COPPER ROUGHER CONC SAMPLER 320-SA-501
ROUGHER 1 CONCENTRATE TO COPPER FINAL CONCENTRATE HOPPER
ROUGHER 1 CONCENTRATE TO COPPER CLEANER
ROUGHER CONCENTRATE SAMPLE TO OSA
COPPER ROUGHER 1 CONC SAMPLE PUMP 320-PP-542
PROCESS WATER FROM DISTRIBUTION
REAGENTS FROM DOSING PUMPS
DEXTRIN FROM DOSING PUMPS
107
108
111
COPPER FLOTATION BLOWER 1 320-BL-551
COPPER ROUGHER 2 FLOTATION CELL
110
COPPER SCAVENGER FLOTATION CELL 1
COPPER SCAVENGER FLOTATION CELL 2
COPPER SCAVENGER FLOTATION CELL 3
109
COPPER SCAVENGER TAILS HOPPER 320-HP-505
COPPER SCAVENGER TAILS PUMPS 320-PP-506/510
113
COPPER SCAVENGER TAILS TO LEAD FLOTATION
112
COPPER ROUGHER 2 CONC DISTRIBUTION BOX
COPPER SCAVENGER CONC DISTRIBUTION BOX 320-DI-503
SCAVENGER CONCENTRATE TO SCAVENGER CONC. HOPPER
SCAVENGER CONCENTRATE TO FINAL CONCENTRATE HOPPER
ROUGHER 2 CONCENTRATE TO FINAL CONCENTRATE HOPPER
ROUGHER 2 CONCENTRATE TO SCAVENGER CONCENTRATE HOPPER
EXISTING
INTERMITTENT
NEW
MODIFIED
NOT FOR CONSTRUCTION
PRELIMINARY
B 12.06.20 ISSUED FOR CLIENT REVIEW JRC JF
A 10.06.20 ISSUED FOR INTERNAL REVIEW JRC
DRA PACIFIC (PTY) LIMITED
PROJECT: GOLDEN GROVE FLOTATION UPGRADE
TITLE: COPPER FLOTATION CIRCUIT PROCESS FLOW DIAGRAM SHEET 1 OF 2
A3
SCALE: NTS
P4631-000-PFD-PR-001
REV: B


PROCESS WATER FROM DISTRIBUTION
S167-000-PFD-PR-001 SCAVENGER CONCENTRATE FROM COPPER SCAVENGER
S167-000-PFD-PR-001 ROUGHER 1 CONCENTRATE FROM COPPER ROUGHER 1
S167-000-PFD-PR-001 ROUGHER 2 CONCENTRATE FROM COPPER ROUGHER 2
S167-000-PFD-PR-001 ROUGHER 1 CONCENTRATE FROM COPPER ROUGHER 1
S167-000-PFD-PR-001 SCAVENGER CONCENTRATE FROM COPPER SCAVENGER
S167-000-PFD-PR-001 ROUGHER 2 CONCENTRATE FROM COPPER ROUGHER 2
COPPER CLEANER FEED PUMP 320-PP-517
COPPER CLEANER FLOTATION CELL 320-FT-521
COPPER SCAVENGER CONCENTRATE HOPPER 320-HP-503
COPPER SCAVENGER CONCENTRATE PUMP 320-PP-504
COPPER CLEANER TAILS HOPPER 320-HP-505
COPPER CLEANER TAILS PUMP 320-PP-511
COPPER SCAVENGER CONC SAMPLE PUMP 320-PP-543
COPPER FINAL CONCENTRATE HOPPER 320-HP-506
COPPER FINAL CONCENTRATE PUMP 320-PP-519
COPPER FINAL CONC SAMPLER 320-SA-508
COPPER FINAL CONC SAMPLE PUMP 320-PP-544
COPPER CONCENTRATE TO CONCENTRATE DEWATERING S167-000-PFD-PR-004
COPPER FINAL CONC SAMPLE TO OSA
SCAVENGER CONCENTRATE SAMPLE TO OSA
PROCESS WATER FROM DISTRIBUTION
COPPER CLEANER CONDITIONING TANK 320-TK-002
COPPER CLEANER SCAVENGER BANK 1 320-FT-100/103
COPPER CLEANER SCAVENGER BANK 2 320-FT-104/107
COPPER CLEANER SCAVENGER BANK 3 320-FT-108/111
COPPER CLEANER SCAVENGER TAILS TO LEAD TAILS TANK S167-000-PFD-PR-003
REGRIND CYCLONE OVERFLOW FROM REGRIND
COPPER CLEANER SCAVENGER TAILS HOPPER
COPPER CLEANER SCAVENGER TAILS PUMP 320-PP-512
COPPER CLEANER SCAVENGER TAILS TO LEAD FLOTATION S167-000-PFD-PR-003
COPPER CLEANER SCAVENGER CONCENTRATE PUMPS 320-PP-513/515
COPPER CLEANER SCAVENGER CONCENTRATE HOPPER 320-HP-508
EXISTING
INTERMITTENT
NEW
MODIFIED
NOT FOR CONSTRUCTION
PRELIMINARY
B 12.06.20 ISSUED FOR CLIENT REVIEW JRC JF
A 10.06.20 ISSUED FOR INTERNAL REVIEW JRC
DRA PACIFIC (PTY) LIMITED
PROJECT: GOLDEN GROVE FLOTATION UPGRADE
TITLE: COPPER FLOTATION CIRCUIT PROCESS FLOW DIAGRAM SHEET 2 OF 2
A3
SCALE: NTS
P4631-000-PFD-PR-002
REV: B


PROCESS WATER
FROM DISTRIBUTION
302
304
FLOCCULANT
FROM DOSING PUMP
301
303
S167-000-PFD-PR-001
COPPER CONCENTRATE
FROM COPPER FLOTATION
122
FILTRATE
FROM CONCENTRATE FILTERS
313
COPPER THICKENER
350-TK-004
THICKENER OVERFLOW
TO PROCESS WATER DAM
305
COPPER THICKENER
UNDERFLOW PUMPS
CONCENTRATE RETURN
FROM DISC FILTER 1/2
CONCENTRATE RETURN
TO ZINC CONCENTRATE THICKENER
ZINC CONCENTRATE
FROM ZINC CONCENTRATE THICKENER
ZINC CONCENTRATE
SURGE TANK
350-TK-014
ZINC CONCENTRATE
SURGE TANK
350-TK-038
COPPER CONCENTRATE
SURGE TANK
350-TK-502
COPPER FILTER FEED
PUMPS
350-PP-502/503
FILTER FEED PUMPS
350-PP-[illegible]
CONCENTRATE
TO DISC FILTRATION
CONCENTRATE
TO PRESSURE FILTRATION
FILTER FEED PUMPS
350-PP-050/250
LEGEND
EXISTING
INTERMITTENT
NEW
MODIFIED
NOT FOR CONSTRUCTION
PRELIMINARY
B 12.06.20 ISSUED FOR CLIENT REVIEW JRC JF
A 10.06.20 ISSUED FOR INTERNAL REVIEW JRC
DRA PACIFIC (PTY) LIMITED
PROJECT: GOLDEN GROVE FLOTATION UPGRADE
TITLE: CONCENTRATE THICKENING
PROCESS FLOW DIAGRAM
A3
SCALE: NTS
P4631-000-PFD-PR-004
REV: B



