Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6416/2020/1
Works approval holder	Department of Planning, Lands and Heritage
Registered business address	Level 2, 140 William Street PERTH WA 6000
DWER file number	DER2020/000257
Duration	04/12/2020 to 03/12/2025
Date of amendment	13/07/2021
Premises details	Former Wheal Ellen Mine Site Legal description – Lot 1146 on Deposited Plan 231889 Certificate of Title LR3164/799, Lot 11448 on Deposited Plan 184560 Certificate of Title LR3075/254, and Part of Lot 5680 on Deposited Plan 252078 Certificate of Title 1583/256 as defined by the coordinates in Map 16 of Schedule 1

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed design capacity**
Category 65 - Class IV secure landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises in accordance with the Landfill Waste Classification and Waste Definitions 1996, is accepted for burial.	Maximum capacity of 38,780m^3
Category 70 – Screening etc of material: premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.	46,305 tonnes per annual period
Assessed activities directly related to the above categories	
Clearing of 0.66 hectares of native vegetation	

This works approval is granted to the works approval holder, subject to the attached conditions, on 13 July 2021, by:

Melissa Chamberlain
Digitally signed by Melissa Chamberlain
Date: 2021.07.13 15:09:21 +08'00'

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

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

Clearing

1. The works approval holder must not clear more than 0.66 hectares of native vegetation within the areas cross-hatched yellow on Plan 8976/1 in Schedule 1

2. In determining the amount of native vegetation to be cleared as authorised in Condition 1, the works approval holder must have regard to the following principles, set out in order of preference:

(a) avoid the clearing of native vegetation;

(b) minimise the amount of native vegetation to be cleared; and

(c) reduce the impact of clearing on any environmental value

3. When undertaking any clearing authorised under this works approval, the works approval holder must take the following steps to minimise the risk of the introduction and spread of weeds:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no weed-affected soil, mulch, fill or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

4. The works approval holder must revegetate and rehabilitate areas cleared for temporary works under this works approval within six months of the area no longer being required for the purpose for which it was cleared.

5. The works approval holder is not required to revegetate and rehabilitate an area specified in condition 4 if the works approval holder intends to use that cleared area for another purpose within 24 months of that area no longer being required for the purpose that it was cleared under this works approval.

6. The works approval holder must maintain the following records for activities done pursuant to this works approval:

(a) In relation to the clearing of native vegetation authorised under this works approval:

(i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(ii) the date that the area was cleared;

(iii) the size of the area cleared in hectares;

(iv) actions taken to avoid, minimise and reduce the impacts and the extent of clearing in accordance with Condition 2; and

(v) actions taken to minimise the introduction and spread of weeds in accordance with condition 3.

and

(b) In relation to the revegetation and rehabilitated areas pursuant to condition 4 of this works approval:

(i) the size of the area revegetated and rehabilitated in hectares;

(ii) the date(s) on which the area revegetated and rehabilitated was undertaken; and

(iii) the boundaries of the area revegetated and rehabilitated recorded as a shapefile.

7. The works approval holder must provide to the CEO the records required under Condition 6 when requested by the CEO.

Infrastructure and equipment

8. The works approval holder must:

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

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

(c) at the corresponding infrastructure location

as set out in Table 1.

9. The works approval holder must not depart from the requirements specified in Table 1 except:

(a) where such departure is minor in nature and does not materially change or affect the infrastructure;

(b) where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment; and

(c) all other Conditions in this Licence are still satisfied.

Table 1: Design and construction requirements

	Infrastructure	Design and construction requirements	Infrastructure location
Stage 1			
1.	Southern portion of the Permanent Containment Cell (PCC)	• To incorporate a maximum 1 in 3.5 slope grade capable of containing tailings within the partial cell • To be capable of holding 17,600m^3 of tailings material • The lowest portion of the PCC (including any collection chamber) is to have a minimum 2 metres separation distanced from the maximum seasonal groundwater level. • To be consistent with the drawings depicted in Maps 3 to 9 in Schedule 1.	To be located as depicted in Maps 3 to 9 in Schedule 1
2.	PCC basal liner	• To consist of: ○ Prepared subgrade	To be located as depicted in Map 4 in

	Infrastructure	Design and construction requirements	Infrastructure location
		○ 200 mm protective layer of locally sourced sand over the subgrade ○ 2 mm textured HDPE liner ○ A cushion geotextile liner ○ Minimum 300 mm sand protection layer (excluding the cell side batter which instead is to consist of a second cushion geotextile layer) • To have an anchor trench design as depicted in Map 10 in Schedule 1	Schedule 1
3.	Megaflo land draining system	• To be located within the Southern portion of the PCC as depicted in Map • To incorporate a collection chamber; • To contain a vertical riser shaft (a minimum of 300 mm in diameter) capable of being used to monitor for any liquids in the collection chamber and remove liquids if necessary. • To be consistent with the drawings depicted in Map 14 in Schedule 1	At the locations depicted in Maps 4, 10 and 14 in Schedule 1.
4.	Perimeter drain	• Sized to collect and convey a 1% AEP critical storm event without compromising the integrity of the PCC • To incorporate erosion protection • To be constructed as depicted in Maps 11 and 12 in Schedule 1	To be located as depicted in Map 11 in Schedule 1
5.	Stilling basin	• Capable of capturing and settling out sediments from stormwater. • To be constructed as depicted in Maps 11 and 13 in Schedule 1	To be located as depicted in Map 11 in Schedule 1
Stage 2			
6.	Northern portion of the PCC	• To achieve a combined total storage of at least 38, 780 m^3 • The lowest portion of the PCC (including any collection chamber) is to have a minimum 2 metres separation distanced from the maximum seasonal groundwater level.	To be located as depicted in Maps 6 to 9 in Schedule 1
7.	PCC basal liner	As described in Row 2.	To be located as depicted in Map 6 in Schedule 1
8.	Megaflo land draining system	To be constructed as, and connected to, the system described in Row 3.	At the locations depicted in Maps 4, 10 and 14 in Schedule 1.

	Infrastructure	Design and construction requirements	Infrastructure location
Stage 3 (Capping)			
9.	HDPE layer	To consist of a 2 mm HDPE geomembrane (textured double-side) as depicted in Map 10 in Schedule 1	To be located as depicted in Map 7 in Schedule 1
10	Sand layer	To consist of 300 mm of loosely placed sand	
11	Rehabilitation material	• To consist of 500 mm of a soil, topsoil mulch and organics blend. • The rehabilitation material is not to be overtly compacted	
12	Vegetation layer	To consist of vegetation identified as having a root system which will not penetrate the HDPE layer	
Category 70 infrastructure			
13	Jaw crusher	Terex Finlay J1175 Jaw Crusher or similar, capable of producing <150mm material	To be located as depicted in Map 15 in Schedule 1
14	Mobile screening plant	Terex Finlay 595 Hydratrak or similar	To be located as depicted in Map 15 in Schedule 1

Compliance reporting

10. Where a departure from the requirements specified in Table 1 occurs and is of a type allowed by condition 9, the Licence Holder must provide to the CEO a description of, and explanation for, the departure(s) along with the report required by condition 11.

11. The works approval holder must within 30 calendar days of Stage 1, 2 or 3 infrastructure required by condition 9 being constructed:

(a) undertake an audit of their compliance with the requirements of condition 9; and

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

12. The Critical Containment Infrastructure Report required by condition 11, must include as a minimum the following:

(a) certification by a suitably qualified Professional Engineer that the infrastructure or component(s) thereof, as specified in condition 9, has been constructed in accordance with the relevant requirements specified in condition 9;

(b) as constructed plans and a detailed site plan showing the location and dimensions for each stage of infrastructure or component thereof, as specified in condition 9;

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

(d) contains 'as constructed' surveys reporting actual subgrade levels against planned levels for the Southern and Northern portions of the PCC (Maps 3 to 9 in Schedule 1); and

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

13. The works approval holder must within 30 calendar days of Category 70 infrastructure required by condition 9 being constructed:

(a) undertake an audit of their compliance with the requirements of condition 9; and

(b) prepare and submit to the CEO a report on that compliance including photographic evidence of the infrastructure

Construction quality assurance and reporting

14. The works approval holder must undertake quality assurance including visual inspection, materials testing and weld testing for HDPE membranes in accordance with the requirements specified in Table 2.

Table 2: HDPE CQA

CQA item	Property	Standard	Frequency	Minimum value
Conformance testing upon shipment to site, or at point of manufacture	Thickness	ASTM D5994	Each roll	2.0 mm
	Density	ASTM D1505 ASTM D792	At least one sample per 5,000 m^2 or every five rolls delivered to site whichever is the greatest number of tests	0.94 g/cm^3
	<u>Tensile properties:</u> Yield strength Yield elongation Break strength Break elongation	ASTM D6693		29 kN/m 12% 21 kN/m 100%
	Puncture resistance	ASTM D4833		534 N
	Tear resistance	ASTM D1004		249 N
	Carbon black dispersion	ASTM D1603		For 10 different views: 9 in categories 1 or 2 and 1 in Category 3
	Stress crack resistance (tested on smooth edges of textured rolls or on smooth sheets made from the same formulation used for the textured sheet materials)	ASTM D5397	One sample every 10,000 m^2, or resin type or manufacturing run	500 hr
	Oxidative induction time (a) Standard OIT; and (b) High Pressure OIT	 ASTM D3895 ASTM D5885		 100 min 400 min

CQA item	Property	Standard	Frequency	Minimum value
Start-up test weld	Welding equipment	N/A	Checked daily at start of works, and whenever the welding equipment is shut-off for more than one hour. Also, after significant changes in weather conditions	N/A
	Weld conditions	N/A	Test weld strips will be required whenever personnel or equipment are changed and when wide temperature fluctuations are experienced Minimum 1.5 continuous seam	N/A
Destructive weld testing	On-site, hand tensiometer in peel and shear	ASTM D6392	Every 150 m (if fusion weld), Every 120 m (if extrusion weld)	<u>Fusion weld:</u> Peel: 530 N/25mm Shear: 700 N/25mm <u>Extrusion weld:</u> Peel: 455 N/25mm Shear: 700 N/25mm
	Off-site – weld seam strength in peel and shear			
Non-destructive weld testing	Air pressure test	ASTM D5820	All seams over full length	Observed, validated and recorded by the consultant
	Vacuum box test	ASTM D5641		Presence/ absence of bubbles
Visual inspection	Tears, punctures, abrasions, cracks, indentations and thin spots	N/A	Every roll	N/A
Thickness of geomembrane	On-site	N/A	Five per 100 m, 20 m apart, taken at the edge of the sheet	2 mm

15. The works approval holder must undertake quality assurance, including visual inspection and materials testing for the protection geotextile layer, in accordance with the requirements specified in Table 3.

