

EGL Ref: 9702

**MATAKANUI GOLD LIMITED
BENDIGO-OPHIR GOLD PROJECT
PROCESS PLANT, INFRASTRUCTURE, AND ADMINISTRATION AREAS
GEOTECHNICAL REPORT**

Prepared for:

08 August 2025

Matakanui Gold Limited

EXECUTIVE SUMMARY

This geotechnical report has been prepared for Matakanui Gold Limited to support a resource consent application for the construction of the Process Plant, Infrastructure, and Administration area building platforms associated with the Bendigo-Ophir Gold Project (BOGP), as part of an application for approvals under the Fast-Track Approvals Act 2024.

Engineering Geology Limited (EGL) considers the proposed Process Plant, Infrastructure and Administration Areas (as shown on the appended figures) are not at significant risk from geotechnical hazards and are suitable for development with the mitigations proposed.

The building platforms for the Process Plant and Infrastructure Area will be formed by stripping weak materials to stockpile, reprofiling the alluvial materials (through cut to fill operations), and placing site won rockfill materials in the Shepherds Valley floor. Minor cuts of the Shepherds Valley slopes may be required to form the building platforms. The Administration Buildings are located on the terraces out of Shepherds Valley, next to the dry creek bed of Shepherds Creek. The Administration Building platform will be formed primarily by profiling the existing outwash gravel, till and alluvial materials.

EGL has reviewed the geotechnical investigations undertaken within and in proximity to the proposed building platforms to assess the geotechnical hazards of liquefaction, settlement, slope stability, and rockfall. Slopes above the building platforms are generally stable. Any minor cuts into the slope will form battered exposed rock faces with berms to control rockfall and surface water and will have little effect on the overall stability of the slopes. The building platforms will be able to be constructed so most structures only require shallow foundations. Some heavy structures such as the ball mill, tanks, and crusher may require piling.

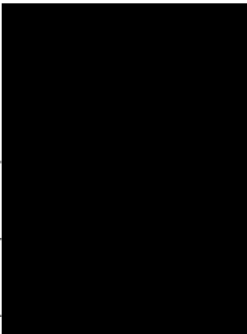
It is recommended that a earthworks suitability statement is provided on completion of the earthworks for the building platforms. This should cover the general geotechnical conditions and considerations for the benefit of future foundation design. Specific geotechnical design of foundations, beyond the general considerations, is required for all structures. Building consent will be required for most structures.

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Draft report versions are assigned alphabetic revision numbers. Final report versions and subsequent revision are assigned numeric revision numbers.

Document applicability and disclaimers

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This report shall only be read in its entirety.

Where this report is issued in draft the contents shall be for initial information and review only and are subject to change and shall not be relied upon.

The author of this report acknowledges that this report will be relied on by a Panel appointed under the Fast Track Approvals Act 2024 and these disclaimers do not prevent that reliance.

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BENDIGO-OPHIR GOLD PROJECT
PROCESS PLANT, INFRASTRUCTURE AND ADMINISTRATION AREAS
GEOTECHNICAL REPORT**

1.0 INTRODUCTION

Engineering Geology Limited (EGL) has been engaged by Matakanui Gold Limited (MGL) to provide a geotechnical advice for the Bendigo-Ophir Gold Project (BOGP). The purpose of this report is to summarise the geotechnical hazards and mitigations for the following areas as part of an application for a resource consent under the Fast-Track Approvals Act 2024:

- Process Plant and Infrastructure Area Buildings; and
- Administration Buildings.

Assessment of natural hazards is required under the Resource Management Act (1991) (Ref. 1) and Building Act (2004) (Ref. 2).

MGL are proposing to establish the BOGP, which comprises a new gold mine, ancillary facilities and environmental mitigation measures, within the Bendigo and Ardgour Stations in the Dunstan Mountains of Central Otago. The project site is located approximately 20 km north of Cromwell.

The BOGP involves mining the identified gold deposits at Rise and Shine ("RAS"), Come in Time ("CIT"), Sreks ("SRX") and Sreks East ("SRE"). Both open pit and underground mining methods will be utilised within the project site to access the gold deposits. Infrastructure to support the project will be constructed in the lower Shepherds Valley. Administration Buildings will be constructed on the gravel terraces beyond Shepherds Valley. The site location is shown on Figure 1.

The recommendations and opinions that are presented in this report are based upon factual data which was obtained during the site wide geotechnical investigation program. The results of such investigation program are presented in a separate report by EGL titled:

"Matakanui Gold Limited Bendigo-Ophir Gold Project Site Wide Geotechnical Factual Report", EGL Ref 9702 dated 3 June 2025.

2.0 DESCRIPTION OF THE PROCESS PLANT, INFRASTRUCTURE AND ADMINISTRATION AREAS

The proposed Process Plant and Infrastructure Area is located in the lower reaches of the Shepherds Valley. This area has an elevation of approximately 420 m above sea level (420 mRL) with valley slopes that rise to a maximum height of approximately 150 m to 180 m above the valley floor. The general location of the Process Plant and Infrastructure Area within Shepherds Valley is shown on Figure 2.

The lowest part of the valley floor is bisected by a meandering stream that originates in the valley head approximately 5.5 km further up valley. In those locations where the valley floor is near level, the stream has fringes of swampy grassland. Away from the stream, the side slopes of the valley are covered in grass, tussocks and lowland scrub.

The geomorphology of the valley slopes appears to be governed by the underlying geological conditions. The south-western slopes of the valley are relatively uniform and have an average slope angle of between 26 and 28° (to the horizontal). Visual assessment of rock outcrops within the south-western side of the valley indicates that the slope topography in this area is controlled by the foliation angle of the underlying schist bedrock (as the slope angle is very similar to the foliation angle).

The north-eastern valley slopes are more irregular than the opposite side and appear to be controlled by a mix of foliation and defects within the underlying schist rock mass.

The proposed Administration Building Area (and non-mine infrastructure) is located north of Shepherds Valley, out on the gravel (outwash, till, and alluvial) terraces. See Figures 5 and 6. It is located adjacent to the dry creek bed of Shepherds Creek.

3.0 PROPOSED DEVELOPMENT

The mine Process Plant and Infrastructure Area building platforms are currently proposed to be situated within the lower reaches of the Shepherds Valley floor. The building platforms require the construction of several earthworks platforms that, combined, extend over approximately 500 m length of valley floor. The width of the area varies between approximately 80 to 250 m. The general layout of the mine Process Plant and Infrastructure Area is shown on Figure 2.

The earthworks within the footprint to form the proposed Process Plant and Infrastructure Area building platforms are typically expected to comprise the following tasks:

- The construction of an all-weather access road to the building platforms in the valley floor;
- Removal of topsoil, mullock and unsuitable materials from the valley floor;
- Minor cuts into the south-western valley slope;
- Bulk earthworks that primarily comprise cut and filling of the valley floor materials, and filling using site won materials (likely TZ3 schist material from the pit or haul roads); and
- The re-alignment of Shepherds Creek (where required) to the north side of the valley floor.

The mine Process Plant and Infrastructure buildings will be constructed after the earthworks program is complete. The Process Plant structures are to house a variety of heavy industrial

plant and equipment including rock crushers, ball mills, tanks and gold processing plant, and supporting office, storage, and workshop type buildings.

Administrative and non-mine infrastructure buildings will be constructed on the gravel terraces north of the Shepherds Valley. These buildings are likely to be lightweight single-story structures.

4.0 GEOTECHNICAL INVESTIGATIONS

Site-specific geotechnical investigations have been completed across the wider BOGP site. The results of the BOGP geotechnical site investigation program are presented in a separate report by EGL titled “Matakanui Gold Limited Bendigo-Ophir Gold Project Site Geotechnical Factual Report”, EGL reference 9702 dated 3 June 2025.

The geotechnical investigation locations in the Process Plant, Infrastructure, and Administration Area are shown on Figures 5, 6, and 7.

Four test pits were undertaken in the Administration Area on Figures 5 and 6. These are MTP043, MTP044, MTP045, and MTP046.

25 test pits were undertaken in the Process Plant and Infrastructure Areas in Figure 7. These are MTP001, MTP002, MTP003, MTP004, MTP005, MTP006, MTP007, MTP013, MTP016, MTP017, MTP018, MTP019, MTP020, MTP023, MTP024, MTP025, MTP047, MTP048, MTP049, MTP050, MTP051, MTP052, MTP053, MTP054 and MTP055.

A summary of the test pits is included in Table 1.

Geotechnical boreholes MDD362 and MDD365 targeted the lower Shepherds Valley in the Process Plant and Infrastructure Area. MDD365 is directly in the Process Plant area. Standard Penetration Testing (SPT) in these boreholes assist with characterising the density of the valley alluvium. Three vibrating wire piezometers were installed in each borehole.

Exploration holes have also been undertaken around the Process Plant and Infrastructure Area. They include MRC060, MRC063, MRC071, MRC071R, MRC072, MRC072R, MRC073, MRC077, MRC078, MRC243, MRC243, MRC244, and MRC245 and are shown in light grey on Figure 7 for reference information. MGL hold the exploration borehole logs. The boreholes are primarily useful to determine depth to rock (if required) as they did not target recovery in the soils above rock.

4.1. Geological Units

The following geological description of the strata that is inferred to underlie the BOGP is based on a review of available site-specific investigation results and information published on the Geological and Nuclear Science (GNS) 1:250,00 scale geological map (Ref. 1) and in the memoir “Geology of the Wakatipu Area” by Turnbull et al (2000) (Ref. 2). The relevant excerpt from the GNS geological map is presented as Figure 4 within the Site Wide Geotechnical Factual Report.

The summary of the main geological units within the Process Plant area are as follows (after Turnbull et al 2000. Ref. 2):

Loess: These deposits are not mapped on geological maps of the area and are described in the geological memoir as “*too thin, diffuse and complex to be shown on a map*”. Locally, on the lower flatter slopes the loess may have been deposited as a thin ‘blanket deposit’ with a

depth of 1 to 2m thick while on steeper slopes it has been remobilised and forms a thin loess / colluvium slope wash unit containing material from the underlying rock. Within the vicinity of the Process Plant these deposits occur on the lower slopes and generally cover the weathered schist rock.

Undifferentiated Quaternary & Holocene Landslide Deposits: Deposits ranging from shattered rock to clay and boulder breccias. These materials are typically derived from underlying adjacent rocks. It may be described in some references as colluvium and slope wash deposits. These deposits seem to be more associated with TZ3 schist and mostly occur on the northeastern side of the valley.

Alluvial Deposits and Fans (Q1a & Q1af): Undifferentiated, typically unconsolidated, variable weathered gravels with interbeds of sands, silts and clays. These units were generally encountered in the valley floor or within an outwash fan on the southern side of the valley. These materials comprise clays, silts, sands and gravels derived from parent materials upslope of the deposition location.

Dredge Tailings and sluiced gravels (Q1n): Washed and redeposited quartz -schist gravels and sand. This unit was encountered as a veneer overlying other pre-existing surfaces down stream of historic gold workings. This includes the outwash fan in the Process Plant and Infrastructure Area which is below the CIT deposit. The sluicings may be indistinguishable from the alluvials.

Till (Q12t & Q16t): These deposits comprise till and outwash gravels. They are generally present as terraces against the western side of the Dunstan Mountains to the east of the Lindis River.

Torlesse TZ3 Schist (*Rakaia Terrane, Whakatipu Group*) (Yt3): Permian to Triassic era undifferentiated pelitic and psammitic schist and greenschist sequences. This unit may be locally weathered to a silty gravel. The TZ3 schist is found on the northeast valley slopes.

Torlesse TZ4 Schist (*Rakaia Terrane, Whakatipu Group*) (Yt4): Permian to Triassic era undifferentiated pelitic and psammitic schist and greenschist sequences. This unit may be variable segregated, veined and foliated.

The distribution of the geological units has been annotated on appended Photographs 1 and 2. The administration building is located on the alluvial over outwash gravel or till deposits shown in Photograph 3.

5.0 LOCAL GEOLOGICAL CONDITIONS

The test pits and boreholes completed to date indicate that the valley floor is underlain by alluvial deposits sourced from up-valley and deposited by the stream. At the valley edge, the alluvial deposits are overlain by a mix of alluvial fan material, which has washed down local gullies, and colluvium. The slopes above the valley floor comprise a thin veneer of loess overlying weathered rock (schist).

The alluvial deposits encountered in machine borehole MDD365 at the Process Plant were 10 m deep and overlay TZ3 schist. The borehole is located on the alluvial fan and colluvial material. The top of the schist rock is clayey and is logged as a fault gouge. Piezometers in the borehole MDD365 indicate notable artesian groundwater pressures (14 to 15 m) in the rock at depth.

The alluvial deposits encountered in machine borehole MDD362 in the Infrastructure area downstream of the main Process Plant area were 6 m deep and overlay TZ3 schist. Again, the top of the schist rock is clayey and is logged as a fault gouge. Piezometers in the borehole MDD365 indicate slight artesian groundwater pressures (2 to 3 m) in the rock at depth.

The alluvial material which was observed in the test pits generally comprised sandy gravel materials with a variable fines content (i.e. silts and clays). Commonly, at the base of the test pits, weathered material comprising silty clay and/or clayey silt was encountered before quickly transitioning to moderately to un-weathered schist rock. Two geological cross sections are presented as Figure 3 and Figure 4.

The test pits located at the topographic transition between the valley floor and the valley slopes encountered either alluvial fan material or loess colluvium that quickly transitioned to weathered and unweathered schist rock.

SPT Test results for MDD362 and MDD365 are presented in Tables 2 and 3. The results indicate the alluvial materials are medium dense.

Table 5 summarises the geotechnical design parameters that have been used in the following assessments which are described in this report:

- Liquefaction analysis;
- Settlement analysis; and
- Slope stability analysis.

6.0 SITE SOIL CLASS

In terms of NZS 1170.5 (Ref. 3), depending on the specific location within the wider site footprint, the ground is assessed to comprise one of the following subsoil classes:

- Class A/B: Strong rock in those locations where the building platforms have been excavated down to expose unweathered TZ3 or TZ4 schist material, or,
- Class C: Shallow soil in those locations where the building platform is located either on filled ground or alluvial deposits.

The depth to rock at the Administration Buildings on the gravel terraces may be notable and therefore specific review of the subsoil class may be required to determine if the subsoil class is Class D in this location.

7.0 BUILDING IMPORTANCE AND DESIGN PEAK GROUND ACCELERATION

The subject site is located within an a moderate to high seismic area of New Zealand. This being stated, it is anticipated that the seismic risks and consequences to the proposed development can be appropriately mitigated or managed via conventional design and construction techniques.

In terms of Table 3.2 of NZS:1170.0, most of the structures within the Process Plant and infrastructure area are expected to be Importance Level 2 (IL2). Structure that contains hazardous material may need to be designated as Importance Level 3 (IL3). This is to be confirmed in detailed design.

The peak horizontal seismic acceleration (PGA) values that have been adopted for the purposes of this report have been estimated in accordance with the relevant recommendations that are published in the Ministry of Business Innovation and Employment (MBIE) guideline “Earthquake Geotechnical Engineering Practice - Module 1” (Ref. 4). Such PGA values are summarised in attached Table 4. Values from the Site-Specific Seismic Hazard Assessment can be used for detailed design as long as minimum design values are observed.

8.0 LIQUEFACTION RISK

8.1. Seismic Design

For liquefaction assessment, the Serviceability Limit State (SLS) and Ultimate Limit State (ULS) seismic design loading in Table 4 has been applied. These cases consider a 50-year design life, based on Annual Exceedance Probability (AEP) of 1/25 / 1/500 for IL2 Structures and 1/25 / 1/1000 for IL3 structures . This should be reviewed in detailed design.

8.2. Liquefaction Assessment

The liquefaction assessment that is presented in this report has been carried out using the specialist software package Settle 3D that is published by RocScience and the relevant SPT results that are shown on the borehole logs.

The Settle 3D program incorporates various liquefaction assessment methods, and the method of the Boulanger and Idriss (2014) (Ref. 7) has been adopted for the purpose of this report. The estimate of liquefaction induced volumetric settlements is based on Zhang et al. (2004) (Ref. 6).

