Appendix 5

ATC Williams Technical Report and Memorandums

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REPORT

R.W CORKERY & CO PTY LTD
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TARONGA TIN PROJECT REGULATORY RESPONSE – TECHNICAL SERVICES

251128-R01-Rev0

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1 INTRODUCTION

1.1 Overview

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the project) in northern New South Wales. The project comprises planned open-cut mining of the Southern and Northern open cut pits with an expected Project-life up to approximately 21 years.

The project would include two Waste Rock Emplacements (Northern and Southern WRE), a Co-Disposal Area (CDA), a Residual Storage Facility (RSF). Runoff and leachate from both WRE and the CDA would be collected within runoff dams (ROD) that would be situated downslope of each of these facilities.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the NSW Environment Protection Authority (EPA), Resources NSW and the NSW Department of Climate Change, Energy, Environment and Water (DCCEEW) provided submissions requesting further details on groundwater and seepage control, WREs, CDA and RSF design and closure and post-mining water management.

This Technical Services Report has been prepared by ATC Williams Pty Ltd (ATCW) on behalf of TMPL to address the matters raised in these submissions regarding seepage processes, foundation conditions, permeability assumptions and cover system design for the Taronga Tin Project **[1][2]**.

It is noted that ATC Williams (ATCW) prepared the conceptual and nominal designs for the WRE, CDA, RSF, ROD and the Mine Water Dam (MWD) **[3]**. These components are represented in the proposed Mine Site presented and assessed in the project's EIS that was prepared by RW Corkery & Co Pty Ltd (RWC).

1.2 Purpose and Scope of Report

This report responds to agency submissions and provides an updated technical assessment of seepage and cover system performance for the proposed mine waste storage facilities.

The scope of work comprised the following tasks:

- Geotechnical investigation, including test pitting, logging and material characterisation.
- Laboratory testing, including permeability and strength testing.
- Capping assessment and net percolation modelling.
- Seepage assessment, including modelling of phreatic surface and seepage flux.
- Interpretation of results to assess seepage behaviour, material performance and closure outcomes.

Supporting technical detail is provided in:

- Appendix A – Geotechnical Investigation
- Appendix B – Lab Testing and Material Characterisation
- Appendix C – Capping Design and Net Percolation Modelling
- Appendix D – Seepage Assessment

2 RESPONSE TO REGULATOR QUERIES

The submissions provided by the NSW EPA, Resources NSW and DCCEEW have requested additional information regarding seepage behaviour, foundation conditions, permeability assumptions and the proposed capping systems for the WRE, CDA, RSF and associated ROD. Key points raised in submissions include:

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2.1 Groundwater and Seepage Control

Regulator Query:

Regulators noted that assessments undertaken for the EIS did not explicitly consider seepage from waste rock and processing residue storage facilities. While mitigation measures were referenced in the EIS, the agencies requested further detail on the effectiveness of low-permeability foundations beneath the WRE and CDA is insufficient to inform assessment.

Additional clarity on the proposed RSF liner system, its installation and measure to limit seepage into underlying geology were also requested.

2.1.1 Mine Water Run Off Dams

Response:

Seepage from the Northern and Southern WRE ROD as well as CDA ROD would be contained within the respective facility footprint and controlled by foundation preparation and liner systems, as demonstrated by 2D finite element seepage modelling (GeoStudio) using site-specific parameters derived from onsite geotechnical investigations presented in Appendix A. The calculated geometric mean of hydraulic conductivity values per each footprint is presented in **Table 1**. The average values are also presented for comparison only. For details on laboratory test results, please refer to Appendix B – Laboratory Testing and Material Characterisation.

TABLE 1 ADOPTED HYDRAULIC CONDUCTIVITY VALUES FOR FOUNDATION MATERIALS

Sample	Laboratory-Based K_{sat} (m/s)	Location	Geometric Mean K_{sat} (m/s) Adopted in the Assessment	Material
TP03 @ 0.8 m (0.8-1.8)	5.10×10^{-10}	**Southern WRE**	**4.68×10^{-10}**	CI-CH
TP04 @ 0.2 m (0.2-1.6)	4.30×10^{-10}			
TP14 @ 1 m (1-1.7)	9.10×10^{-5}	**Northern WRE**	**1.64×10^{-5}**	CL-CI
TP18 @ 0.6 m (0.6 - 3.7)	1.30×10^{-5}			
TP15 @ 0.0 m (0 - 1.8)	3.70×10^{-6}			
TP28 @ 1.1 m (1.1 - 2)	1.60×10^{-4}	**CDA**	**4.56×10^{-5}**	Silty SAND
TP32 @ 0.3 m (0.3-1.45)	$1.30E\times10^{-5}$			
TP39 @ 0.2 m (0.2 - 1.3)	$2.30E\times10^{-6}$	**RSF**	**$2.30E\times10^{-6}$**	Silty SAND
TP22 @ 0.2 m (0.2 - 1.2)	$1.70E\times10^{-6}$	**MWD**	**$1.70E\times10^{-6}$**	Silty SAND

Following the update to the hydraulic conductivity values of the foundation soils, development of new phreatic surfaces was observed in the models, resulting in variations in seepage behaviour in each facility as presented in Appendix D of this report.

Supporting Evidence:

1. No groundwater was encountered during the 2025 to 2026 field investigation, indicating unsaturated foundation conditions (Appendix A – Geotechnical Investigation).
2. Foundation conditions defined as medium to high plasticity clay at Southern WRE ROD to silty sand at the RSF and CDA ROD. The foundation within the footprint of the Northern ROD comprises low to medium plasticity clay. (Appendix A - Geotechnical Investigation).
3. Laboratory-derived permeability values for typical materials encountered at the Mine Site including 4.68×10^{-10} metres per second (m/s) for the Southern WRE ROD and 1.64×10^{-5} m/s for the Northern WRE ROD (Appendix B – Laboratory Testing and Material Characterisation).

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4. 2D finite element seepage modelling assessing phreatic surface and seepage flux under multiple loading conditions (Appendix D – Seepage Assessment).
5. The liner defined as the seepage control element at the RSF is an HDPE geomembrane with permeability of 1.0×10^{-14} m/s. It should be noted that the same permeability value is adopted for the HDPE geomembrane used in other facilities (Appendix D - Seepage Assessment)

Interpretation:

1. At the Southern WRE ROD, the low permeability clay foundation, with a hydraulic conductivity of 4.68×10^{-10} m/s, significantly limits vertical seepage.
2. At the Northern WRE ROD, higher permeability conditions, with a hydraulic conductivity of 1.64×10^{-5} m/s, which suggests an increased seepage potential at the downstream toe along the interface. Recommendations on mitigations measures are outlined in Appendix D - Seepage Assessment.
3. For the RSF, modelling confirms the HDPE liner system reduces basal seepage flux and effectively isolates underlying geology.

Implications

1. The proposed RSF liner system would provide a high-integrity barrier to the basal seepage.
2. Installation of liner system shall be adopted as the primary mitigating measure to reduce both basal and toe seepage rates in ROD, RSF and MWD facilities (refer to Appendix D for details.)

2.1.2 Co-disposal and Waste Rock Emplacement Footprints

Response:

For WRE's and CDA, the permeability of the placed processing residues was conservatively assumed to be 1×10^{-5} m/s, and sensitivity of basal seepage to basal drains and subgrade excavation was observed in the seepage modelling under all three mitigation scenarios described in Appendix D when exposed to 15% infiltration (conservative based on cover system modelling results in Appendix C).

For both the Southern and Northern WRE's as well as the Co-Disposal Area, the overall magnitude of the basal and toe seepages can be controlled without liner installation as described in Section 4 of Appendix D.

Interpretation:

Explicit assessment of basal seepage from the footprints of both WRE's and the CDA identify that the foundation permeability conditions and adopted basal drainage system act as the functional initiatives that reduce vertical migration of seepage into the underlying formations. Details on required mitigation measures for each facility are presented in Appendix D.

A summary of the seepage assessment results for the CDA and WRE's when no mitigation measures are adopted is provided in **Table 2**. For details on mitigation measures please refer to Appendix D.

TABLE 2 SEEPAGE ASSESSMENTS FOR WASTE EMPLACEMENT AREAS WITHOUT MITIGATION MEASURES

Facility	Toe Seepage	Basal Seepage
CDA	1.08 L/d/m	0.05 L/d/m^2
Southern WRE	1.01 L/d/m	0.0071 L/d/m^2
Northern WRE	0.11 L/d/m	0.03 L/d/m^2

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Implications

1. Basal seepage from the WRE's and CDA would be readily controlled via the foundation treatment mitigation provided in Appendix D without the requirement for HDPE or engineered liner installation.
2. The basal drain in each facility controls the water flux behaviour at the downstream toe, directing seepage to the ROD.
3. Limited risk to surrounding groundwater receptors.

2.2 Waste Rock Emplacements, CDA and RSF Closure Capping Design

Regulator Query:

For the proposed Northern WRE, the intended 2m advective barrier of compacted non-acid forming (NAF) material lacks supporting information on expected permeability, water percolation behaviour and associated leachate generation. Low-permeability barriers are not provided for the Southern WRE, CDA or RSF, where the potential leachate generation from the latter two components was considered by the submitting agencies to pose increased risks.

Regulatory agency submissions also noted that the proposed NAF waste rock capping material, may contain leachable metals or other pollutants.

Response:

The proposed closure capping design adopts a store-and-release cover system with a compacted NAF advective barrier on the embankment portions of both WRE to control infiltration, limit net percolation, and limit oxygen ingress from advective forces.

The CDA cover system also adopts a store and release cover system. While the WRE and CDA designs do not incorporate a conventional low-permeability capping layer, the CDA landform adopts a store-and-release (S&R) cover system integrated with engineered sub-surface drainage controls to manage infiltration, seepage, and associated environmental risks.

For the CDA specifically:

The store-and-release cover is designed to retain rainfall within the cover profile and release it back to the atmosphere via evapotranspiration, thereby managing net percolation to underlying waste materials.

The proposed base-case cover systems for CDA and WRE represent the current base-case approach for post-closure management and have been selected to achieve long-term environmental protection outcomes consistent with regulatory expectations. Seepage water quality and geochemical conditions will be monitored throughout operations, with results used to periodically review and refine the post-closure risk profile under an adaptive management framework and to inform closure planning as additional data become available.

Should it be warranted based on seepage water quality monitoring data collected during operations, a cover system incorporating a low-permeability layer would be developed. This enhanced cover system with low permeability layer would comprise either locally sourced clay or geosynthetic barrier materials. It would be designed and constructed as part of closure works, where practicable, to achieve the targeted net percolation performance. This measure is intended to minimise infiltration and seepage generation, thereby reducing long-term environmental risks and supporting a stable, sustainable post-closure landform without reliance on ongoing active management. This enhanced cover system would only be implemented if proposed placement methodology and operational management prove insufficient in controlling oxidation reactions within the storage facilities, as determined from seepage water quality monitoring.

The RSF cover system incorporates an enhanced store-and-release (S&R) cover system with an integrated capillary break and 0.5 m low permeability layer, designed to minimise water percolation into tailings while supporting long-term closure performance.

To control seepage and reduce potential leachate risks, the RSF design includes multiple engineered seepage mitigation measures, both physical and operational:

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- An upstream HDPE geomembrane is incorporated within the embankment face, keyed into foundation material to limit seepage migration.
- A toe seepage interception sump captures seepage and returns it to the storage, preventing uncontrolled discharge.
- A small, centrally located decant pond is maintained away from perimeter embankments, reducing hydraulic driving forces for seepage during operations.
- The internal storage area and upstream embankment face are lined with an HDPE geomembrane, providing an additional impermeable barrier consistent with construction specifications.

To further manage residual risk, the RSF base-case cover design and operational strategy include:

- Continuous surface water and groundwater monitoring to detect seepage migration and confirm system performance.
- Minimisation of stored water volumes within the sulphide TSF to reduce the seepage footprint.
- Operational controls that promote tailings consolidation and water recovery, including optimised deposition cycling and controlled decant pond volumes.
- Ongoing operation of seepage interception and recovery systems, with monitoring feedback used to trigger targeted dewatering or mitigation measures if required.

Supporting evidence:

1. Analysis of cover configuration comprising 0.2 m topsoil over 0.8 m subsoil or growth medium for CDA and WRE cover systems (Appendix C – Capping Design and Net Percolation Modelling).
2. Laboratory-derived permeability values for cover and foundation materials (Appendix B – Lab Testing and Material Characterisation).
3. Preliminary 1D infiltration and net percolation modelling using SEEP/W (Appendix C)
4. Geochemistry Characterisation and Assessment (RGS,2025)

Interpretation:

1. The compacted subsoil reduces infiltration and controls vertical percolation, while the upper layers promote evapotranspiration. This supports a store-and-release mechanism that limits water ingress into underlying materials. A low-permeability layer is not required for the WRE or CDA covers because the natural subsoil or cover soils inherently possess low hydraulic conductivity, high water-holding capacity, and strong store-and-release (SR) functionality.
2. According to Appendix C – Capping Design and Net Percolation Modelling, Net percolation under vegetated conditions remains low (6–7% in WRE/CDA, 0% in RSF), capillary rise is suppressed, and RGS 2025 geochemical testing demonstrates that the materials have low AMD risk and limited leachable metal potential. Therefore, the proposed cover systems do not pose elevated leachate generation risks and are fit for purpose under site climatic conditions.
3. The particle size distribution (PSD) curves for the subsoil indicate that the material contains approximately 14–80% fines (<0.075 mm) and, in many samples, more than 12% clay-sized particles (<0.002 mm). The curves exhibit smooth, well-graded profiles characteristic of silty to clayey soils, with only a limited sand fraction. These textural properties correspond to low saturated hydraulic conductivity in the order of 10^{-4} to 10^{-10} m/s, strong capillary water retention, slow infiltration and limited deep drainage, and high available water storage capacity to support vegetation. Collectively, these characteristics align with the expected behaviour of a store-and-release (SR) cover, whereby rainfall infiltrates the fine-textured matrix, moisture is retained within the upper soil layers, vegetation extracts water through transpiration, and only a small proportion of water percolates downward. Consequently, the subsoil material will be stockpiled during the operation. The subsoil inherently functions as an effective infiltration-limiting layer, eliminating the need for an additional engineered compacted clay or low-permeability layer within the cover system design.
4. In addition, the weathered or transitional finer material will be used to construct the NAF advective barrier, which will be traffic-compacted. Compaction substantially lowers the

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saturated hydraulic conductivity (k_{sat}) of NAF materials, often by one or more orders of magnitude. The compaction process increases the air-entry value and moisture retention of the NAF layer. Additionally, A compacted advective barrier interrupts the continuity of preferential flow paths and oxygen ingress.

5. As demonstrated in SEEP/W cover system modelling, vegetation removes 56–60% of annual rainfall in the presence of such storage layers, substantially reducing the water available for percolation. At this stage, modelling confirms the concept is viable.

Implications:

1. The design concept is appropriate for managing infiltration and leachate generation.
2. Final performance metrics are subject to confirmation through ongoing modelling.

2.3 Closure and Post-Mining Water Management

Regulator Query:

Closure plans indicate that ROD would be decommissioned, allowing the WRE and CDA to drain freely to receiving waters. The NSW EPA considered this approach may increase pollution risks in the absence of defined mitigation and contingency measures. Clarity on water interactions with the RSF post-closure and associated environmental risks was also requested.

Response:

1. Closure water management is predicated on the store-and-release cover system and maintaining seepage control through the foundation conditions and liner systems installed during initial component construction. The water balance results show that almost all incident rainfall is retained within the cover systems through evapotranspiration and short-term storage, with only a small proportion reported as surface runoff. The Net percolation assessment was completed using current parameters; it will also be monitored during the operation.
2. The removal of ROD does not present a material increase in pollution risk, because the WRE, CDA and RSF landforms generate very low-volume, low-concentration drainage under rehabilitated conditions, and engineered controls prevent any significant tailings-related seepage (Appendix C). It is noted that the project life incorporates a post-mining rehabilitation phase that includes monitoring. The ROD would only be removed once it can be demonstrated that runoff from the final landforms reflects that of natural systems, as established by ambient water quality monitoring. It is also noted that a program for ambient water quality monitoring commenced in late 2022 and remains ongoing.
3. The geochemical assessment undertaken by RGS (2025) indicates that both the WRE and CDA materials present a low likelihood of pollutant generation, as they are predominantly classified as Non-Acid Forming (NAF), exhibit low total sulfur concentrations (generally <0.2% Sulfur), and display negative or near-zero Net Acid Producing Potential (NAPP) values. Kinetic leach column testing further confirms their geochemical stability, with very low sulfide oxidation rates in the order of 10^{-10} to 10^{-9} kg $O_2/m^3/s$ and >95–99% retention of sulfur and metals within the solid phase, demonstrating minimal potential for the release of acidity or dissolved metals under field conditions. Geochemical assessment will continue during the operation based on the updated risk profile and monitoring.
4. Leachate from WRE and CDA materials is expected to remain circum-neutral, low-salinity, and below livestock/agricultural guideline thresholds, even when drainage is allowed to flow freely post-closure (RGS,2025).

Supporting evidence:

1. RSF HDPE liner providing vertical basal seepage control post-closure (Appendix D – Seepage Assessment).
2. Net percolation and infiltration modelling for the CDA, WRE, and RSF storage facilities (Appendix C – Capping Design and Net Percolation Modelling).
3. Conceptual water balance framework (Appendix C).
4. Seepage pathway assessment under closure conditions (Appendix D).

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5. Geochemistry Characterisation and Assessment (RGS,2025)

Interpretation:

1. The primary control on closure performance is the reduction of infiltration through the store-and-release cover system. This limits seepage generation and reduces the potential for contaminant transport.
2. While free drainage introduces a potential pathway, the risk is mitigated by limiting water ingress.

Implications:

1. Closure objectives are achievable with appropriate infiltration control.
2. Current assessment demonstrates concept viability.

REFERENCES

[1] NSW Resources, 'ADVICE RESPONSE: Taronga Tin Project Stage: Environmental Impact Statement Development Application: SSD- 74389710', Nov. 04, 2025.

[2] NSW EPA, 'EPA Advice on Environmental Impact Statement – Taronga Tin Mine – SSD-74389710', Nov. 04, 2025.

[3] ATC Williams, 'Taronga Mine: Feasibility Study - Waste Rock Emplacements Design Summary', 115146-09-M005Rev0, March 2024.

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APPENDICES

APPENDIX A – GEOTECHNICAL INVESTIGATION

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TARONGA TIN PROJECT REGULATORY RESPONSE – GEOTECHNICAL INVESTIGATION

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1 GEOTECHNICAL FIELD INVESTIGATION

1.1 Overview

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the project) in northern New South Wales. The project comprises planned open-cut mining of the Southern and Northern open cut pits with an expected Project-life up to approximately 21 years.

The project would include two Waste Rock Emplacements (Northern and Southern WRE), a Co-Disposal Area (CDA), a Residue Storage Facility (RSF). Runoff and leachate from both WRE and the CDA would be collected within runoff dams (ROD) that would be situated downslope of each of these facilities.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the NSW Environment Protection Authority (EPA), Resources NSW and the (NSW) Department of Climate Change, Energy, Environment and Water (DCCEEW) provided submissions requesting further details on groundwater and seepage control, WREs, CDA and RSF design and closure and post-mining water management.

This appendix presents the outcomes of geotechnical investigations undertaken by ATC Williams Pty Ltd (ATCW) on behalf of TMPL to support the Technical Services Report addressing matters raised by the NSW EPA, DCCEEW and Resources NSW.

The investigations were completed to characterise surface and near-surface geotechnical conditions and to provide site-specific data to support assessment of seepage processes, foundation conditions and infiltration behaviour for key Mine Site components, including the Northern and Southern WRE, CDA, RSF and ROD.

The investigation programme was undertaken in general accordance with AS1726:2017 Geotechnical Site Investigations and standard geotechnical practice. Two field campaigns were completed. The first was conducted between 15 and 17 December 2025, followed by a second campaign between 5 and 7 January 2026. All test pits were logged and supervised by suitably qualified geotechnical engineers or scientists from ATCW.

1.2 Objectives

- Conduct geotechnical test pitting through key component footprints. Test pit locations are shown in **MAP 1.** This included:
  - Northern Waste Rock Emplacement (Northern WRE) and associated runoff dam (Northern WRE ROD,
  - Southern Waste Rock Emplacement (Southern WRE) and associated runoff dam (Southern WRE ROD,
  - Co-Disposal Area (CDA) and associated runoff dam (CDA ROD),
  - Mine Water Dam,
  - Residue Storage Facility (RSF)
- Perform mass infiltration tests on each WRE and the CDA to determine hydraulic conductivity of the surface and sub-surface material

1.3 Methodology

1.3.1 Geotechnical Test Pitting

Test pit locations were identified during the planning phase using digital information packages (QGIS) to assess potential seepage and infiltration behaviour within the footprint of each component.

A total of forty-six (46) test pits were excavated. A 36-tonne excavator with a 600 mm wide toothed bucket was used to excavate the test pits to a minimum target depth of 3.0 m below ground level (bgl)

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or prior refusal (practical). Upon completion of each test pit excavation, exposed surfaces were photographed and the material properties were logged to collect detailed observational data.

Bulk Disturbed Samples (BDS) were then collected and then transported to Trilab in Brisbane, QLD for analysis. A test pit summary is shown in **TABLE 1** with test pit logs are provided in **ATTACHMENT.**

TABLE 1: TEST PIT SUMMARY

Test Pit ID	Coordinates[1] (MGA94 Zone 55J)		Elevation (RL m AHD)	Termination Depth (m bgl)	Method	Groundwater (m bgl)	Termination Remark
	Easting	Northing					
TP01	357719	6747548	832	1.0	30t Ex	GNE	Refusal
TP02	357471	6747590	797	1.3	30t Ex	GNE	Refusal
TP03	357582	6747571	796	3.0	30t Ex	GNE	Target depth reached
TP04	357814	6747667	805	1.9	30t Ex	GNE	Refusal
TP05	358225	6747951	830	1.8	30t Ex	GNE	Refusal
TP06	358353	6748225	870	1.3	30t Ex	GNE	Refusal
TP07	358585	6748100	921	1.4	30t Ex	GNE	Refusal
TP08	358297	6747909	881	1.9	30t Ex	GNE	Refusal
TP09	358862	6748386	948	2.0	30t Ex	GNE	Refusal
TP10	358770	6748593	936	1.8	30t Ex	GNE	Refusal
TP11	359057	6749021	834	1.5	30t Ex	GNE	Refusal
TP12	359193	6749133	813	2.3	30t Ex	GNE	Refusal
TP13	359411	6748957	813	2.3	30t Ex	GNE	Refusal
TP14	359519	6748978	834	2.0	30t Ex	GNE	Refusal
TP15	359532	6748562	875	1.8	30t Ex	GNE	Refusal
TP16	359123	6748457	903	1.7	30t Ex	GNE	Refusal
TP17	359136	6748593	881	1.4	30t Ex	GNE	Refusal
TP18	359183	6748876	819	3.7	30t Ex	GNE	Target depth reached
TP19	359219	6748440	869	1.1	30t Ex	GNE	Refusal
TP20	359246	6748805	826	1.8	30t Ex	GNE	Refusal
TP21	359150	67439258	801	1.2	30t Ex	GNE	Refusal
TP22	359092	6749350	802	1.2	30t Ex	GNE	Refusal

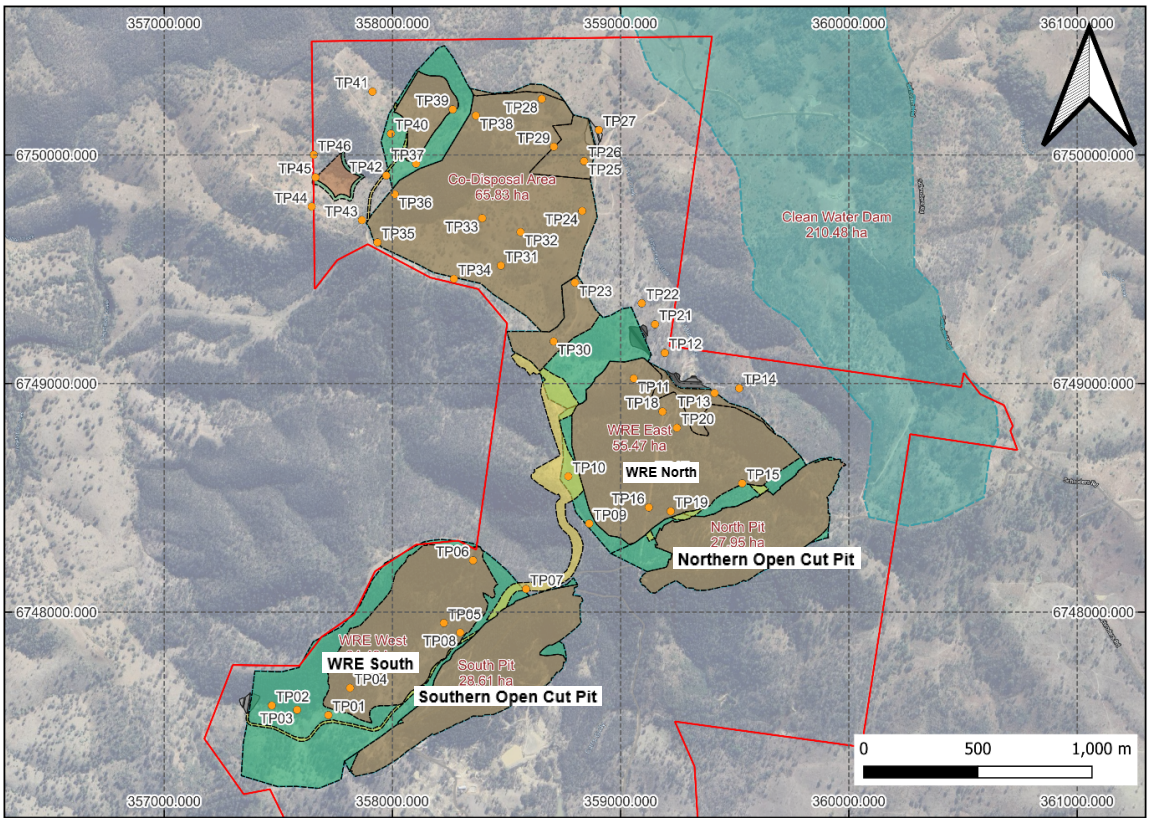
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Test Pit ID	Coordinates[1] (MGA94 Zone 55J)		Elevation (RL m AHD)	Termination Depth (m bgl)	Method	Groundwater (m bgl)	Termination Remark
	Easting	Northing					
TP23	358799	6749440	856	1.2	30t Ex	GNE	Refusal
TP24	358831	6749754	798	1.9	30t Ex	GNE	Refusal
TP25	358839	6749972	777	1.1	30t Ex	GNE	Refusal
TP26	358839	6749972	777	1.8	30t Ex	GNE	Refusal
TP27	358904	6750108	751	1.7	30t Ex	GNE	Refusal
TP28	358654	6750244	801	2.0	30t Ex	GNE	Refusal
TP29	358707	6750035	769	1.4	30t Ex	GNE	Refusal
TP30	358706	6749183	865	1.3	30t Ex	GNE	Refusal
TP31	358475	6749515	864	1.3	30t Ex	GNE	Refusal
TP32	358561	6749662	845	1.45	30t Ex	GNE	Refusal
TP33	358393	6749722	833	0.5	30t Ex	GNE	Refusal
TP34	358269	6749457	862	0.8	30t Ex	GNE	Refusal
TP35	357934	6749616	872	2.0	30t Ex	GNE	Refusal
TP36	358010	6749827	876	1.0	30t Ex	GNE	Refusal
TP37	358103	6749961	858	1.6	30t Ex	GNE	Refusal
TP38	358365	6750171	857	1.3	30t Ex	GNE	Refusal
TP39	358264	6750198	850	1.3	30t Ex	GNE	Refusal
TP40	357993	6750092	869	1.3	30t Ex	GNE	Refusal
TP41	357912	6750276	826	1.1	30t Ex	GNE	Refusal
TP42	357973	6749909	867	3.1	30t Ex	GNE	Target depth reached
TP43	357866	6749714	871	2.1	30t Ex	GNE	Refusal
TP44	357646	6749773	863	1.3	30t Ex	GNE	Refusal
TP45	357663	6749901	824	1.95	30t Ex	GNE	Refusal
TP46	357655	6750000	799	1.0	30t Ex	GNE	Refusal

NOTES: 1 – Coordinates obtained using a hhGPS with an accuracy of ±5.0 m
EX = Excavator
GNE = Groundwater Not Encountered

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MAP 1: FACILITIES AND TEST PIT LOCATIONS



1.3.2 Limitations

- Test pit locations were relocated only where the originally proposed positions were inaccessible or unsafe for personnel or excavator access. In such cases, test pits were undertaken at the nearest practicable location to the originally proposed location, some of which were located outside the footprints.
- Due to the presence of gravelly soil across most test pit locations, pit walls perpendicular to the excavator boom could not be formed to a fully vertical profile. Pit walls parallel to the excavator boom were, however, vertical and were used to log the soil profiles.
- Challenging terrain conditions limited access for the primary water truck; therefore, a smaller water truck was utilised to fill the test pits. The reduced capacity of this smaller vehicle necessitated multiple trips, resulting in extended filling durations for each test pit subjected to the mass infiltration test. This did not impact infiltration testing.
- All locations were located using a handheld GPS (hhGPS) with an accuracy of ±5.0 m in the Easting and Northing directions.

1.3.3 Mass Infiltration Test (In-situ Permeability Test)

A total of four (4) mass infiltration tests were undertaken at key locations across the mine site based on access limitations. Two (2) tests were completed on the Southern WRE, one (1) on the Northern WRE, and one (1) in the footprint of the CDA. Test distribution reflects site access constraints, particularly at the Northern WRE, where terrain and access limitations prevented mobilisation. As a result, only one test was completed in this area within the available programme.

The tests were conducted in accordance with ATCW best practice procedure TI-GI-BP-5-13 Mass Infiltration Test (Test Pit) and involved filling each test pit with water three (3) times to ensure a consistent saturation front within the soil profile. Following a 24-hour period, each test pit was filled a further time to assess soil permeability under undrained conditions. Water level measurements were then recorded at fixed time intervals. This data was then used to calculate the permeability of the relevant soil layers. Results of the in-situ permeability tests are provided in **ATTACHMENT.**

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ATTACHMENT -TEST PIT LOGS AND MASS INFILTRATION TEST RESU

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REPORT OF TESTPIT: TP01

Job No	: 251128	Easting	: 357719.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6747548.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, Rootlets.	w < PL	S		
				Bulk Bag 0.2 - 0.4 m			0.4		SC	NATURAL; clayey SAND (SC): fine to coarse grained, pale yellow brown, medium plasticity clay, with gravel, medium dense, dry.	D	MD		
				Bulk Bag 0.4 - 0.8 m			0.8		CI	NATURAL; sandy CLAY (CI): medium plasticity, orange brown and pale yellow, fine to medium grained sand, trace gravel, stiff, w < pl.	w < PL	St		
				Bulk Bag 0.8 - 1 m		831.0			SC	NATURAL; clayey SAND (SC): fine to coarse grained, pale yellow brown, medium to high plasticity clay, with gravel, very dense, dry.	D	VD		
										TP01 Refusal at 1 m				



Spoil Pile 0.2 - 0.4 m



Spoil Pile 0.8 - 1.0 m



TP01

Photo description	TP01 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP01	**TP Depth**	0.0 - 1.0 m

REPORT OF TESTPIT: TP02

Job No	: 251128	Easting	: 357471.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6747590.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S	
				Bulk Bag 0.2 - 0.4 m			0.4		CI	NATURAL; gravelly CLAY (CI): medium plasticity, dark brown, with sand, firm to stiff, w < pl, with angular cobbles.	w < PL	F-St	
				Bulk Bag 0.4 - 0.6 m			0.6		CI	Becoming: Clay appears to infill rock joints.	w < PL	F-St	
				Bulk Bag 0.6 - 0.9 m			0.9		GC	NATURAL; clayey GRAVEL (GC): angular, fine to coarse sized, brown, medium plasticity clay, with sand, dense to very dense, dry, With angular cobbles.	D	D-VD	
				Bulk Bag 0.9 - 1.3 m		796.0 / 795.7	1.0		GW	NATURAL; GRAVEL (GW): well-graded, red, with clay, with sand, With angular cobbles dense to very dense.		D-VD	
										TP02 Refusal at 1.3 m			



Spoil Pile 0.4 - 0.6 m



Spoil Pile 0.9 - 1.3 m



TP02

Photo description	TP02 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP02	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP03

Job No	: 251128	Easting	: 357582.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6747571.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 0.8 m			0.8		CI-CH	NATURAL; sandy CLAY (CI-CH): medium to high plasticity, brown and pale brown, fine to coarse grained sand, with gravel, stiff to very stiff, w < pl.	w < PL	St-VSt		
				Bulk Bag 0.8 - 1.8 m		795.0	1.0		GC	NATURAL; clayey GRAVEL (GC): poorly graded, angular, fine to coarse sized, pale orange brown, medium plasticity clay, with sand, with cobbles, HW siltstone with orange brown stains and black dendrites. very dense, dry.	D	VD		
				Bulk Bag 1.8 - 2 m			1.8		CI	NATURAL; gravelly CLAY (CI): medium plasticity, grey mottled orange brown, stiff to very stiff, w < pl.	w < PL	St-VSt		
			TPI 1.9 3	Bulk Bag 2 - 3 m		794.0	2.0		GC	NATURAL; clayey to sandy GRAVEL (GC): angular, fine to coarse sized, grey brown, fine to coarse grained sand, medium plasticity clay, very dense, dry.	D	VD		
						793.0								
										TP03 Target Depth Reached at 3 m				



TP03



TP03

Photo description	TP03 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP03	**TP Depth**	0.0 - 3.0 m



Spoil Pile 0.2 - 0.8 m



Spoil Pile 2.0 - 3.0 m

Photo description	TP03 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP03	**TP Depth**	0.0 - 3.0 m

REPORT OF TESTPIT: TP04

Job No	: 251128	Easting	: 357814.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6747667.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 1.6 m		804.0	1.0		CH	NATURAL; CLAY (CH): high plasticity, orange brown, trace sand, trace gravel, very stiff, w < pl.	w < PL	VSt		
			TPI 1.16 1.9				1.6							
				Bulk Bag 1.6 - 1.9 m		803.1			GC	NATURAL; clayey GRAVEL (GC): angular, coarse sized, orange brown mottled dark grey, low plasticity clay, very dense, dry.	D	VD		
										TP04 Refusal at 1.9 m				



TP04



Spoil Pile 0.2 - 1.6 m

Photo description	TP04 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP04	**TP Depth**	0.0 - 1.9 m

REPORT OF TESTPIT: TP05

Job No	: 251128	Easting	: 358225.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6747951.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 1 m			1		CL	NATURAL; gravelly CLAY low plasticity, pale yellow brown, firm to stiff, w < pl.	w < PL	F-St		
				Bulk Bag 1 - 1.5 m		829.0	1.0		GC	NATURAL; clayey GRAVEL (GC): sub-rounded to sub-angular, medium to coarse sized, pale yellow brown, low plasticity clay, very dense, dry, trace pockets of brown clay.	D	VD		
							1.5		Silts tone	ROCK; SILTSTONE; fine grained, dark grey, Medium to High Strength Highly Weathered blocky.	D	MS-HS		
										TP05 Refusal at 1.8 m				



All Spoil Piles



Site Conditions Around TP09



TP05

Photo description	TP05 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP05	**TP Depth**	0.0 - 1.8 m

REPORT OF TESTPIT: TP06

Job No	: 251128	Easting	: 358353.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748225.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.1 - 1 m					CI-CH	NATURAL; CLAY medium to high plasticity, brown mottled orange brown, trace sand, with gravel, very stiff to hard, w < pl, rootlets to 0.7 m.	w < PL	VSt-H		
						869.0	1.0			Becoming: more compact clay clumps.				
				Bulk Bag 1 - 1.3 m					CI-CH		w < PL	VSt-H		
						868.7								
										TP06 Refusal at 1.3 m				



TP06



Spoil Pile 0.0 - 1.0 m

Photo description	TP06 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP06	**TP Depth**	0.0 - 1.3 m

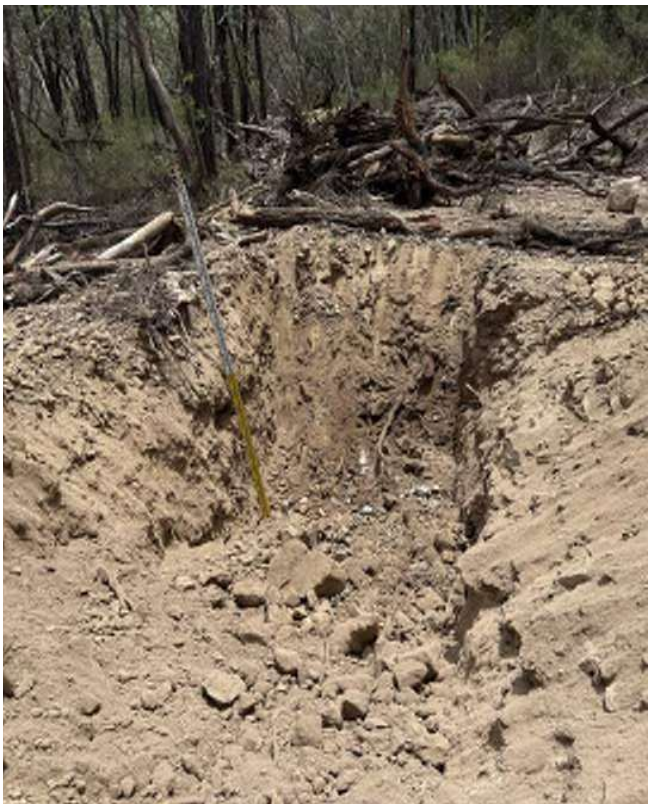
REPORT OF TESTPIT: TP07

Job No	: 251128	Easting	: 358585.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748100.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
						920.0	1.0		SW	NATURAL; gravelly SAND fine to coarse grained, pale brown, fine to coarse sized gravel, with clay, dense, dry.	D	D		
				Bulk Bag 1.2 - 1.4 m			1.3		Sandstone	ROCK; SANDSTONE; fine grained, grey, Medium to High Strength Highly Weathered blocky.	D	MS-HS		
										TP07 Refusal at 1.4 m				



Spoil Pile 1.2 - 1.4 m



TP07 and Surrounds



TP07

Photo description	TP07 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP07	**TP Depth**	0.0 - 1.4 m

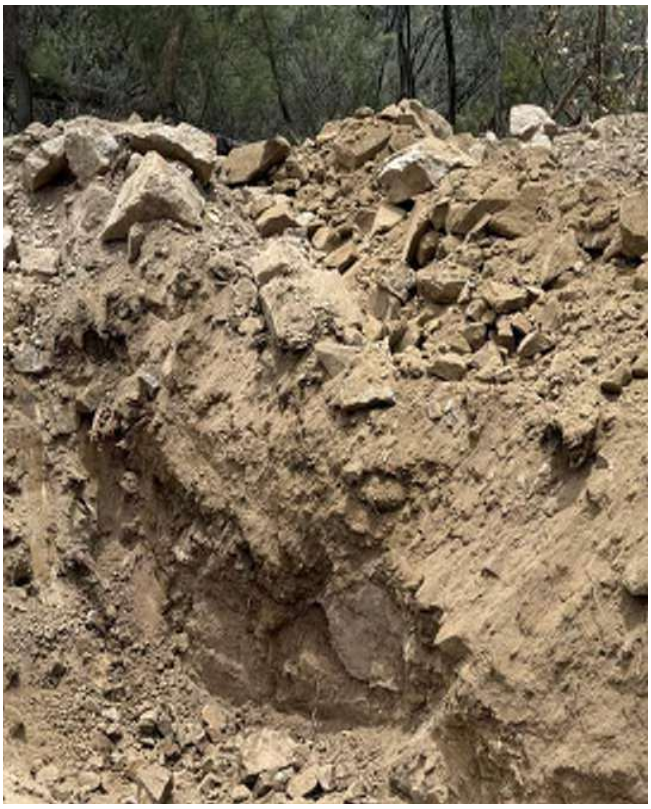
REPORT OF TESTPIT: TP08

Job No	: 251128	Easting	: 358297.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6747909.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0.1 - 1.8 m		880.0 879.1	0.1 1.0 1		SC SC	FILL; SAND fine to medium grained, pale yellow, loose, dry. NATURAL; gravelly to clayey SAND (SC): fine to medium grained, pale brown, fine to coarse sized gravel, low plasticity clay, medium dense to dense, dry. Becoming: More gravelly pockets. TP08 Refusal at 1.9 m	D D D	L MD-D MD-D		Excavated along existing track



TP08



TP08



Spoil Pile 0.1 - 1.8 m

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Photo description	TP08 - WRE West		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP08	**TP Depth**	0.0 - 1.9 m

REPORT OF TESTPIT: TP09

Job No	: 251128	Easting	: 358862.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748386.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 1.5 m		947.0	1.0		CL-CI	NATURAL; gravelly to sandy CLAY (CL-CI): low to medium plasticity, pale brown, fine to coarse grained sand, stiff to very stiff, w < pl.	w < PL	St-VSt		
							1.5		GC	NATURAL; clayey GRAVEL (GC): angular, fine to coarse sized, brown mottled orange brown, high plasticity clay, very dense, dry.	D	VD		
						946.0								
										TP09 Refusal at 2 m				



Spoil Pile 0.2 - 1.5 m



TP09, Spoil and Surrounds



TP09

Photo description	TP09 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP09	**TP Depth**	0.0 - 2.0 m

REPORT OF TESTPIT: TP10

Job No	: 251128	Easting	: 358770.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748593.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S	
				Bulk Bag 0.2 - 1.4 m		935.0	1.0		SW	NATURAL; gravelly SAND fine to coarse grained, red, fine to coarse sized gravel, with clay, dense, dry.	D	D	
				Bulk Bag 1.4 - 1.8 m			1.4		GW	NATURAL; sandy GRAVEL angular, fine to coarse sized, pale brown, fine to coarse grained sand, with clay, dense, dry.	D	D	siltstone pocket, dark grey, fine grained, moderately to highly weathered, medium to high strength, jointed.
										TP10 Refusal at 1.8 m			



TP10



TP10, Spoil and Surrounds



Spoil Pile 0.2 - 1.4 m

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Photo description	TP10 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP10	**TP Depth**	0.0 - 1.8 m

REPORT OF TESTPIT: TP11

Job No	: 251128	Easting	: 359057.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749021.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered							CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 0.5 m			0.2		SC	NATURAL; clayey SAND (SC): fine to coarse grained, pale brown, low to medium plasticity clay, with gravel, medium dense, dry, with angular cobbles.	D	MD		
							0.5		SC	NATURAL; gravelly to clayey SAND (SC): fine to coarse grained, pale brown, fine to medium sized gravel, low to medium plasticity clay, medium dense, dry, With angular cobbles.	D	MD		
						833.0	1.0							
							1.2		Silts tone	ROCK; SILTSTONE; fine grained, grey, Medium Strength Highly Weathered clay infilling joints, orange brown staining.	D	MS		
						832.5								
										TP11 Refusal at 1.5 m				



Spoil Pile 0.5 - 1.5 m



Spoil Pile 0.2 - 0.5 m



TP11

Photo description	TP11 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP11	**TP Depth**	0.0 - 1.5 m

REPORT OF TESTPIT: TP12

Job No	: 251128	Easting	: 359193.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749133.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations	
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 1.5 m		812.0	1.0		SC	NATURAL; clayey SAND (SC): fine to coarse grained, pale brown mottled orange brown, low to medium plasticity clay, with gravel, medium dense to dense, dry, trace angular cobbles.	D	MD-D		
							1.5		GC	NATURAL; clayey to sandy GRAVEL (GC): angular, fine to coarse sized, pale brown mottled orange brown, fine to coarse grained sand, low to medium plasticity clay, dense, dry.	D	D		
						811.0	2.0		Silts tone	ROCK; SILTSTONE; fine grained, grey, Medium to High Strength Highly Weathered.	D	MS-HS		
						810.7				TP12 Refusal at 2.3 m				



TP12



Spoil Pile 0.2 - 1.5 m

Photo description	TP12 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP12	**TP Depth**	0.0 - 2.3 m

REPORT OF TESTPIT: TP13

Job No	: 251128	Easting	: 359411.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748957.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
							0.7		Cl	NATURAL; gravelly to sandy CLAY (Cl): medium plasticity, red brown, fine to coarse grained sand, stiff, w < pl, with angular cobbles.	w < PL	St		
				Bulk Bag 0.2 - 1.8 m		812.0	1.0		Cl	NATURAL; gravelly CLAY (Cl): medium plasticity, red brown, with sand, very stiff, w < pl, With angular cobbles.	w < PL	VSt		
							1.8		Silts tone	ROCK; SILTSTONE; fine grained, grey, Medium to High Strength Highly to Moderately Weathered orange brown stains.	D	MS-HS		
						811.0	2.0							
						810.7				TP13 Refusal at 2.3 m				



TP13



Spoil Pile 0.2 - 1.8 m

Photo description	TP13 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP13	**TP Depth**	0.0 - 2.3 m

REPORT OF TESTPIT: TP14

Job No	: 251128	Easting	: 359519.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748978.00	Logged	: Julia Gordon
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 16/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl, rootlets.	w < PL	S		
				Bulk Bag 0.2 - 1 m					CH	NATURAL; CLAY (CH): high plasticity, brown mottled orange brown, with gravel, trace silt, stiff to very stiff, w < pl.	w < PL	St-VSt		
						833.0	1.0							
				Bulk Bag 1 - 1.7 m					SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale yellow, fine to coarse sized gravel, low plasticity clay, with angular cobbles very dense, dry.	D	VD		very brittle gravel and cobbles, easily broken.
							1.7		GP	NATURAL; sandy GRAVEL angular, coarse sized, pale yellow, fine to coarse grained sand, with clay, very dense, dry, with angular cobbles.	D	VD		
						832.0								
										TP14 Refusal at 2 m				



TP14



Spoil Piles 0.2 - 1.7 m

Photo description	TP14 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP14	**TP Depth**	0.0 - 2.0 m

REPORT OF TESTPIT: TP15

Job No	: 251128	Easting	: 359532.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748562.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0 - 1 m		874.0	1.0		CI	NATURAL; gravelly to sandy CLAY (CI): medium plasticity, red - red brown, fine to coarse grained sand, stiff, w < pl.	w < PL	St	
				Bulk Bag 1 - 1.6 m			1.7		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, angular, fine to coarse sized, fine to coarse grained sand, medium plasticity clay, very dense, dry.	D	VD	
										TP15 Refusal at 1.8 m			



Spoil Piles 0.0 - 1.6 m



Spoil Piles 0.0 - 1.6 m



TP15

Photo description	TP15 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP15	**TP Depth**	0.0 - 1.8 m

REPORT OF TESTPIT: TP16

Job No	: 251128	Easting	: 359123.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748457.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0 - 0.5 m			0.5		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale yellow brown, fine to coarse sized gravel, low plasticity clay, very dense, dry, Angular gravels.	D	VD		
				Bulk Bag 0.5 - 1 m			1		SP	NATURAL; gravelly SAND (SP): poorly graded, fine to coarse grained, pale yellow brown, fine to coarse sized gravel, with clay, Some angular cobbles very dense, dry.	D	VD		
						902.0	1.0		GP	NATURAL; GRAVEL (GP): poorly graded, angular, coarse sized, pale yellow brown, with sand, very dense, dry.	D	VD		
						901.3			GP	Becoming: angular cobbles.	D	VD		
										TP16 Refusal at 1.7 m				



TP16



Spoil Piles 0.0 - 1.0 m



TP16 Sidewall

Photo description	TP16 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP16	**TP Depth**	0.0 - 1.7 m

REPORT OF TESTPIT: TP17

Job No	: 251128	Easting	: 359136.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748593.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 0.7 m			0.7		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale yellow brown, fine to coarse sized gravel, medium plasticity clay, With cobbles and large roots down to 1m medium dense, dry.	D	MD		
				Bulk Bag 0.7 - 1 m					CH	NATURAL; sandy CLAY (CH): high plasticity, orange brown, fine grained sand, trace gravel, very stiff, w < pl.	w < PL	VSt		
						880.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-rounded to angular, medium sized, pale yellow, fine to coarse grained sand, high plasticity clay, dense, dry.	D	D		
										TP17 Refusal at 1.4 m				



TP17



TP17



Spoil Pile 0.2 - 0.7 m



Spoil Pile 0.7 - 1.0 m

Photo description	TP17 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP17	**TP Depth**	0.0 - 1.4 m

REPORT OF TESTPIT: TP18

Job No	: 251128	Easting	: 359183.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748876.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 0.6 m			0.6		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale yellow brown, medium to coarse sized gravel, medium plasticity clay, medium dense, dry.	D	MD		
				Bulk Bag 0.6 - 1.5 m		818.0	1.0			NATURAL; sandy CLAY low plasticity, pale yellow, fine to coarse grained sand, trace gravel, firm, w < pl.				
				Bulk Bag 1.5 - 2.5 m		817.0	2.0		CL		w < PL	F		
			TPI 1.37 3.7			816.0	3.0							
						815.3				TP18 Target Depth Reached at 3.7 m				



TP18



Spoil Pile 0.2 - 0.6 m



Spoil Piles 0.6 - 2.5 m

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Photo description	TP18 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP18	**TP Depth**	0.0 - 3.7 m

REPORT OF TESTPIT: TP19

Job No	: 251128	Easting	: 359219.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748440.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0 - 1.1 m					CL	NATURAL; gravelly to sandy CLAY low plasticity, red brown, fine to coarse grained sand, soft, w < pl.	w < PL	S		
						868.0	1.0		CL	NATURAL; gravelly to sandy CLAY low plasticity, red brown, fine to coarse grained sand, more gravelly very stiff, w < pl.	w < PL	VSt		
						867.9				TP19 Refusal at 1.1 m				



TP19 Surrounds



TP19 Surrounds

Photo description	TP19 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP19	**TP Depth**	0.0 - 1.1 m

REPORT OF TESTPIT: TP20

Job No	: 251128	Easting	: 359246.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6748805.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 1.1 m		825.0	1.0		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, medium plasticity clay, dense, dry.	D	D		
				Bulk Bag 1.1 - 1.8 m			1.1		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, angular, medium to coarse sized, pale yellow, fine to coarse grained sand, dense, dry.	D	D		
										TP20 Refusal at 1.8 m				



TP20



Spoil Piles 0.2 - 1.8 m



Sidewall and Spoil Piles

Photo description	TP20 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP20	**TP Depth**	0.0 - 1.8 m

REPORT OF TESTPIT: TP21

Job No	: 251128	Easting	: 359150.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 67439258.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.2 - 1.2 m		800.0	1.0		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, medium plasticity clay, very dense, dry.	D	VD	
										TP21 Refusal at 1.2 m			



TP21



Spoil Pile 0.2 - 1.2 m

Photo description	TP21 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP21	**TP Depth**	0.0 - 1.2 m

REPORT OF TESTPIT: TP22

Job No	: 251128	Easting	: 359092.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749350.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.2 - 0.8 m			0.8		CL	NATURAL; CLAY low plasticity, pale yellow, with sand, with gravel, stiff, w < pl.	w < PL	St	
				Bulk Bag 0.8 - 1.2 m		801.0	1.0		CH	Becoming: cobbly.	w < PL	St	
										TP22 Refusal at 1.2 m			



TP22



Spoil Pile 0.2 - 0.8 m

Photo description	TP22 - WRE East		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP22	**TP Depth**	0.0 - 1.2 m

REPORT OF TESTPIT: TP23

Job No	: 251128	Easting	: 358799.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749440.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 0.9 m					CI	NATURAL; gravelly to sandy CLAY (CI): medium plasticity, red brown, fine to coarse grained sand, soft, w < pl.	w < PL	S		
				Bulk Bag 0.9 - 1.2 m		855.0	0.9 1.0		CI	Becoming: sub-rounded to angular gravel stiff to very stiff.	w < PL	St-VSt		
										TP23 Refusal at 1.2 m				



TP23



Spoil Piles 0.2 - 1.2 m

Photo description	TP23 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP23	**TP Depth**	0.0 - 1.2 m

REPORT OF TESTPIT: TP24

Job No	: 251128	Easting	: 358831.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749754.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 0.6 m			0.6		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, angular, fine to coarse sized, pale brown, fine to coarse grained sand, medium plasticity clay, dense, dry.	D	D		
				Bulk Bag 0.6 - 1.9 m		797.0	1.0		Silts tone	ROCK; SILTSTONE; grey orange brown, Dry Medium to High Strength Highly Weathered.	D	MS-HS		
						796.1								
										TP24 Refusal at 1.9 m				



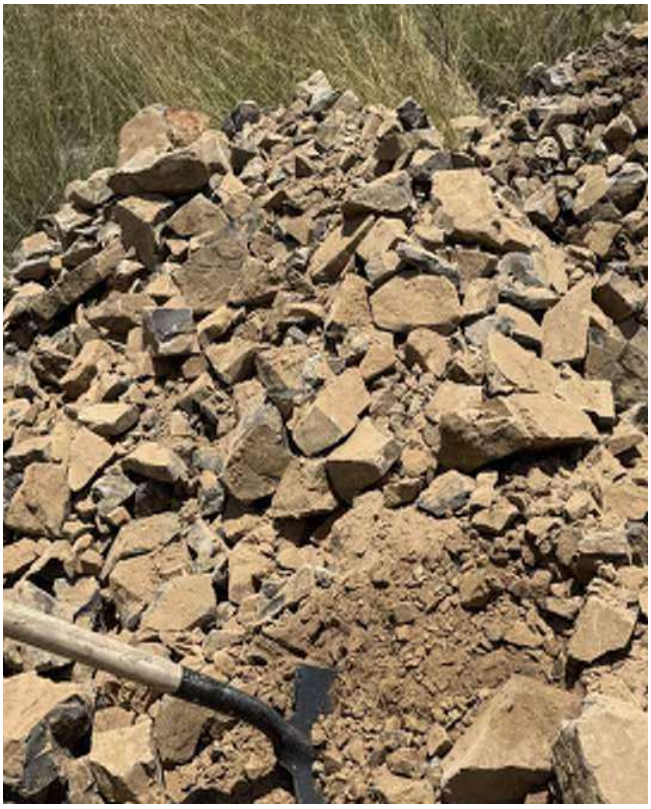
TP24



TP24 Sidewall



Spoil Piles 0.2 - 1.9 m



Spoil Pile 0.6 - 1.9 m

Photo description	TP24 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP24	**TP Depth**	0.0 - 1.9 m

REPORT OF TESTPIT: TP25

Job No	: 251128	Easting	: 358839.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749972.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 1 m					Cl	NATURAL; gravelly to sandy CLAY (Cl): medium plasticity, pale brown, fine to coarse grained sand, firm, w < pl.	w < PL	F		
						776.0	1.0							
						775.9			Cl	Becoming: hard.	w < PL	H		
										TP25 Refusal at 1.1 m				



TP25



Spoil Pile 0.2 - 1.0 m



TP25

Photo description	TP25 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP25	**TP Depth**	0.0 - 1.1 m