Table 3: CQA requirements table – cushion geotextile layer

CQA item	Property	Standard	Frequency	Minimum value	
Construction Quality Control testing (sampled at the point of manufacture or on site)	Wide strip tensile strength	AS 3706-2	1 sample per 5,000 m^2	Machine direction	≥ 18.5 kN/m
				Cross machine direction	≥18.5 kN/m
	Grab tensile strength	AS 3706-2		Machine direction	≥ 1,270 N
				Cross machine direction	≥ 1,210 N
	Trapezoidal tear strength	AS 3706-3		Machine direction	≥ 440 N
				Cross machine direction	≥ 440 N
	CBR Burst Strength	AS 3706-4		Machine direction	≥ 3,400 N
				Cross machine direction	≥ 3,400 N
Visual inspection of geotextile	Colour, thickness, tears, holes, punctures, needle-punching, presence of needles or broken needles, and other faults in the material	N/A	Each roll during placement	N/A	

16. The works approval holder must ensure all laboratory tests are performed in a geosynthetics laboratory which holds NATA accreditation for the specific test referenced.

17. The works approval holder must provide to the CEO a Construction Quality Assurance Validation Report within 30 days of the completion of the Works specified in condition 9 for each of:

(a) Stage 1 of the PCC (excluding perimeter drain and stilling basin);

(b) Stage 2 of the PCC; and

(c) Stage 3 (the capping system of the entire PCC).

18. The works approval holder must ensure the report required by condition 17 is written and certified by the suitably qualified Professional Engineer that completed the CQA and includes, but is not limited to, the following:

(a) documentation of the quality of the completed Works;

(b) demonstration that all requirements of the Works specifications and quality assurance provisions in Tables 2 and 3 have been complied with;

(c) an assessment of test results against minimum values in Tables 2 and 3 as relevant;

(d) documentation of all repairs to subgrade and resulting from non-destructive weld testing;

(e) certification that the constructed infrastructure is free of fault of defect, built to the design specification and is fit for the intended purpose; and

(f) copies of all surveys and drawings of the 'as constructed' cell, inspections, materials testing and weld testing results.

Time limited operations phase

Commencement and duration

19. The works approval holder may only commence time limited operations for Stage 1, 2 or 3 infrastructure identified in condition 9:

(a) Where the Report(s) for that stage of infrastructure as required by conditions 11 and 17 have been submitted to the CEO and;

(i) The CEO has notified the works approval holder that the Report(s) for that stage of infrastructure as required by conditions 11 and 16 meets the requirement of that condition; or

(ii) At least 30 business days has passed after the Report(s) for that stage of infrastructure has been submitted to the CEO.

20. The works approval holder may conduct time limited operations for Category 70 infrastructure identified in condition 9, where the report(s) for that infrastructure as required by condition 13 have been submitted to the CEO.

21. The works approval holder may conduct time limited operations for Stage 1, 2 or 3 or Category 70 infrastructure specified in condition 9:

(a) For a period not exceeding 180 days from the day the works approval holder meets the requirements of conditions 19 or 20 for that infrastructure; or

(b) Until such time, not exceeding the period outlined in 20(a), as a licence for that infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*

Time limited operations requirements and emission limits

22. The works approval holder must ensure that materials on the Premises are only subjected to the processes set out in Table 4 and in accordance with any process limits described in that Table.

Table 4: Material Processing

Material type(s)	Process	Process limits
Lead Tailings	Disposal of waste by landfilling	(a) Shall only take place within the PCC as depicted in Maps 5 and 7 of Schedule 1. (b) The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2 m.

Material type(s)	Process	Process limits
Excavated material from the borrow pit on Lot 5680	Crushing, screening, and stockpiling prior to use in construction of the PCC	(a) Limited to processing on-site material only. (b) A maximum of 46.305 tonnes of material may be processed. (c) Stockpiles and haul roads are to be maintained in a damp state to prevent dust lift-off

23. The Licensee shall manage the landfilling activities to ensure:

(a) the initial tailings layer be placed in a single layer of 800 mm minimum thickness;

(b) tailings are to be compacted to a minimum 95% Standard Maximum Dry Density or 70% Density Index by the end of the working day in which the tailings were deposited;

(c) clean stormwater run-off must be directed away from the active landfill area; and

(d) contaminated stormwater run-off generated within the PCC must be kept separate from clean stormwater run-off.

24. The works approval holder must capture any leachates generated within the PCC and store within an impermeable container prior to removal off-site to an appropriately authorised facility.

Compliance reporting

25. 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 each stage of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

26. The works approval holder must ensure the report required by condition 23 includes the following;

(a) A summary of the time limited operations, including timeframes and total amount of material landfilled;

(b) A review of operational performance and compliance against the conditions of the works approval; and

(c) Where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

27. 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 9; and

(b) any maintenance of infrastructure that is performed in the course of complying with condition 9;

28. The books specified under condition 25 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 5 have the meanings defined.

Table 5: Definitions

Term	Definition
AEP	Annual Exceedance Probability
annual period	a 12 month period commencing 1 January until 31 December of the same year.
AS 3706-2	Standards Australia (2012) AS 3706 Methods for Testing Geotextiles
AS 3706-3	Standards Australia (2012) AS 3706 Methods for Testing Geotextiles
AS 3706-4	Standards Australia (2012) AS 3706 Methods for Testing Geotextiles
ASTM D792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
ASTM D1004	Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
ASTM D1505	Standard Test Method for Density of Plastics by the Density-Gradient Technique
ASTM D1603	Standard Test Method for Carbon Black Content in Olefin Plastics
ASTM D3895	Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
ASTM D4833	Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
ASTM D5397	Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
ASTM D5641	Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber
ASTM D5820	Standard Practice for Pressurized Air Channel Evaluation of Dual-Seamed Geomembranes
ASTM D5885	Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry

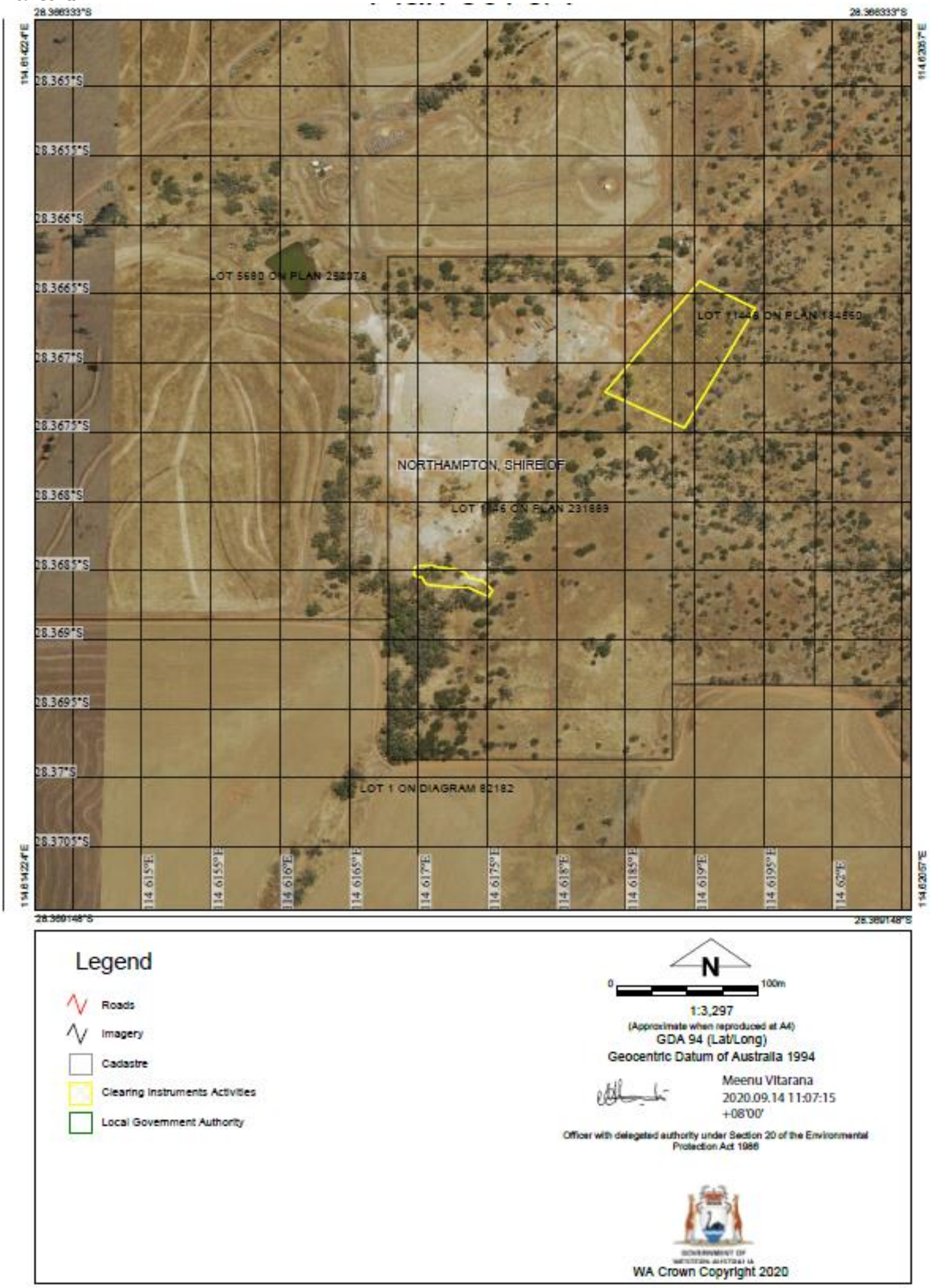
Term	Definition
ASTM D5994	Standard Test Method for Measuring Core Thickness of Textured Geomembranes
ASTM D6392	Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
ASTM D6693	Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
critical containment infrastructure	means the items of infrastructure listed in condition 9 under the headings Stage 1, 2 and capping layer.
Critical Containment Infrastructure Report	means a report to satisfy the CEO that the conditioned infrastructure and critical containment infrastructure has been constructed in accordance with the works approval.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
kN/m	kilonewton meter
N	newton
PCC	Permanent Containment Cell as specified in Table 1
premises	the premises to which this licence applies, as specified at the front of this works approval.
prescribed premises	has the same meaning given to that term under the EP Act

