



Works approval number	W6449/2020/1
Works approval holder	GSM Mining Company Pty Ltd
ACN	165 235 030
Registered business address	Level 4, 235 St Georges Terrace, PERTH WA 6000
DWER file number	DER2020/000457
Duration	16/04/2021 to 15/04/2026
Date of Issue	15/04/2021
Date of amendment	05/11/2024
Premises details	Granny Smith Gold Mine Part of Mining Tenements M38/205 and M38/532 LAVERTON WA 6440

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore: premises on which: (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed; (b) tailings from metallic or non-metallic ore are reprocessed; or (c) tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.	Tailings Storage Facility Cell 4 1,750,000 tonnes per annum

This works approval is granted to the works approval holder, subject to the attached conditions, on 5 November 2024, by:

**MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES**

Officer delegated under section 20 of the Environmental Protection Act 1986

Works approval history

Date	Reference number	Summary of changes
15/04/2021	W6449/2020/1	Works approval granted.
10/07/2023	W6449/2020/1	Works approval amended to upgrade the design and construction requirements of TSF Cell 4.
17/05/2024	W6449/2020/1	Administrative amendment to increase TLO period from 180 days to 360 days.
05/11/2024	W6449/2020/1	Administrative amendment to increase TLO period from 360 days to 450 days.

Interpretation

In this works approval:

- (a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a condition, each row in a table constitutes a separate condition;
- (d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:
 - (i) if dated, refers to that particular version; and
 - (ii) if not dated, refers to the latest version and therefore may be subject to change over time;
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

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

Construction phase

Infrastructure and equipment

1. The works approval holder must:
 - (a) construct 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 1.

Table 1: Critical containment infrastructure design and construction requirements

	Infrastructure	Design and construction requirements	Infrastructure location
1.	Tailings Storage Facility Cell 4	<ul style="list-style-type: none"> • Constructed within mining tenements M38/205 and M38/532 • Storage capacity of 16 Million tonnes of tailings material; • Storage area of 104 hectares; and • Constructed to provide a minimum 0.5 m total freeboard (including an allowance for a 1% AEP 72 hour rain event) above the normal operating pond. 	As shown in Site layout map in Schedule 1
2.	Starter embankment (stages 4A and 4B)	Stages 4A and 4B embankments, including cut-off trench and toe drains constructed as specified in Drawing F005	As shown under heading Embankment Stages in Schedule 1
3.	Seepage control	<ul style="list-style-type: none"> • Testing of the compacted soil liner must be completed at a rate of one test per hectare • The TSF Cell 4 must be constructed with an in-situ compacted soil liner (minimum 300 mm thick) with a hydraulic conductivity of 1×10^{-7} m/s. • In Zone B2 areas where compacted subgrade permeability is $> 1 \times 10^{-7}$ m/s, place a 300 mm layer of TSF cell 2 tailings or Childe Harold waste over the subgrade and compact to $> 102\%$ SMD; • Construct a temporary runoff diversion bund at the base of the TSF cell 3 embankment to protect the placed liner areas from erosion while exposed. • Construct an additional upstream toe in the southern portion of the TSF cell 4 basin area 	As shown under heading Seepage Design in Schedule 1

	Infrastructure	Design and construction requirements	Infrastructure location
4.	Water reclamation	<ul style="list-style-type: none"> Pump-off decant water system Underdrainage system and toe drains as specified in Figures F006, F007 	As shown under heading Seepage Design in Schedule 1
5.	Embankment raises	<ul style="list-style-type: none"> Upstream embankment raises constructed from mine waste materials sourced from existing waste rock dumps and tailings borrowed from Cell 1 and Cell 2 Embankment raises of 2m 	As shown under heading Embankment Stages in Schedule 1

2. The works approval holder is authorised to construct embankment raises for TSF-cell 4 to the construction height as specified in Table 2.

Table 2: Stages construction heights for TSF Cell 4

Stages	Construction height (mRL)
4A Starter	416.5
4B Starter	419.0
4C	421.0
4D	423.0

Infrastructure and equipment (non-CCI)

3. The works approval holder must:
- construct and/or install the infrastructure and/or equipment;
 - in accordance with the corresponding design and construction/installation requirements;
 - at the corresponding infrastructure location; and
 - within the corresponding timeframe as set out in Table 3

Table 3: Design and construction requirements

	Infrastructure	Design and construction requirements	Timeframe
1.	Tailings and Decant Return Pipeline	<ul style="list-style-type: none"> Constructed in containment trenches or culverts Fitted with telemetry 	N/A
2.	Monitoring instrumentation	<ul style="list-style-type: none"> Vibrating wire piezometers to be installed on the north, west and south embankments of TSF-Cell 4 Survey pins to be installed along crest of the starter embankments (stage 4A to 4B) and on each stage of upstream raises. 	Vibrating wire piezometers to be constructed and determined operational prior to operation of Stage 4A to 4B

Compliance reporting

4. The works approval holder must within 30 calendar days of an item of Critical Containment Infrastructure 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 a Critical Containment Infrastructure Report on that compliance.
5. The Critical Containment Infrastructure Report required by condition 4, must include as a minimum the following:
 - (a) certification by a qualified geotechnical or civil engineer that each item of critical containment infrastructure or component(s) thereof, as specified in condition 1 has been constructed in accordance with the relevant requirements specified in condition 1;
 - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1;
 - (c) photographic evidence of the installation of the infrastructure;
 - (d) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person; and
 - (e) a Quality Control/Quality Assurance Certificate from an independent third party which demonstrates that the in-situ compacted soil liner meets the requirements specified in Table 1.
6. The works approval holder must within 30 calendar days of an item of infrastructure or equipment required by condition 3 being constructed and/or installed:
 - (a) undertake an audit of their compliance with the requirements of condition 3; and
 - (b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.
7. The Environmental Compliance Report required by condition 6 must include as a minimum the following:
 - (a) certification by a suitably qualified geotechnical or civil engineer that the items of infrastructure or component(s) thereof, as specified in condition 3, have been constructed in accordance with the relevant requirements specified in condition 3;
 - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 3; and
 - (c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Construction of groundwater monitoring wells

8. The works approval holder must design, construct and install groundwater monitoring wells in accordance with the requirements specified in Table 4.