Schedule 6: Tailings reclamation from TSF2 design drawings



LEGEND

⟹ PROPOSED TRAFFIC MOVEMENT

CLIENT	EMR GOLDEN GROVE
TITLE	TAILINGS RECLAMATION AND PASTE BACKFILL PHASE 1 TSF 2 RECLAMATION SECTIONS AND DETAILS
SCALE	1:500
PROJECT No.	667750
DRG SIZE	A1
DRAWING No.	607750-0000-DD10-SKT-0008
REV No	B

wood.

CLIENT: EMRGoldenGrove

No.	BY	DATE	REVISION	CHECKED	APPROV.
				PROJECT APPR.	
				DESIGN APPR.	
				DESIGNED	
				CHECKED	
				DRAWN	

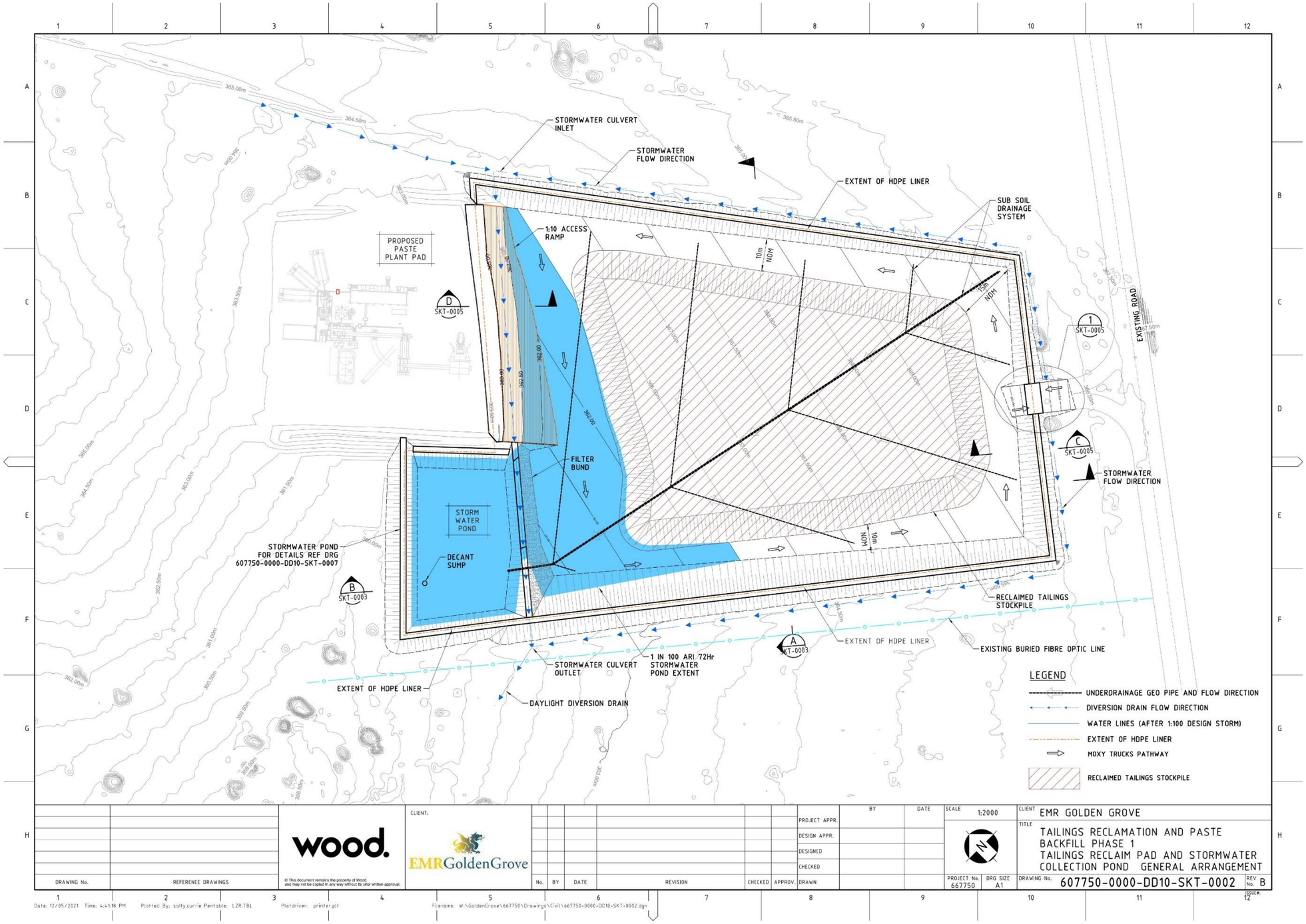
BY DATE

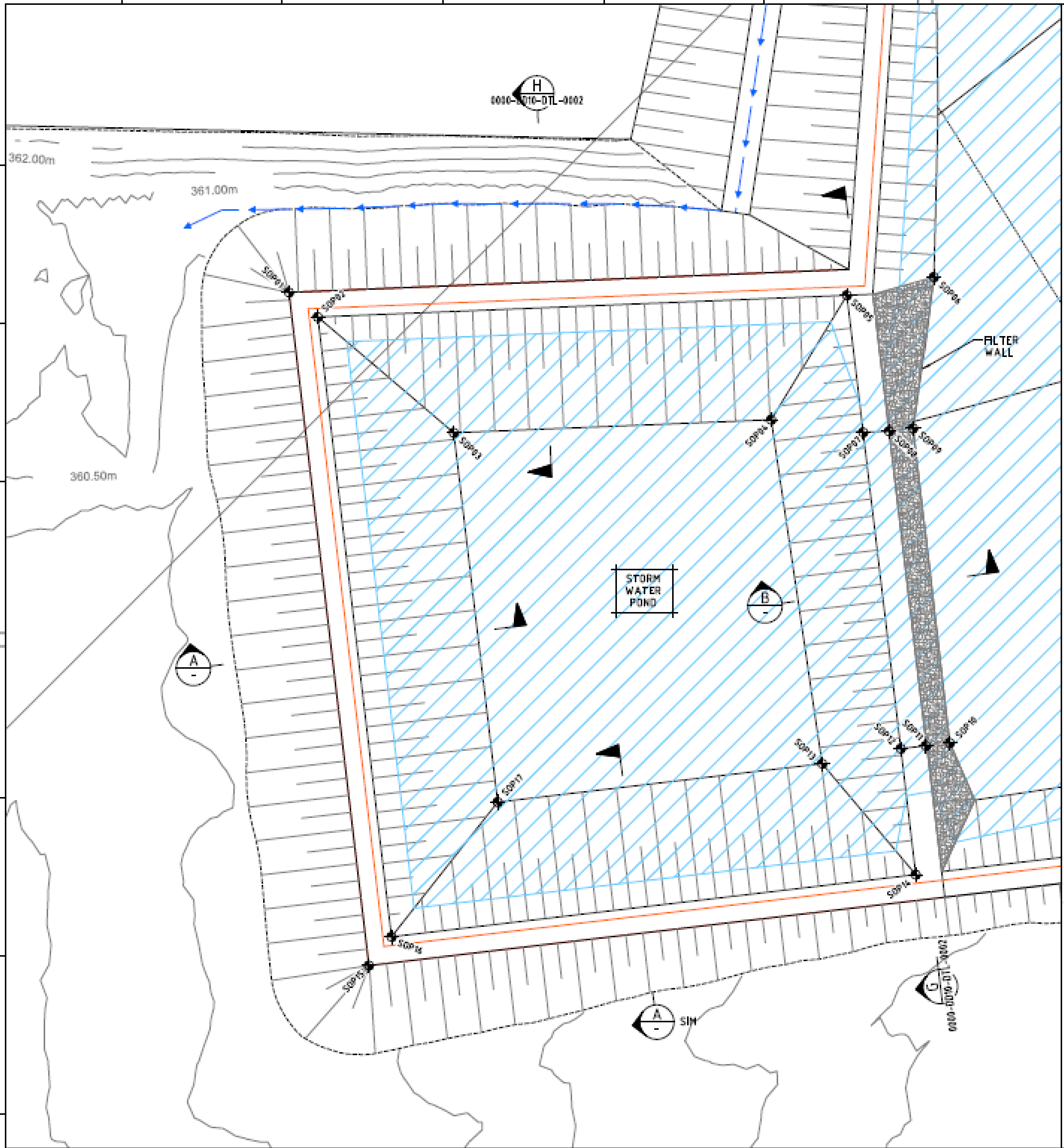
DRAWING No. | REFERENCE DRAWINGS

Date: 12/05/2021 Time: 4:36:05 PM Plotted By: sally.currie Pentable: LZR.TB. Plotdriver: printer.plt Filename: W:\GoldenGrove\667750\Drawings\Civil\667750-0000-DD10-SKT-0008.dgn

ISSUE#

Schedule 7: Reclaimed tailings storage pad and storage pond design drawings





GENERAL NOTES

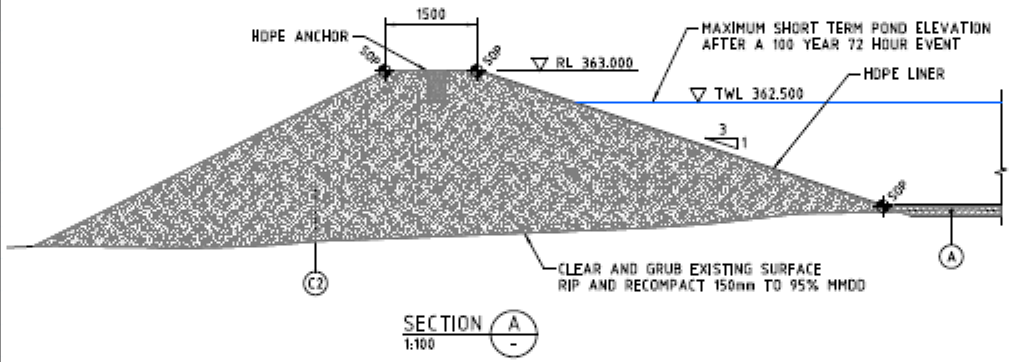
1. FOR GENERAL NOTES REFER DRAWING 607750-0000-DD10-SKT-0002

PROPOSED LAYERWORKS

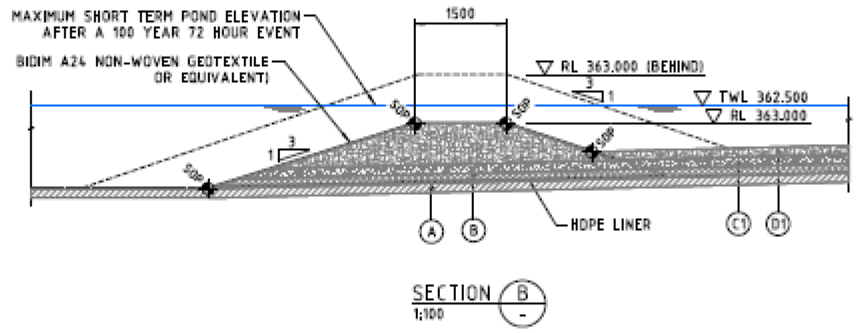
- (A) 150mm CLAYEY FOUNDATION LAYER COMPACTED TO 95% SMDD AT OMC
- (B) 150mm LOOSELY COMPACTED SAND
- (C1) 150mm GENERAL FILL (CLAYEY GRAVEL) COMACTED TO 95% MMDD AT OMC
- (C2) GENERAL FILL COMPACTED TO 95% MMDD IN MAX 150mm LAYERS
- (D1) 150mm GRAVEL WEARING COURSE COMPACTED TO 98% MMDD AT OMC
- (D2) LOOSELY COMPACTED GRAVEL FILTER (80% MMDD AT OMC)
- (D3) LOOSELY COMPACTED EROSION PROTECTION MATERIAL (90% MMDD AT OMC)
- (E) FILTERED SAND

SETOUT

POINT	EASTING (mE)	NORTHING (mN)	LEVEL (m)
SOP01	E 496,045.430	N 6,816,941.120	RL 363.000
SOP02	E 496,045.610	N 6,816,938.910	RL 363.000
SOP03	E 496,046.430	N 6,816,928.570	RL 360.650
SOP04	E 496,060.610	N 6,816,916.060	RL 360.650
SOP05	E 496,068.240	N 6,816,918.070	RL 363.000
SOP06	E 496,072.550	N 6,816,915.260	RL 361.850
SOP07	E 496,063.380	N 6,816,911.770	RL 362.200
SOP08	E 496,064.380	N 6,816,910.750	RL 362.200
SOP09	E 496,065.490	N 6,816,909.880	RL 361.730
SOP10	E 496,054.050	N 6,816,895.450	RL 361.750
SOP11	E 496,052.960	N 6,816,896.310	RL 362.200
SOP12	E 496,051.810	N 6,816,897.210	RL 362.200
SOP13	E 496,047.970	N 6,816,899.830	RL 360.650
SOP14	E 496,047.250	N 6,816,891.420	RL 366.000
SOP15	E 496,021.040	N 6,816,918.150	RL 363.000
SOP16	E 496,023.150	N 6,816,918.400	RL 363.000
SOP17	E 496,033.650	N 6,816,911.580	RL 360.650



SECTION A
1:100



SECTION B
1:100

LEGEND

- DIVERSION DRAIN FLOW DIRECTION
- WATER LINES (AFTER 1:100 DESIGN STORM)
- EXTENT OF HDPE LINER

DRAWING No.	REFERENCE DRAWINGS	No.	BY	DATE	REVISION	CHECKED	APPROV.	DRAWN

wood.

