

111 Bridge Street Nelson 7010

16 October 2025

The Panel
Waihi North Project Fast-track Application
FTA-2504-1046

RE: Request for information in relation to the Waihi North Project under the Fast-track Approvals

Act 2024

Please find in the document attached (File name: OceanaGold – RFI 1 Response – EGL Response Letter) a response to the further information requested by the Panel on 3 October 2025.

Should you require any further details relating to the topics discussed in the document attached, please do not hesitate to contact me.

Yours sincerely,

Polly Smith

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Attention: M. Lovely

EGL Ref: 9017 16 October 2025

OCEANA GOLD (NEW ZEALAND) LIMITED WAIHI NORTH PROJECT FAST TRACK APPROVALS ACT APPLICATION RESPONSE TO REQUEST FOR INFORMATION ON STORAGE 3 TAILINGS STORAGE FACILITY (TSF3)

1.0 INTRODUCTION

Oceana Gold (New Zealand) Limited (OceanaGold) engaged Engineering Geology Limited (EGL) to provide technical reports on the proposed design of Tailing Storage Facility 3 (TSF3, or Storage 3) for the Waihi North Project (WNP). These reports (Ref. 1, 2, 3) and accompanying statement of evidence (Ref. 4) were included in the substantive application made by OceanaGold under the Fast Track Approvals Act (FTAA).

As part of the FTAA process for the WNP, Dr Trevor Matuschka of EGL has provided expert evidence in reply to comments made on the WNP application by invited parties, including items related to the TSF (Ref. 5).

The Environmental Protection Agency (EPA) on behalf of the panel appointed to consider the OceanaGold application has requested further information specifically on the TSF3, per their letter to OceanaGold 3rd October 2025 (Ref. 6). This letter responds to this request for further information.

2.0 RESPONSES TO REQUEST FOR INFORMATION OCTOBER 2025 ON TSF3

RFI 1: TSF3 Geomembrane Liner

Please provide additional design commentary on why the TSF 3 membrane liner is terminated at RL 135 m. Please provide information on the expected life of the membrane. Please provide guidance on the expected timeframe before tailings consolidate sufficiently to start acting as a low permeability liner.







EGL Response:

- Full lining of the impoundment is proposed to minimise seepage of supernatant water through the foundation of the TSF. A combination of earth lining and High-density Polyethylene (HDPE) lining is proposed.
- HDPE lining is proposed only up to the top of the crest of the starter embankment (proposed to be 135mRL) as during initial deposition there is no tailings beach across the floor of the facility and the potential for seepage into the foundation is greater. HDPE is lower permeability than an earth liner and provides greater protection during the initial stages of tailings deposition.
- Once a tailings beach is established the benefit of the HDPE liner, over just an earth liner, is much less and not required, as the tailings themselves create a layer of low permeability.
- The HDPE liner only needs to be effective for the first few years until the tailing have filled the floor of the starter impoundment and partially consolidated. At this point ponded water is only in contact with the earth lining at the perimeter of the impoundment with low driving pressure.
- Site specific testing of HDPE geomembrane liner samples in tailings solution was undertaken under the guidance of Mike Sadlier, who is experienced in geomembrane liners. The conclusion of the testing is the HDPE liner would have a service life well in excess of the 20-year warranty which would normally be provided by the manufacturer.
- To summarise, the HDPE liner is only required for approximately 3 years for the starter embankment and the design life of the HDPE liner based on testing is estimated at well over 20 years.

RFI 2: Uphill Diversion Drain

Does the 10 Year ARI design on uphill diversion drain (Section 10.2) account for climate change scenarios? Section 11.14 notes that the uphill diversion drain is sized for an ARI 50 year event (compared to 10 year ARI in Section 10.2). Please confirm the correct design ARI.

EGL Response:

- Yes, the uphill diversion design sizing criterion is to pass a 10 year ARI event with the design criterion applied to the drain including an allowance for climate change.
- The preliminary design of the drain for consenting has assumed a 50 year ARI event using historical records. This is consistent with the design adopted for the existing uphill diversion drains. It is conservative compared to the proposed 10 year ARI event with climate change. As a comparison the rainfall intensity for a 10 minute duration 50 year ARI event based on historical data is 144 mm/hr, whereas the 10 year ARI intensity for Representative Concentration Pathway 8.5 (RCP8.5) for the period 2031 to 2050 (which incorporates a climate change assumption) is 113 mm/hr. The resource consent design proposed in the application is therefore conservative and sufficient to navigate the potential climate change scenarios.
- Final uphill diversion drain sizing is part of the detailed design of the TSF and will accommodate the effects of climate change. This is undertaken at building consent stage required under the Building Act 2004 (Ref. 8).
- A 10-year ARI minimum criterion is the correct condition for resource consenting purposes.