Table 4: Infrastructure requirements – groundwater monitoring bores

Infrastructure	Design, construction and installation requirements	Monitoring well location(s)	Timeframe
<p>Groundwater monitoring well MB72, MB73, MB74, MB75, MB77 and MB78 (shallow and deep)</p>	<p><u>Well design and construction.</u> Designed and constructed in accordance with the Minimum Construction Requirements for Water Bores in Australia and Figure 4 in Schedule 1. Well screens must target the part, or parts of the aquifer most likely to be affected by contamination¹. Where temporary/seasonal perched features are present bores must be nested, and the perched features individually screened.</p>	<p>As depicted in map under heading 'Proposed monitoring bores' in Schedule 1.</p>	<p>Must be constructed, developed (purged) and determined to be operational prior to the commencement of construction of works specified in condition 1.</p>
	<p><u>Logging of borehole.</u> Soil samples must be collected and logged during the installation of the monitoring bores. A record of the geology encountered during drilling must be described and classified in accordance with the Minimum Construction Requirements for Water Bores in Australia. Any observations of staining/odours or other indications of contamination must be included in the bore log.</p>		
	<p><u>Well construction log.</u> Well construction details must be documented within a well construction log to demonstrate compliance with the Minimum Construction Requirements for the Water Bores in Australia. 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.</p>		
	<p>Installation survey: the vertical (top of casing) and horizontal position of each monitoring bore must be surveyed and subsequently mapped by a suitably qualified surveyor.</p>		
	<p>Bore network map: a bore location map (using aerial image overlay) must be prepared and include the location of all monitoring bores in the monitoring network and their respective identification numbers.</p>		

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

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

Time limited operations phase

Commencement and duration

10. The works approval holder may only commence time limited operations for an item of critical containment infrastructure identified in condition 1 where the CEO has notified the works approval holder that the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 4 meets the requirements of that condition.
11. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 3 where the Environmental Compliance Report as required by condition 6 has been submitted by the works approval holder for that item of infrastructure.
12. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 13 (as applicable):
 - (a) for a period not exceeding 450 calendar days from the day the works approval holder meets the requirements of condition 10 or 11 for that item of infrastructure; or
 - (b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*.

Time limited operations – infrastructure and equipment

13. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 5

Table 5: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Tailings Storage Facility cell 4	Operational freeboard of 500 mm Methods of operation must minimize the likelihood of erosion of the embankments by wave action	As shown in Site layout map in Schedule 1
2.	Tailings and Decant Return Pipeline Corridor	Provided with secondary containment adequate to contain any spill for a period equal to the time between routine inspections.	As shown in Site layout map in Schedule 1

Monitoring during time limited operations

14. The works approval holder must conduct monitoring in accordance with the requirements specified in Table 6 and record the results of all monitoring activities conducted under that program.

Table 6: Compliance and performance monitoring

Site infrastructure and equipment	Parameter	Frequency
Tailings Storage Facility Cell 4	<ul style="list-style-type: none"> Outer perimeter area and embankments Condition of roads and ramps Tailings pipeline integrity Tailings behaviour at deposition point Visual check on tailings and water levels embankment crest (freeboard) Offtake location Blockage or damage of discharge Monitoring instrumentation 	Daily
TSF decant system	<ul style="list-style-type: none"> Size of supernatant pond Location of supernatant pond Return water pipeline integrity Blockage of decant tower Visual check on decant tower operation 	Daily
TSF underdrainage, toe-drains and seepage trench	<ul style="list-style-type: none"> Blockage of towers/pipes Visual checks of water level in towers/pipes Visual check of pipeline integrity 	Daily
TSF basin	<ul style="list-style-type: none"> Water volume and level Tailings beach-head level 	Each weekly period
Tailings	<ul style="list-style-type: none"> Tailings solids (tonnes) Water in tailings (tonnes or m³) Average tailings flow (m³/s) 	Each weekly period
Water	<ul style="list-style-type: none"> Outflow from decant pumps Outflow from toe drain and underdrainage Specific gravity of decant water 	Daily
Standpipe and vibrating wire piezometers	<ul style="list-style-type: none"> Standing water level Pore-water pressure 	Each monthly period

15. The works approval holder must conduct a groundwater monitoring program in accordance with the requirements specified in Table 7 and record the results of all monitoring activity conducted under that program.

Table 7: Groundwater monitoring of ambient concentrations

Monitoring well location	Parameter	Frequency	Method
Monitoring Bores MB72 – MB78 (shallow and deep)	Standing water level ¹	Each monthly period	Spot sample in accordance with AS/NZS 5667.1
	pH ¹		
	Electrical conductivity ¹		
	Total dissolved solids		
	WAD cyanide	Each quarterly period	
	Total cyanide		
	Ca, Mg, Na, K, CO ₃ , Cl, SO ₄ , Al, As, Cd, Cr, Cu, Fe, Mn, Ni, Zn, Pb and Co		

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

Time limited operations – Compliance reporting

16. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is sooner.
17. The works approval holder must ensure the report required by condition 16 includes the following:
 - (a) a summary of the time limited operations, including timeframes and amount of gold bearing ore processed;
 - (b) a summary of the environmental performance of all infrastructure as constructed or installed (as applicable), which includes records detailing the:
 - (i) tailings deposited in TSF-cell 4;
 - (ii) monitoring conducted in accordance with conditions 14 and 15; and
 - (iii) water balance for TSF-cell 4 for the duration of time limited operations, recording site rainfall; evaporation rate, decant water recovery volumes; volumes of tailings deposited and estimated seepage losses.
 - (c) a review of performance and compliance against the conditions of works approval; and
 - (d) where the 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)

18. 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.
- 19.** 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 1;
 - (c) monitoring programmes undertaken in accordance with conditions 14 and 15; and
 - (d) complaints received under condition 18.
- 20.** The books specified under condition 19 must:
- (a) be legible;
 - (b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
 - (c) be retained by the works approval holder for the duration of the works approval; and
 - (d) be available to be produced to an inspector or the CEO as required.

Definitions

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

Table 8: Definitions

Term	Definition
AEP	means the average exceedance probability.
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 <i>Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.</i>
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 <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
critical containment infrastructure	means the items of infrastructure listed in condition 1.
Critical Containment Infrastructure Report	means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval.
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
Environmental	means a report to satisfy the CEO that the conditioned

Term	Definition
Compliance Report	infrastructure has been constructed in accordance with the works approval.
EP Act	<i>Environmental Protection Act 1986 (WA).</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA).</i>
monthly period	means a one-month period commencing from the first day of a month until the last day of that same month.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map 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: <ul style="list-style-type: none"> (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.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
TSF	means tailings storage facility
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