Term	Definition
rehabilitate/ed/ion	means actively managing an area containing native vegetation in order to improve the ecological function of that area
revegetate/ed/ion	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
temporary works	means access tracks, spoil areas, side tracks, site offices, storage areas, laydown areas, extraction sites, camps, project surveys, pre-construction activities and similar works associated with a project activity that are temporary in nature
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
waste	has the same meaning given to that term under the EP Act.
weed/s	means any plant – (a) that is declared pest under section 22 of the Biosecurity and Agriculture Management Act 2007; (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or not indigenous to the area concerned. (c) Not indigenous to the area concerned.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

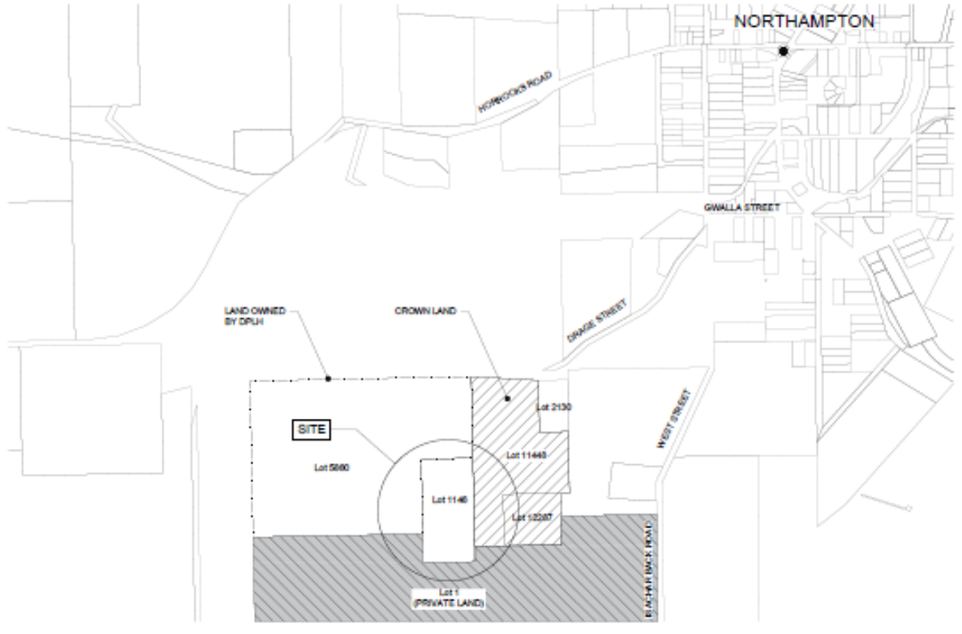
Schedule 1: Premises Plans and Maps

Plan 8976/1



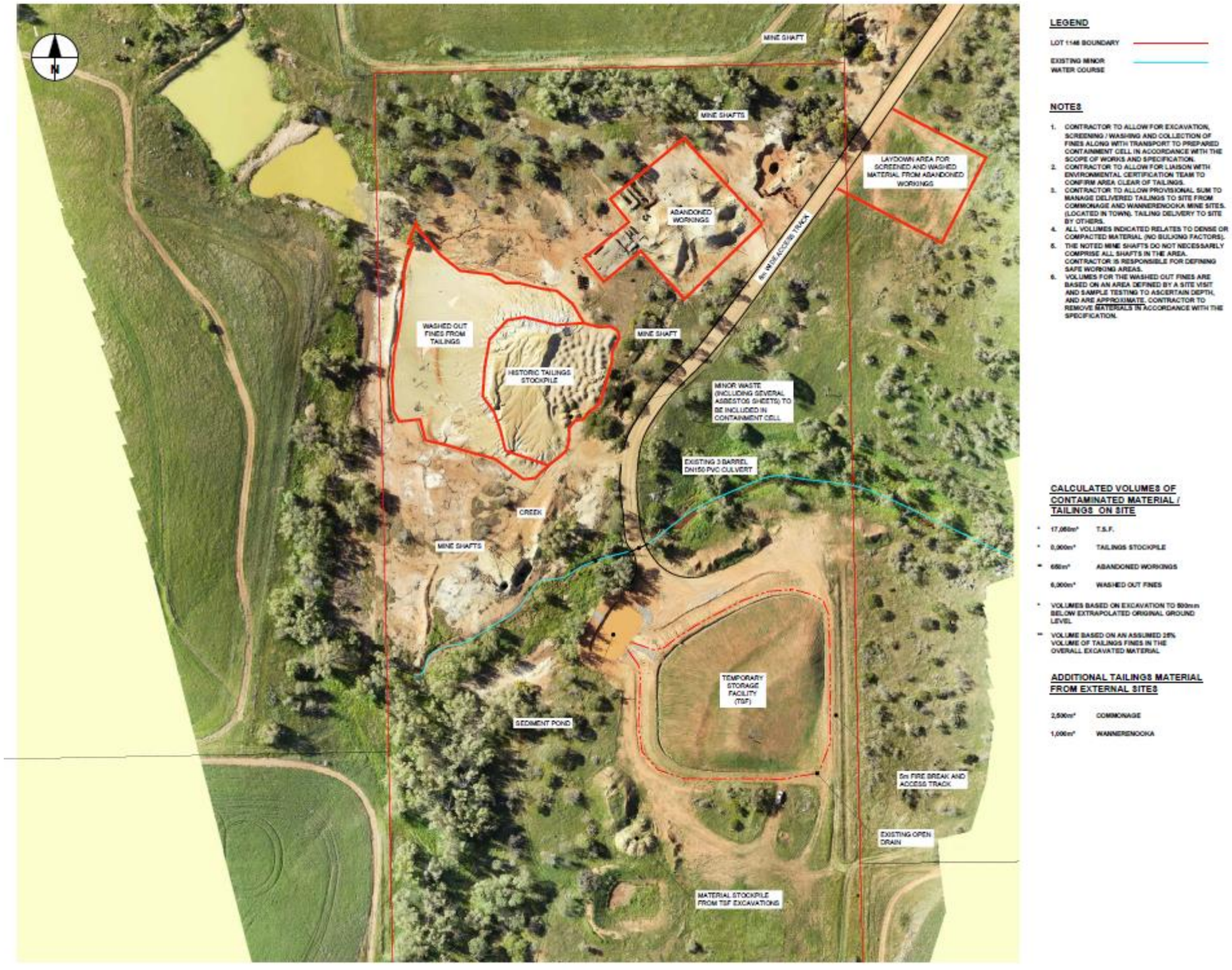
Map 1: Premises locality

LOCALITY PLAN
Scale N.T.S.



SITE PLAN
Scale 1:10000

Map 2: Site Plan



PLAN
Scale 1:500

LEGEND

LOT 1146 BOUNDARY

EXISTING MINOR WATER COURSE

NOTES

1. CONTRACTOR TO ALLOW FOR EXCAVATION, SCREENING / WASHING AND COLLECTION OF FINES ALONG WITH TRANSPORT TO PREPARED CONTAINMENT CELL IN ACCORDANCE WITH THE SCOPE OF WORKS AND SPECIFICATION.
2. CONTRACTOR TO ALLOW FOR LIAISON WITH ENVIRONMENTAL CERTIFICATION TEAM TO CONFIRM AREA CLEAR OF TAILINGS.
3. CONTRACTOR TO ALLOW PROVISIONAL SUM TO MANAGE DELIVERED TAILINGS TO SITE FROM COMMONAGE AND WANNERENOOKA MINE SITES. (LOCATED IN TOWN). TAILING DELIVERY TO SITE BY OTHERS.
4. ALL VOLUMES INDICATED RELATES TO DENSE OR COMPACTED MATERIAL (NO BULKING FACTORS).
5. THE NOTED MINE SHAFTS DO NOT NECESSARILY COMPRISE ALL SHAFTS IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR DEFINING SAFE WORKING AREAS.
6. VOLUMES FOR THE WASHED OUT FINES ARE BASED ON AN AREA DEFINED BY A SITE VISIT AND SAMPLE TESTING TO ASCERTAIN DEPTH, AND ARE APPROXIMATE. CONTRACTOR TO REMOVE MATERIALS IN ACCORDANCE WITH THE SPECIFICATION.