REPORT OF TESTPIT: TP26

Job No	: 251128	Easting	: 358839.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749972.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 1.8 m		776.0	1.0		Cl	NATURAL; gravelly to sandy CLAY (Cl): medium plasticity, pale brown, fine to coarse grained sand, stiff, w < pl.	w < PL	St		
										TP26 Refusal at 1.8 m				



TP26



TP26



Spoil Pile 0.2 - 1.8 m

Photo description	TP26 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP26	**TP Depth**	0.0 - 1.8 m

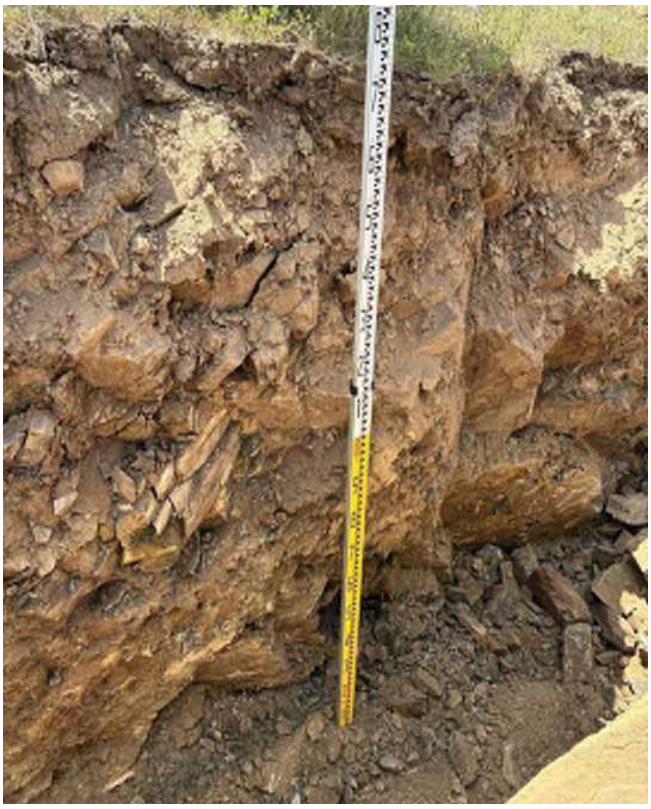
REPORT OF TESTPIT: TP27

Job No	: 251128	Easting	: 358904.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750108.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.1 - 0.7 m			0.7		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, low plasticity clay, dense, dry.	D	D	
				Bulk Bag 0.7 - 1.4 m		750.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, fine to coarse sized, pale brown, low plasticity clay, very dense, dry.	D	VD	
						749.3	1.4		Silts tone	ROCK; SILTSTONE; fine grained, dark grey, Medium Strength Highly Weathered clay infill in joints.		MS	
										TP27 Refusal at 1.7 m			



TP27



TP27 Sidewall



Spoil Piles 0.1 - 1.4 m

Photo description	TP27 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP27	**TP Depth**	0.0 - 1.7 m

REPORT OF TESTPIT: TP28

Job No	: 251128	Easting	: 358654.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750244.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.1		CL	TOPSOIL; sandy CLAY low plasticity, pale brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.1 - 1.1 m		800.0	1.0		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, low to medium plasticity clay, medium dense, dry.	D	MD		
				Bulk Bag 1.1 - 1.6 m			1.1		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-angular to angular, fine to coarse sized, pale brown, fine to coarse grained sand, low plasticity clay, dense, dry.	D	D		
							1.6		GC	Becoming: gravelly pocket very dense.	D	VD		
						799.0								
										TP28 Refusal at 2 m				



TP28



Spoil Pile 1.1 - 1.6 m



Spoil Pile 0.1 - 1.1 m

Photo description	TP28 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP28	**TP Depth**	0.0 - 2.0 m

REPORT OF TESTPIT: TP29

Job No	: 251128	Easting	: 358707.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750035.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 17/12/2025
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0.1 - 1.2 m		768.0	0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
							1.0		CI	NATURAL; gravelly to sandy CLAY (CI): medium plasticity, pale brown, fine to coarse grained sand, stiff, w < pl.	w < PL	St		
							1.2		CI	Becoming: gravelly, coarse and angular very stiff.	w < PL	VSt		
										TP29 Refusal at 1.4 m				



TP29



Spoil Pile



Spoil Pile

Photo description	TP29 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP29	**TP Depth**	0.0 - 1.4 m

REPORT OF TESTPIT: TP30

Job No	: 251128	Easting	: 358706.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749183.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 05/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 0.6 m			0.6		CL	NATURAL; sandy CLAY low plasticity, pale brown, fine to coarse grained sand, firm, w < pl.	w < PL	F		
				Bulk Bag 0.6 - 0.9 m		864.0	1.0		CI	NATURAL; gravelly to sandy CLAY (CI): medium plasticity, fine to coarse grained sand, very stiff, w < pl.	w < PL	VSt		
						863.7				TP30 Refusal at 1.3 m				



TP30

Photo description	TP30 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP30	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP31

Job No	: 251128	Easting	: 358475.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749515.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered							CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
							0.3						
				Bulk Bag 0.3 - 1.3 m					SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, low plasticity clay, loose, dry.	D	L	
						863.0	1.0						
						862.7			SC	Becoming: very dense.	D	VD	
										TP31 Refusal at 1.3 m			



TP31

Photo description	TP31 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP31	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP32

Job No	: 251128	Easting	: 358561.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749662.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.3		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.3 - 1.45 m					GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-angular, fine to coarse sized, pale brown, fine to coarse grained sand, low plasticity clay, loose, dry.	D	L		
			TPI 0.95 1.45			844.0	1.0							
							1.35		SC	Becoming: very dense.	D	VD		
						843.5				TP32 Refusal at 1.45 m				



TP32

Photo description	TP32 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP32	**TP Depth**	0.0 - 1.45 m

REPORT OF TESTPIT: TP33

Job No	: 251128	Easting	: 358393.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749722.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0.1 - 0.5 m		832.5	0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
							0.4		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, rounded, fine to coarse sized, brown, fine to coarse grained sand, low plasticity clay, loose, dry.	D	L	
									GC	Becoming: very dense.	D	VD	
										TP33 Refusal at 0.5 m			



TP33

Photo description	TP33 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP33	**TP Depth**	0.0 - 0.5 m

REPORT OF TESTPIT: TP34

Job No	: 251128	Easting	: 358269.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749457.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered							CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.2 - 0.8 m			0.2		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, dark pale red, fine to medium sized gravel, low plasticity clay, loose, dry.	D	L	
							0.7		SC	Becoming: very dense.	D	VD	
										TP34 Refusal at 0.8 m			



TP34

Photo description	TP34 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP34	**TP Depth**	0.0 - 0.8 m

REPORT OF TESTPIT: TP35

Job No	: 251128	Easting	: 357934.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749616.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 2 m		871.0	1.0		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to medium sized gravel, low to medium plasticity clay, loose, dry.	D	L		
							1.8		SC	Becoming: dense to very dense.	D	D-VD		
						870.0				TP35 Refusal at 2 m				



TP35

Photo description	TP35 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP35	**TP Depth**	0.0 - 2.0 m

REPORT OF TESTPIT: TP36

Job No	: 251128	Easting	: 358010.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749827.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0 - 1 m		875.0	0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
									GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, rounded to angular, fine to coarse sized, pale brown, fine to coarse grained sand, low to medium plasticity clay, dense to very dense, dry.	D	D-VD		
										TP36 Refusal at 1 m				



TP36

Photo description	TP36 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP36	**TP Depth**	0.0 - 1.0 m

REPORT OF TESTPIT: TP37

Job No	: 251128	Easting	: 358103.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749961.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.25		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.25 - 1.6 m		857.0	1.0		SC	NATURAL; gravelly to clayey SAND (SC): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, low plasticity clay, dense, dry.	D	D		
										TP37 Refusal at 1.6 m				



TP37

Photo description	TP37 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP37	**TP Depth**	0.0 - 1.6 m

REPORT OF TESTPIT: TP38

Job No	: 251128	Easting	: 358365.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750171.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 05/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered		Bulk Bag 0.1 - 1.3 m		856.0 855.7	0.1 1.0		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
									SP	NATURAL; gravelly SAND (SP): poorly graded, fine to coarse grained, pale brown, fine to coarse sized gravel, trace clay, trace silt, dense, dry.	D	D		
										TP38 Refusal at 1.3 m				



TP38

Photo description	TP38 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP38	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP39

Job No	: 251128	Easting	: 358264.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750198.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 05/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.2		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.2 - 1.3 m		849.0	1.0		CI	NATURAL; CLAY (CI): medium plasticity, pale brown, trace sand, trace gravel, very stiff, w < pl.	w < PL	VSt		
						848.7				TP39 Refusal at 1.3 m				



TP39

Photo description	TP39 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP39	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP40

Job No	: 251128	Easting	: 357993.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750092.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.3		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.3 - 1.3 m		868.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-rounded to angular, fine to coarse sized, pale brown, fine to coarse grained sand, low plasticity clay, trace silt, very dense, dry.	D	VD	
						867.7							
										TP40 Refusal at 1.3 m			



TP40

Photo description	TP40 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP40	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP41

Job No	: 251128	Easting	: 357912.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750276.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.25		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.25 - 1.1 m		825.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-rounded to angular, fine to coarse sized, pale brown, fine to coarse grained sand, low plasticity clay, trace silt, very dense, dry.	D	VD		
						824.9				TP41 Refusal at 1.1 m				



TP41

Photo description	TP41 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP41	**TP Depth**	0.0 - 1.1 m

REPORT OF TESTPIT: TP42

Job No	: 251128	Easting	: 357973.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749909.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.3		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.3 - 0.7 m		866.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-rounded to angular, fine to coarse sized, pale brown, fine to coarse grained sand, low plasticity clay, trace silt, medium dense to dense, dry.	D	MD-D	
						865.0	2.0						
						864.0	2.9 3.0		Silts tone	ROCK; SILTSTONE; fine grained, Dry High Strength.	D	HS	
						863.9				TP42 Target Depth Reached at 3.1 m			



TP42

Photo description	TP42 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP42	**TP Depth**	0.0 - 3.1 m

REPORT OF TESTPIT: TP43

Job No	: 251128	Easting	: 357866.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749714.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.1 - 2.1 m		870.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-rounded to angular, fine to coarse sized, red brown, fine to coarse grained sand, low to medium plasticity clay, trace silt, dense, dry.	D	D		
						869.0	2.0							
						868.9				TP43 Refusal at 2.1 m				



TP43

Photo description	TP43 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP43	**TP Depth**	0.0 - 2.1 m

REPORT OF TESTPIT: TP44

Job No	: 251128	Easting	: 357646.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749773.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600 / Structure and Additional Observations
Tooth Bucket		Not Encountered					0.3		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S	
				Bulk Bag 0.3 - 1.3 m		862.0	1.0		GC	NATURAL; clayey to sandy GRAVEL (GC): poorly graded, sub-rounded, fine to coarse sized, pale red, fine to coarse grained sand, low plasticity clay, trace silt, dense to very dense, dry.	D	D-VD	
						861.7				TP44 Refusal at 1.3 m (Bedrock)			



TP44

Photo description	TP44 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP44	**TP Depth**	0.0 - 1.3 m

REPORT OF TESTPIT: TP45

Job No	: 251128	Easting	: 357663.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6749901.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.1 - 1.95 m		823.0	1.0		CI	NATURAL; gravelly to sandy CLAY (CI): medium plasticity, pale yellow, fine to coarse grained sand, trace silt, very stiff, w < pl.	w < PL	VSt		
						822.0								
										TP45 Refusal at 1.95 m				



TP45

Photo description	TP45 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP45	**TP Depth**	0.0 - 1.95 m

REPORT OF TESTPIT: TP46

Job No	: 251128	Easting	: 357655.00	Sheet	: 1 OF 1
Client	: RWC	Northing	: 6750000.00	Logged	: Faiz Jitno
Project	: Taronga Tin	UTM	: 56J	Logged Date	: 06/01/2026
Location	: Grampians Rd, Emmaville NSW 2371, Australia	Excavator	: 30T Excavator	Checked	: Julia Gordon
Contractor	: Taronga Mines Pty Ltd	Inclination	:	Checked Date	: 27/03/2026

Excavation								Soil Description					Observations	
Method	Support	Water	Field Tests	Samples	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	MATERIAL: Origin, Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency / Density	Pocket Penetrometer UCS (kPa) 0 200 400 600	Structure and Additional Observations
Tooth Bucket		Not Encountered					0.1		CL	TOPSOIL; sandy CLAY low plasticity, grey brown, fine grained sand, trace gravel, soft, w < pl.	w < PL	S		
				Bulk Bag 0.1 - 1 m		798.0			CL	NATURAL; gravelly to sandy CLAY low plasticity, pale yellow, fine to coarse grained sand, firm to stiff, w < pl.	w < PL	F-St		
										TP46 Refusal at 1 m				



TP46

Photo description	TP46 - CDA		
Client	RWC		
Location	Grampians Rd, Emmaville NSW 2371, A...		
Project name	Taronga Tin		
Project No	251128	**Scale**	Not to Scale
TP No	TP46	**TP Depth**	0.0 - 1.0 m

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CLIENT:	RWC
PROJECT:	Taronga Tin Mine
LOCATION:	Emmaville
JOB NO:	251128
DATE:	6/01/2026
INITIALS:	

Test Pit Infiltration Test Calculation Sheet - Rectangular Test Pit

TP03 (3 m depth)

TP Dimensions (m)		Water Depth (m)	Time		Volume	Wetted Surface Area	Variable Parameters			Permeability	Average Permeability	Mass Permeability
L (m)	W (m)	d (m)	t (min)	t (s)	V (m^3)	SA (m^2)	Δt (s)	ΔV (m^3)	ΔSA (m^2)	k (m/s)	k_{ave} (m/s)	k_{mass} (m/s)
3.20	1.10	1.100	0	0	3.87	12.98	0	0.00	0.00	-		
3.20	1.10	1.040	260	15600	3.66	12.46	15600	0.21	0.52	1.06E-06		
3.20	1.10	0.970	520	31200	3.41	11.86	15600	0.25	0.60	1.30E-06		
3.20	1.10	0.910	794	47640	3.20	11.35	16440	0.21	0.52	1.11E-06	1.16E-06	1.15E-06

TP32 (3.8m depth)

TP Dimensions (m)		Water Depth (m)	Time		Volume	Wetted Surface Area	Variable Parameters			Permeability	Average Permeability	Mass Permeability
L (m)	W (m)	d (m)	t (min)	t (s)	V (m^3)	SA (m^2)	Δt (s)	ΔV (m^3)	ΔSA (m^2)	k (m/s)	k_{ave} (m/s)	k_{mass} (m/s)
3.80	1.60	0.500	0	0	3.04	11.48	0	0.00	0.00	-		
3.80	1.60	0.350	125	7470	2.13	9.86	7470	0.91	1.62	1.14E-05		
3.80	1.60	0.200	249	14940	1.22	8.24	7470	0.91	1.62	1.35E-05		
											1.25E-05	1.24E-05

TP18 (3.7 m depth)

TP Dimensions (m)		Water Depth (m)	Time		Volume	Wetted Surface Area	Variable Parameters			Permeability	Average Permeability	Mass Permeability
L (m)	W (m)	d (m)	t (min)	t (s)	V (m^3)	SA (m^2)	Δt (s)	ΔV (m^3)	ΔSA (m^2)	k (m/s)	k_{ave} (m/s)	k_{mass} (m/s)
4.80	1.10	2.350	0	0	12.41	33.01	0	0.00	0.00	-		
4.80	1.10	2.265	146	8730	11.96	32.01	8730	0.45	1.00	1.58E-06		
4.80	1.10	2.180	291	17460	11.51	31.00	8730	0.45	1.00	1.63E-06		
											1.61E-06	1.61E-06

TP04 (m depth)

TP Dimensions (m)		Water Depth (m)	Time		Volume	Wetted Surface Area	Variable Parameters			Permeability	Average Permeability	Mass Permeability
L (m)	W (m)	d (m)	t (min)	t (s)	V (m^3)	SA (m^2)	Δt (s)	ΔV (m^3)	ΔSA (m^2)	k (m/s)	k_{ave} (m/s)	k_{mass} (m/s)
3.60	1.50	0.740	0	0	4.00	12.95	0	0.00	0.00	-		
3.60	1.50	0.590	366	21960	3.19	11.42	21960	0.81	1.53	3.03E-06		
3.60	1.50	0.440	732	43920	2.38	9.89	21960	0.81	1.53	3.46E-06		
											3.25E-06	3.23E-06

APPENDIX B – LABORATORY TESTING AND MATERIAL CHARACTERISATION

TAILINGS.WATER.WASTE.

REPORT

R.W CORKERY & CO PTY LTD
ABN: 31002033712

TARONGA TIN PROJECT REGULATORY RESPONSE – LABORATORY TESTING AND MATERIAL CHARACTERISATION

251128-R01-Rev0 -APPENDIX B

April 2026



TAILINGS.WATER.WASTE.

Document Control

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TAILINGS.WATER.WASTE.

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1 LABORATORY TESTING AND MATERIAL CHARACTERISATION

1.1 Overview

This appendix presents the results of laboratory testing undertaken to characterise the engineering properties of materials encountered during the geotechnical investigation at the Taronga Tin Project.

The laboratory testing programme was carried out on selected disturbed samples obtained from test pits across the Northern and Southern Waste Rock Emplacements (WRE), Co-disposal Area (CDA), Residue Storage Facility (RSF) and associated runoff dams (ROD) that would be situated downslope of each WRE and the CDA. The purpose of the testing was to define material properties relevant to seepage assessment, foundation performance and cover system design.

Testing was undertaken by Trilab, a NATA-accredited laboratory, in accordance with the relevant Australian Standards, including AS1289 Methods of Testing Soils for Engineering Purposes, and other applicable standards where required.

Sample locations for laboratory testing were selected to provide coverage across the main project landforms and to capture the range of foundation materials identified during the geotechnical investigation. Selection was guided by field logging, sample recovery, field infiltration test results and the need to characterise materials relevant to seepage assessment, foundation performance and cover system design.

Laboratory test results and certificates are presented in **ATTACHMENTS**.

Laboratory tests undertaken and their respective methods / Australian Standards are as follows:

- Particle Size Distribution (AS 1289.3.6.3, AS 1289.3.5.1 (2023) ASTM D4221)
- Atterberg Limits (AS 1289.3.6.3, AS 1289.3.2.1, AS 1289.3.3.1, AS 1289.3.4.1, ASTM D4318)
- Emerson Class Tests (AS 1289 3.8.1)
- Compaction: Standard (AS 1289.5.1.1, Q142A, ASTM D698, WA132.1)
- Soil Particle Density (AS 1289.3.5.1 (2023))
- Permeability – Constant Head (AS 1289.6.7.1 ASTM D2434)
- Permeability – Falling Head (AS 1289.6.7.2)
- Soil Water Characteristic Curve – SWCC

1.2 Particle Size Distribution

PSD samples were selected to provide representative coverage of the principal landforms and the range of residual soil materials identified in the test pits. The results were used as a primary index for assessing grading variability and to support the selection and interpretation of Atterberg limits and permeability testing.

Testing was conducted on the residual soil (or subsoil) samples using a range of sieve sizes from 53 mm to 0.075 mm. A hydrometer test for fine materials (less than 0.075 mm particle size) was conducted. A summary of the PSD results is provided in **TABLE 1**, and the corresponding PSD curves are presented in **GRAPH 1**.

Two (2) particle size distribution (PSD) tests completed on the WRE West, two (2) on the WRE East, two (2) on the CDA, one (1) on the RSF, and two (2) samples representing material sourced outside the landform (TP14 and TP22).

Sample selection was informed by field logging observations, core recovery, results of field infiltration testing, and the requirement to characterise materials relevant to seepage assessment, foundation performance and cover system design.

A PSD curve describes the relative proportions of particle sizes within a soil or rock material on a mass basis. Interpretation of the curve allows assessment of whether the material is well-graded,

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poorly graded (uniform), or gap-graded. It indicates the material's likely permeability, drainage characteristics, and moisture retention behaviour.

According to Australian Standard particle size divisions:

- Cobble and gravel: > 4.75 mm
- Sand: 4.75 mm to 0.075 mm
- Clay and silt (fines): < 0.075 mm

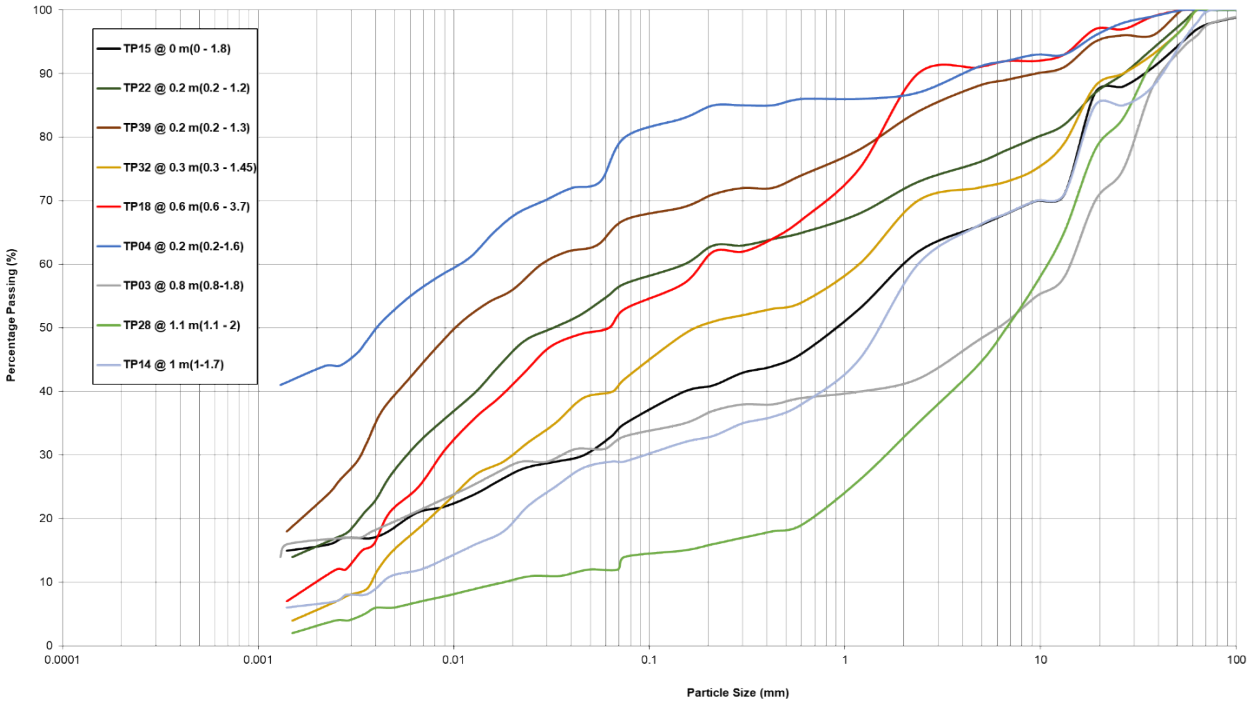
The PSD results indicate that the residual soil samples are predominantly composed of clay- and silt-sized particles. The PSD curves exhibit steep gradients, suggesting that the particle-size distribution spans a relatively narrow size range. The broad distribution of fine fractions confirms that the residual soils are fine-grained, consistent with their classification based on visual and laboratory assessments.

TABLE 1: PSD RESULTS

Sample Name	Sample Depth (m)	Cobble and Gravel % (>4.75)	Sand % (4.75 -0.075)	Clay and Silt % (<0.075 mm)
TP03 @ 0.8	0.8-1	52	15	33
TP04 @ 0.2	0.2-1.6	9	11	80
TP14 @ 1	1-1.7	34	37	29
TP18 @ 0.6	0.6 - 3.7	9	38	53
TP28 @ 1.1	1.1 - 2	56	30	14
TP32 @ 0.3	0.3 - 1.45	28	30	42
TP39 @ 0.2	0.2 - 1.3	12	21	67
TP15 @ 0	0 - 1.8	34	31	35
TP22 @ 0.2	0.2 - 1.2	24	19	57

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GRAPH 1: PSD RESULTS FOR RESIDUAL SOIL SAMPLES



1.3 Atterberg Limit

The Atterberg Limits is a basic measure of the critical water contents of fine-grained soils as the material changes character, transitioning from a solid to a liquid. Assessing this behaviour provides an insight towards the prediction of engineering properties within silt and clay soils. The Atterberg Limits consist of the following key values of moisture content:

- The Liquid Limit (LL) is the moisture content at which a fine-grained soil no longer flows like a liquid.
- The Plastic Limits (PL) is the moisture content at which fine-grained soil can no longer be remoulded without cracking.
- The Shrinkage Limit (SL) is the moisture content at which a fine-grained soil no longer changes volume upon drying, and any loss of moisture is compensated by the entry of air into the pores.

Atterberg limits results for the residual soil samples are summarised in **TABLE 2.** The LL and PL results for are displayed graphically in **GRAPH 2**.

Atterberg limits testing was undertaken on samples with higher fines content, as indicated by field logging and PSD results, to assess plasticity, shrinkage behaviour and consistency of the fine-grained foundation materials.

In **GRAPH 2**, the A-line separates clay-dominated soils from silt-dominated soils, while the U-line defines the upper theoretical limit of plasticity for natural fine-grained soils and serves as a check on the validity of laboratory Atterberg limit results.

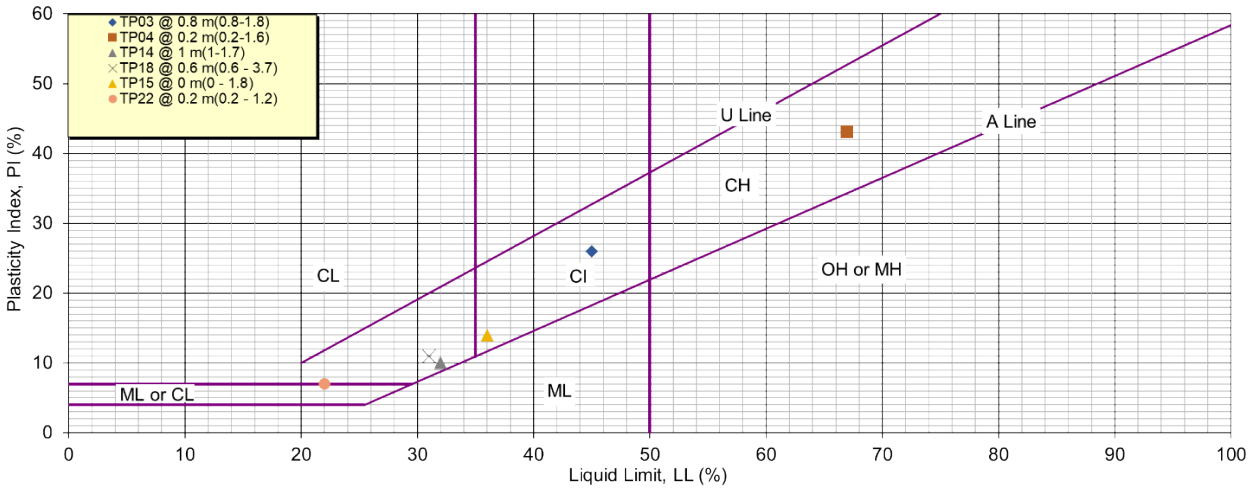
The majority of data points plot within or adjacent to the low-plasticity silt-clay range (ML–CL). Several samples plot marginally above the A-line, indicating the presence of lean clay to clayey silt materials (CL/CI). One sample exhibits higher liquid limit and plasticity index values, plotting close to the CH (high-plasticity clay) classification. No samples plot within the clean sand fields, indicating that the materials are predominantly fine-grained. No samples are also plotted within OH or MH (OH: Organic clay of high plasticity and MH: Inorganic silt of high plasticity).

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TABLE 2: ATTERBERG LIMITS RESULTS FOR RESIDUAL SOIL SAMPLES

Sample Name	Sample Depth (m)	Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI) %	Linear Shrinkage %
TP03 @ 0.8	0.8-1	45	19	26	14
TP04 @ 0.2	0.2-1.6	67	24	43	27
TP14 @ 1	1-1.7	32	22	10	6
TP18 @ 0.6	0.6 - 3.7	31	20	11	5
TP15 @ 0	0 - 1.8	36	22	14	9.5
TP22 @ 0.2	0.2 - 1.2	22	15	7	4.5

GRAPH 2: ATTERBERG LIMIT FOR RESIDUAL SOIL



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1.4 Emerson Test

Emerson aggregate testing was undertaken on four residual soil samples to determine their Emerson Classification. This test assesses the behaviour and structural stability of soil aggregates when immersed in water, based on their tendency to disperse, slake, flocculate, or swell. When aggregates are submerged, osmotic stresses develop as soluble salts diffuse from the negatively charged particle surfaces into the surrounding water. This process may generate sufficient repulsive force to cause dispersion. The test is semi-quantitative and relies on visual observation of the rate and extent of aggregate breakdown and an indicator for potentially dispersive soils.

Samples for Emerson testing were selected from fine-grained residual soils considered relevant to erosion, slaking and dispersion behaviour for rehabilitation and cover system performance.

The Emerson Classification system comprises eight classes, defined by dispersion and slaking behaviour:

- Class 1: Complete dispersion
- Class 2: Partial dispersion
- Classes 3–6: No initial dispersion, but dispersion may occur following remoulding; flocculation or slaking may also be observed
- Class 7: No slaking or dispersion, but swelling occurs (commonly associated with organic-rich materials)
- Class 8: No slaking, swelling, or dispersion

All samples in the Emerson Classification range from 2 to 5, indicating that the aggregates do not disperse upon initial immersion but may disperse when remoulded such as during rehabilitation earthworks and may exhibit some degree of flocculation or slaking. Results of the test are presented below in **TABLE 3.**

TABLE 3: EMERSON TEST RESULTS

Sample Name	Sample Depth (m)	Emerson Classification
TP04 @ 0.2	0.2-1.6	5
TP14 @ 1	1-1.7	3
TP15 @ 0	0 - 1.8	4
TP22 @ 0.2	0.2 - 1.2	2

1.5 Permeability

Permeability laboratory results are presented in **TABLE 4.** It is noted that TP 03 and TP04 (Southern WRE) residual samples have the lowest k_{sat} values when compared to the other locations.

Laboratory permeability testing was targeted at representative samples covering the range of hydraulic behaviour indicated by field infiltration tests, particle size distribution and field logging, rather than all test pits, to define characteristic hydraulic conductivity values for the foundation materials.

Test pit infiltration test calculation sheet in **Appendix A** presents the results of the field infiltration tests.

TABLE 4: HYDRAULIC CONDUCTIVITY TEST RESULTS

Sample Name	Sample Depth (m)	Permeability k_{sat} (m/s)
TP03 @ 0.8	0.8-1	5.10×10^{-10}
TP04 @ 0.2	0.2-1.6	4.30×10^{-10}
TP14 @ 1	1-1.7	9.10×10^{-05}
TP18 @ 0.6	0.6 - 3.7	1.30×10^{-05}
TP28 @ 1.1	1.1 - 2	1.60×10^{-04}
TP32 @ 0.3	0.3 - 1.45	1.30×10^{-05}
TP39 @ 0.2	0.2 - 1.3	2.30×10^{-06}
TP15 @ 0	0 - 1.8	3.70×10^{-06}
TP22 @ 0.2	0.2 - 1.2	1.70×10^{-06}

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1.6 Soil Water Characteristic Curve

Two soil samples (TP15 and TP18) were selected for Soil–Water Characteristic Curves (SWCCs) testing. The samples were chosen based on particle size distribution (PSD) results, representing materials with relatively higher and lower fine content. The SWCC laboratory results were not incorporated into the modelling due to their availability late in the study program.

Table 5 and **GRAPH 3** present the laboratory results of the SWCCs of two samples, showing the relationship between volumetric water content and matric suction. Both curves display the characteristic non-linear decrease in water content with increasing suction, reflecting progressive desaturation of the soils.

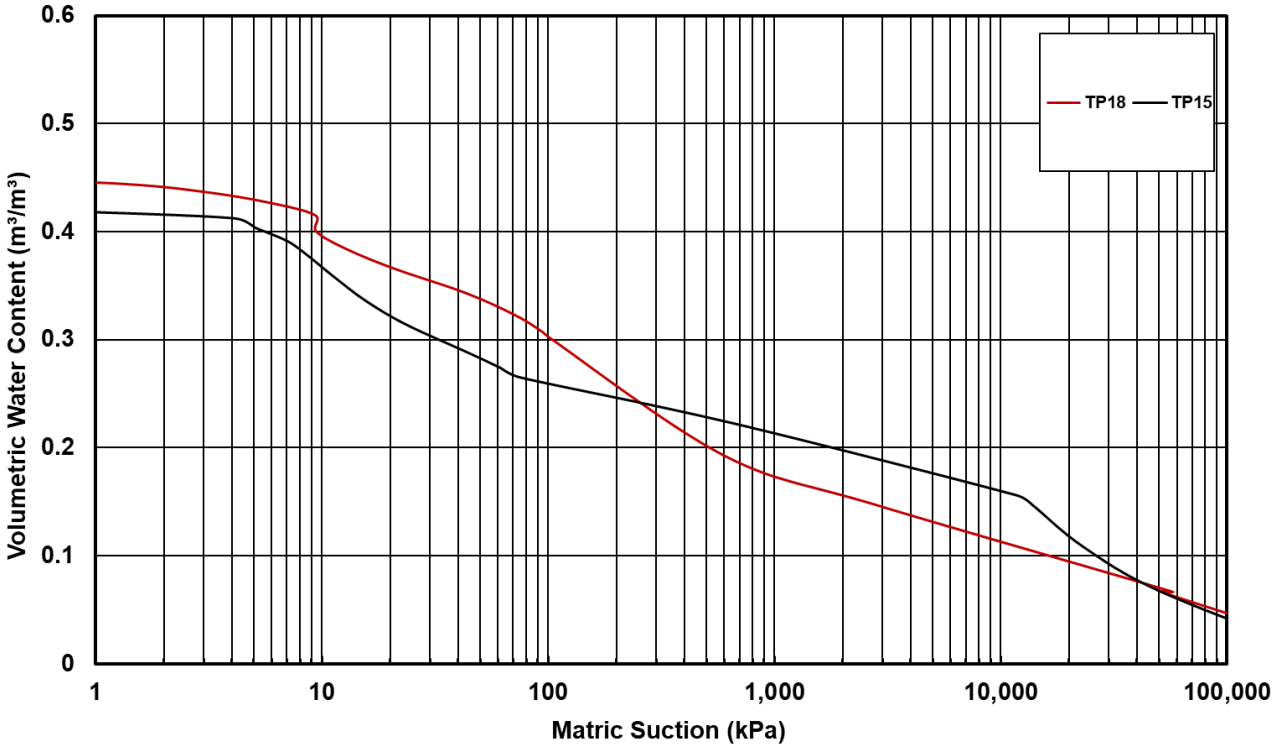
The soil–water characteristic curves raw laboratory results indicate that both materials exhibit moderate water-holding capacity and behaviour consistent with fine-grained soils. Variations observed between TP18 and TP15 reflect differences in pore structure and moisture retention characteristics, which have implications for seepage behaviour and unsaturated hydraulic conductivity.

TABLE 5: SWCC LABORATORY RESULTS

TP15		TP18	
Matric Suction (Ψm)	Volumetric Water Content (θ)	Matric Suction (Ψm)	Volumetric Water Content (θ)
0.3	0.421	0.3	0.449
0.9	0.418	1.3	0.444
4.1	0.412	2.9	0.437
5.1	0.403	5.7	0.427
7.0	0.391	9.3	0.415
8.7	0.377	9.4	0.400
11.1	0.359	13.0	0.383
15.5	0.336	21.2	0.365
23.4	0.314	43.2	0.343
45.0	0.287	72.1	0.322
61.0	0.274	94.2	0.307
74.8	0.265	102.3	0.301
641	0.223	595	0.193
11731	0.156	2816	0.147
13782	0.147	56941	0.067
22857	0.109	50797	0.067
50797	0.067	193152	0.028
259548	0.009	274543	0.019

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GRAPH 3: SWCC LABORATORY RAW RESULTS



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ATTACHMENT – LABORATORY TEST RESULTS

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PERMEABILITY BY FALLING HEAD TEST REPORT

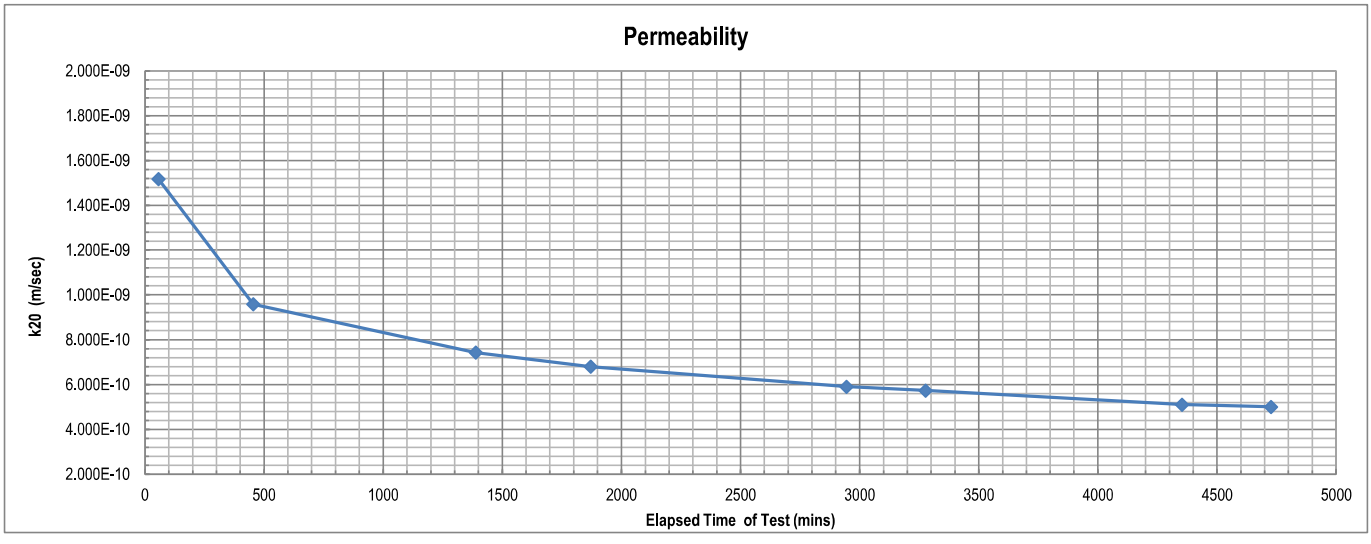
Test Method AS 1289 6.7.2, 5.1.1

Client	TMPL	**Report No.**	26020750-FPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	9/03/2026
		Report Date	13/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP03 @ 0.8 m	**Depth (m)**	0.8 - 1.8
Description	gravelly sandy CLAY (CI-CH)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.79**	Hydraulic Gradient	**11.2**
Optimum Moisture Content (%)	**15.9**	Surcharge (kPa)	**3.6**
Placement Moisture Content (%)	**15.7**	Head Pressure Applied (kPa)	**12.75**
Moisture Ratio (%)	**98.7**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.76**	Percentage Material Retained/Sieve Size (mm)	**28.1 % /19 mm**
Density Ratio (%)	**85.2**	Sample Height and Diameter (mm)	**115.92 / 152.03 mm**

PERMEABILITY $k_{(20)} =$ **5.1×10^{-10} (m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client | The compaction data was supplied by the client. | Tested as received

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Tested at Trilab Brisbane Laboratory

Approved Signatory

Michael Hamilton

Michael Hamilton

NATA

Laboratory No. 9926

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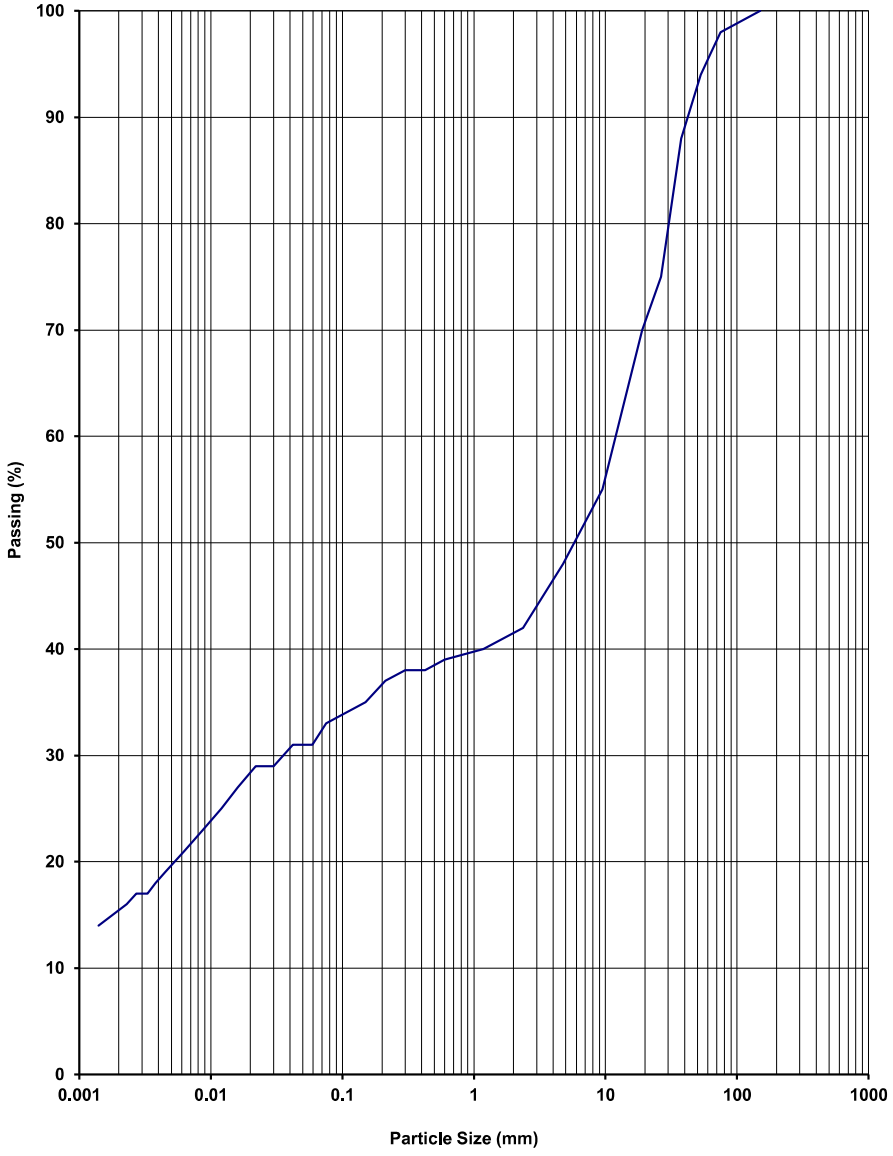
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Ph: +61 7 3265 5656

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020750-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	12/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP03 @ 0.8 m	**Location** TP03	**Depth (m)** 0.8 - 1.8
Description	gravelly sandy CLAY (CI-CH)		

Sieve Size (mm)	Passing %
150.0	100
75.0	98
63.0	96
53.0	94
37.5	88
26.5	75
19.0	70
13.2	58
9.5	55
6.7	51
4.75	48
2.36	42
1.18	40
0.600	39
0.425	38
0.300	38
0.212	37
0.150	35
0.075	33
0.059	31
0.042	31
0.03	29
0.022	29
0.016	27
0.012	25
0.0087	23
0.0063	21
0.0045	19
0.0038	18
0.0033	17
0.0027	17
0.0023	16
0.0014	14



NOTES/REMARKS: -

Sample/s supplied by the client

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020750-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	12/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP03 @ 0.8 m	**Location** TP03	**Depth (m)** 0.8 - 1.8
Description	gravelly sandy CLAY (CI-CH)		

Average Apparent Particle Density (t/m^3)	2.53
Received Moisture Content (%)	12.6
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020750-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020750
Test Date	23/02/2026
Client ID	TP03 @ 0.8 m
Location	TP03
Depth (m)	0.8 - 1.8
Description	gravelly sandy CLAY (CI-CH)
Soil Particle Density (g/cm³) (-2.36mm)	2.53
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.53

NOTES/REMARKS:

Sample/s supplied by the client

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Email: michael.ferguson@trilab.com.au

ATTERBERG LIMITS REPORT

Client:	TMPL	Report Number:	26020752-QUAL-1
Client Address:	16 - 20 Edmondstone Street, Newmarket	Project Number:	9919/P/26-139
Project:	251128 - Taronga Tin Project - Technical Service to Address	Lot Number:	7144
Location:	Emmaville NSW	Internal Test Request:	9919/T/26-136
Supplied To:	Kwame Lartey	Client Reference/s:	
Area Description:		Report Date / Page:	25/02/2026 Page 1 of 6

Test Procedures:	AS1289.3.1.2, AS1289.3.3.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1		
Sample Number	26020750	Sample Location	
Sampling Method	Tested As Received	Borehole / Test pit	TP03
Date Sampled	11/02/2026	Depth	0.8 - 1.8
Sampled By	Client	Material	gravelly sandy CLAY (CI-CH)
Date Tested	24/02/2026	Comments	
Drying / Prep Method	Oven Dried / Dry Sieved	Material Source	-
LL Water Type	Potable	Material Type	-
LL Device Type	Cassagrande	Specification	-
Client Reference	TP03 @ 0.8 m	Prep Mat > 53mm (%)	-
Material Description	-		

Atterberg Limit	Specification Minimum	Test Result	Specification Maximum
Liquid Limit (%)		**45**	
Plastic Limit (%)		**19**	
Plasticity Index (%)		**26**	
Linear Shrinkage (%)		**14.0**	
Linear Shrinkage Mould Length / Defects:	Mould Length: 149.9mm / Nil		

Remarks	Results apply to the sample/s as received.

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Corporate Site Number: 9919

Michael Hamilton

Approved Signatory: Michael Hamilton
Form ID: W11bRep Rev 2

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ATTERBERG LIMITS REPORT

Client:	TMPL	Report Number:	26020752-QUAL-1
Client Address:	16 - 20 Edmondstone Street, Newmarket	Project Number:	9919/P/26-139
Project:	251128 - Taronga Tin Project - Technical Service to Address	Lot Number:	7144
Location:	Emmaville NSW	Internal Test Request:	9919/T/26-136
Supplied To:	Kwame Lartey	Client Reference/s:	
Area Description:		Report Date / Page:	25/02/2026 Page 2 of 6

Test Procedures:	AS1289.3.1.2, AS1289.3.3.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1		
Sample Number	26020751	Sample Location	
Sampling Method	Tested As Received	Borehole / Test pit	TP04
Date Sampled	11/02/2026	Depth	0.2 - 1.6
Sampled By	Client	Material	CLAY (CI-CH)
Date Tested	23/02/2026	Comments	
Drying / Prep Method	Oven Dried / Dry Sieved	Material Source	-
LL Water Type	Potable	Material Type	-
LL Device Type	Cassagrande	Specification	-
Client Reference	TP04 @ 0.2 m	Prep Mat > 53mm (%)	-
Material Description	-		

Atterberg Limit	Specification Minimum	Test Result	Specification Maximum
Liquid Limit (%)		**67**	
Plastic Limit (%)		**24**	
Plasticity Index (%)		**43**	
Linear Shrinkage (%)		**27.0**	
Linear Shrinkage Mould Length / Defects:	Mould Length: 150.1mm / Curling		

Remarks	Results apply to the sample/s as received.

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Accreditation Number: 9926
Corporate Site Number: 9919

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Approved Signatory: Michael Hamilton
Form ID: W11bRep Rev 2

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ATTERBERG LIMITS REPORT

Client:	TMPL	Report Number:	26020752-QUAL-1
Client Address:	16 - 20 Edmondstone Street, Newmarket	Project Number:	9919/P/26-139
Project:	251128 - Taronga Tin Project - Technical Service to Address	Lot Number:	7144
Location:	Emmaville NSW	Internal Test Request:	9919/T/26-136
Supplied To:	Kwame Lartey	Client Reference/s:	
Area Description:		Report Date / Page:	25/02/2026 Page 3 of 6

Test Procedures:	AS1289.3.1.2, AS1289.3.3.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1		
Sample Number	26020752	Sample Location	
Sampling Method	Tested As Received	Borehole / Test pit	TP14
Date Sampled	11/02/2026	Depth	1 - 1.7
Sampled By	Client	Material	gravelly sandy CLAY (CI)
Date Tested	23/02/2026	Comments	
Drying / Prep Method	Oven Dried / Dry Sieved	Material Source	-
LL Water Type	Potable	Material Type	-
LL Device Type	Cassagrande	Specification	-
Client Reference	TP14 @ 1 m	Prep Mat > 53mm (%)	-
Material Description	-		

Atterberg Limit	Specification Minimum	Test Result	Specification Maximum
Liquid Limit (%)		**32**	
Plastic Limit (%)		**22**	
Plasticity Index (%)		**10**	
Linear Shrinkage (%)		**6.0**	
Linear Shrinkage Mould Length / Defects:	Mould Length: 150.0mm / Nil		

Remarks	Results apply to the sample/s as received.

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 9926
Corporate Site Number: 9919

Michael Hamilton

Approved Signatory: Michael Hamilton
Form ID: W11bRep Rev 2

Trilab Pty Ltd
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Laboratory: Trilab Brisbane
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ATTERBERG LIMITS REPORT

Client:	TMPL	Report Number:	26020752-QUAL-1
Client Address:	16 - 20 Edmondstone Street, Newmarket	Project Number:	9919/P/26-139
Project:	251128 - Taronga Tin Project - Technical Service to Address	Lot Number:	7144
Location:	Emmaville NSW	Internal Test Request:	9919/T/26-136
Supplied To:	Kwame Lartey	Client Reference/s:	
Area Description:		Report Date / Page:	25/02/2026 Page 4 of 6

Test Procedures:	AS1289.3.1.2, AS1289.3.3.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1		
Sample Number	26020753	Sample Location	
Sampling Method	Tested As Received	Borehole / Test pit	TP18
Date Sampled	11/02/2026	Depth	0.6 - 3.7
Sampled By	Client	Material	gravelly sandy CLAY (CI)
Date Tested	24/02/2026	Comments	
Drying / Prep Method	Oven Dried / Dry Sieved	Material Source	-
LL Water Type	Potable	Material Type	-
LL Device Type	Cassagrande	Specification	-
Client Reference	TP18 @ 0.6 m	Prep Mat > 53mm (%)	-
Material Description	-		

Atterberg Limit	Specification Minimum	Test Result	Specification Maximum
Liquid Limit (%)		**31**	
Plastic Limit (%)		**20**	
Plasticity Index (%)		**11**	
Linear Shrinkage (%)		**5.0**	
Linear Shrinkage Mould Length / Defects:	Mould Length: 150.3mm / Nil		

Remarks	Results apply to the sample/s as received.

Accredited for compliance with ISO/IEC 17025 – Testing

NATA

Accreditation Number: 9926
Corporate Site Number: 9919

Michael Hamilton

Approved Signatory: Michael Hamilton
Form ID: W11bRep Rev 2

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ATTERBERG LIMITS REPORT

Client:	TMPL	Report Number:	26020752-QUAL-1
Client Address:	16 - 20 Edmondstone Street, Newmarket	Project Number:	9919/P/26-139
Project:	251128 - Taronga Tin Project - Technical Service to Address	Lot Number:	7144
Location:	Emmaville NSW	Internal Test Request:	9919/T/26-136
Supplied To:	Kwame Lartey	Client Reference/s:	
Area Description:		Report Date / Page:	25/02/2026 Page 5 of 6

Test Procedures:	AS1289.3.1.2, AS1289.3.3.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1		
Sample Number	26020757	Sample Location	
Sampling Method	Tested As Received	Borehole / Test pit	TP15
Date Sampled	11/02/2026	Depth	0 - 1.8
Sampled By	Client	Material	gravel sandy CLAY (CI)
Date Tested	23/02/2026	Comments	
Drying / Prep Method	Oven Dried / Dry Sieved	Material Source	-
LL Water Type	Potable	Material Type	-
LL Device Type	Cassagrande	Specification	-
Client Reference	TP15 @ 0 m	Prep Mat > 53mm (%)	-
Material Description	-		

Atterberg Limit	Specification Minimum	Test Result	Specification Maximum
Liquid Limit (%)		**36**	
Plastic Limit (%)		**22**	
Plasticity Index (%)		**14**	
Linear Shrinkage (%)		**9.5**	
Linear Shrinkage Mould Length / Defects:	Mould Length: 150.0mm / Nil		

Remarks	Results apply to the sample/s as received.

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Accreditation Number: 9926
Corporate Site Number: 9919

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ATTERBERG LIMITS REPORT

Client:	TMPL	Report Number:	26020752-QUAL-1
Client Address:	16 - 20 Edmondstone Street, Newmarket	Project Number:	9919/P/26-139
Project:	251128 - Taronga Tin Project - Technical Service to Address	Lot Number:	7144
Location:	Emmaville NSW	Internal Test Request:	9919/T/26-136
Supplied To:	Kwame Lartey	Client Reference/s:	
Area Description:		Report Date / Page:	25/02/2026 Page 6 of 6

Test Procedures:	AS1289.3.1.2, AS1289.3.3.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1		
Sample Number	26020758	Sample Location	
Sampling Method	Tested As Received	Borehole / Test pit	TP22
Date Sampled	11/02/2026	Depth	0.2 - 1.2
Sampled By	Client	Material	gravelly sandy CLAY (CH)
Date Tested	23/02/2026	Comments	
Drying / Prep Method	Oven Dried / Dry Sieved	Material Source	-
LL Water Type	Potable	Material Type	-
LL Device Type	Cassagrande	Specification	-
Client Reference	TP22 @ 0.2 m	Prep Mat > 53mm (%)	-
Material Description	-		

Atterberg Limit	Specification Minimum	Test Result	Specification Maximum
Liquid Limit (%)		**22**	
Plastic Limit (%)		**15**	
Plasticity Index (%)		**7**	
Linear Shrinkage (%)		**4.5**	
Linear Shrinkage Mould Length / Defects:	Mould Length: 149.9mm / Nil		

Remarks	Results apply to the sample/s as received.