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

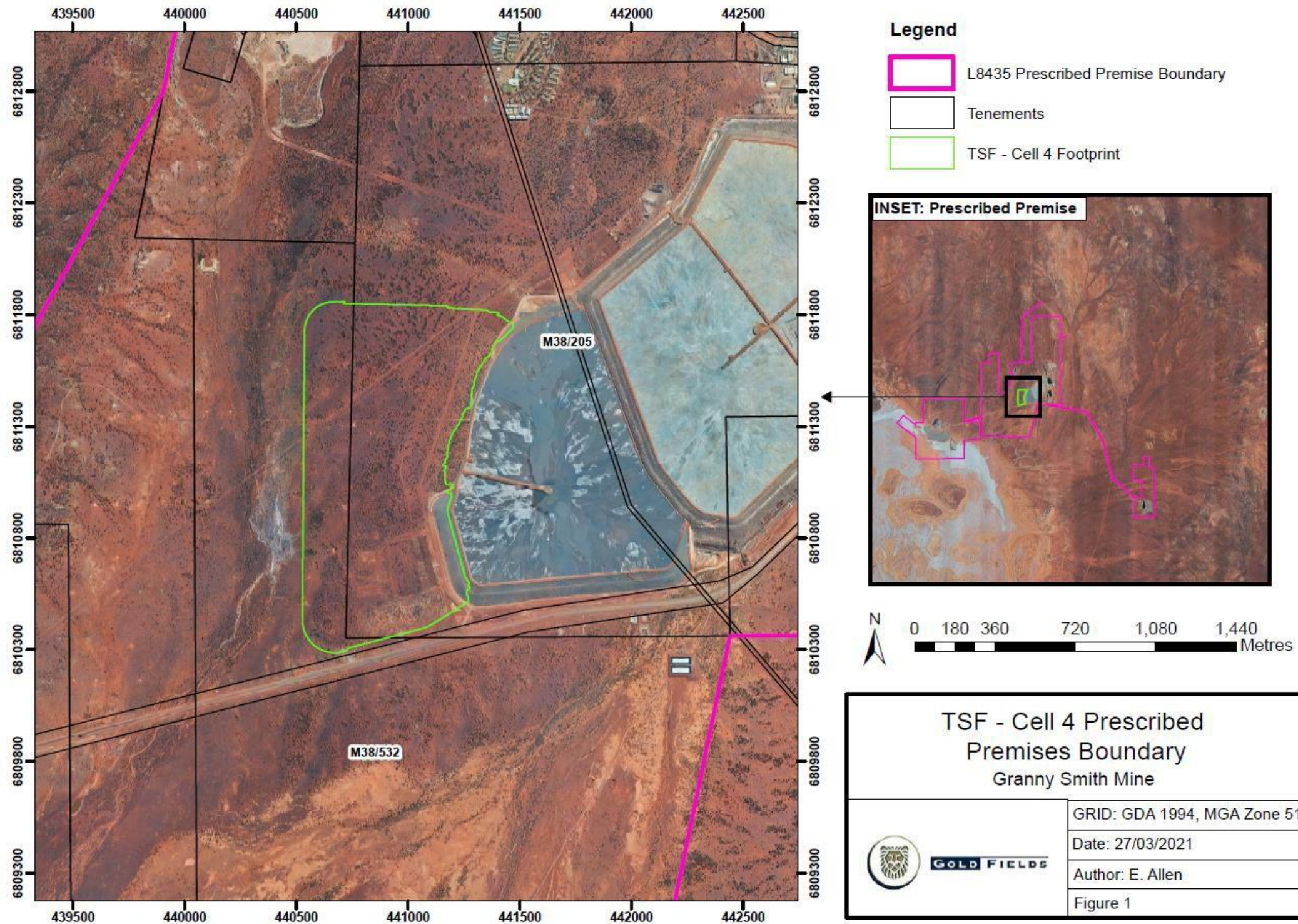