CALCULATED VOLUMES OF CONTAMINATED MATERIAL / TAILINGS ON SITE

*	17,050m³	T.S.F.
*	9,000m³	TAILINGS STOCKPILE
**	650m³	ABANDONED WORKINGS
	6,000m³	WASHED OUT FINES

* VOLUMES BASED ON EXCAVATION TO 500mm BELOW EXTRAPOLATED ORIGINAL GROUND LEVEL

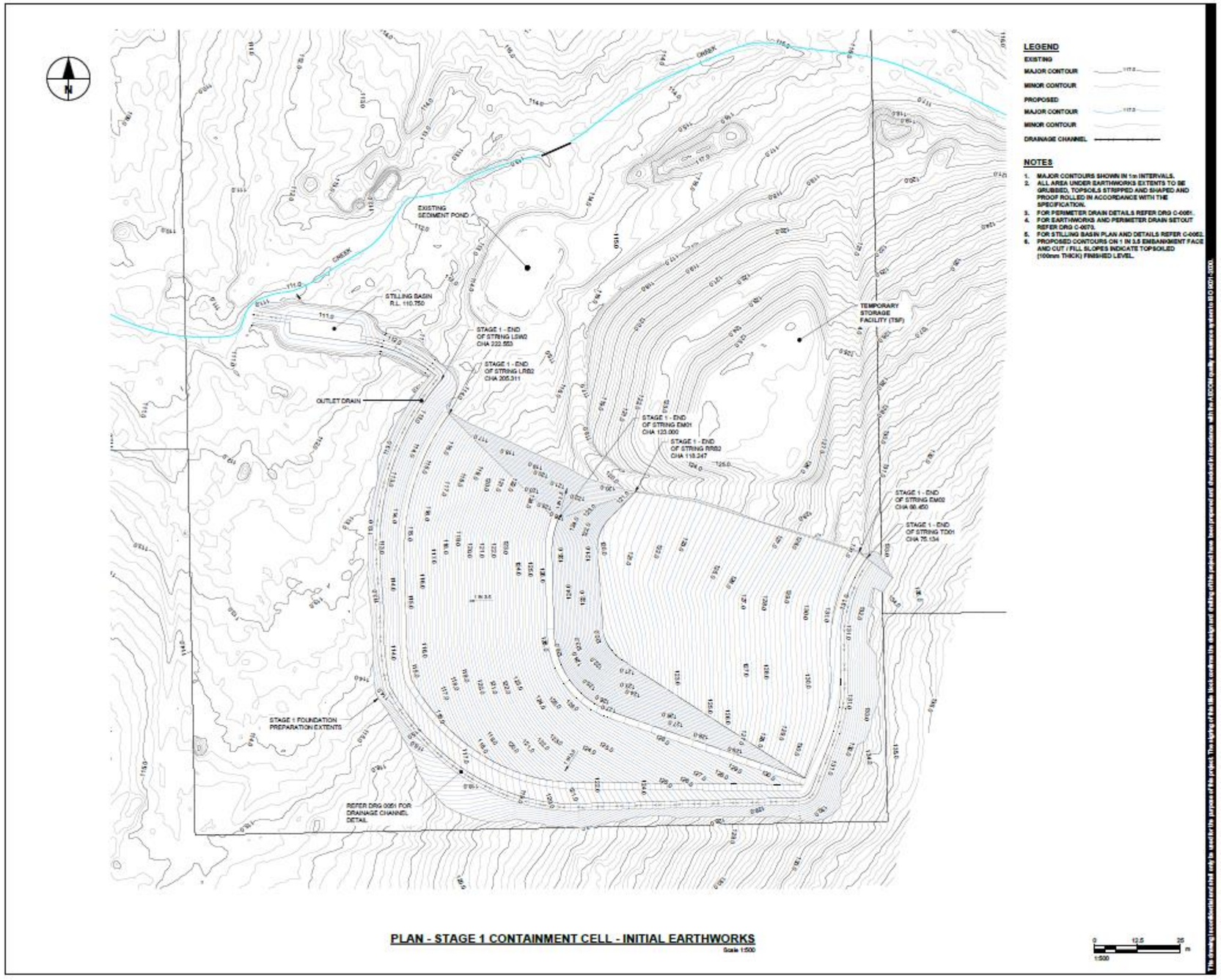
** VOLUME BASED ON AN ASSUMED 25% VOLUME OF TAILINGS FINES IN THE OVERALL EXCAVATED MATERIAL

ADDITIONAL TAILINGS MATERIAL FROM EXTERNAL SITES

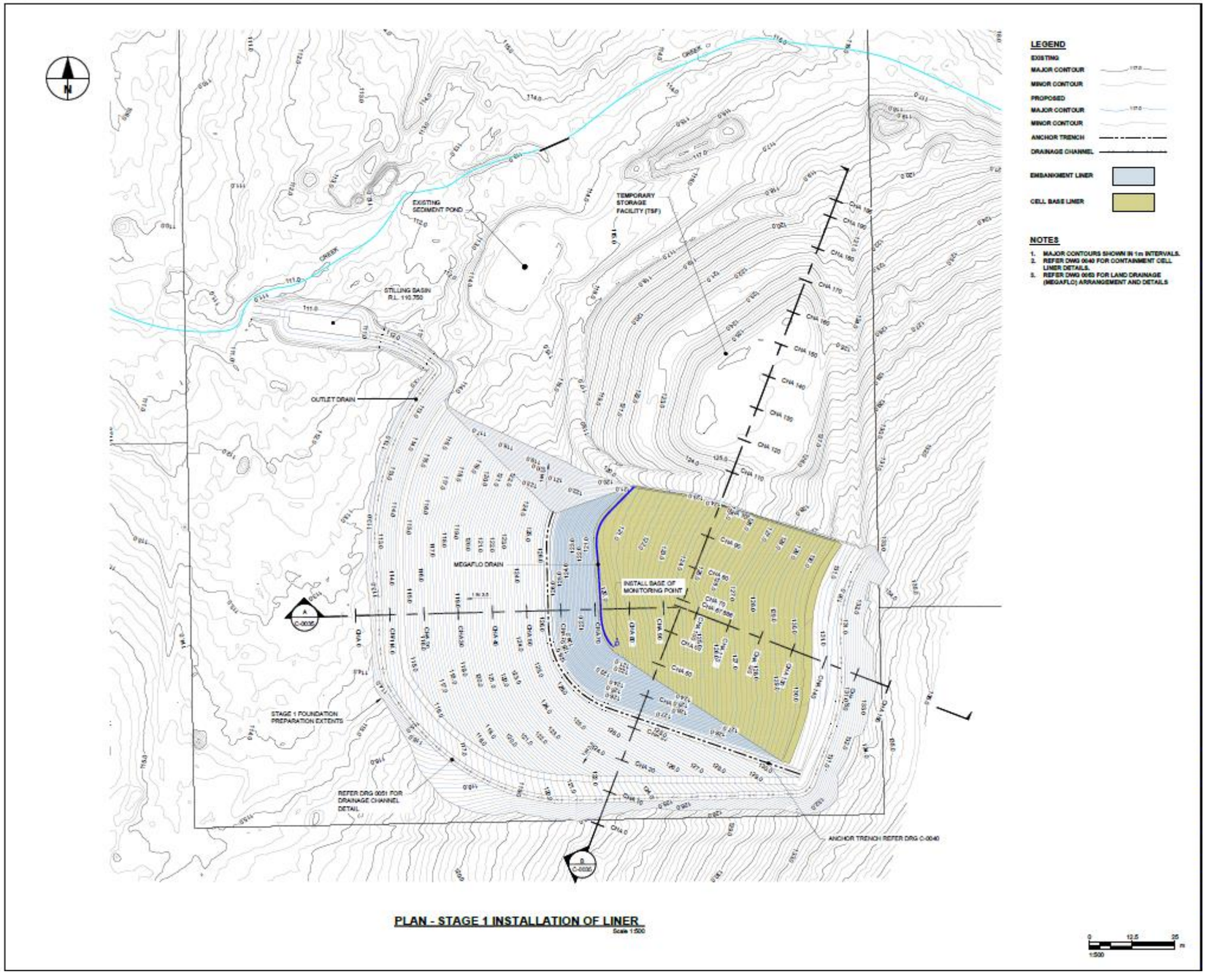
2,500m³	COMMONAGE
1,000m³	WANNERENOOKA

0 12.5 25 m

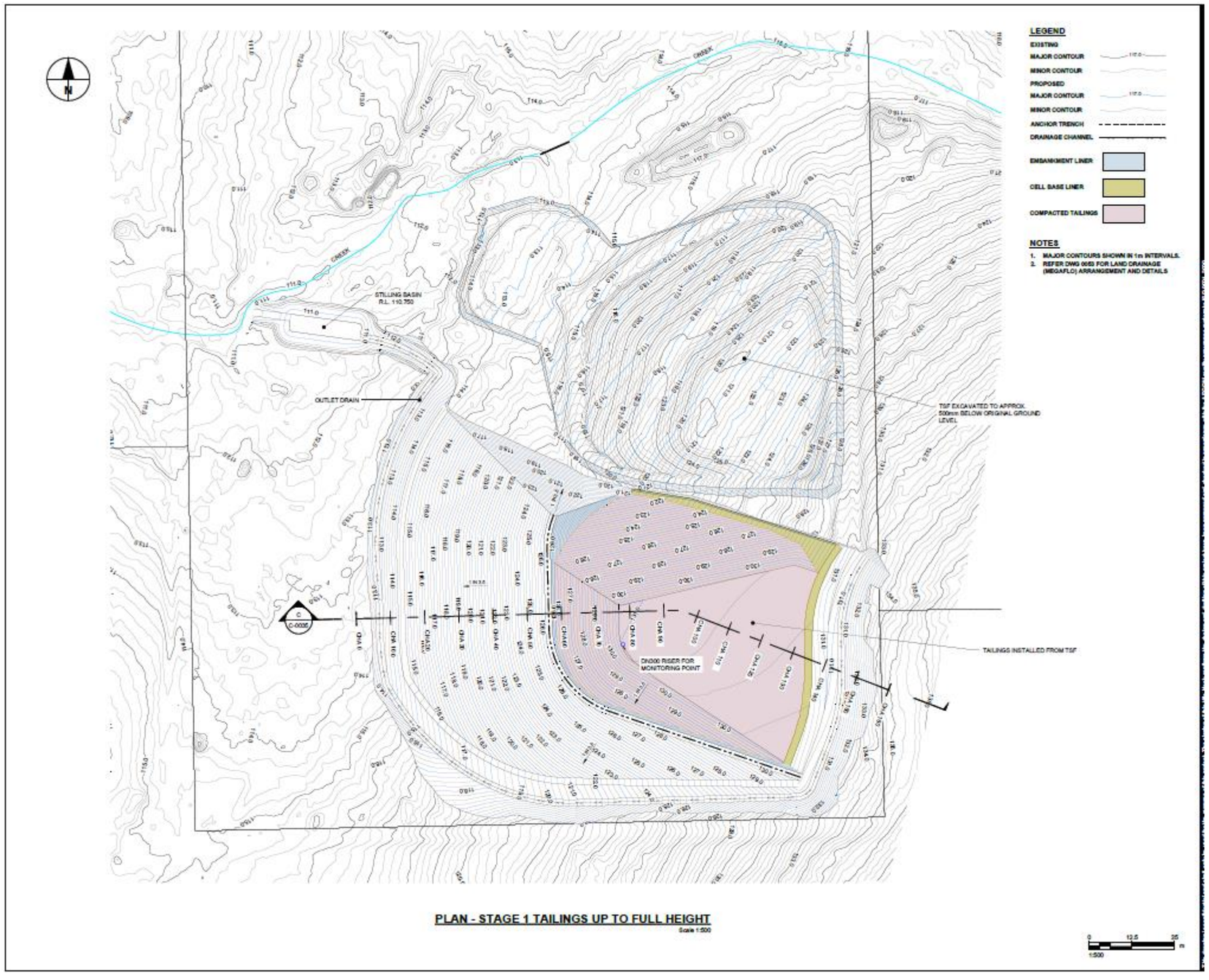
Map 3: Earthworks and location of Stage 1 (southern portion of PCC)