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Accreditation Number: 9926
Corporate Site Number: 9919

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EMERSON CLASS NUMBER TEST REPORT

Test Method: AS 1289 3.8.1

Client	TMPL	**Report No.**	26020751-ECN
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	23/02/2026
		Report Date	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020751
Client ID	TP04 @ 0.2 m
Bore Hole/Test Pit	TP04
Depth (m)	0.2 - 1.6
Description	CLAY (CI-CH)
Emerson Class Number	**5**

NOTES/REMARKS:

Sample/s supplied by the client | Tested with Distilled water at 19.2°C | REP004 | 15 December 2025

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Tested at Trilab Brisbane Laboratory

Approved Signatory

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PERMEABILITY BY FALLING HEAD TEST REPORT

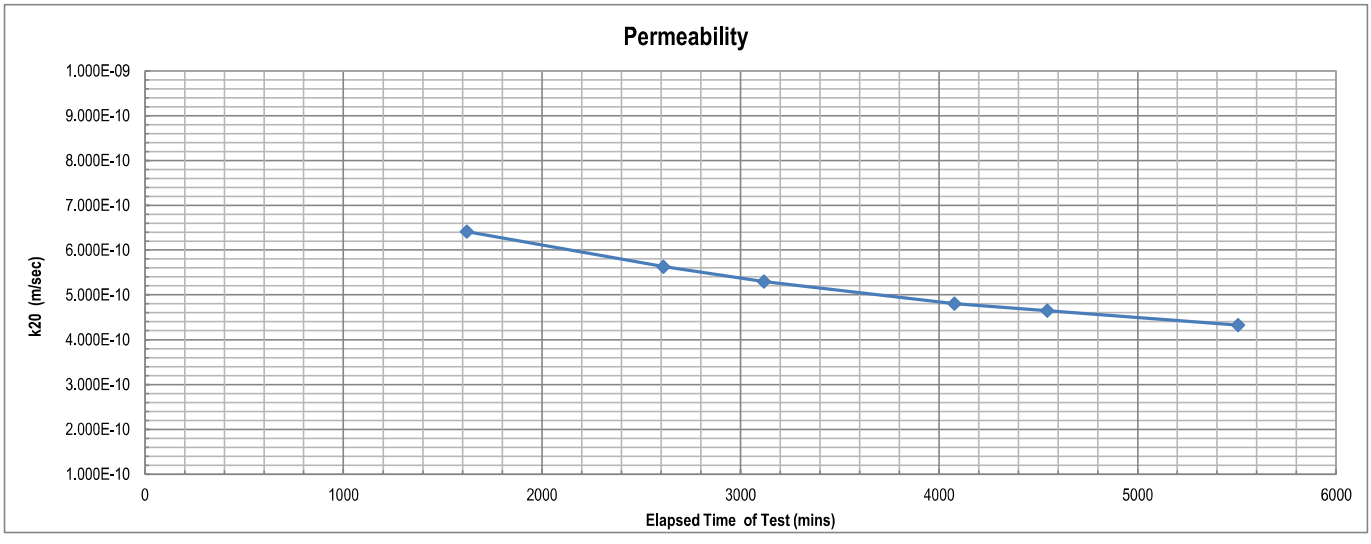
Test Method AS 1289 6.7.2, 5.1.1

Client	TMPL	**Report No.**	26020751-FPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	27/02/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP04 @ 0.2 m	**Depth (m)**	0.2 - 1.6
Description	CLAY (CI-CH)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.61**	Hydraulic Gradient	**11.2**
Optimum Moisture Content (%)	**22.6**	Surcharge (kPa)	**3.7**
Placement Moisture Content (%)	**22.5**	Head Pressure Applied (kPa)	**12.75**
Moisture Ratio (%)	**99.8**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.68**	Percentage Material Retained/Sieve Size (mm)	**4.8 % /19 mm**
Density Ratio (%)	**85.0**	Sample Height and Diameter (mm)	**116.57 / 152.36 mm**

PERMEABILITY $k_{(20)}$ = **4.3×10^{-10}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client The compaction data was supplied by the client.

REP063 | 29 December 2025

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Approved Signatory

Michael Hamilton

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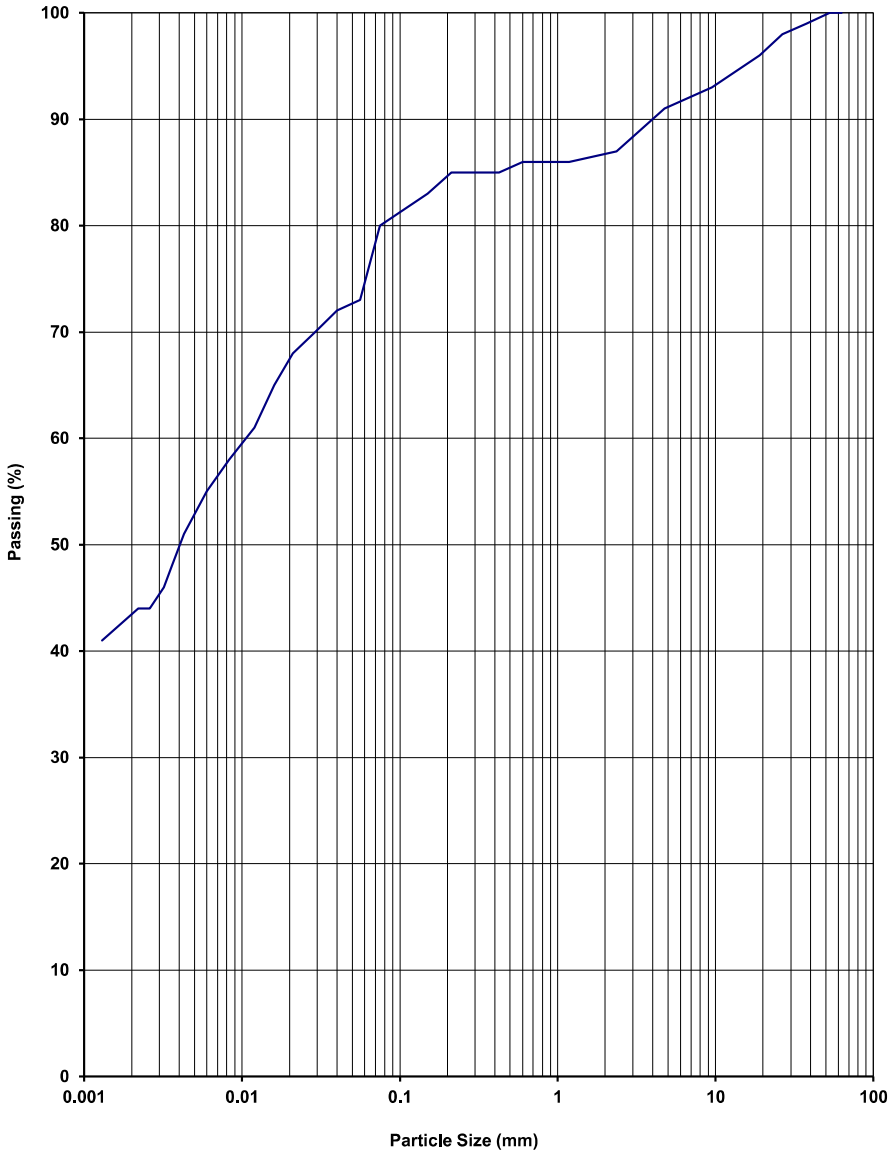
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020751-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	12/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP04 @ 0.2 m	**Location** TP04	**Depth (m)** 0.2 - 1.6
Description	CLAY (CI-CH)		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	100
37.5	99
26.5	98
19.0	96
13.2	93
9.5	93
6.7	92
4.75	91
2.36	87
1.18	86
0.600	86
0.425	85
0.300	85
0.212	85
0.150	83
0.075	80
0.056	73
0.04	72
0.029	70
0.021	68
0.016	65
0.012	61
0.0083	58
0.006	55
0.0043	51
0.0036	48
0.0032	46
0.0026	44
0.0022	44
0.0013	41



NOTES/REMARKS: -

Sample/s supplied by the client

REP039A | 5 January 2026

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Michael Hamilton

Tested at Trilab Brisbane Laboratory

Laboratory No. 9926

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020751-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	12/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP04 @ 0.2 m	**Location** TP04	**Depth (m)** 0.2 - 1.6
Description	CLAY (CI-CH)		

Average Apparent Particle Density (t/m^3)	2.52
Received Moisture Content (%)	20
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

REP039A | 5 January 2026

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020751-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020751
Test Date	23/02/2026
Client ID	TP04 @ 0.2 m
Location	TP04
Depth (m)	0.2 - 1.6
Description	CLAY (CI-CH)
Soil Particle Density (g/cm³) (-2.36mm)	2.52
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.52

NOTES/REMARKS:

Sample/s supplied by the client

Accredited for compliance with ISO/IEC 17025 - Testing

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Michael Hamilton

Tested at Trilab Brisbane Laboratory

Laboratory No. 9926

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

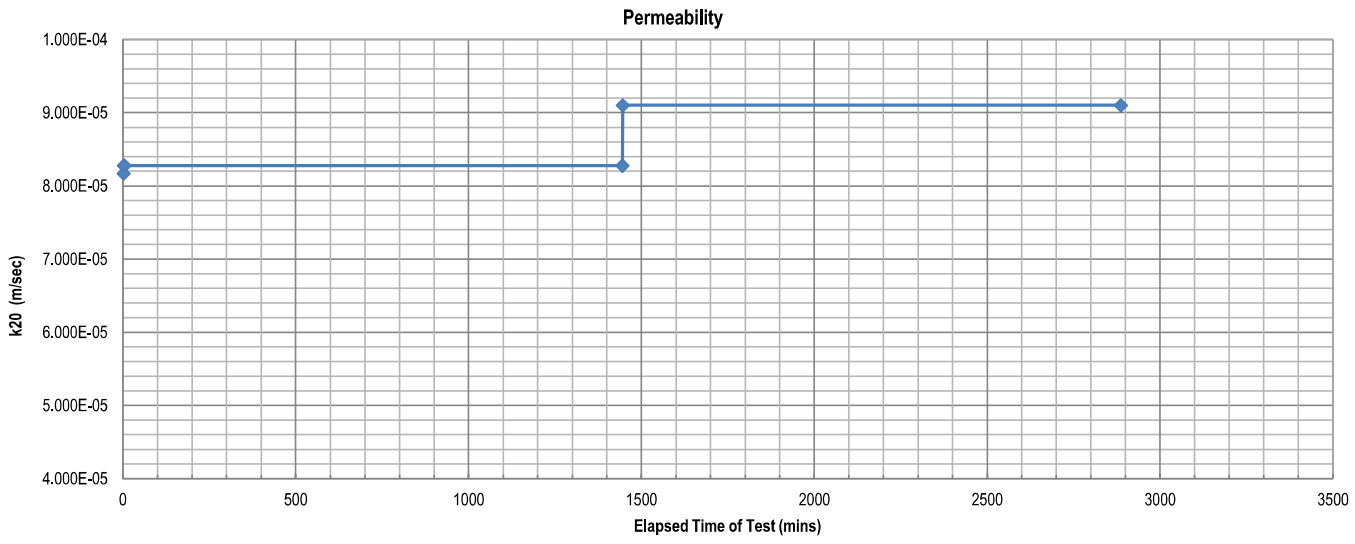
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020752-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	2/03/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP14 @ 1 m	**Depth (m)**	1 - 1.7
Description	gravelly sandy CLAY (CI)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.70**	Hydraulic Gradient	**4.2**
Optimum Moisture Content (%)	**15.0**	Surcharge (kPa)	**3.6**
Placement Moisture Content (%)	**14.9**	Head Pressure Applied (kPa)	**4.81**
Moisture Ratio (%)	**99.1**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.66**	Percentage Material Retained/Sieve Size (mm)	**15 % / 19 mm**
Density Ratio (%)	**85.1**	Sample Height and Diameter (mm)	**115.92 / 152.03 mm**

PERMEABILITY $k_{(20)} =$ **9.1×10^{-05}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

REP064 | 29 December 2025

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Tested at Trilab Brisbane Laboratory

Approved Signatory

Michael Hamilton

Michael Hamilton

Laboratory No. 9926

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EMERSON CLASS NUMBER TEST REPORT

Test Method: AS 1289 3.8.1

Client	TMPL	**Report No.**	26020752-ECN
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	23/02/2026
		Report Date	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020752
Client ID	TP14 @ 1 m
Bore Hole/Test Pit	TP14
Depth (m)	1 - 1.7
Description	gravelly sandy CLAY (CI)
Emerson Class Number	**3**

NOTES/REMARKS:

Sample/s supplied by the client | Tested with Distilled water at 19.2°C | REP004 | 15 December 2025

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Approved Signatory

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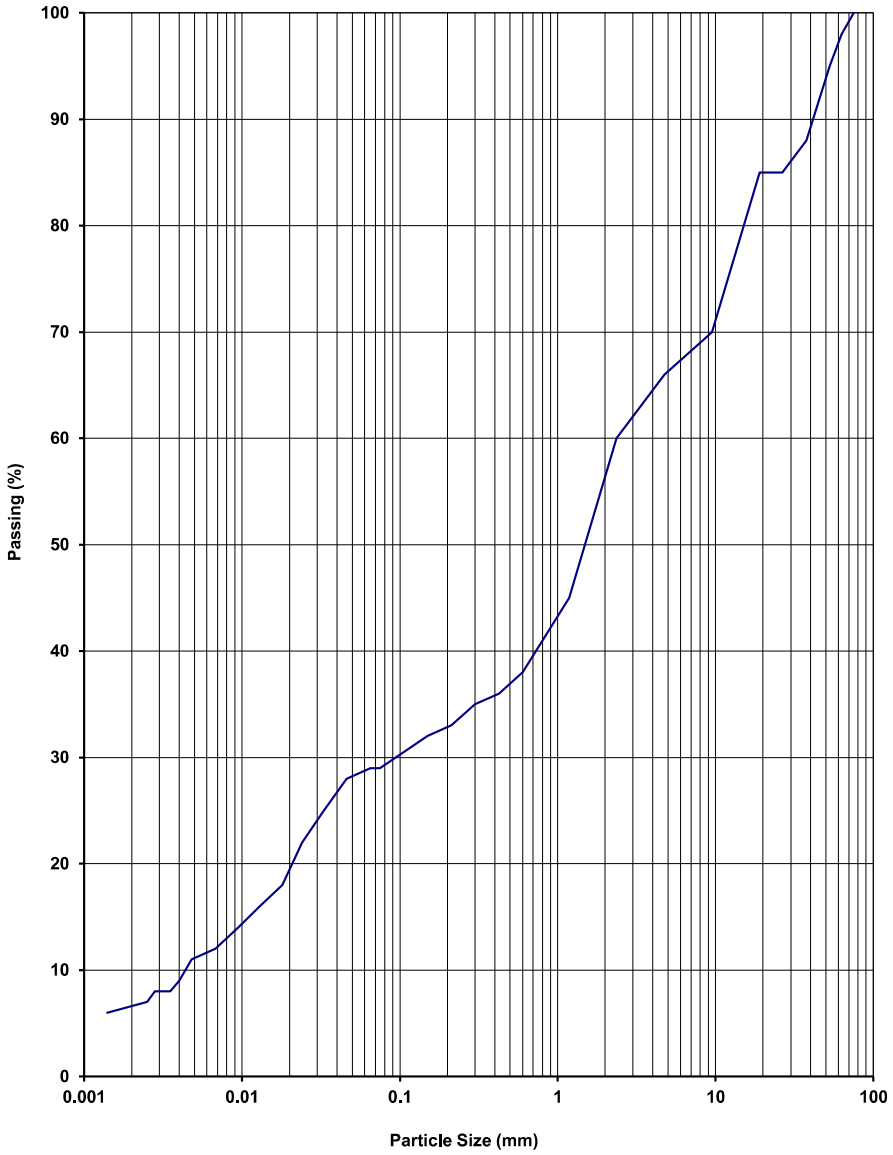
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020752-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	13/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP14 @ 1 m	**Location** TP14	**Depth (m)** 1 - 1.7
Description	gravelly sandy CLAY (CI)		

Sieve Size (mm)	Passing %
150.0	
75.0	100
63.0	98
53.0	95
37.5	88
26.5	85
19.0	85
13.2	71
9.5	70
6.7	68
4.75	66
2.36	60
1.18	45
0.600	38
0.425	36
0.300	35
0.212	33
0.150	32
0.075	29
0.065	29
0.046	28
0.033	25
0.024	22
0.018	18
0.013	16
0.0095	14
0.0068	12
0.0048	11
0.004	9
0.0035	8
0.0028	8
0.0025	7
0.0014	6



NOTES/REMARKS: -

Sample/s supplied by the client

REP039A | 5 January 2026

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020752-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	13/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP14 @ 1 m	**Location** TP14	**Depth (m)** 1 - 1.7
Description	gravelly sandy CLAY (CI)		

Average Apparent Particle Density (t/m^3)	2.64
Received Moisture Content (%)	9.4
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

REP039A | 5 January 2026

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020752-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	25/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020752
Test Date	23/02/2026
Client ID	TP14 @ 1 m
Location	TP14
Depth (m)	1 - 1.7
Description	gravelly sandy CLAY (CI)
Soil Particle Density (g/cm³) (-2.36mm)	2.64
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.64

NOTES/REMARKS:

Sample/s supplied by the client

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Approved Signatory

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Michael Hamilton

Tested at Trilab Brisbane Laboratory

Laboratory No. 9926

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

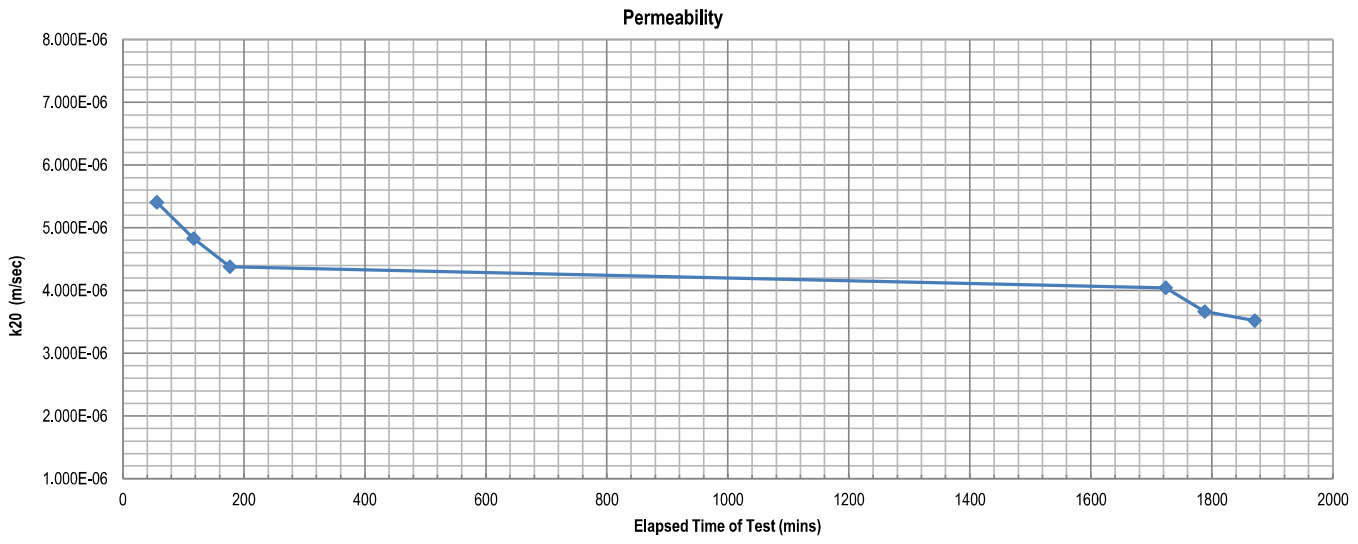
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020757-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	6/03/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP15 @ 0 m	**Depth (m)**	0 - 1.8
Description	gravel sandy CLAY (CI)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.77**	Hydraulic Gradient	**2.0**
Optimum Moisture Content (%)	**15.5**	Surcharge (kPa)	**3.7**
Placement Moisture Content (%)	**15.0**	Head Pressure Applied (kPa)	**2.26**
Moisture Ratio (%)	**97.0**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.74**	Percentage Material Retained/Sieve Size (mm)	**11.9 % / 19 mm**
Density Ratio (%)	**85.4**	Sample Height and Diameter (mm)	**116.67 / 152.22 mm**

PERMEABILITY $k_{(20)} =$ **3.7×10^{-06}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

REP064 | 29 December 2025

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EMERSON CLASS NUMBER TEST REPORT

Test Method: AS 1289 3.8.1

Client	TMPL	**Report No.**	26020757-ECN
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	23/02/2026
		Report Date	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020757
Client ID	TP15 @ 0 m
Bore Hole/Test Pit	TP15
Depth (m)	0 - 1.8
Description	gravel sandy CLAY (CI)
Emerson Class Number	**4 Calcite**

NOTES/REMARKS:

Sample/s supplied by the client | Tested with Distilled water at 19.2°C | REP004 | 15 December 2025

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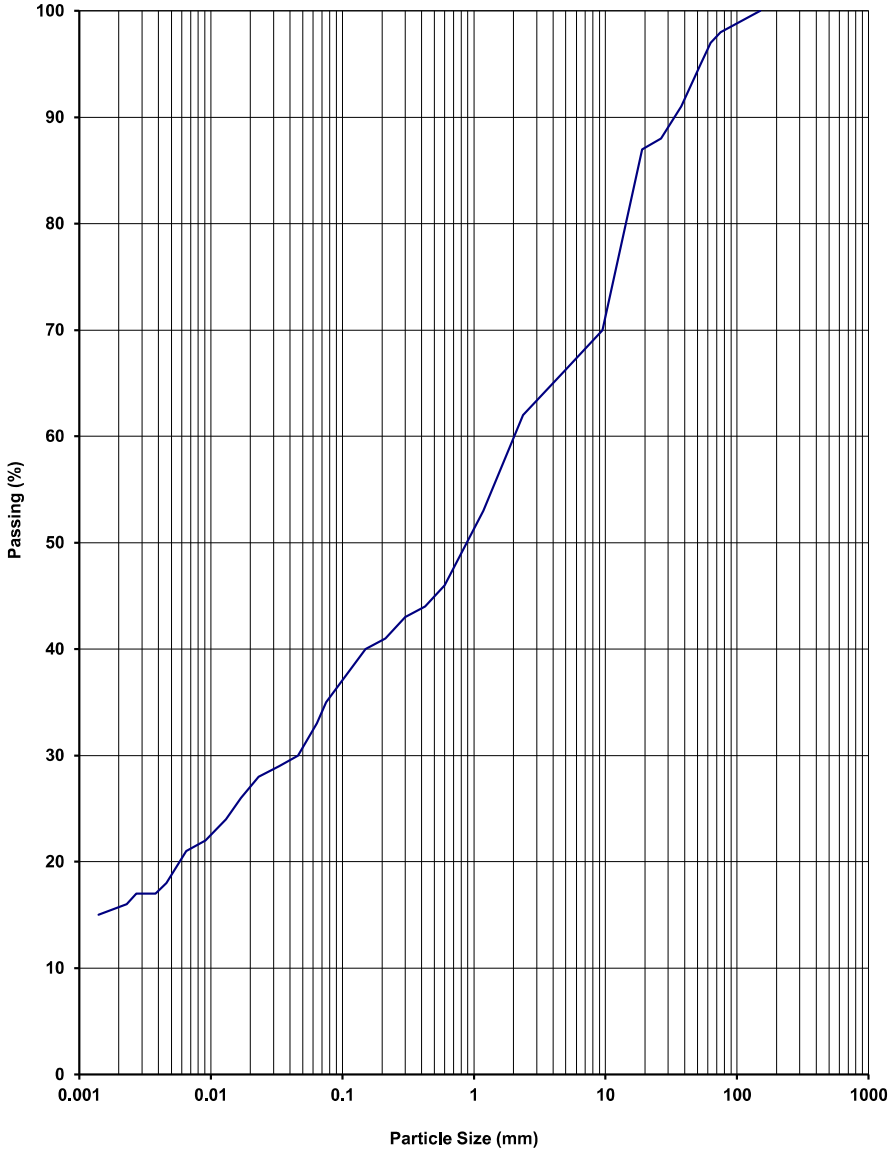
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020757-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	25/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP15 @ 0 m	**Location** TP15	**Depth (m)** 0 - 1.8
Description	gravel sandy CLAY (CI)		

Sieve Size (mm)	Passing %
150.0	100
75.0	98
63.0	97
53.0	95
37.5	91
26.5	88
19.0	87
13.2	71
9.5	70
6.7	68
4.75	66
2.36	62
1.18	53
0.600	46
0.425	44
0.300	43
0.212	41
0.150	40
0.075	35
0.064	33
0.046	30
0.033	29
0.023	28
0.017	26
0.013	24
0.0091	22
0.0065	21
0.0046	18
0.0038	17
0.0033	17
0.0027	17
0.0023	16
0.0014	15



NOTES/REMARKS: -

Sample/s supplied by the client

REP039A | 5 January 2026

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020757-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	25/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP15 @ 0 m	**Location** TP15	**Depth (m)** 0 - 1.8
Description	gravel sandy CLAY (CI)		

Average Apparent Particle Density (t/m^3)	2.71
Received Moisture Content (%)	11.8
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

REP039A | 5 January 2026

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020757-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	25/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020757
Test Date	25/02/2026
Client ID	TP15 @ 0 m
Location	TP15
Depth (m)	0 - 1.8
Description	gravel sandy CLAY (CI)
Soil Particle Density (g/cm³) (-2.36mm)	2.71
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.71

NOTES/REMARKS:

Sample/s supplied by the client

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

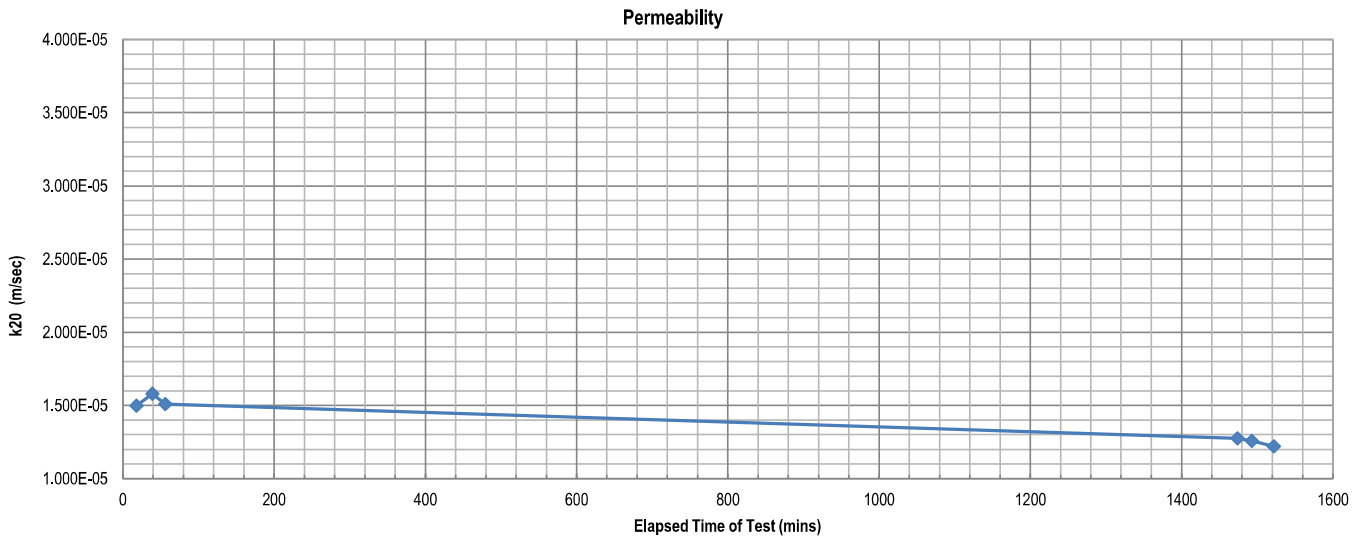
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020753-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	2/03/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP18 @ 0.6 m	**Depth (m)**	0.6 - 3.7
Description	gravelly sandy CLAY (CI)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.73**	Hydraulic Gradient	**2.0**
Optimum Moisture Content (%)	**14.8**	Surcharge (kPa)	**3.7**
Placement Moisture Content (%)	**14.7**	Head Pressure Applied (kPa)	**2.26**
Moisture Ratio (%)	**99.1**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.69**	Percentage Material Retained/Sieve Size (mm)	**5 % / 19 mm**
Density Ratio (%)	**85.1**	Sample Height and Diameter (mm)	**116.67 / 152.22 mm**

PERMEABILITY $k_{(20)} = 1.3 \times 10^{-05}$ **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

REP064 | 29 December 2025

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Approved Signatory

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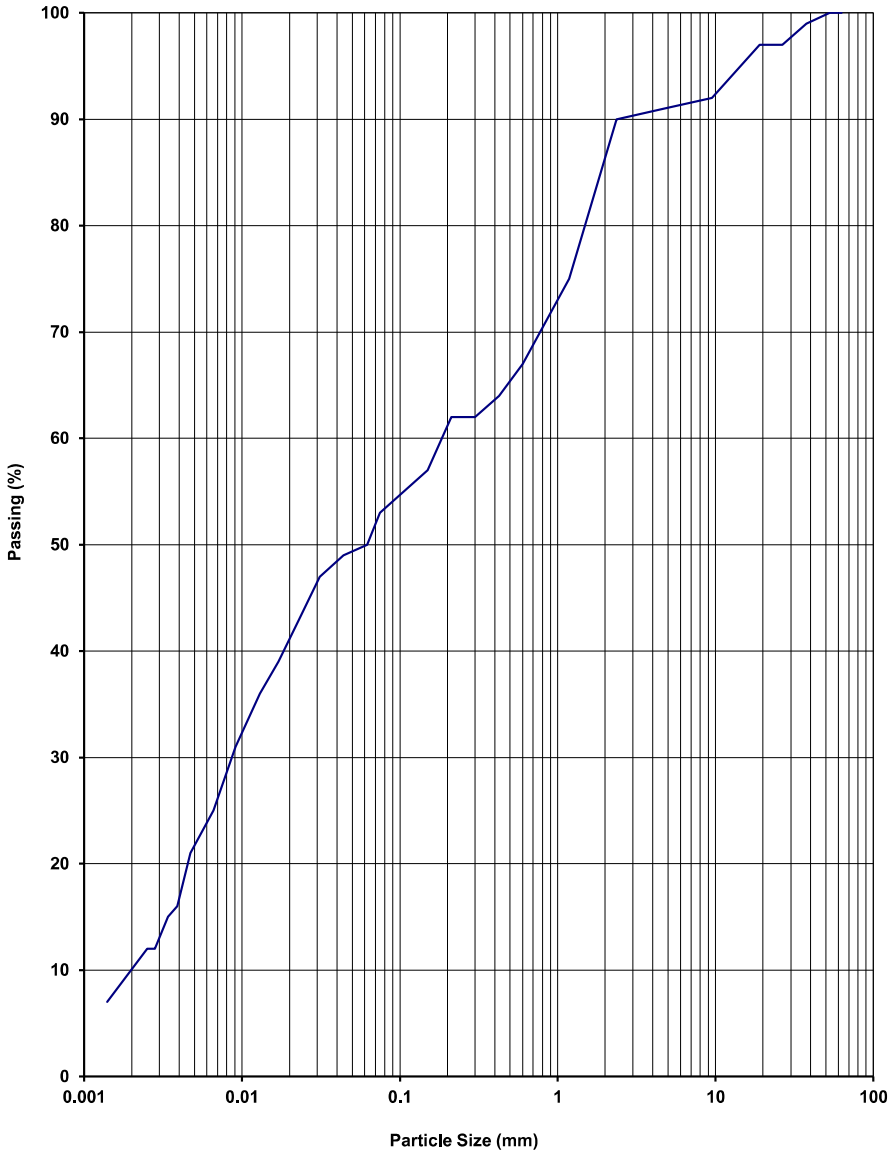
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020753-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	13/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP18 @ 0.6 m	**Location** TP18	**Depth (m)** 0.6 - 3.7
Description	gravelly sandy CLAY (CI)		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	100
37.5	99
26.5	97
19.0	97
13.2	93
9.5	92
6.7	92
4.75	91
2.36	90
1.18	75
0.600	67
0.425	64
0.300	62
0.212	62
0.150	57
0.075	53
0.062	50
0.044	49
0.031	47
0.023	43
0.017	39
0.013	36
0.0091	31
0.0066	25
0.0047	21
0.0039	16
0.0034	15
0.0028	12
0.0025	12
0.0014	7



NOTES/REMARKS: -

Sample/s supplied by the client

REP039A | 5 January 2026

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020753-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	13/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP18 @ 0.6 m	**Location** TP18	**Depth (m)** 0.6 - 3.7
Description	gravelly sandy CLAY (CI)		

Average Apparent Particle Density (t/m^3)	2.64
Received Moisture Content (%)	8.7
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020753-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020753
Test Date	23/02/2026
Client ID	TP18 @ 0.6 m
Location	TP18
Depth (m)	0.6 - 3.7
Description	gravelly sandy CLAY (CI)
Soil Particle Density (g/cm³) (-2.36mm)	2.64
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.64

NOTES/REMARKS:

Sample/s supplied by the client

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

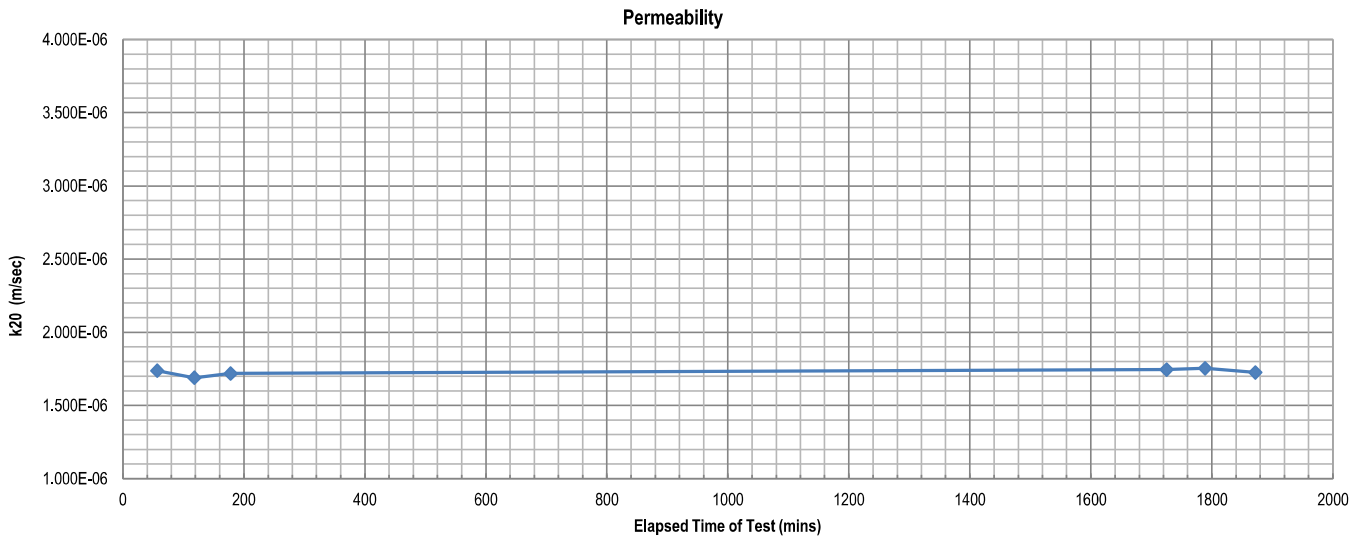
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020758-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	6/03/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP22 @ 0.2 m	**Depth (m)**	0.2 - 1.2
Description	gravelly sandy CLAY (CH)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.78**	Hydraulic Gradient	**2.2**
Optimum Moisture Content (%)	**16.2**	Surcharge (kPa)	**3.7**
Placement Moisture Content (%)	**16.4**	Head Pressure Applied (kPa)	**2.55**
Moisture Ratio (%)	**101.2**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.76**	Percentage Material Retained/Sieve Size (mm)	**12 % / 19 mm**
Density Ratio (%)	**84.9**	Sample Height and Diameter (mm)	**115.79 / 152.48 mm**

PERMEABILITY $k_{(20)} =$ **1.7×10^{-06}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

REP064 | 29 December 2025

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EMERSON CLASS NUMBER TEST REPORT

Test Method: AS 1289 3.8.1

Client	TMPL	**Report No.**	26020758-ECN
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	23/02/2026
		Report Date	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020758
Client ID	TP22 @ 0.2 m
Bore Hole/Test Pit	TP22
Depth (m)	0.2 - 1.2
Description	gravelly sandy CLAY (CH)
Emerson Class Number	**2**

NOTES/REMARKS:

Sample/s supplied by the client | Tested with Distilled water at 19.2°C | REP004 | 15 December 2025

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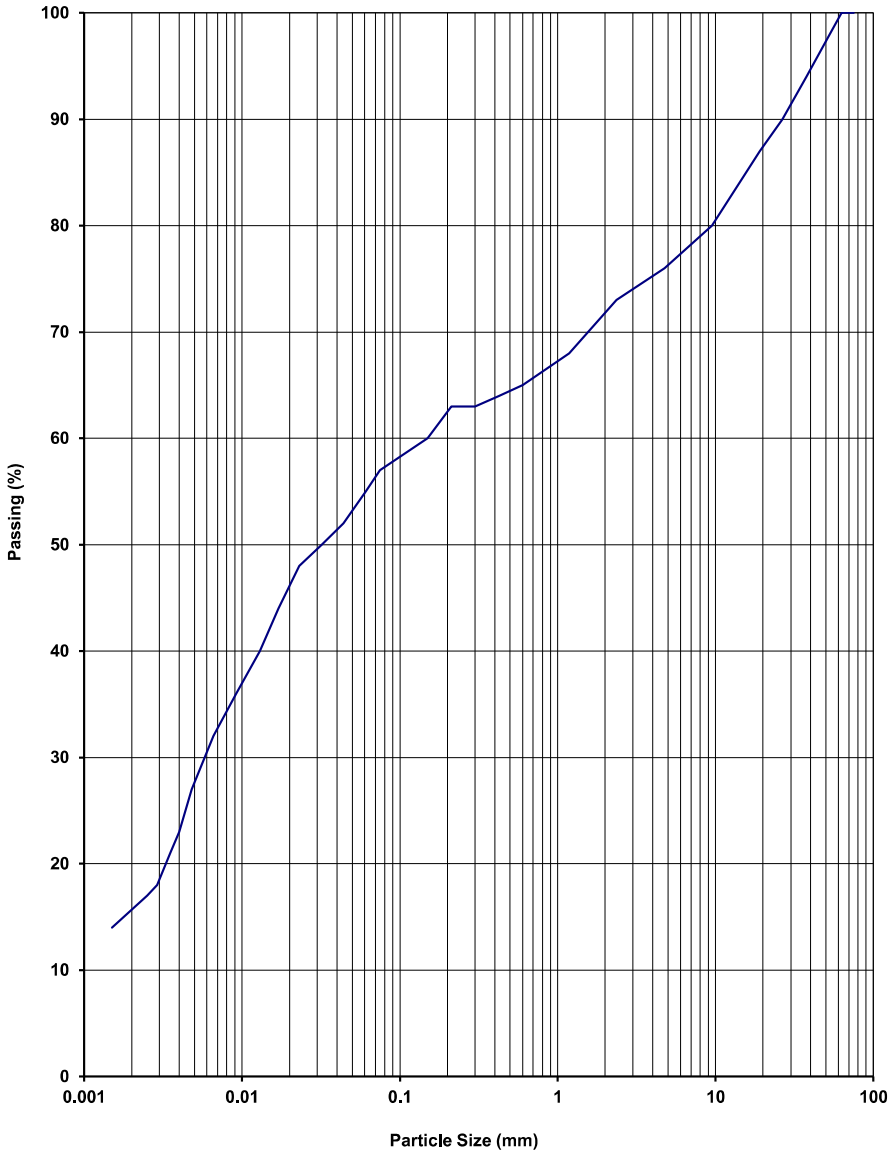
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020758-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	25/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP22 @ 0.2 m	**Location** TP22	**Depth (m)** 0.2 - 1.2
Description	gravelly sandy CLAY (CH)		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	100
53.0	98
37.5	94
26.5	90
19.0	87
13.2	82
9.5	80
6.7	78
4.75	76
2.36	73
1.18	68
0.600	65
0.425	64
0.300	63
0.212	63
0.150	60
0.075	57
0.061	55
0.044	52
0.032	50
0.023	48
0.017	44
0.013	40
0.0092	36
0.0066	32
0.0048	27
0.004	23
0.0035	21
0.0029	18
0.0025	17
0.0015	14



NOTES/REMARKS: -

Sample/s supplied by the client

REP039A | 5 January 2026

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020758-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	25/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP22 @ 0.2 m	**Location** TP22	**Depth (m)** 0.2 - 1.2
Description	gravelly sandy CLAY (CH)		

Average Apparent Particle Density (t/m^3)	2.54
Received Moisture Content (%)	9.4
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

REP039A | 5 January 2026

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Approved Signatory

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Michael Hamilton

Tested at Trilab Brisbane Laboratory

Laboratory No. 9926

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020758-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	25/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020758
Test Date	23/02/2026
Client ID	TP22 @ 0.2 m
Location	TP22
Depth (m)	0.2 - 1.2
Description	gravelly sandy CLAY (CH)
Soil Particle Density (g/cm³) (-2.36mm)	2.54
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.54

NOTES/REMARKS:

Sample/s supplied by the client

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

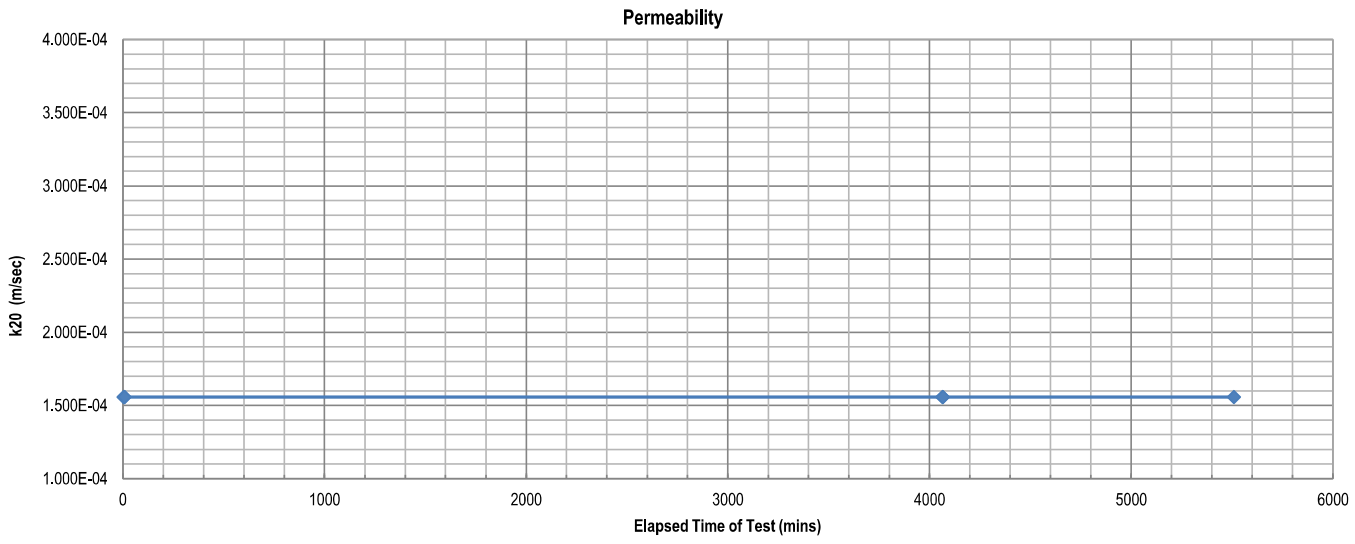
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020754-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	27/02/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP28 @ 1.1 m	**Depth (m)**	1.1 - 2
Description	clayey sandy GRAVEL (GC)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.95**	Hydraulic Gradient	**1.1**
Optimum Moisture Content (%)	**11.7**	Surcharge (kPa)	**3.6**
Placement Moisture Content (%)	**12.0**	Head Pressure Applied (kPa)	**1.28**
Moisture Ratio (%)	**102.6**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.85**	Percentage Material Retained/Sieve Size (mm)	**20 % / 19 mm**
Density Ratio (%)	**84.8**	Sample Height and Diameter (mm)	**116.46 / 152.5 mm**

PERMEABILITY $k_{(20)} =$ **1.6×10^{-04}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

REP064 | 29 December 2025

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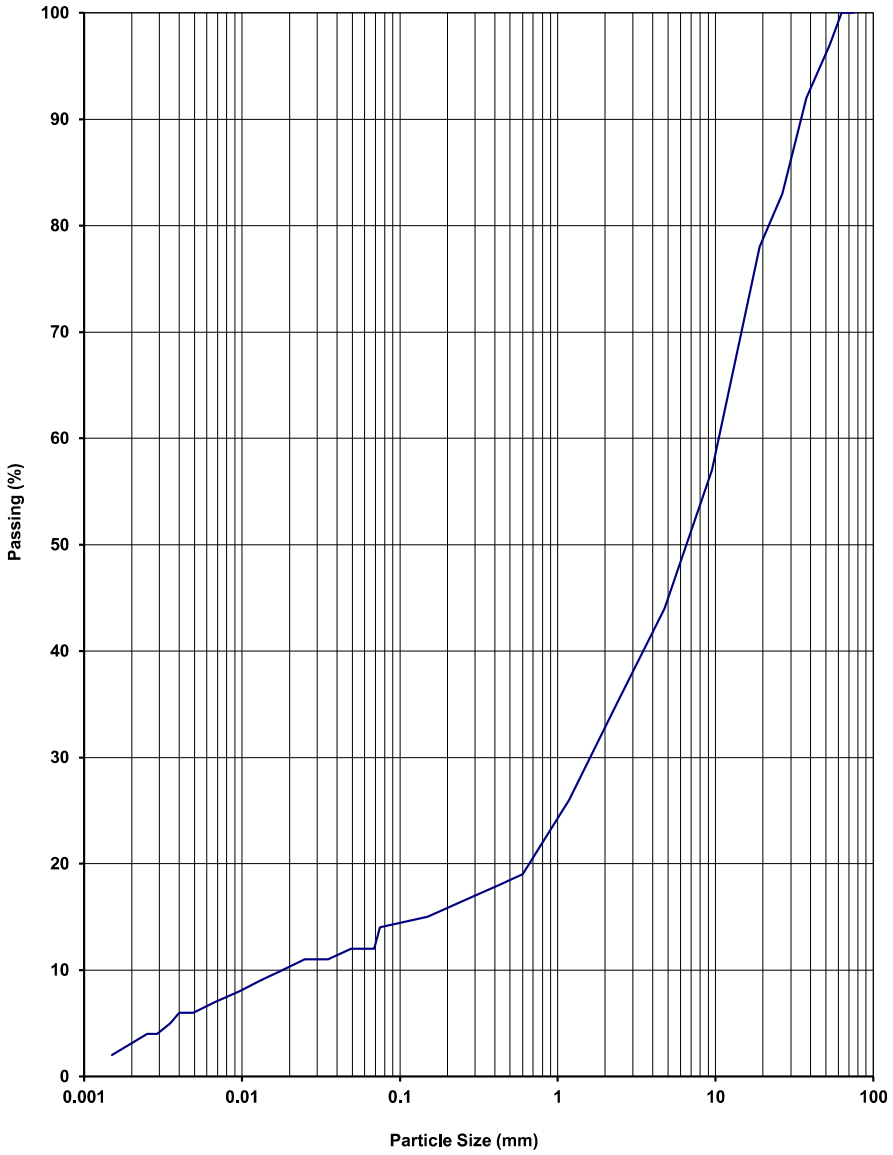
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020754-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	13/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP28 @ 1.1 m	**Location** TP28	**Depth (m)** 1.1 - 2
Description	clayey sandy GRAVEL (GC)		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	100
53.0	97
37.5	92
26.5	83
19.0	78
13.2	65
9.5	57
6.7	50
4.75	44
2.36	35
1.18	26
0.600	19
0.425	18
0.300	17
0.212	16
0.150	15
0.075	14
0.069	12
0.049	12
0.035	11
0.025	11
0.018	10
0.013	9
0.0096	8
0.0068	7
0.0049	6
0.004	6
0.0035	5
0.0029	4
0.0025	4
0.0015	2



NOTES/REMARKS: -

Sample/s supplied by the client

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020754-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	13/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP28 @ 1.1 m	**Location** TP28	**Depth (m)** 1.1 - 2
Description	clayey sandy GRAVEL (GC)		

Average Apparent Particle Density (t/m^3)	2.62
Received Moisture Content (%)	6.8
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020754-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	24/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020754
Test Date	23/02/2026
Client ID	TP28 @ 1.1 m
Location	TP28
Depth (m)	1.1 - 2
Description	clayey sandy GRAVEL (GC)
Soil Particle Density (g/cm³) (-2.36mm)	2.62
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.62

NOTES/REMARKS:

Sample/s supplied by the client

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

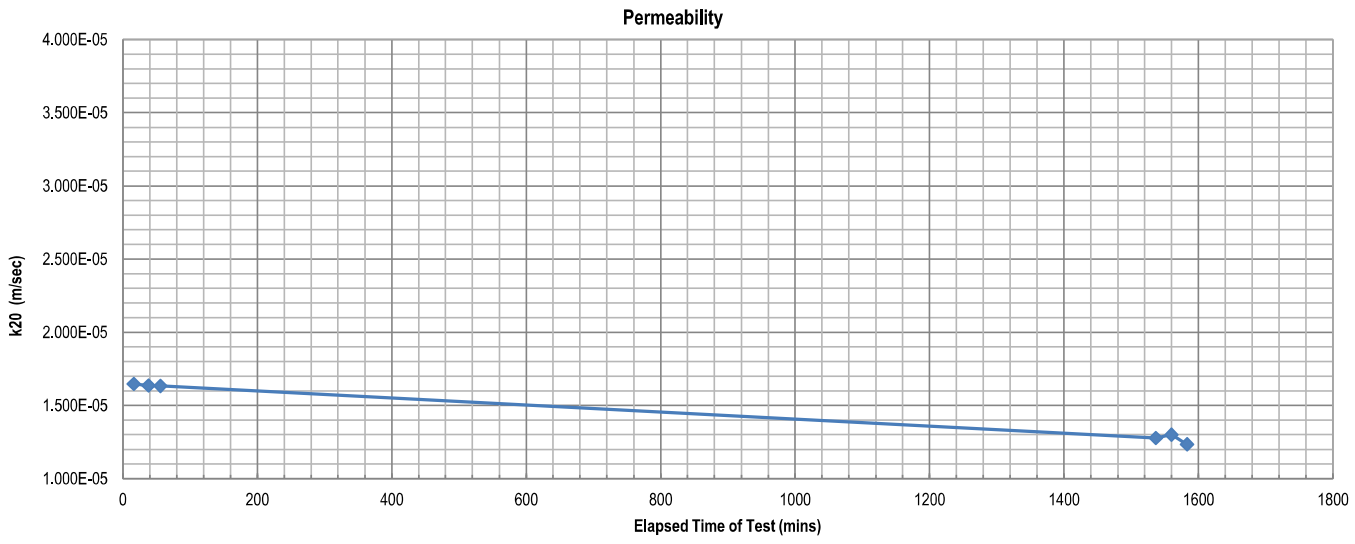
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020755-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	27/02/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP32 @ 0.3 m	**Depth (m)**	0.3 - 1.45
Description	gravelly clayey SAND (SC)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.77**	Hydraulic Gradient	**1.7**
Optimum Moisture Content (%)	**7.4**	Surcharge (kPa)	**3.6**
Placement Moisture Content (%)	**7.4**	Head Pressure Applied (kPa)	**1.96**
Moisture Ratio (%)	**99.5**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.62**	Percentage Material Retained/Sieve Size (mm)	**11.2 % / 19 mm**
Density Ratio (%)	**85.0**	Sample Height and Diameter (mm)	**116.5 / 152.36 mm**

PERMEABILITY $k_{(20)} = 1.3 \times 10^{-05}$ **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

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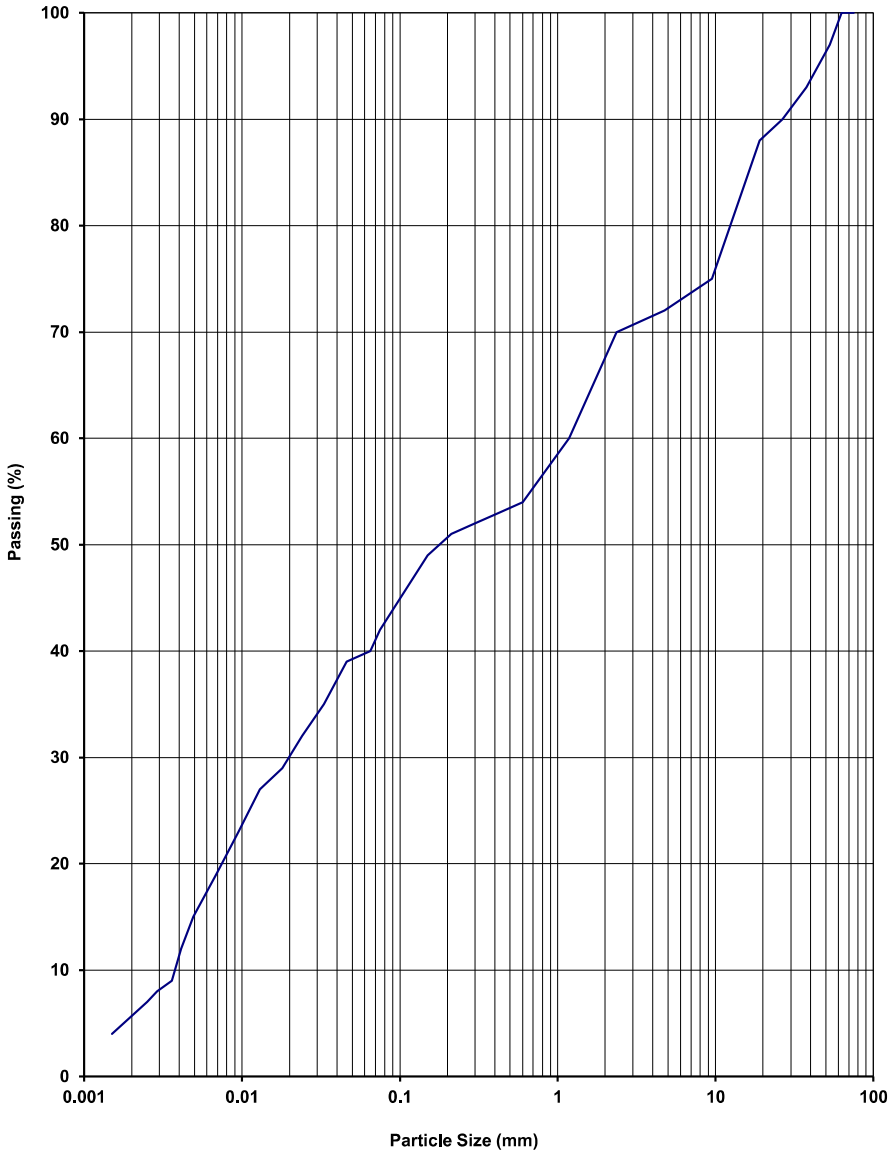
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020755-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP32 @ 0.3 m	**Location** TP32	**Depth (m)** 0.3 - 1.45
Description	gravelly clayey SAND (SC)		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	100
53.0	97
37.5	93
26.5	90
19.0	88
13.2	79
9.5	75
6.7	73
4.75	72
2.36	70
1.18	60
0.600	54
0.425	53
0.300	52
0.212	51
0.150	49
0.075	42
0.065	40
0.046	39
0.033	35
0.024	32
0.018	29
0.013	27
0.0095	23
0.0069	19
0.0049	15
0.0041	12
0.0036	9
0.0029	8
0.0025	7
0.0015	4



NOTES/REMARKS: -

Sample/s supplied by the client

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020755-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	24/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP32 @ 0.3 m	**Location** TP32	**Depth (m)** 0.3 - 1.45
Description	gravelly clayey SAND (SC)		