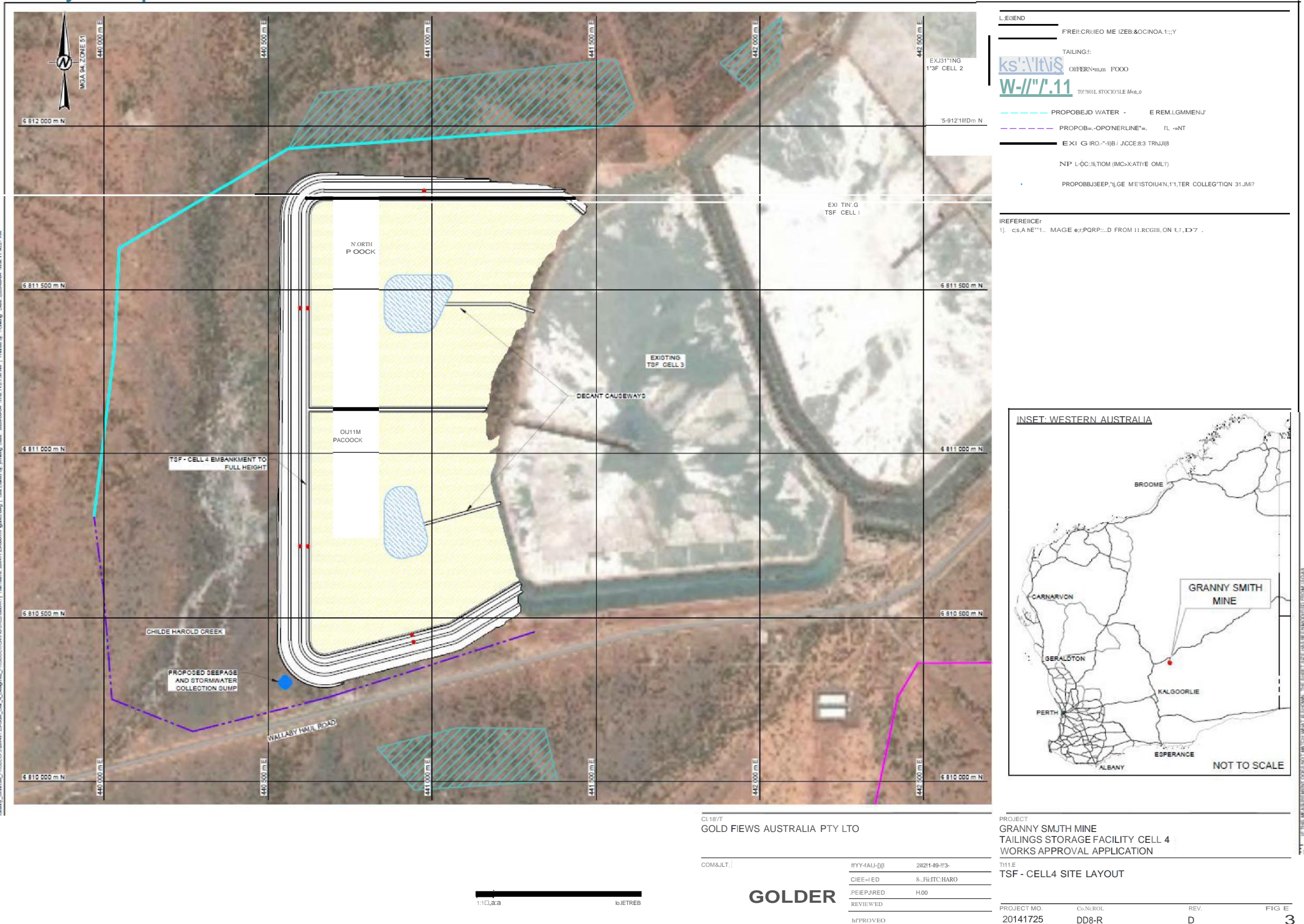
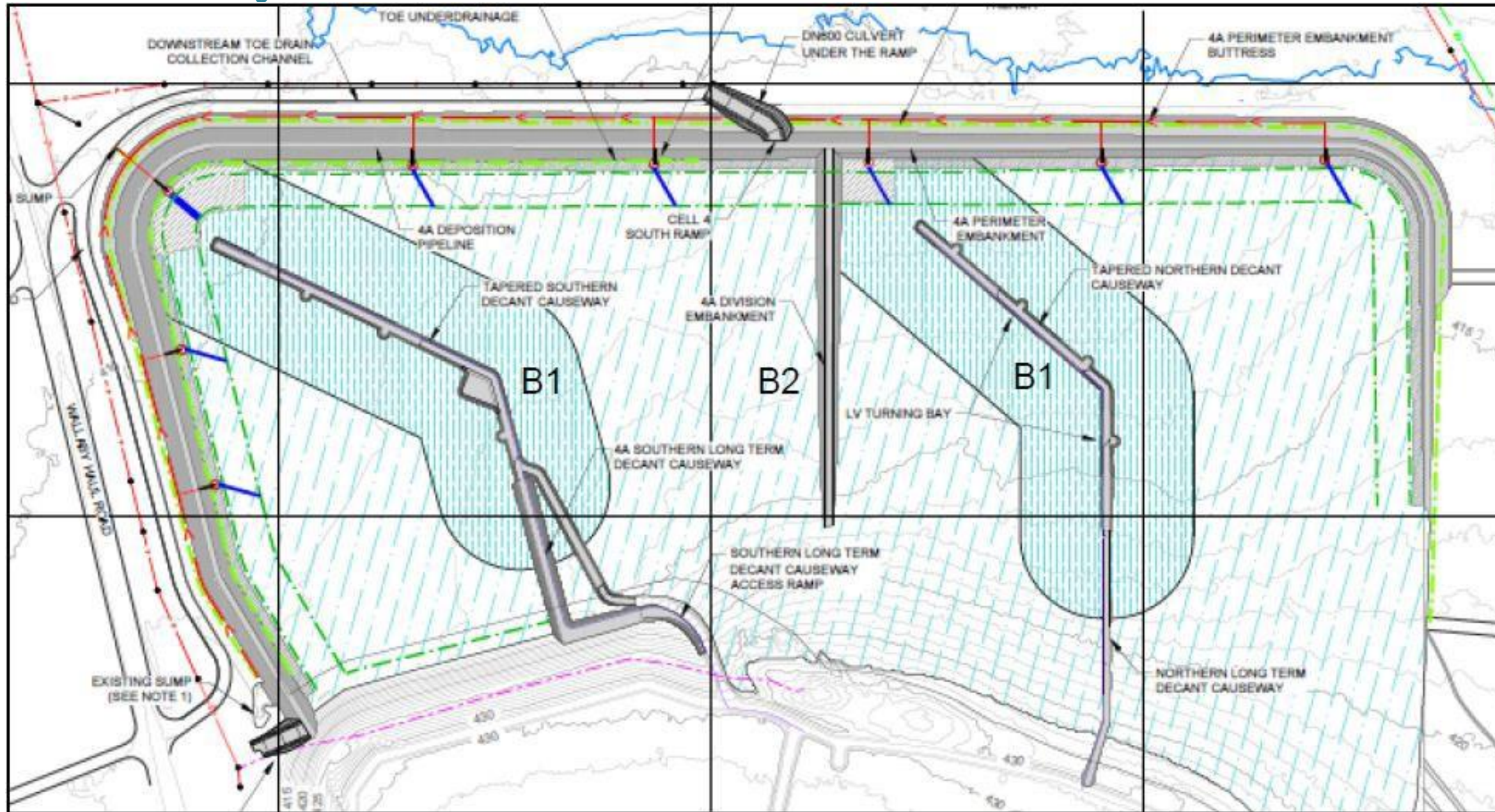