Generally, no liquefaction is estimated to occur at the SLS events, and minimal liquefaction appears to be triggered for the ULS (IL2) event, with the critical earthquake scenario being the ULS (IL3) event. The maximum settlements which were estimated for the ULS design scenario range from 46 to 90 mm. The above analysis was undertaken for the location where the deeper alluvial deposits were encountered (borehole MDD365). Settlements will be lower than these estimates along the edges of the valley floor. The design of the foundations shall account for the effect of liquefaction. Detailed design shall be undertaken for each structure.

8.3. Lateral Spreading

The earthworks will modify the valley floor creating flat building platforms with a free face at the realigned stream edge. The liquefiable material ranges between 2 and 4 m thick. Groundwater levels from the test pits found that the groundwater table was at least 2 m deep within the valley, shallowing towards the stream and valley invert. It is assumed that the slope of the ground towards the stream is near level, i.e. less than 5° and that the engineered fill material placed to form the building platform will be above the water table and therefore forming a non-liquefiable crust.

The liquefaction analysis which was undertaken on Borehole MDD365 was located in the alluvial deposits. Lateral spreading interpreted from the results of this borehole indicate that the ground displacement due to a ULS (IL3) magnitude event could be in the order of 20 to

50 cm toward the valley centreline. Foundations shall be designed for these potential lateral spreading effects. Options include tying foundation systems together or using raft type slabs. Geogrid reinforcement is also an option. The selection of the foundation solution for each structure is for detailed design.

9.0 SETTLEMENT ANALYSIS

Cut and fill earthworks will be required across the valley floor to achieve the final ground surface levels and create the proposed building platforms and access roads for the Process Plant and Infrastructure Areas.

Initial modelling of the building platform earthworks construction indicates that the as-built fill depths are likely to vary between 1 and 3 m and locally be a maximum of approximately 5 m thick. Placement of such fill material is expected to result in consolidation of the underlying alluvial materials and this will result in settlement of the finished ground surface.

The total settlements due to construction of the proposed earthworks program have been conservatively estimated by EGL for the deepest area of filling in conjunction with the deepest known alluvium profile. Such settlement analysis was undertaken using the specialist RocScience software package “Settle3D” Version 4. The geotechnical input parameters for the EGL settlement assessment were inferred based on a combination of the soil and rock descriptions provided on the currently available drilling logs, site observations, experience with similar materials and analysis of the relevant SPT data in conjunction with published correlations to infer a Coefficient of Compressibility (M_v).

The alluvial deposits are mostly granular in nature, and EGL anticipates that they will have a relatively high permeability which will enable their consolidation to occur quickly (i.e. >90 to 95% consolidation could occur within a few weeks). The depth of alluvium thins away from the middle of the valley, with the observed settlements reducing.

In summary, the above preliminary settlement analysis indicates settlements in the order of 20 and 30 mm could occur as a result of the proposed fill depths. Specific assessment of the effect of settlement shall be incorporate into detailed design considerations.

Full details of the preliminary settlement calculations and estimates are presented in Appendix A.

Much of the earthworks-related settlement is expected to occur as its construction is advanced. However, a proportion of this settlement will likely occur after the earthworks construction is complete. As such, robust geotechnical investigation, testing, engineering assessment, design and construction monitoring will be required to manage the risk of ground surface settlement causing unacceptable levels of damage to the Process Plant, infrastructure buildings, pavements and/or services. Based on experience, and a review of the preliminary settlement analysis results, EGL anticipate that this settlement related risk can be appropriately mitigated during the earthworks construction phase via the use of settlement hold periods and surcharging if required and appropriate.

10.0 GEOTECHNICAL STABILITY ASSESSMENT

10.1. Cut Batter Design Profile

Minor cuts may be required at the toe of the schist slopes on the south side of the valley. Investigations indicate that this cut will be undertaken within either TZ4 schist at the north-west end or TZ3 schist at the south-east end of the site.

Preliminary cut profile for assessment is nominally 8 m high cut batters at 55° with a 4 m wide bench between each cut batter face. This profile will result in an overall average slope angle of approximately 45°.

10.2. Qualitative Stability Assessment

As part of the scope of work EGL has undertaken a review of historical photographs and a site walkover. EGL review of the available aerial photographs and onsite observations did not identify any surface evidence of recent instability on the valley slopes to the south-west of the proposed Process Plant footprint.

10.3. Quantitative Stability Assessment

The proposed Process Plant and Infrastructure Area building platforms will be located below the existing slope with potential minor cut faces at the toe. As such, the global geotechnical stability of the site has been assessed and analysed by EGL.

Sections 1 and 2 were reviewed. The location of Sections 1 and 2 are shown in Figure 2. Section 2 was steeper and more critical than Section 1. The analyses used the specialist SLOPE/W computer software package and the relevant topographic and geotechnical details shown on Section 2 in Figure 4.

The results of the above slope stability analyses are shown on attached Figures 1.1 to 2.2 (Appendix B). These analyses adopted the geotechnical strength parameters in Table 5.

A check of the slope stability under static conditions and an ULS seismic acceleration was undertaken.

The results of the EGL global geotechnical stability analysis are summarised in attached Table 6. These results indicate that the Factor of Safety (FoS) of the slope adjacent to the proposed building platform is greater than the normally accepted values for the static case.

For the seismic case, a 1 in 1000 year acceleration was adopted, assuming an IL3 loading. The FoS was less than 1.0 indicating some displacement. EGL assessed the co-seismic displacement using Bray and Macedo methodology (Ref. 5). The horizontal yield acceleration “ k_y ” was determined to be 0.21g. The estimated shear-induced slope displacement was 30 to 140 mm, which is relatively minor.

10.4. Residual Risks of Cut Faces

On the south-western (proposed cut) side of the valley the schist rock foliation dips out of the slope at an unfavourable angle. As such there is a risk that joint sets dipping orthogonal to the foliation may provide a relief mechanism and allow wedge and toppling failures to occur. It is possible remedial measures will need to be constructed to secure potential rock failures. Such remedial measures are likely to comprise rock netting above critical areas, rock bolting and cabling to secure areas of potential block failures. This will be undertaken through a construction monitoring/observation approach following detailed design.

10.5. Rockfall Hazard from Natural Slopes Above the Proposed Cut Face

There are exposed outcrops of rock upslope of the proposed building platforms. Typically, such rock outcrops are less than 1 m in height above the existing ground surface and comprise large platy material then tends to lay flat against the ground surface.

Observations at the toe of the slope did not identify a significant risk of these rocks migrating downslope and there were no boulders encountered in the testpits that could be interpreted as being the result of a rockfall from upslope.

It is inferred that the foliated material, where it may become dislodged, does not move a significant distance from the source outcrop due to boulder shape being platy rather than round. The rockfall hazard from the natural slopes above the Process Plant is low and can be managed through operational risk assessments. Mitigations if required, include detailed outcrop mapping and securing outcrops via a combination of rock bolting and cable anchoring. This will be undertaken through a construction monitoring/observation approach following detailed design.

10.6. Construction Monitoring

Cut slope faces (if required) shall be mapped during construction and the joints and foliation measured and checked against the stability models and analysis. A kinematic analysis of the mapped joints and foliation should be undertaken based on the results of the as-built observations to confirm the likely risk of wedge and toppling failure of the exposed cuts and construct additional stabilisation measures as appropriate.

11.0 CLEANWATER DIVERSION CHANNEL

The existing stream is proposed to be realigned during the construction of the Process Plant building platforms. It is anticipated that some of the channel will be formed over the alluvials on the north side of Shepherd Valley.

A design stream flow has been calculated with a channel shape to prevent flooding of the building platform during a 1:100 year design storm event. The width required of the channel is approximately 11 m. Design calculations and channel dimensions will be further refined as part of the earthworks detailed design for the Process Plant.

12.0 EROSION AND SEDIMENT CONTROL

A site-wide erosion and sediment control methodology has been developed for the site. Details are presented in an Erosion and Sediment Control Management Plan.

13.0 CONCLUSIONS AND RECOMMENDATIONS

On the basis of our investigations, site observations and geotechnical analyses that has been completed to date, EGL generally considers the proposed Process Plant, Infrastructure, and Administration areas (as shown on the appended drawings) are geotechnically suitable for the proposed development and are not exposed to any natural hazards that cannot be mitigated through normal design and construction solutions.

The following sub-sections present EGL's geotechnical recommendations for resource consent.

13.1. Earthworks

It is anticipated that the earthworks construction that is currently proposed for this project may be completed using earthmoving and rock breaking equipment and techniques that are commonly deployed in the wider Otago region.

A Geotechnical Earthworks Specification (EWS) will be prepared for this project. Such EWS will outline the requirements for all key earthworks construction issues such as site preparation, fill placement, subsoil drainage, compaction requirements, quality assurance testing and as-built records.

13.2. Excavatable & Ripability of Schist

Site observations indicate that the unweathered schist material is capped by a 1 to 2 m thick veneer of weathered materials. It is anticipated that the weathered rock material may be removed by ripping. However, the underlying unweathered rock material is significantly harder and less fractured and is likely to be difficult or impossible to rip using conventional earthmoving equipment. It is possible that the unweathered schist rock material will need to be drilled and blasted to facilitate its excavation. The rock material from the cut slopes may need to be crushed and processed for placement as a bulk fill.

13.3. Compaction

Two types of site-sourced material will be available to place as engineered fill:

- Alluvial deposits (sourced from within the fill platform area and up-valley); and,
- Weathered to unweathered schist (sourced from the south-western slope cut, haul roads or open pits).

The materials are essentially expected to comprise a gravelly material. Effective compaction of these materials is likely to be undertaken using heavy vibratory compactors.

13.4. Buildings and Structures

An Earthworks Completion Report (ECR) would be prepared upon the completion of earthworks. Such a report would generally include any geotechnical constraints recommendations for the future building and pavement foundation design and construction.

At this stage it is considered likely that the BOGP Process Plant, Infrastructure, and Administration area earthworks will be staged to enable timely and progressive construction of critical infrastructure as the mine establishment is progressed. Site-specific design for each building platform will be done for Building Consent ahead of the ECR. It is likely that a Geotechnical Detailed Report will be prepared to support the Building Consent Application. The ECR would confirm the assumptions made for design.

In general, building platforms will be suitable to support conventional lightweight timber and/or steel portal framed buildings providing such building platforms are appropriately designed and the as-built fill is placed, compacted, and tested in accordance with normal best practices.

Heavier structures such will be constructed upon specifically designed engineered fill platforms or be piled. It is proposed that an appropriately qualified and experienced geotechnical professional engineer (CPEng - Geotechnical)) will oversee the design and certification of these platforms or founding conditions and will provide appropriate documentation and producer statement certification as required under the normal Building Consent application and code of compliance certification (CCC) processes.

14.0 REFERENCES

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TABLES

Table 1: Summary of Relevant Testpits

GI ID	Depth of Testpit (m)	Depth to groundwater (m)	Description of Ground Conditions*			Geological Unit
MTP1	6	5.6	0 to 1m: Silt	1.1 to 5m: Gravel	5 to 6m: Clay	Alluvial Fan
MTP2	6.0	4	0 to 2m: Sandy GRAVEL	2 to 3m: Clayey SILT	3 to 6m: Coarse GRAVEL	Holocene Landslide Deposits
MTP3	4.0	3	0 to 2.5m: Sandy SILT	2.5 to 4m: Sandy GRAVEL	-	Alluvial Fan
MTP4	4.1	N/A	0 to 1m: SILT minor clay	1 to 3m: Gravelly SILT / SILT	3 to 4m: GRAVEL	Holocene Landslide Deposits
MTP5	7.0	N/A	0 to 2.5m: GRAVEL	2.5 to 3.5m: Sandy SILT	3.5 to 7m: Sandy GRAVEL	Holocene Landslide Deposits
MTP6	7.0	5	0 to 1.2m: Organic CLAY	1.2 to 2.2m: Clayey SILT	2.2 to 7m: Bouldery COBBLES	Alluvial Fan
MTP7	6.0	N/A	0 to 2.2m: Sandy GRAVEL	2.2 to 5m: Coarse GRAVEL/COBBLES	5 to 6m: SILT	Alluvial Fan
MTP13	6.5	N/A	0 to 0.5m: Organic SILT	0.5 to 6.5m: Gravel	-	Alluvial Fan
MTP16	6.5	6	0 to 2m: SILT	2 to 5.4m: Gravelly SAND	5.4 to 6.5m: COBBLES, BOULDERS	Alluvial Fan
MTP17	1.0	N/A	0 to 1m: SILT	-	-	Holocene Landslide Deposits
MTP18	6.5	4	0 to 1m: SAND	1 to 3.5m: SILT, minor CLAY	3.5 to 6.5m: COBBLES, BOULDERS	Alluvial Fan
MTP19	2.5	N/A	0 to 2.5m: GRAVEL	-	-	Holocene Landslide Deposits
MTP20	5.5	N/A	0 to 1m: GRAVEL	1 to 3m: SILT, SAND	3 to 5.5m: COBBLES, BOULDERS	Holocene/ Undifferentiated quaternary Landslide Deposits
MTP23	6.0	3	0 to 1.6m: Clayey SILT	1.6 to 5.6m COBBLES	5.6 to 6m: GRAVEL with minor clay	
MTP24	7.5	N/A	0 to 1.8m: Sandy GRAVEL/SILT	1.8 to 4.5m: GRAVEL	4.5m to 7.5m: BOULDERS	Alluvial Fan
MTP25	4.5	N/A	0 to 4.5m: Alternating layers of GRAVEL, SILT and CLAY.			Alluvial Fan
MTP43	6.0	Not encountered	0 to 1.5m: SILT	1.5 to 6.0m: Sandy Gravel		Alluvium over outwash gravels (or till)
MTP44	7.0	Not encountered	0 to 2.0m: Sandy GRAVEL	2.0 to 3.0m: GRAVEL	3.0 to 7.0m Sandy GRAVEL	Alluvium over outwash gravels (or till)
MTP45	6.0	Not encountered	0 to 6.0m: Sandy GRAVEL			Alluvium over outwash gravels (or till)
MTP46	6.5	Not encountered	0 to 1.0m: Silty GRAVEL	1.0 to 6.5m: Sandy GRAVEL		Alluvium over outwash gravels (or till)
MTP47	2.8	N/A	0 to 2.8m: Silty GRAVEL	-	-	-
MTP48	3.1	N/A	0 to 0.7m: Silty GRAVEL	0.7 to 2m: Silty CLAY	2 to 3.1m: Sandy GRAVEL	-
MTP49	3.1	N/A	0 to 0.8m: Silty GRAVEL	0.8 to 1.7m: Silty CLAY	1.7 to 3.1m: Sandy GRAVEL	-
MTP50	4.1	N/A	0 to 4.12m: Silty GRAVEL	-	-	-
MTP51	6.9	N/A	0 to 2m: Silty GRAVEL	2 to 6.9m: Sandy GRAVEL	-	-
MTP52	3.2	N/A	0 to 1.9m: Silty SAND/GRAVEL	1.9 to 3.2m: Silty SAND/CLAY	-	-
MTP53	3.8	N/A	0 to 1.8m: Silty GRAVEL	1.8 to 3m: Clayey SILT	3 to 3.8: Sandy GRAVEL	-
MTP54	3.6	N/A	0 to 3.6m: Alternating layers of Silty GRAVEL, SILT and Silty CLAY.			-
MTP55	3.5	N/A	0 to 0.9m: Gravelly SILT	0.9 to 1.6m: Sandy GRAVEL	-	-

*Topsoil depth not distinguished in table. See log for topsoil depth within top layer.