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CLIENT: EMR Golden Grove

PROJECT APPR. / DESIGN APPR. / DESIGNED / CHECKED / DRAWN — BY — DATE

SCALE 1:2000

CLIENT EMR GOLDEN GROVE

TITLE TAILINGS RECLAMATION AND PASTE BACKFILL PHASE 1 UNDERDRAINAGE SECTIONS AND DETAILS

PROJECT No. 607750 | DRG SIZE A1 | DRAWING No. 607750-0000-DD10-GAD-0003 | REV No. 0

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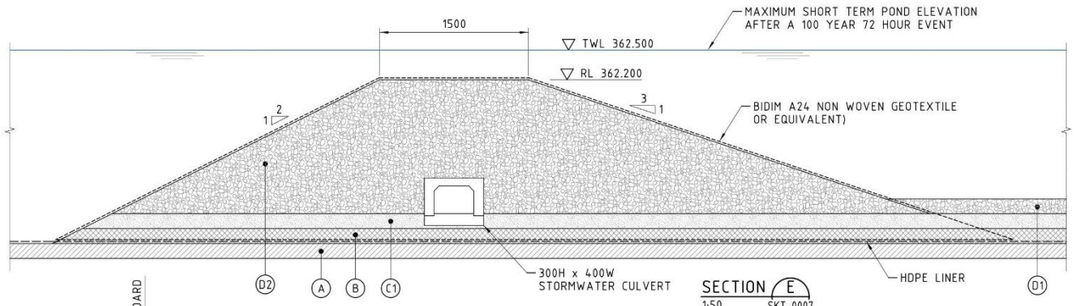

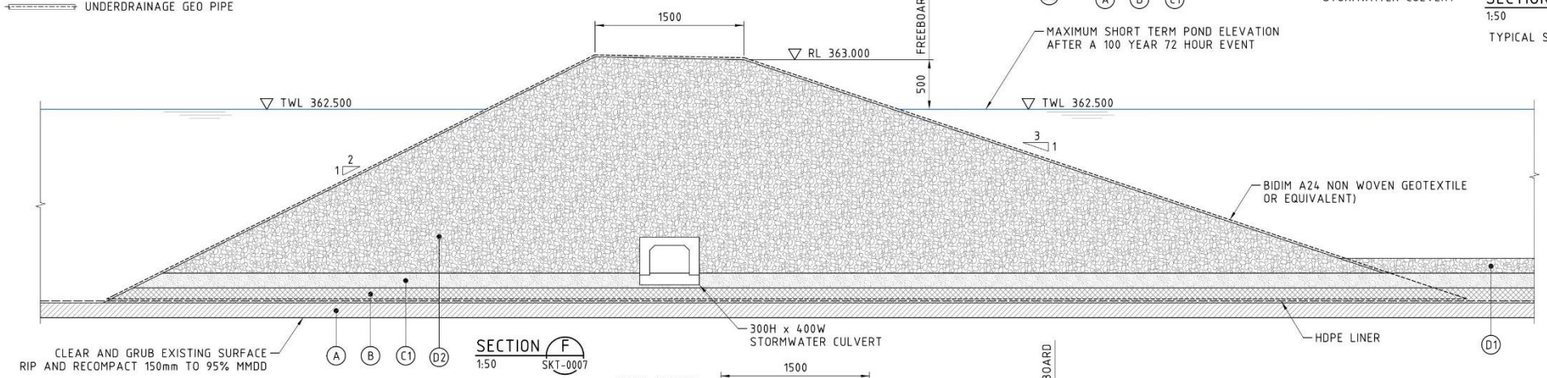

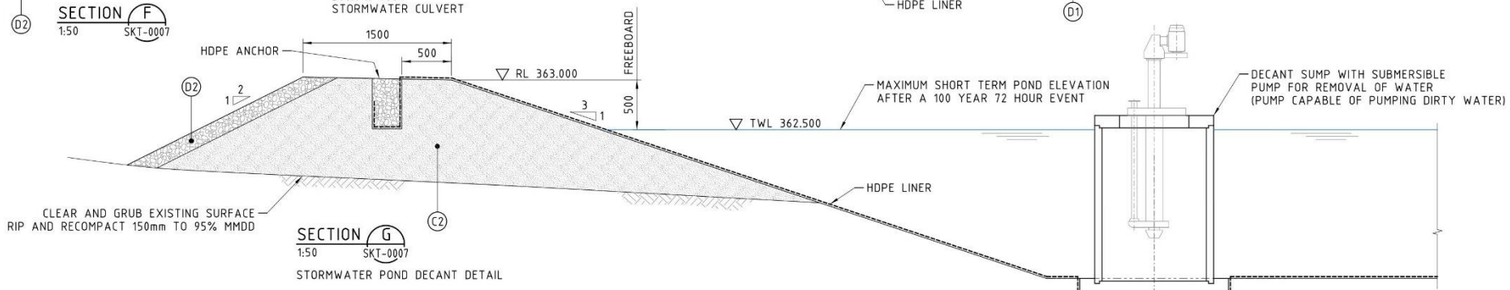

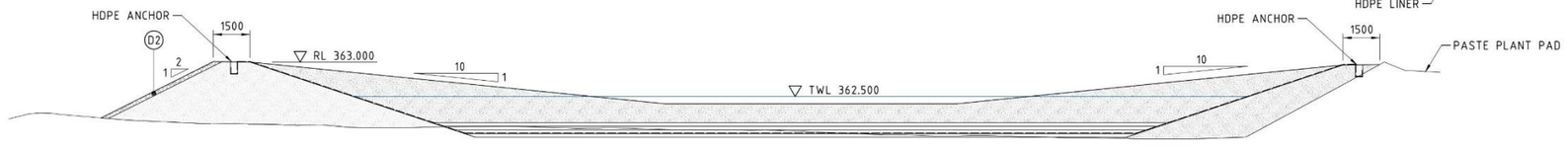

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	BY	DATE
PROJECT APPR.		
DESIGN APPR.		
DESIGNED		
CHECKED		
DRAWN		

SCALE 1:20

CLIENT EMR GOLDEN GROVE

TITLE
TAILINGS RECLAMATION AND PASTE
BACKFILL PHASE 1
STORMWATER COLLECTION POND
SECTIONS AND DETAILS

PROJECT No. 667750 | DRG SIZE A1 | DRAWING No. 607750-0000-DD10-SKT-0004 | REV No. B

ISSUE#:

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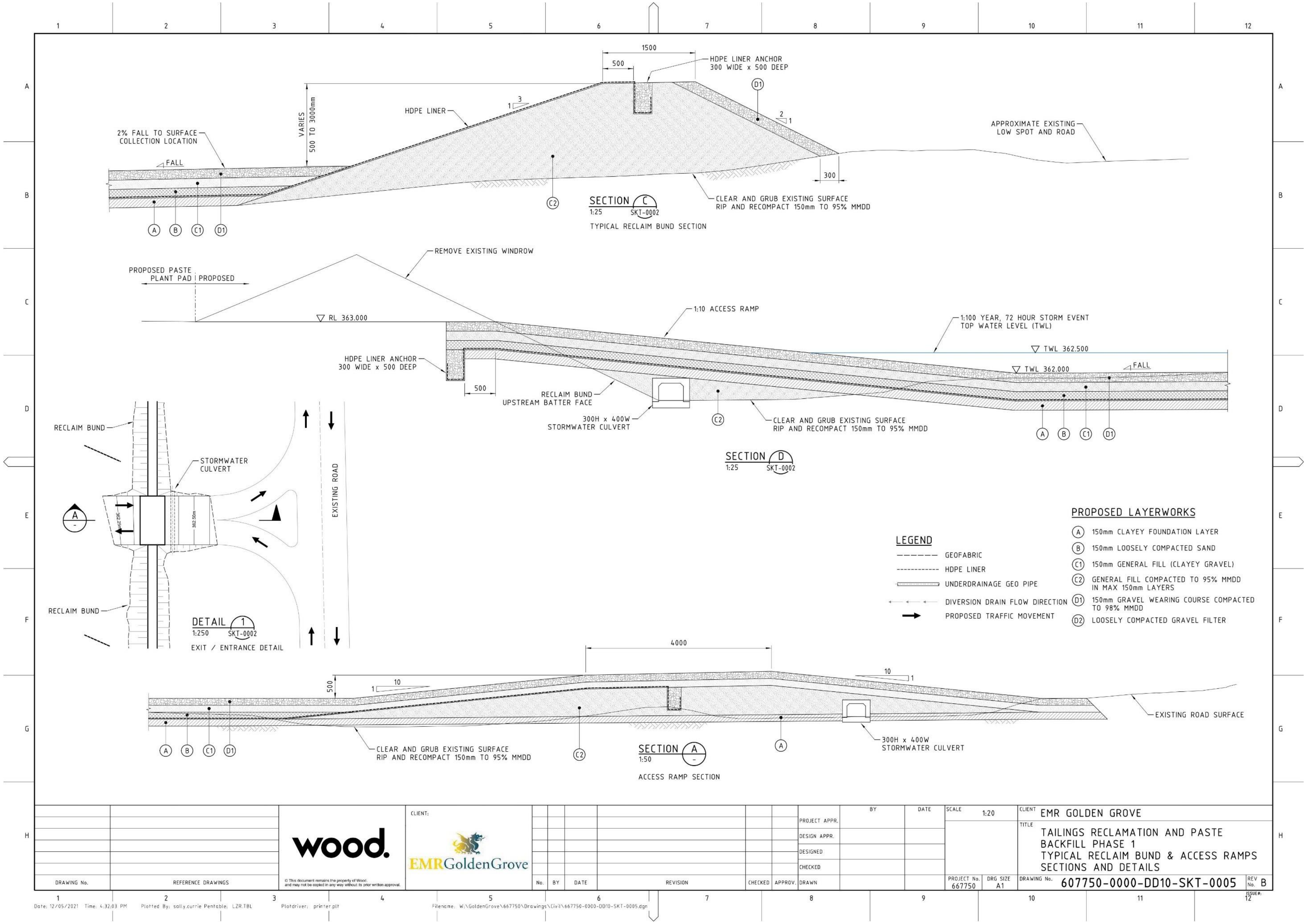
1500
500
HDPE LINER ANCHOR
300 WIDE x 500 DEEP
HDPE LINER
VARIES
500 TO 3000mm
2% FALL TO SURFACE
COLLECTION LOCATION
FALL
APPROXIMATE EXISTING
LOW SPOT AND ROAD
300
SECTION C
1:25 SKT-0002
TYPICAL RECLAIM BUND SECTION
CLEAR AND GRUB EXISTING SURFACE
RIP AND RECOMPACT 150mm TO 95% MMDD
REMOVE EXISTING WINDROW
PROPOSED PASTE
PLANT PAD | PROPOSED
RL 363.000
1:10 ACCESS RAMP
1:100 YEAR, 72 HOUR STORM EVENT
TOP WATER LEVEL (TWL)
TWL 362.500
TWL 362.000
FALL
HDPE LINER ANCHOR
300 WIDE x 500 DEEP
500
RECLAIM BUND
UPSTREAM BATTER FACE
300H x 400W
STORMWATER CULVERT
SECTION D
1:25 SKT-0002
RECLAIM BUND
STORMWATER
CULVERT
EXISTING ROAD
DETAIL 1
1:250 SKT-0002
EXIT / ENTRANCE DETAIL
LEGEND
GEOFABRIC
HDPE LINER
UNDERDRAINAGE GEO PIPE
DIVERSION DRAIN FLOW DIRECTION
PROPOSED TRAFFIC MOVEMENT
PROPOSED LAYERWORKS
A 150mm CLAYEY FOUNDATION LAYER
B 150mm LOOSELY COMPACTED SAND
C1 150mm GENERAL FILL (CLAYEY GRAVEL)
C2 GENERAL FILL COMPACTED TO 95% MMDD IN MAX 150mm LAYERS
D1 150mm GRAVEL WEARING COURSE COMPACTED TO 98% MMDD
D2 LOOSELY COMPACTED GRAVEL FILTER