Figure 1: Map of the boundary of the prescribed premises

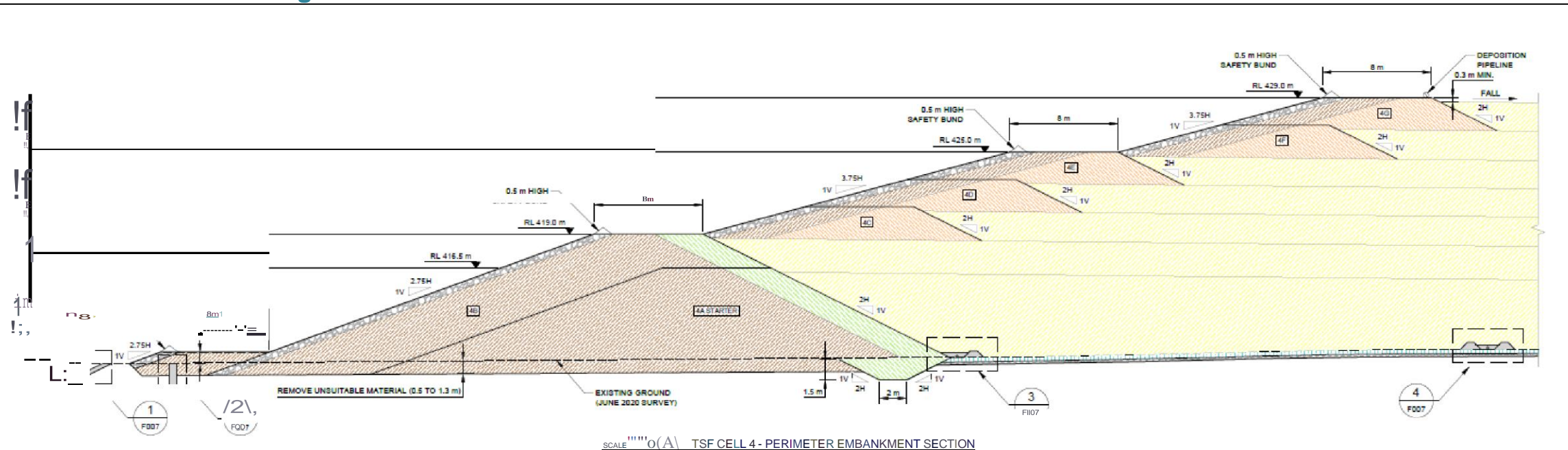
Site Layout Map



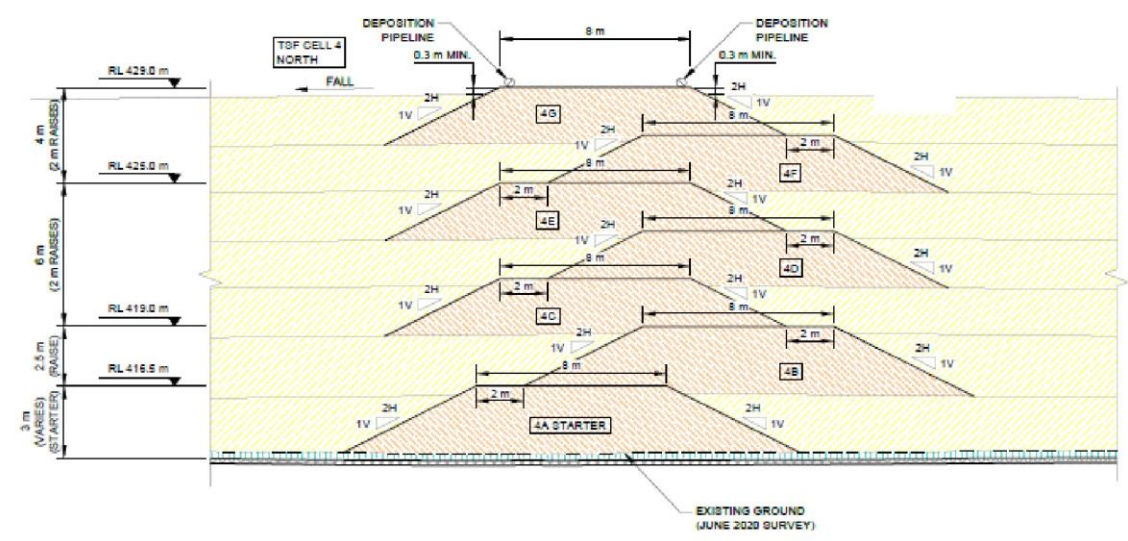
Zone B1 and B2 Arrangement



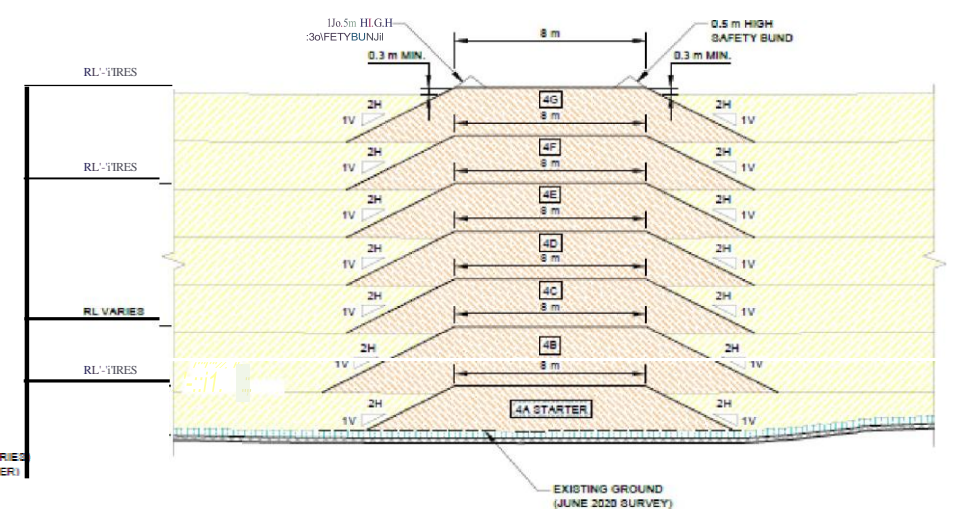
Embankment sections design



SCALE 1:1000 (A) TSF CELL 4 - PERIMETER EMBANKMENT SECTION



SCALE 1:250 (B) TSF CELL 4 - DIVISION EMBANKMENT SECTION



SCALE 1:500 (C) TSF CELL 4 SOUTH - DECANT CAUSEWAY SECTION

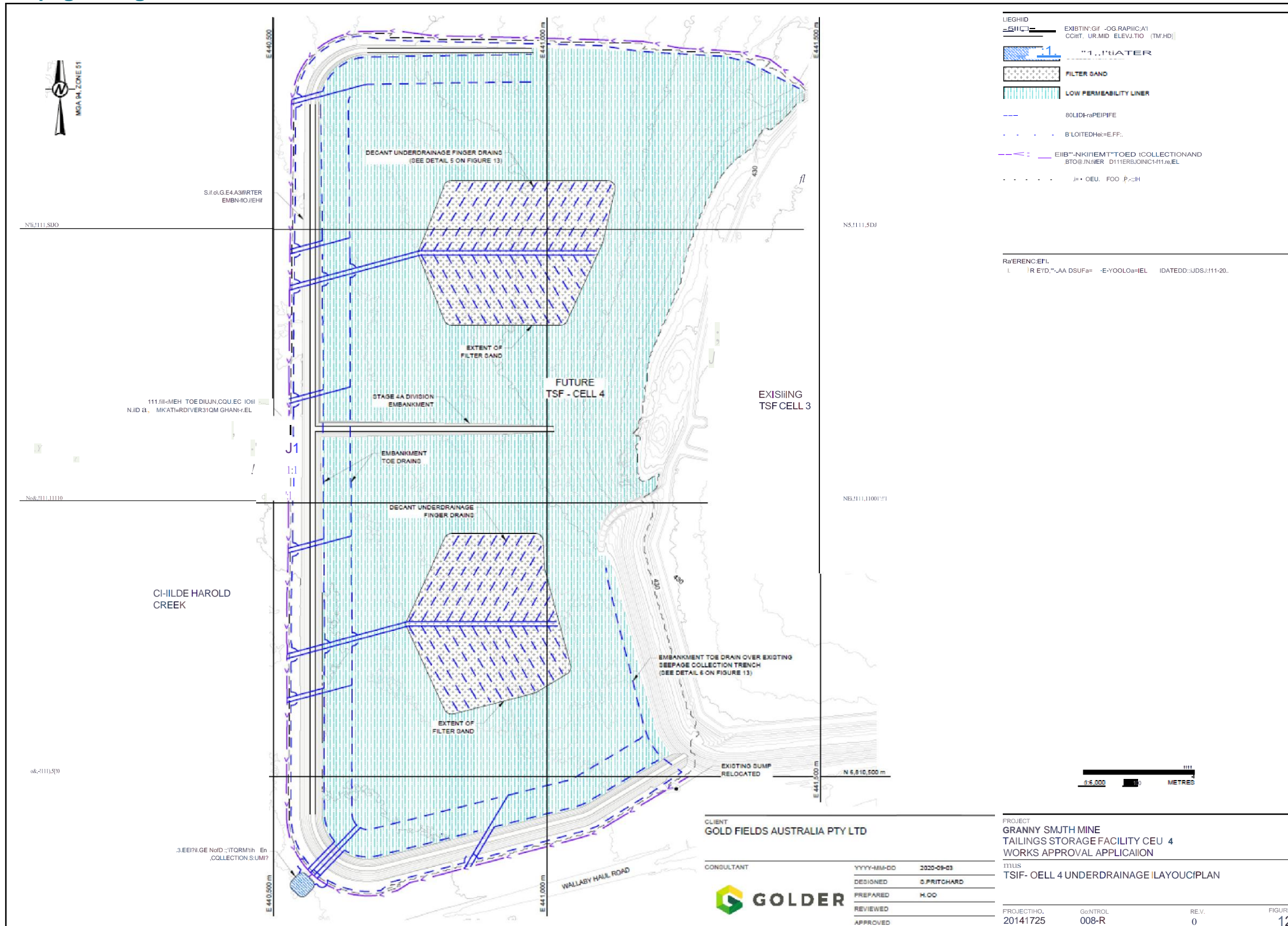
LEGEND

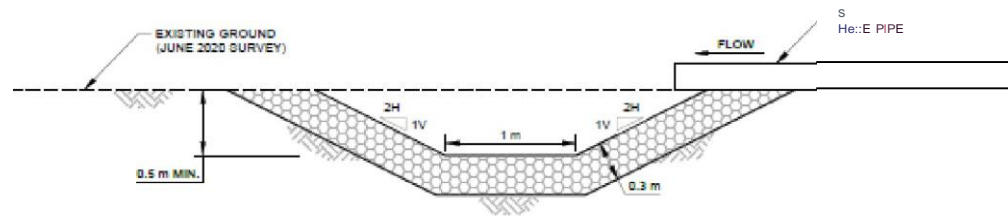
	TAILINGS
	TAILINGS EMBANKMENT FILL
	LOW PERMEABILITY EMBANKMENT FILL
	STRUCTURAL ZONE EMBANKMENT FILL
	ROCK FILL EMBANKMENT COVER
	LOW PERMEABILITY LAYER
	RIP AND COMPACT IN SITU MATERIAL