Table 2: Process Plant and Infrastructure Area Borehole MDD362 Standard Penetration Test Results

Geological Unit	Depth (m bgl)	SPT N Value (N ₆₀)
Alluvium/Colluvium Deposits	1	4
	2	14
	3	29
	4	19
	5	23
TZ3 Schist	6	50+
	7	40
	8	50+
	9	50+
	10	39
	11	50+
	12	50+

Table 3: Process Plant and Infrastructure Area Borehole MDD365 Standard Penetration Test Results

Geological Unit	Depth (m bgl)	SPT N Value (N ₆₀)
Alluvium/Colluvium Deposits	1	15
	2	12
	3	13
	4	12
TZ3 Schist	5	23
	6	29
	7	33
	8	50+
	9	23
	10	24
	11	36
	12	50+
	13	50+
	14	27
	15	50+
	16	50+
	17	40
	18	46
	19	50+
	20	50+
	21	50+
	22	50+
	23	49
	23	49
	24	50+
	25	50+
	26	50+
Thompson Gorge Fault	27	0
	28	50+
	29	50+

Table 4: Summary of Geotechnical Design PGA and Earthquake Magnitude Values

Design Scenario	Earthquake Return Period	Peak Ground Acceleration (g)	Earthquake Magnitude
SLS	25	0.08	6.2
ULS (IL2 Structures)	500	0.34	6.2
ULS (IL3 Structures)	1000	0.44	6.2
Slopes (IL3)	2500	0.61	6.2

Table 5: Summary Soil Parameters

Name	Unit Weight (kN/m ³)	UCS Intact (kPa)	Intact Rock Parameter mi	Geological Strength Index GSI	Disturbance Factor D	Anisotropic Strength Fn	Effective Cohesion (kPa)	Effective Friction Angle (°)
Colluvium/Weather Schist	18	-	-	-	-	-	5	32
Unweathered TZ3 Schist (Isotropic)	26	65,000	12	55	0.7	-	50	40
Unweathered TZ3 Schist with Anisotropic Strength Function <40m	26	-	-	-	-	-	50	40
Unweathered TZ3 Schist with Anisotropic Strength Function >40m	26	-	-	-	-	-	150	45

Table 6: Summary of Slope Stability Analysis

Reference	Analysis	FOS	ky
Figure B1	Circular Failure – Isotropic Material	4.85	-
Figure B2	Circular Failure – Anisotropic Material	1.47	-
Figure B3	Block Failure – Isotropic Material	5.51	-
Figure B4	Block Failure – Anisotropic Seismic	1.62	-
Figure B5	Circular – Anisotropic Seismic	0.65	-
Figure B6	Circular – Anisotropic Seismic Yield	-	ky = 0.21

FIGURES

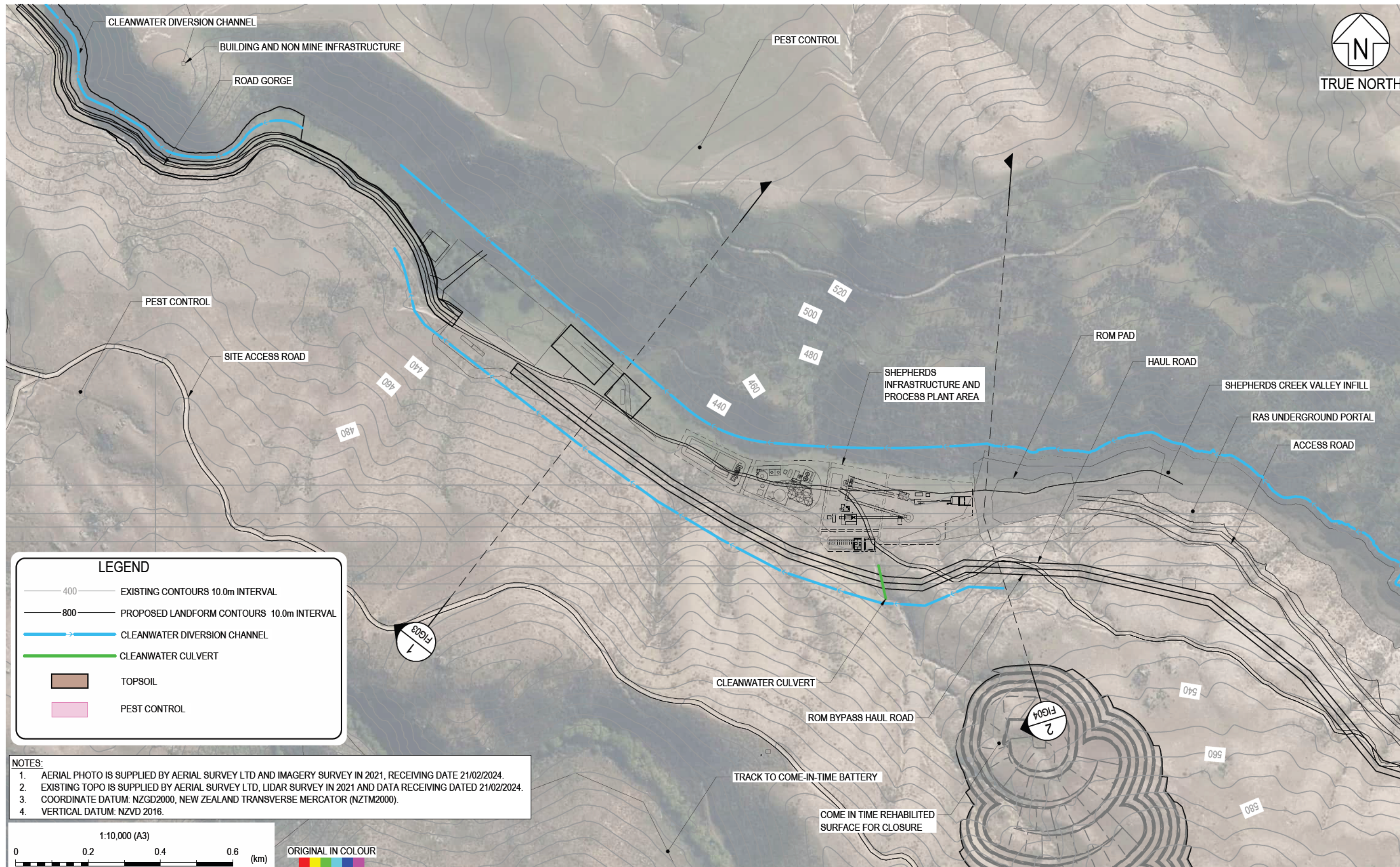
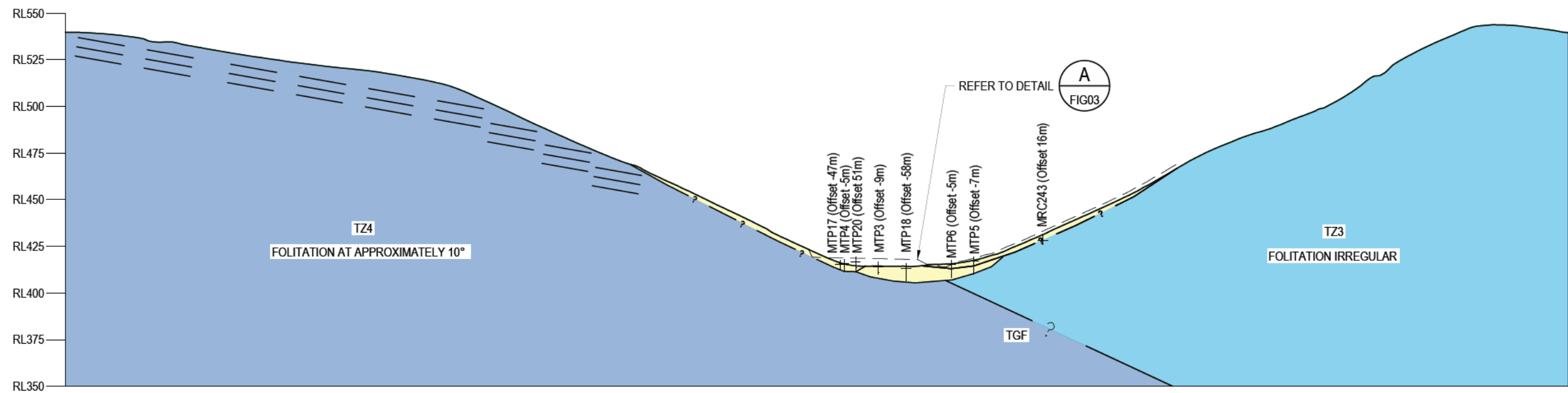
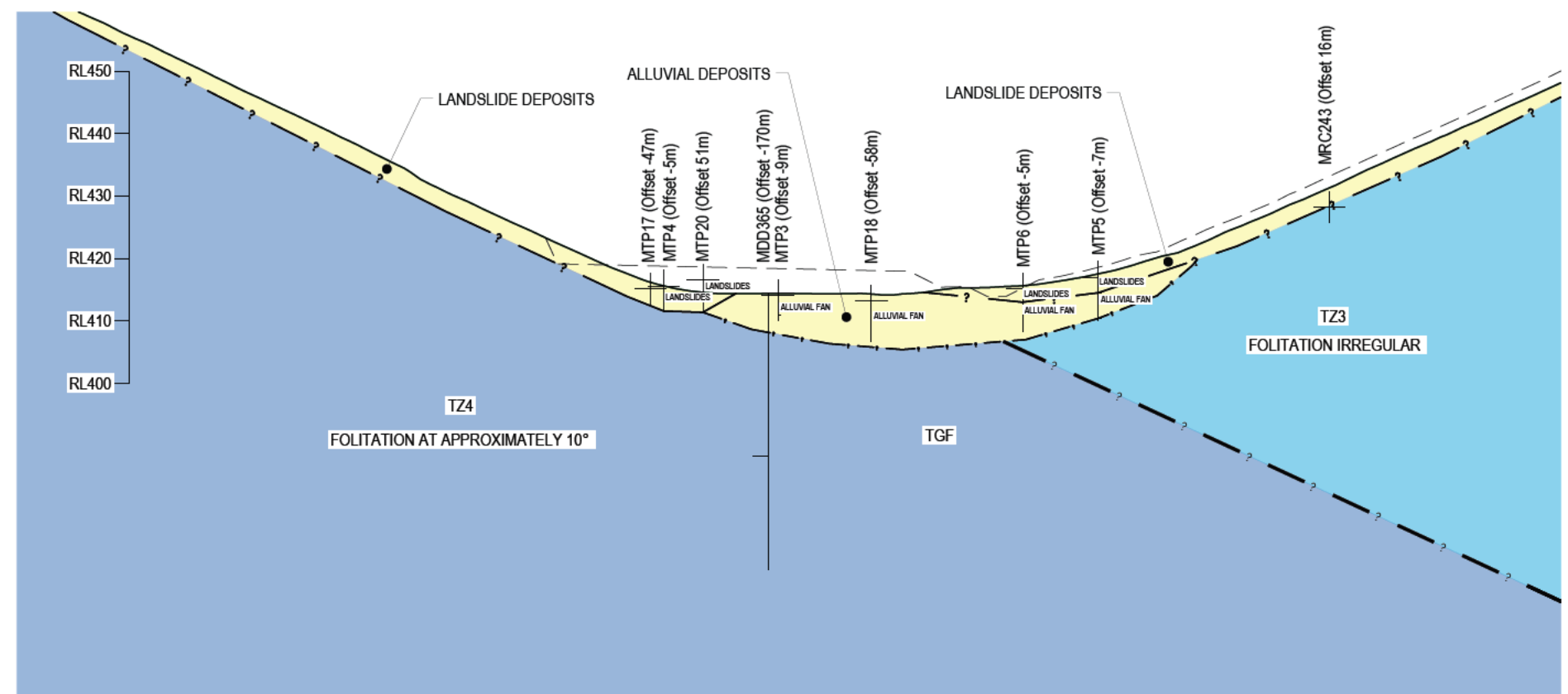


FIGURE 02



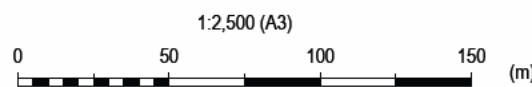
1 SECTION
FIG02 SCALE (A3) - 1:2500



A DETAIL
FIG03 SCALE (A3) - 1:1000

LEGEND	
	QUATERNARY DEPOSITS
	TZ3 OTAGO SCHIST
	TZ4 OTAGO SCHIST
	INFERRED UNIT BOUNDARY
	PROPOSED SURFACE
	EXISTING SURFACE
	THOMSON GORGE FAULT

- NOTES:
1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
 2. VERTICAL DATUM: NZVD 2016.



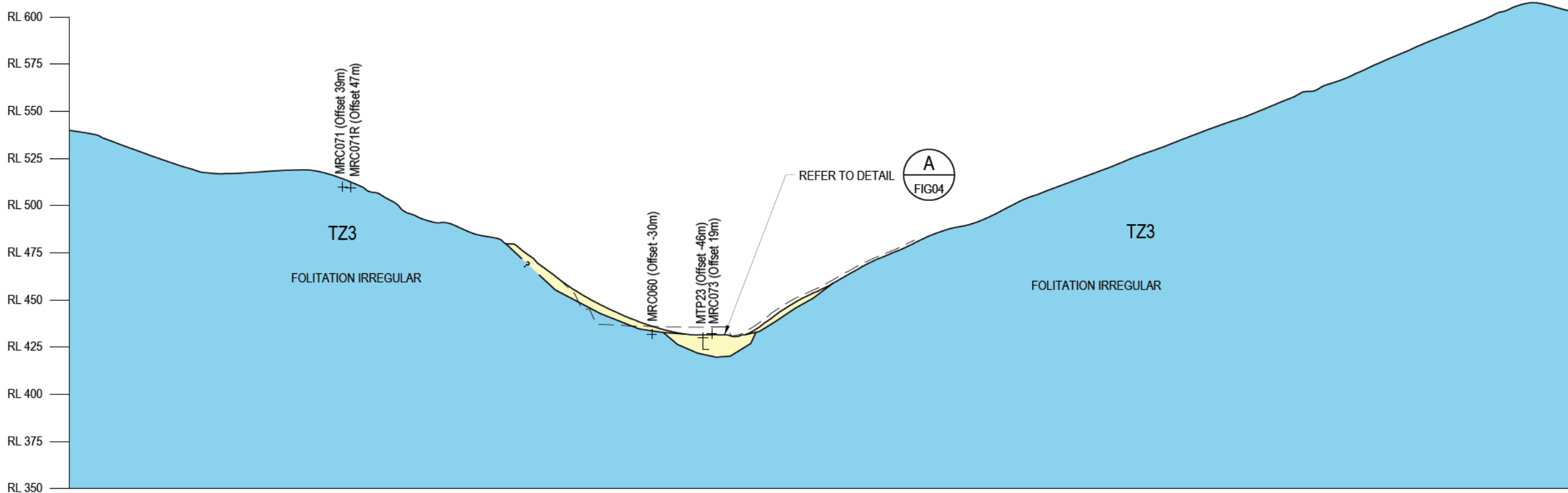
ORIGINAL IN COLOUR

MATAKANUI
GOLD LIMITED

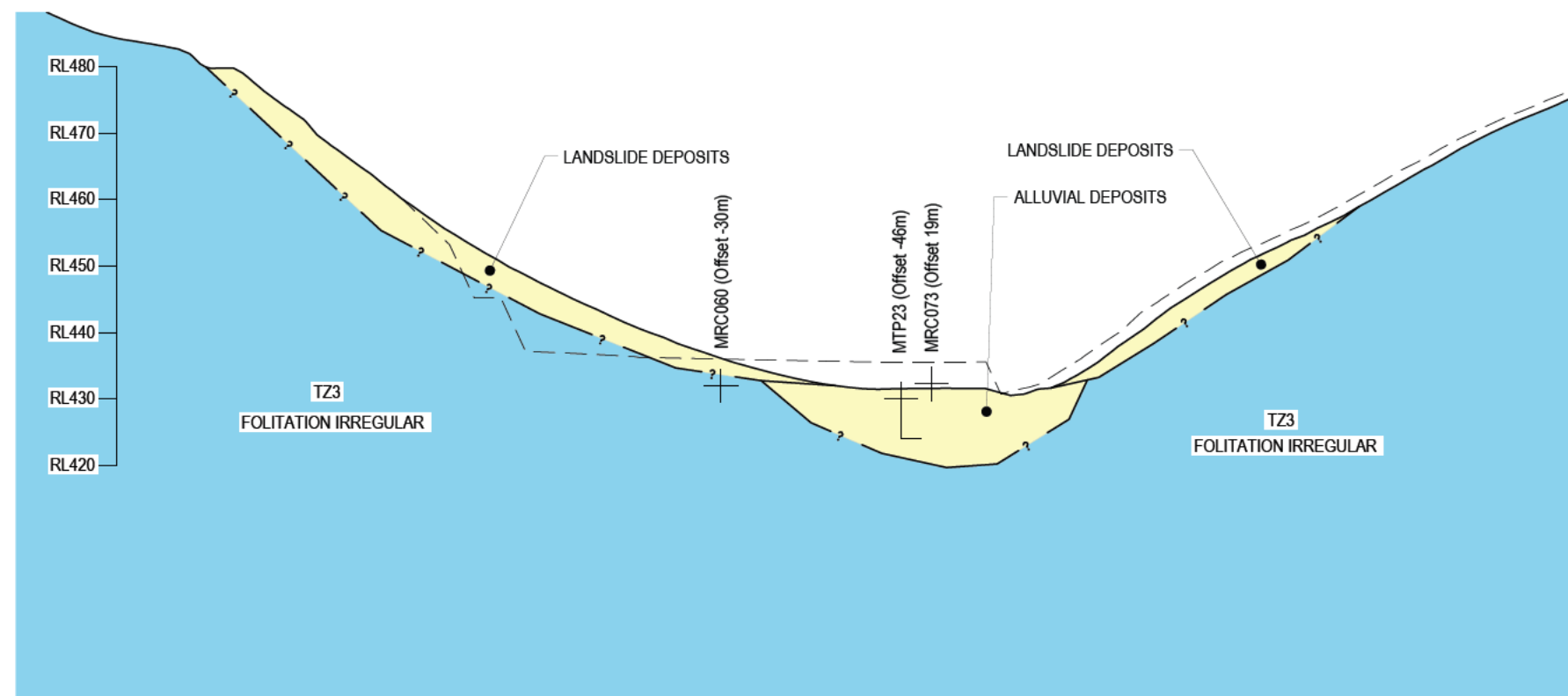
BENDIGO
SHEPHERDS CREEK PROCESS PLANT
CROSS SECTIONS
SECTION 1

DRAWN	R.M.	DATE	JOB No	SCALE (A3)	REV.
CHECKED	P.C.	03/12/2024	9702	1:2,500	A

FIGURE 03



2 SECTION
FIG02 SCALE (A3) - 1:2500



A DETAIL
FIG04 SCALE (A3) - 1:1000

LEGEND	
	QUATERNARY DEPOSITS
	TZ3 OTAGO SCHIST
	TZ4 OTAGO SCHIST
	INFERRED UNIT BOUNDARY
	PROPOSED SURFACE
	EXISTING SURFACE
	THOMSON GORGE FAULT

- NOTES:**
1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
 2. VERTICAL DATUM: NZVD 2016.