RFI 3: TSF3 Abutment with TSF1A

Please provide a cross section that extends through the as-built for tailings Storage 1A and the design for TSF3 so that we can better understand the integration of these two storage facilities.

EGL Response:

- Figure 1 attached shows the location of two cross sections showing the current proposed detail for the TSF3 abutment with TSF1A. Figure 2 shows the cross sections. Section 1 shows the TSF3 tailings against the TSF1A embankment. Section 2 shows the TSF3 tailings and embankment in contact with the TSF1A embankment just upstream of the TSF3 crest contact with TSF1A.
- The design concept is that the upstream zones (Zones B, C1 and C2) wrap around the
 inside of the impoundment and against the Storage 1A embankment. The embankment
 bulk fill zones become joined and the outer rehabilitation layers become continuous.

RFI 4: Piezometric pressure application in stability assessment

A seepage analysis is not provided as part of the preliminary design for TSF3. Instead, a series of piezometric surfaces have been adopted, with pore pressures within the dam itself modelled by use of an Ru value. This may be appropriate at the present preliminary design stage, but the Ru values selected fundamentally impact on the calculated stability of the embankment. Please provide the design basis for selection of the Ru values adopted.

EGL Response:

- The pore pressure parameter r_u is the ratio of the pore pressure over the total stress at any location.
- The selected r_u values are based on review of over 30 years of monitoring of different materials at the existing Waihi TSF1A and TSF2.
- The r_u value is selected to cover the maximum potential piezometric condition. This becomes a key performance measure during monitoring.
- The r_u values in application for a stability analysis depend on the zone within the embankment or position of the soil or rock in the foundation.
- In the TSF3 Technical Report (Ref. 2) Appendix B, Table B3, B4 and B5 the selected values applied in stability analysis are summarised under the column labelled Porewater Pressure Operational. We did not provide commentary about this in our report due to the extent of design work undertaken to inform the consent application. To address this question commentary is provided in Table 1 on the different ru values adopted in the preliminary design. At detailed design the parameters will be reviewed, updated, and documented and will be peer reviewed.

Table 1:

Embankment	Operational	EGL Commentary
Zone or	static pore	
Foundation	pressure	
	parameter	
Zone A/I –	$r_{\rm u} = 0.3$	Zone A site won soils used in perimeter embankment
site won soils		and base lining of embankment. Due to the time to
		progressively raise the large embankment the excess
		pore pressures in Zone A will generally be less than

To similar sources of site won material.			
Zone A/I			0.3. The same r_u assumption is used for Zone I due
Overburden embankment and base lining of embankment. Due to the time to progressively raise the large embankment and the rock component within the overburden fill source the excess pore pressures in Zone A are generally less than 0.1 where overburden type materials are used. The same r₁ assumption is used for Zone I due to similar sources of overburden materials. Zone B below 145 mRL Tu = 0.5 The piezometric profile at depth in Zone B is subhydrostatic well below the level of the pond. A r₁ = 0.5 allows for excess pore pressure developing during the deposition of tailings against the embankment. Based on experience the actual value is expected to be well below 0.5. However, the exact value depends on the deposition rate. 0.5 is allowed for in preliminary design for stability assessment. Zone B above 145 mRL Pond phreatic surface In the upper sections of Zone B piezometric level follows the pond. Therefore, the phreatic surface is applied. Zone C1 ru = 0.1 Zone C1 is a structural and transition fill zone. It is specified coarser than Zone B. Pore pressures drop notably where seepage passes into a more permeable material. Zone C2 ru = 0.05 Structural and transition fill zone. Slightly coarser than Zone C1. This material is more granular than cohesive and therefore little pore pressure develops in this zone. Zone D3 ru = 0.1 Bulk fill zone. Material can be variable. Zone D2 is present in TSF1A and TSF2. In TSF1A ru is typically less than 0.05. In TSF2 ru is typically less than 0.1. Zone E ru = 0.6 Zone E is not present in TSF1A or TSF2. Proposed for weak underc			ł
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RFI 5: Closure capping comparison

The EGL 2025a report states that there are large volumes of overburden materials available and that dry capping is feasible. Coromandel Watchdog indicates that partial wet ponded rehabilitation of the upper surface presents a higher long term instability risk than a complete dry cap. Dr Matuschka responding for OGNZL has indicated in summary that he considers that the proposed capping is appropriate and that a long term stable landform can be achieved. Please provide a more detailed comparison of a dry capping and partial wet capping of TSF3 in the context of long-term embankment stability post mine closure.