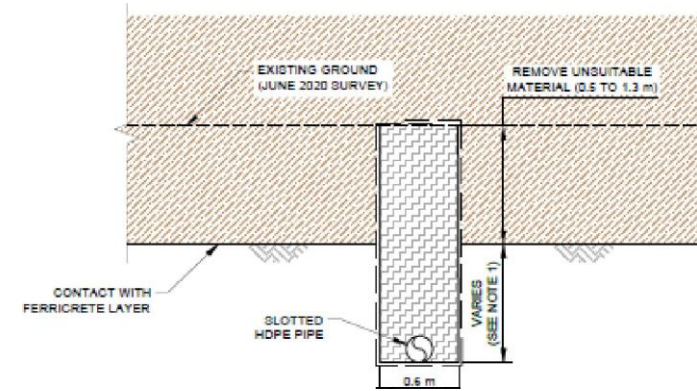
CLIENT GOLD FIBRES AUSTRALIA PTY LTD	PROJECT GRANNY SMITH MINE TAILINGS STORAGE FACILITY CELL 4 DESIGN
CONTRACT TYPY-MU-00	TITLE EMBANKMENT SECTIONS
DESIGNED K. RENGIFO	PROJECT NO. 2D1417.25
REVIEWED M. ORE 83EL	ISSUE NO. 002-R
APPROVED	REV.

Seepage design

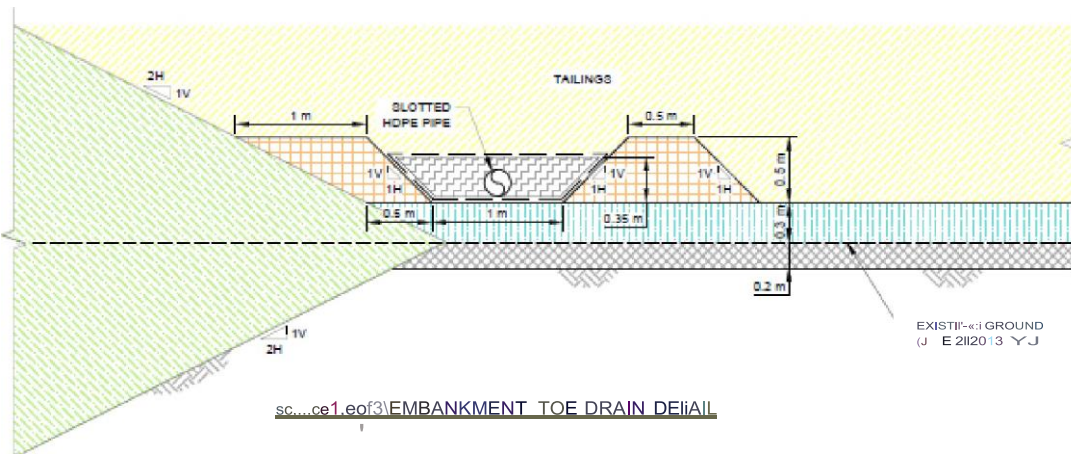




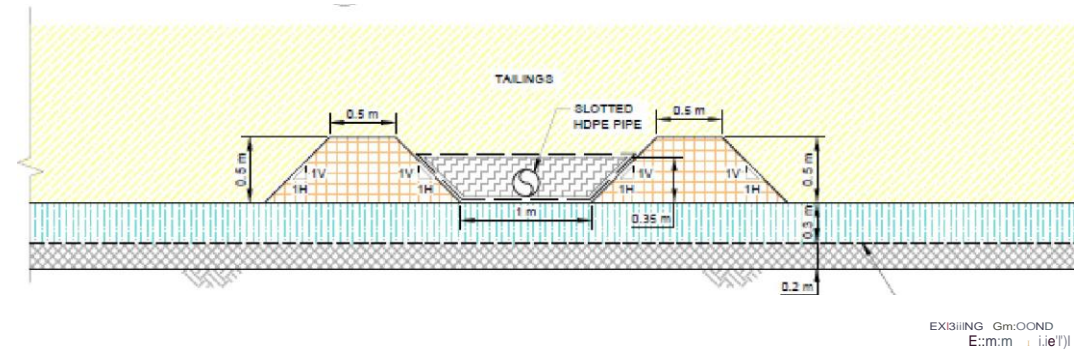
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1-V