4000
500
10
EXISTING ROAD SURFACE
300H x 400W
STORMWATER CULVERT
SECTION A
1:50
ACCESS RAMP SECTION
wood.
CLIENT:
EMR Golden Grove
DRAWING No.
REFERENCE DRAWINGS
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No. BY DATE REVISION CHECKED APPROV.
PROJECT APPR.
DESIGN APPR.
DESIGNED
CHECKED
DRAWN
BY DATE
SCALE 1:20
CLIENT EMR GOLDEN GROVE
TITLE
TAILINGS RECLAMATION AND PASTE
BACKFILL PHASE 1
TYPICAL RECLAIM BUND & ACCESS RAMPS
SECTIONS AND DETAILS
PROJECT No. 667750
DRG SIZE A1
DRAWING No. 607750-0000-DD10-SKT-0005
REV No. B
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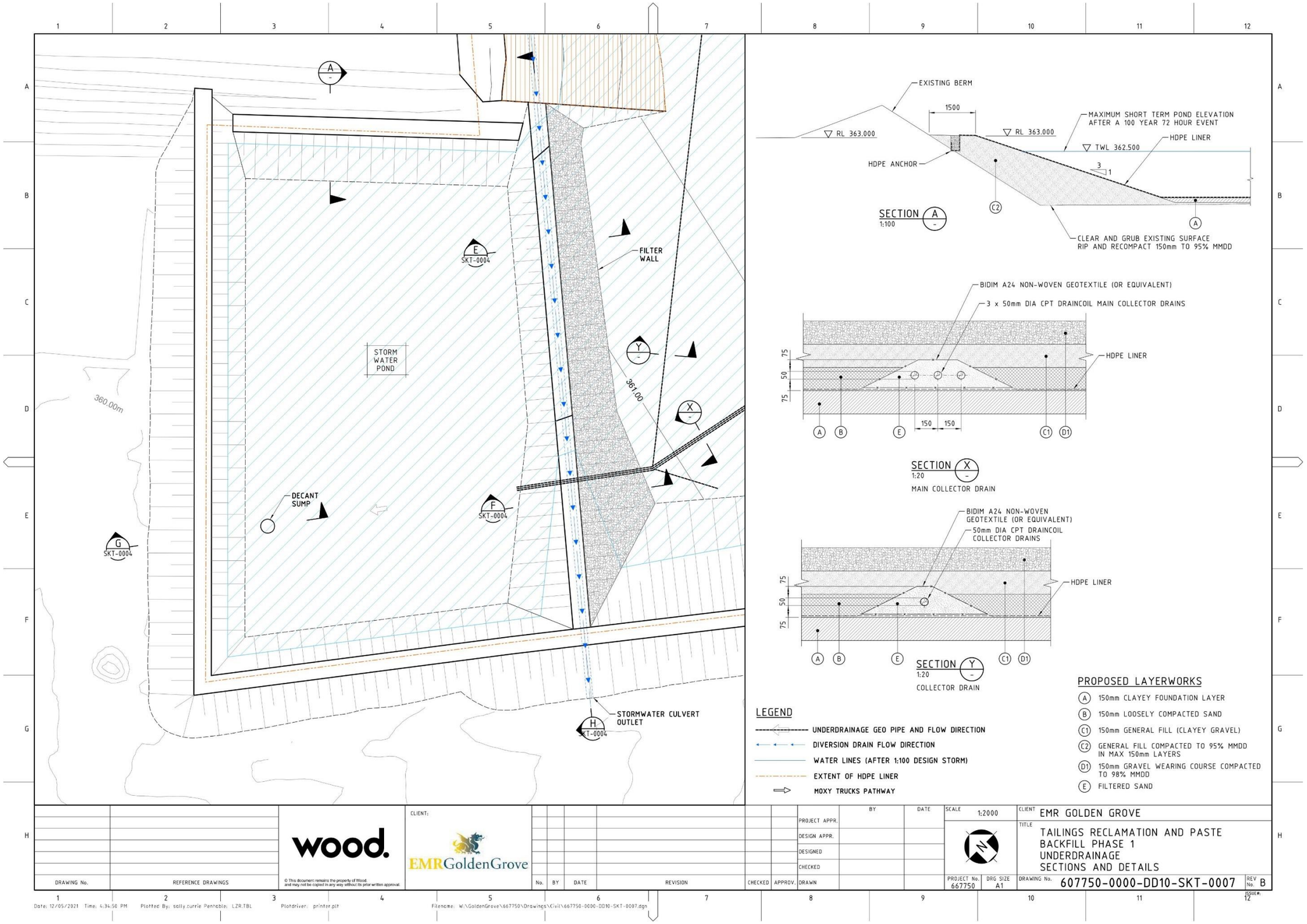
A
E
SKT-0004
FILTER WALL
STORM WATER POND
Y
361.00
X
360.00m
DECANT SUMP
F
SKT-0004
G
SKT-0004
H
SKT-0004
STORMWATER CULVERT OUTLET
EXISTING BERM
1500
RL 363.000
RL 363.000
MAXIMUM SHORT TERM POND ELEVATION AFTER A 100 YEAR 72 HOUR EVENT
TWL 362.500
HDPE LINER
HDPE ANCHOR
3
1
C2
A
CLEAR AND GRUB EXISTING SURFACE
RIP AND RECOMPACT 150mm TO 95% MMDD
SECTION A
1:100
BIDIM A24 NON-WOVEN GEOTEXTILE (OR EQUIVALENT)
3 x 50mm DIA CPT DRAINCOIL MAIN COLLECTOR DRAINS
HDPE LINER
75
50
75
150
150
A
B
E
C1
D1
SECTION X
1:20