EGL Response:

- The proposed closure capping shown in the technical report comprises a perimeter of ignimbrite rockfill with a 0.5 m thick layer of Zone H over the top, for approximately 50 to 100 m width around the embankment and across the abutments. The uphill diversion drain along the northern hills will be decommissioned and runoff will be allowed to flow into the closure pond providing a wet cap where the tailings are away from the embankment. The eastern section of the uphill diversion drain will remain and form a permanent outlet channel (i.e. spillway) for closure, discharging water to the Ruahorehore Stream.
- The dry perimeter cap provides keeps water from permanently ponding directly against the embankment and thereby reduces seepage through the embankment. This significantly reduces the potential for instability and piping.
- In extreme flood conditions a pond will form on the tailings cap for a very short time. The water will quickly discharge via the outlet channel (spillway).
- The main difference is that with the proposed option there is a permanent pond on the TSFs and therefore greater volumes of water in the pond. The permanent pond for closure would have a volume of approximately 0.5 Mm³. The volume would increase temporarily in large rainfall events.
- Overall, the risk for both closure capping options are similar and acceptable when
 designed to the NZDSG. This is the because the likelihood of failure for both the
 proposed perimeter dry cap and partially wet cap option versus a full dry cap option is
 extremely low following design to the NZDSGs as both options keep the water off the
 embankment and both have to pass flood flows through an outlet channel.
- The closure design will be subject to building consent under the Building Act 2004 (Ref. 8) and will be independently peer reviewed.

RFI 6: Summary of the performance monitoring of TSF1A and TSF2

Coromandel Watchdog commented that accurate monitoring of existing waste rock piles and tailings facilities was needed. OGNZL responded that these sites are extensively instrumented, however there is no information provided that summarises the outcomes of that monitoring. Performance of the existing rock stacks and tailings areas is pertinent to the expected performance of future rock stacks and tailings areas. Please provide a summary of the outcomes of monitoring of Tailings Storage 1A and 2 and existing rock stacks.

EGL Response:

• Monitoring of existing waste rock piles and tailings facilities is undertaken. It includes:

12 hourly visual inspections of the TSFs and collection pond pipe and pumping infrastructure

Weekly visual inspections of the TSFs, stockpiles and collection ponds

Deformation survey of benchmarks yearly

Monthly piezometric monitoring in the embankment and foundations

Monthly seepage drainage flow monitoring

3x per week pond level monitoring

Monthly pH slurry testing of exposed fill surfaces

Six monthly ground water quality in detection bores

Six monthly ground water quality in compliance bores

Quarterly seepage water quality testing

The monitoring results are reported annually and reviewed by the independent Peer Review Panel. These reports can be provided if required.

- Monitoring extends back to 1989.
- In regard to dam safety and structural integrity:

TSF1A has 26 deformation benchmarks installed as shown on Figure 3 attached.

TSF2 has 41 deformation benchmarks installed as shown on Figure 4 attached.

TSF1A has 109 piezometers installed as shown on Figures 5, 6, and 7 attached.

TSF2 has 49 piezometers installed as shown on Figures 8, 9, and 10 attached.

- The visual monitoring and deformation survey indicates both TSFs are stable with very small deformations. This is attributed to the rigorous specifications for fill placement and compaction within the zoned embankments.
- The piezometers indicate the bulk fill zone (Zone D) in TSF2 is partially saturated and TSF1A is well drained and with very low levels of saturation. The higher level of saturation within the TSF2 bulk fill zone is associated with wetter material placed in the embankment that was obtained from higher elevations in the pit. The stability of TSF2 has been reviewed and confirmed for the monitored piezometric condition. The low level of saturation in the bulk fill zone of TSF1A is because it is constructed of more granular fill obtained from lower elevations in the pit.