Average Apparent Particle Density (t/m^3)	2.57
Received Moisture Content (%)	5.7
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020755-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	25/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020755
Test Date	23/02/2026
Client ID	TP32 @ 0.3 m
Location	TP32
Depth (m)	0.3 - 1.45
Description	gravelly clayey SAND (SC)
Soil Particle Density (g/cm³) (-2.36mm)	2.57
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.57

NOTES/REMARKS:

Sample/s supplied by the client

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PERMEABILITY BY CONSTANT HEAD TEST REPORT

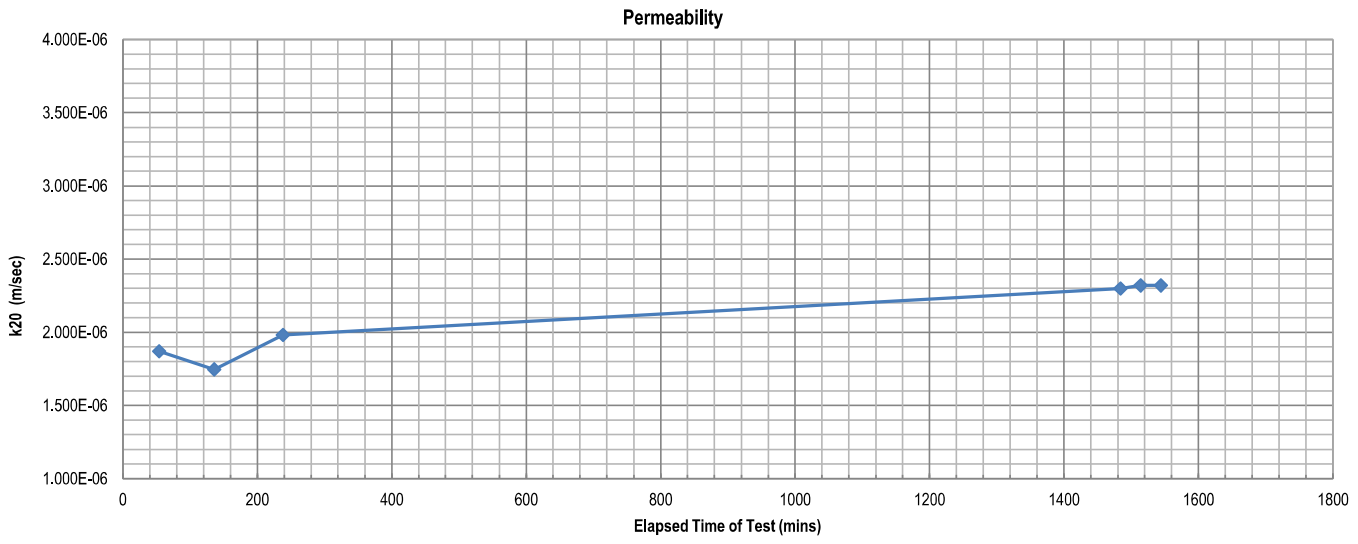
Test Method AS 1289 6.7.1, 5.1.1

Client	TMPL	**Report No.**	26020756-CPER
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	2/03/2026
		Report Date	11/03/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP39 @ 0.2 m	**Depth (m)**	0.2 - 1.3
Description	clayey sandy GRAVEL (GC)	**Sample Type**	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.79**	Hydraulic Gradient	**3.9**
Optimum Moisture Content (%)	**15.0**	Surcharge (kPa)	**3.6**
Placement Moisture Content (%)	**15.5**	Head Pressure Applied (kPa)	**4.41**
Moisture Ratio (%)	**103.5**	Water Type	**Deaerated**
Placement Wet Density (t/m^3)	**1.75**	Percentage Material Retained/Sieve Size (mm)	**10 % / 19 mm**
Density Ratio (%)	**84.6**	Sample Height and Diameter (mm)	**116.12 / 152.4 mm**

PERMEABILITY $k_{(20)} =$ **2.3×10^{-06}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 85% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

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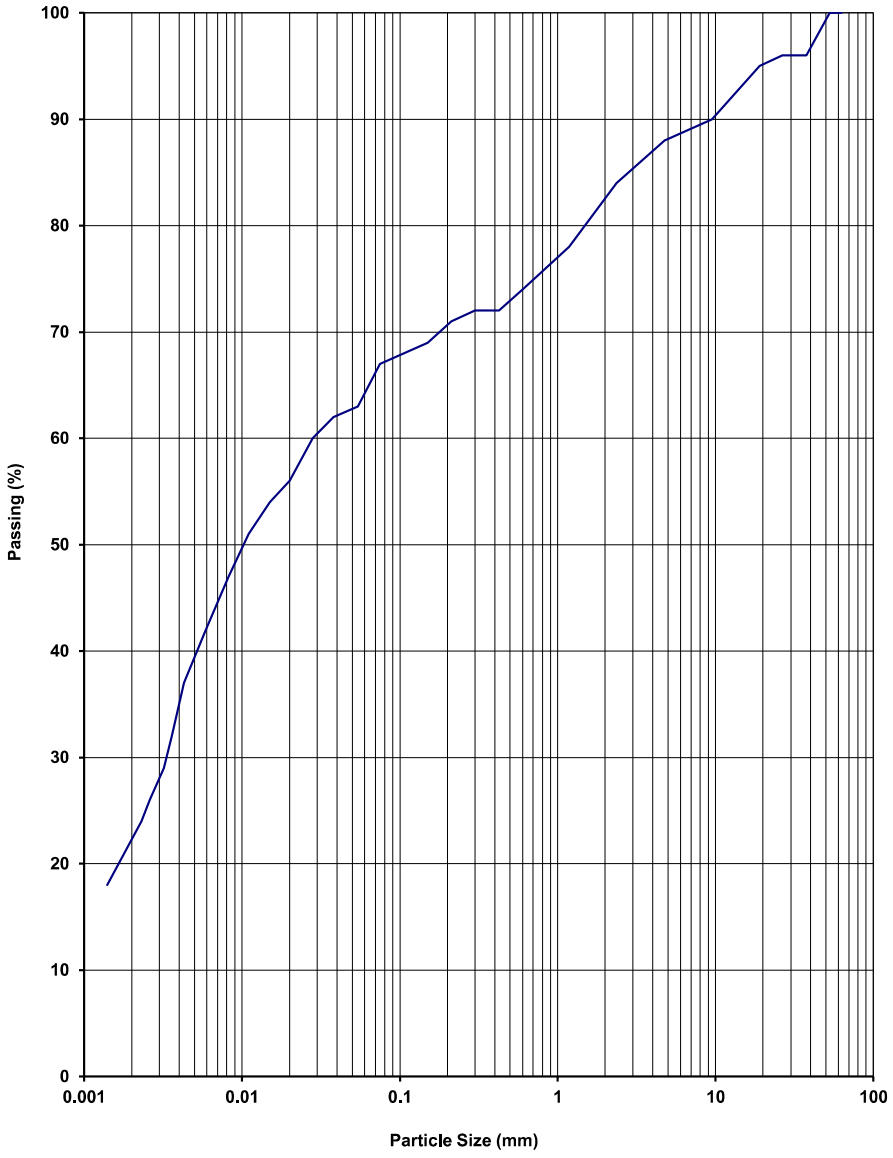
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020756-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	25/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP39 @ 0.2 m	**Location** TP39	**Depth (m)** 0.2 - 1.3
Description	clayey sandy GRAVEL (GC)		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	100
37.5	96
26.5	96
19.0	95
13.2	91
9.5	90
6.7	89
4.75	88
2.36	84
1.18	78
0.600	74
0.425	72
0.300	72
0.212	71
0.150	69
0.075	67
0.054	63
0.038	62
0.028	60
0.02	56
0.015	54
0.011	51
0.0082	47
0.0059	42
0.0043	37
0.0036	32
0.0032	29
0.0026	26
0.0023	24
0.0014	18



NOTES/REMARKS: -

Sample/s supplied by the client

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1, 2.1.1 & 1726

Client	TMPL	**Report No.**	26020756-PSDH
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Test Date**	16/2/2026
		Report Date	25/2/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		
Client ID	TP39 @ 0.2 m	**Location** TP39	**Depth (m)** 0.2 - 1.3
Description	clayey sandy GRAVEL (GC)		

Average Apparent Particle Density (t/m^3)	2.68
Received Moisture Content (%)	8.6
Method of Dispersion	Standard Dispersion Solution of 82.5% Sodium Hexametaphostpahte ($Na_6[Po_3]_6$) and 17.5% Sodium Carbonate (Na_2Co_3)
Hydrometer Type	Glass Hydrometer conforming to ASTM E100
Method of preparation	Oven Dried at 105-110 °c
Method of Pre-treatment	Dispersant only
Method of Secondary Pre-treatment	Nil
Method or Tertiary Pre-treatment	Nil
Percentage of loss due to Pre-treatment	0

NOTES/REMARKS:

Sample/s supplied by the client

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SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	TMPL	**Report No.**	26020756-SPD
		Workorder No.	9919/T/26-136
Address	16 - 20 Edmondstone Street Newmarket QLD 4051	**Report Date**	25/02/2026
Project	251128 - Taronga Tin Project - Technical Service to Address		

Sample No.	26020756
Test Date	23/02/2026
Client ID	TP39 @ 0.2 m
Location	TP39
Depth (m)	0.2 - 1.3
Description	clayey sandy GRAVEL (GC)
Soil Particle Density (g/cm³) (-2.36mm)	2.68
Soil Particle Density (g/cm³) (+2.36mm)	N/A
Total Soil Particle Density (g/cm³)	2.68

NOTES/REMARKS:

Sample/s supplied by the client

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SOIL MOISTURE CHARACTERISTIC CURVE - DRYING

TEST IN ACCORDANCE WITH IHM 17.0, IN DEVELOPMENT

☑ Oven Drying Method 2.1.1

Client:	RW Corkery & Co	**Report No.:**	**R024826**
Address:	Taronga Tin Project 2 Glen Innes Road, Emmaville NSW 2371	**Job No.:**	251128
		Register No.:	O8526
Project:	Taronga Tin Project EPA and NSW Resources Queries	**Location:**	NSW

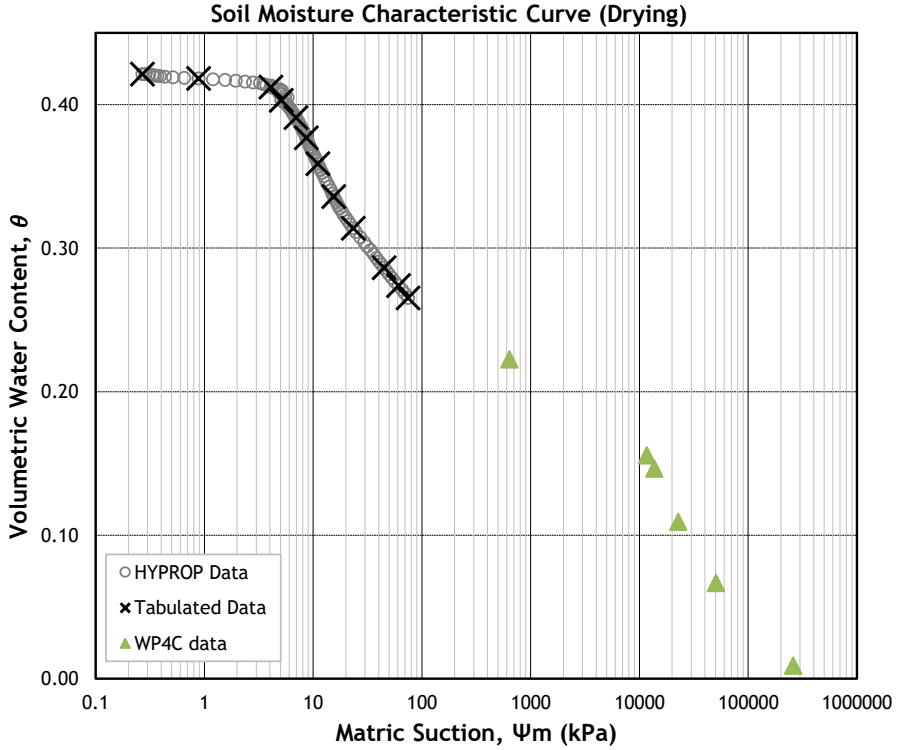
Sample Description: TP 15	Borehole No:	Test Pit Depth:

Test and Apparatus Information:

Start of Measurements:	2/04/2026 16:38
End of Measurements:	9/04/2026 12:00
HYPROP Unit Serial Number:	3903
HYPROP Balance Serial Number:	244227180
WP4C Unit Serial Number:	WP400004221
*Note Sample sieved on 2.36mm sieve	

Sample Properties:

Preparation Method:	Moist Tamped	
Specific Gravity, ρ_{st}:	2.65	t/m^3
Moisture Content after Saturation, w:	27.9	%
Initial Dry Density, ρ_d:	1.51	t/m^3
Initial Void Ratio, e:	0.75	
Porosity, n:	0.43	
Initial Volumetric Water Content, θ_i:	42.1	
Degree of Saturation, S:	100	%
Volume Change Correction Applied:	Not Applicable	



(kPa) Matric Suction (Ψm)	(%) Vol. Water Content (θ)
0.3	0.421
0.9	0.418
4.1	0.412
5.1	0.403
7.0	0.391
8.7	0.377
11.1	0.359
15.5	0.336
23.4	0.314
45.0	0.287
61.0	0.274
74.8	0.265
641	0.223
11731	0.156
13782	0.147
22857	0.109
50797	0.067
259548	0.009

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Approved Signatory: _____ Date Tested:02/04/2026-14/04/2026

Name of Signatory: Luke Renkin Date Reported:15/04/2026

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Date of Issue: Nov 2024

SOIL MOISTURE CHARACTERISTIC CURVE - DRYING

TEST IN ACCORDANCE WITH IHM 17.0, IN DEVELOPMENT

☑ Oven Drying Method 2.1.1

Client: RW Corkery & Co

Address: Taronga Tin Project
2 Glen Innes Road, Emmaville NSW 2371

Project: Taronga Tin Project EPA and NSW Resources Queries

Report No.: R024926

Job No.: 251128

Register No.: O8626

Location: NSW

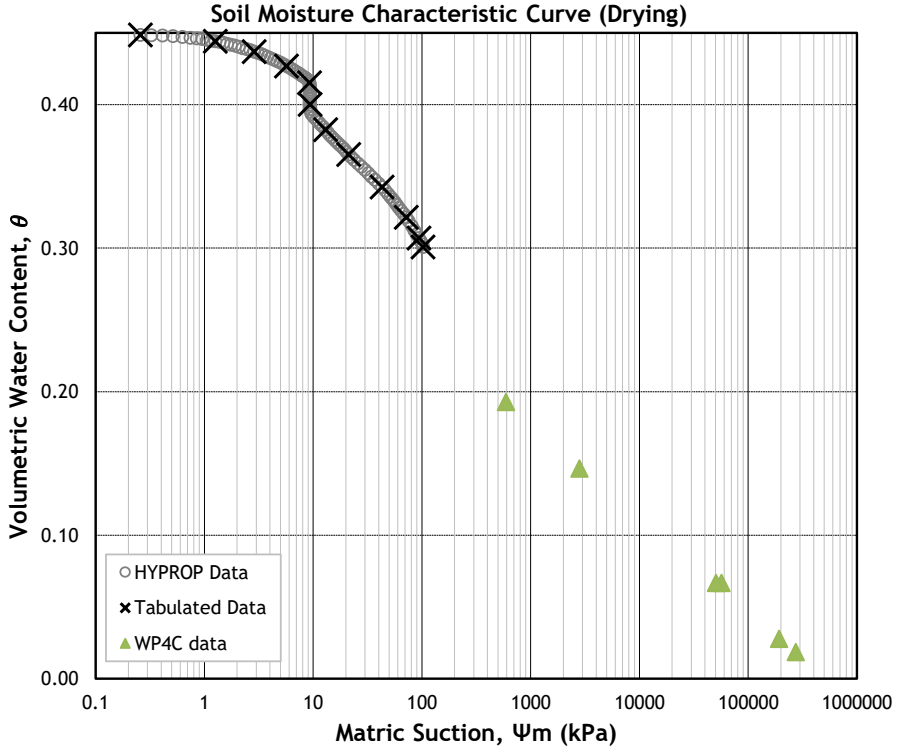
Sample Description: TP 18	Borehole No:	Test Pit Depth:

Test and Apparatus Information:

Start of Measurements:	1/04/2026 16:06
End of Measurements:	14/04/2026 12:00
HYPROP Unit Serial Number:	2043
HYPROP Balance Serial Number:	184226064
WP4C Unit Serial Number:	WP400004221
*Note Sample sieved on 2.36mm sieve	

Sample Properties:

Preparation Method:	Moist Tamped	
Specific Gravity, ρ_{st}:	2.65	t/m^3
Moisture Content after Saturation, w:	30.5	%
Initial Dry Density, ρ_d:	1.47	t/m^3
Initial Void Ratio, e:	0.80	
Porosity, n:	0.45	
Initial Volumetric Water Content, θ_i:	44.9	
Degree of Saturation, S:	100	%
Volume Change Correction Applied:	Not Applicable	



(kPa) Matric Suction (Ψm)	(%) Vol. Water Content (θ)
0.3	0.449
1.3	0.444
2.9	0.437
5.7	0.427
9.3	0.415
9.4	0.400
13.0	0.383
21.2	0.365
43.2	0.343
72.1	0.322
94.2	0.307
102.3	0.301
595	0.193
2816	0.147
56941	0.067
50797	0.067
193152	0.028
274543	0.019

This document is issued in accordance with the laboratory quality system requirements of ATC Williams Pty Ltd.

Approved Signatory: _____ Date Tested:01/04/2026-14/04/2026

Name of Signatory: Luke Renkin Date Reported:15/04/2026

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Date of Issue: Nov 2024

APPENDIX C – CAPPING SYSTEM AND NET PERCOLATION MODELLING

TAILINGS.WATER.WASTE.

REPORT

R.W CORKERY & CO PTY LTD
ABN: 31002033712

TARONGA TIN PROJECT REGULATORY RESPONSE – TECHNICAL SERVICES

251128-R001-Rev0-APPENDIX C

May 2026



TAILINGS.WATER.WASTE.

Document Control

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1 APPENDIX C - CAPPING SYSTEM DESIGN AND NET PERCOLATION MODELLING

1.1 Overview

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the project) in northern New South Wales. The project comprises planned open-cut mining of the Southern and Northern open cut pits with an expected Project-life up to approximately 21 years.

The project would include two Waste Rock Emplacements (Northern and Southern WRE), a Co-Disposal Area (CDA), and a Residue Storage Facility (RSF). Runoff and leachate from both WRE and the CDA would be collected within runoff dams (ROD) that would be situated downslope of each WRE and the CDA. Following the cessation of mining operations, both WRE, the CDA and RSF would be closed, rehabilitated and capped for retention in the final post-mining landform.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the NSW Environment Protection Authority (EPA), Resources NSW and the (NSW) Department of Climate Change, Energy, Environment and Water (DCCEEW) provided submissions requesting further details on the design and closure of the WRE, CDA and RSF closure capping.

This appendix presents the capping design and net percolation assessment undertaken by ATC Williams Pty Ltd to support the Technical Services Report addressing the matters raised by the NSW EPA, DCCEEW and Resources NSW.

The work forms part of Task 3 and provides supporting analysis for the main report, linking the - development of base-case capping systems with the assessment of net percolation performance.

The assessment is based on site-specific material characterisation derived from laboratory testing, as summarised in Appendix B, which is used to inform the modelling and evaluation of cover system performance.

1.2 Mine Waste Materials Geochemical Characterisation

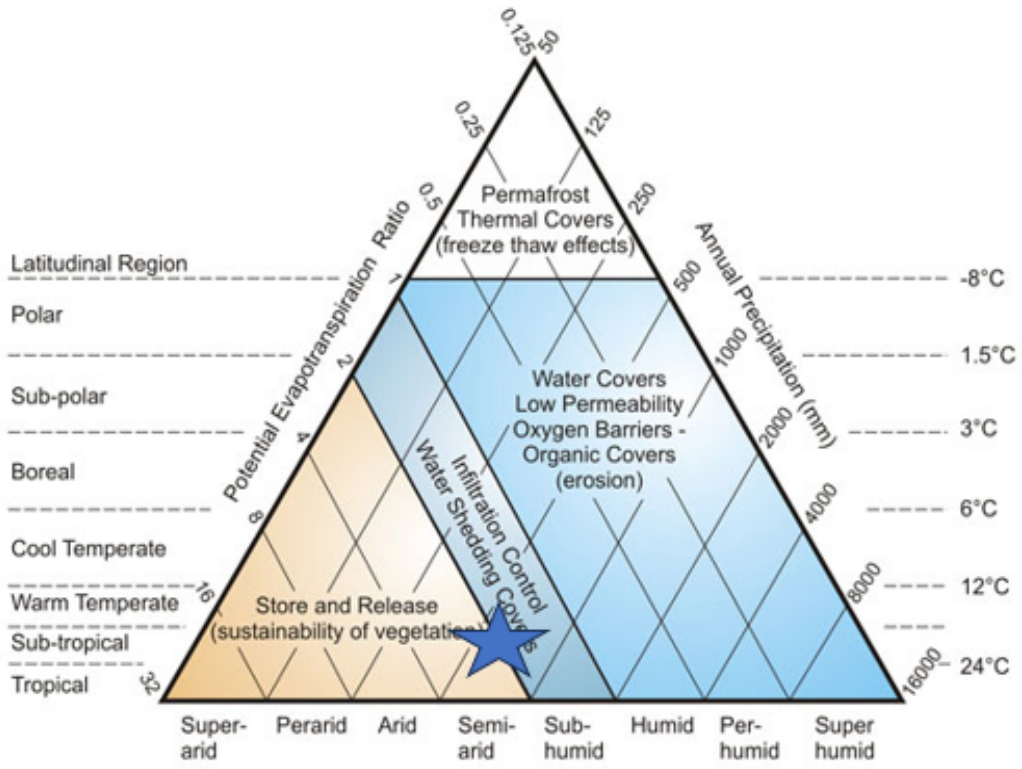
RGS (2025) reported that waste rock materials present a low risk of acid and metalliferous drainage (AMD), and therefore, no specialised material handling or segregation measures are required.

The processing residues placed in the CDA would comprise a mixture of potentially acid-forming (PAF) and non-acid-forming (NAF) materials and are likewise classified as presenting a low overall AMD risk (RGS 2025).

1.3 Base Case Cover System Configurations

In accordance with the guidance provided in the International Network for Acid Prevention (INAP) Global Acid Rock Drainage Guide, (**DIAGRAM 1)** an appropriate capping configuration for the climatic conditions of the Mine Site would comprise either a water-shedding cover system or a store-and-release cover system. These cover types are identified in the INAP framework as suitable approaches for managing infiltration, oxygen ingress, and long-term geochemical stability under a range of climatic and operational conditions.

DIAGRAM 1: SUGGESTED CAPPING ARRANGEMENT (SOURCE: GLOBAL ACID ROCK DRAINAGE GUIDE, INAP)



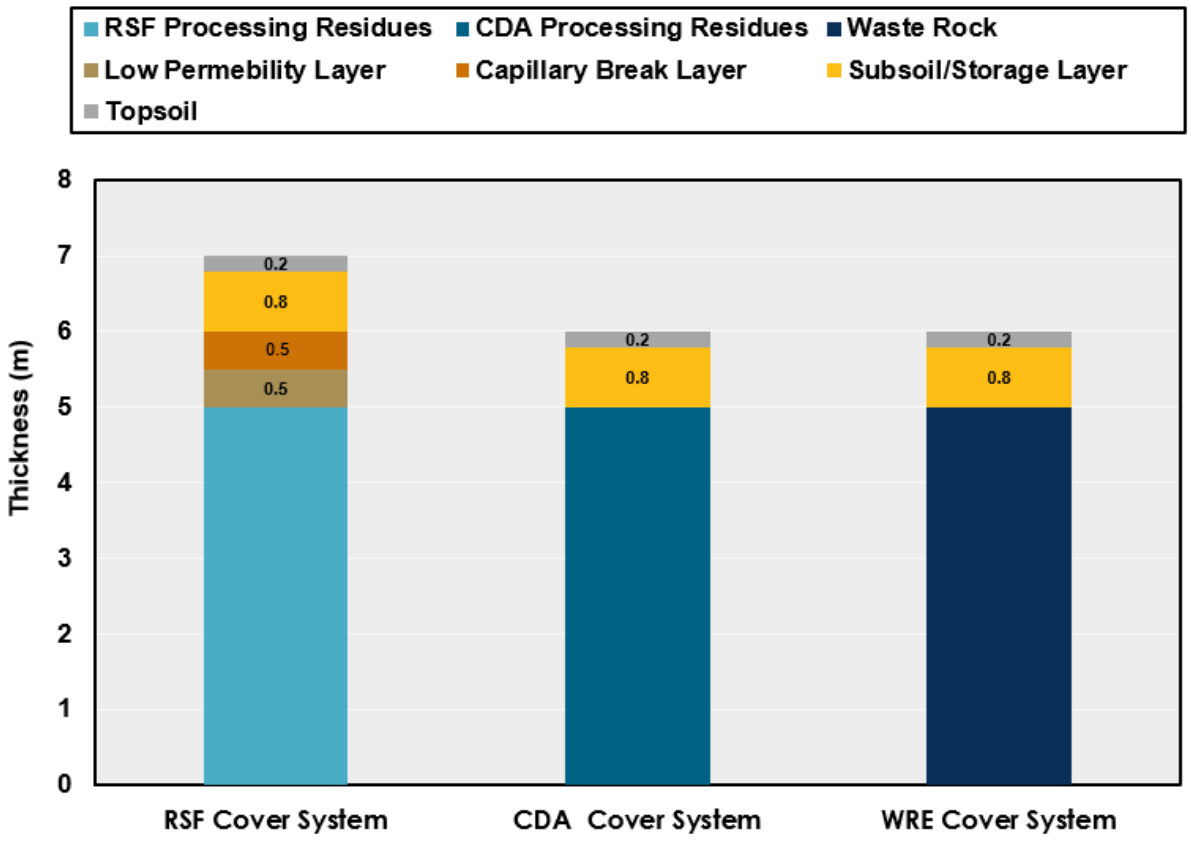
1.3.1 Base Case Cover Systems

The proposed base case cover system includes an enhanced store-and-release (SR) configuration for both the WRE and CDA tailings, while the RSF process residues storage facility cover incorporates a capillary break layer and an underlying low-permeability layer. This integrated design approach is intended to improve moisture control and improve the long-term performance and resilience of the cover systems under site-specific climatic conditions.

DIAGRAM 2 illustrates the proposed cover systems for each facility.

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DIAGRAM 2: PROPOSED COVER DESIGN FOR EACH FACILITY



1.3.2 CDA and WRE Base Case Cover System

The CDA and WRE base-case cover system has been designed to achieve the following functional objectives **[7]**:

- Limit oxygen ingress into the underlying material to minimise oxidation reactions.
- Control water infiltration through the cover to reduce percolation into the underlying material.
- Minimise erosion caused by rainfall, runoff, and wind processes.
- Support the establishment and long-term sustainability of vegetation to enhance evapotranspiration and surface stability.

The proposed operational material placement methodology and the paddock-style, bottom-up development of potentially acid-forming (PAF) waste rock cells in the Northern WRE allow for a simplified cover design for both WRE that would achieve the environmental performance objectives of limiting oxidation and any subsequent formation of oxidation products. Notwithstanding the above, the cover system is intended to restrict oxygen and water ingress, control erosion, and support the growth of sustainable vegetation **[9]**.

The proposed cover system for both WRE and CDA comprises the following layers (from surface to base):

- 0.2 m topsoil layer, to promote vegetation growth and provide a medium for root development.
- 0.8 m subsoil/growth medium, designed to function as the primary store-and-release layer by retaining moisture and promoting evapotranspiration.

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A low-permeability layer is not considered necessary as this function would be fulfilled by the advection barrier surrounding the PAF material during WRE development. The cover system is proposed to be applied across the full surface area of both WREs.

1.3.2.1 CDA and WRE Enhanced Configuration

This report has been prepared to support project approval under the NSW legislative and regulatory framework and is not intended to function as a detailed internal engineering design document. The cover systems developed for each facility represent the current base-case configuration for post-closure management and have been selected to achieve long-term environmental protection outcomes consistent with regulatory expectations.

Seepage water quality will be monitored throughout the operational phase in accordance with applicable approval conditions and management plans. Monitoring results will be used to periodically review and refine the post-closure risk profile, consistent with an adaptive management approach. In parallel, geochemical assessment will continue during operations to improve understanding of material behaviour and inform closure planning, with the risk profile updated as additional data become available.

Operational monitoring may increase the risk profile of the waste storage facilities. Should this be the case, enhanced control measures can be implemented at closure through the design of the cover systems.

A cover system incorporating a low-permeability layer, utilising either locally sourced clay materials or geosynthetic barrier systems, can be designed and constructed as part of closure works to achieve the required net percolation performance for a higher risk profile waste storage facility. Use of low permeability layer could reduce net percolation to less than 1% of rainfall. This approach is intended to minimise infiltration, limit seepage generation, and reduce the potential for long-term environmental impacts, thereby supporting a stable and sustainable post-closure landform without reliance on ongoing active management.

These measures (enhanced cover system) would only be implemented if operational monitoring of the waste storage facilities justify their implementation. The option to adopt the enhanced cover system remains available all the way to cessation of operations, allowing the decision making process to be based on real-world monitoring data.

1.3.3 RSF Base Case Cover System

Tailings stored within the RSF, which are derived from ore processing residues and classified as Potentially Acid Forming (PAF) or Uncertain, exhibit a lower factor of safety with respect to acid and metalliferous drainage (AMD) generation (RGS,2025). These geochemical characteristics were explicitly considered during the development of the cover system design, with appropriate engineering and containment measures incorporated to ensure adequate environmental protection and to maintain long-term geochemical stability under post-closure conditions **[9]**.

The proposed base-case cover system for RSF comprises the following layers (from surface to base):

- 0.2 metres (m) topsoil layer, to promote vegetation growth and provide a medium for root development.
- 0.8 m subsoil/growth medium, designed to function as the primary store-and-release layer by retaining moisture and promoting evapotranspiration.
- 0.5 m of low-permeability layer (clay-rich soil, compacted).
- 0.5 m of a capillary break (coarse, high permeability material also used to create a trafficable layer on the deposited tailings).

1.4 Revegetation

It is recommended that revegetation activities commence as soon as areas become available, specifically upon completion of each section of the final cover system. This would maximise vegetation establishment and support early soil stabilisation and erosion control.

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All selected species would be consistent with the Post-Mining Landform and Land-use, as described in the Rehabilitation Management Plan that would be approved by Resources NSW.

1.5 Performance Criteria

The adopted performance criteria for the cover system are described in **TABLE 1.**

TABLE 1: COVER SYSTEM PERFORMANCE CRITERIA

OBJECTIVE	PERFORMANCE CRITERIA
Limit Net Percolation	Net Percolation into the facility should be less than a nominal 10% of the total rainfall depth.
Limit Capillary Rise	No capillary rise of salts within the root zone that may affect plant growth.
Sustain Vegetation	Establish vegetation cover.
	Sufficient Plant Available Water Capacity (PAWC) to sustain target vegetation.

1.6 Model Development

1.6.1 General

GeoStudio SEEP/W was used to model one-dimensional saturated–unsaturated flow through a vertical profile comprising the proposed cover system and the upper 5 m of processing residue materials in the CDA and RSF and waste rock in each WRE. The model employed a 0.1 m mesh, refined to 0.02 m within the cover layers to adequately resolve steep hydraulic gradients and wetting fronts near material interfaces. Transient analyses were run using a 0.5-daytime step, providing sufficient resolution to capture infiltration and drying behaviour.

1.6.2 Model Limitations

Default Soil–Water Characteristic Curves (SWCC) and saturated hydraulic conductivity (Ksat) functions available within GeoStudio SEEP/W were utilised where site-specific data were unavailable, except for the subsoil unit, which was parameterised using laboratory permeability test results. Implemented materials were selected to verify consistency with field logging, particle size distribution (PSD) results, and the laboratory permeability test result values. **Table 2** illustrates the implemented materials and parameters for the model.

TABLE 2: IMPLEMENTED MATERIALS AND PARAMETERS FOR THE MODEL

Material	Implemented Material in GeoStudio SEEP/W	Parameters	
		K_{sat}	SWCC
Topsoil	Silty Sand	GeoStudio SEEP/W	GeoStudio SEEP/W
Subsoil	Silty Clay	Lab. Permeability Results [10]	GeoStudio SEEP/W
Waste Rock	Silty Sand	GeoStudio SEEP/W	GeoStudio SEEP/W
RSF Processing Residue	Clay	Referred from Mincore (2023) [9]	GeoStudio SEEP/W
Low Permeability Layer	Clay	GeoStudio SEEP/W	GeoStudio SEEP/W
Capillary Layer	Gravel	GeoStudio SEEP/W	GeoStudio SEEP/W
CDA Processing Residue	Silty Clay	Referred from Mincore (2023) [9]	GeoStudio SEEP/W

Undertaking preliminary numerical assessments using laboratory and field data is standard practice for evaluating the relative behaviour of cover system designs. Accordingly, the current modelling was intended to support comparative assessment of cover system options and configurations.

It is recommended that following project approval, the model should be calibrated to long-term monitoring data collected at the Mine Site during operation and field trials to improve predictive capability over longer timeframes. This iterative process may inform further optimisation of the cover system before commencement of final rehabilitation.

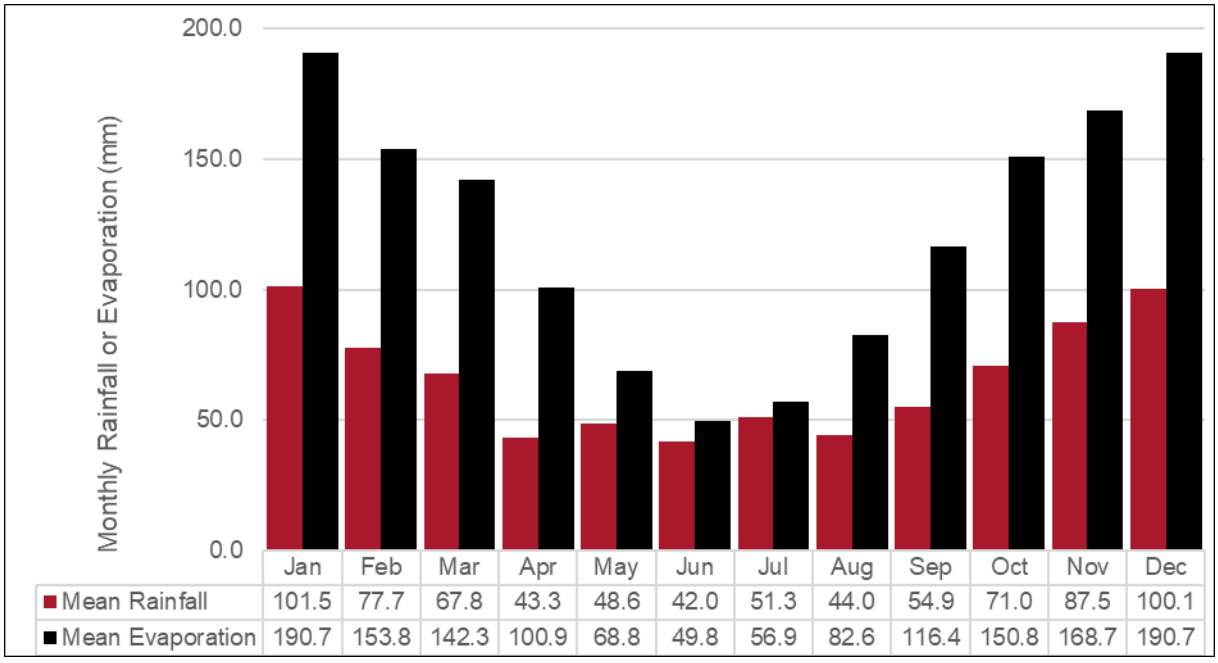
1.6.3 Climate Data for Modelling

Long-term climate data (SILO point rainfall and evaporation data; Latitude: -29.40°; Longitude: 151.55°) was used for the modelling. Climate data for the period between 1970 and 2025 (55 years) was used for the modelling **[13]**.

CHART 1 presents the SILO monthly average rainfall and evaporation data for the period 1970–2025. The site experiences a mean annual rainfall of approximately 789 mm, and a substantially higher mean annual evaporation of about 1,472 mm. Rainfall is predominantly received during the spring–summer months (October to March); however, evaporation exceeds precipitation throughout the year, resulting in a net moisture deficit and progressive depletion of soil moisture over the annual cycle.

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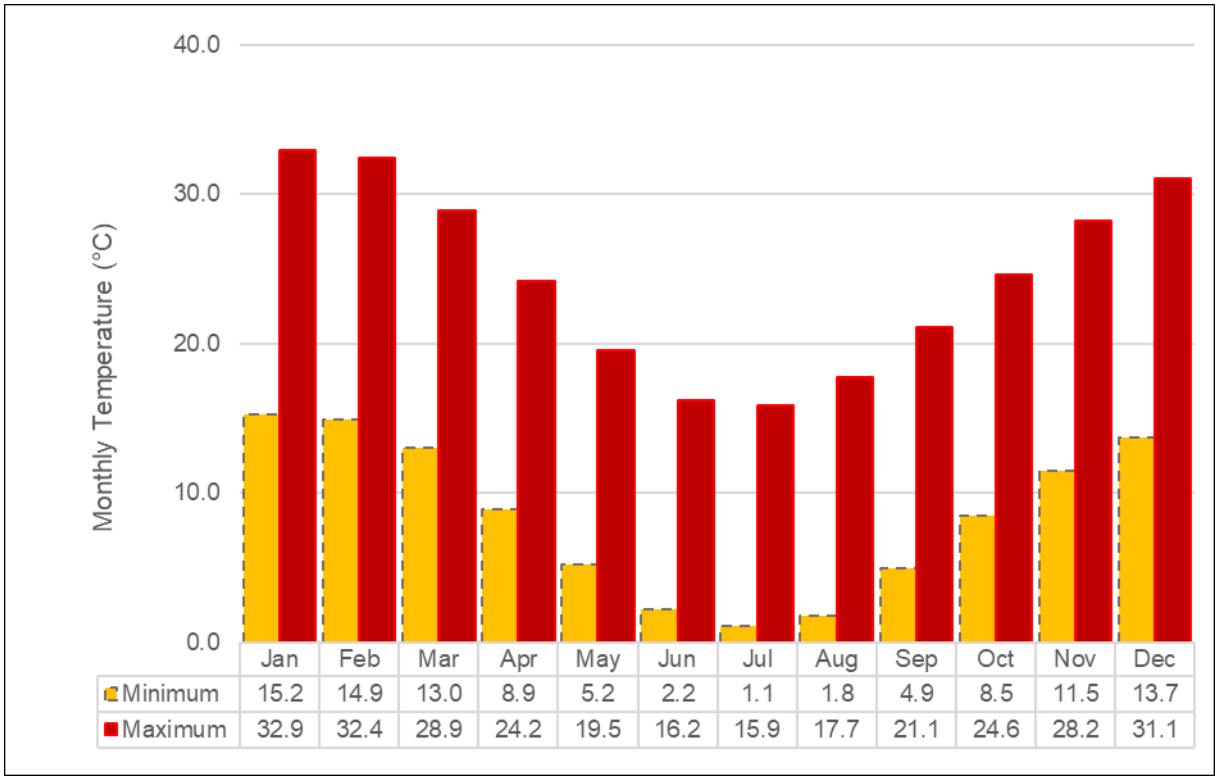
CHART 1: SILO MONTHLY MEAN MONTHLY RAINFALL OR EVAPORATION DATA



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	101.5	77.7	67.8	43.3	48.6	42.0	51.3	44.0	54.9	71.0	87.5	100.1
Mean Evaporation	190.7	153.8	142.3	100.9	68.8	49.8	56.9	82.6	116.4	150.8	168.7	190.7

CHART 2 illustrates the SILO mean minimum and maximum monthly temperature data from 1970 to 2025. January is the warmest month at Taronga Tin Mine site with an average maximum temperature of 32.9 ^{0}C. July is the coldest month with an average temperature of 1.1 ^{0}C.

CHART 2:SILO MEAN MINIMUM AND MAXIMUM MONTHLY TEMPERATURE



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minimum	15.2	14.9	13.0	8.9	5.2	2.2	1.1	1.8	4.9	8.5	11.5	13.7
Maximum	32.9	32.4	28.9	24.2	19.5	16.2	15.9	17.7	21.1	24.6	28.2	31.1

Other climatic data required for the model, obtained from SILO, are summarised as follows:

- Potential Evapotranspiration (PET) ($m^3/sec/m^{2)}$,
- Daily maximum and minimum Relative Humidity (%),

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For transient modelling, the climate data were aggregated into standard calendar years. The monthly mean rainfall is shown in **CHART 1.**

1.6.4 Model Geometry

The SEEP/W model was configured as a one-dimensional column comprising the proposed cover system overlying the upper 5 m of residue material in the CDA and RSF and waste rock in each WRE. Although the actual material depths would exceed the modelled upper 5 m, climatic influences would predominantly only affect this upper portion of the profile. This assumption was verified during model development by assessing predicted hydraulic responses at depth. The results indicated negligible moisture movement below the modelled 5 m underlying material thickness. Accordingly, extending the model to greater depths would not materially influence the predicted hydraulic behaviour or model outcomes.

1.6.5 Boundary Conditions

Model boundary conditions are outlined as follows:

Climatic Conditions: Applied to the surface of the cover system as detailed in **SECTION 1.6.3.**

Initial Gradient (Free Drainage): Applied at the base of the model to allow seepage from the model. Seepage rates are calculated assuming the downward flux is equal to the hydraulic conductivity at that point.

Vegetation: Applied assuming a 50% vegetation cover, which is discussed further in **SECTION 1.7**.

Initial moisture content and pore water pressures were defined as an initial water head located 0.5 m below the RSF and CDA processing residues surface and running all RSF and CDA models for 1 year to reach a quasi- steady state condition throughout the modelled profile. The initial 1 year is not presented, recognising that these results are influenced by the initial water head input by the model user.

1.6.6 Material Properties

1.6.6.1 Soil Water Characteristic Curves (SWCC)

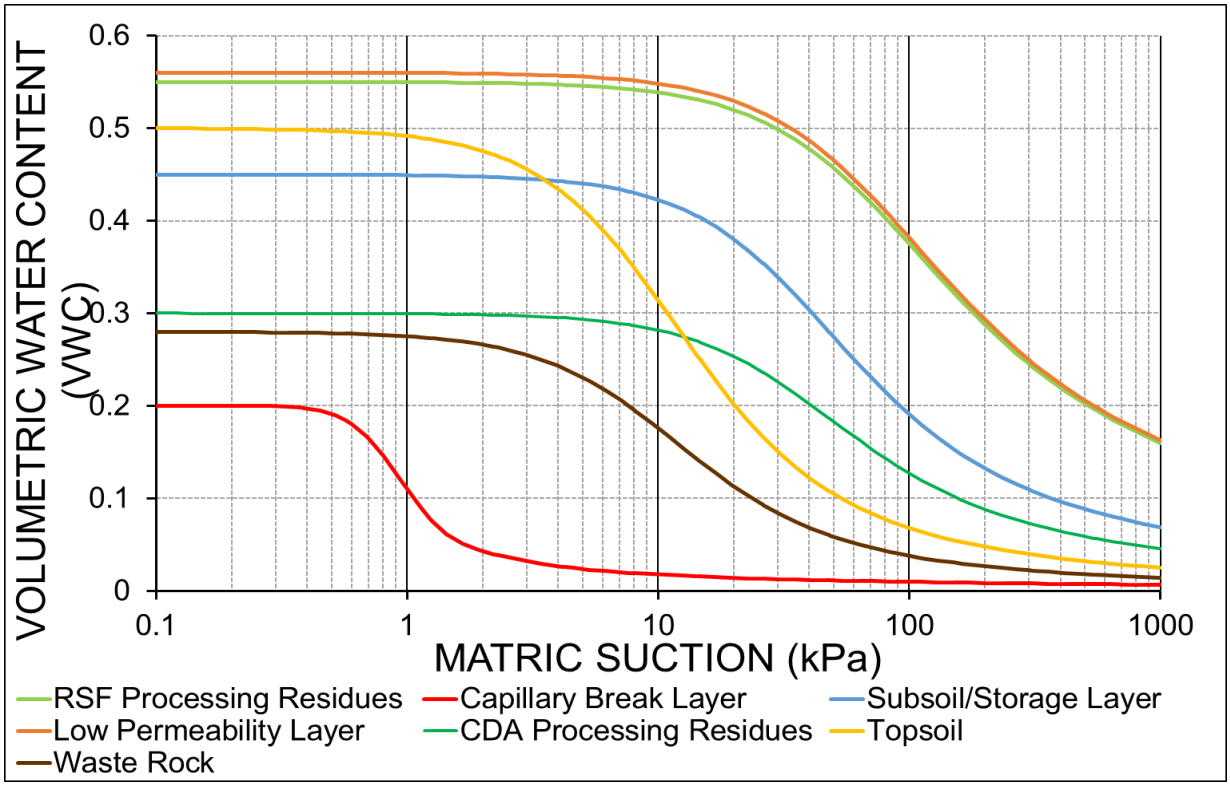
The hydraulic properties of the materials were characterised using the Volumetric Water Content Function as implemented in the GeoStudio SEEP/W software. Adopted SWCC's are presented in **CHART 3.**

The volumetric water content (VWC) curves indicate that all materials exhibit decreasing moisture content with increasing matric suction, consistent with typical unsaturated soil behaviour. The relative position and shape of each curve reflect the pore size distribution and moisture retention characteristics of the materials.

The VWC–suction relationships confirm that the materials perform as intended within a cover system: surface soils retain sufficient moisture for vegetation, engineered layers maintain moisture to limit percolation, and coarse layers effectively reduce capillary transfer.

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CHART 3: SWWC FOR MATERIALS USED FOR MODELLING



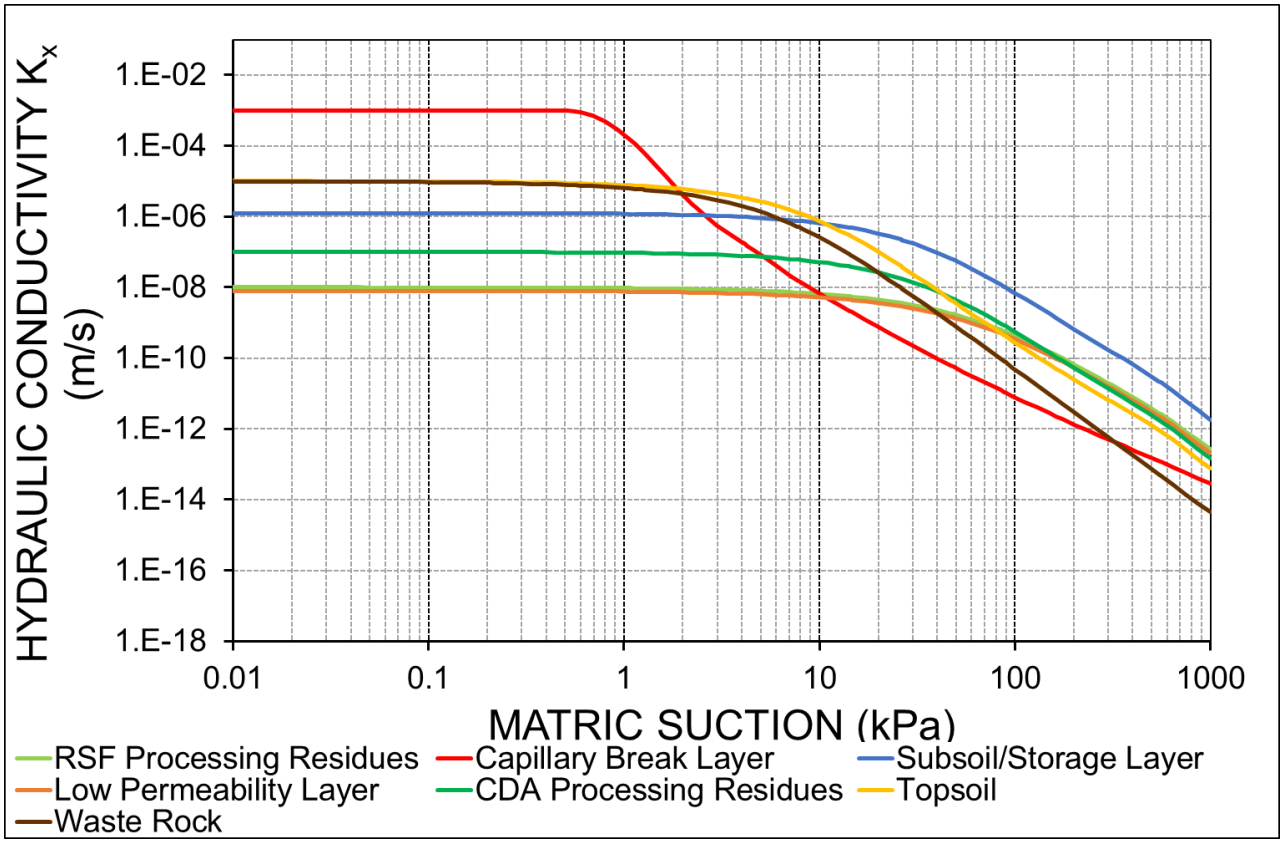
1.6.6.2 Hydraulic Conductivity

The hydraulic conductivity curves were estimated using SEEP/W's in-built Fredlund - Xing - Huan model. Adopted permeability curves are presented in **CHART 4.**

The relationship between hydraulic conductivity and matric suction demonstrates that all materials exhibit decreasing conductivity as suction increases, consistent with typical unsaturated soil behaviour. Topsoil and subsoil display high hydraulic conductivity under low-suction (wet) conditions, with gradual reductions as they dry, indicating their suitability for supporting infiltration and vegetation establishment. Processing residues placed in the RSF and CDA processing residues, as well as the low-permeability layer material, maintain consistently low hydraulic conductivity across the suction range, reflecting their capacity to limit percolation relative to soil layers. Waste rock exhibits moderate conductivity when wet, with a steady decrease as suction increases, consistent with well-drained, coarse-grained materials.

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CHART 4: HYDRAULIC CONDUCTIVITY VALUES FOR EACH MATERIAL



1.7 Vegetation

Vegetation inputs to SEEP/W include the Leaf Area Index (LAI), plant moisture limiting function, normalised root density distribution, and the cover soil fraction. These parameters exhibit substantial variability depending on plant species and prevailing environmental conditions such as rainfall and climate variability. For the purposes of this assessment, a constant LAI of 1.0 and a cover soil fraction of 0.50 were adopted. These assumptions imply that vegetation characteristics remain uniform throughout the simulation period and do not vary seasonally or inter-annually. The adopted values are intended to represent a stabilised and mature vegetative cover consistent with expected post-rehabilitation conditions. The adopted root density distribution is reasonable because it reflects the commonly observed exponential decline of roots with depth, with most roots concentrated in the upper soil layers where water and nutrients are most accessible. The functions applied for plant moisture limitation, root density, and cover soil fraction in the model are presented in **CHART 5** and **CHART 7.**

Although vegetation will become a critical component influencing the medium- to long-term performance of the cover system, it is recognised that plant function is expected to increase progressively during the initial 3–5 years of vegetation establishment. Ongoing studies as part of the approved Rehabilitation Management Plan, pre- and post-vegetation establishment, would be undertaken to monitor plant density and revegetation success.