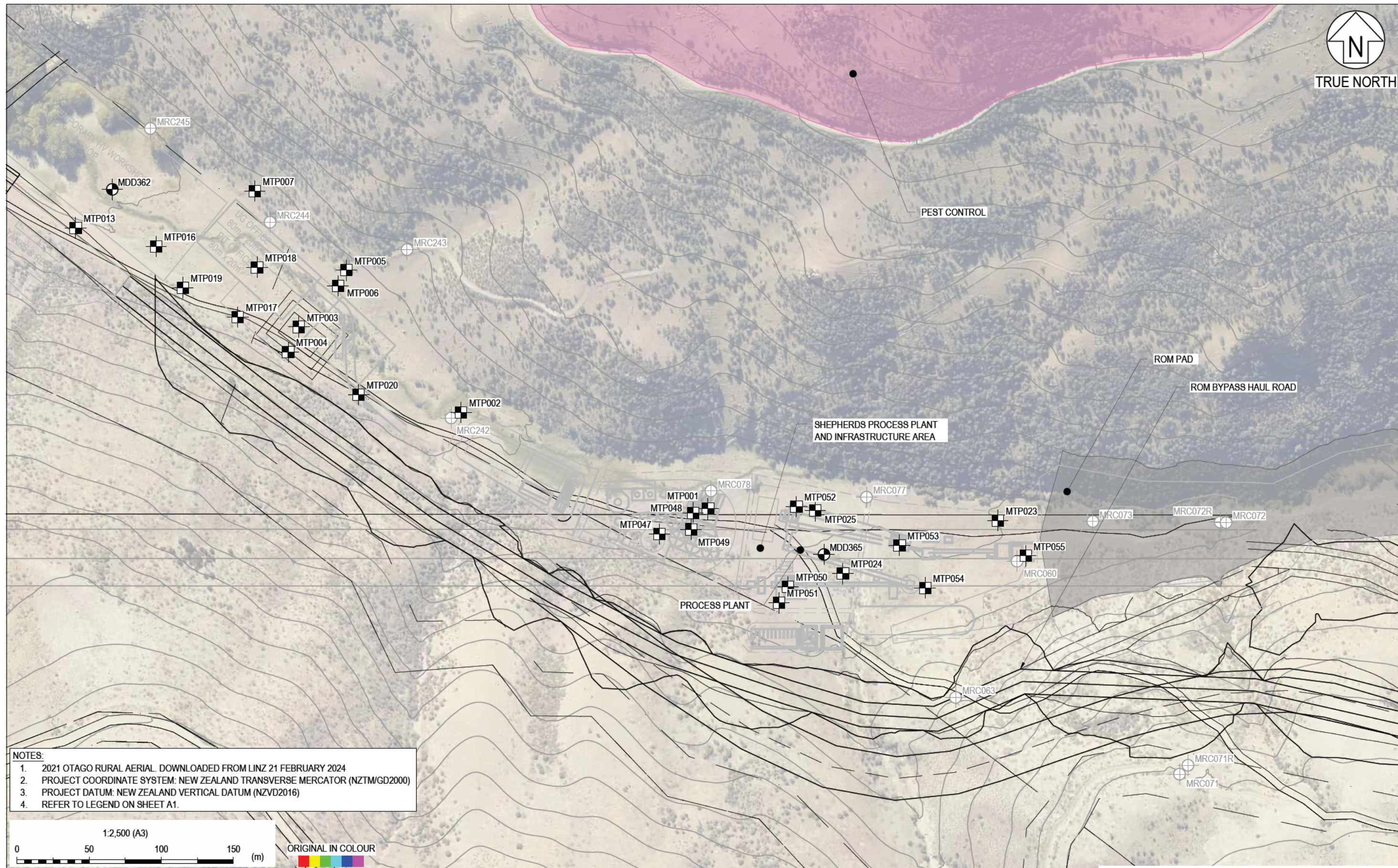
FIGURE 04



FIGURE 05



FIGURE 06



- NOTES:
1. 2021 OTAGO RURAL AERIAL. DOWNLOADED FROM LINZ 21 FEBRUARY 2024
 2. PROJECT COORDINATE SYSTEM: NEW ZEALAND TRANSVERSE MERCATOR (NZTM/GD2000)
 3. PROJECT DATUM: NEW ZEALAND VERTICAL DATUM (NZVD2016)
 4. REFER TO LEGEND ON SHEET A1.

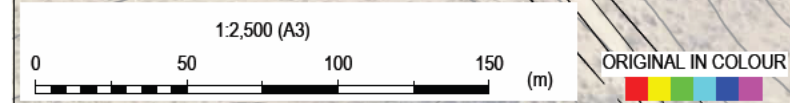


FIGURE 07

PHOTOS

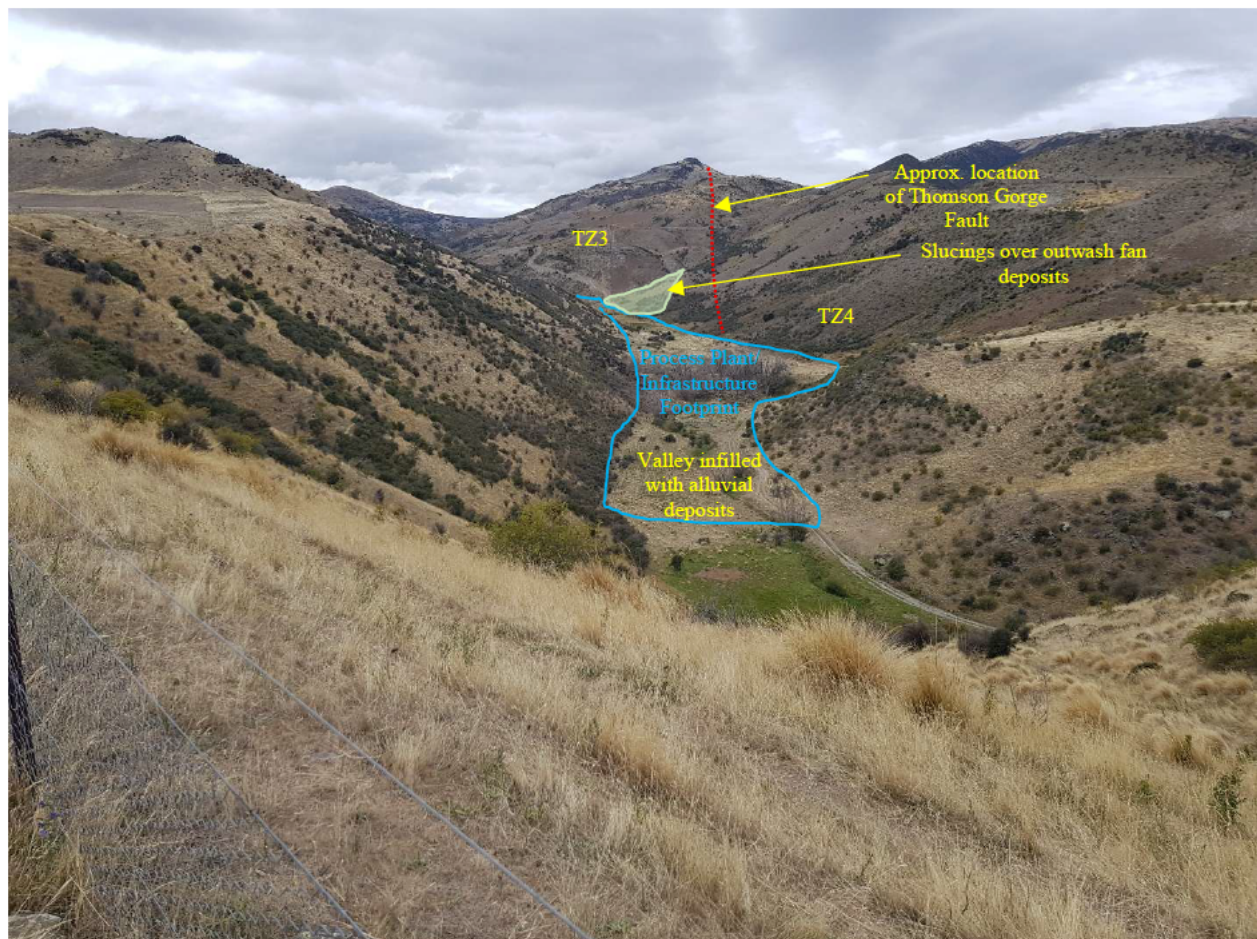


Photo 1 – Overview of Process Plant and Infrastructure Footprint, looking east.



Photo 2 – Alluvial outwash fan at eastern end of Process Plant site. Potential slucings in this area.

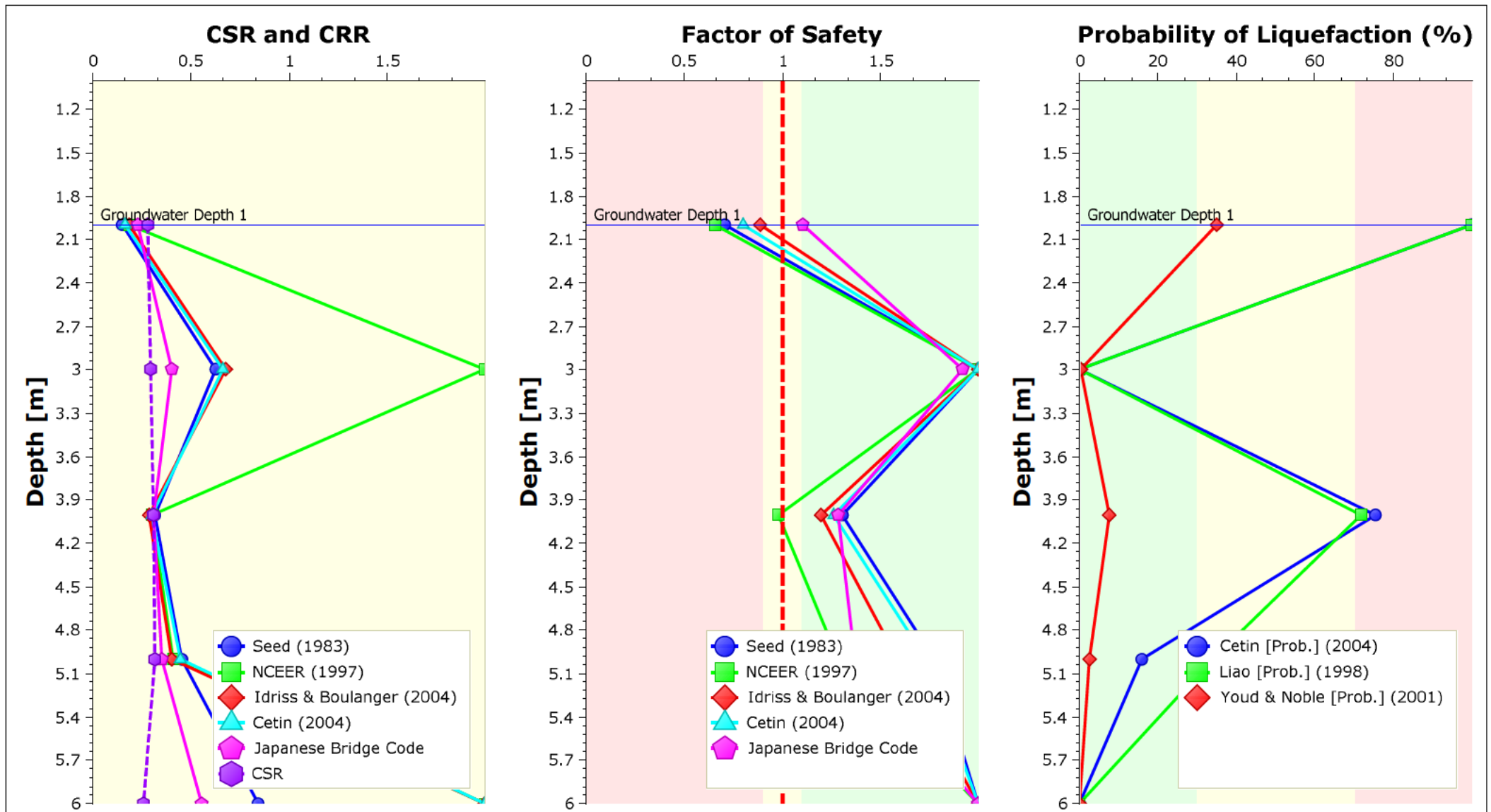


Photo 3 – View across plain showing administration building location.