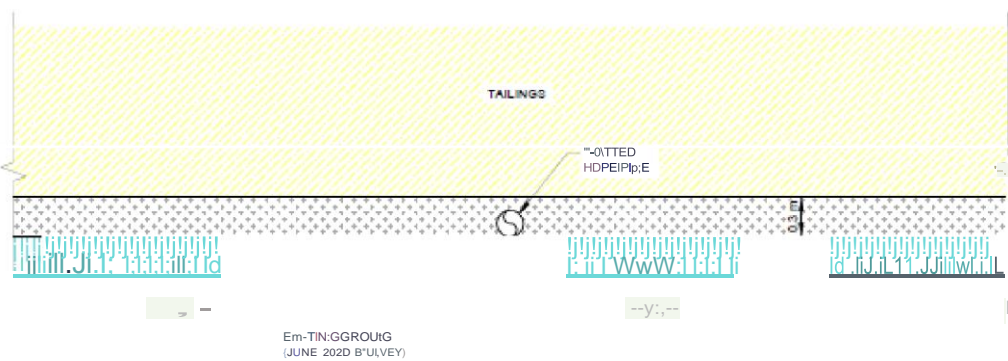
SCALE 1:50 (2) SEEPAGE COLLECTION PIPELINE DETAIL



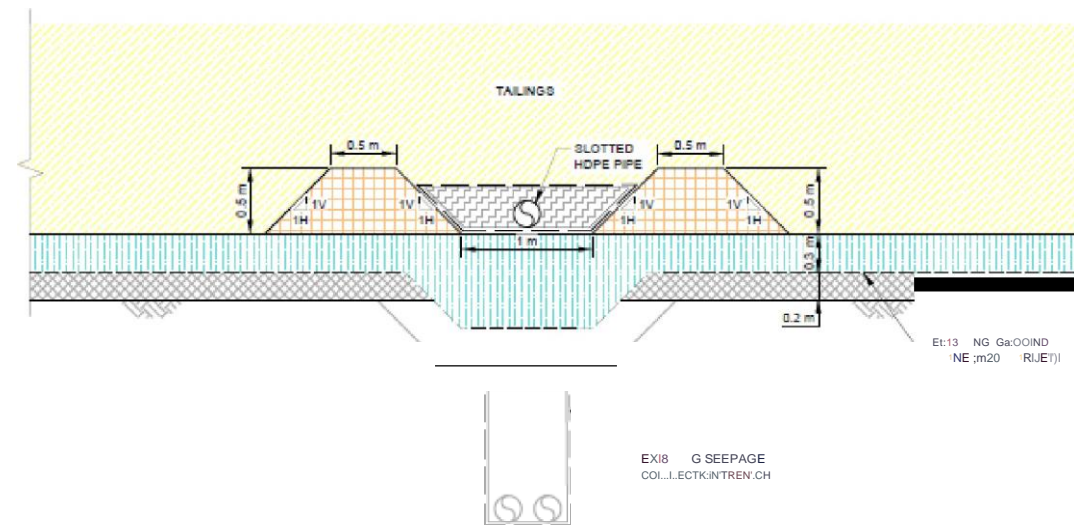
sc...ce1:so(3) EMBANKMENT TOE DRAIN DETAIL



re...ce:so(4) BLANKET TOE DRAIN IN TSE DETAIL
1-V



sc...ce1:so(5) SEEPAGE COLLECTION TRENCH DETAIL



sc...ce1:so(6) EMBANKMENT TOE DRAIN OVER EXISTING, SEEPAGE COLLECTION TRENCH DETAIL
1-V

- NOTES
- MINI MOF... 4m ORIGINAL RELOCATED TO 1.5m FROM FACE OF TRENCH

LEGEND	
	TAILINGS
	LOW PERMEABILITY EMBANKMENT FILL
	STRUCTURAL ZONE EMBANKMENT FILL
	NOMINALLY COMPACTED EARTH FILL BUND
	FILTER SAND
	FILTER WALL
	EROSION PROTECTIVE
	LOW PERMEABILITY LINER
	RUBBER GOMPHOSIS LINER



CLIENT
GOLD FIELDS AUSTRALIA PTY LTD

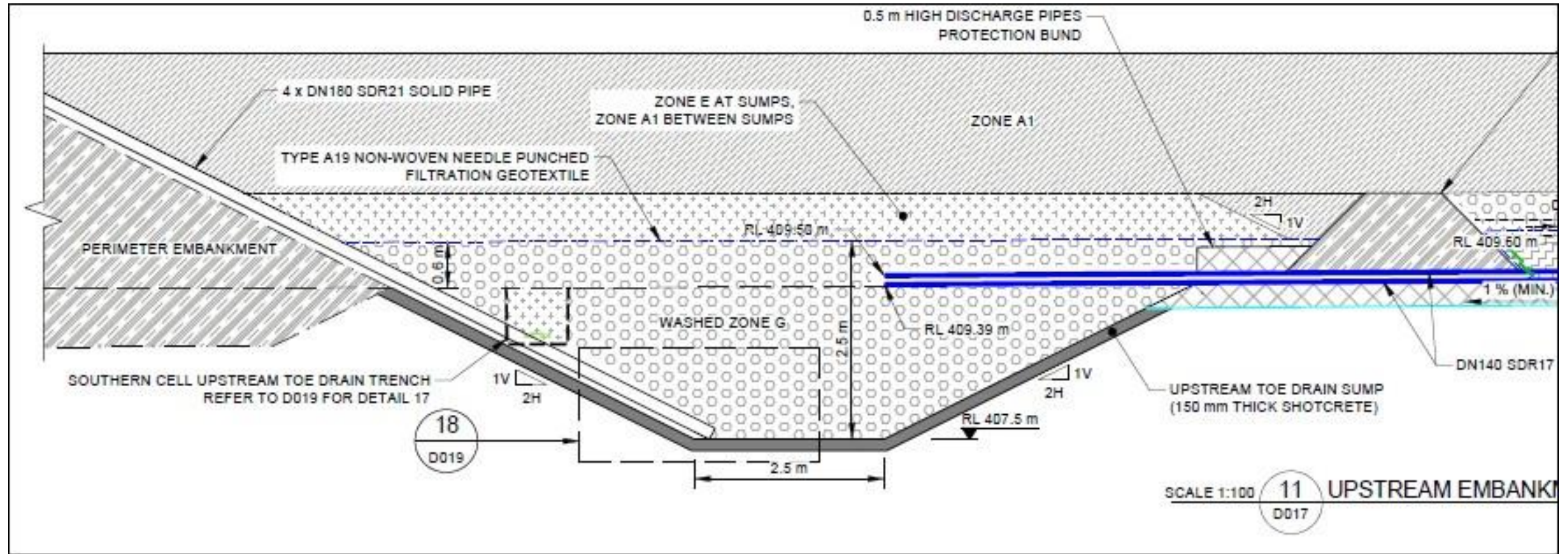
PROJECT
GRANNY SMITH MINE
TAILINGS STORAGE FACILITY CELL 4
WORKS APPROVAL APPLICATION