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CHART 5: PLANT MOISTURE LIMITING FUNCTION

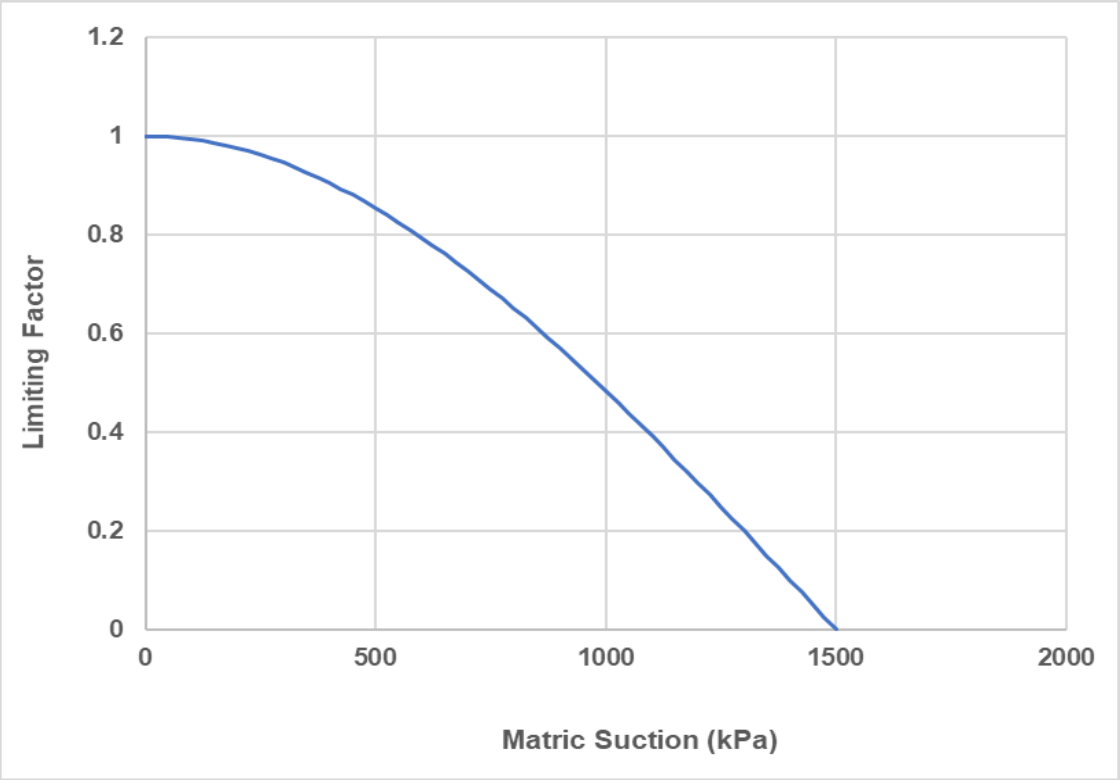
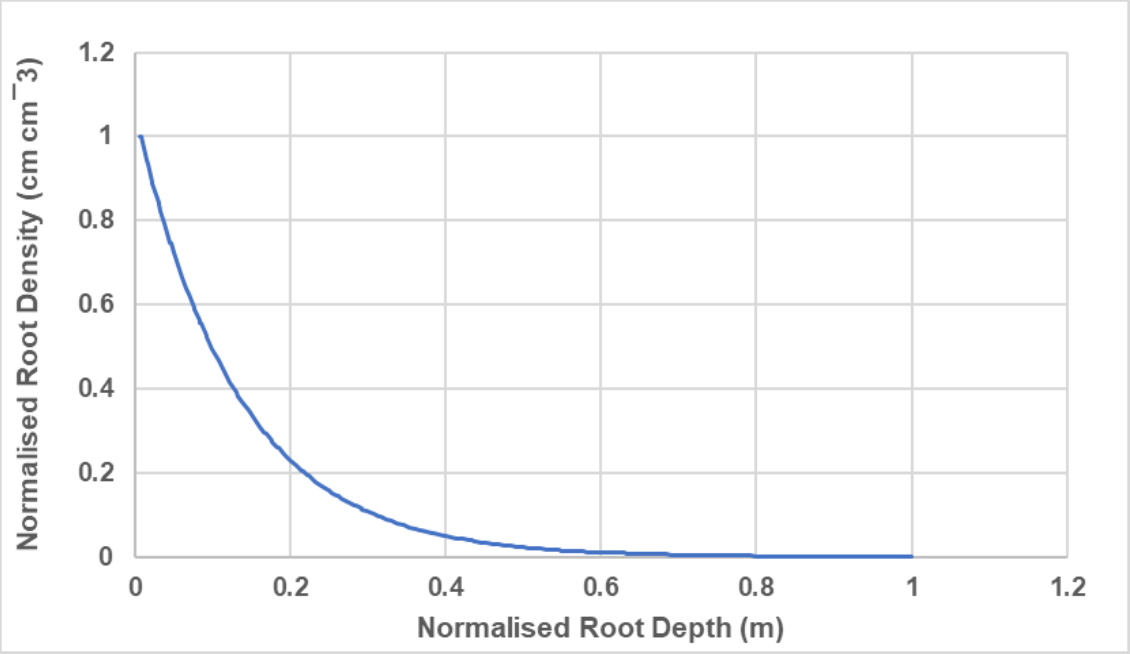
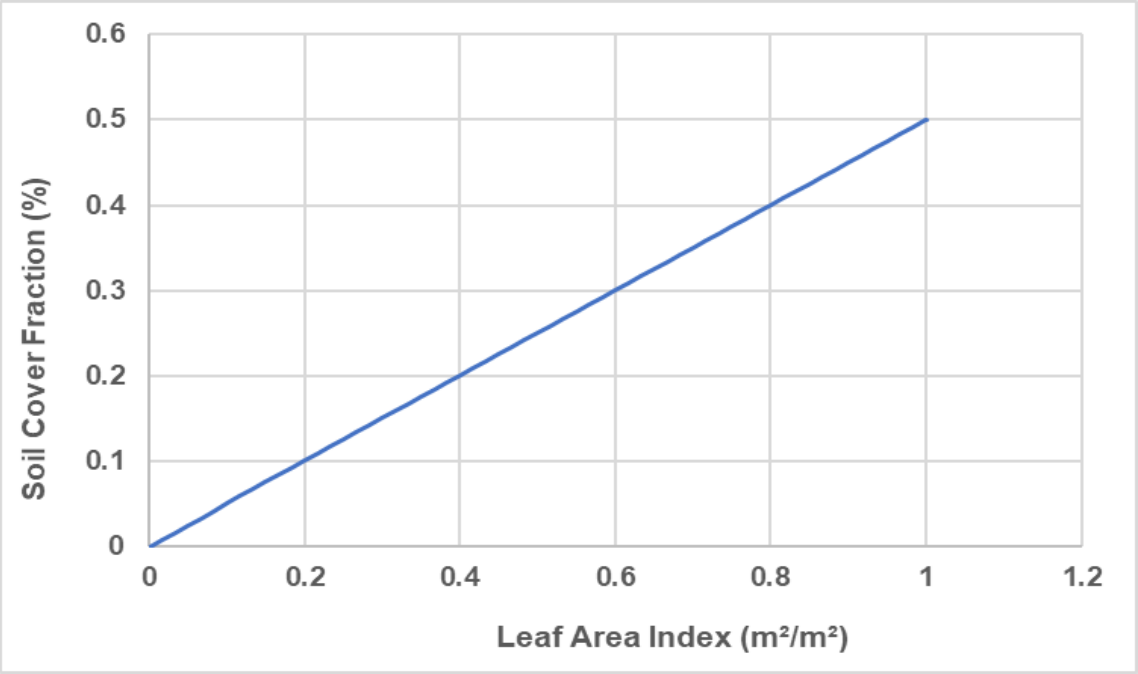


CHART 6: NORMALISED ROOT DENSITY



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CHART 7: SOIL COVER FRACTION



1.8 Overview and Terminology

The performance of each cover system has been assessed against the closure criteria discussed in the **SECTION 2**. The terminology used is summarised as follows:

Water Balance: The water balance shows the balance of moisture within the modelled profile. Elements which form part of the water balance are:

Rainfall: Rainfall depth occurring for the modelled period.

Runoff: Rainfall runoff that does not infiltrate into the cover system and reports as surface water runoff off the landform. It is noted that, as the model is one-dimensional, no run-on is considered, with rainfall reporting as runoff leaving the model domain.

Evapotranspiration: Evaporation and transpiration losses from the cover profile.

Flux: Moisture flux indicates the direction and rate of movement of moisture within and through the cover system profile. Negative flux rates indicate downward movement of moisture (e.g. rainfall infiltrating into the soil or percolation out of the soil and into the tailings) whilst positive flux rates are upward (e.g. evaporation or evapotranspiration to the atmosphere or capillary rise from tailings into the cover profile).

Net Percolation: The volume of water moving out of the cover system profile and into the underlying tailings.

Degree of Saturation: Degree of Saturation (DoS) is used to support the interpretation of wetting and drying behaviour within the soil profile. DoS expresses the relative saturation level, ranging from the residual water content (typically between 0.05 and 0.2) to full saturation (1.0). By normalising moisture content in this way, DoS provides a clearer visual representation of changes in saturation state across different soil layers, especially when comparing materials with differing porosity or retention characteristics. This allows for a more intuitive assessment of water movement and storage, and helps identify periods of recharge, drying, and potential percolation into underlying tailings.

1.8.1 Modelling Results

Table 3 presents the SEEP/W modelling outputs and indicates the water balance performance of the proposed cover system, each assessed with and without vegetation with the synthetic rainfall obtained from SILO Point Data **[13], [14]**. The results compare the proposed cover system constructed over CDA and RSF processing residues and waste rock. Key components of the water balance include

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runoff, actual evaporation, transpiration, net percolation, and changes in storage. Runoff was predicted to be negligible for all scenarios.

Across all material types, the presence of vegetation markedly influences the water balance by decreasing actual evaporation and substantially increasing transpiration. Under vegetated conditions, transpiration becomes the primary pathway for moisture loss from the cover system, accounting for approximately 56–60% of annual precipitation, depending on the substrate characteristics. This shift in evapotranspiration processes leads to a significant reduction in net percolation relative to non-vegetated scenarios, thereby enhancing the overall hydraulic performance of the cover system.

All scenarios exhibit minimal changes in storage (2–3%), indicating that the systems reach quasi-steady hydrological behaviour and do not accumulate excess moisture over time.

Net percolation values vary substantially across the different cover system configurations, reflecting the combined influence of material properties and vegetation on downward water flux. In non-vegetated scenarios, net percolation ranges from 3% to 16% of annual precipitation, with the highest values occurring over waste rock due to its relatively higher permeability and lower capacity for evapotranspiration. All vegetated (50% vegetated) covers provide less than 10% Net percolation values. Vegetated systems over CDA tailings and waste rock similarly show substantial reductions, with net percolation decreased to 6% and 7%, respectively. These results indicate that vegetation plays a critical role in limiting seepage and improving the overall hydrological performance of the cover systems, with the most pronounced benefits observed where substrate permeability is inherently higher.

It is important to note that the sum of evaporation, transpiration, and runoff does not always equal 100%, because the cover system can either gain or lose stored water depending on its store-and-release behaviour. When the total percentage (sum of evaporation, transpiration and runoff) exceeds 100%, it indicates that the soil cover is releasing stored water from previous wet periods (i.e., net drainage or desaturation is occurring).

Overall, the results confirm the importance of establishing and maintaining vegetation to minimise seepage, improve moisture management, and support long-term cover system stability.

TABLE 3 : MODELLING RESULTS

Cover System	Average Annual Precipitation (mm/yr)	Runoff (% PPT)	Actual Evaporation (% PPT)	Net Percolation (% PPT)	Actual Transpration (%PPT)	Change in Storage (%)
CDA -No Vegetation	791	0	86	15	0	1
CDA -With Vegetation	791	0	40	6	56	2
RSF- No Vegetation	791	0	98	3	0	1
RSF- With Vegetation	791	0	43	0	60	3
WRE- No Vegetation	791	0	84	16	0	0
WRE- With Vegetation	791	0	40	7	57	4

2 RESULTS AND DISCUSSION

2.1 Water Balance

CHART 8 to **CHART 10** present the annual water balance components of the 1D soil cover model over a 55-year simulation period (from 01/01/1970 to 31/12/2025).

CHART 8 presents the evaporation comparison between the CDA, RSF and WRE results. The cumulative evaporation results show clear differences between cover system materials and the influence of vegetation over the 55-year simulation period. Waste rock exhibits the highest cumulative evaporation, reflecting its coarse and free-draining nature, whereas RSF processing residues show the lowest evaporation due to their finer texture and higher moisture retention. CDA materials display intermediate behaviour. In all cases, vegetated cover systems consistently produce lower cumulative evaporation than non-vegetated systems, as a portion of moisture loss is redirected from evaporation to transpiration. The separation between vegetated and non-vegetated curves remains stable over time, indicating persistent vegetation influence on surface water fluxes. Overall, the results demonstrate that both material characteristics and vegetation have a significant and sustained effect on long-term evaporative performance.

CHART 9 presents net infiltration comparison. The cumulative net infiltration results demonstrate clear differences in hydrological behaviour across the three cover system substrates. RSF processing residues exhibit the lowest net infiltration, reflecting their fine-grained, low-permeability characteristics, with minimal downward flux observed under both vegetated and non-vegetated conditions. CDA materials display intermediate infiltration behaviour, with vegetation providing a moderate but consistent reduction in net infiltration over time. Waste rock shows the highest cumulative infiltration due to its coarse and highly permeable structure, although vegetation still contributes to meaningful reductions in downward water movement. Across all materials, vegetated systems consistently produce lower cumulative infiltration than non-vegetated systems, confirming the critical role of vegetation in reducing percolation and enhancing overall cover system performance.

CHART 10 presents an actual transpiration comparison. The cumulative transpiration modelling indicates that vegetation established over the CDA and WRE covers exhibits the highest transpiration rates, reflecting greater moisture availability within these substrates. Vegetation over the RSF cover shows consistently lower cumulative transpiration, consistent with the finer texture and higher moisture retention properties of tailings, which limit the amount of water accessible to plant roots. All materials display steady, long-term transpiration trends, demonstrating stable vegetation performance and sustained evapotranspirative demand. These results highlight the important role of substrate characteristics in influencing vegetation water use and confirm that transpiration constitutes a major component of the water balance in vegetated cover systems.

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CHART 8: EVAPORATION COMPARISON

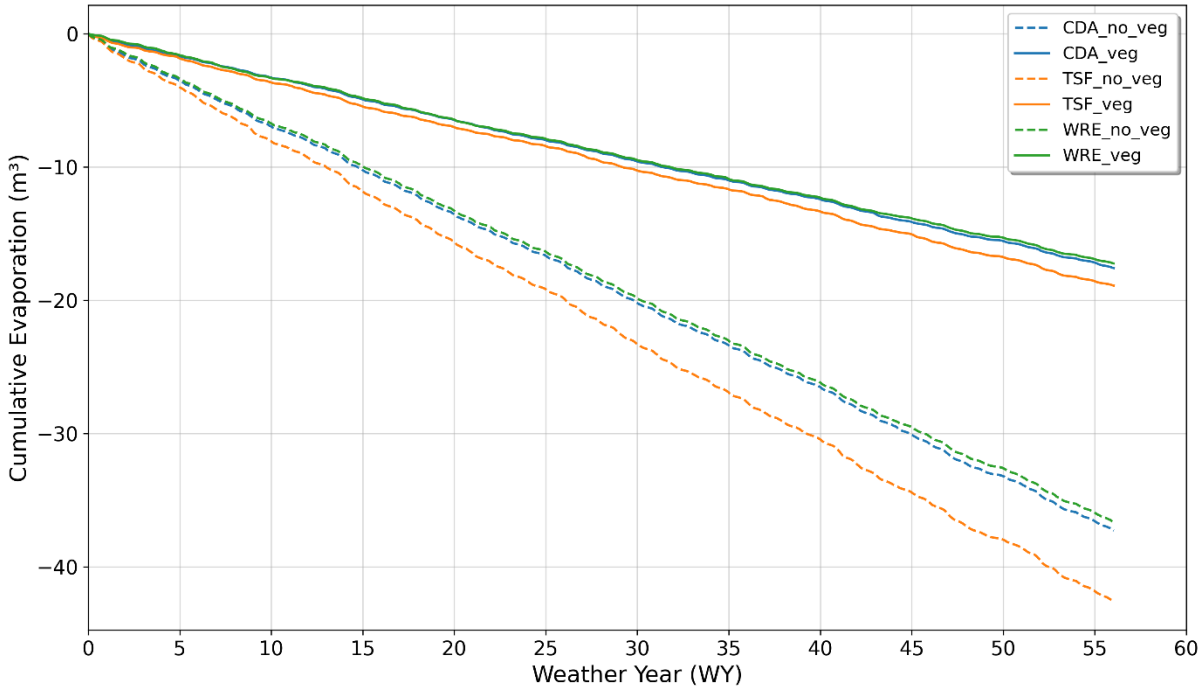


CHART 9: NET INFILTRATION COMPARISON

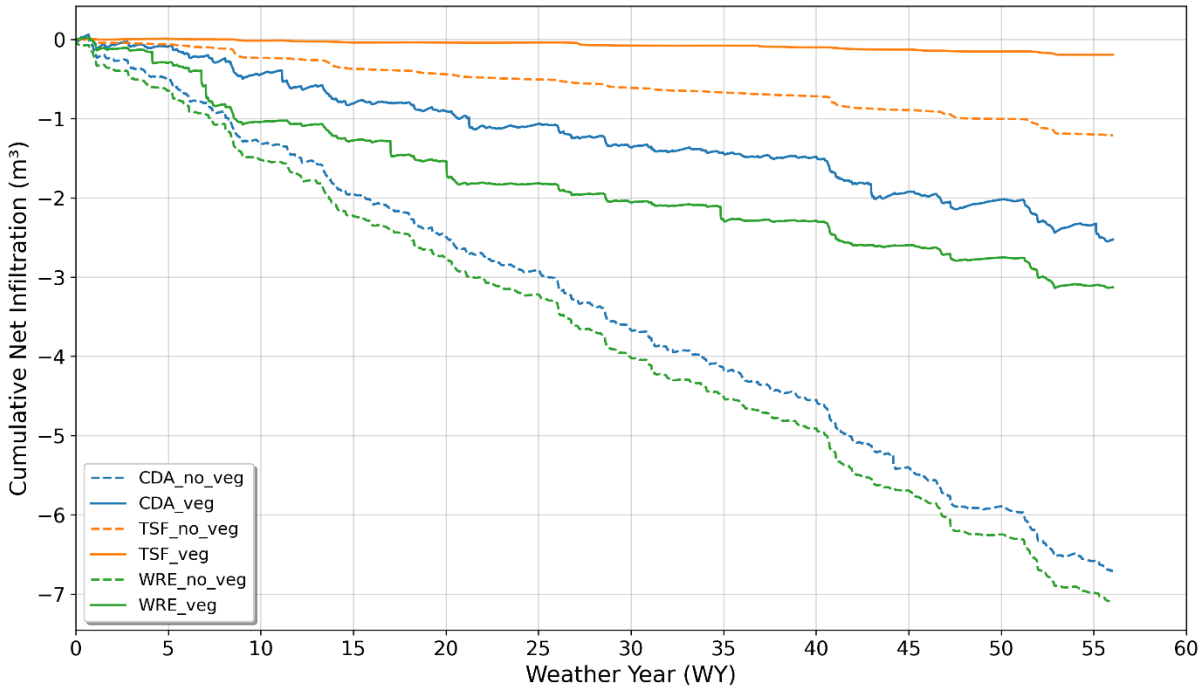
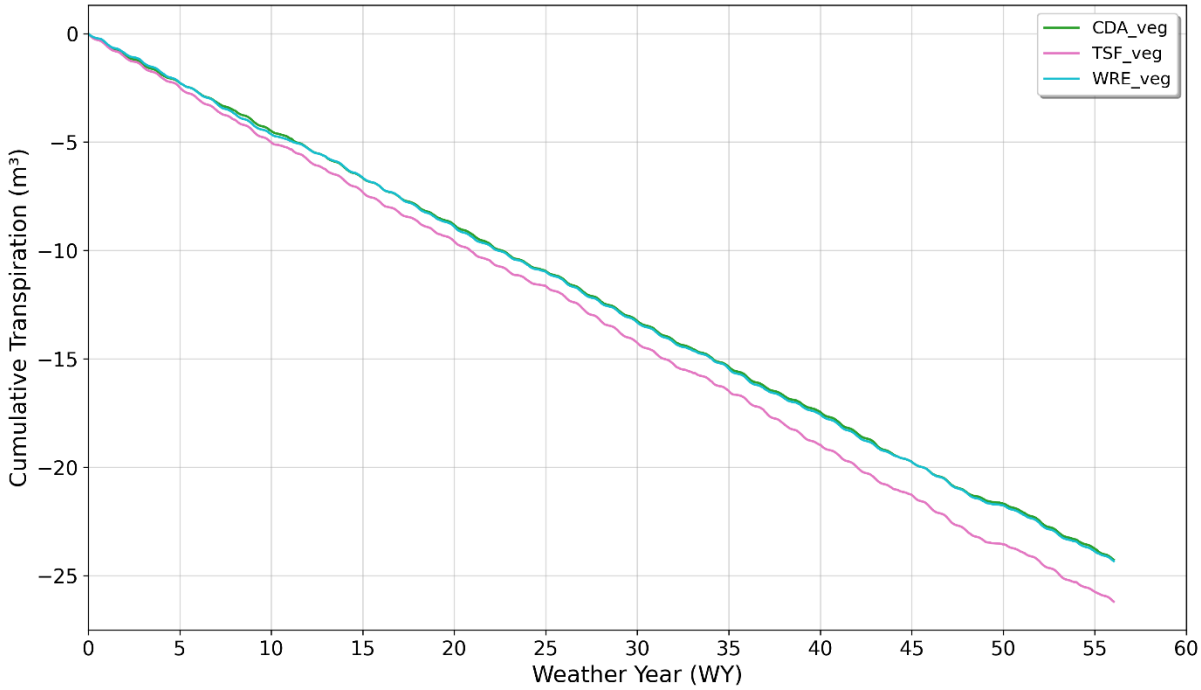


CHART 10: ACTUAL TRANSPIRATION COMPARISON



2.2 Net Percolation

The physical mechanism behind these net percolation responses with no vegetation is illustrated through **CHART 11** to **CHART 13,** which presents DoS and VWC profiles in a timeseries. Under normal weather conditions, the subsoil undergoes wetting and drying cycles, as shown by the alternating red (drying) and blue (wetting) zones. Typically, DoS decreases with depth within the subsoil and reaches approximately 0.3 at the subsoil and CDA and RSF interfaces, while the subsoil remains more saturated. However, WRE is mostly dry and reaches approximately 0.2, while the subsoil reaches the low DoS values for no vegetated scenarios.

The saturation profiles highlight clear contrasts in hydrological performance between the three cover systems. The RSF cover system, supported by a low-permeability layer and a capillary break, provides effective moisture control, with near-constant saturation in the barrier layer and minimal deep infiltration into the underlying processing residues. The CDA cover maintains moderate saturation at depth, with rainfall-induced fluctuations confined mainly to the upper cover layers, reflecting limited but measurable moisture movement. In contrast, the WRE cover system remains predominantly unsaturated, with rapid drainage and deeper wetting front penetration, consistent with its coarse, high-permeability structure.

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CHART 11: DOS TIME SERIES FOR CDA NO VEGETATION

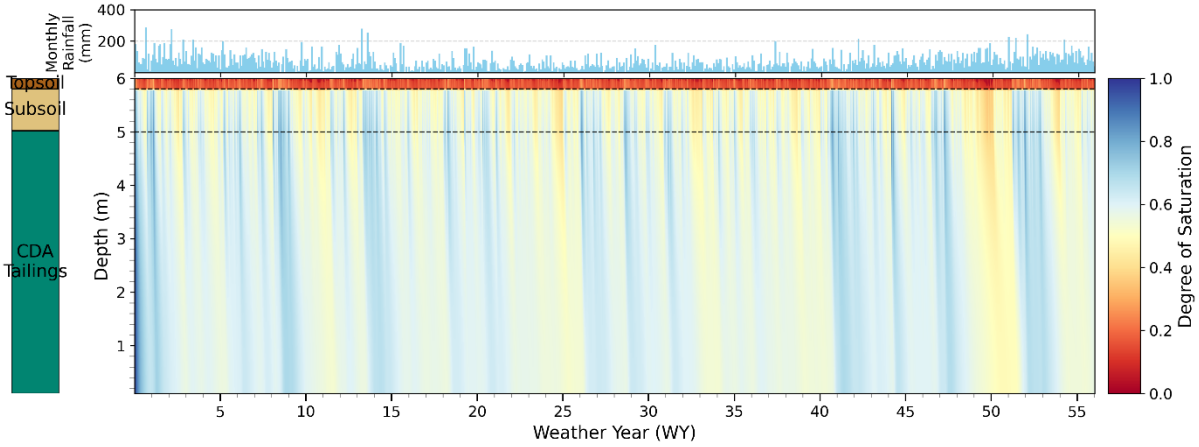


CHART 12: DOS TIME SERIES FOR RSF NO VEGETATION

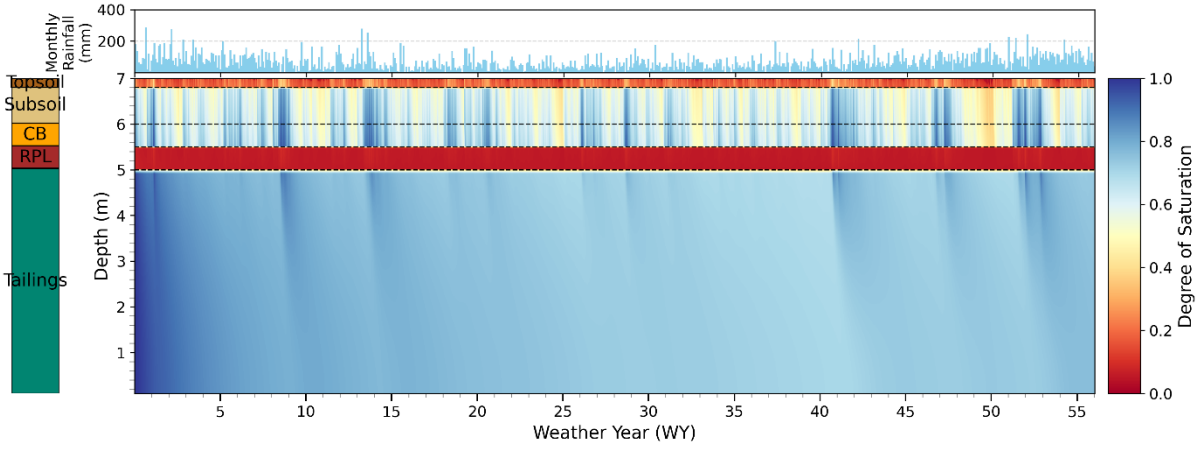
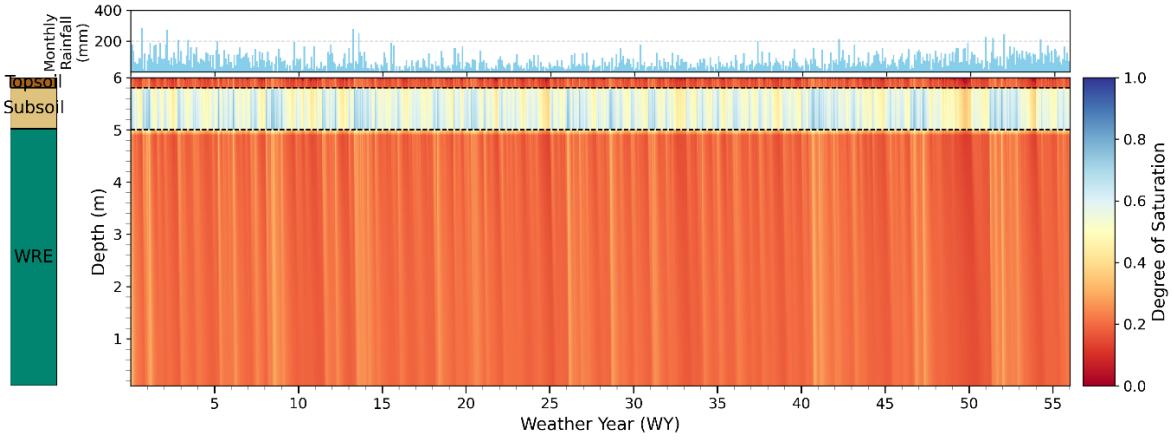


CHART 13: DOS TIME SERIES FOR WRE NO VEGETATION



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CHART 14 to **CHART 16** present DOS timeseries for the CDA, RSF and WRE cover systems with vegetation. The vegetated saturation-profile modelling highlights clear contrasts in the hydrological performance of the three cover systems. The RSF cover system—with its low-permeability layer and capillary break—provides the strongest moisture control, maintaining a stable, saturated barrier layer and preventing deep infiltration into the underlying processing residues. The CDA cover system exhibits intermediate behaviour, with moisture fluctuations largely restricted to the upper cover profile and moderate moisture retention at depth. In contrast, the WRE system remains predominantly unsaturated and responsive to rainfall inputs due to its coarse texture and rapid drainage characteristics. The RSF system demonstrated the better infiltration control, followed by the CDA, and then the WRE.

CHART 14: DOS TIME SERIES FOR CDA WITH VEGETATION

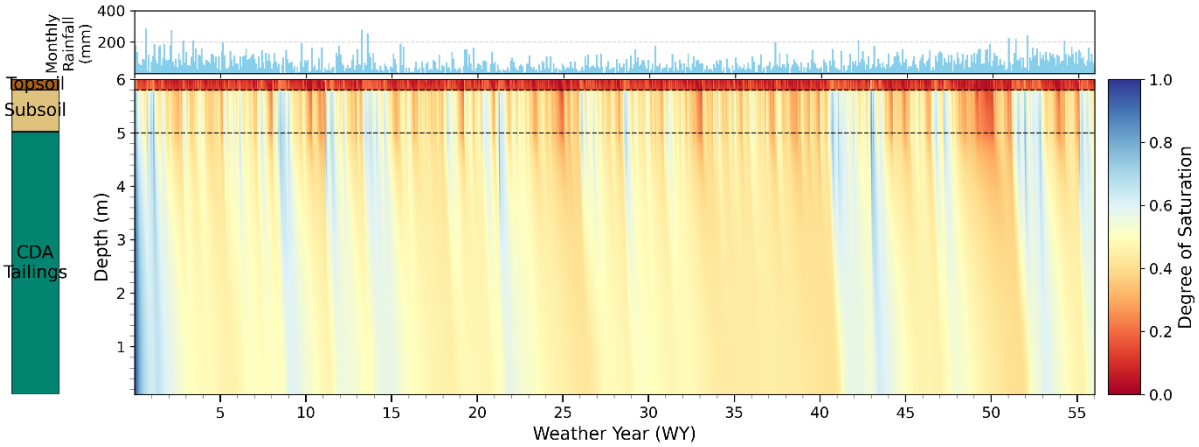
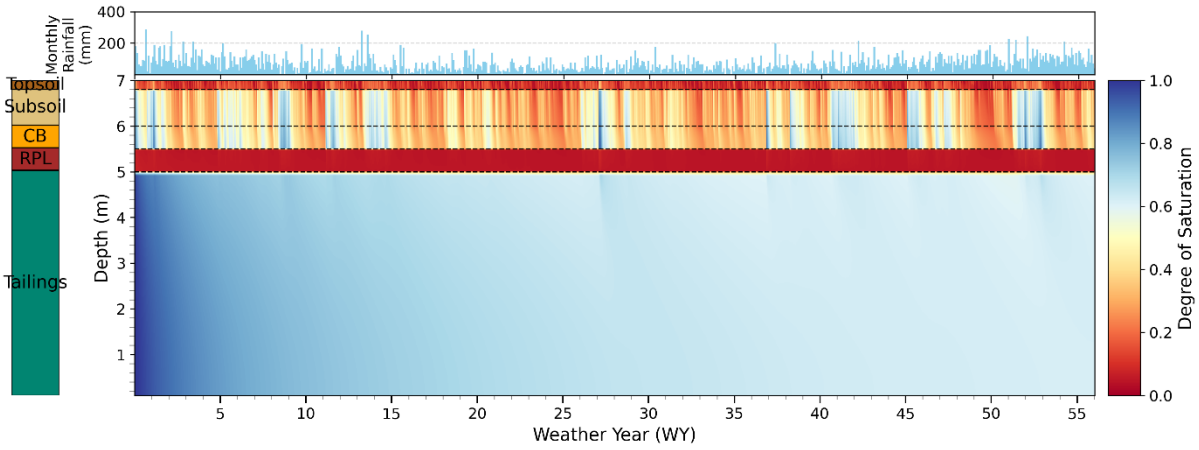
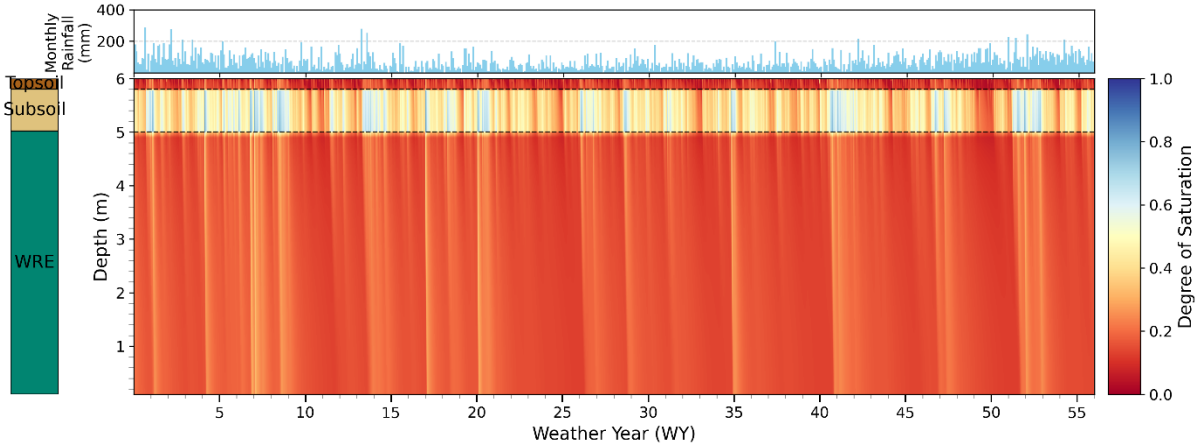


CHART 15: DOS TIME SERIES FOR RSF WITH VEGETATION



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CHART 16: DOS TIME SERIES FOR WRE WITH VEGETATION



2.3 Capillary Rise

The saturation-profile modelling provides clear evidence of how capillary rise influences the moisture distribution within each cover system. In the RSF cover system, the inclusion of a dedicated capillary break (CB) layer effectively restricts upward capillary movement from the underlying tailings, as shown by the persistent low degrees of saturation within the CB layer and the stable, fully saturated low-permeability (RPL) layer beneath it. This demonstrates that the CB layer successfully interrupts capillary continuity, preventing moisture from rising back into the overlying store-and-release zone. This effect is consistent with the water-balance results, where the TSF system exhibits 0% net percolation under vegetated conditions and minimal net infiltration under non-vegetated conditions, indicating a well-controlled vertical moisture regime.

For the CDA cover system, a very small degree of capillary rise is indicated, reflected by moderate and persistent saturation in the mid-depth tailings. However, the depth and magnitude of capillary rise remain limited due to the hydraulic properties of the CDA materials, as evidenced by reduced re-wetting of deeper layers under vegetated conditions and a net percolation reduction from 15% to 6% with vegetation present. Effective vegetation-driven water removal and reduced percolation suggest that downward seepage is sufficiently controlled through natural processes. The inclusion of a low-permeability layer would provide minimal additional benefit, while potentially increasing construction complexity, cost, and long-term maintenance requirements. The observed hydraulic performance demonstrates that the CDA cover system achieves its functional objectives through material selection and vegetation establishment alone, making a low-permeability layer unnecessary.

In contrast, the waste rock (WRE) system exhibits no meaningful capillary rise due to its coarse, freely draining structure and low matric suction capacity. The saturation profiles show persistently low degrees of saturation at depth, and moisture does not migrate upward between rainfall events. This behaviour corresponds with comparatively high net percolation values (16% without vegetation; 7% with vegetation) and deeper wetting-front penetration observed in the water-balance modelling.

Overall, the modelling confirms that capillary rise is effectively controlled where barrier layers are present (RSF), moderately active in fine-textured CDA materials, and negligible in coarse waste rock materials. These findings align directly with the measured infiltration, percolation, and evapotranspiration patterns, reinforcing the importance of substrate hydraulic properties and engineered layers in governing vertical moisture movement within cover systems.

2.4 Monitoring

A monitoring program should support the evaluation and optimisation of the proposed field-scale cover systems for the WRE, CDA and RSF. The program is informed by INAP (2014; 2017) guidance.

INAP emphasises that monitoring should quantify gas, heat, mass, and water balances, improve understanding of controlling processes, provide field data for numerical model calibration, and demonstrate performance to stakeholders. These principles underpin the monitoring framework applied to the Project.

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The monitoring program includes climate observations, soil moisture and suction profiling, seepage and runoff measurement, vegetation performance monitoring, geochemical sampling of porewater and drainage, gas and oxygen diffusion monitoring, and landform stability surveys. Data collected would be used to validate model predictions, support adaptive management, and confirm that the cover systems maintain low infiltration rates, geochemical stability, and long-term structural integrity.

Collectively, these monitoring objectives provide a rigorous framework for planning field-scale trials. They inform the selection of relevant performance indicators, the development of instrumentation strategies, and the establishment of appropriate data collection and evaluation methodologies for the Project.

3 CONCLUSIONS

The combined analysis of water-balance modelling, cumulative fluxes, and long-term saturation behaviour demonstrates that vegetation and substrate properties exert strong control over the hydrological performance of the various cover systems assessed. Across all scenarios, vegetation consistently enhances performance by increasing transpiration and reducing evaporation, resulting in significantly lower net percolation and reduced hydraulic loading on underlying materials.

The RSF cover system, comprising a low-permeability layer and a capillary break, provides the most effective infiltration control. Under vegetated conditions, net percolation is reduced from 3% to 0% of annual rainfall, with the low-permeability layer remaining fully saturated and functioning effectively as a long-term moisture barrier. Saturation-profile modelling confirms stable system behaviour over the full 55-year climate sequence, with wetting fronts consistently prevented from penetrating below the engineered layers.

The CDA cover system exhibits moderate infiltration resistance, with vegetation reducing net percolation from 15% to 6% (a 60% reduction). Vegetation increases drying of the upper cover layers through transpiration, while deeper CDA materials remain moderately saturated and hydraulically stable. This behaviour aligns well with the observed cumulative evaporation, transpiration, and infiltration trends.

When compared with the other cover systems evaluated, the WRE cover system shows the most susceptibility to deep infiltration. This behaviour is consistent with the course-grained, highly permeable, and free-draining nature of the WRE substrate. While vegetation establishment reduces net percolation from 16% to 7%, representing 56% reduction, saturation profiles indicate that minor wetting events are accompanied by rapid drainage. Notwithstanding this behaviour, the WRE cover system relies primarily on vegetation-mediated water-balance processes, which, based on the current assessment, are sufficient to achieve acceptable hydraulic performance and meet the cover system's functional objectives.

Overall, the modelling results clearly demonstrate that:

- Vegetation significantly improves cover system performance, shifting water loss from evaporation to transpiration and reducing deep drainage across all material types.
- Engineered cover systems (RSF) provide superior infiltration control due to the presence of purpose-built barrier layers.
- CDA tailings offer moderate natural moisture retention, with vegetation playing a key role in limiting percolation.
- Waste rock with vegetation, offers sufficient hydraulic performance.

Seepage water quality and geochemical characteristics will be monitored throughout the operational phase in accordance with applicable approval conditions, with results used to periodically review and refine the post-closure risk profile under an adaptive management framework. Information obtained through monitoring will inform the ongoing design and optimisation of closure measures. Consistent with the NSW legislative and regulatory framework, a low-permeability cover system will be designed and implemented as part of closure works, where practicable and where required, to reduce net percolation and manage seepage risks. The base case cover system is intended to support a stable, self-sustaining post-closure landform that minimises long-term environmental impacts.

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APPENDIX D – SEEPAGE ASSESSMENT

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TARONGA TIN PROJECT REGULATORY RESPONSE – SEEPAGE ASSESSMENT

251128-R01-Rev0 – APPENDIX D

May 2026



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B	Revised Draft Issue			
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1 SEEPAGE ASSESSMENT OF STORAGE FACILITIES

1.1 Overview of Seepage Modelling

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the project) in northern New South Wales. The project comprises planned open-cut mining of the Southern and Northern open cut pits with an expected Project-life up to approximately 21 years.

The project would include two Waste Rock Emplacements (Northern and Southern WRE), a Co-Disposal Area (CDA) and a Residue Storage Facility (RSF). Runoff and leachate from both WRE and the CDA would be collected within runoff dams (ROD) that would be situated downslope of each component. In addition, a Mine Water Dam (MWD) would also be constructed downslope of the processing area to act as a runoff dam and the primary balance storage for processing operations.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the NSW Environment Protection Authority (EPA), Resources NSW and the (NSW) Department of Climate Change, Energy, Environment and Water (DCCEEW) provided submissions requesting further details on the management of seepage.

This appendix presents the seepage assessment undertaken by ATC Williams Pty Ltd (ATCW) to support the Technical Services Report addressing the matters raised by the NSW EPA, DCCEEW and Resources NSW **[1][2]**. This seepage assessment utilises site-specific data obtained from the 2025 geotechnical investigation programme. This includes refined stratigraphy, material characterisation and laboratory-derived permeability parameters to improve understanding of subsurface conditions.

The assessment has been undertaken using finite element numerical modelling in GeoStudio 2025.2.0 Seep/W. The modelling considers steady state conditions to evaluate phreatic surface development and seepage behaviour under full capacity scenarios for the RSF, MWD and ROD while transient conditions were applied to the seepage modelling of WRE's and CDA. The following methodology was adopted to achieve the objectives of seepage assessment:

- Development of models based on the planned landforms and expected boundary conditions.
- Update to foundation material and hydraulic properties based on the results of ATCW 2025 site investigation.
- Seepage assessment using SEEP/W (Finite Element) under steady-state and transient conditions to evaluate:
  - Possible interaction of seepage with the groundwater
  - The toe seepage at the critical sections
  - Assessment of seepage for the ROD's and MWD

1.1.1 Adopted Scenarios and Parameters

Based on the stratigraphy identified during the test pit excavations described in **ATTACHMENT 1,** the following materials have been assigned to the foundation of each facility:

- Northern WRE Run-Off Dam (Northern WRE ROD) and Northern WRE: Low to medium plasticity CLAY
- Southern WRE Run-Off Dam (Southern WRE ROD) and Southern WRE: Medium to high plasticity CLAY
- Co-Disposal Area (CDA): silty SAND
- Co-Disposal Area Run-Off Dam (CDA ROD): silty SAND
- Residue Storage Facility (RSF): silty SAND
- Mine Water Dam (MWD): silty SAND

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It should be noted that no interaction of the phreatic surface with the groundwater was modelled in the seepage assessments as no groundwater was observed during the fieldwork as stated in **ATTACHMENT 1.**

A steady state and transient conditions for seepage assessment was undertaken for each facility under the following four scenarios:

1. No HDPE Geomembrane liner and No subgrade excavation (No Mitigation Scenario)
2. No HDPE Geomembrane liner and subgrade excavation (Minimal Mitigation Scenario)
3. HDPE Geomembrane liner and subgrade excavation (Full Mitigation Scenario)

ATCW has undertaken the assessment of seepage design based on the updated hydraulic conductivity values of foundation soils in the models. The permeability parameters adopted for each material including the updated values for the foundation materials per each facility are presented in **TABLE 1.**

TABLE 1: PERMEABILITY PARAMETERS

Material	Hydraulic Model	Horizontal Permeability (m/s)	K_h/K_v	Facility
HDPE Geomembrane	Saturated Only	1.0×10^{-14}	1.0	All Facilities
Embankment Clay Fill	Saturated/Unsaturated	5.0×10^{-8}	1.0	ROD, MWD and RSF
Embankment Rock Fill	Saturated/Unsaturated	1.0×10^{-5}	1.0	ROD, MWD and RSF
Transition Rock Fill	Saturated/Unsaturated	1.0×10^{-5}	1.0	RSF
Weathered Basement	Saturated Only	5.0×10^{-8}	1.0	All Facilities
Tailings	Saturated/Unsaturated	1.0×10^{-8}	0.1	RSF
Foundation Soils	Saturated/Unsaturated	4.68×10^{-10}	1.0	Southern WRE
	Saturated/Unsaturated	1.64×10^{-5}	1.0	Northern WRE
	Saturated/Unsaturated	2.30×10^{-6}	1.0	RSF
	Saturated/Unsaturated	4.56×10^{-5}	1.0	CDA
	Saturated/Unsaturated	1.70×10^{-6}	1.0	MWD

1.1.2 Boundary Conditions

The boundary conditions applied to the different materials of the seepage model under steady and transient conditions for each facility are presented in **TABLE 2.** A schematic visualisation of the boundary conditions for each of the facilities assessed is presented in **ATTACHMENT 2**.

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TABLE 2: BOUNDARY CONDITIONS APPLIED TO SEEPAGE MODELS

Boundary Condition	Model Condition	Description
CDA ROD Total Head	Water Total Head	Fixed at 763.3 m
MWD Total Head	Water Total Head	Fixed at 812.88 m
RSF Total Head	Water Total Head	Fixed at 836 m
Northern WRE ROD Total Head	Water Total Head	Fixed at 803.4 m
Southern WRE ROD Total Head	Water Total Head	Fixed at 792.87 m
Downstream (DS) Boundary Condition	Water Total Head	Downstream boundary water level
Potential Seepage Face	Water Flux	Potential seepage face enabled on downstream slope/toe
Northern and Southern WRE's and CDA 15% Infiltration	Water Flux	Potential Infiltration due to precipitation
Zero Pressure	Water Pressure Head	Zero pore pressure boundary (atmospheric)

2 ASSESSMENT OUTCOMES

The seepage assessments have been conducted following the updates to the permeability values of the foundation materials based on ATCW (2025) geotechnical investigation. The following seepage mitigation scenarios were adopted in the assessments to inform recommended mitigations:

1. No mitigation: No HDPE liner and no subgrade excavation.
2. Minimal Mitigation: No HDPE liner with subgrade excavation.
3. Full mitigation: Implementation of both a HDPE liner and subgrade excavation.

2.1 Waste Storage Facilities

A summary of the seepage assessment results for the RSF, CDA, N-WRE, and S-WRE is presented in **TABLE 3.**

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TABLE 3: SUMMARY OF ASSESSMENT RESULTS FOR WASTE STORAGE FACILITIES

Facility	Seepage Risk	No HDPE Liner and No Subgrade Excavation (Scenario 1)	No HDPE Liner and Subgrade Excavation (Scenario 2)	HDPE Liner and Subgrade Excavation (Scenario 3)
RSF	**Downstream Toe Seepage Face**	24 L/d/m	47 L/d/m	0.01 L/d/m
	Basal Seepage	1.18 L/d/m^2	1.10 L/d/m^2	0.00004 L/d/m^2
CDA	**Downstream Toe Seepage Face**	1.08 L/d/m	0.45 L/d/m	1.19 L/d/m
	Basal Seepage	0.05 L/d/m^2	0.03 L/d/m^2	0.03 L/d/m^2
Northern WRE	**Downstream Toe Seepage Face**	0.11 L/d/m	0.30 L/d/m	1.84 L/d/m
	Basal Seepage	0.034 L/d/m^2	0.044 L/d/m^2	0.033 L/d/m^2
Southern WRE	**Downstream Toe Seepage Face**	1.01 L/d/m	1.33 L/d/m	1.01 L/d/
	Basal Seepage	0.0071 L/d/m^2	0.03 L/d/m^2	0.02 L/d/m^2

The results in **Table 3** suggest that the following percentages of the 3.75 × 10^{-9} m/s infiltration rate equal to 0.32 L/d/m^2 are projected as basal seepage underneath each of the facilities when no mitigation is in place:

- CDA basal seepage under Scenario 1 is equal to 15% of the infiltration flux
- N-WRE basal seepage under Scenario 1 is equal to 9% of the infiltration flux
- S-WRE basal seepage under Scenario 1 is equal to 2% of the infiltration flux

It should be noted that the total inflow for each facility was calculated based on the 15% infiltration rate of 3.75 × 10^{-9} m/s and the corresponding length at the top of each waste area in accordance with the annual rainfall reported in Appendix C of the report. The seepage rates at the downstream toe of each facility under each scenario as a percentage of the total inflow are presented in **TABLE 4.** The low percentages of outflow at the downstream toe confirm the effectiveness of basal drains.

Basal seepage represents the average flux through the selected basal reporting section in the two-dimensional model and is reported in L/day/m². Downstream toe seepage represents the modelled outflow through the downstream seepage face and is reported in L/day per metre length of facility. These values represent steady-state or nominated transient model outputs and are not directly interchangeable with total facility seepage volumes unless multiplied by the relevant reporting area or facility length.

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TABLE 4: PERCENTAGE OF TOE SEEPAGE PROPORTIONATE TO TOTAL INFLOW

Facility	Total Inflow at the Top of the Waste Material based on 15% Infiltration	Scenario	Outflow at Downstream Toe as Percentage of Total Inflow
Northern WRE	178 L/d	Scenario 3	1.03%
		Scenario 2	1.52%
		Scenario 1	0.06%
Southern WRE	172 L/d	Scenario 3	0.59%
		Scenario 2	0.77%
		Scenario 1	0.59%
CDA	243 L/d	Scenario 3	0.43%
		Scenario 2	0.27%
		Scenario 1	0.63%

2.2 Water Storage Facilities

A summary of the seepage assessments for RODs and MWD is presented in **TABLE 5**. The seepage rates are presented in L/d/m^2 for basal flux and L/d/m for flow rate at the downstream toe as follows:

- Basal seepage: cross section along the X-axis, i.e., the footprint of the facilities
- Downstream toe seepage: The flow rate against time perpendicular to the cross section

TABLE 5:SUMMARY OF SEEPAGE ASSESSMENT FOR ROD'S

Facility	Seepage Risk	No HDPE Liner and No Subgrade Excavation	No HDPE Liner and Subgrade Excavation	HDPE Liner and No Subgrade Excavation
Northern WRE ROD	**Downstream Toe Seepage Face**	95.04 L/d/m	12.36 L/d/m	0.0002 L/d/m
	Basal Seepage	0.33 L/d/m^2	0.31 L/d/m^2	0.00009 L/d/m^2
Southern WRE ROD	**Downstream Toe Seepage Face**	13.13 L/d/m	15.55 L/d/m	0.00011 L/d/m
	Basal Seepage	0.54 L/d/m^2	0.45 L/d/m^2	0.00019 L/d/m^2
MWD	**Downstream Toe Seepage Face**	275 L/d/m	277 L/d/m	0.0005 L/d/m
	Basal Seepage	0.007 L/d/m^2	0.18 L/d/m^2	0.00018 L/d/m^2
CDA ROD	**Downstream Toe Seepage Face**	181 L/d/m	173 L/d/m	0.000010 L/d/m
	Basal Seepage	0.25 L/d/m^2	0.25 L/d/m^2	0.000038 L/d/m^2

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3 DETAILED SEEPAGE ASSESSMENT RESULTS

The following sections present interpretation of the seepage assessment outcomes for each facility under the adopted mitigation scenarios. The discussion focuses on the relative influence of foundation permeability, seepage mitigation measures and basal drainage performance on predicted seepage behaviour.

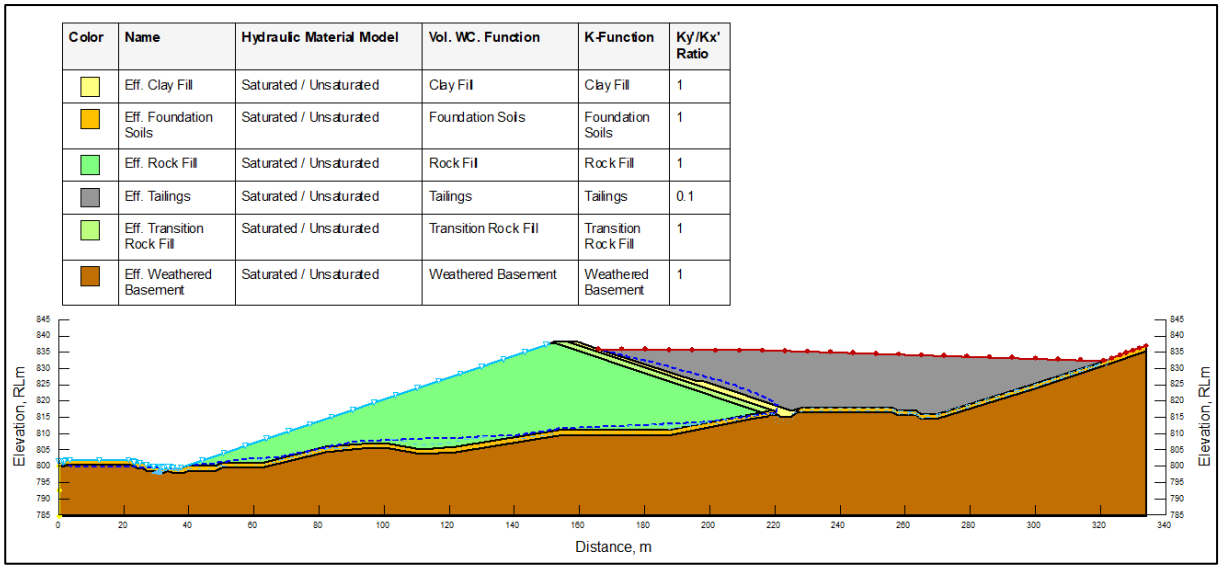
Based on the adopted scenarios outlined in **Section 1.1.1**, the results of seepage assessments under the different scenarios are presented in the following sections for each of the facilities. The assessment outcomes for other scenarios are presented in the **ATTACHMENT 1** to this appendix. Models were developed based on cross sections from the IFR drawings (Results presented in **TABLE 3**).