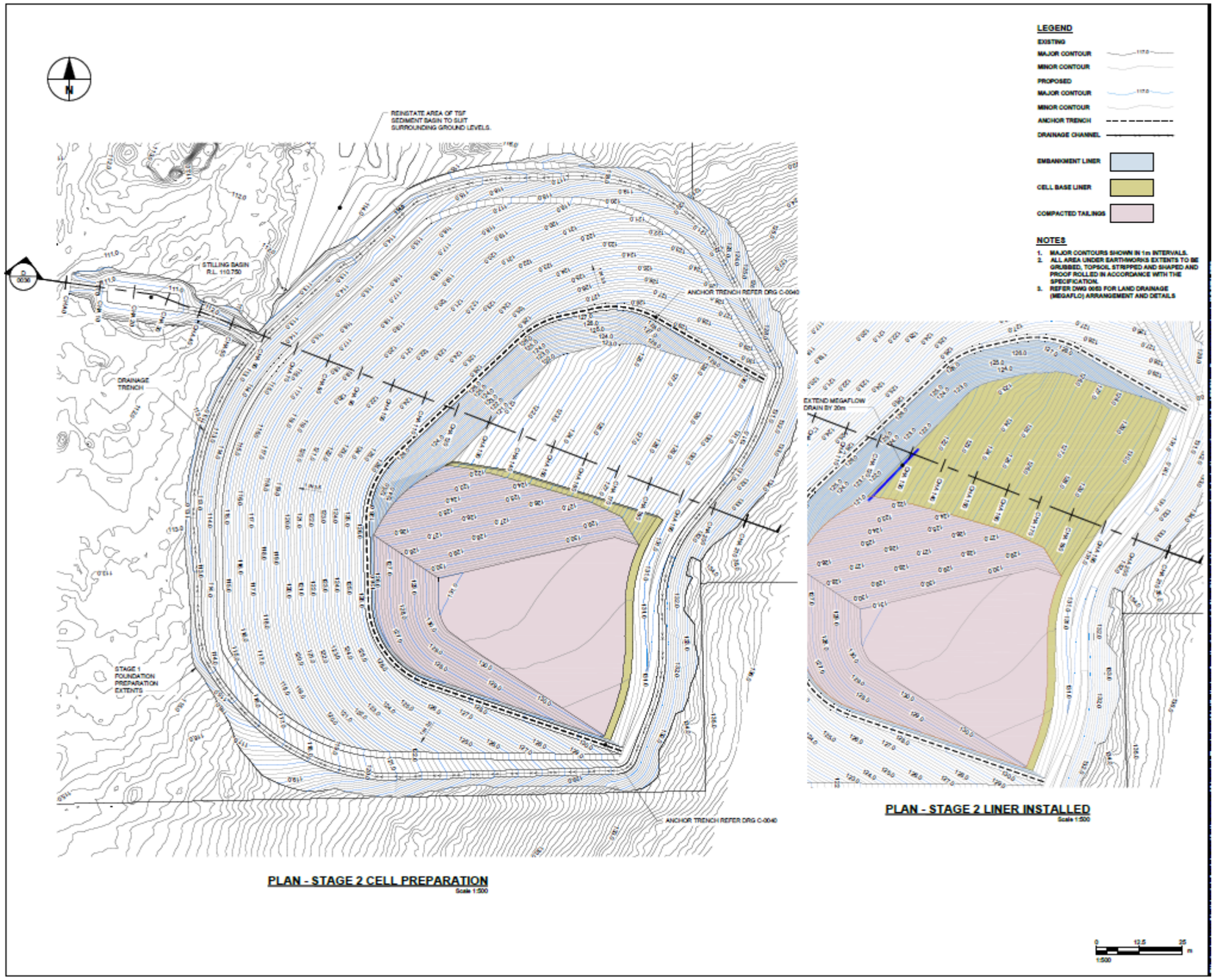
Map 4: Liner installation of Stage 1 (southern portion of PCC)



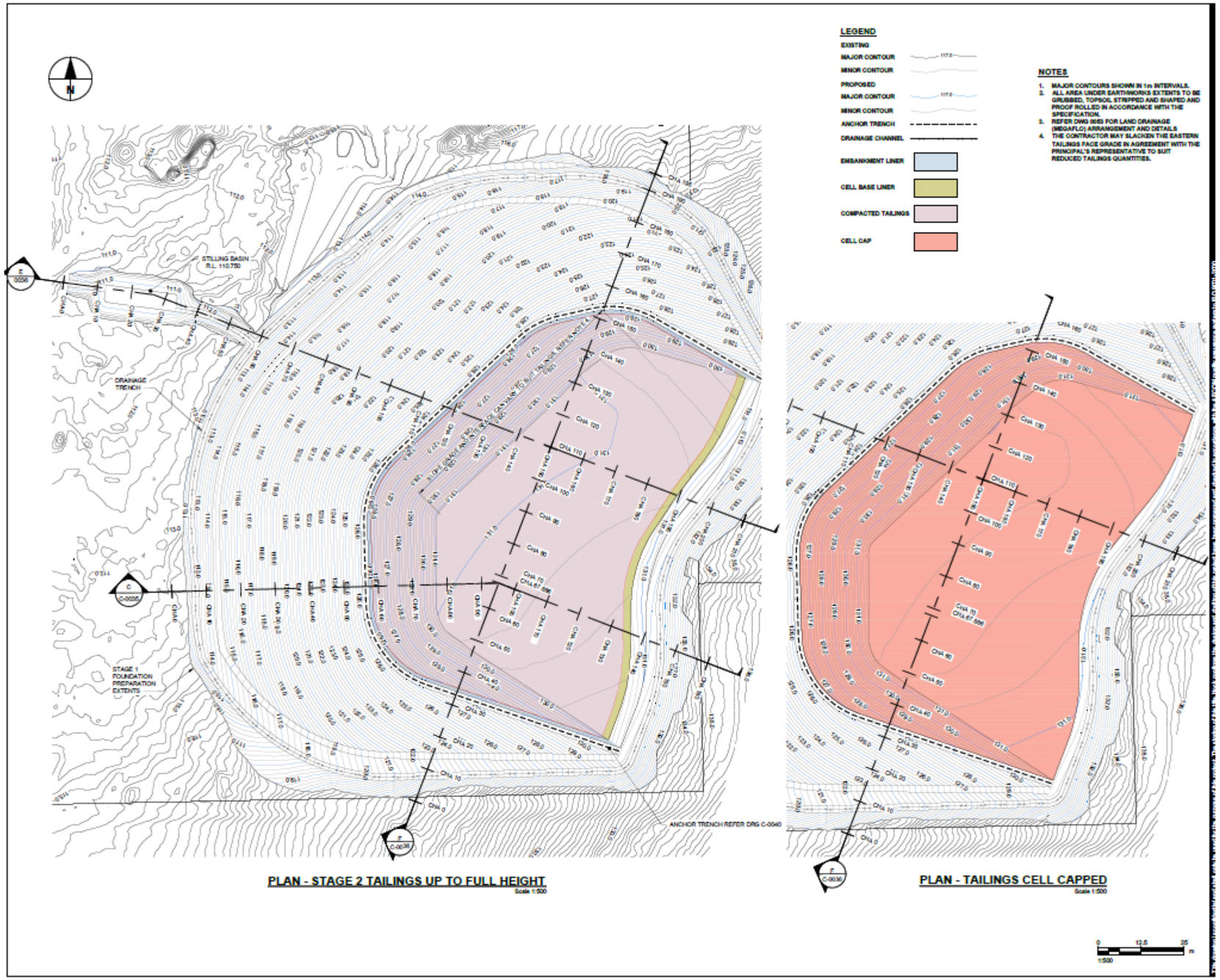
Map 5: Deposition of tailings in Stage 1 (southern portion of PCC)