3.0 COMMENT ON DETAILED DESIGN AND DAM SAFETY, AND PEER REVIEW PANEL

TSF3 will be designed, constructed, commissioned, operated, maintained, assessed, rehabilitated and closed in accordance with the New Zealand Dam Safety Guidelines (NZDSG) published by the New Zealand Society on Large Dams (Ref. 7) which is a requirement under the Building Act 2004 (Ref. 8) and building consent process. The building consent process requires submission of detailed design documentation (design report, drawings, and specifications) undertaken by persons with appropriate experience, independent peer review, and approval prior to construction.

The NZDSG guidelines are based on international best practice. As part of the building consent process the design is required to undergo an engineering peer review. The building consent and peer review process is a detailed and robust process which will be under the jurisdiction of the Waikato Regional Council as the Building Consent Authority processing building consents for large dams in the Waihi Area. This is the same detailed process for any large dam in New Zealand.

Following commissioning of TSF3 it will be subject to the requirements of the Building (Dam Safety) Regulations 2022 (Ref. 9, 10, 11) which requires a Dam Safety Assurance Programme to be in place, annual performance reviews, and the performance to certified annually by a Recognised Engineer. It also requires comprehensive dam safety reviews by an independent engineer every 5 years.

The Waihi Operation independent Peer Review Panel (PRP), required by existing resource consent conditions, will continue with its role for the Waihi North Project. The role of the PRP is to review the operation annually for compliance with the consent conditions and report to the Waikato Regional Council and Hauraki District Council about compliance. The PRP is made up of a range of experts covering dam safety, geochemistry, hydrogeology, and rehabilitation. The panel also covers some environmental monitoring aspects that are not a focus of the building consent process (which is focused on structural integrity). This PRP acts independently and according to accepted professional standards.

OGNZL has also recently instituted an Independent Tailings Review Board (ITRB) in accordance with the recommendations of the Global Industry Standard on Tailings Management (GISTM). It is comprised of two internationally recognised tailings dam experts. Their role is to provide independent technical review of the design, construction, operation, closure and management of the tailings facilities.

4.0 **SUMMARY**

The EPA requested further information on 03 October 2025 in a letter to OceanaGold in regard to TSF3 as part of the substantive application submitted for the WNP under a FTAA application.

EGL has provided further information in respect of each of the items requested.

Your Sincerely

Engineering Geology Limited

Dr Trevor Matuschka Principal Geotechnical Engineer

BE (Hons), PhD, FEngNZ, CPEng,

RecEng (DSAP), RecEng (PIC)