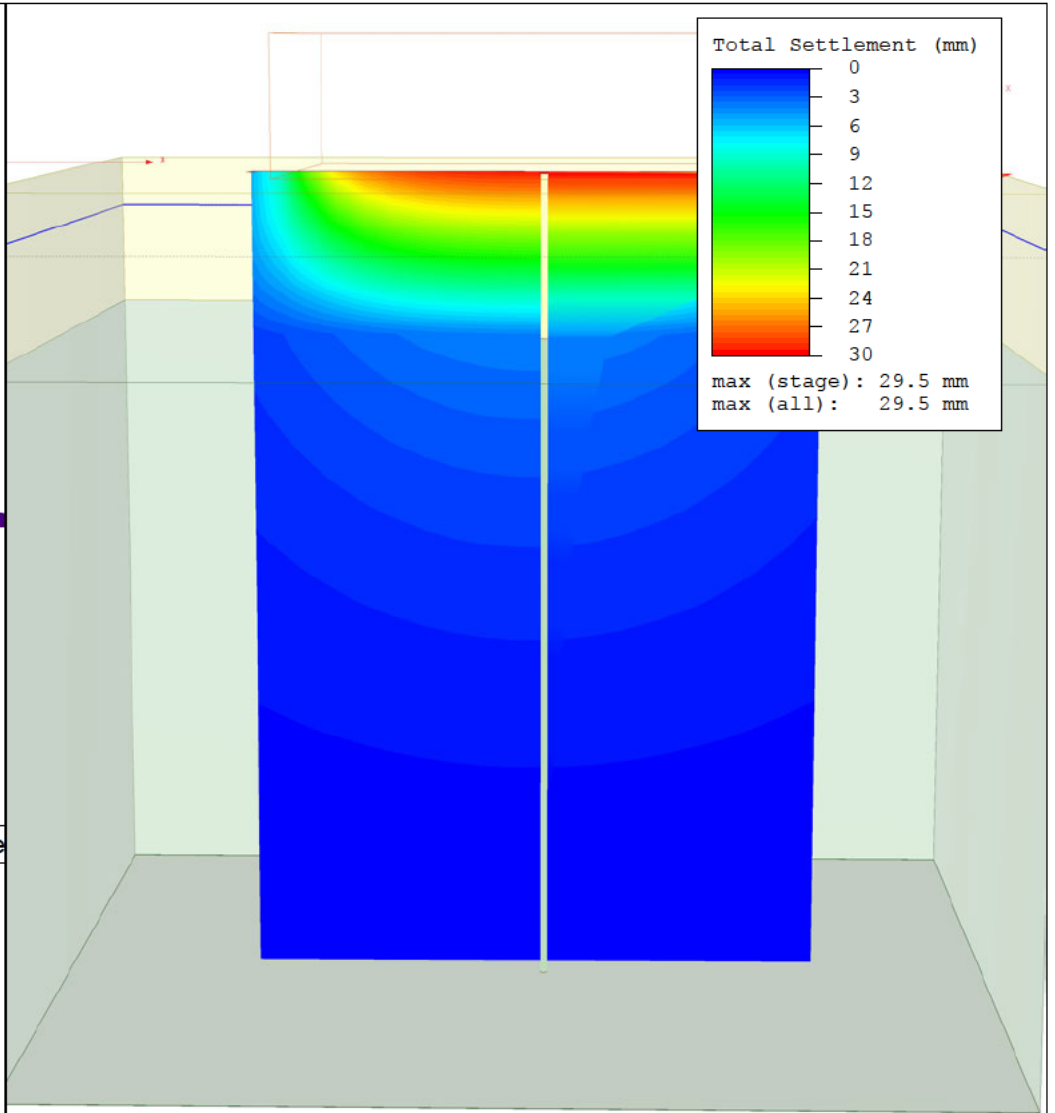
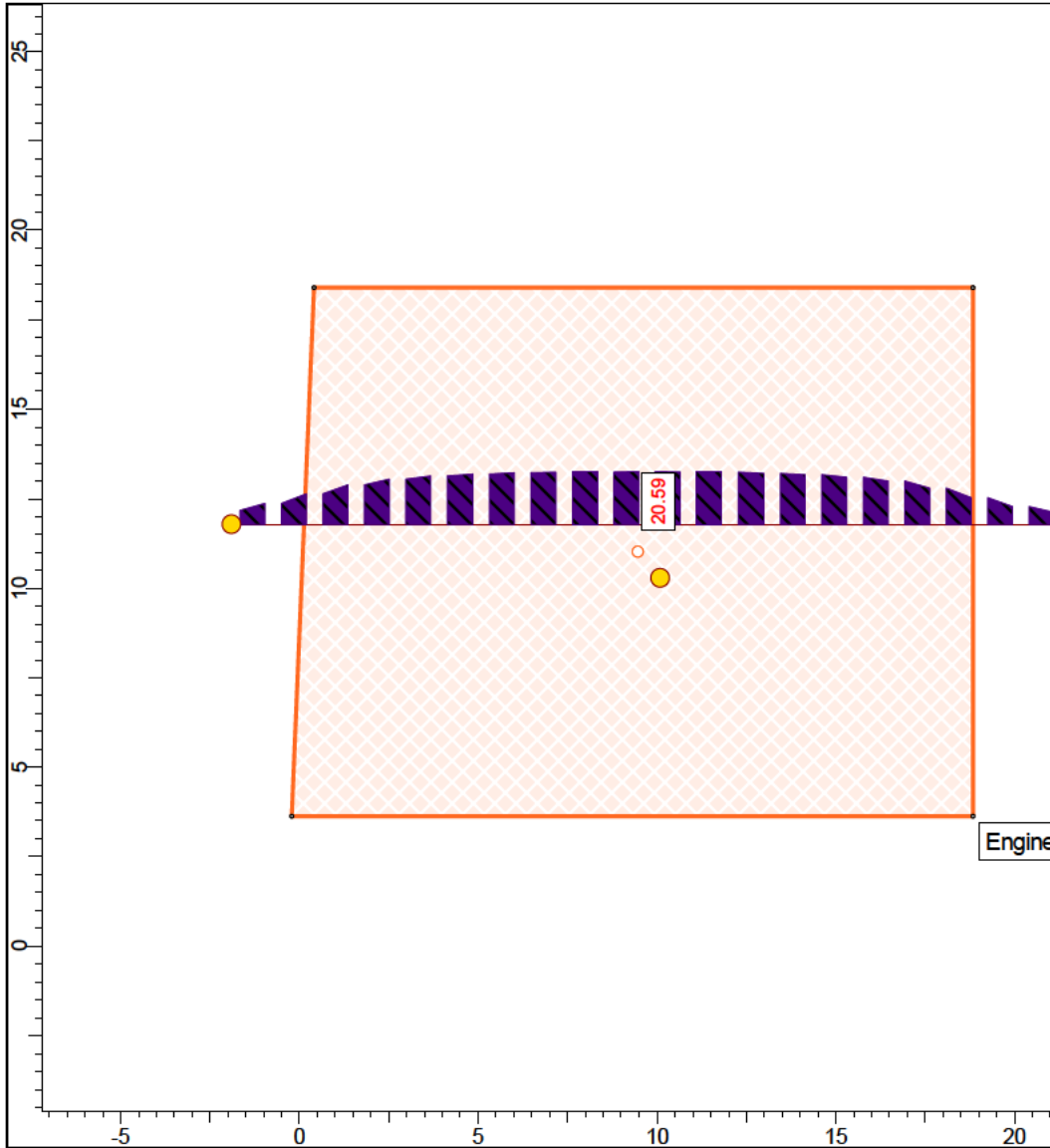
APPENDICES

APPENDIX A

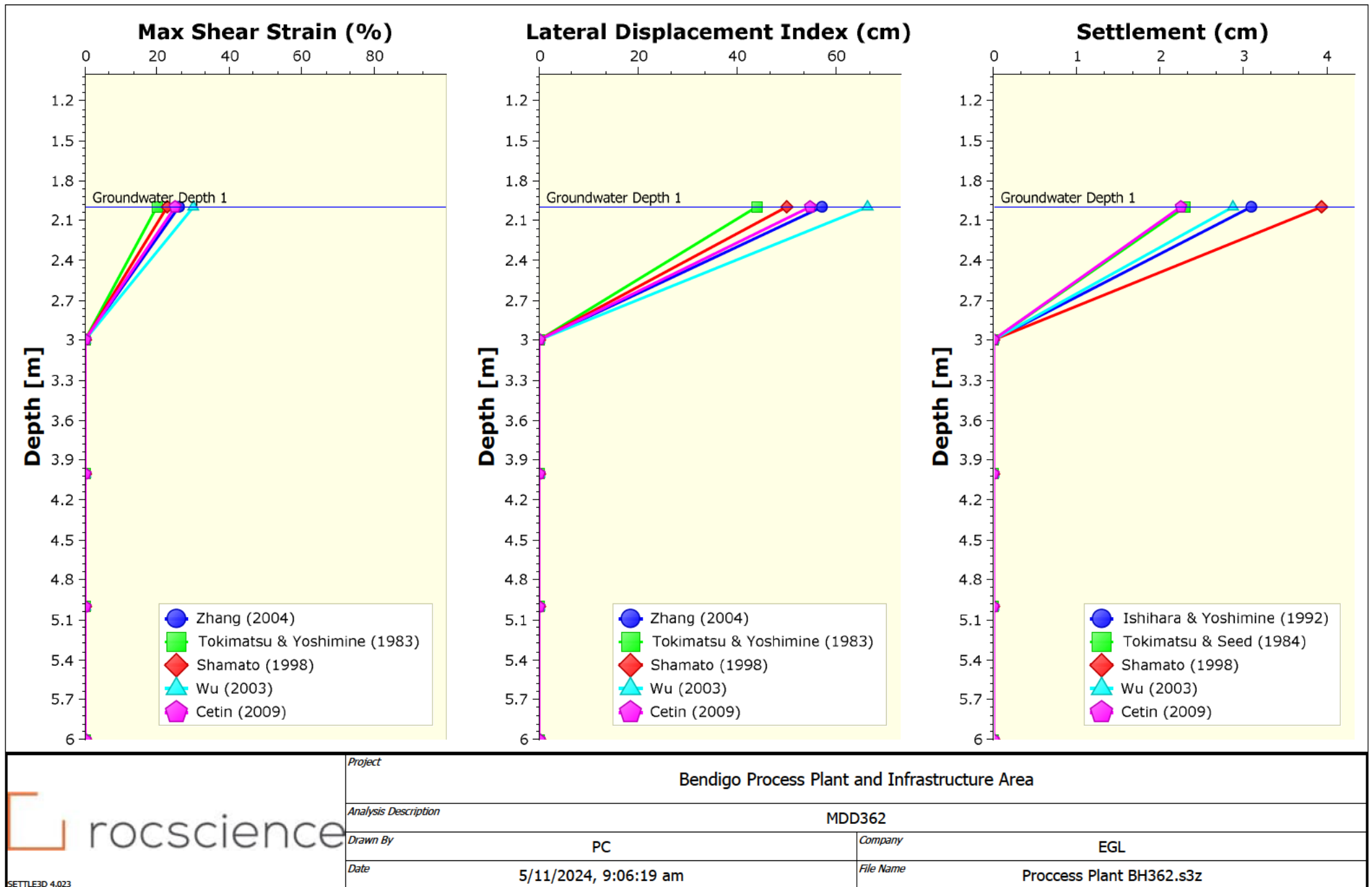
Liquefaction and Settlement Analysis Results

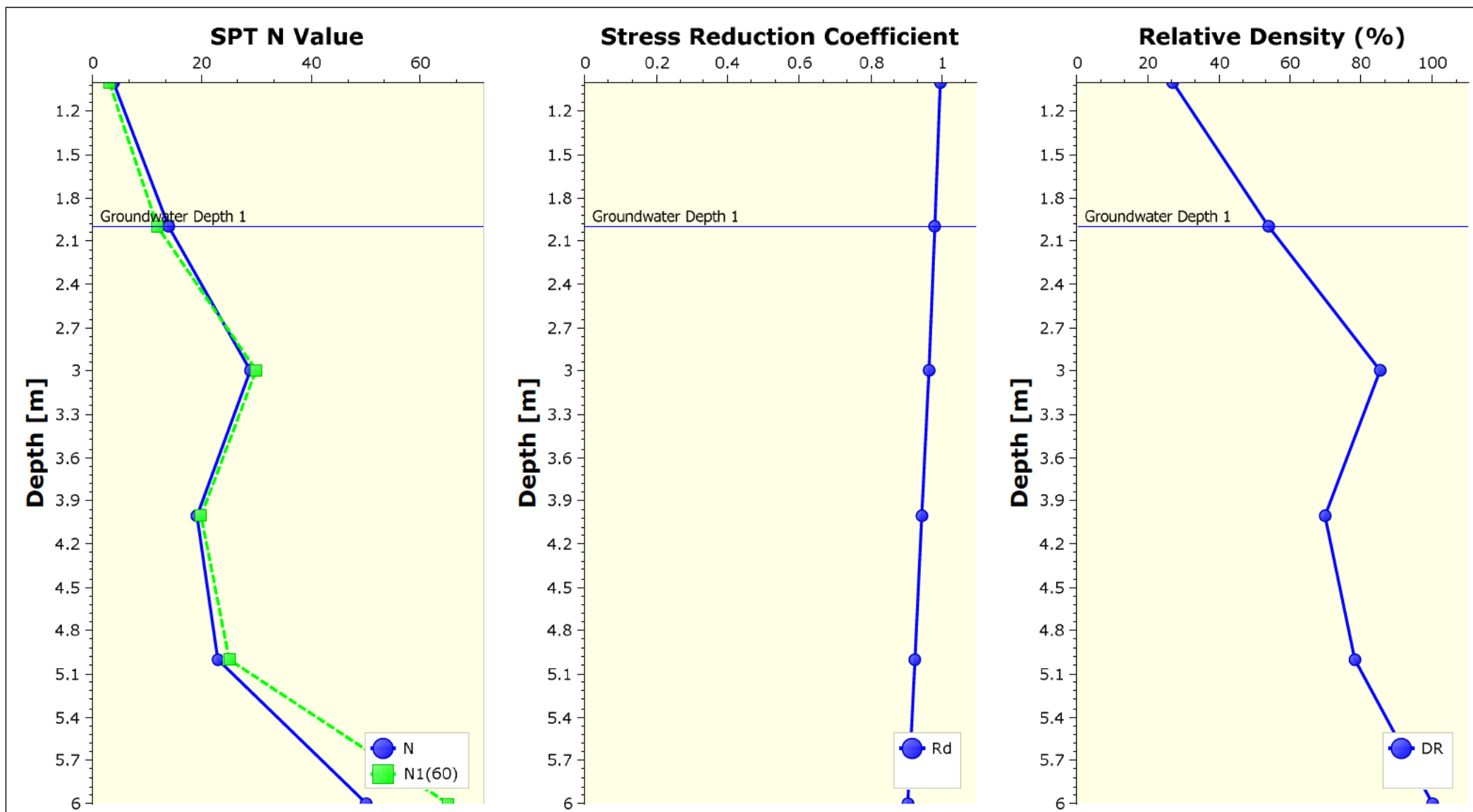


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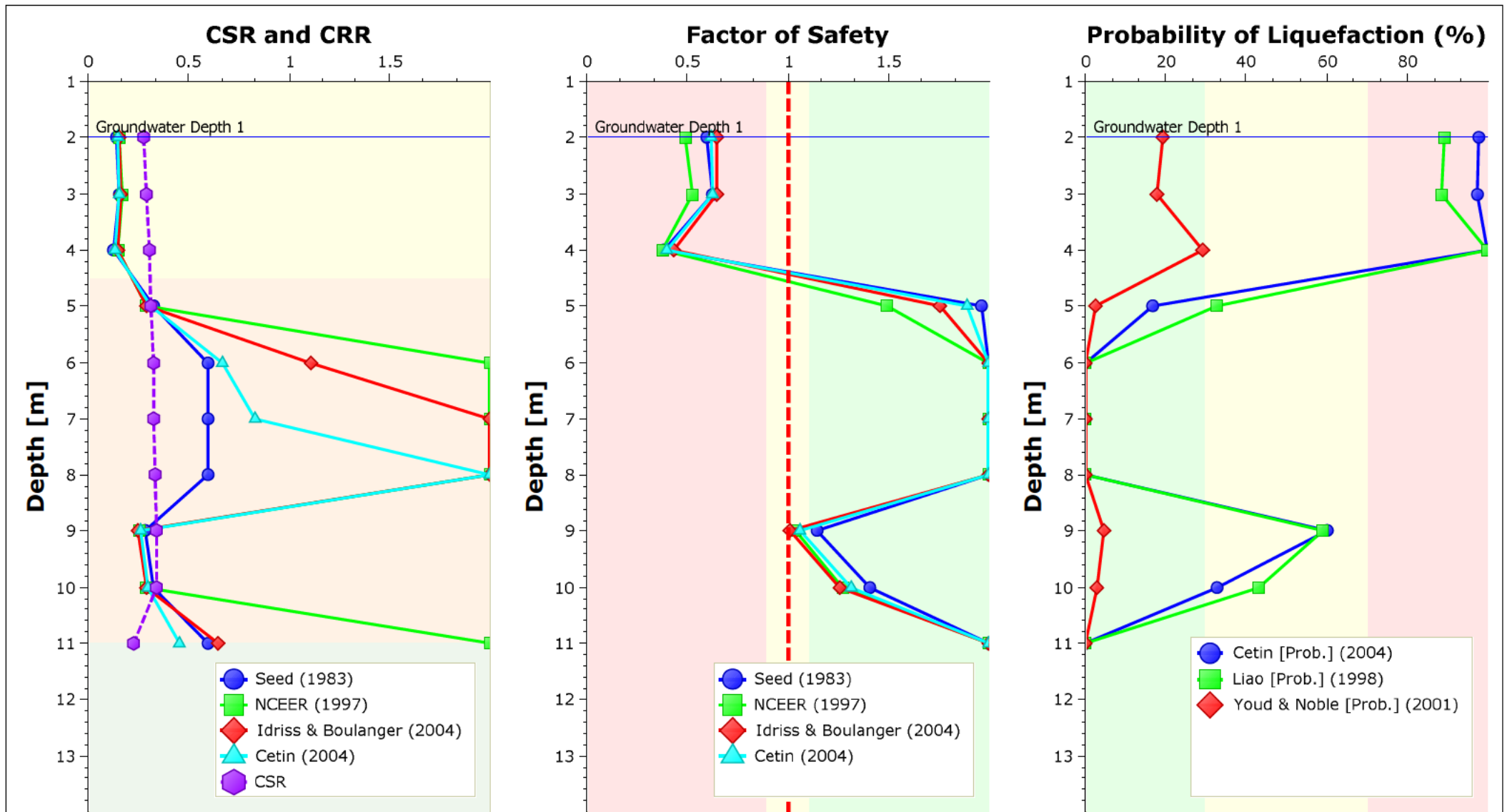