3.1 Waste Storage Facilities

3.1.1 Residue Storage Facility

Considerable variation in seepage path is observed when the model is updated based on the increased permeability of the silty SAND foundation to k= 2.30 × 10^{-6} m/s compared to the conceptual value of 5 × 10^{-8} m/s as shown in **DIAGRAM 1.**

DIAGRAM 1: PHREATIC SURFACE UNDER NO MITIGATION MEASURES (RSF)



The basal seepage in the absence of any seepage mitigation measures, i.e., Scenario 1, is equal to 1.18 L/d/m^2. A similar basal seepage of 1.10 L/d/m^2 is predicted under Scenario 2, “No HDPE and Subgrade Excavation”. However, basal seepage drops to a water flux equal to 4.2 × 10^{-5} L/d/m^2 when mitigation measures including both the HDPE liner installation and subgrade excavation are adopted, i.e. Scenario 3 as presented in **DIAGRAM 2** and the plot of flux section in **DIAGRAM 3.**

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DIAGRAM 2: PHREATIC SURFACE WITH THE HDPE LINER INSTALLED (RSF)

Color	Name	Hydraulic Material Model	Vol. WC. Function	K-Function	Ky'/Kx' Ratio	Sat Kx (m/sec)
	Eff. Clay Fill	Saturated / Unsaturated	Clay Fill	Clay Fill	1	
	Eff. Foundation Soils	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	Eff. Tailings	Saturated / Unsaturated	Tailings	Tailings	0.1	
	Eff. Transition Rock Fill	Saturated / Unsaturated	Transition Rock Fill	Transition Rock Fill	1	
	Eff. Weathered Basement	Saturated / Unsaturated	Weathered Basement	Weathered Basement	1	
	HDPE Geomembrane	Saturated Only			1	1e-14

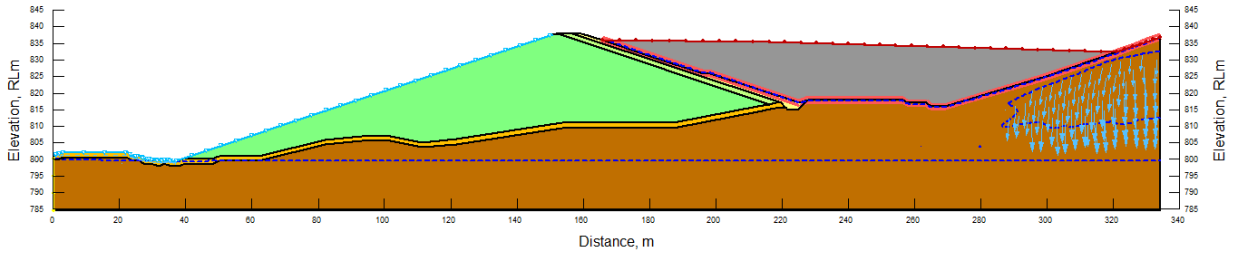
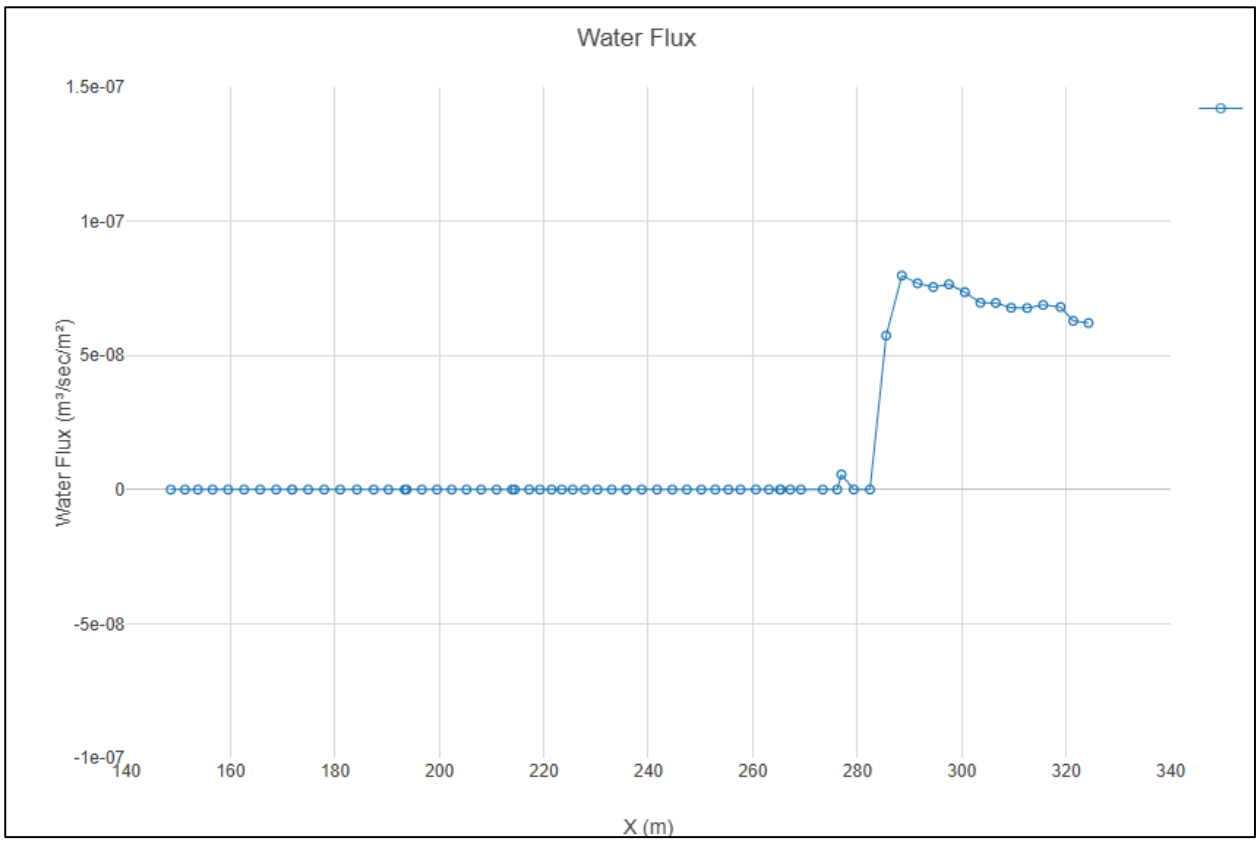


DIAGRAM 3: PLOT OF BASAL FLUX FOR RSF UNDER SCENARIO 3

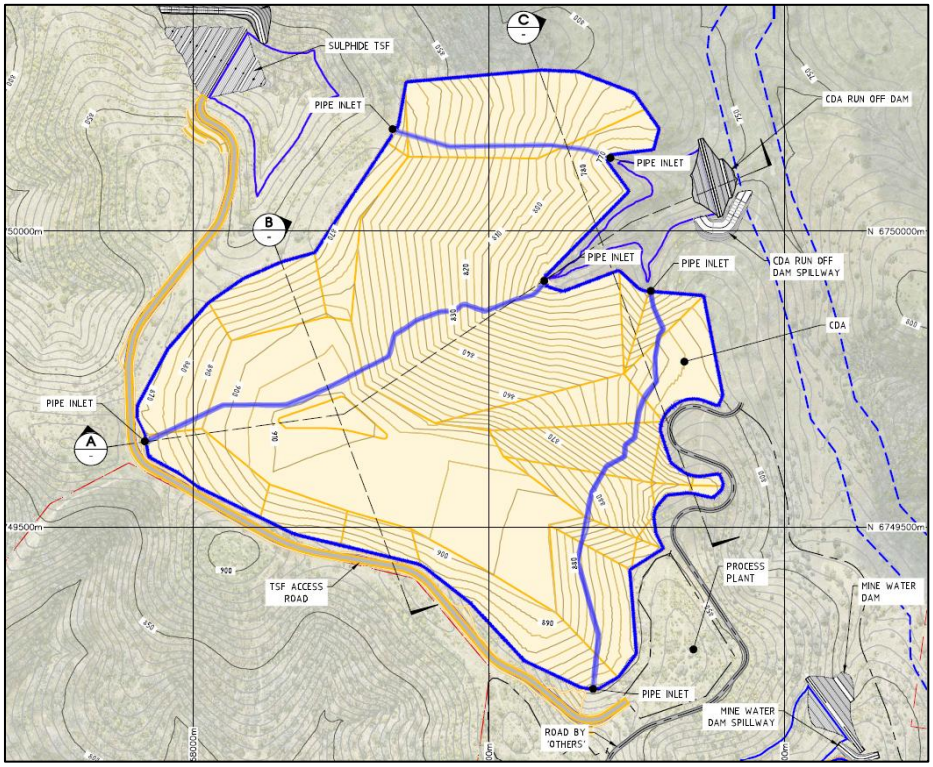


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3.1.2 Co-Disposal Area

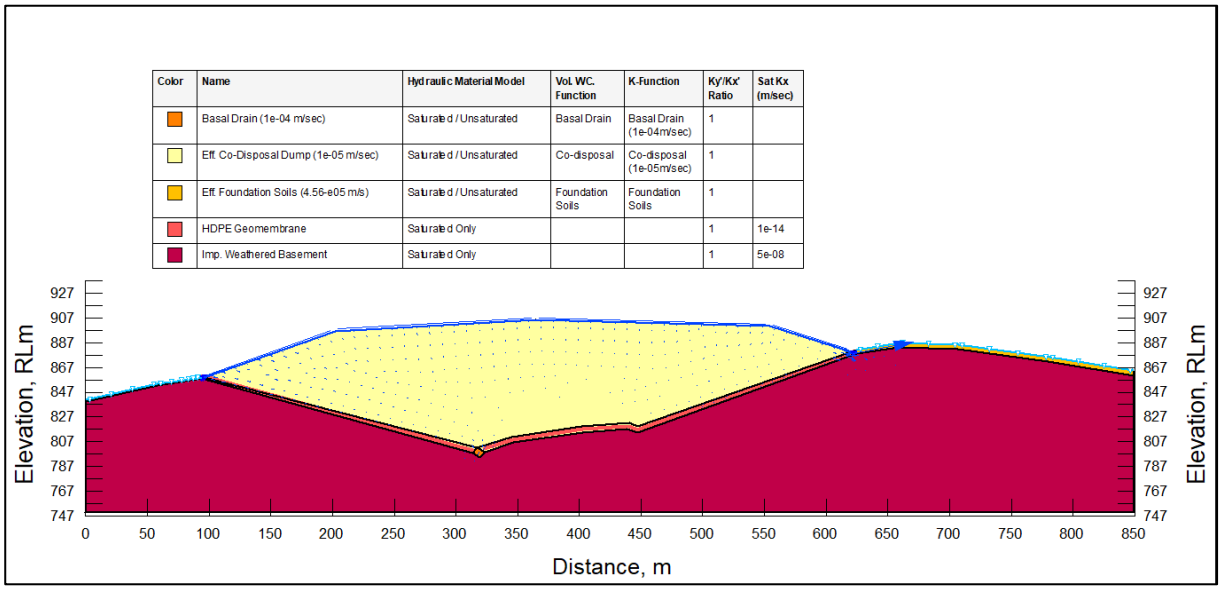
The model for the CDA was developed based on cross section B shown in the IFR layout plan in **DIAGRAM 4.**

DIAGRAM 4: PLAN VIEW OF CDA



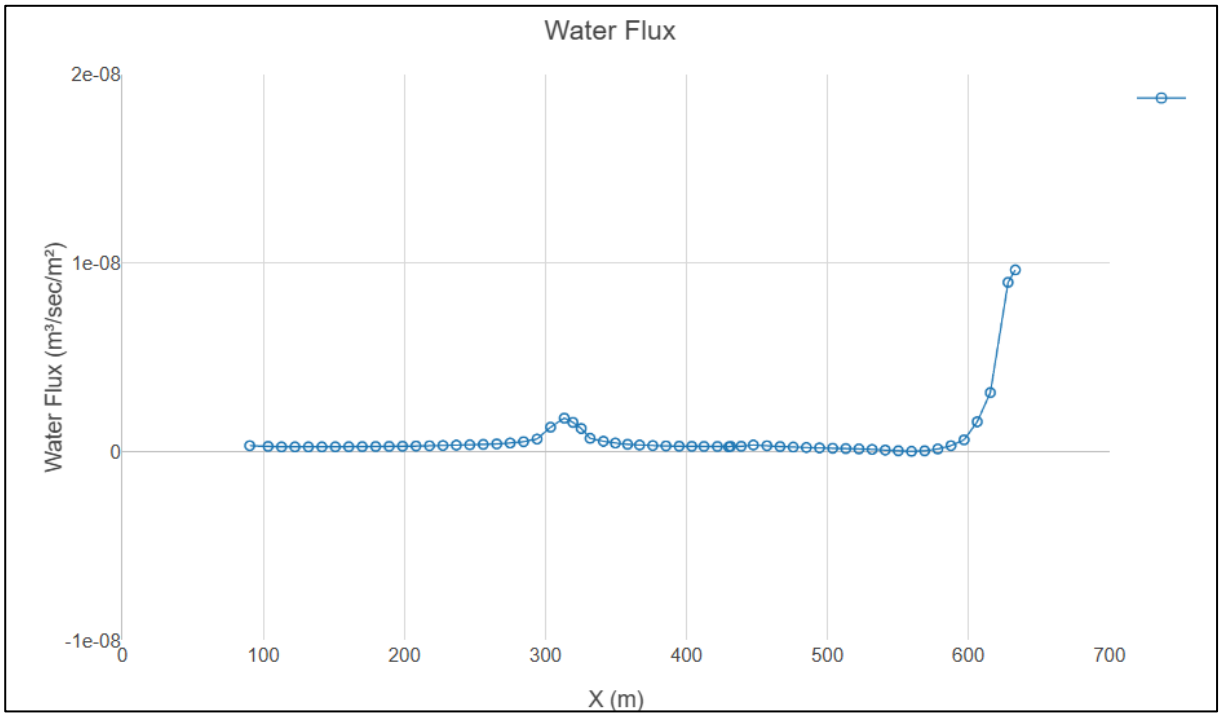
The permeability of mixed processing residues placed in the CDA with a basal drain was conservatively assumed to be 1 × 10^{-5} m/s. The basal seepage in the absence of any seepage mitigation measures, i.e., Scenario 1, is equal to 0.05 L/d/m^2. A similar basal seepage of 0.03 L/d/m^2 was observed under both “No HDPE and Subgrade Excavation”, i.e. Scenario 2 as well as “HDPE liner and Subgrade Excavation” i.e., Scenario 3 when exposed to 15% infiltration as shown in **DIAGRAM 5.** The plot for flux section for basal seepage under Scenario 3 is presented in **DIAGRAM 6.**

DIAGRAM 5: PHREATIC SURFACE UNDER SCENARIO 3 (CDA)



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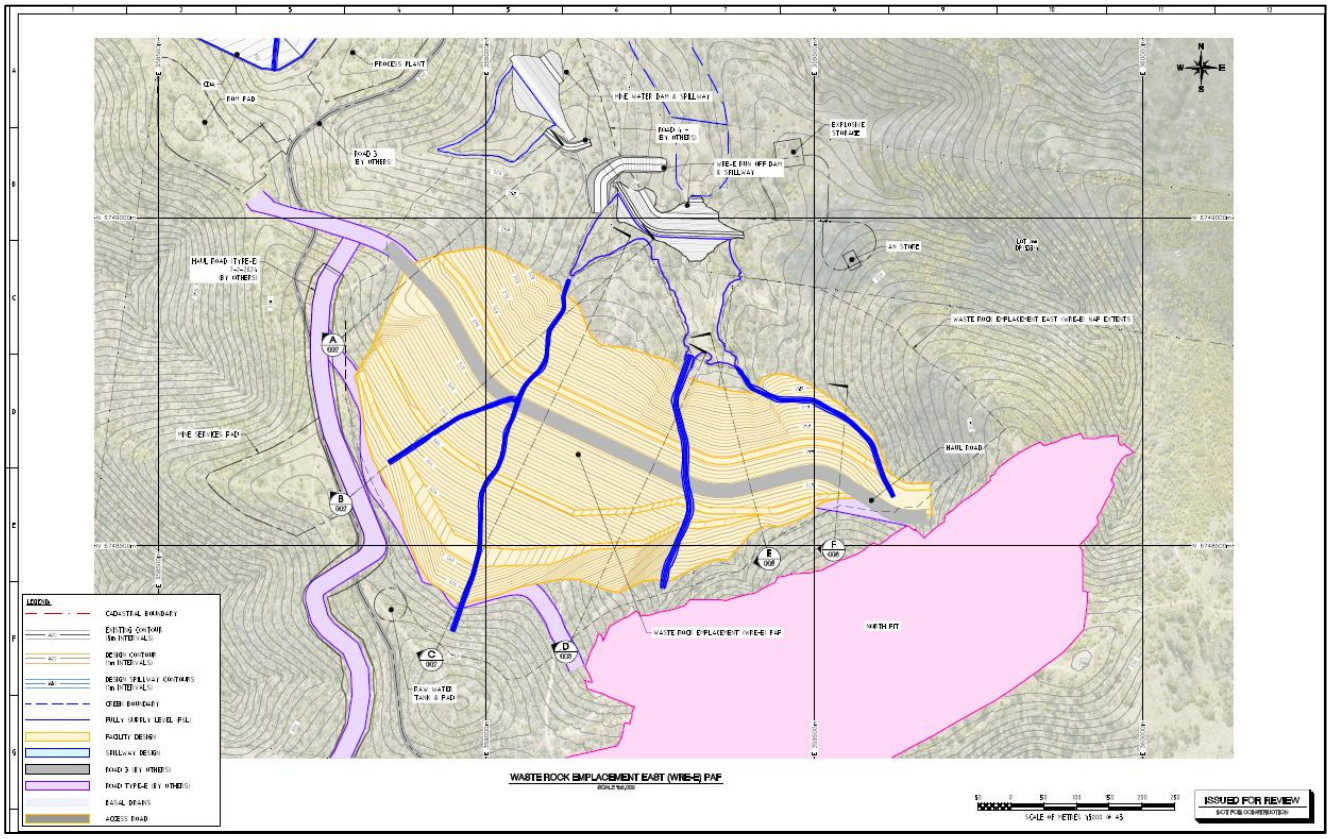
DIAGRAM 6: PLOT OF BASAL FLUX FOR CDA UNDER SCENARIO 3



3.1.3 Northern WRE

The model for Northern WRE model developed based on cross section B which intersects the basal drains at two locations as shown in the IFR drawing presented in **DIAGRAM 7.**

DIAGRAM 7: PLAN VIEW OF NORTHERN WRE AREA [3]



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The result of seepage assessment for the Northern WRE footprint under the Scenario 3 i.e., "HDPE liner and Subgrade Excavation" suggests seepage flux of 0.04 L/d/m^2 with the observed flow rate at the downstream seepage face equal to 1.84 L/d/m as shown in **DIAGRAM 8.** The plot for basal flux section under Scenario 3 is presented in **DIAGRAM 9.** This is a similar basal seepage to both Scenario 1 (no mitigation measures) equal to 0.034 L/d/m^2, and Scenario 2 (No HDPE and Subgrade Excavation) equal to 0.044 L/d/m^2, However, the flow rates at the downstream seepage faces are slightly less for Scenarios 1 and 2 equal to 0.11 L/d/m and 0.30 L/d/m respectively.

DIAGRAM 8: PHREATIC SURFACE UNDER SCENARIO 3 (NORTHERN WRE)

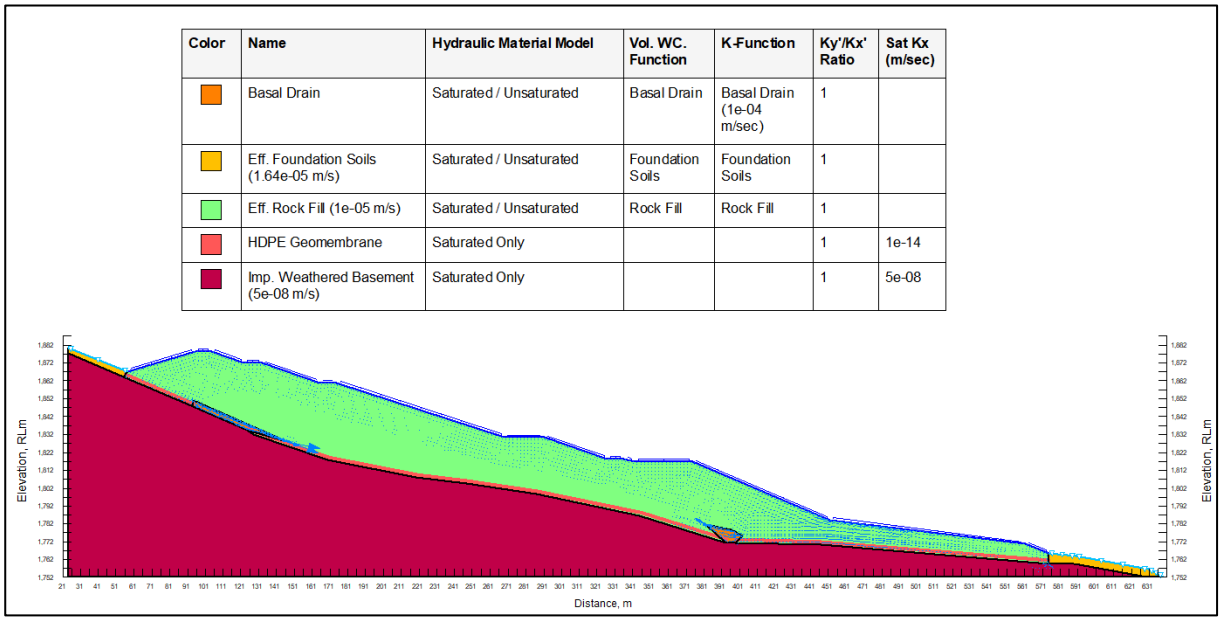
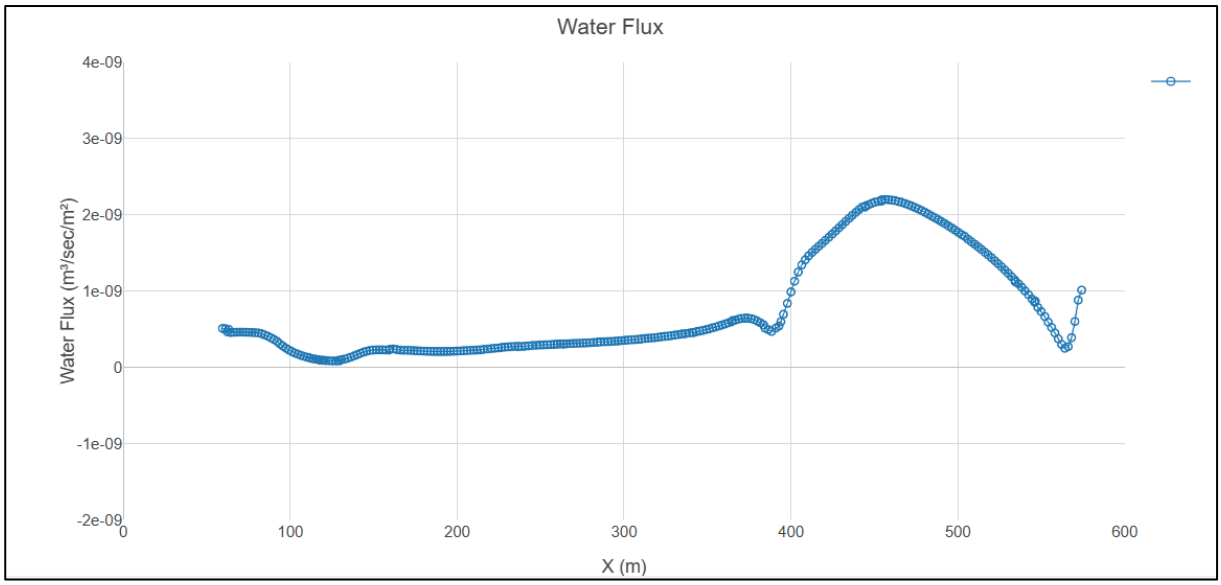


DIAGRAM 9: PLOT OF BASAL FLUX FOR N-WRE UNDER SCENARIO 3

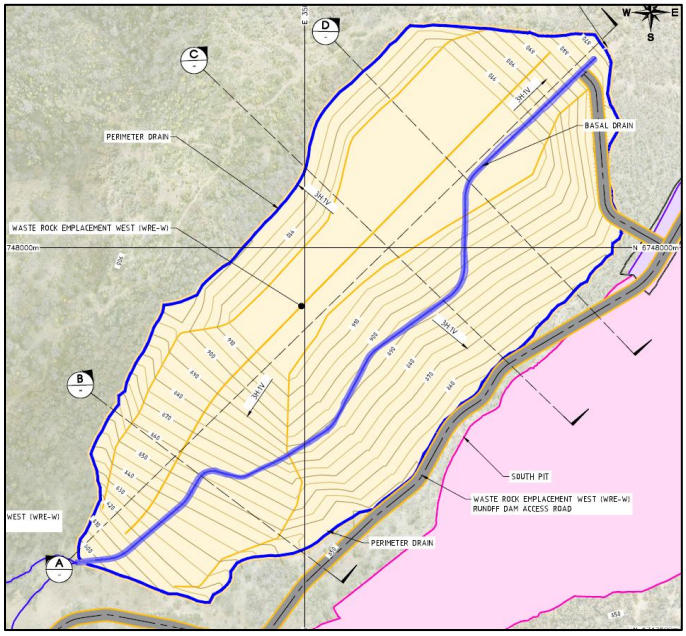


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3.1.4 Southern WRE

The model for the Southern WRE model was developed based on cross section D which intersects the basal drain at one location as shown in the layout plan presented in **DIAGRAM 10.**

DIAGRAM 10: LAYOUT PLAN OF S-WRE



The result of seepage assessment for the Southern WRE footprint under Scenario 3 i.e., “HDPE liner and Subgrade Excavation” suggests basal seepage of 0.02 L/d/m^2 while magnitude of flow rate at the downstream toe is equal to 1.01 L/d/m as shown in **DIAGRAM 11.** The flux section plot for basal seepage under Scenario 3 is presented in **DIAGRAM 12.** This is a similar basal seepage to Scenario 2 (No HDPE and Subgrade Excavation) equal to 0.03 L/d/m^2 and greater than Scenario 1 (no mitigation measures) equal to 0.0071 L/d/m^2, attributed to the existing low permeability of the substrate material. Flow rates at the downstream seepage faces are similar for Scenarios 1 and 2 equal to 1.01 L/d/m and 1.33 L/d/m respectively.

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DIAGRAM 11: PHREATIC SURFACE UNDER SCENARIO 3 (SOUTHERN WRE)

Color	Name	Hydraulic Material Model	Vol. WC. Function	K-Function	Ky'/Kx' Ratio	Sat Kx (m/sec)
	Basal Drain	Saturated / Unsaturated	Basal Drain	Basal Drain (1e-04 m/sec)	1	
	Eff. Foundation Soils (4.68e-10 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	HDPE Geomembrane	Saturated Only			1	1e-14
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08

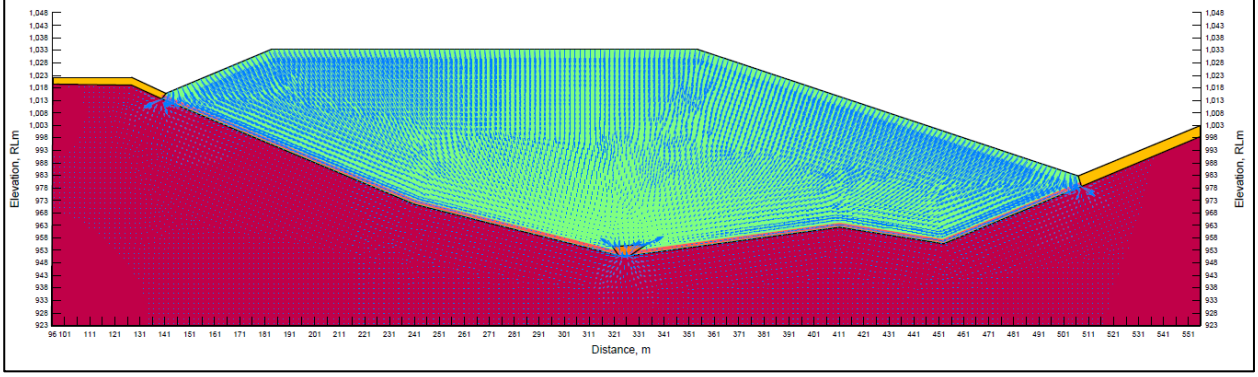
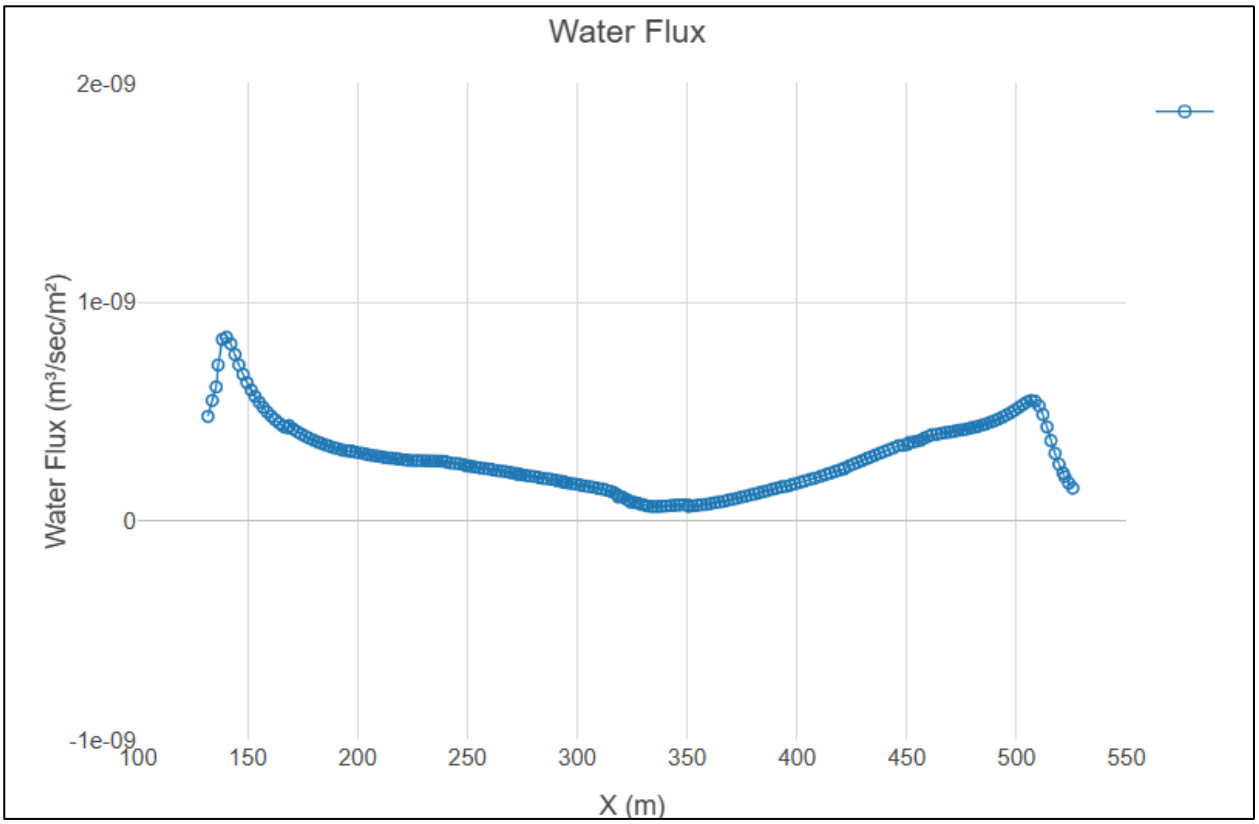


DIAGRAM 12: PLOT OF BASAL FLUX FOR S-WRE UNDER SCENARIO 3



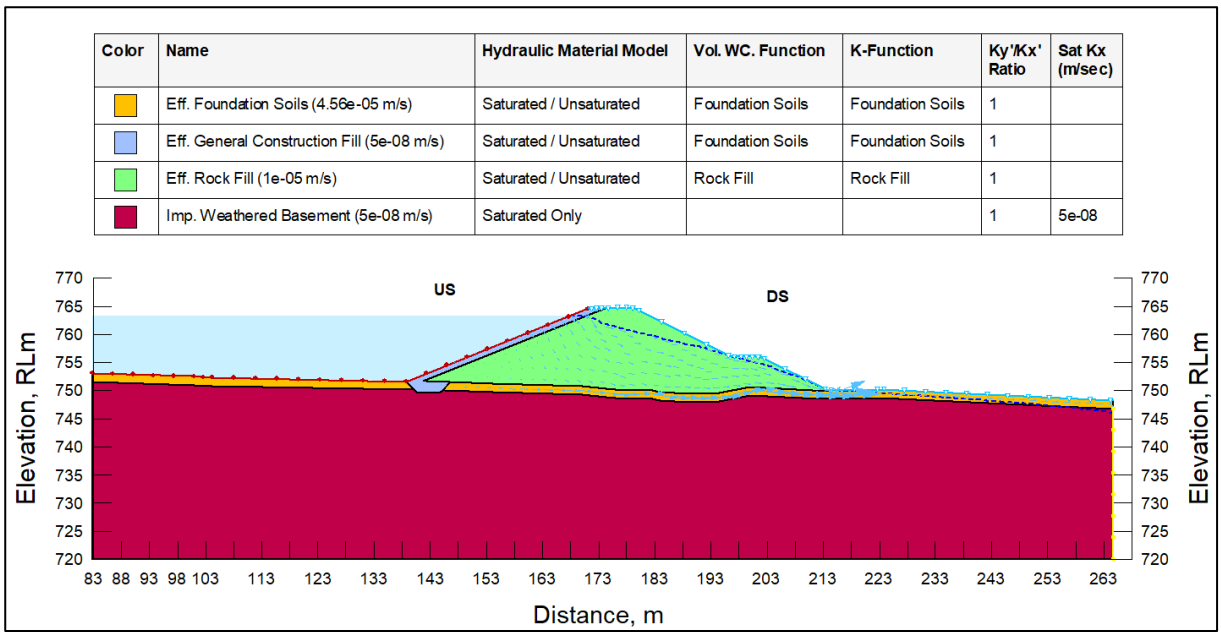
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3.2 Water Storage Facilities

3.2.1 Co-Disposal Area Run Off Dam

The increased permeability of the foundation from the conceptual value of 5 × 10^{-8} m/s to 4.56 × 10^{-6} m/s has resulted in a higher phreatic surface as shown in **DIAGRAM 13**. Basal seepage flux equal to 0.25 L/d/m^2 is observed in the model when no mitigation measures are in place.

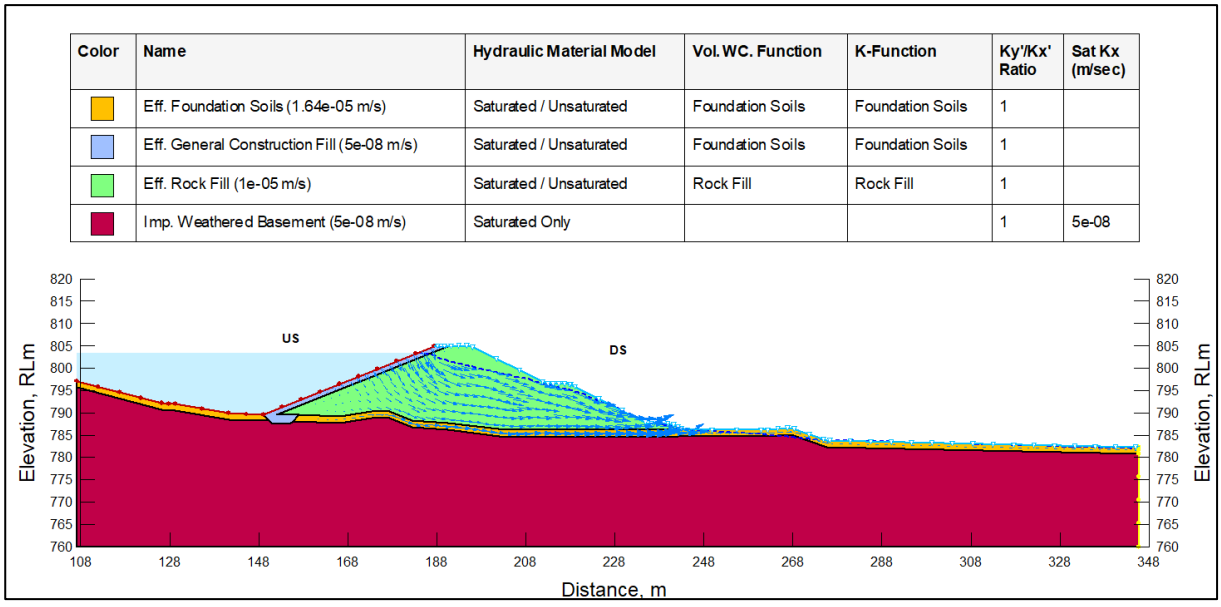
DIAGRAM 13: PHREATIC SURFACE UNDER NO MITIGATION MEASURES (CDA-ROD)



3.2.2 Northern WRE ROD

The phreatic surface for Northern WRE ROD based on the updated permeability value of the foundation material is presented in **DIAGRAM 14.**

DIAGRAM 14: PHREATIC SURFACE UNDER NO MITIGATION MEASURES (N-WRE-ROD)



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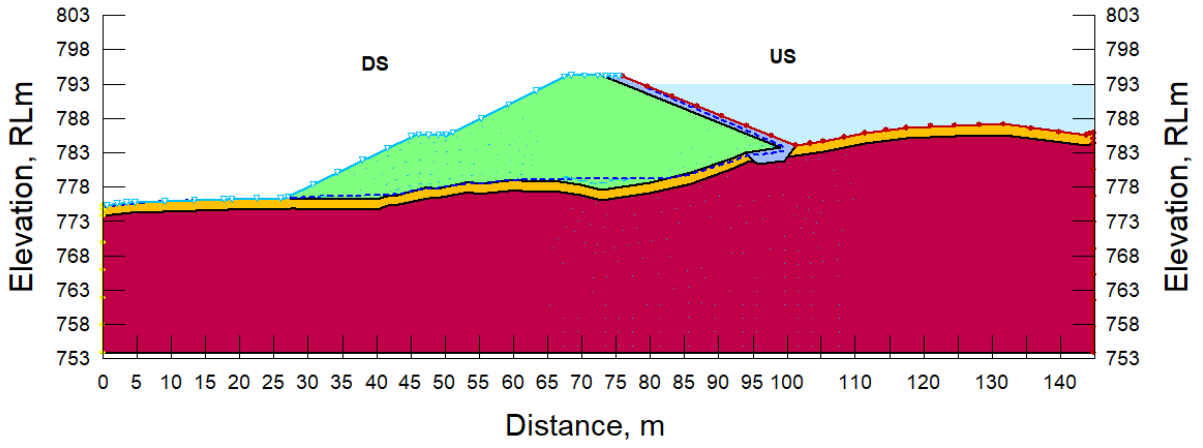
The rise of the phreatic surface in **DIAGRAM 14** is due to increased permeability of the foundation material from the conceptual value of 5×10^{-8} m/s to 1.64×10^{-5} m/s. This has resulted in saturation of a larger portion of the embankment and higher water flux equal to 95.04 L/d/m through the downstream seepage face. Basal seepage of 0.33 L/d/m^2 is observed when no mitigation measures are adopted.

3.2.3 Southern WRE ROD

The phreatic surface for the Southern WRE ROD based on the updated permeability value of the foundation material is presented in **DIAGRAM 15.** The lower permeability of the clayey foundation ($k=4.68 \times 10^{-10}$ m/s) compared to the Northern WRE in **DIAGRAM 15** has resulted in a longer seepage path along the interface of the foundation and the weathered basement. Basal seepage flux of 0.54 L/d/m^2 is observed in the model without any seepage mitigation measure in place.

DIAGRAM 15:PHREATIC SURFACE UNDER NO MITIGATION MEASURES (S-WRE-ROD)

Color	Name	Hydraulic Material Model	Vol. WC. Function	K-Function	Ky'/Kx' Ratio	Sat Kx (m/sec)
	Eff. Foundation Soils (4.68e-10 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. General Construction Fill (5e-08 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fil (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08

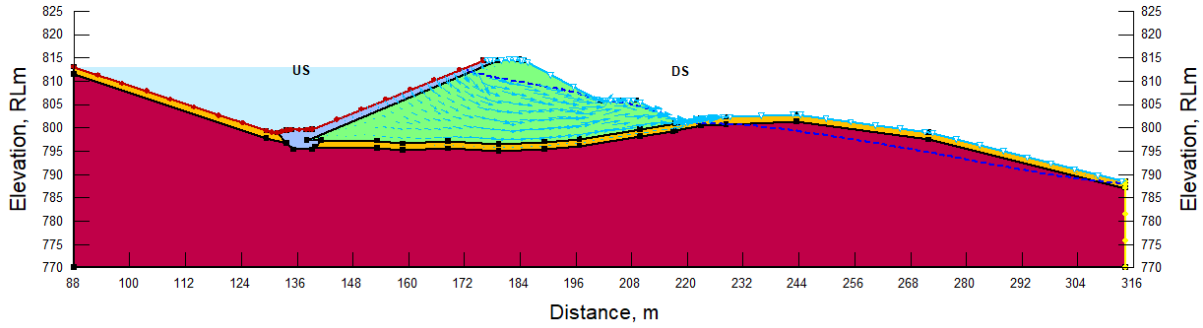


3.2.4 Mine Water Dam

For the Mine Water Dam, the increased permeability of the foundation material from the conceptual value of 5×10^{-8} m/s to 1.70×10^{-6} m/s has resulted in a higher phreatic surface as shown in **DIAGRAM 16.** The basal seepage occurs with an average water flux of 0.007 L/d/m^2 when no mitigation measures are adopted.

DIAGRAM 16: PHREATIC SURFACE UNDER NO MITIGATION MEASURES (MWD)

Color	Name	Hydraulic Material Model	Vol. WC. Function	K-Function	Ky'/Kx' Ratio	Sat Kx (m/sec)
	Eff. Foundation Soils (1.70e-06 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. General Construction Fill (5e-08 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08



4 DISCUSSION AND CONCLUSION

4.1 ROD's, MWD and RSF

The seepage assessment results for ROD's, RSF and MWD presented in **TABLE 3** and **TABLE 5** suggest the following:

- Limited sensitivity to subgrade excavation was observed for the RODs and MWD, with the HDPE liner providing the primary seepage control mechanism for reduction of basal and downstream toe seepage rates.
- The lined scenarios demonstrated a significant reduction in seepage relative to the unlined condition, confirming the effectiveness of the proposed seepage mitigation measures.

The updates to EIS design recommendations for management of seepage at ROD's and MWD are presented in **TABLE 6.**

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TABLE 6: MITIGATION RECOMMENDATIONS FOR ROD'S AND MWD

Facilities	Recommended Mitigation Measure
RSF	• Installation of HDPE Geomembrane liner with thickness of 2mm and hydraulic conductivity of 1×10^{-14} m/s under the internal storage area and on the upstream embankment face to limit seepage losses. • Subgrade excavation is not recommended for the RSF. • Installation of seepage collection sumps at the downstream toe of the embankment.
ROD's including • Southern WRE ROD • Northern WRE ROD • CDA ROD	• Installation of compacted clay liner with equivalent hydraulic conductivity of 5×10^{-8} m/s on the upstream embankment face and keyed into substrate to limit seepage losses combined with installation of HDPE Geomembrane liner. Alternatively, the compacted clay liner may be installed to provide an equivalent (or lower) hydraulic conductivity of 1×10^{-9} m/s over 1m to limit seepage losses. • Installation of an engineered liner under the internal water storage area (either a HDPE Geomembrane or compacted clay liner) to provide an equivalent (or lower) hydraulic conductivity of 1×10^{-9} m/s over 1m. • The seepage assessments indicate that subgrade excavation does not provide a material reduction in seepage rates for these facilities and is therefore not considered necessary as a primary seepage mitigation measure. • Installation of seepage collection sumps at the downstream toe of the embankment to intercept and manage any localised seepage.
MWD	

4.2 WRE's and CDA

The seepage assessment results for WRE's and CDA presented in **TABLE 4** suggest the following common outcomes:

- The seepage assessment results for the WREs and CDA indicate that seepage behaviour is primarily controlled by foundation permeability conditions and the performance of the basal drainage systems.
- The Northern WRE, which has comparatively permeable foundation materials ($k = 1.64 \times 10^{-5}$ m/s), demonstrated increased downstream toe seepage rates under the HDPE liner and subgrade excavation scenario.
- In contrast, the Southern WRE is founded on lower permeability clayey materials ($k = 4.68 \times 10^{-10}$ m/s) and demonstrated greater sensitivity to subgrade excavation due to removal of naturally low permeability foundation soils that contribute to seepage containment.
- The modelled flux / effective seepage for Scenarios 1 and 2 ranged from 0.0071 L/d/m^2 (8.22×10^{-11}) to 0.05 L/d/m^2 (5.79×10^{-10}) under the modelled conditions.
- Overall, the modelling indicates that the basal drainage systems provide the primary seepage control mechanism for the WREs and CDA by limiting seepage migration beneath the facilities and directing seepage toward controlled drainage pathways.

The updates to EIS design recommendations for management of seepage at WRE's and CDA are presented in **TABLE 7.**

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TABLE 7: MITIGIATION RECOMMENDATIONS FOR WRE'S AND CDA

Facilities	Recommended Mitigation Measure

• **WRE's including**
  – Southern WRE
  – Northern WRE
• **CDA**
	• Based on the assessment outcomes, seepage mitigation for the WREs and CDA may be adequately managed through the adopted basal drainage system without the requirement for HDPE or engineered liner installation (Scenario 1 or 2).
	• Basal drains shall be constructed as per the IFR drawings to limit any potential interaction with underlying groundwater.
	• The seepage assessment has been undertaken using a conceptual hydraulic conductivity value of 5×10^{-8} m/s for the underlying basement rock. During construction, exposed foundation conditions should be inspected and permeability testing undertaken where considered necessary to confirm consistency with the adopted seepage model assumptions.
	• Where field conditions differ materially from the adopted design assumptions, additional seepage mitigation measures, including placement of low permeability materials, should be considered as part of detailed design and construction verification.

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REFERENCES

[1] NSW Resources, 'ADVICE RESPONSE: Taronga Tin Project Stage: Environmental Impact Statement Development Application: SSD- 74389710', Nov. 04, 2025.

[2] NSW EPA, 'EPA Advice on Environmental Impact Statement – Taronga Tin Mine – SSD-74389710', Nov. 04, 2025.

[3] ATC Williams, 'Taronga Mine: Feasibility Study - Waste Rock Emplacements Design Summary', 115146-09-M005Rev0, March 2024.

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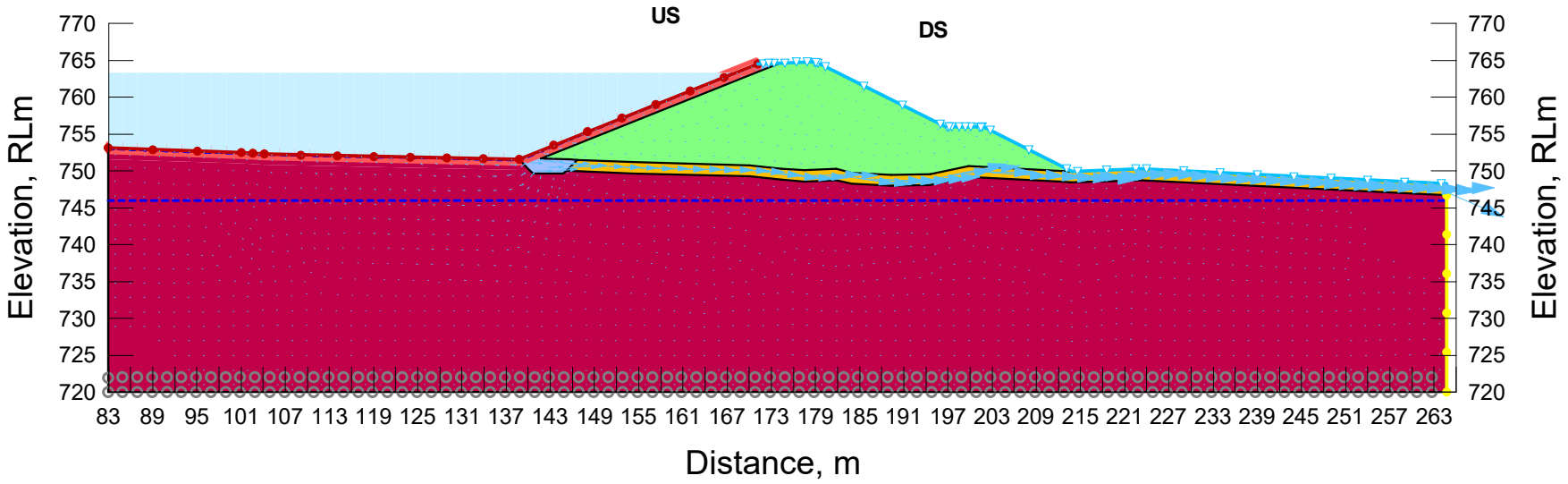
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ATTACHMENT 1 SEEPAGE ASSESSMENT RESULT

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	Eff. General Construction Fill (5e-08 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	HDPE Geomembrane	Saturated Only			1	1e-14
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08



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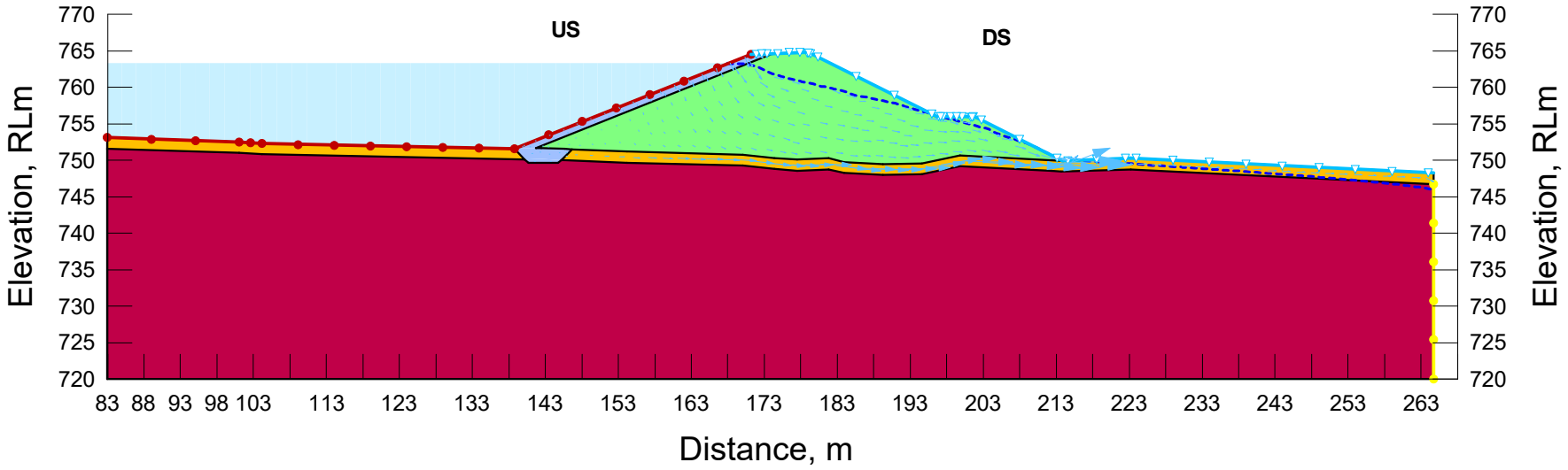
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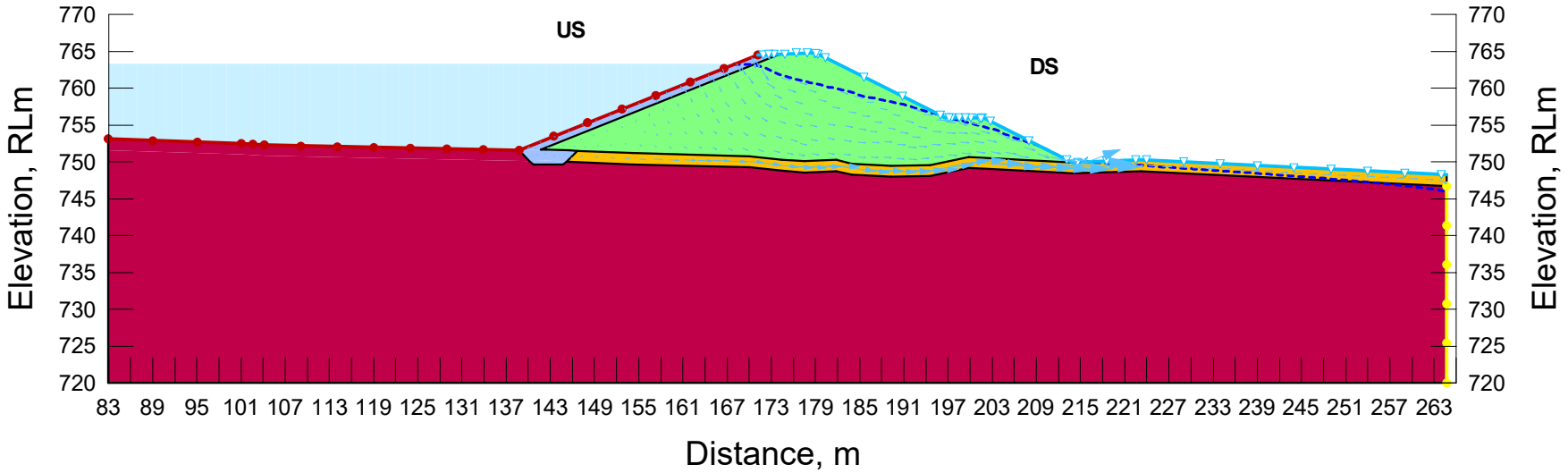
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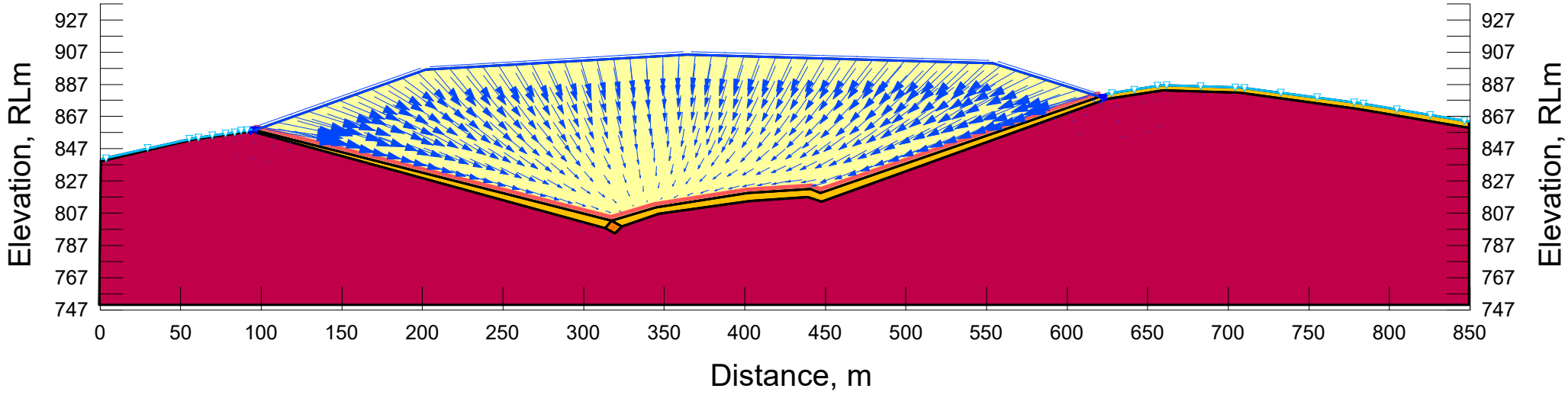
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	HDPE Geomembrane	Saturated Only			1	1e-14
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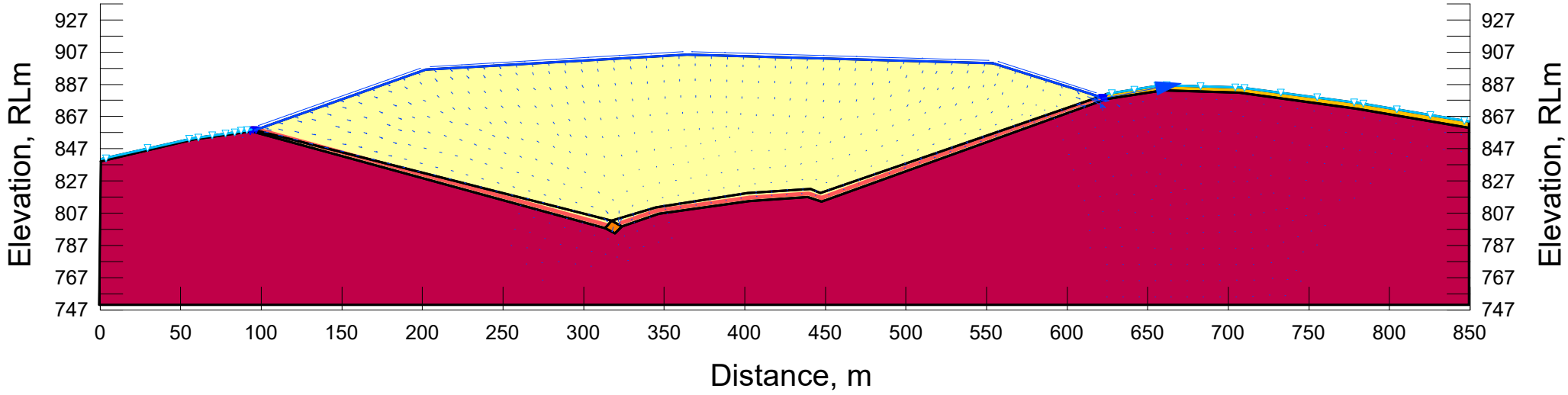
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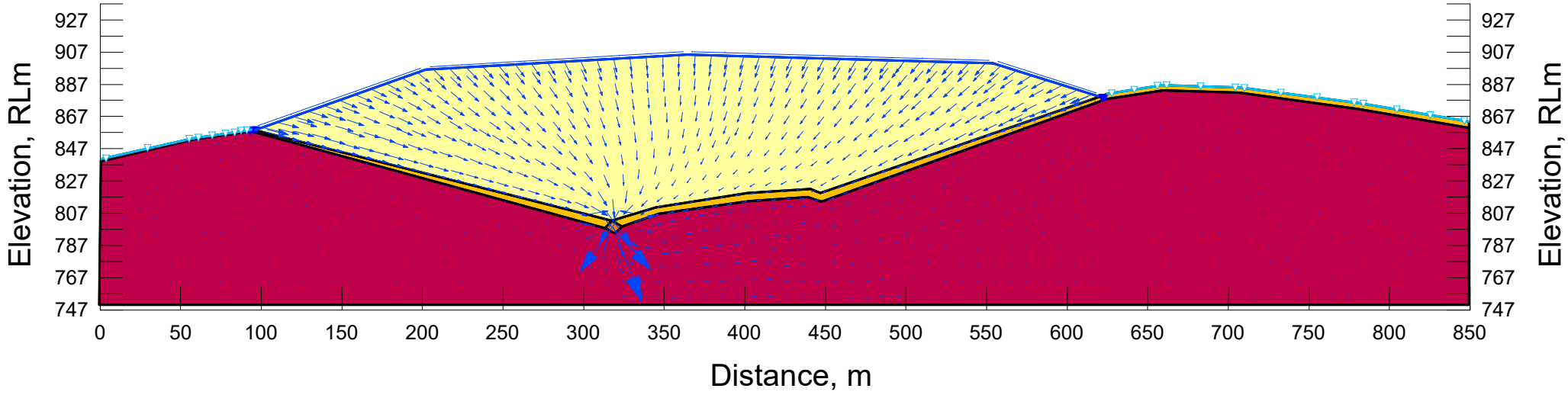
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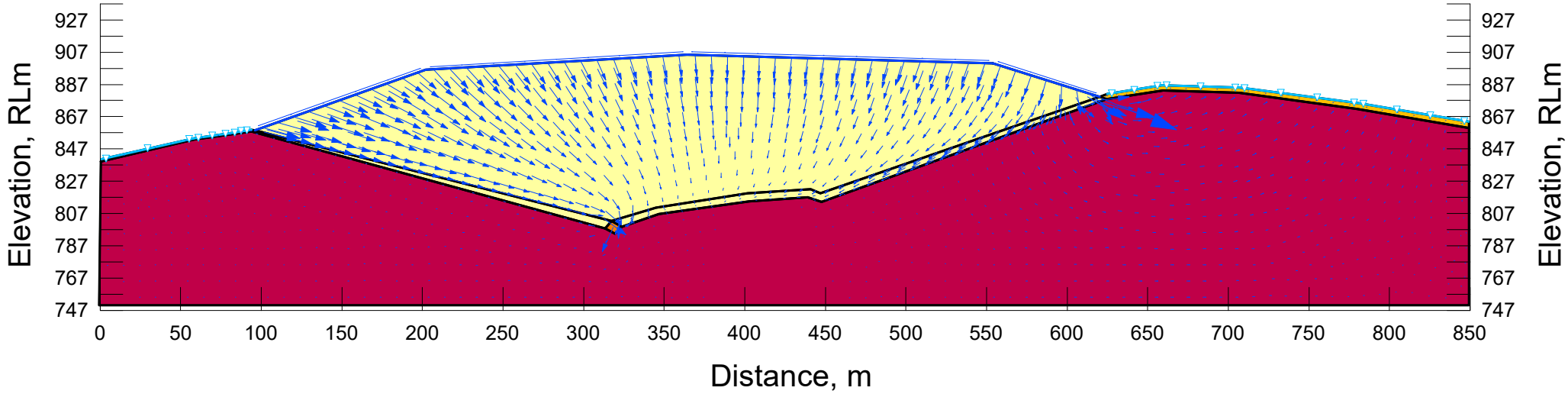
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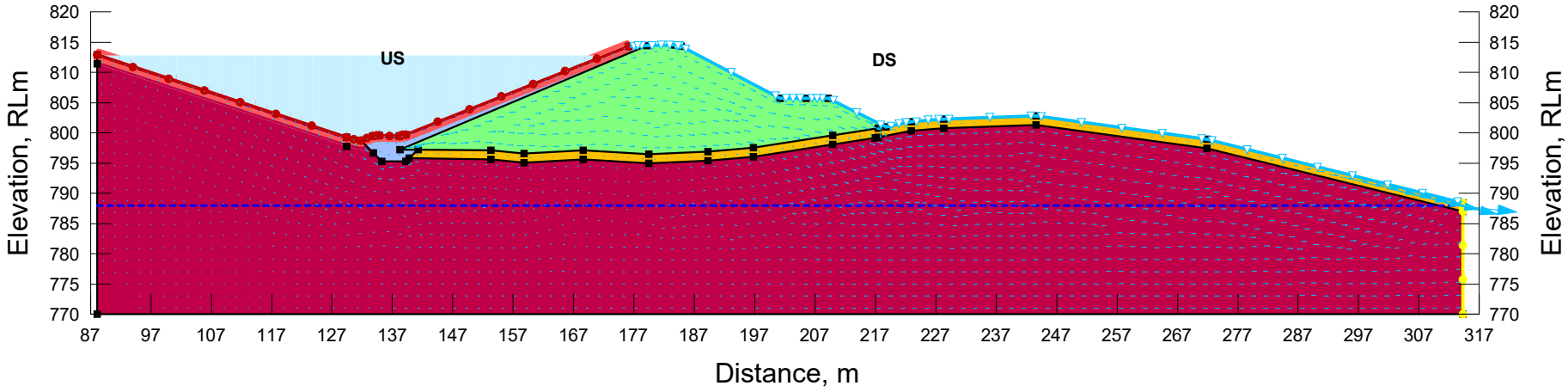
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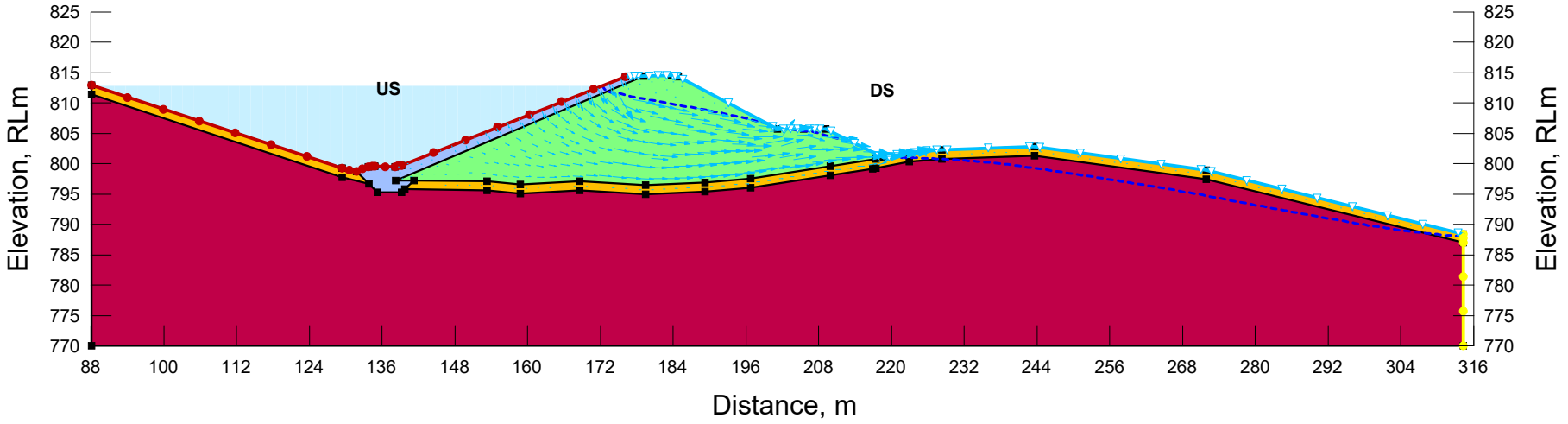
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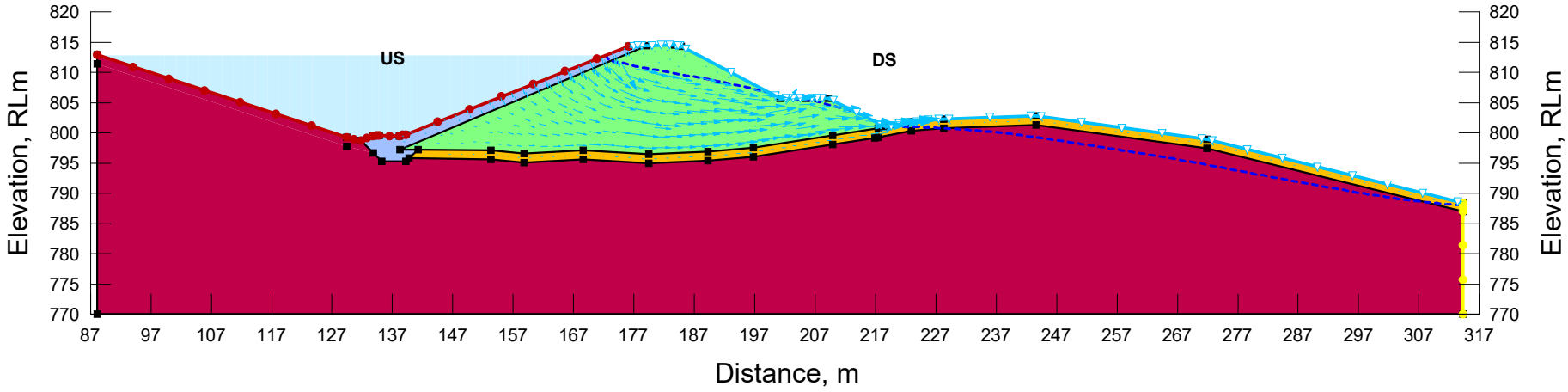
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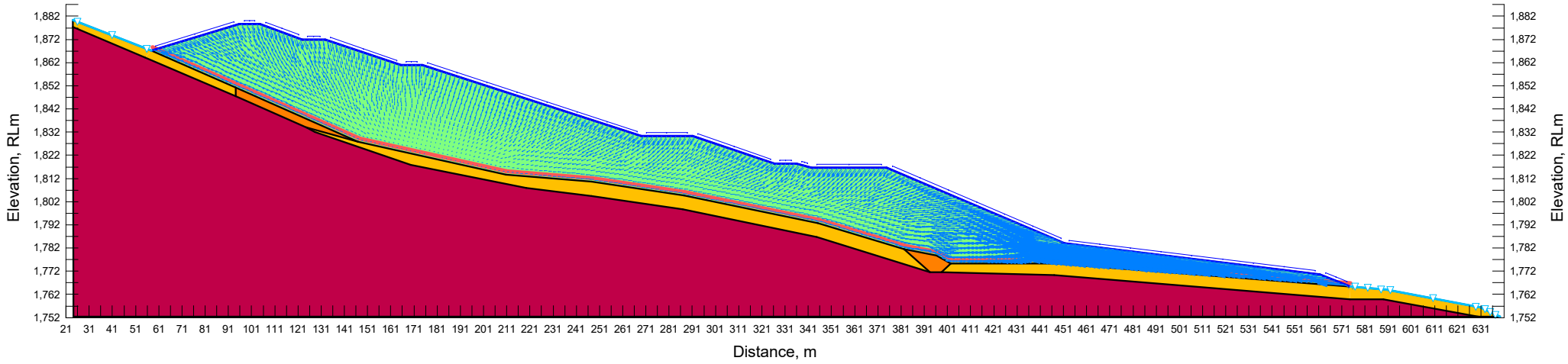
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	Eff. Foundation Soils (1.64e-05 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	HDPE Geomembrane	Saturated Only			1	1e-14
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08