Eric Torvelainen

6. Correlaine

Principal Geotechnical Engineer

BE (Hons), MEngNZ

References

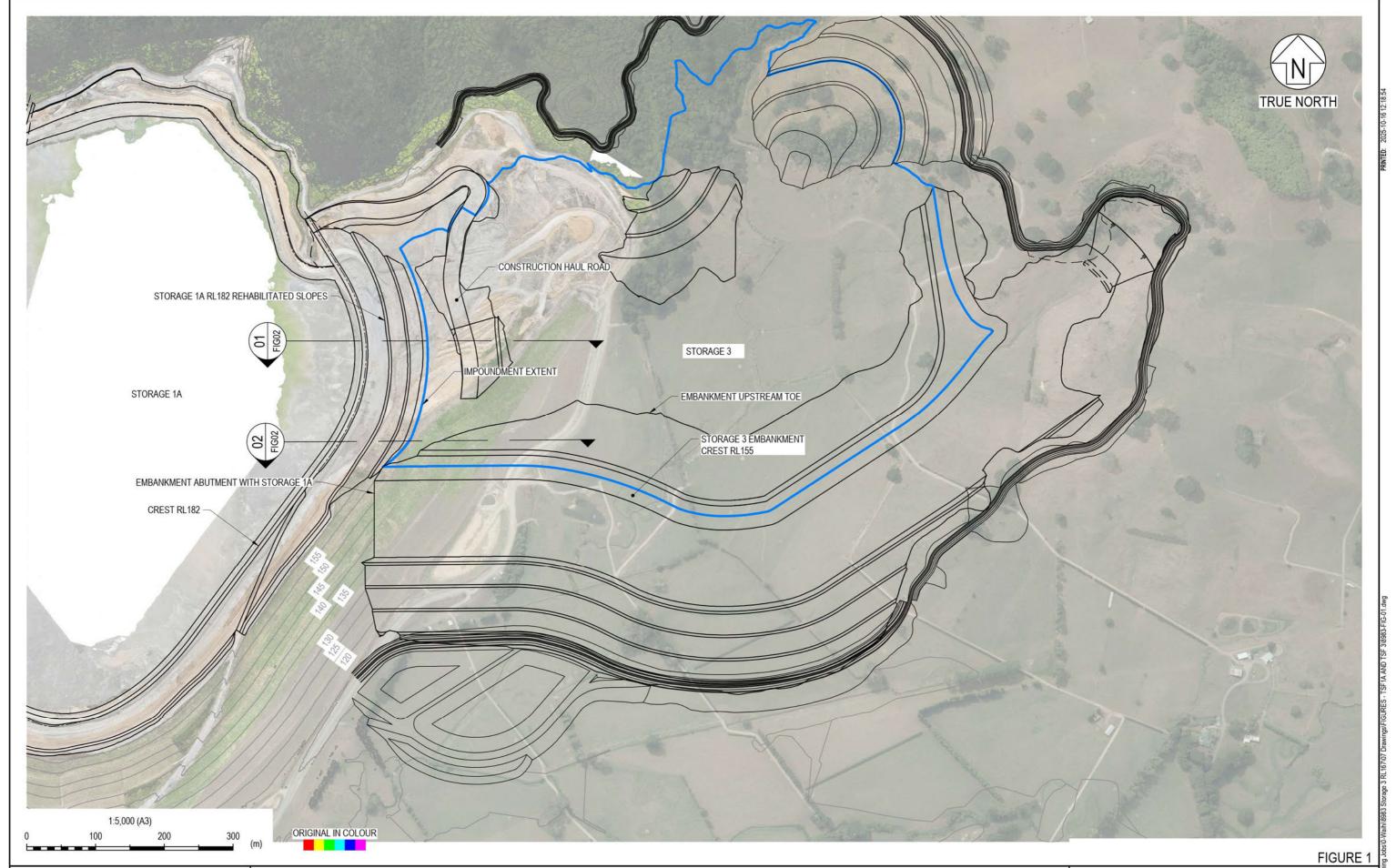
Attachments:

- 1. Figure 1 TSF3 Plan showing TSF1A abutment cross section locations
- 2. Figure 2 Cross sections of TSF3 abutment with TSF1A
- 3. Figure 3 TSF1A Deformation mark plan
- 4. Figure 4 TSF2 Deformation mark plan
- 5. Figure 5 TSF1A Piezometer plan
- 6. Figure 6 TSF1A Piezometer Cross Sections G, & H

- 7. Figure 7 TSF1A Piezometer Cross Sections I, J, K, L, & M
- 8. Figure 8 TSF1A Piezometer plan
- 9. Figure 9 TSF2 Piezometer Cross Sections A, B, C, D, Z 10. Figure 10 TSF2 Piezometer Cross Sections E, F