MAIN COLLECTOR DRAIN
BIDIM A24 NON-WOVEN GEOTEXTILE (OR EQUIVALENT)
50mm DIA CPT DRAINCOIL COLLECTOR DRAINS
HDPE LINER
75
50
75
A
B
E
C1
D1
SECTION Y
1:20
COLLECTOR DRAIN
LEGEND
UNDERDRAINAGE GEO PIPE AND FLOW DIRECTION
DIVERSION DRAIN FLOW DIRECTION
WATER LINES (AFTER 1:100 DESIGN STORM)
EXTENT OF HDPE LINER
MOXY TRUCKS PATHWAY
PROPOSED LAYERWORKS
A 150mm CLAYEY FOUNDATION LAYER
B 150mm LOOSELY COMPACTED SAND
C1 150mm GENERAL FILL (CLAYEY GRAVEL)
C2 GENERAL FILL COMPACTED TO 95% MMDD IN MAX 150mm LAYERS
D1 150mm GRAVEL WEARING COURSE COMPACTED TO 98% MMDD
E FILTERED SAND
wood.
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No. BY DATE REVISION CHECKED APPROV.
PROJECT APPR.
DESIGN APPR.
DESIGNED
CHECKED
DRAWN
BY DATE
DRAWING No.
REFERENCE DRAWINGS
SCALE 1:2000
CLIENT EMR GOLDEN GROVE
TITLE TAILINGS RECLAMATION AND PASTE BACKFILL PHASE 1 UNDERDRAINAGE SECTIONS AND DETAILS
PROJECT No. 667750
DRG SIZE A1
DRAWING No. 607750-0000-DD10-SKT-0007
REV No. B
ISSUE#.
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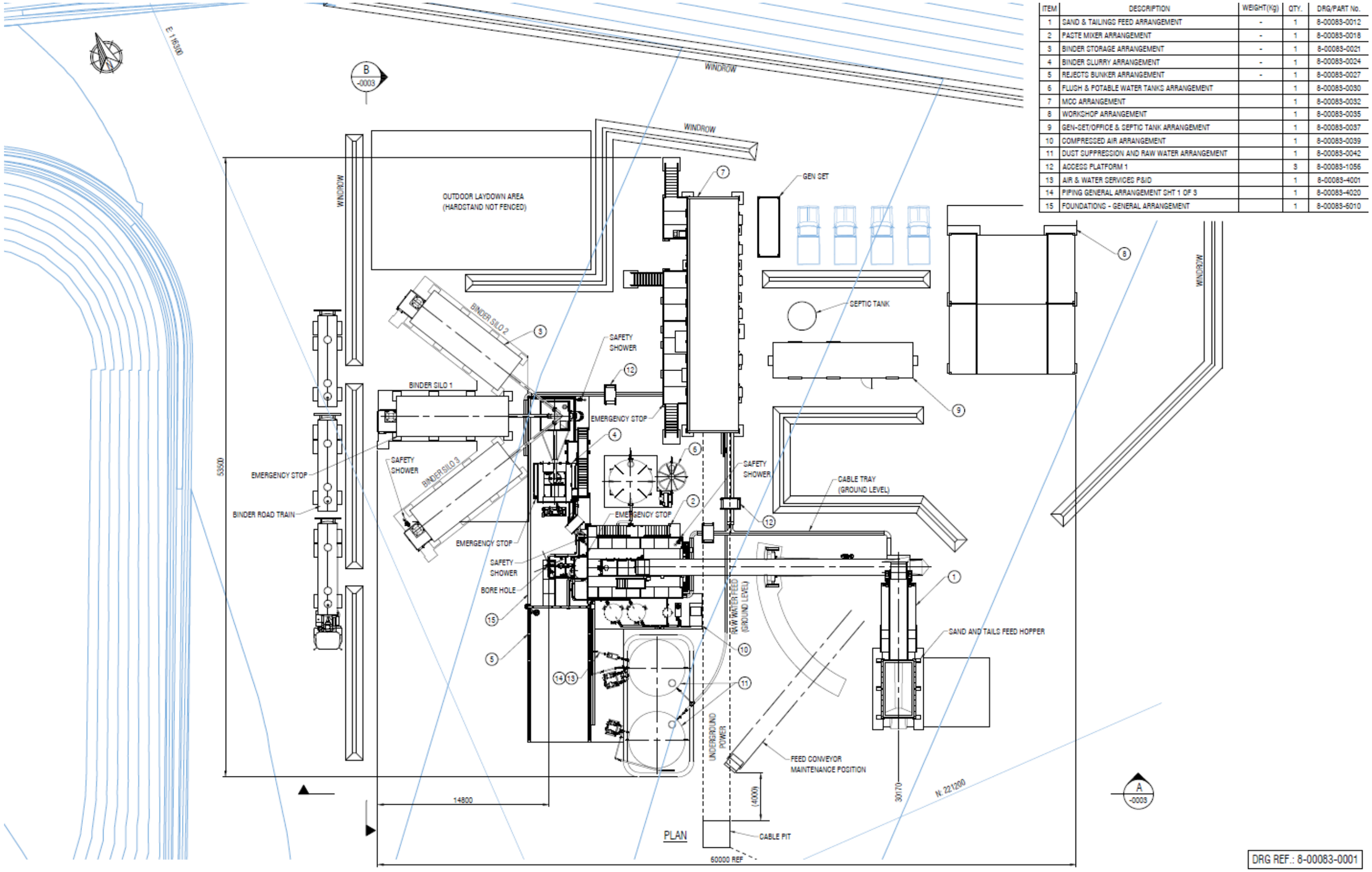
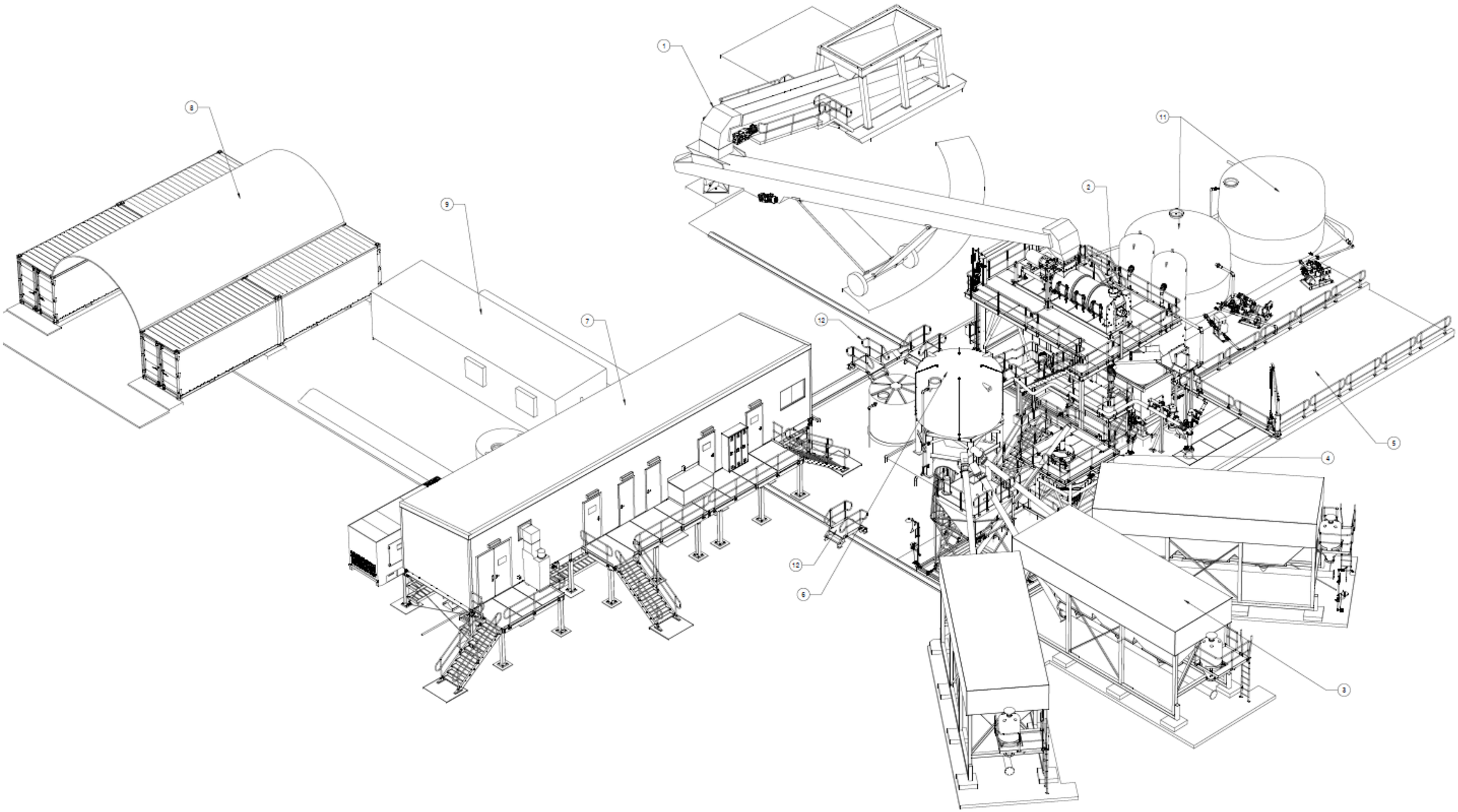
Schedule 8: Paste plant design drawings