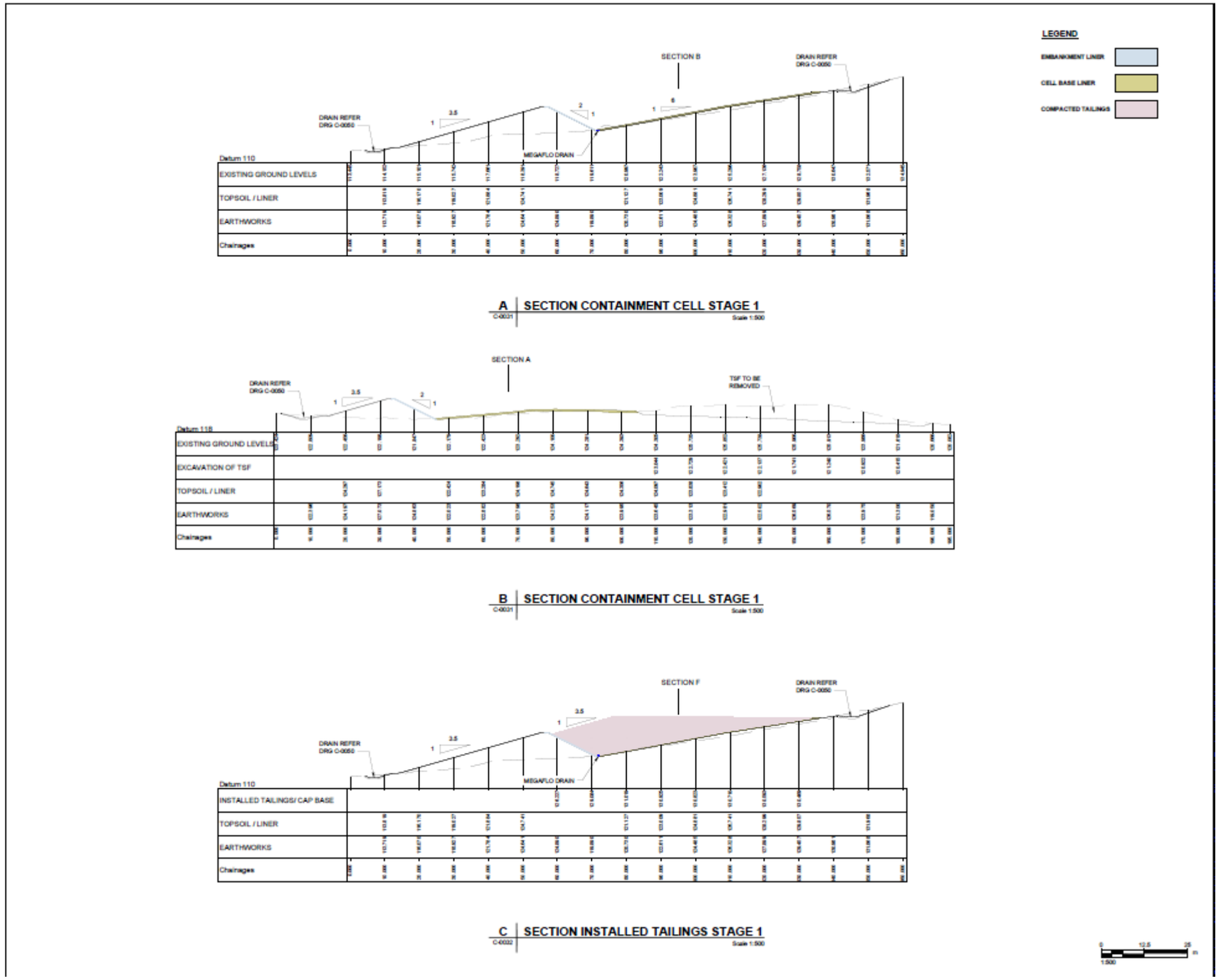
Map 6: Earthworks and liner installation for Stage 2 (northern portion of PCC)



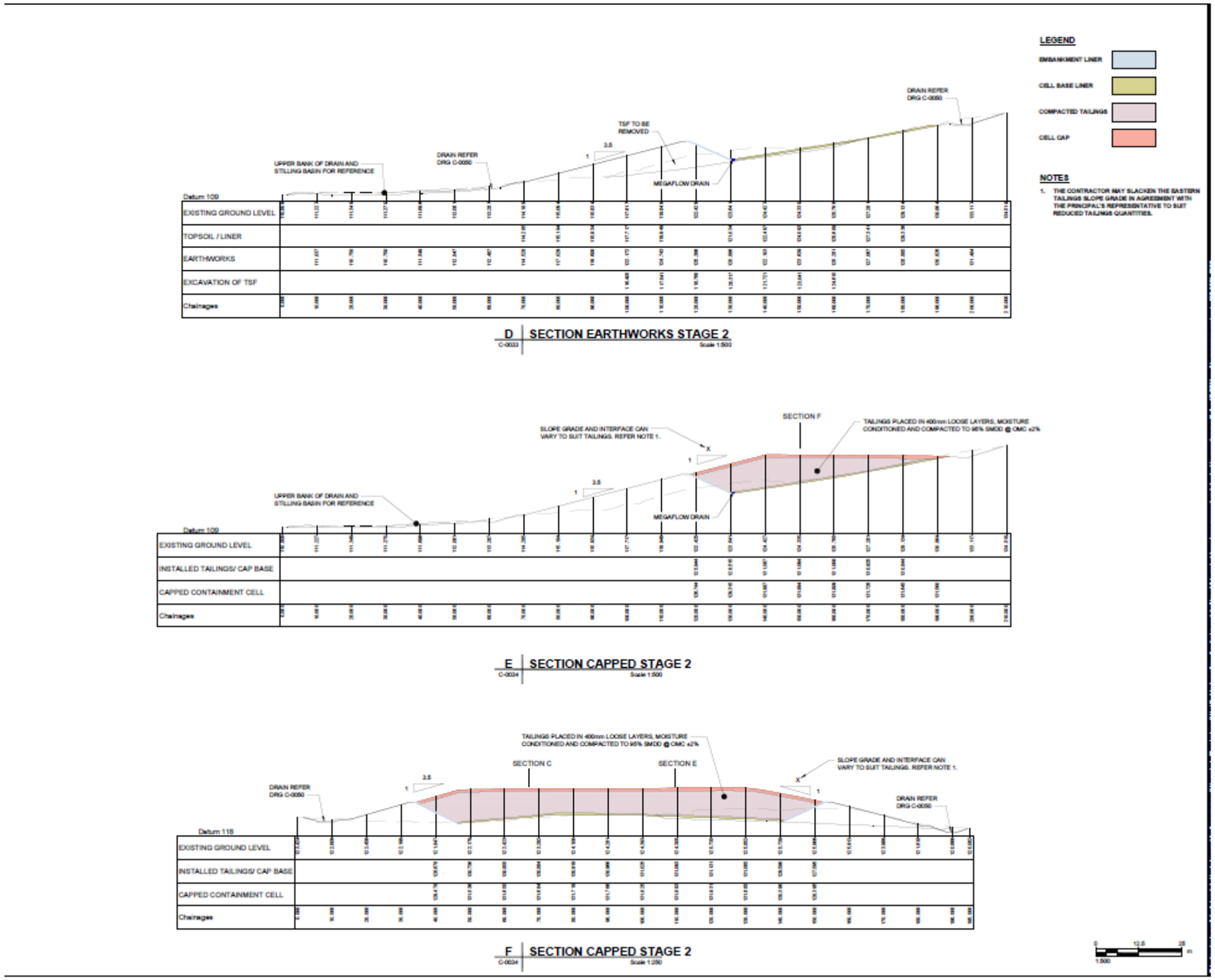
Map 7:Placement of tailings in Stage 2 and capping of entire PCC