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- EGL (2025), Oceana Gold (New Zealand) Limited, Waihi Operation, Waihi North Project, Tailings Storage and Rock Disposal, Volume 1, Natural Hazards and Options Assessment Technical Report, OceanaGold Ref: WAI-985-000-REP-LC-0002, EGL Ref. 9215. Dated 14 February 2025, Revision 2.
- 2. EGL (2025), Oceana Gold (New Zealand) Limited, Waihi Operation, Waihi North Project, Tailings Storage and Rock Disposal, Volume 3, Proposed Tailings Storage Facility, Storage 3 RL155, Technical Report, OceanaGold Ref: WAI-985-000-REP-LC-0004, EGL Ref. 8983, Dated 14 February 2025, Revision 2.
- 3. EGL (2025), Oceana Gold (New Zealand) Limited, Waihi Operation New Zealand, Storage 3 Tailings Storage Facility RL155, Dam Breach and Potential Impact Classification, OceanaGold Ref: WAI-983-080-REP-GT-0013 Rev 1, EGL Ref. 9216, Revision 1.
- 4. Matuschka, T. (2025), Oceana Gold (New Zealand) Limited, Waihi North Project, Tailings Storage and Rock Disposal, Evidence of Trevor Matuschka Regarding Technical Assessment of Tailings Storage and Rock Disposal and Ground Settlement Effects and Proposed Conditions, Dated 27 February 2025
- 5. Matuschka, T. (2025), Statement of Evidence by Trevor Matuschka on Behalf of Oceana Gold (New Zealand) Limited, Geotechnical Matters, Dated 01 September 2025.
- 6. Environmental Projection Authority (2025), Request for information from Oceana Gold (New Zealand) Limited in relation to the Waihi North under the Fast-track Approvals Act 2024, Letter dated 3 October 2025 to Oceana Gold (New Zealand) Limited.
- 7. NZSOLD (2024), New Zealand Dam Safety Guidelines, December 2024, ISBN: 978-0-473-72599-0, nzsold.org.nz
- 8. New Zealand Government (2021), Building Act 2004, legislation.govt.nz
- 9. New Zealand Government (2022), Building (Dam Safety) Regulations 2022, legislation.govt.nz
- 10. New Zealand Government (2023), Building (Dam Safety) Amendment Regulations 2023, legislation.govt.nz
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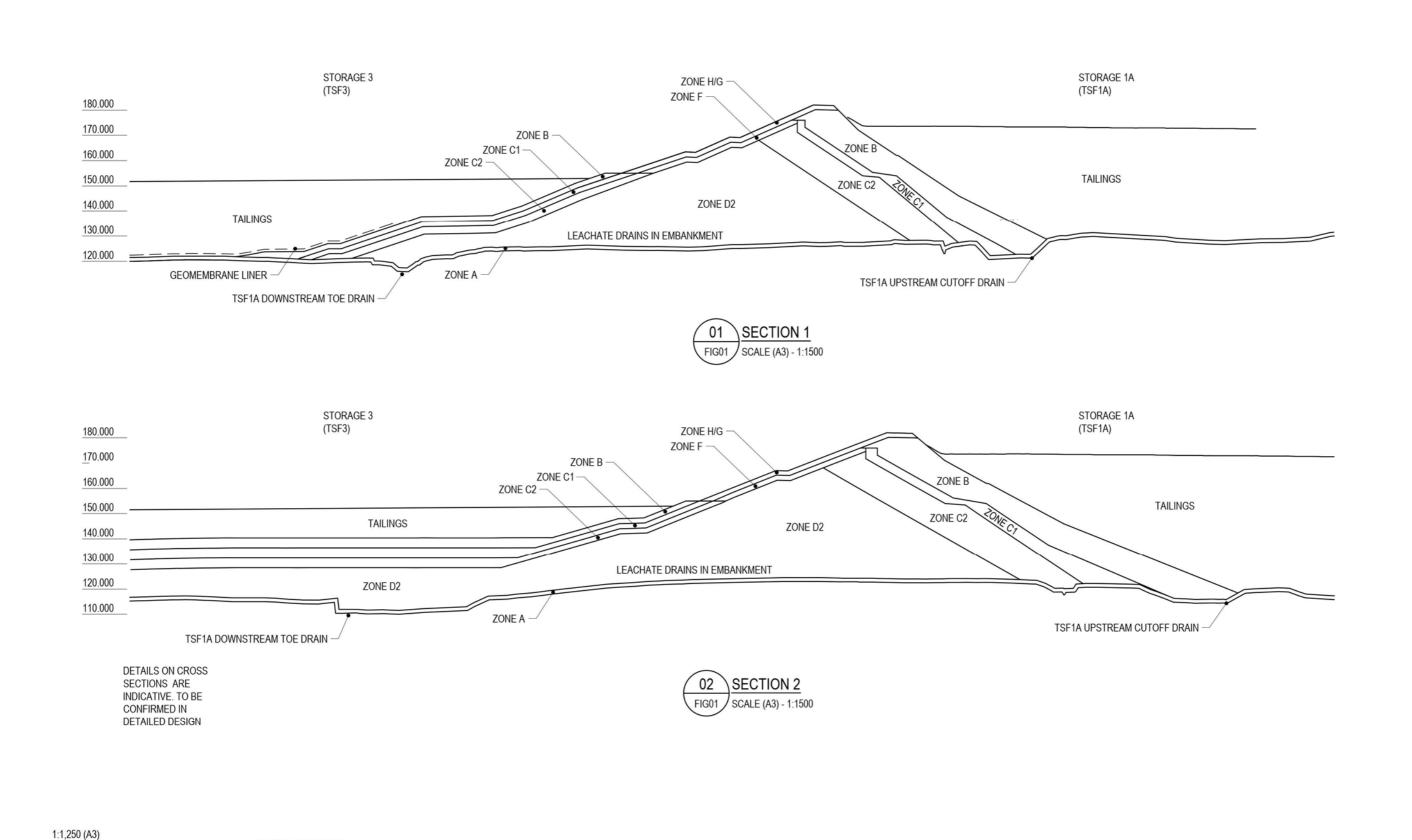