ITEM	DESCRIPTION	WEIGHT(Kg)	QTY.	DRG/PART No.
1	SAND & TAILINGS FEED ARRANGEMENT	-	1	8-00083-0012
2	PASTE MIXER ARRANGEMENT	-	1	8-00083-0018
3	BINDER STORAGE ARRANGEMENT	-	1	8-00083-0021
4	BINDER SLURRY ARRANGEMENT	-	1	8-00083-0024
5	REJECTS BUNKER ARRANGEMENT	-	1	8-00083-0027
6	FLUSH & POTABLE WATER TANKS ARRANGEMENT		1	8-00083-0030
7	MCC ARRANGEMENT		1	8-00083-0032
8	WORKSHOP ARRANGEMENT		1	8-00083-0035
9	GEN-SET/OFFICE & SEPTIC TANK ARRANGEMENT		1	8-00083-0037
10	COMPRESSED AIR ARRANGEMENT		1	8-00083-0039
11	DUST SUPPRESSION AND RAW WATER ARRANGEMENT		1	8-00083-0042
12	ACCESS PLATFORM 1		3	8-00083-1056
13	AIR & WATER SERVICES P&ID		1	8-00083-4001
14	PIPING GENERAL ARRANGEMENT SHT 1 OF 3		1	8-00083-4020
15	FOUNDATIONS - GENERAL ARRANGEMENT		1	8-00083-5010