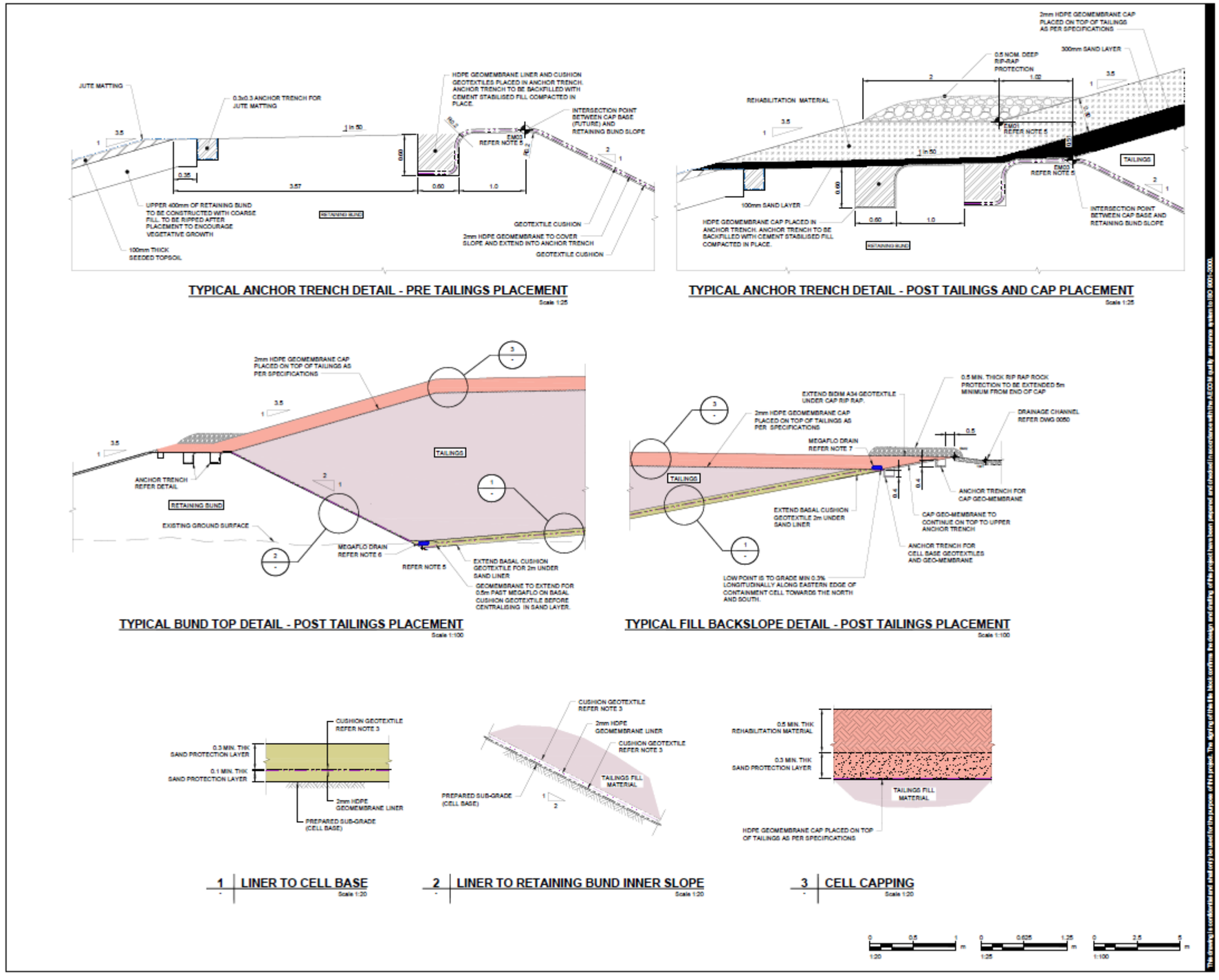
Map 8: PCC cross-sections



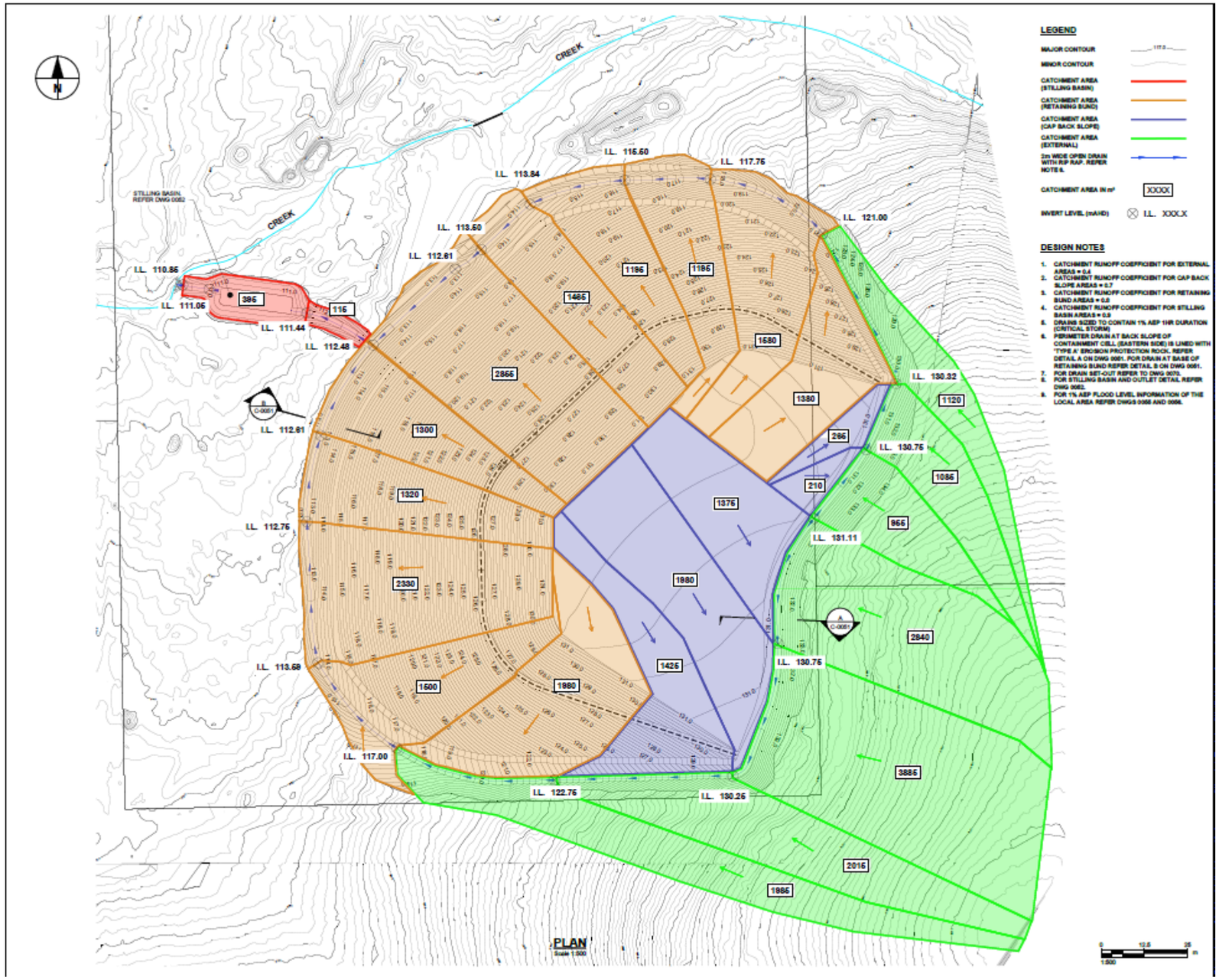
Map 9: PCC cross-sections



Map 10: PCC design details



Map 11:PCC drainage layout



Map 12: PCC drainage details

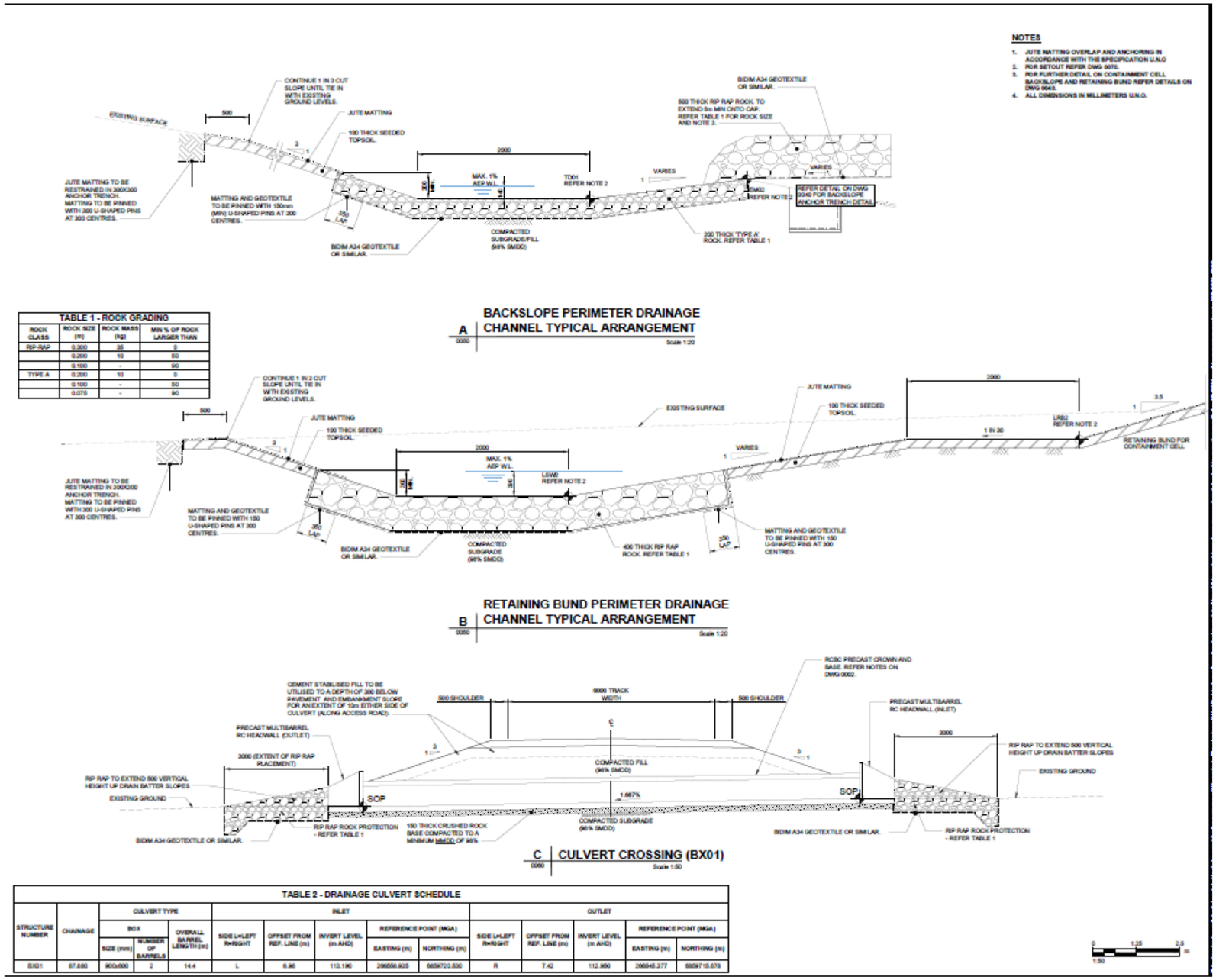
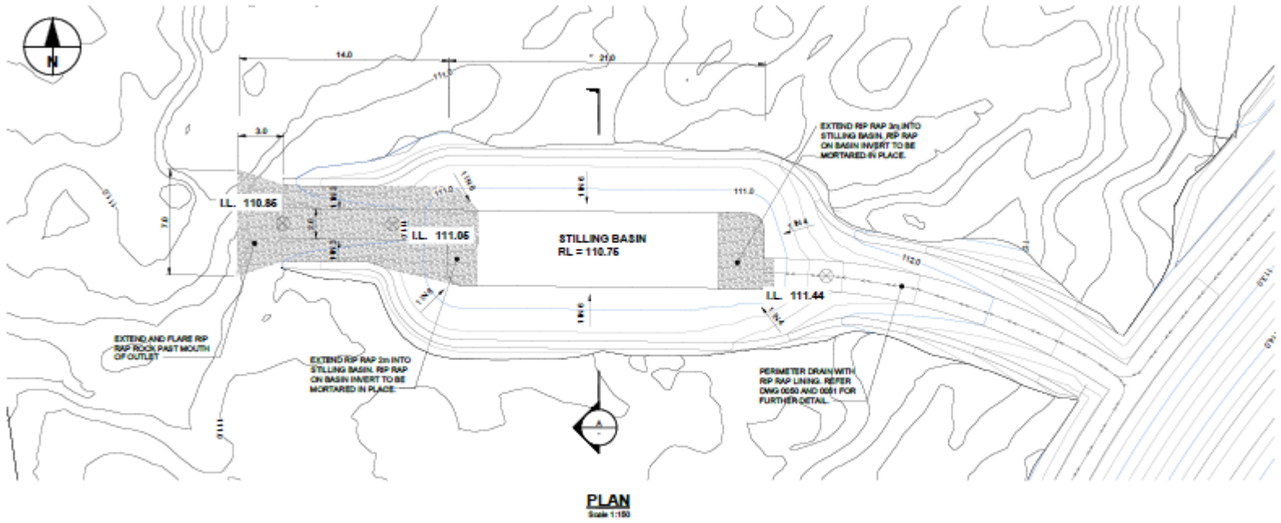
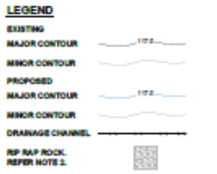