WAIHI NORTH PROJECT STORAGE 3 - TAILINGS STORAGE FACILITY RESOURCE CONSENT DESIGN - RL155 CROSS SECTION LOCATION PLAN

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Engineering Geology Ltd www.egl.co.nz

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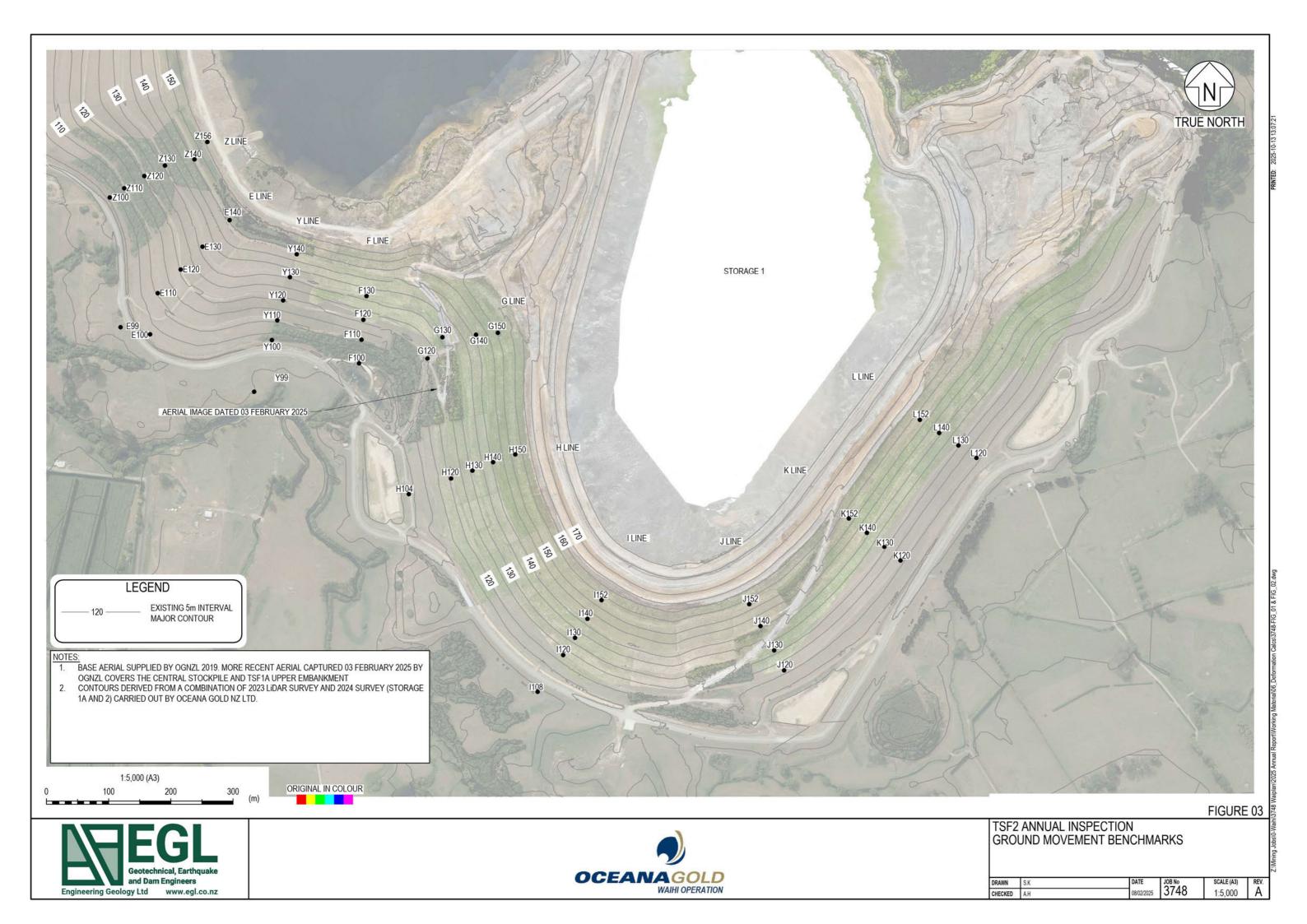