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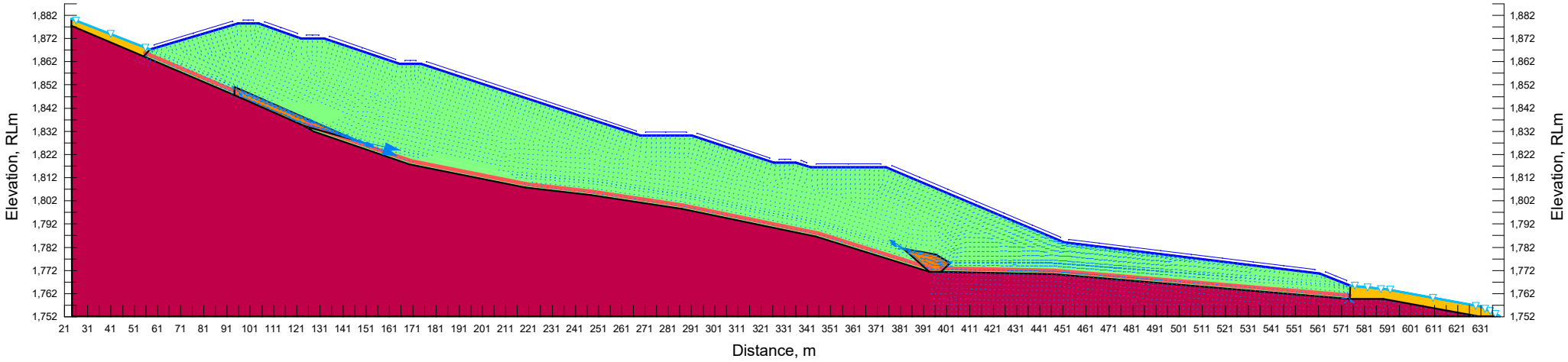
TARONGA MINES PTY LTD - Souther WRE

Transient Analysis - Liner and No Subgrade Excavation

Date: 06/05/2026 | Job No: 251128

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Color	Name	Hydraulic Material Model	Vol. WC. Function	K-Function	Ky'/Kx' Ratio	Sat Kx (m/sec)
	Basal Drain	Saturated / Unsaturated	Basal Drain	Basal Drain (1e-04 m/sec)	1	
	Eff. Foundation Soils (1.64e-05 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	HDPE Geomembrane	Saturated Only			1	1e-14
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08



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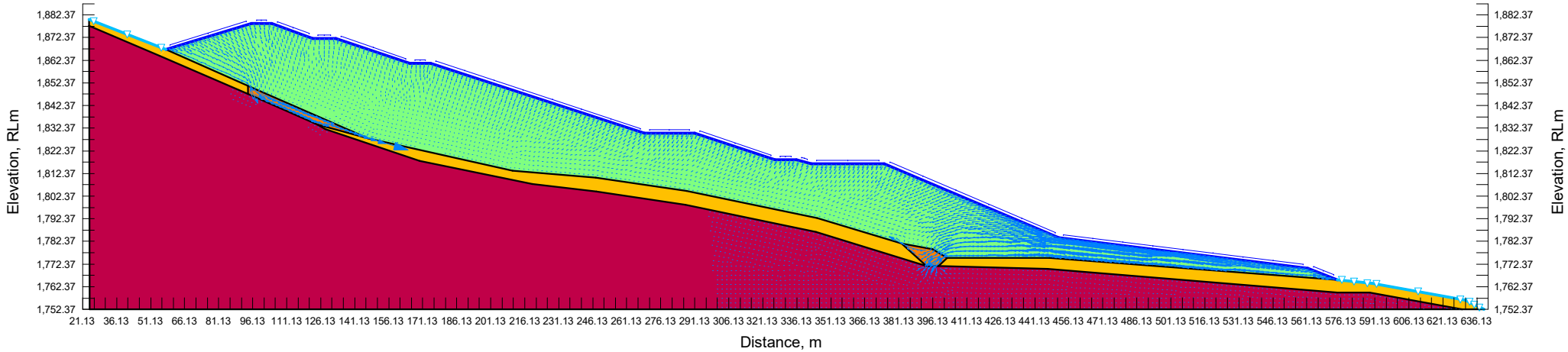
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Transient Analysis - Liner and Subgrade Excavation

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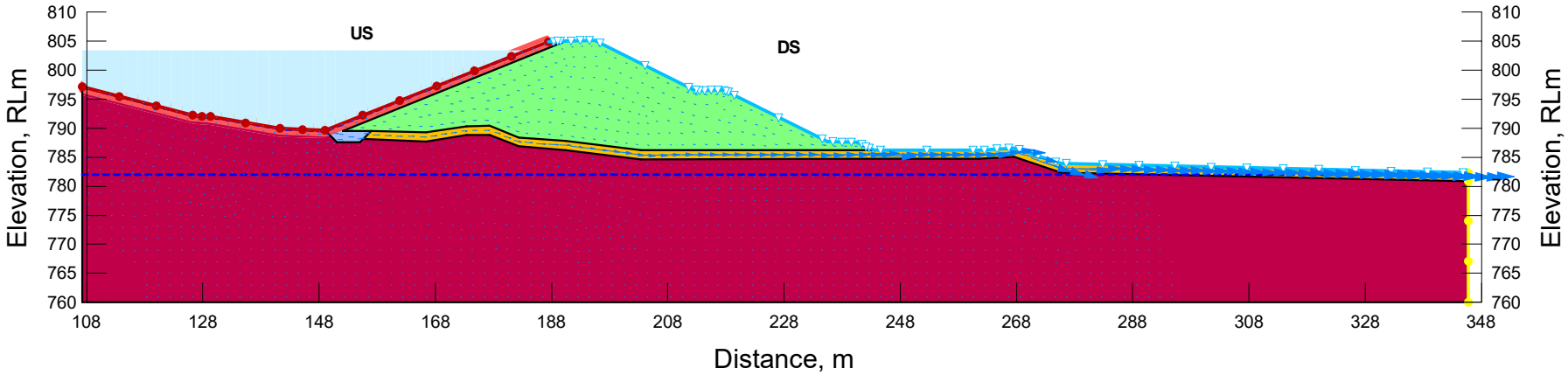
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Date: 05/05/2026 | Job No: 251128

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	Eff. General Construction Fill (5e-08 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	HDPE Geomembrane	Saturated Only			1	1e-14
	Imp. Weathered Basement (5e-08 m/s)	Saturated Only			1	5e-08



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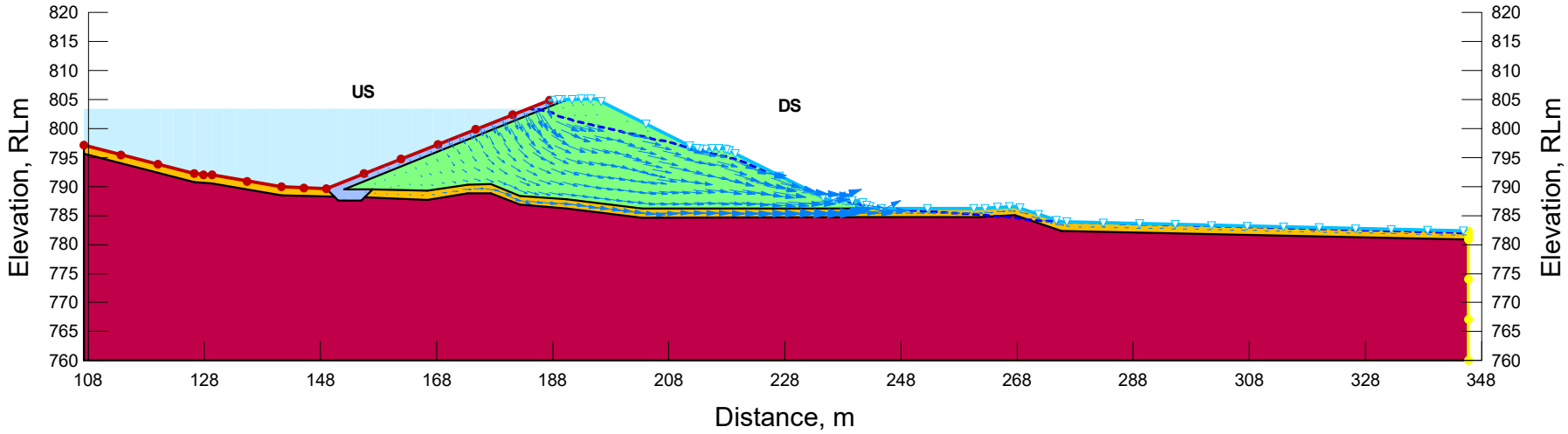
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Steady State - Liner and Subgrade Excavation

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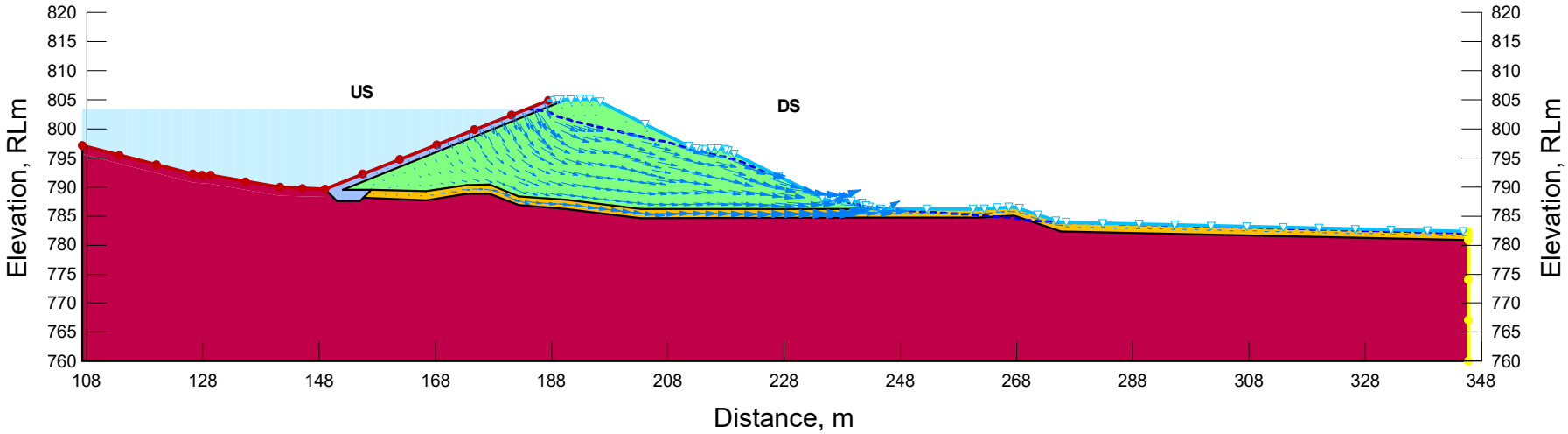
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Steady State - No Liner and No Subgrade Excavation

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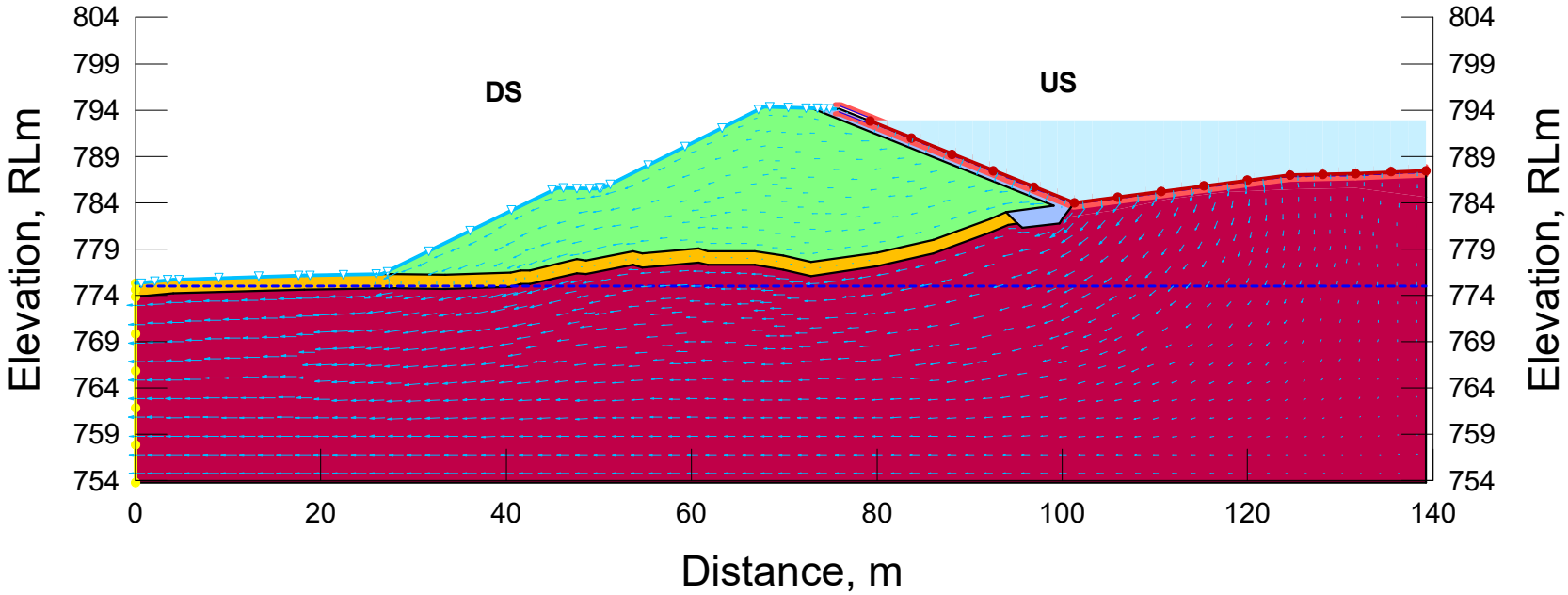
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Color	Name	Hydraulic Material Model	Vol. WC. Function	K-Function	Ky'/Kx' Ratio	Sat Kx (m/sec)
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	Eff. General Construction Fill (5e-08 m/s)	Saturated / Unsaturated	Foundation Soils	Foundation Soils	1	
	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
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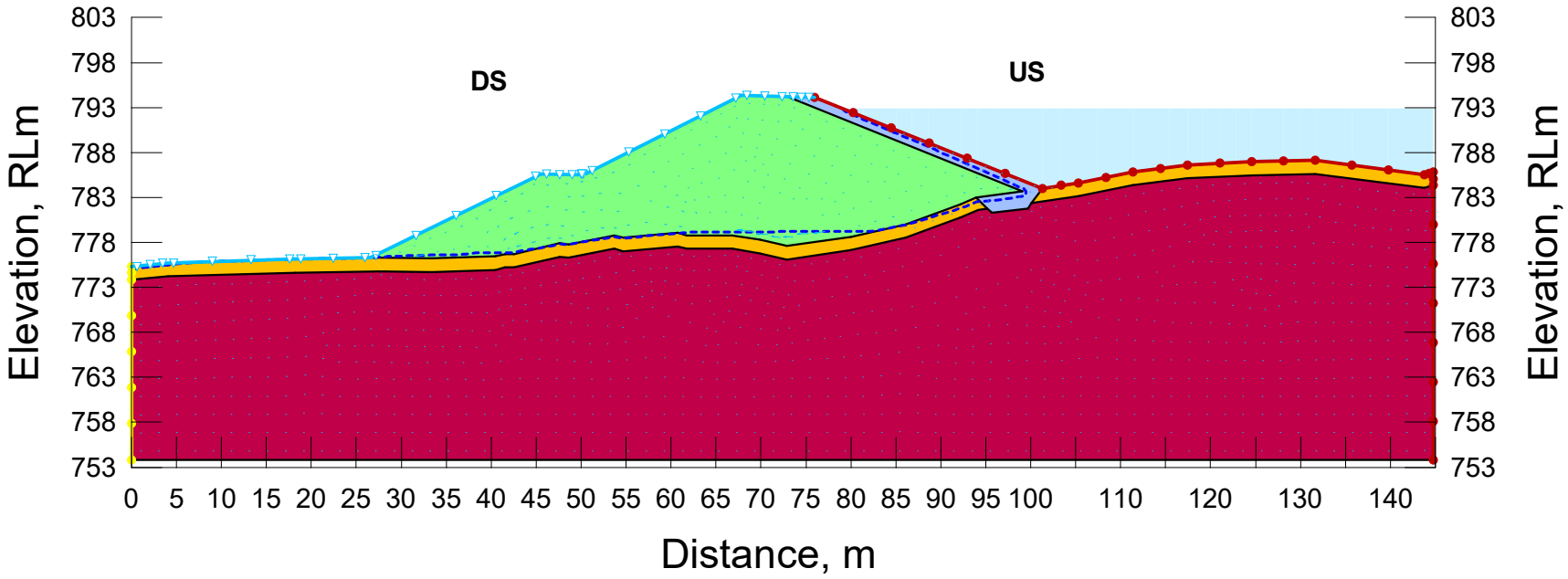
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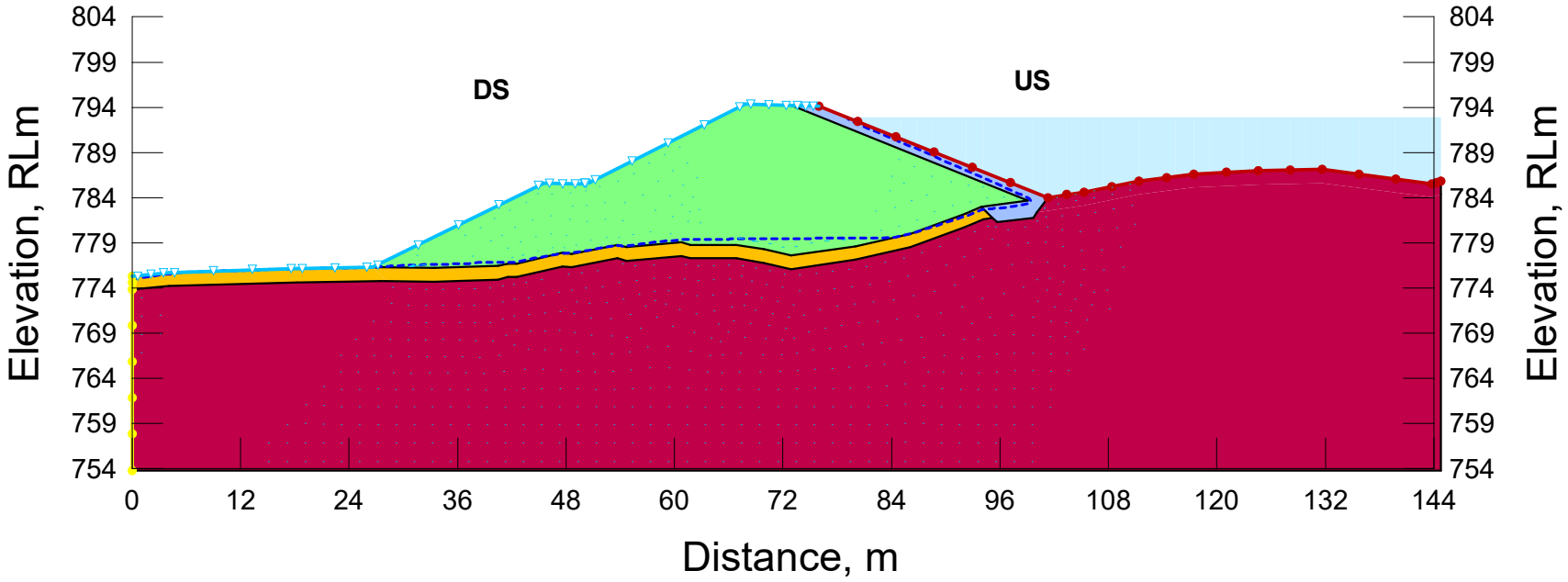
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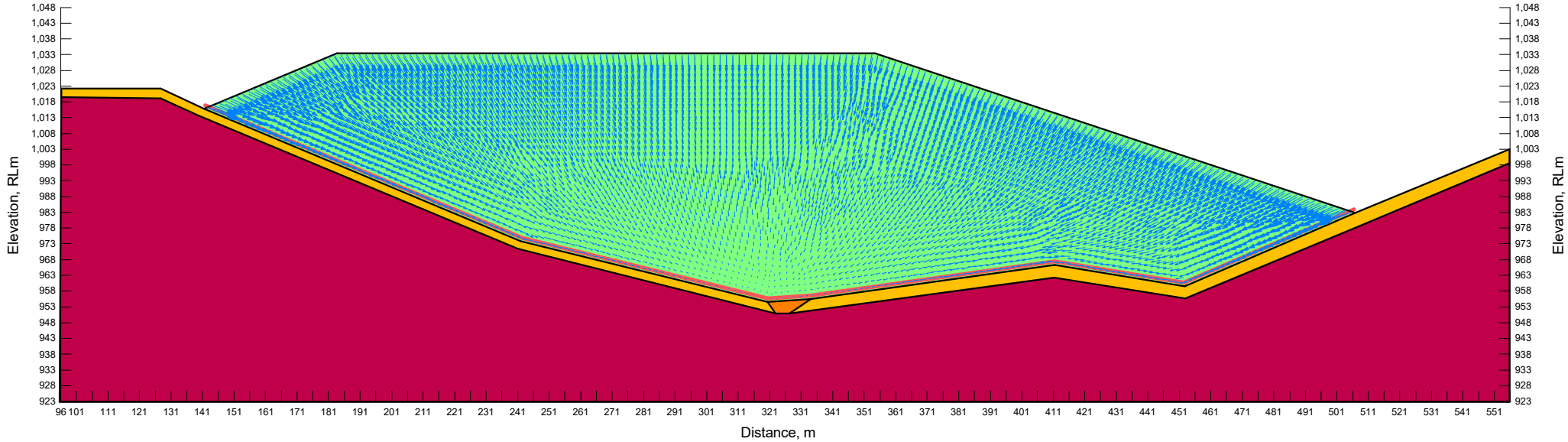
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P:\TarTin\251128 TarTin Address Queries From EPA\Documents\R01\Text\Rev C\Appendix D\Models\

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	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
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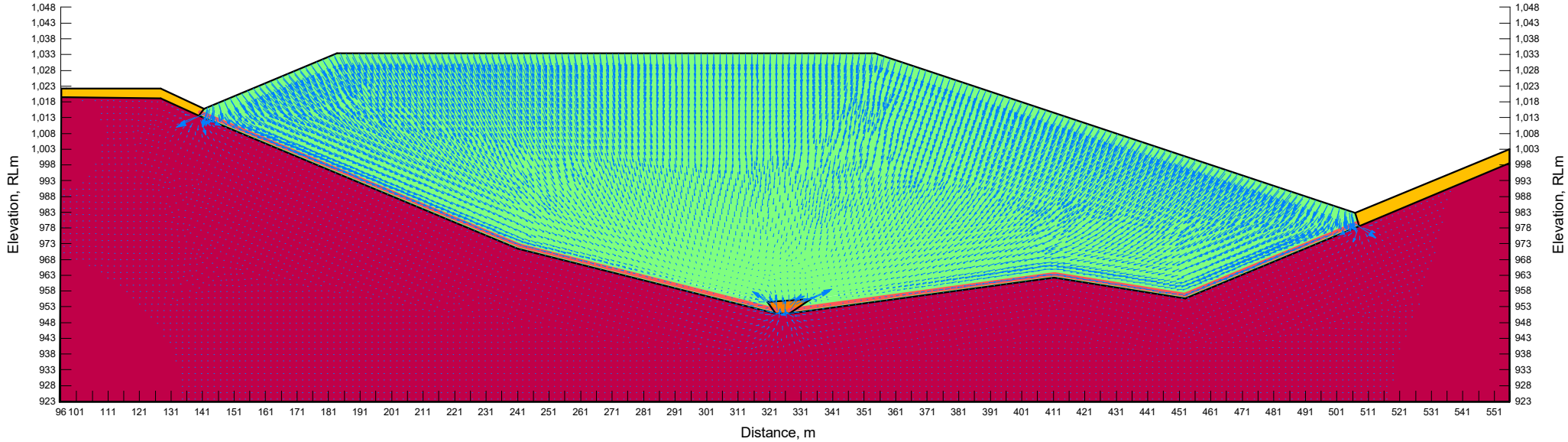
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	Eff. Rock Fill (1e-05 m/s)	Saturated / Unsaturated	Rock Fill	Rock Fill	1	
	HDPE Geomembrane	Saturated Only			1	1e-14
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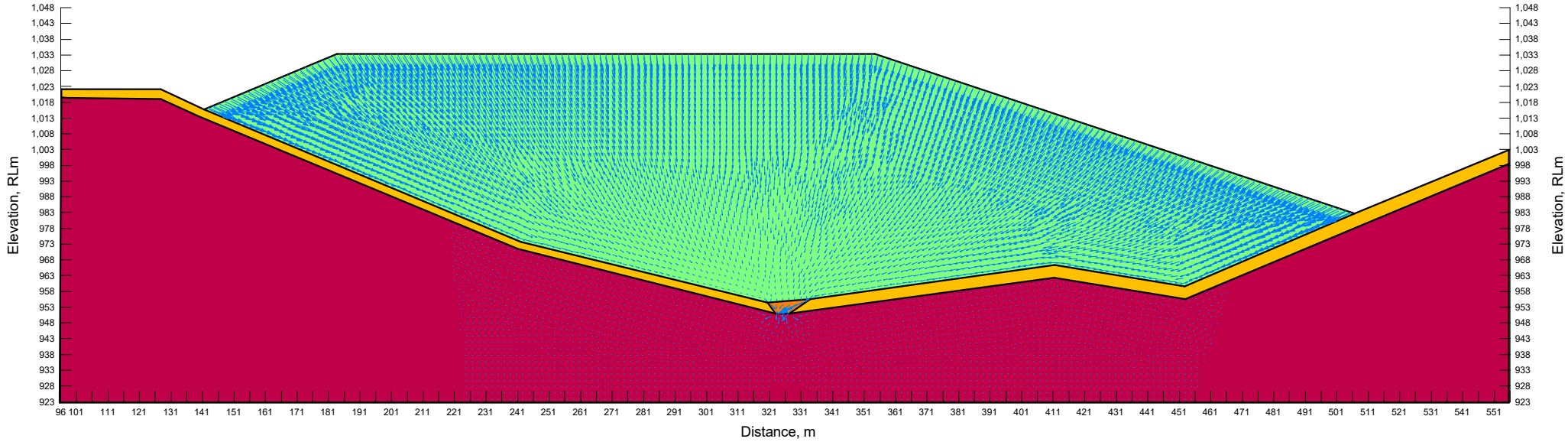
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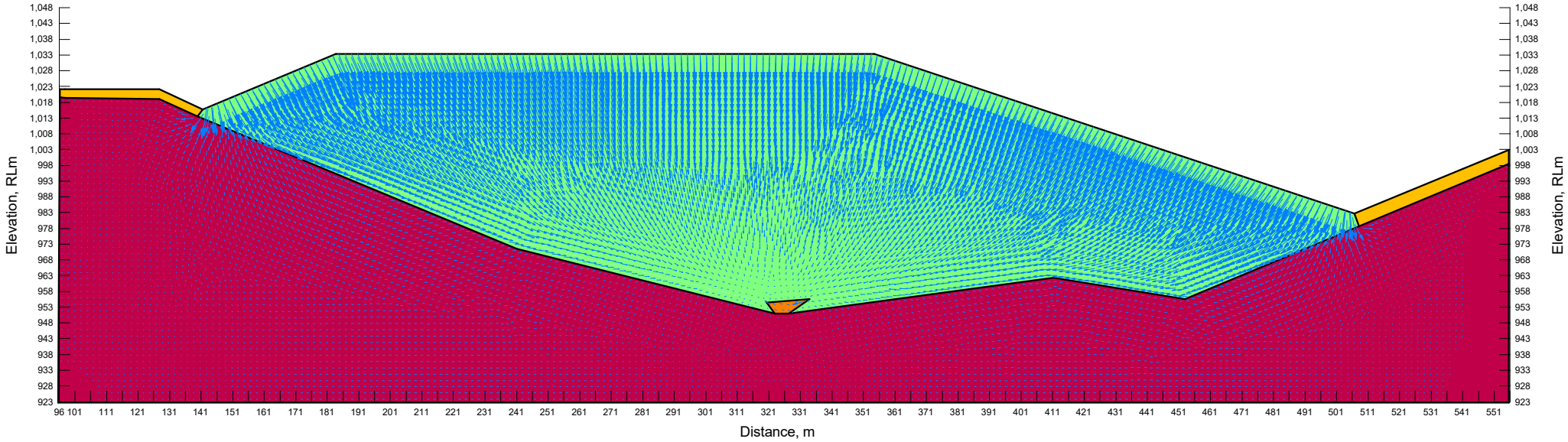
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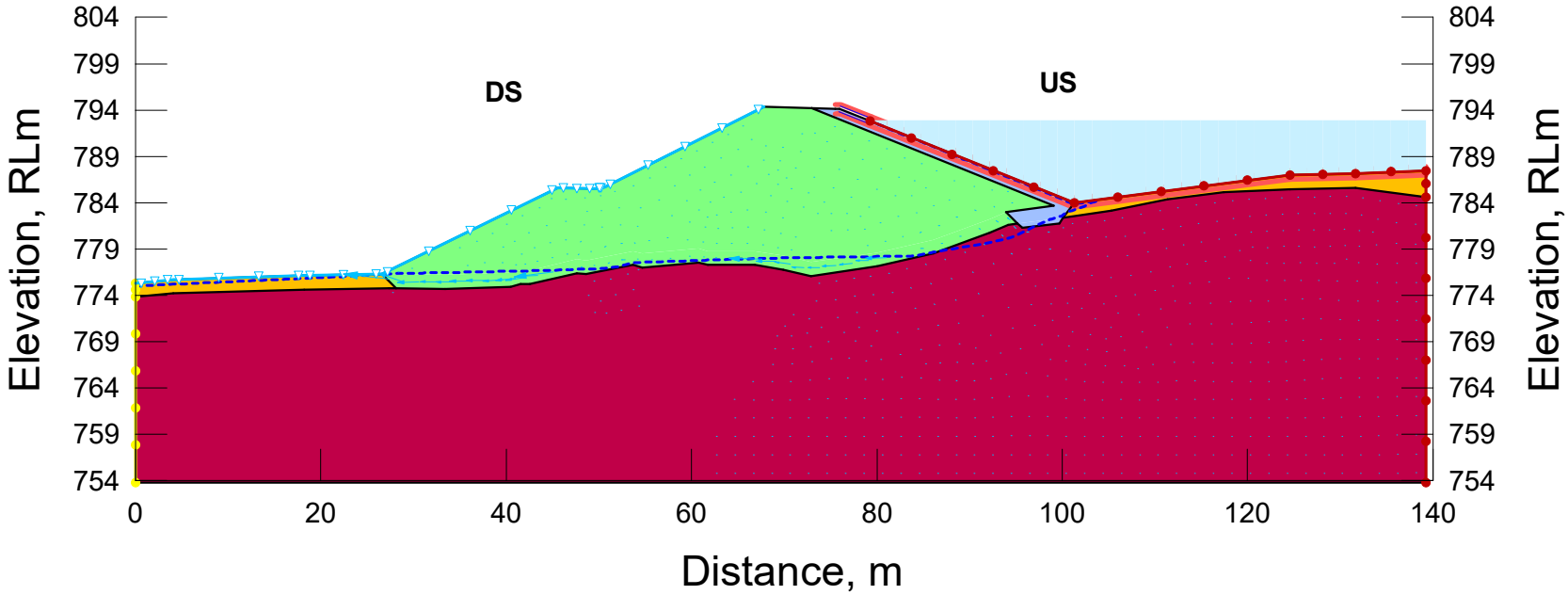
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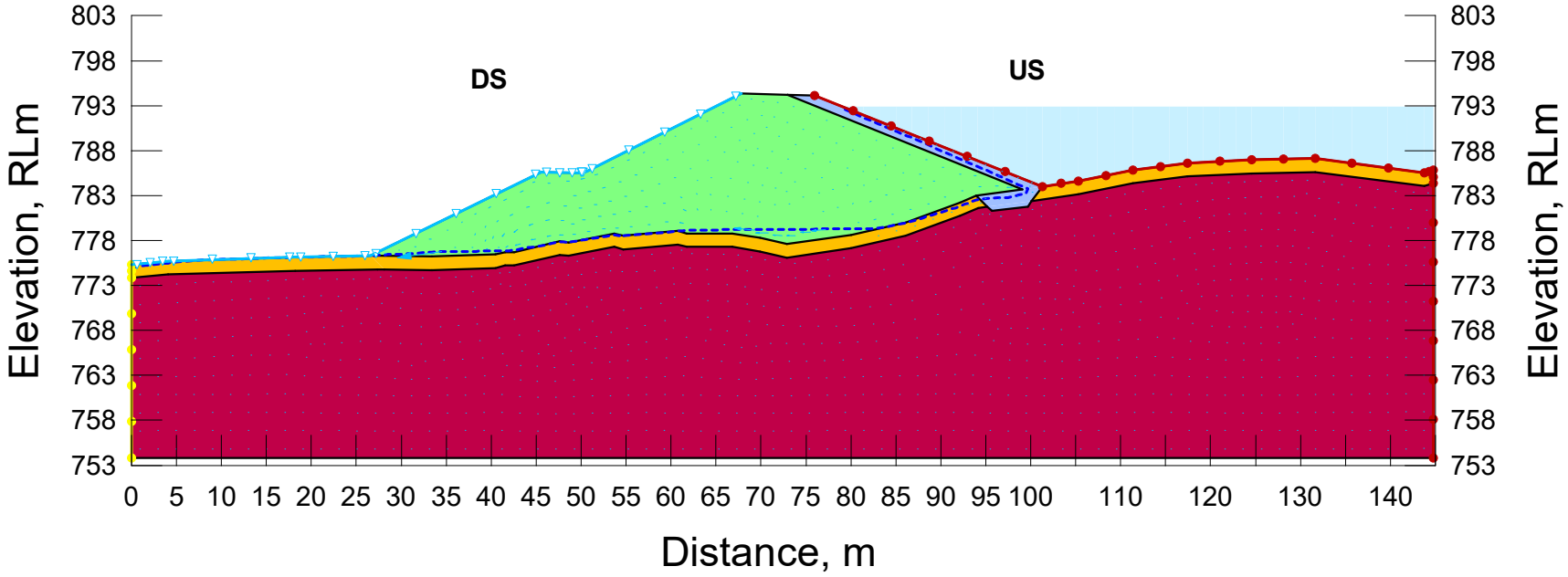
Steady State- Liner and Subgrade Excavation

Date: 02/04/2026 | Job No: 251128

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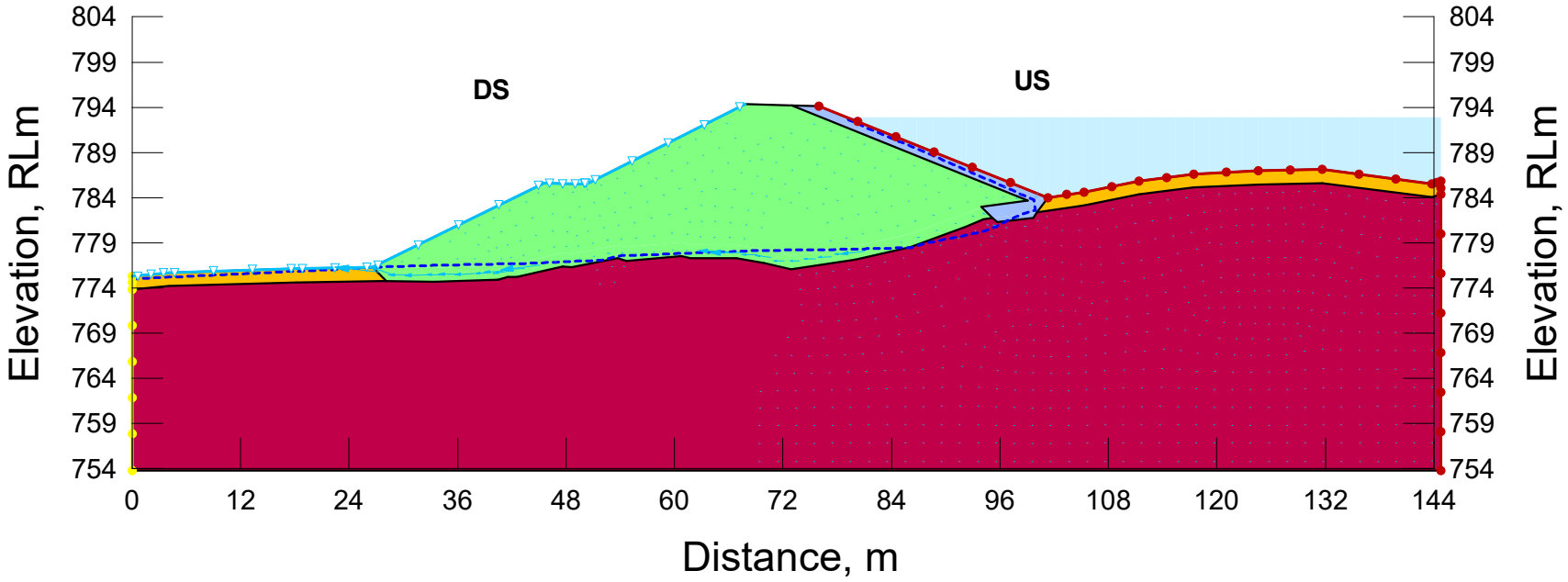
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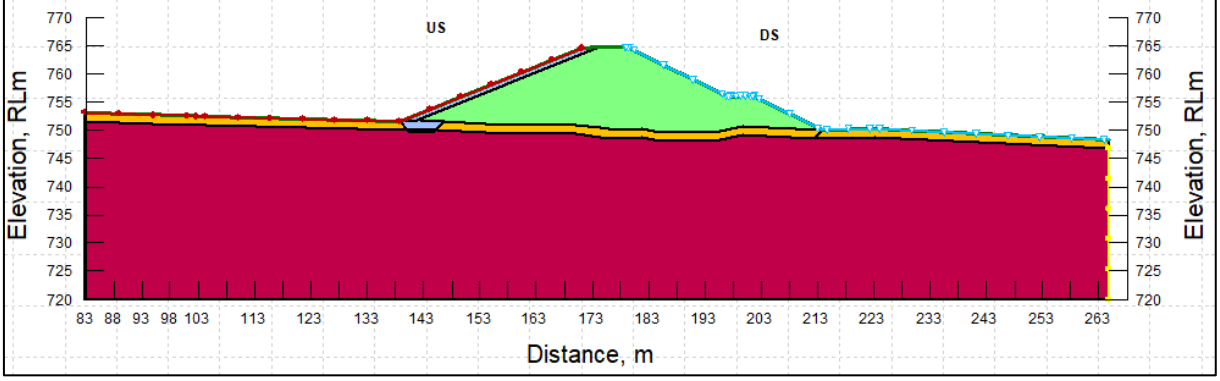
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ATTACHMENT 2 BOUNDARY CONDITIONS

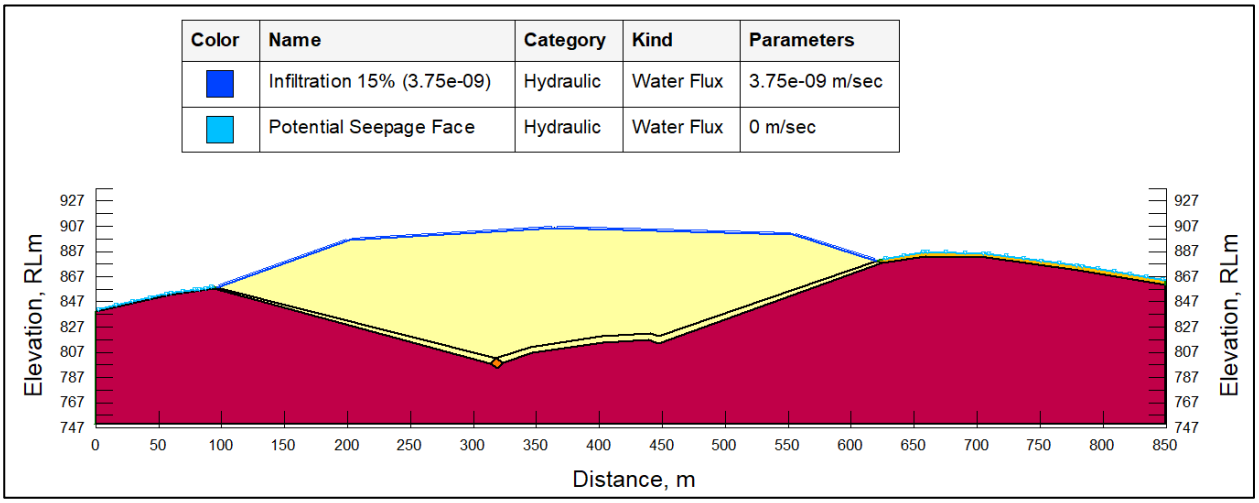
BOUNDARY CONDITIONS FOR CDA ROD

Color	Name	Category	Kind	Parameters
	Co-Disposal Runoff Dam Total Head (763.3m)	Hydraulic	Water Total Head	763.3 m
	DS Boundary Condition	Hydraulic	Water Total Head	746 m
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec



BOUNDARY CONDITIONS FOR CDA

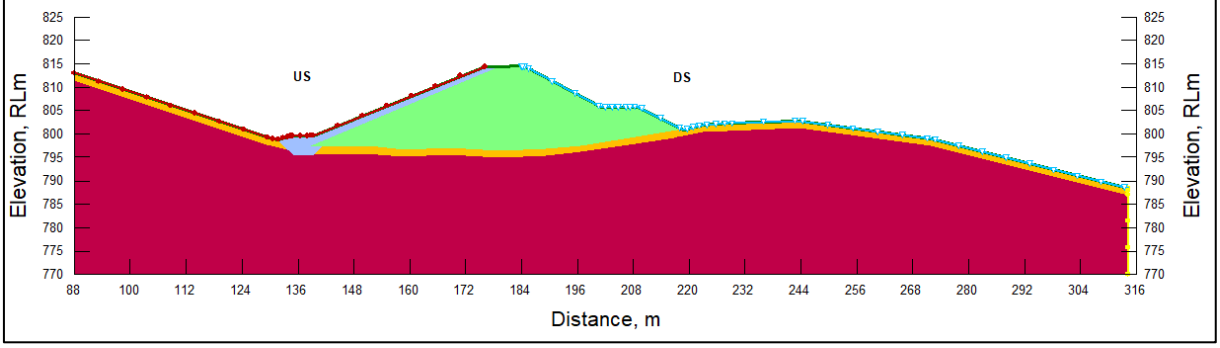
Color	Name	Category	Kind	Parameters
	Infiltration 15% (3.75e-09)	Hydraulic	Water Flux	3.75e-09 m/sec
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec



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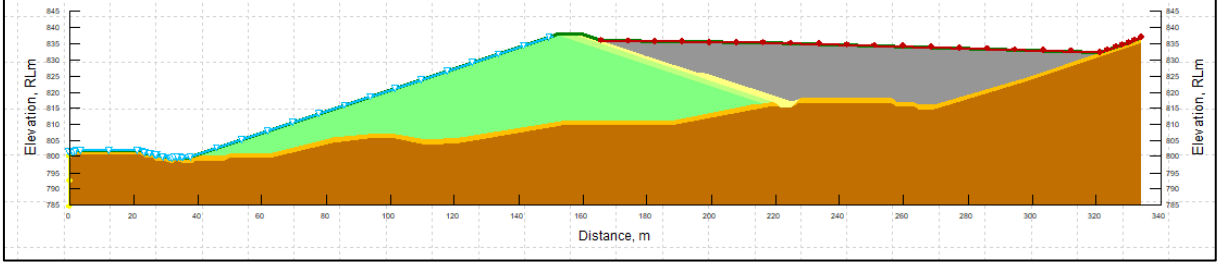
BOUNDARY CONDITIONS FOR MWD

Color	Name	Category	Kind	Parameters
	DS Boundary Condition	Hydraulic	Water Total Head	788 m
	Mine Water Dam Total Head (812.88m)	Hydraulic	Water Total Head	812.88 m
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec



BOUNDARY CONDITIONS FOR RSF

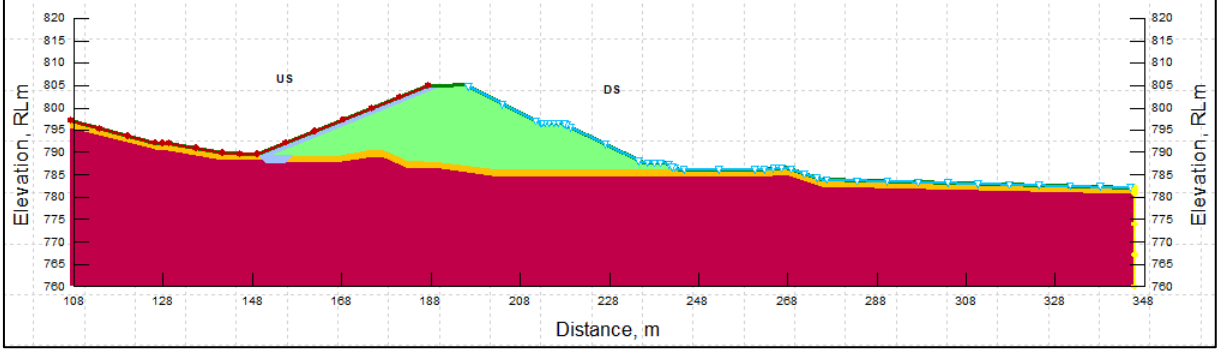
Color	Name	Category	Kind	Parameters
	DS Boundary Condition	Hydraulic	Water Total Head	800 m
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec
	Water Total Head	Hydraulic	Water Total Head	836 m



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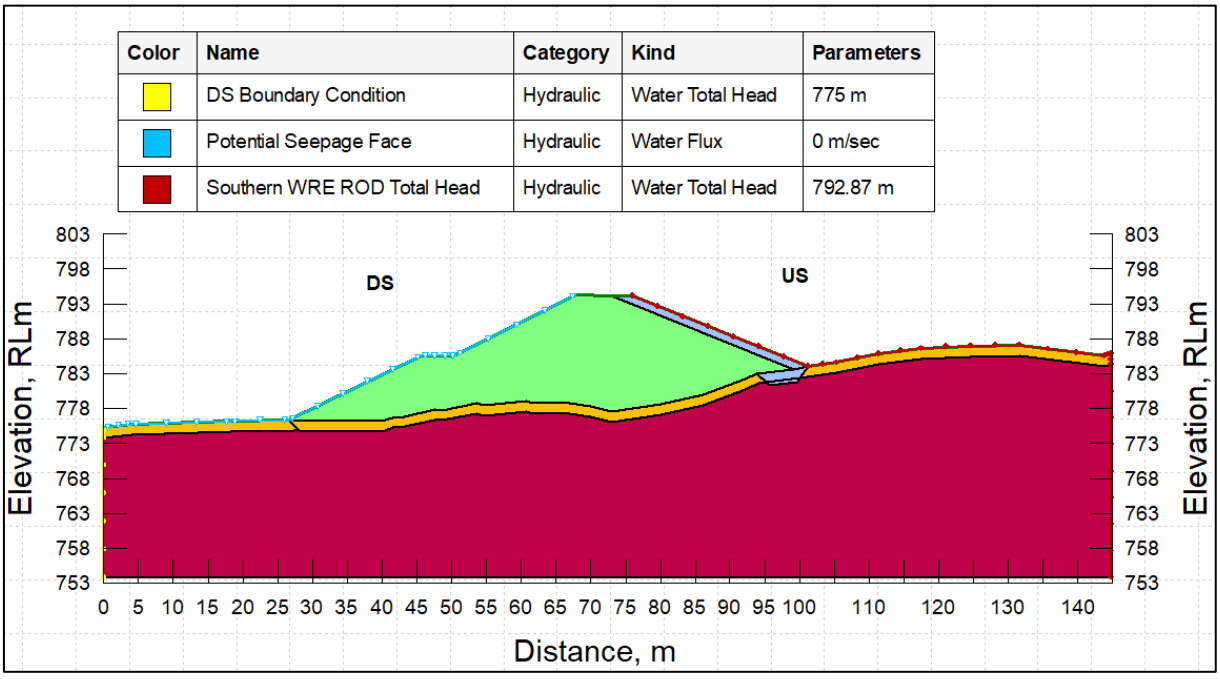
BOUNDARY CONDITIONS FOR NORTHERN WRE ROD

Color	Name	Category	Kind	Parameters
	DS Boundary Condition	Hydraulic	Water Total Head	782 m
	Northern WRE ROD Total Head (803.4m)	Hydraulic	Water Total Head	803.4 m
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec



BOUNDARY CONDITIONS FOR SOUTHERN WRE ROD

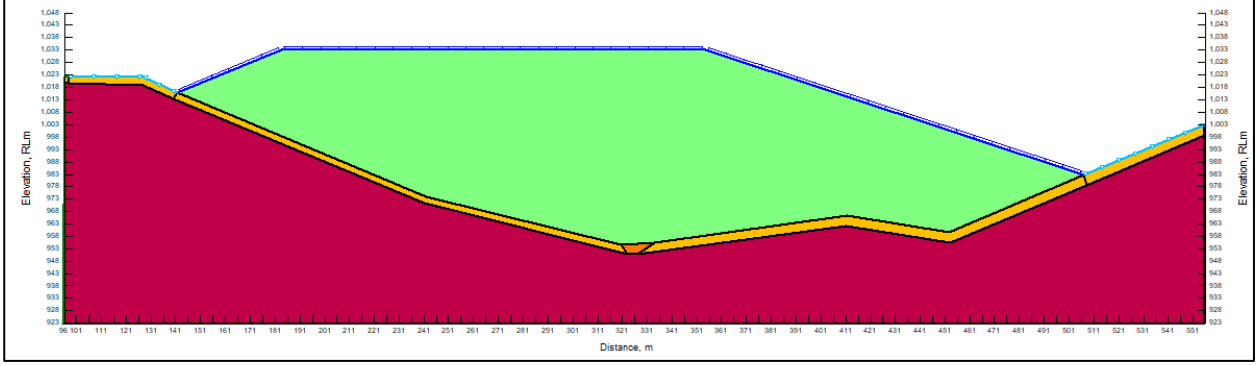
Color	Name	Category	Kind	Parameters
	DS Boundary Condition	Hydraulic	Water Total Head	775 m
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec
	Southern WRE ROD Total Head	Hydraulic	Water Total Head	792.87 m



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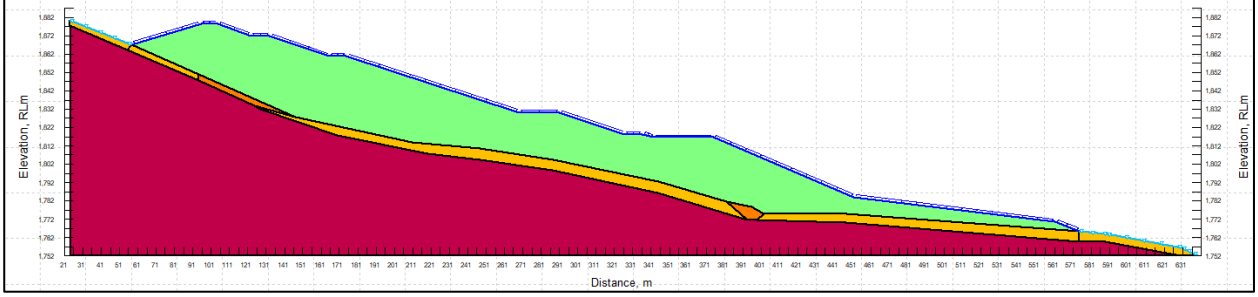
BOUNDARY CONDITIONS FOR SOUTHERN WRE

Color	Name	Category	Kind	Parameters
	Infiltration 15% (3.75e-09)	Hydraulic	Water Flux	3.75e-09 m/sec
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec



BOUNDARY CONDITIONS FOR NORTHERN WRE

Color	Name	Category	Kind	Parameters
	Infiltration 15% (3.75e-09)	Hydraulic	Water Flux	3.75e-09 m/sec
	Potential Seepage Face	Hydraulic	Water Flux	0 m/sec



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MEMORANDUM

TO	Paul Ryall	**COMPANY**	R.W. Corkery & Co Pty Limited
FROM	Tony Marszalek	**OFFICE**	Brisbane
PROJECT TITLE	Taronga Tin Project – Response to Agency Submissions		
SUBJECT	Water Balance Modelling Assessment		
DATE	7 April 2026	**OUR REF**	251147M03_Rev1

1 INTRODUCTION

1.1 Background

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the project) in northern New South Wales. The project comprises planned open-cut mining of the Southern and Northern pits with an expected mine life of approximately nine years.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the NSW Environment Protection Authority (EPA) has provided a submission requesting further detail regarding Water Balance Modelling **[1]**.