TABLE 2 - DRAINAGE CULVERT SCHEDULE

STRUCTURE NUMBER	CHAINAGE	CULVERT TYPE			INLET					OUTLET				
		BOX		OVERALL BARREL LENGTH (m)	SIDE L=LEFT R=RIGHT	OFFSET FROM REF. LINE (m)	INVERT LEVEL (m AHD)	REFERENCE POINT (MGA)		SIDE L=LEFT R=RIGHT	OFFSET FROM REF. LINE (m)	INVERT LEVEL (m AHD)	REFERENCE POINT (MGA)	
		SIZE (mm)	NUMBER OF BARRELS					EASTING (m)	NORTHING (m)				EASTING (m)	NORTHING (m)
BX01	67.880	900x600	2	14.4	L	6.98	113.190	266556.935	6859720.530	R	7.42	112.950	266545.377	6859715.678

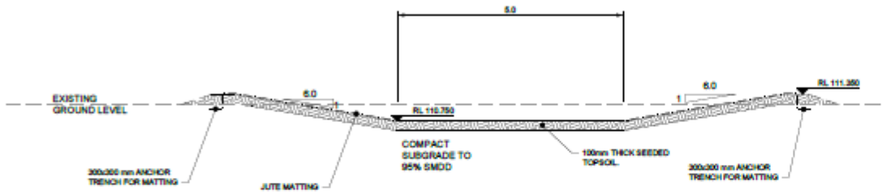
Map 13: Stillage Basin design





NOTES

1. MAJOR CONTOURS SHOWN IN 1m INTERVALS.
2. INSTALL 400mm THICK RIP RAP ROCK ON BIDIM A34 GEOTEXTILE OR SIMILAR.
3. DIMENSIONS IN METRES U.N.O.

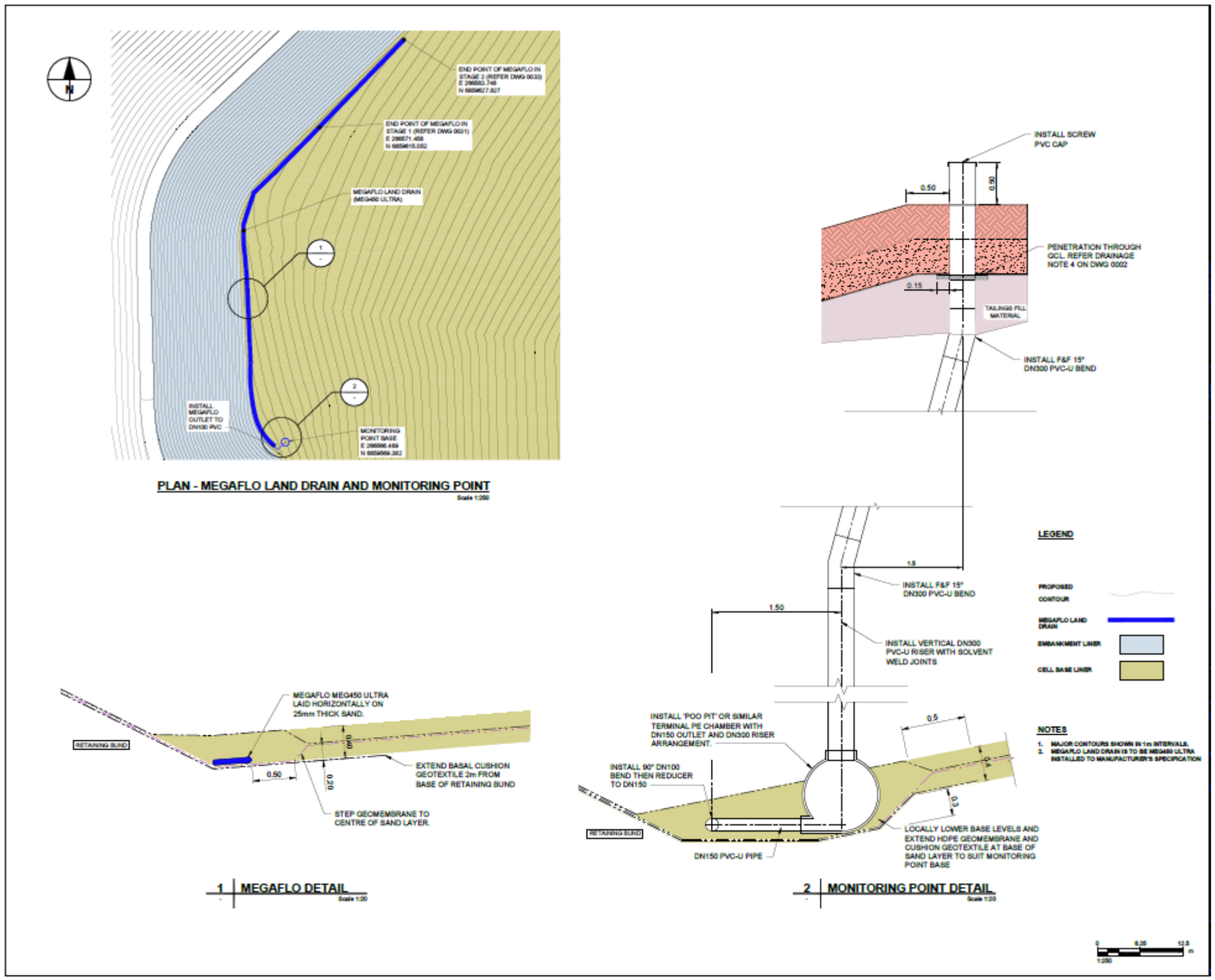


A SECTION STILLING BASIN
Scale 1:50

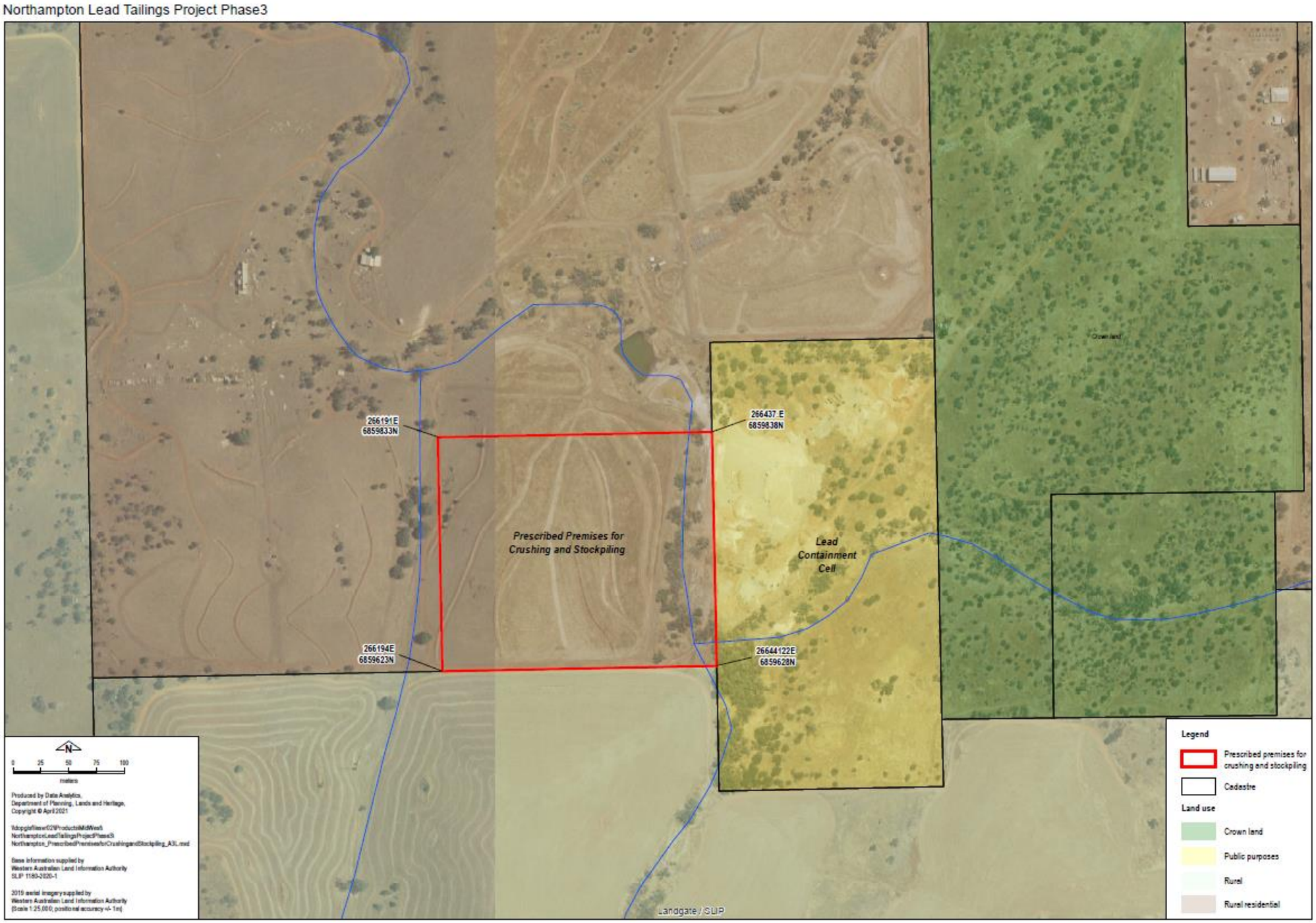
STILLING BASIN SETOUT (BASE)

EASTING	NORTHING	LEVEL
266491.126	6859658.744	110.750
266491.780	6859663.701	110.750
266470.320	6859661.563	110.750
266470.988	6859666.518	110.750

Map 14: Megaflo location and detail



Map 15: Category 70 equipment location



Map 16: Prescribed Premises Boundary