	Project			Bendigo Process Plant and Infrastructure Area	
	Analysis Description			MDD362	
	Drawn By			PC	Company EGL
	Date			5/11/2024, 9:06:19 am	File Name Process Plant BH362.s3z

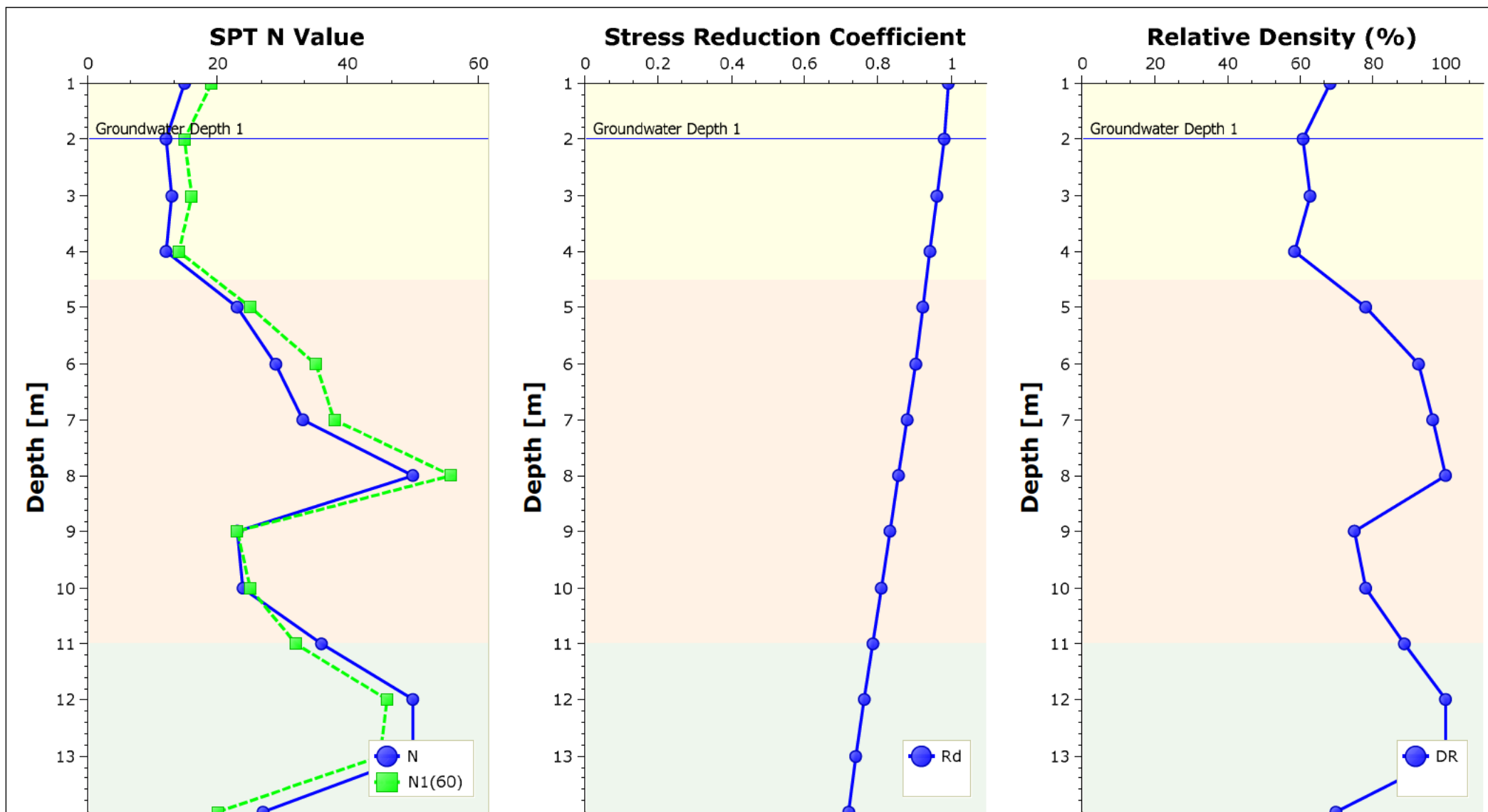




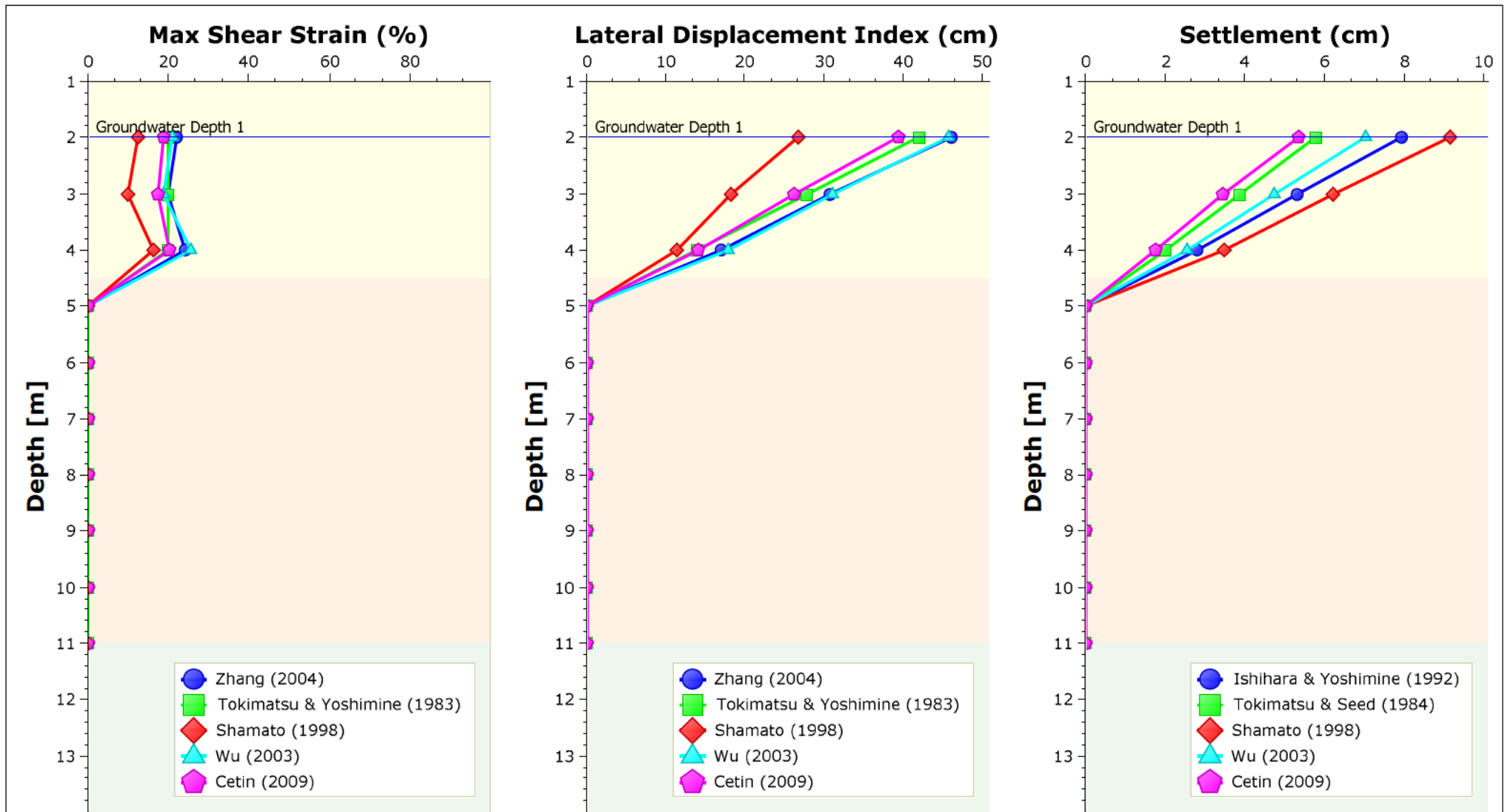
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	Drawn By		PC	Company EGL
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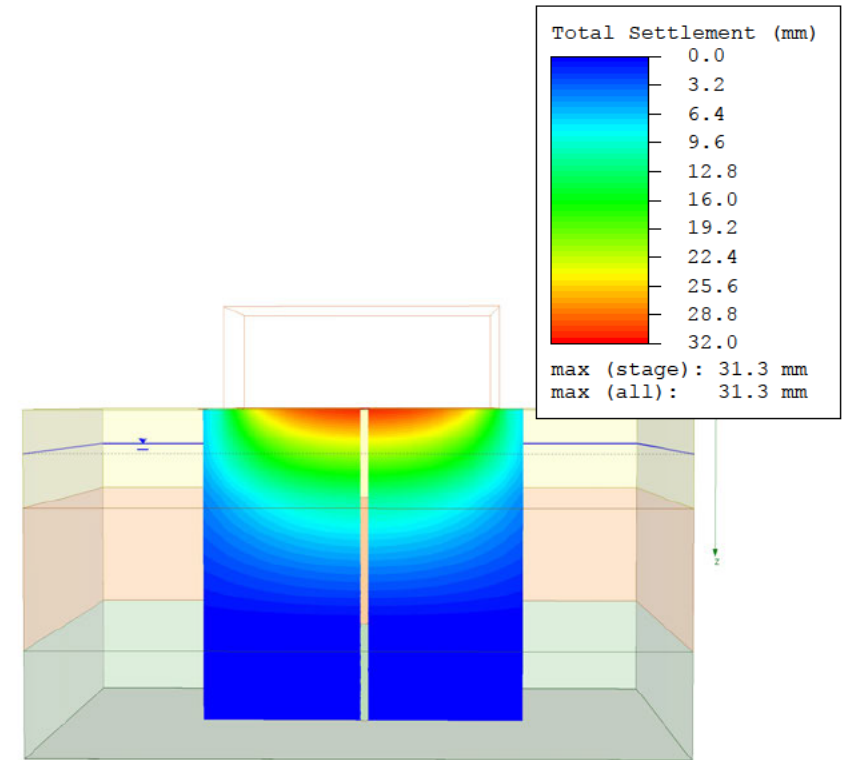
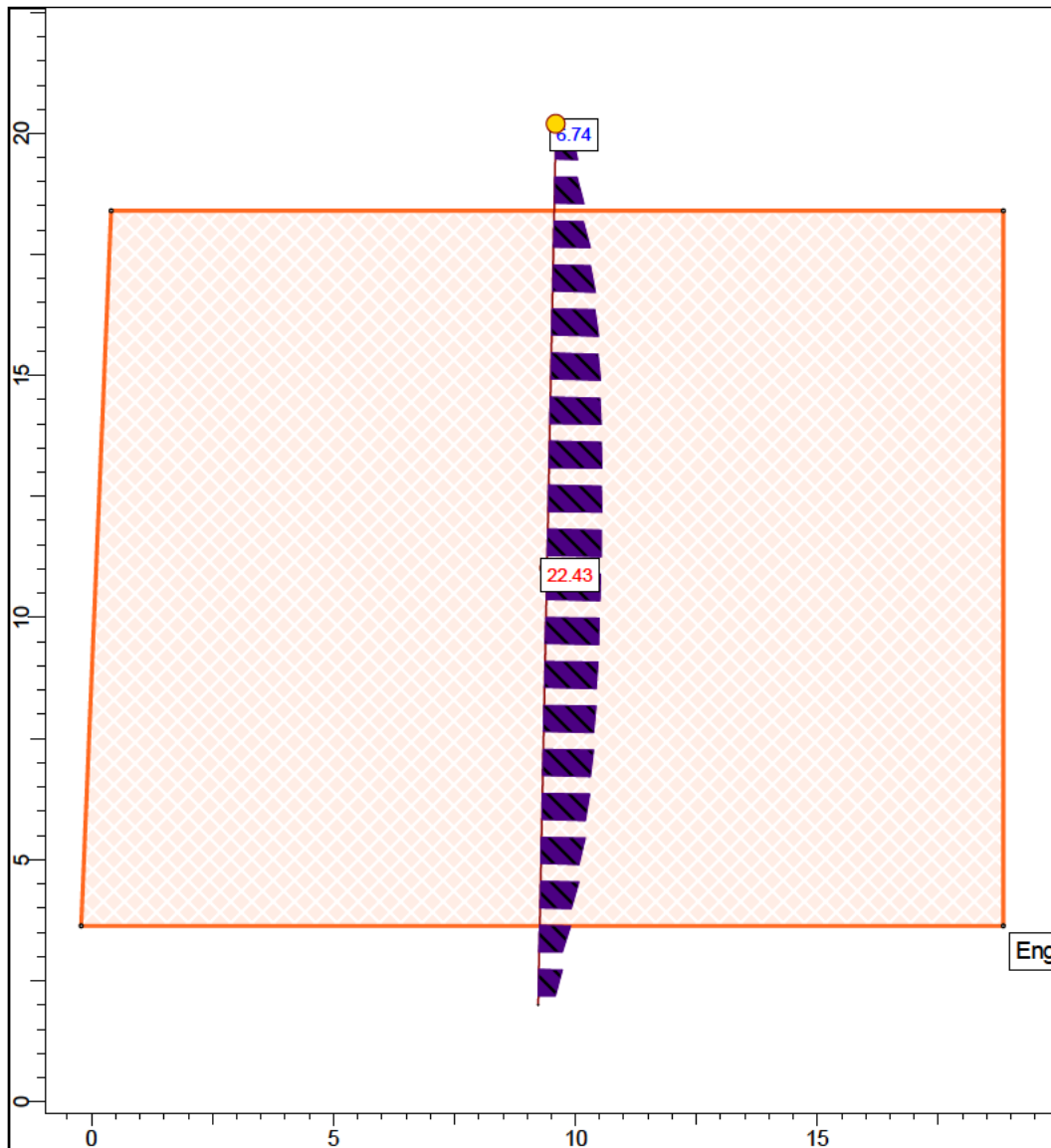
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	Analysis Description		MDD365	
	Drawn By	PC	Company	EGL
	Date	5/11/2024, 9:06:19 am	File Name	Proccess Plant BH365.s3z



	Project		Bendigo Process Plan	
	Analysis Description		MDD365	
	Drawn By		PC	Company EGL
	Date		5/11/2024, 9:06:19 am	File Name Process Plant BH365.s3z