ATC Williams Pty Ltd (ATCW) prepared the Surface Water Assessment (SWA) **[2]** as part of the EIS. ATCW have reviewed this submission and provide the following memorandum in response to the matter identified.

1.2 Identified Issues and Agency Recommendations

The key points raised by the NSW EPA in their submission are summarised below.

- **Agency Concern**: The EPA has queried aspects of the Project's Australian Water Balance Model (AWBM), including:
    - Unclear derivation of AWBM parameters and volumetric runoff coefficients,
    - Groundwater inflows to storages are not considered as model inputs, and
    - Uncertainty about whether controlled discharges would be required during operations or closure
- **EPA Recommendation**: Clarify the derivation of AWBM parameters, justify the absence of groundwater inflows or revise the model accordingly, and consider the likelihood of controlled discharges during operations and closure.

1.3 Summary of response

ATCW prepared the AWBM that was used to assess the Project's potential impacts on surface water resources and assess the performance of the proposed water management system. The AWBM was developed based on long experience preparing and calibrating similar models at proposed and active mine sites. In summary:

1. The adopted AWBM parameters are reasonable and justifiable based on experience at similar mine sites.
2. Groundwater inflows to the open cut pits are predicted to be negligible and, when added as input to the model, have no material change on outcomes that predict no spill from the proposed mine-affected water management system.

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3. Discharge from clean catchments within the Mine Site would occur but this discharge would be of similar quality to that of other dams on private agricultural landholdings in the locality.

1.4 Adopted Approach

To address the agency concerns this technical memorandum includes the following:

- Detailed explanation of AWBM parameters and volumetric runoff coefficients derivation and purpose.
- Justification and update of groundwater inflow assumptions.
- Discussion of risk of controlled discharges during operations and closure.
- Confirmation of model assumptions and their conservatism.

2 RESPONSE TO AGENCY SUBMISSIONS

2.1 Australian Water Balance Model Description

The AWBM was developed to simulate the mine-affected and clean water storages and linkages shown in the site water balance schematic, refer **DIAGRAM 1**. The below configuration was developed using the proposed Mine Site layout and mining/processing information.

The model was developed using the GoldSim® simulation package **[3]**. The model simulates the volume of water held in and pumped between all simulated water storages. For each storage, the model simulates:

Change in Storage = Inflow – Outflow

Where:

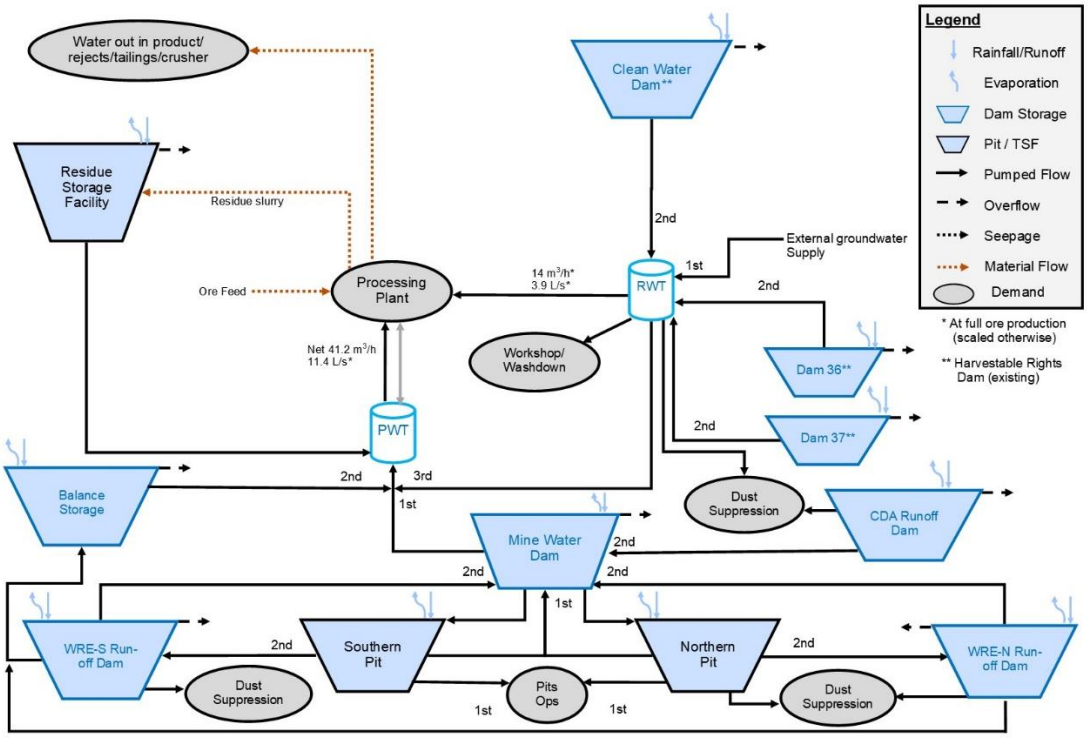
Inflow includes direct rainfall, runoff, water liberated from settling residue, water sourced from external supply and harvestable rights dams, groundwater inflow to the open cut pits and all pumped transfers from other storages.

Outflow includes evaporation, spill, pumped transfers to other storages and losses to a demand sink (e.g., processing plant, pit operations and dust suppression).

For further detail regarding the model assumptions, inputs and model results refer Section 4 of the SWA **[2]**.

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DIAGRAM 1: SITE WATER BALANCE SCHEMATIC



1st and 2nd nomenclature refers to the priority of pumped supply where two or more sources exist. For example, the RWT sources external groundwater supply as first priority; where this source is not available (or insufficient), secondary supply is sourced from the harvestable rights dams (as equal, and shared priority).

2.2 AWBM Parameter Derivation

As discussed in the SWA report, the modelled site catchments were split into sub-catchments each with different AWBM parameters reflecting different land uses. For the vegetated (undisturbed) sub-catchment type, the recorded streamflow data at the Beardy River at Haystack gauge, as described in SWA **Section 2.7**, was used together with SILO Point Data to calibrate a daily streamflow model using the AWBM (refer SWA **Section 2.7.3**).

For other sub-catchment types, model parameters were taken from literature-based guideline values or experience with similar projects. It must be noted that, as the Project is greenfield and at the development assessment stage, site-specific parameters cannot be derived as it is yet to commence.

2.3 Runoff Coefficients

Runoff coefficients for each sub-catchment were calculated as a further check of the AWBM parameters used in the modelling process; they were not used directly in the model but were calculated as a model output. The calculation was undertaken as follows:

$$\frac{(\sum AWBM\ Streamflow) * \Sigma Sub\ Catchment\ Area}{(\sum Rainfall) * \Sigma Sub\ Catchment\ Area}$$

Where:

$\sum AWBM\ Streamflow$ is the sum of all streamflow generated from the AWBM for a specific sub catchment for the model simulation period.

$\sum Rainfall$ is the total rainfall for the model simulation period.

$\Sigma\ Sub\ Catchment\ Area$ is the total area of the relevant sub catchment such as Hardstand, Vegetated etc., averaged over the model simulation period.

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The average runoff coefficients of all modelled sub-catchment areas are presented in **Table 1**.

TABLE 1: CALCULATED RUNOFF COEFFICIENTS

Sub-Catchment Type	Calculated Average Runoff Coefficient
Vegetated	0.10
Hardstand	0.49
Open Cut Pit	0.25
Waste Rock Emplacement	0.11
Rehabilitation	0.10
Residue	0.36

The tabulated values indicate that the AWBM parameters chosen are valid, because the resultant coefficients are in the range expected for the sub-catchment types considered, based on experience with similar projects.

2.4 Groundwater Inflow

The assumption of zero groundwater inflow into the open cut pits was made given that the pits are situated within a low-yielding fractured rock groundwater system and atop topographically elevated ridgelines. Therefore, it was assumed that negligible groundwater inflows would occur once mining commenced.

The completed EIS Groundwater Impact Assessment (GWIA) **[4]** presents estimated open cut pit inflow volumes. It is noted that these inflows (termed 'direct take' in the GWIA **[4]**) would over-estimate the total water management system inflows because they do not allow for evaporative loss from the pit seepage faces nor ponded water in-pit. Predicted open cut pit inflows in the GWIA **[4]** are negligible for the first six years of mining. The maximum predicted open cut pit annual inflow totals 25.2 ML or an average 13.7 ML/year in years 6 to 9 of mining. This compares with an average 550 ML of system inflow from site rainfall runoff, averaged over all full operational Project years. These predicted open cut groundwater inflows (excluding losses) are therefore minor when compared with rainfall runoff system inflows.

When the GWIA **[4]** predicted 'direct take' annual volumes are added as open cut inflows to the site water balance model, there is no material change to the results reported in the SWA. When the groundwater inflows are added, the model did not simulate a spill from any mine-affected water storage[1].

2.5 Discharge Risk

2.5.1 Operational Phase

The site water balance model results indicated that there is a risk of spills occurring from the following clean water storages:

- Clean Water Dam (CWD)
- Dam 36
- Dam 37

These facilities would allow discharge to the receiving environment via spillways when capacity is reached, with details to be completed in the detailed design phase.

[1] Note that in Table 4-8 of the SWA **[4]**, the maximum operating volume (MOV) of the Balancing Storage was given as 152 ML; this should have been 150 ML to prevent simulated spill from this storage.

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The site water balance model predicted no spills from any of the mine-affected water storages in all modelled climatic scenarios. In the event of a mine-affected storage reaching a designated trigger level, a series of pumped transfers would be implemented to transfer water from that storage to other mine-affected storages or the open cut pit to control the risk of discharge to the environment. Whilst the overall management objective for all components of the project's mine-affected water management system is to provide containment and control the risk of release, the design of each storage would include an emergency spillway consistent with good dam design practice.

2.5.2 Closure Phase

As part of closure, the mine-affected storages would be rehabilitated to create a stable and free draining landform with any remaining water to be pumped back to the pits with no discharges to the environment.

REFERENCES

[1] NSW EPA (2025). *EPA Advice on Environmental Impact Statement – Taronga Tin Mine – SSD-74389710*. Letter from NSW Environment Protection Authority to NSW Department of Planning, Housing and Infrastructure, 4 Nov 2025.

[2] ATCW (2025). Taronga Tin Project Surface Water Assessment. ATC Williams Pty Ltd report 240357-R001 Rev 1 prepared for R W Corkery & Co Pty Ltd, September.

[3] GoldSim version 15.0, Goldsim Technology Group LLC.

[4] Hydrogeologist.com.au (2025). *Taronga Tin Project Groundwater Impact Assessment.* Report prepared for Taronga Tin Mines Pty Ltd, August.

MEMORANDUM

TO	Paul Ryall	**COMPANY**	R.W. Corkery & Co Pty Limited
FROM	Tony Marszalek	**OFFICE**	Brisbane
PROJECT TITLE	Taronga Tin Project – Response to Agency Submissions		
SUBJECT	Erosion and Sediment Control		
DATE	15 April 2026	**OUR REF**	251147M02_Rev1

1 INTRODUCTION

1.1 Background

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the project) in northern New South Wales. The project comprises planned open-cut mining of the Southern and Northern pits with an expected mine life of approximately nine years.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the NSW Environment Protection Authority (EPA) provided a submission requesting further detail regarding Erosion and Sediment Control **[1]**.

ATC Williams Pty Ltd (ATCW) prepared the Surface Water Assessment (SWA) **[2]** as part of the EIS. ATCW have reviewed this submission and provide the following memorandum in response to the matter identified.

1.2 Identified Issues and Agency Recommendations

The key points raised by the NSW EPA in their queries are summarised below.

Agency Concern: The EPA has identified that in the absence of a detailed Erosion and Sediment Control Plan (ESCP), it is unclear whether general erosion and sediment control measures would be sufficient to manage site-specific risks, including steep terrain (slopes up to 50%), elevated pollutant concentrations in soils (arsenic, metals), and sediment management for soil stockpiles and mine water catchments.

EPA Recommendation: Prepare an ESCP for the project with reference to the Managing Urban Stormwater guidelines, including indicative site layouts and a Water Pollution Discharge Impact Assessment (WPDIA) if discharges are proposed.

1.3 Summary of response

The Project proposes to construct a closed water management system for the collection and storage of mine-affected runoff. During operations, all Project-related surface disturbance would occur within mine-affected catchments. As all the mine-affected water management system would be integrated and sized to prevent discharge to the downstream environment, there would be no need for an Erosion and Sediment Control Plan.

However, functional operational storage capacity in the mine-affected water management system would be maintained via sumps installed at the upstream inlets of storages. These “inlet sumps” would act as pre-treatment basins to reduce sediment load in mine-affected runoff entering storages. Sediment accumulating in the sumps would be removed and used as either surface or sub-surface rehabilitation material, depending on suitability.

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During the site establishment and construction stage, the Applicant would implement a Construction ESCP that would be prepared during the detailed design phase and based on the construction methodologies and staging.

However, at the current development assessment stage, it is considered that the conceptual sediment control and water management system described in the SWA **[2]** provides sufficient detail regarding the identification of potential impacts and that these can be effectively managed should the Project be approved.

1.4 Adopted Approach

To address the agency concerns this technical memorandum includes the following.

- Discussion on the implementation of sediment basins upstream of the runoff dams with periodic sediment clean-out procedures.
- Provision of reasoning as to why a detailed ESCP is not required at this assessment stage given the planned closed mine water management system.

2 RESPONSE TO AGENCY SUBMISSIONS

2.1 Sediment Management

As discussed in **Section 3.5** of the SWA**[2]**, the Applicant proposes to implement sediment control measures to limit sediment runoff. These measures would be consistent with the intent of, and sized in accordance with, Landcom **[3]** and DECC **[4]**.

Where sediment laden runoff is expected from site establishment and construction activities either outside mine-affected catchments or within the future closed water management system), it would be managed via temporary erosion and sediment control measures to remove suspended sediment as outlined in **Section 6.1.4.4** of the SWA**[2]**. These temporary erosion and sediment control measures would remain in place until all earthwork activities are completed, and the disturbed surfaces are either stabilised and vegetated or, in the case of the closed water management system, runoff dams operational.

During the site establishment and construction phase a Construction ESCP would be developed and implemented.

In addition, permanent sediment basins would be located immediately upstream of dams intercepting mine-affected runoff and act as “inlet sumps”. These sumps would be sized to provide sufficient settling time for sediment entrained in the runoff to drop out of suspension under gravity. This capture of sediment would reduce the sediment load entering mine-affected water storages, thus maintaining the systems operational capacity to manage mine-affected runoff. Once settlement has been achieved, like any sediment basin, the sump would discharge via a spillway connecting the basin to the mine-affected storage.

Sediment markers would be placed in the inlet sumps and inspected routinely to assess sediment accumulation/remaining capacity and, where required, undergo sediment removal. Removed sediment would be tested to establish its suitability for stockpiling and used as a growth medium. If the sediment is unsuitable for this purpose, it would be stockpiled within a mine-affected catchment for use as in sub-surface capping of waste rock.

It is important to note that the mine-affected storages have been sized to not discharge to the environment based on 136 years of historical climate data (refer **Section 4.4.5** of the SWA**[2]**), obviating the impact to the downstream environment of any sediment discharge off site from mine-affected storages. The Applicant would prepare a Water Management Plan for the operational phase of the Project that would include details of these management strategies and maintenance of the inlet sumps.

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2.2 Erosion Sediment Control

Given the Project's proposed closed mine water management system and the low risk of discharge of mine-affected water to the downstream environment, it is considered that a detailed ESCP is not necessary for the Project. The SEARs, given in Section 1.5.4 of the SWA**[2]**, describe the need for:

> "*A description of construction erosion and sediment controls, how the impacts of the development on areas of erosion, salinity or acid-sulphate risk or erodible soils types would be managed and any contingency requirements to address residual impacts*".

This description has been provided in Section 3.5 of the SWA **[2]** detailing the approach towards erosion and sediment control.

The above notwithstanding, the Applicant would prepare a Construction ESCP during the detailed design phase. This ESCP would be based on the agreed construction methodologies and staging. . However, at the current development assessment stage, it is considered that the conceptual sediment control and water management system described in the SWA **[2]** provides sufficient detail regarding the identification of potential impacts and that these can be effectively managed should the Project be approved.

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REFERENCES

[1] NSW Environment Protection Authority. (2025). EPA advice on environmental impact statement – Taronga Tin Mine – SSD-74389710 (DOC25/848046-5). NSW EPA.

[2] ATCW (2025). *Taronga Tin Project Surface Water Assessment*. ATC Williams Pty Ltd report 240357-R001 Rev 1 prepared for R W Corkery & Co Pty Ltd, September.

[3] Landcom (2004). *Managing Urban Stormwater: Soils and Construction: Volume 1*. Landcom, New South Wales.

[4] DECC (2008). *Managing Urban Stormwater: Soils and Construction, Volume 2E: Mines and Quarries*. Department of Environment and Climate Change (DECC), New South Wales.

MEMORANDUM

TO	Paul Ryall	**COMPANY**	R.W. Corkery & Co Pty Limited
FROM	Andrew Chapman	**OFFICE**	Brisbane
EMAIL	AndrewC@atcwilliams.com.au	**PHONE**	0407640494
PROJECT TITLE	Taronga Tin – Response to Agency Submissions		
SUBJECT	Flood Impact Assessment		
DATE	11 March 2026	**OUR REF**	251147M01_Rev0

1 INTRODUCTION

1.1 Background

Taronga Mines Pty Ltd (TMPL) is advancing the Taronga Tin Project (the Project) in northern New South Wales (refer **DIAGRAM 1**). The Project comprises open-cut mining of the Southern and Northern pits with an expected mine life of approximately nine years.

Following the public exhibition of the Taronga Tin Mine Environmental Impact Statement (EIS), the Conservation Programs, Heritage and Regulation (CPHR) Group of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) provided a submission requesting further detail regarding Flooding[1].

ATC Williams (ATCW) have reviewed this submission and provide the following memorandum in response to the matter identified.

1.2 Identified Issues and Agency Recommendations

The CPHR have requested additional information regarding flooding which is summarised below.

- **Agency Concern**: the EIS does not address flooding matters in accordance with subsections 10 to 14 of the Secretary's Environmental Assessment Requirements (SEARs)[2].
- **CPHR Recommendation**: Prepare a flood impact assessment to inform the EIS in accordance with the CPHR SEARs advice.

1.3 Summary of response

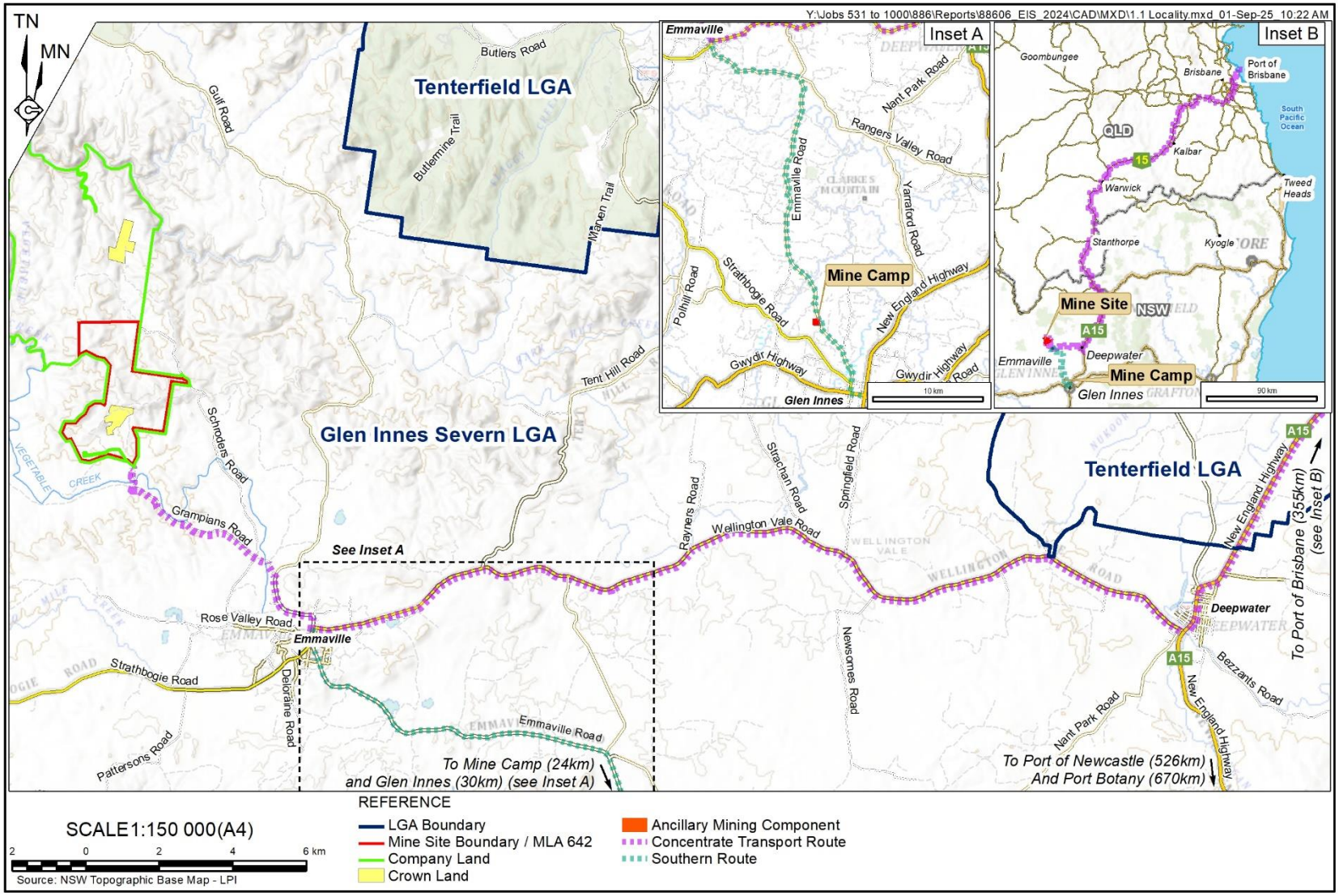
Rather than undertaking a detailed regional flood impact assessment, we have prepared this technical memorandum demonstrating that regional flooding is not a material risk to the Project and the Project would not increase the social or economic costs of flooding on the community. In summary:

1. Vegetable Creek presents no flood hazard to the Mine Site and there is no off-site flood impact that could be attributable to the Project.
2. There is no basis to anticipate a worsening of flood conditions at downstream receptors as the Project would result in a minor reduction to downstream flood flows.

[1] Response to EIS for Taronga Tin Mine (SSD-73489710), Conservation Programs, Heritage and Regulation Group, 13 November 2025, Ref: DOC25/846024-12.
[2] DCCEEW Biodiversity, Conservation and Science Group (BCS) Standard Environmental Assessment Requirements for Taronga Tin Mine, Ref: DOC24/643386-3

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DIAGRAM 1. MINE SITE LOCALITY



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2 RESPONSE TO AGENCY SUBMISSIONS

2.1 Existing flood exposure

As part of the Surface Water Assessment (SWA) for the Project, a flood assessment of the Vegetable Creek catchment was undertaken to assess the proposed upgrade to Grampians Road which is situated in the Vegetable Creek catchment. This local road, which terminates at the proposed Mine Site, would serve as the Project's principal access and egress route to Emmaville and regional transport linkages.

The modelling included the 10% Annual Exceedance Probability (AEP) flood event to assess performance of the proposed cross drainage culverts considering factors such as time of submergence and potential operational disruptions.

The modelling has since been updated to include the 1% AEP flood event to characterise baseline flooding conditions from a rare flood event in Vegetable Creek, identify flood-prone land, and assess the potential flood impacts associated with the proposed road upgrade. Details of the hydrologic and hydraulic model setup and configuration are provided in Appendix C of the SWA[3] .

DIAGRAM 2 presents the 1% AEP flood depths and peak water surface elevations for the Grampians Road crossing of Vegetable Creek that is approximately 400 metres (m) south of Mine Site entrance. Flooding upstream of this crossing is contained within the channel, producing a confined floodplain with moderate flood depths of up to 3m. For a short distance downstream of the crossing, the creek temporarily widens and flows become shallower, before the channel constricts again approximately 100m downstream.

DIAGRAM 3 presents the 1% AEP peak flow velocities which consistently exceed 2.5 metres per second (m/s) throughout the channel, reaching up to 3.5m/s at bends and constrictions. The surrounding terrain rises steeply on both banks, limiting floodplain extent and confining high-velocity flows to the channel corridor.

Given this topographic setting, the 1% AEP flood event does not encroach onto the elevated ground on which either the Mine Site, situated approximately 100m north of the extent shown in the diagrams, or any Project-related infrastructure is proposed. Therefore, Vegetable Creek presents no flood hazard to the Mine Site, and there would be no off-site flood impact on this watercourse that attributable to the Project.

[3] Taronga Tin Project Surface Water Assessment prepared by ATC Williams, ref: 240357-R001-rev1, September 2025.

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DIAGRAM 2. EXISTING SCENARIO 1% AEP FLOOD DEPTH

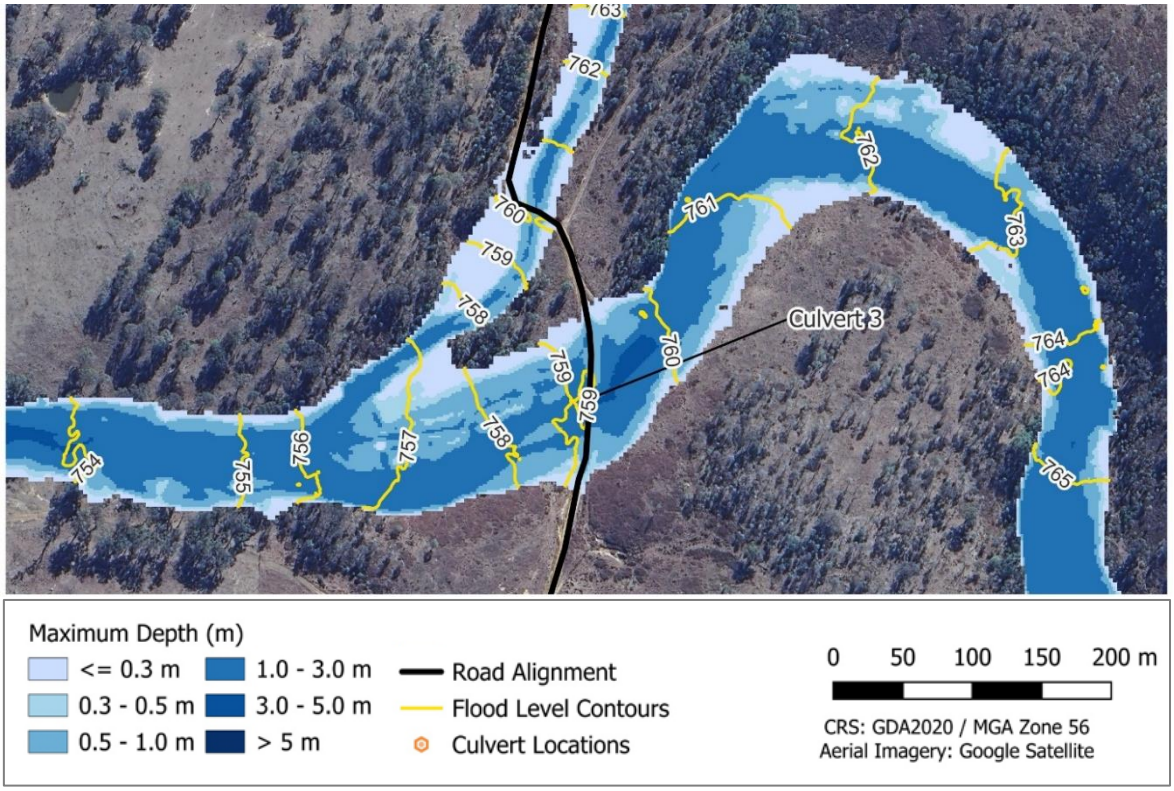
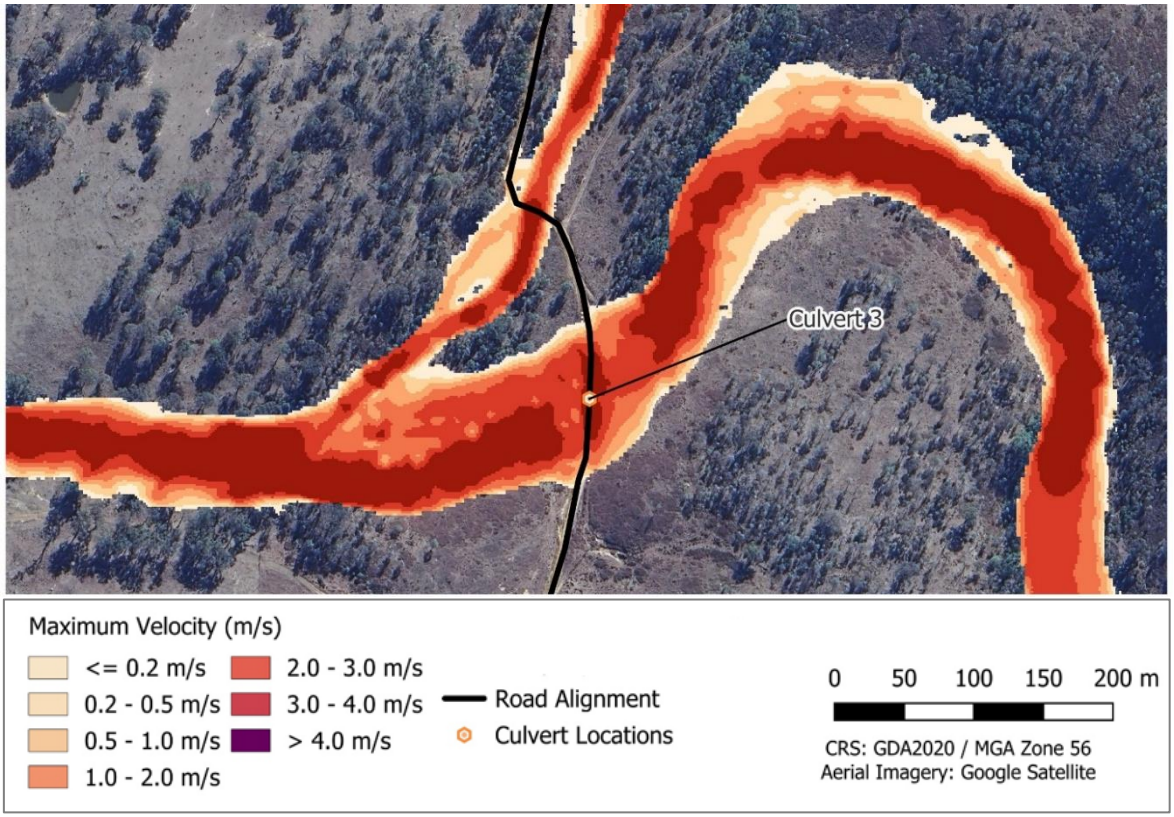


DIAGRAM 3. EXISTING SCENARIO 1% AEP FLOW VELOCITY



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2.2 Project Location

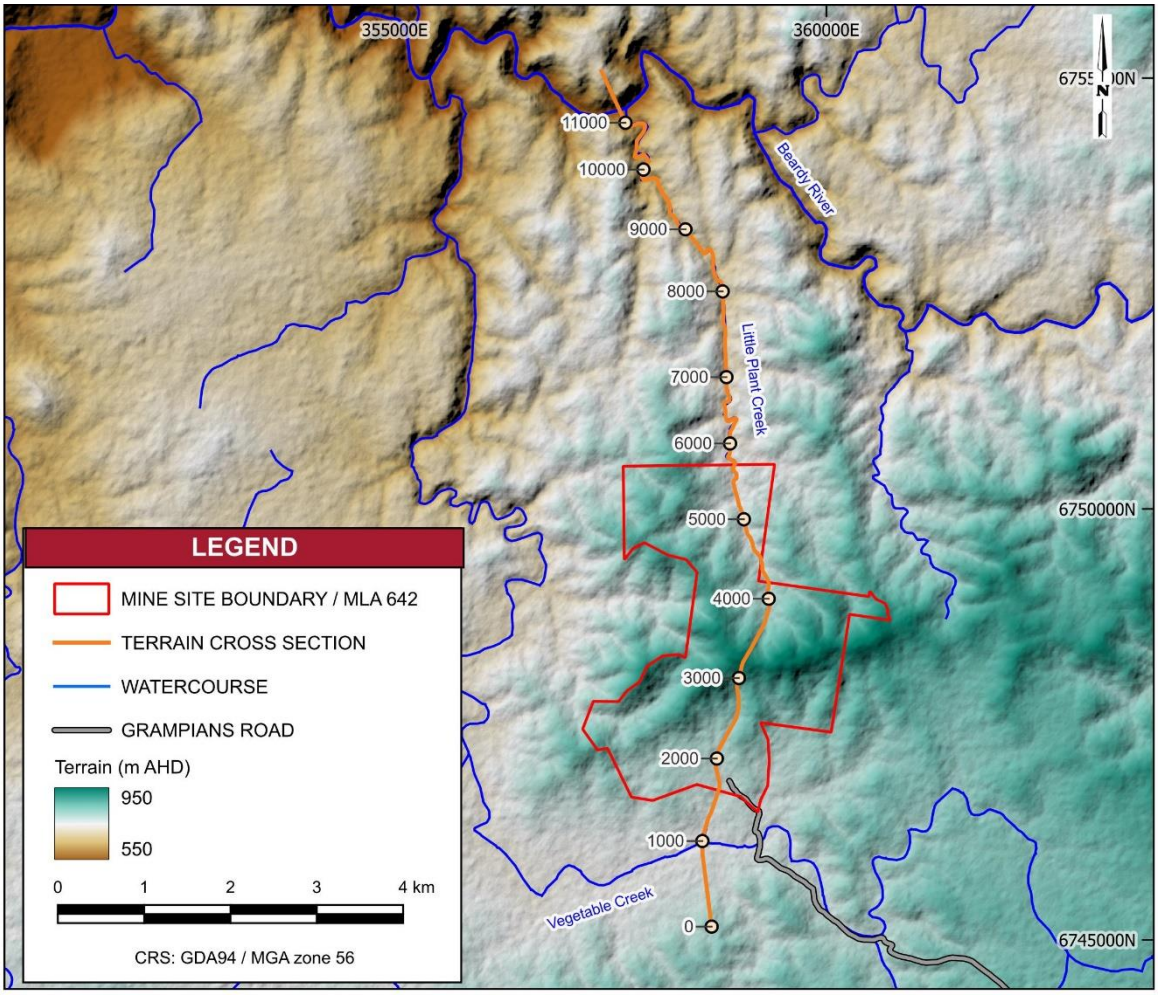
The Mine Site is situated at or near the catchment divide between Vegetable Creek and Little Plant Creek. At these headwater elevations, any flooding impacts arising from the Project would be confined to Applicant-owned land.

The Project would also reduce downstream flows as the development of mine-affected water management infrastructure within the Mine Site would excise upstream sections of contributing catchments. This infrastructure, constructed and operated in accordance with the excluded works provisions of the *Water Management (General) Regulation* 2025, would result in a slight reduction in peak discharge, thus locally reducing flood levels immediately downstream of the Mine Site.

The proposed Grampians Road upgrades would not alter flow conveyance or floodplain storage, and any changes to flood extents upstream or downstream of the culvert crossings are considered minor. As the existing road alignment would generally be maintained, there would be no change to the road's existing flood hazard, other than reduced hazard at the upgraded crossing locations.

To illustrate the Mine Site's topographic context, a 12 kilometre (km) long-section profile has been prepared traversing the three principal watercourses of the Project's setting— the sub-regional Vegetable and Little Plant Creeks, and the regional Beardy River. The alignment of this cross-section is presented in **DIAGRAM 4** with the section profile presented in **DIAGRAM 5**.

DIAGRAM 4. TERRAIN CROSS SECTION AND CHAINAGE



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DIAGRAM 5 also includes the proposed Mine Site Boundary — delineated by the two red vertical lines — sits at (approximate) chainages 1,700m to 5,700m. From **DIAGRAM 5** it is clear that the Mine Site straddles the upper headwaters of both Vegetable Creek and Little Plant Creek and demonstrates that Project-related infrastructure would be situated well above the floodplain of any surrounding watercourses.

The inset detail of **DIAGRAM 5** also shows that the 1% AEP flood extent on Vegetable Creek is confined to a narrow, shallow zone within the creek channel in the vicinity of chainage 950–1,000m. The surrounding terrain rises steeply on both banks, such that the design flood event remains confined within the channel and does not extend to the elevated ground upon which Project-related infrastructure is proposed.

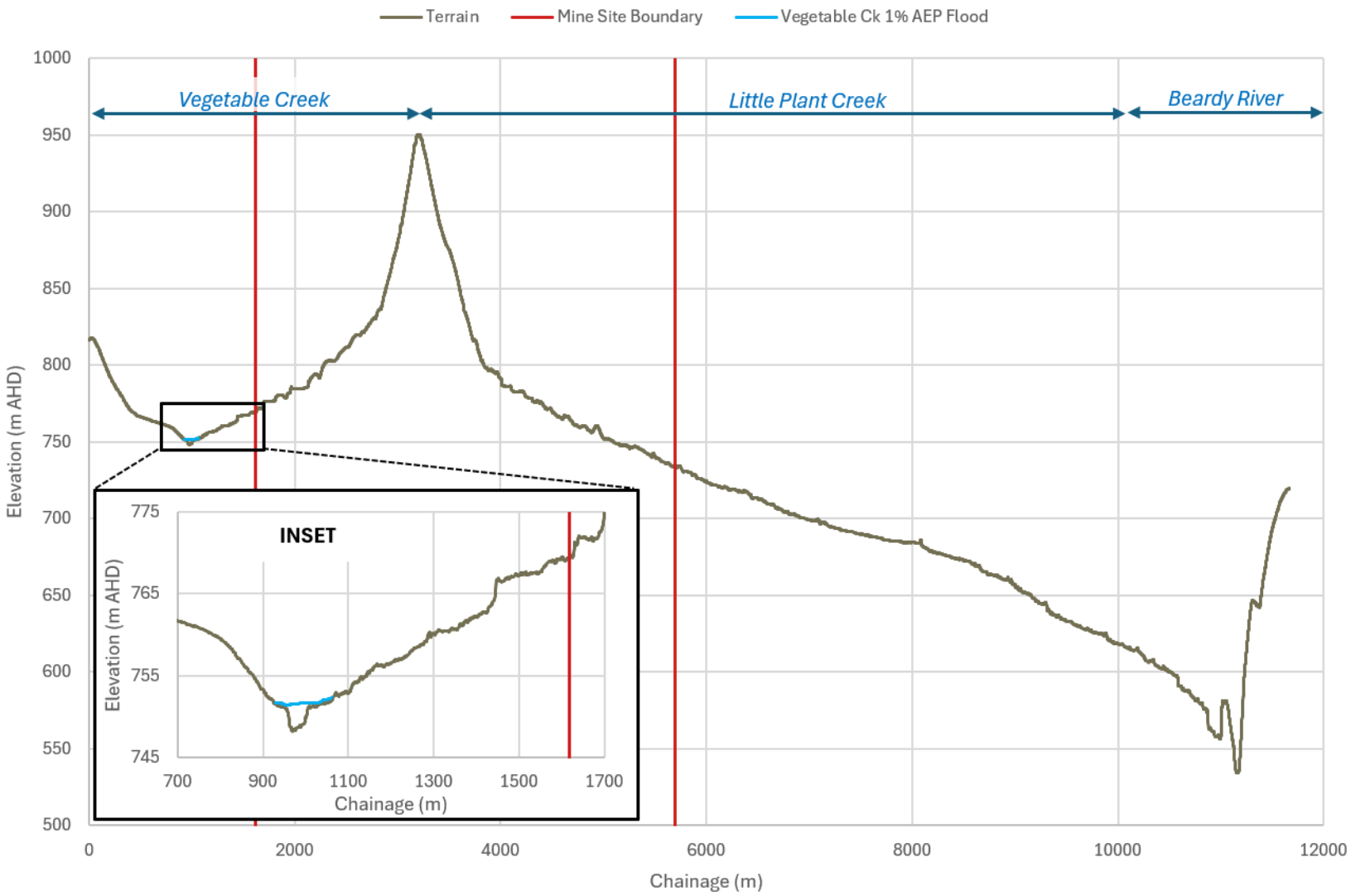
There is therefore no flood hazard to the mine from Vegetable Creek, and no off-site flood impact on this watercourse that could be attributable to the Project.

The Project would not result in any adverse flood outcomes to neighbouring properties, assets, or infrastructure, and would therefore not affect the social or economic costs of flooding on the community. Any marginal change in runoff from the Project's development footprint would be attenuated as flows travel through the lower valley reaches toward the Beardy River.

With a net reduction in contributing catchment area, there is no basis to anticipate a worsening of flood conditions at downstream receptors.

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DIAGRAM 5. TERRAIN CROSS SECTION



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2.3 Flood impacts

A formal flood impact assessment has not been prepared to inform the EIS; however, a scoped assessment has been undertaken given the Mine Site's position at the headwaters of the catchment. As the Project will remove contributing catchment area, it is expected to marginally reduce flood discharges in Vegetable Creek and Little Plant Creek.

No Project-related infrastructure is proposed within any flood hazard area, and given the highly confined, channelised nature of the upper watershed, there is negligible floodplain storage that could be affected. Accordingly, the Project presents no risk of worsening flood exposure or hazard to adjacent landholders or public infrastructure.

However, the Project would require upgrades to the public road network, namely Grampians Road to provide safe access and egress from the Mine Site and for private road users. The existing Grampians Road crossing of Vegetable Creek is a causeway with a single pipe culvert. This is proposed to be replaced with a group of culverts (Culvert 3), with the road embankment raised by 1m to improve trafficability. A second structure, Culvert 4, would also be modified as part of the road upgrade.

Flood modelling was undertaken to assess the impact of these upgrades. A map of the change in flood level at Culvert 3 and Culvert 4 between the existing and design scenarios for the 1% AEP event is provided in **DIAGRAM 6**. The diagram uses a colour-coded legend to illustrate changes in flood level following the road modifications. Areas that transition from dry to wet are shown in pink, and areas that transition from wet to dry are shown in purple. Negligible flood level changes (i.e less than 0.05m) are not displayed.

Flood level increases upstream of Culvert 3 extend approximately 90m and are confined entirely within the creek channel. The modelling demonstrates that the road upgrade will not result in any detrimental change to flood affectation for neighbouring properties, assets, or infrastructure. There is no loss of floodplain storage, no adverse impact to riparian vegetation, bank stability, or watercourse function, and no degradation of emergency management arrangements or evacuation routes. Risk-to-life outcomes are unchanged.

On this basis, the Project would not worsen flood exposure or hazard for people, property, or the environment. Given the Mine Site is located well beyond any defined floodplain, and the only infrastructure modification with any flood interaction is the Grampians Road culvert upgrade — the impacts of which are minor and localised — a detailed flood impact assessment is not warranted.

2.4 Flood Risk Management

By implementing the following measures, the Project would not place additional demands on emergency services during flood events and would effectively manage risk to life from flooding.

- Emergency Management Arrangements: The Project would integrate with existing community emergency management arrangements for flooding. Detailed hydraulic modelling has verified that the Grampians Road upgrade would not adversely affect adjacent landholders or increase flood risk to the community.
- Measures to Manage Risk to Life: The Project would incorporate specific workplace health and safety measures to manage any risk to life from flooding. This would include development of an Emergency Response Plan.

The Glen Innes Severn Local Environmental Plan (LEP) 2012[4] includes Flood Planning Clause 5.21. The proposed road upgrade aligns with the requirements of this clause and is compatible with

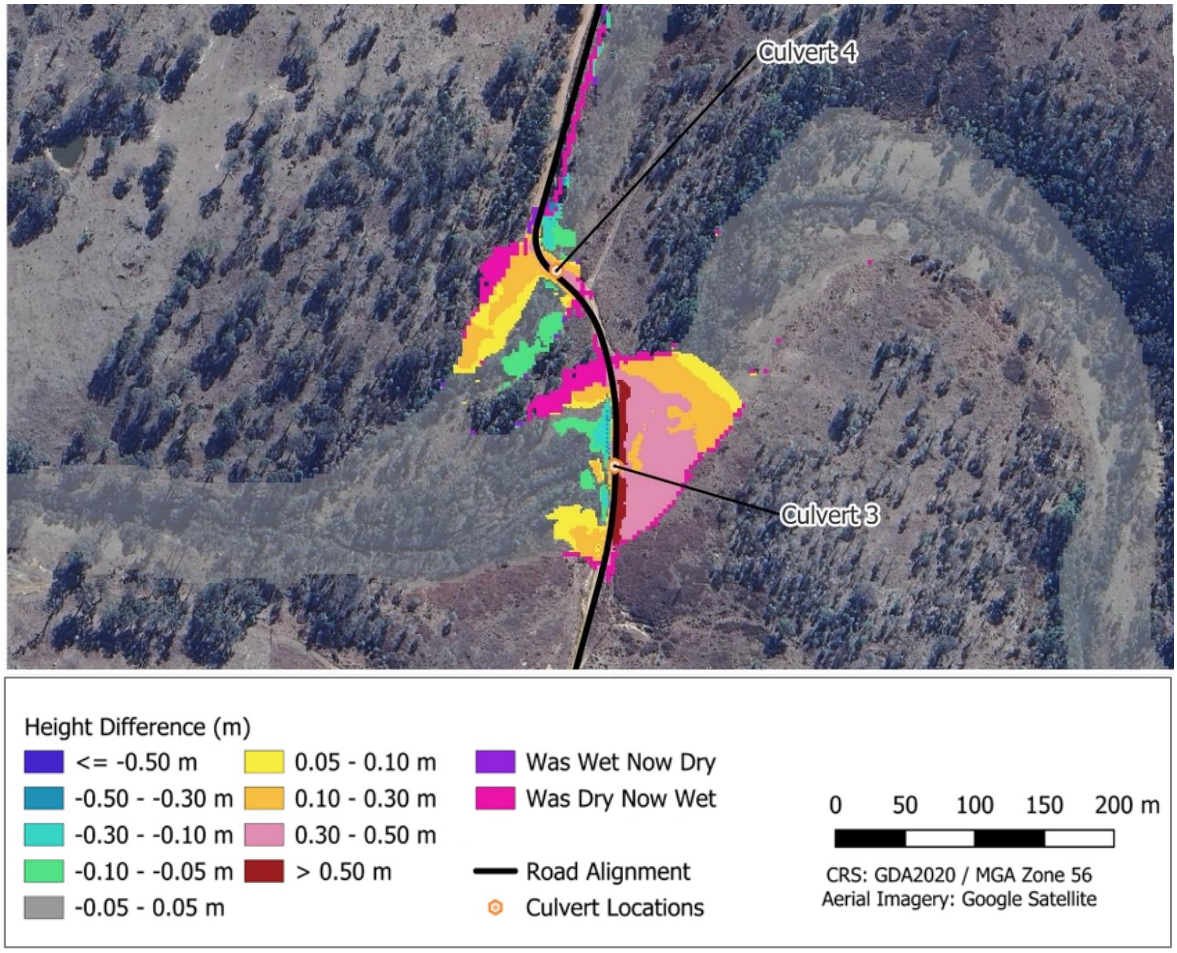
[4] New South Wales Government, Glen Innes Severn Local Environmental Plan 2012, Current version for 10 November 2023 to date, https://legislation.nsw.gov.au/view/html/inforce/current/epi-2012-0467

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flood function and behaviour, does not worsen flooding impacts on other properties or impede their safe evacuation, and does not cause environmental harm.

With reference to the Glen Innes Severn Flood Emergency Sub Plan 2023[5], the road upgrade would improve, rather than compromise existing evacuation routes. In addition, the proposed upgrades would not impact essential infrastructure or increase the isolation risk for nearby properties.

DIAGRAM 6. 1% AEP FLOOD LEVEL DIFFERENCE



[5] NSW State Emergency Service, Glen Innes Severn Flood Emergency Sub Plan, Version 3, October 2023.

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