CONSVLT	DATE	BY	FOR
PREPARED	1-10		
REVIEWED			
APPROVED			

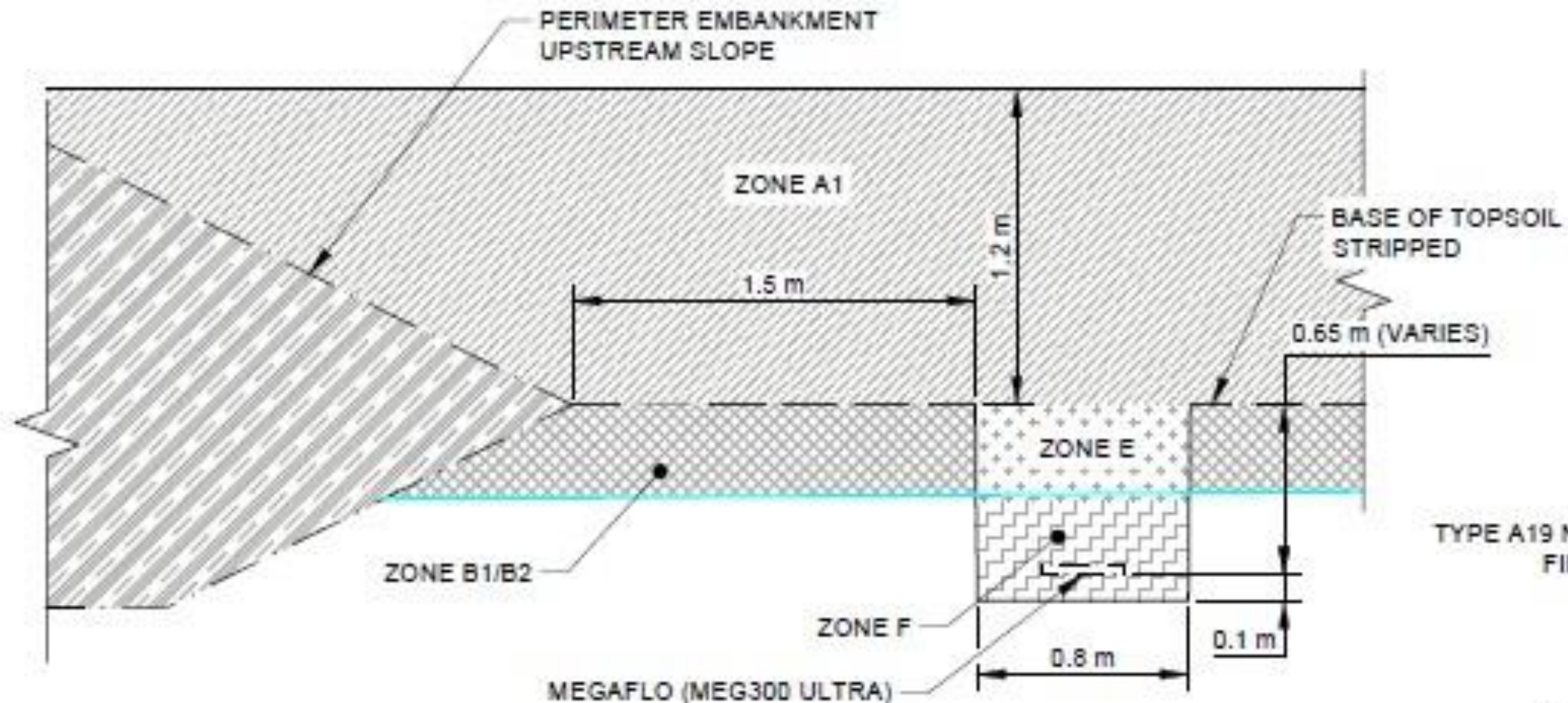
TITLE
CELL 4 UNDERDRAINAGE CROSS-SECTIONS

PROJECT NO.	CONTROL NO.	REVISION	FIGURE
20141725	008-R		13

Upstream Embankment



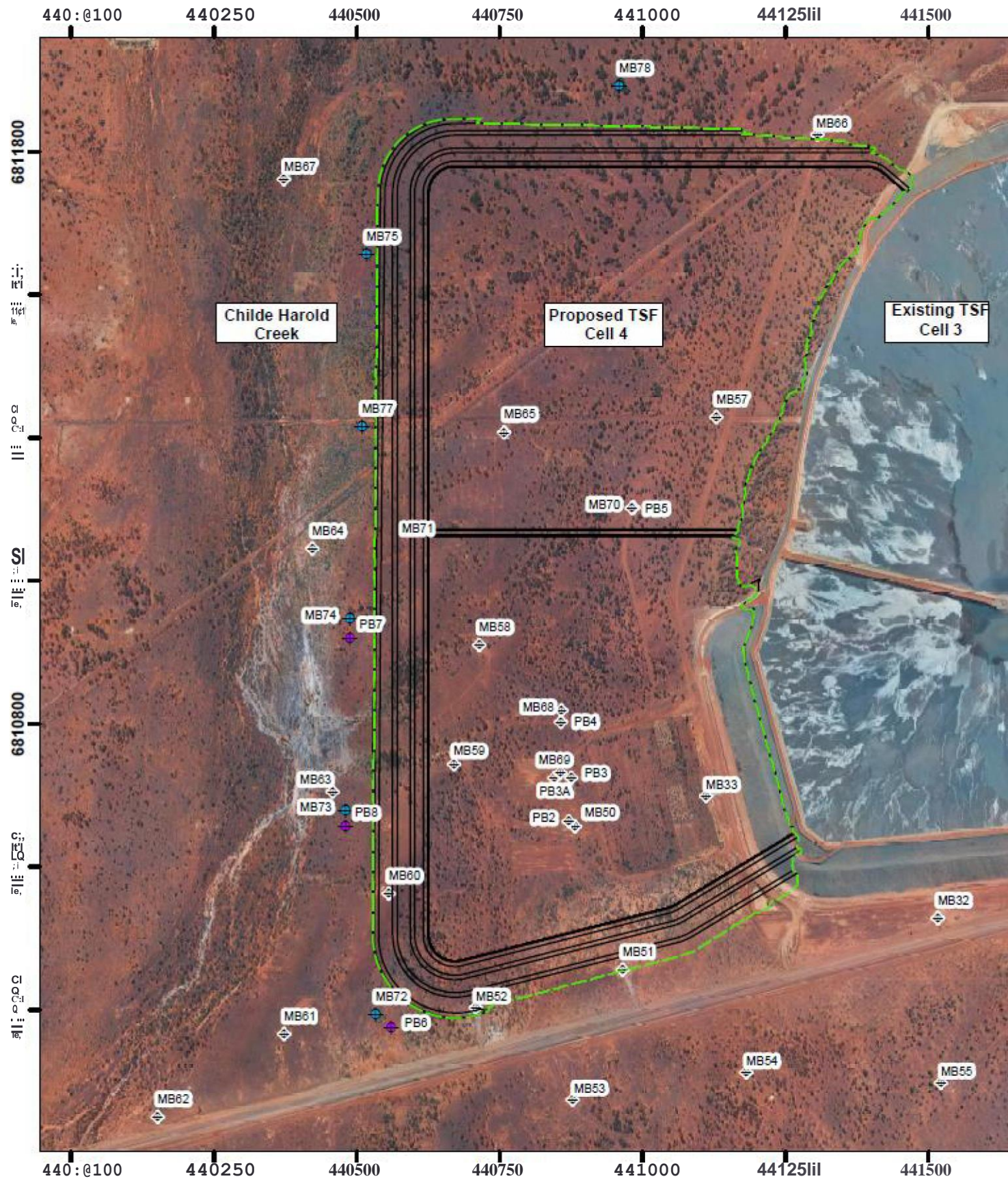
Upstream Toe Drain Tranch



Proposed monitoring bores

SCALE 1:50 **17** UPSTREAM TOE DRAIN TRENCH DETAIL
 D007 D018

TYPE A19 N
 FIL
 SC
 NOTE
 1. 90



Legend

- TSF - Cell 4 Footprint
- Existing Monitoring Bore
- Proposed Monitoring Bore
- Proposed Production Bore

Monitoring Bore ID (Shallow and Deep)	Easting (m)	Northing (m)
MB72	440533	6810292
MB73	440480	6810649
MB74	440488	6810984
MB75	440517	6811620
MB77	440509	6811320
MB78	440509	68111914

Proposed Production Bore ID	Easting (m)	Northing (m)
PB6	440560	6810270
PB7	440488	6810649
PB8	440480	6810620



Groundwater Monitoring and Seepage Interception Bore Layout Plan
Granny Smith Mine - Tailings Storage Facility Cell 4

	GRID: GOA 19'94, MGA Zone 51
	Date: 27/03/2021
	Author: E. Ahen
	Figure 4