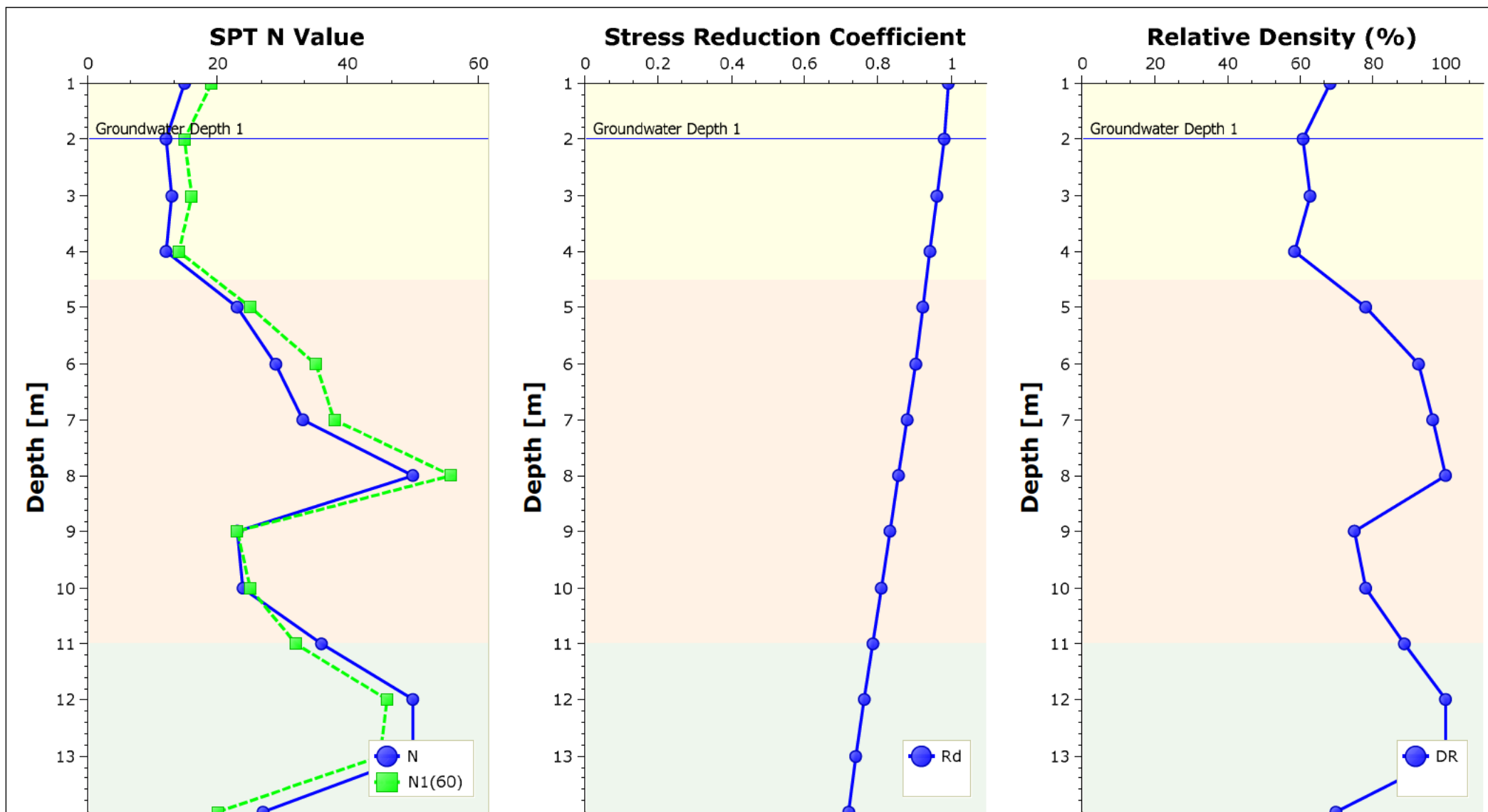
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	Analysis Description		MDD365	
	Drawn By		PC	Company
	Date		5/11/2024, 9:06:19 am	File Name
		EGL		Process Plant BH365.s3z



rocscience

SETTLE3D 4.023

Project		Bendigo Process Plan	
Analysis Description		MDD365	
Drawn By	PC	Company	EGL
Date	5/11/2024, 9:06:19 am	File Name	Process Plant BH365.s3z



 rocscience	Project		Bendigo Process Plan	
	Analysis Description		MDD365	
	Drawn By		PC	Company EGL
	Date		5/11/2024, 9:06:19 am	File Name Process Plant BH365.s3z

APPENDIX B

Slope Stability Analysis Results

Color	Name	Slope Stability Material Model	Unit Weight (kN/m³)	UCS Intact (kPa)	Parameter mb	Parameter s	Parameter a	Calculated from	Intact Rock Parameter mi	Geological Strength Index GSI	Disturbance Factor D	Max Confining Stress Sigma 3 (kPa)	Effective Cohesion (kPa)	Effective Friction Angle (°)
■	Colluvium/Weathered Schist	Mohr-Coulomb	18										5	32
■	Unweathered TZ3 Schist	Hoek-Brown	26	65,000	1.0124561	0.0014711084	0.50404815	Yes	12	55	0.7	1,350		

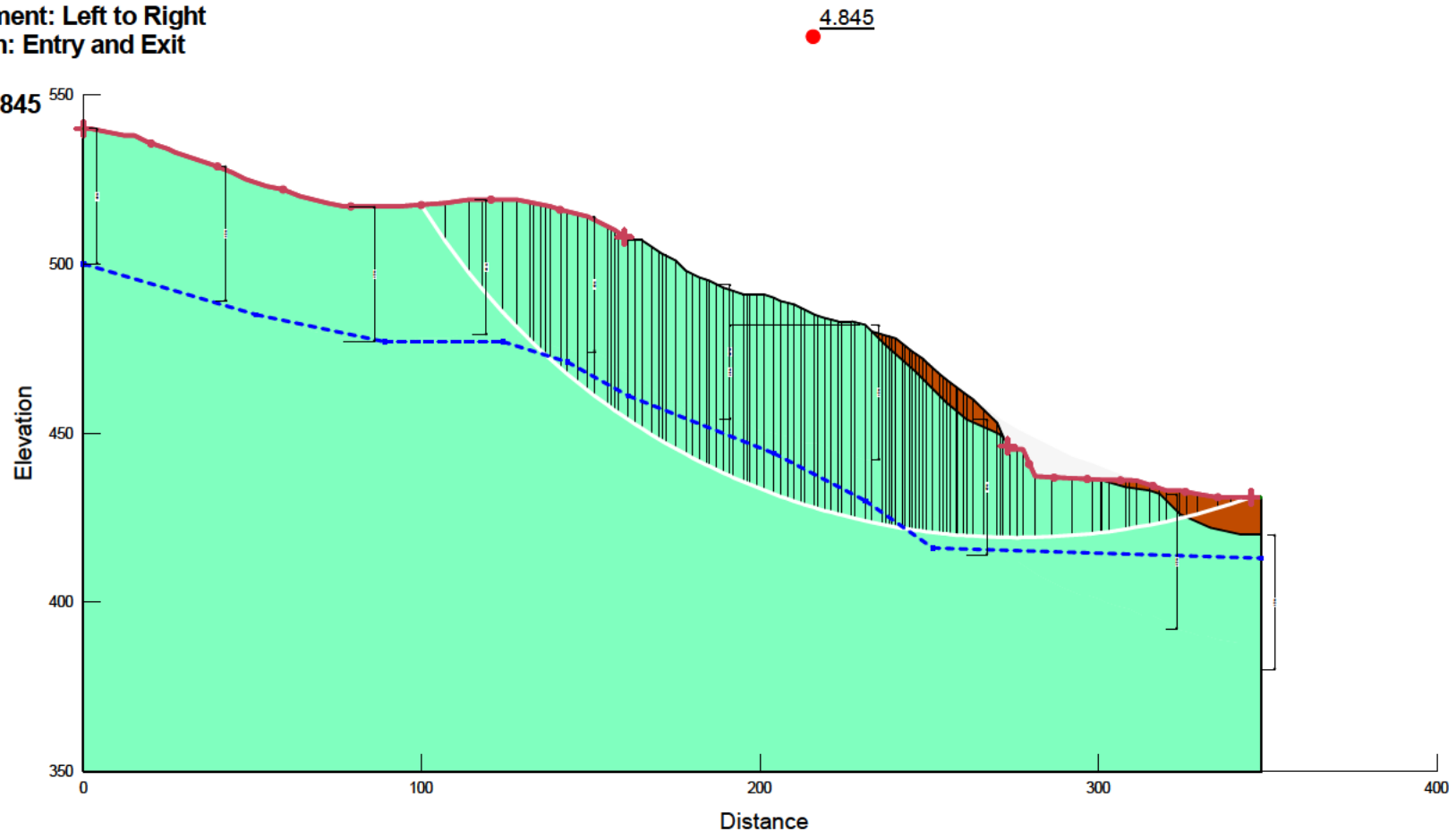
Analysis Parameters:

Method: Morgenstern-Price

Direction of movement: Left to Right

Slip Surface Option: Entry and Exit

Factor of Safety: 4.845



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Process Plant Cut - (Section 2)

Circular Failure - Isotropic Material

Date: 05/06/2025

Ref: 9702

Figure: 1.1

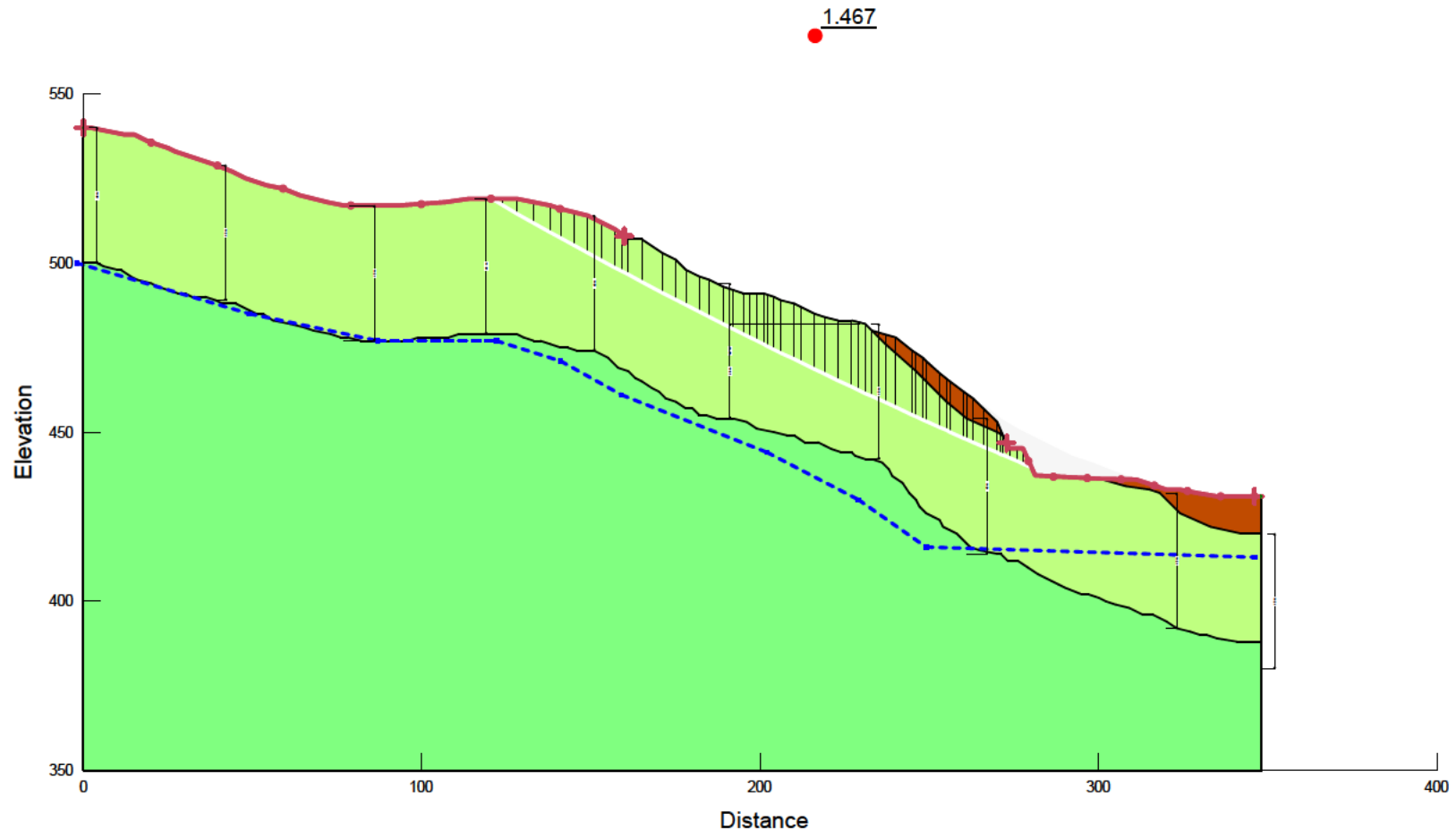
Scale: 1:2,000

Drawn: TO

Analysis Parameters:
Method: Morgenstern-Price
Direction of movement: Left to Right
Slip Surface Option: Entry and Exit

Factor of Safety: 1.467

Color	Name	Slope Stability Material Model	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Phi-Anisotropic Strength Fn.	C-Anisotropic Strength Fn.
■	Colluvium/Weathered Schist	Mohr-Coulomb	18	5	32		
■	Unweathered TZ3 Schists with Anisotropic Strength Function <40m	Anisotropic Fn.	26	50	40	Anisotropic Phi 0.7	Anisotropic C 0.94
■	Unweathered TZ3 Schists with Anisotropic Strength Function >40m	Anisotropic Fn.	26	150	45	Anisotropic Phi 0.7	Anisotropic C 0.94



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Process Plant Cut - (Section 2)

Circular Failure - Anisotropic Material

Date: 05/06/2025
 Ref: 9702
 Figure: 1.2
 Scale: 1:2,000
 Drawn: TO

Color	Name	Slope Stability Material Model	Unit Weight (kN/m³)	UCS Intact (kPa)	Parameter mb	Parameter s	Parameter a	Calculated from	Intact Rock Parameter mi	Geological Strength Index GSI	Disturbance Factor D	Max Confining Stress Sigma 3 (kPa)	Effective Cohesion (kPa)	Effective Friction Angle (°)
■	Colluvium/Weathered Schist	Mohr-Coulomb	18										5	32
■	Unweathered TZ3 Schist	Hoek-Brown	26	65,000	1.0124561	0.0014711084	0.50404815	Yes	12	55	0.7	1,350		

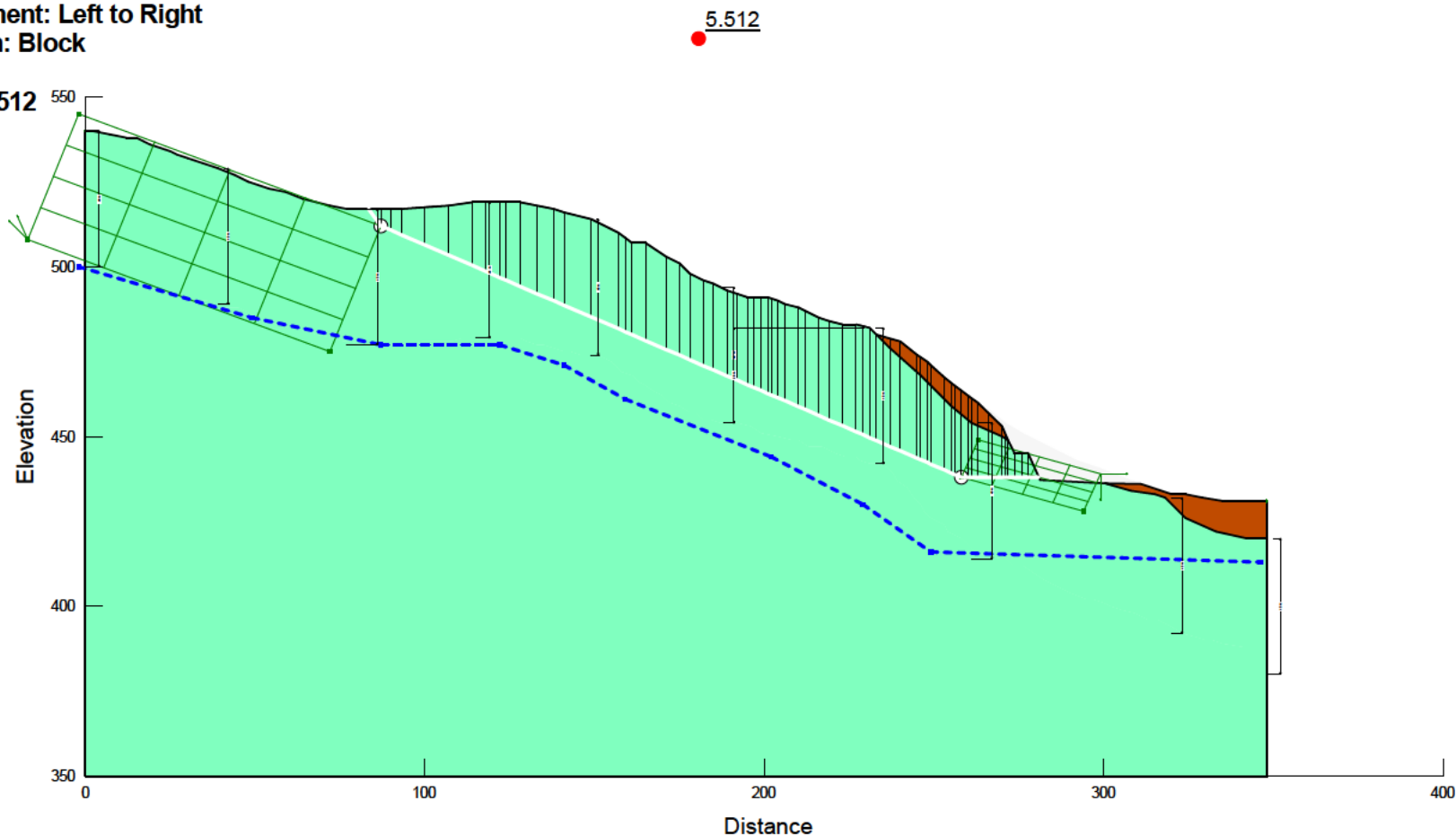
Analysis Parameters:

Method: Morgenstern-Price

Direction of movement: Left to Right

Slip Surface Option: Block

Factor of Safety: 5.512



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Process Plant Cut - (Section 2) Block Failure - Isotropic Material

Date: 05/06/2025

Ref: 9702

Figure: 1.3

Scale: 1:2,000

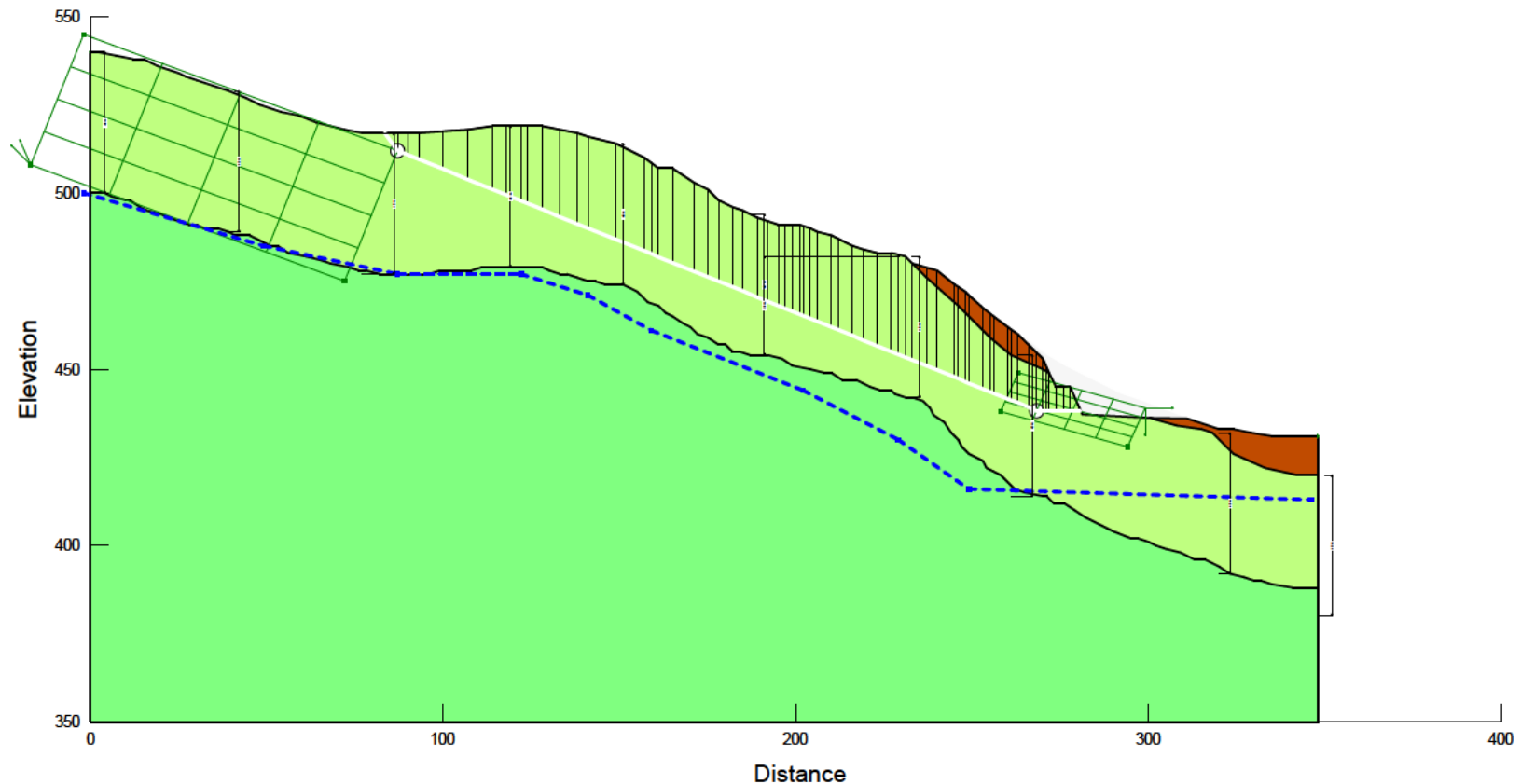
Drawn: TO

Analysis Parameters:
Method: Morgenstern-Price
Direction of movement: Left to Right
Slip Surface Option: Block

Factor of Safety: 1.622

Color	Name	Slope Stability Material Model	Unit Weight (kN/m ³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Phi-Anisotropic Strength Fn.	C-Anisotropic Strength Fn.
	Colluvium/Weathered Schist	Mohr-Coulomb	18	5	32		
	Unweathered TZ3 Schists with Anisotropic Strength Function <40m	Anisotropic Fn.	26	50	40	Anisotropic Phi 0.7	Anisotropic C 0.94
	Unweathered TZ3 Schists with Anisotropic Strength Function >40m	Anisotropic Fn.	26	150	45	Anisotropic Phi 0.7	Anisotropic C 0.94

1.622



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Process Plant Cut - (Section 2)

Block Failure - Anisotropic Material

Date: 05/06/2025
 Ref: 9702
 Figure: 1.4
 Scale: 1:2,000
 Drawn: TO

Analysis Parameters:

Method: Morgenstern-Price

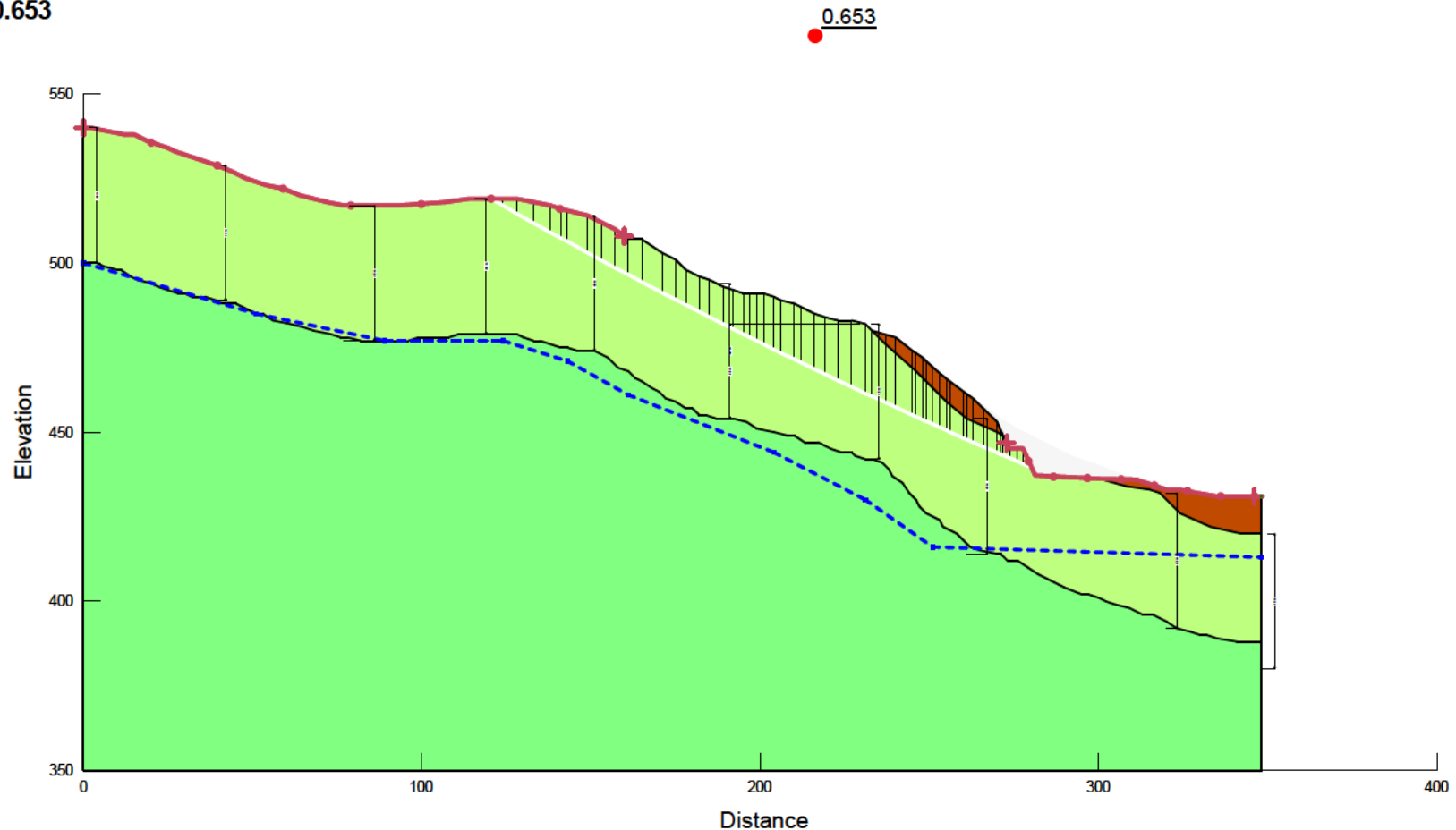
Direction of movement: Left to Right

Slip Surface Option: Entry and Exit

Horz Seismic Coef.: 0.44

Factor of Safety: 0.653

Color	Name	Slope Stability Material Model	Unit Weight (kN/m ³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Phi-Anisotropic Strength Fn.	C-Anisotropic Strength Fn.
■	Colluvium/Weathered Schist	Mohr-Coulomb	18	5	32		
■	Unweathered TZ3 Schists with Anisotropic Strength Function <40m	Anisotropic Fn.	26	50	40	Anisotropic Phi 0.7	Anisotropic C 0.94
■	Unweathered TZ3 Schists with Anisotropic Strength Function >40m	Anisotropic Fn.	26	150	45	Anisotropic Phi 0.7	Anisotropic C 0.94



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Process Plant Cut - (Section 2)

Seismic MBIE Circular Failure - Anisotropic Material

Date: 17/07/2025

Ref: 9702

Figure: 2.1

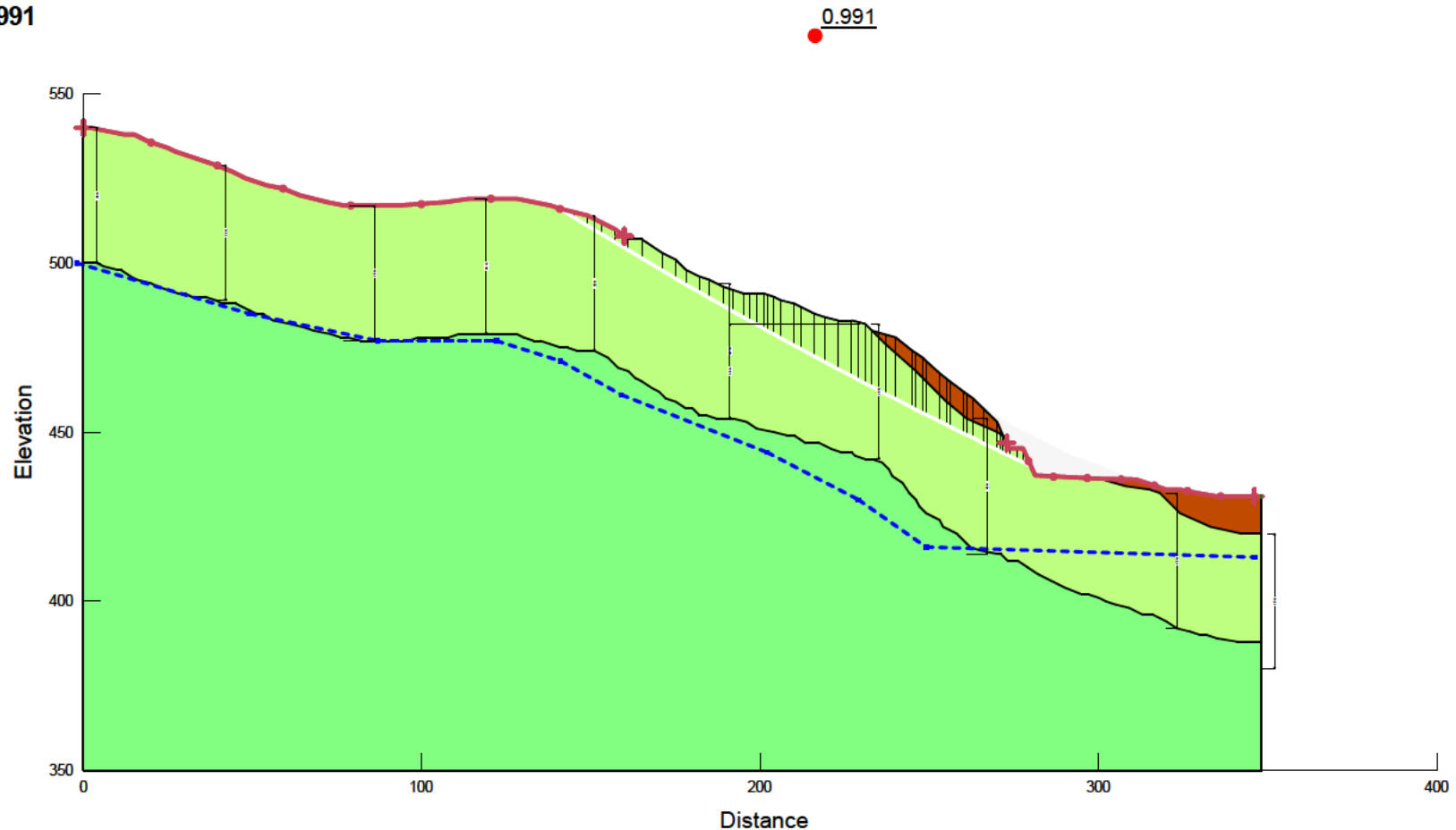
Scale: 1:2,000

Drawn: TO

Analysis Parameters:
Method: Morgenstern-Price
Direction of movement: Left to Right
Slip Surface Option: Entry and Exit
Horz Seismic Coef.: 0.21

Factor of Safety: 0.991

Color	Name	Slope Stability Material Model	Unit Weight (kN/m ³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Phi-Anisotropic Strength Fn.	C-Anisotropic Strength Fn.
■	Colluvium/Weathered Schist	Mohr-Coulomb	18	5	32		
■	Unweathered TZ3 Schists with Anisotropic Strength Function <40m	Anisotropic Fn.	26	50	40	Anisotropic Phi 0.7	Anisotropic C 0.94
■	Unweathered TZ3 Schists with Anisotropic Strength Function >40m	Anisotropic Fn.	26	150	45	Anisotropic Phi 0.7	Anisotropic C 0.94



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Process Plant Cut - (Section 2)

Seismic Yield Circular Failure - Anisotropic Material

Date: 05/06/2025
 Ref: 9702
 Figure: 2.2
 Scale: 1:2,000
 Drawn: TO