DRG REF.: 8-00083-0001

NOTE:
ITEMS NUMBERS REFER TO DWG. 8-00083-0002



ISOMETRIC 3

Schedule 9: Infrastructure/Equipment design and construction/installation requirements

No.	Design, construction and/or installation requirements (infrastructure and equipment)	Infrastructure/Equipment location
Category 5: Processing or beneficiation of metallic or non-metallic ore		

1.	• Tailings reclamation from TSF2:
	  ○ layout in accordance with Schedule 6; and
	  ○ dewatering sump(s) to allow removal of contaminated water via pumping.
	• Reclaimed tailings storage pad:
	  ○ construct in accordance with Schedule 7;
	  ○ capacity of 20,500 m^3;
	  ○ designed to contain a rainfall event of 1:100-year, 72-hour duration, while maintaining a minimum freeboard of 500 mm;
	  ○ clay foundation compacted to 95% modified maximum dry density (MMDD);
	  ○ lined with 2 mm High Density Poly Ethylene (HDPE) on compacted clay foundation;
	  ○ HDPE liner covered with 150 mm compacted loose soil, 150 mm general fill and 150 mm gravel wearing course compacted to 98% MMDD;
	  ○ perimeter bunds:
	  – HDPE liner anchored into the crest of the bund (i.e. exposed sides will be HDPE lined);
	  – constructed with well graded clayey gravel with sand and compacted to 95% of MMDD; and
	  – outer face of the bund lined with erosion resistant gravel soil.
	  ○ underdrainage system:
	  – herringbone configuration and perforated pipes, wrapped in geofabric, are laid in the filter sand layer, immediately above the HDPE liner;
	  – perforated subsoil pipes graded towards the storage pond and drainage via 50 mm diameter pipes; and
	  – one (1) pipe for the upper reaches of the area and three (3) pipes in the lower reaches, near the storage pond.
	  ○ pad engineered to slope towards the storage pond, therefore allowing contaminated water to flow into the storage pond via a filter bund;
	  ○ filter bund:
	  – geofabric (A24 BIDIM) encased bund with free-draining gravel chips (1-4 mm blue metal gravel), which is lightly tamped into place above the HDPE liner. Geofabric is wrapped around the upstream and downstream sides of the bund and fixed in an anchor trench on the crest; and
	  – also acts as a spillway from the reclaimed tailings storage pad to the storage pond, to facilitate water removal once pumps are at capacity.
	  ○ automatic dust suppression system installed on the perimeter of the reclaimed tailings storage pad.
	• Storage pond:
	  ○ construct in accordance with Schedule 7;
	  ○ capacity of 1,500 m^3;
	  ○ designed to contain a rainfall event of 1:100-year, 72-hour duration, while maintaining a minimum freeboard of 500 mm;
	  ○ clay foundation compacted to 95% modified maximum dry density (MMDD);
	  ○ lined with 1.5 mm High Density Poly Ethylene (HDPE) on compacted clay foundation;
	  ○ vehicle/mobile plant will not be permitted to drive on the storage pond, therefore the HDPE liner will not be covered;
	  ○ perimeter bunds:
	  – HDPE liner anchored into the crest of the bund (i.e. exposed sides will be HDPE lined);
	  – constructed with well graded clayey gravel with sand and compacted to 95% of MMDD; and
	  – outer face of the bund lined with erosion resistant gravel soil.
	  ○ decant system:
		As demonstrated in Schedules 1, 6, 7 and 8.

No.	Design, construction and/or installation requirements (infrastructure and equipment)	Infrastructure/Equipment location
	– sump and decant tower located with safe access steel walkway and rails to allow removal of contaminated water via pumping. ○ access management: – storage pond to be located within a fenced area and equipped with egress matts. • Paste plant: ○ layout of paste plant in accordance with Schedule 8; ○ comprising of binder storage and dosing with integrated vortex mixer for dust control; and ○ paste plant and associated infrastructure constructed/installed as per manufacturer's design specifications. • Stormwater management: ○ stormwater diversion bunds and/or culverts to be constructed/installed to safely divert surface water flows around the paste plant, reclaimed tailings storage pad, storage pond and construction areas. • Mobile screening equipment: ○ mobile screening plant to be placed within the reclaimed tailings storage pad and installed as per manufacturer's design specifications.	

Schedule 10: Coffer Dam 2 design drawings