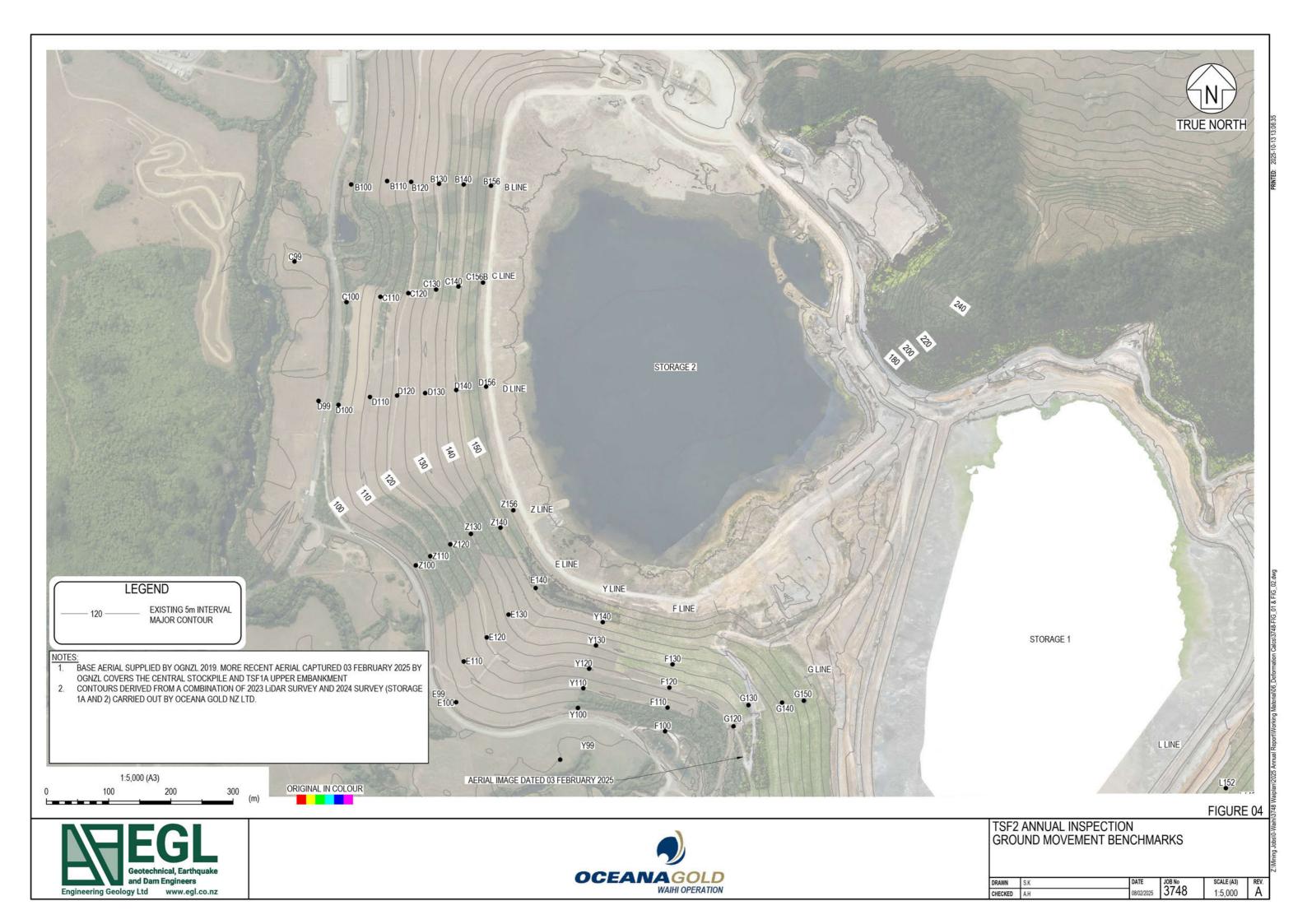
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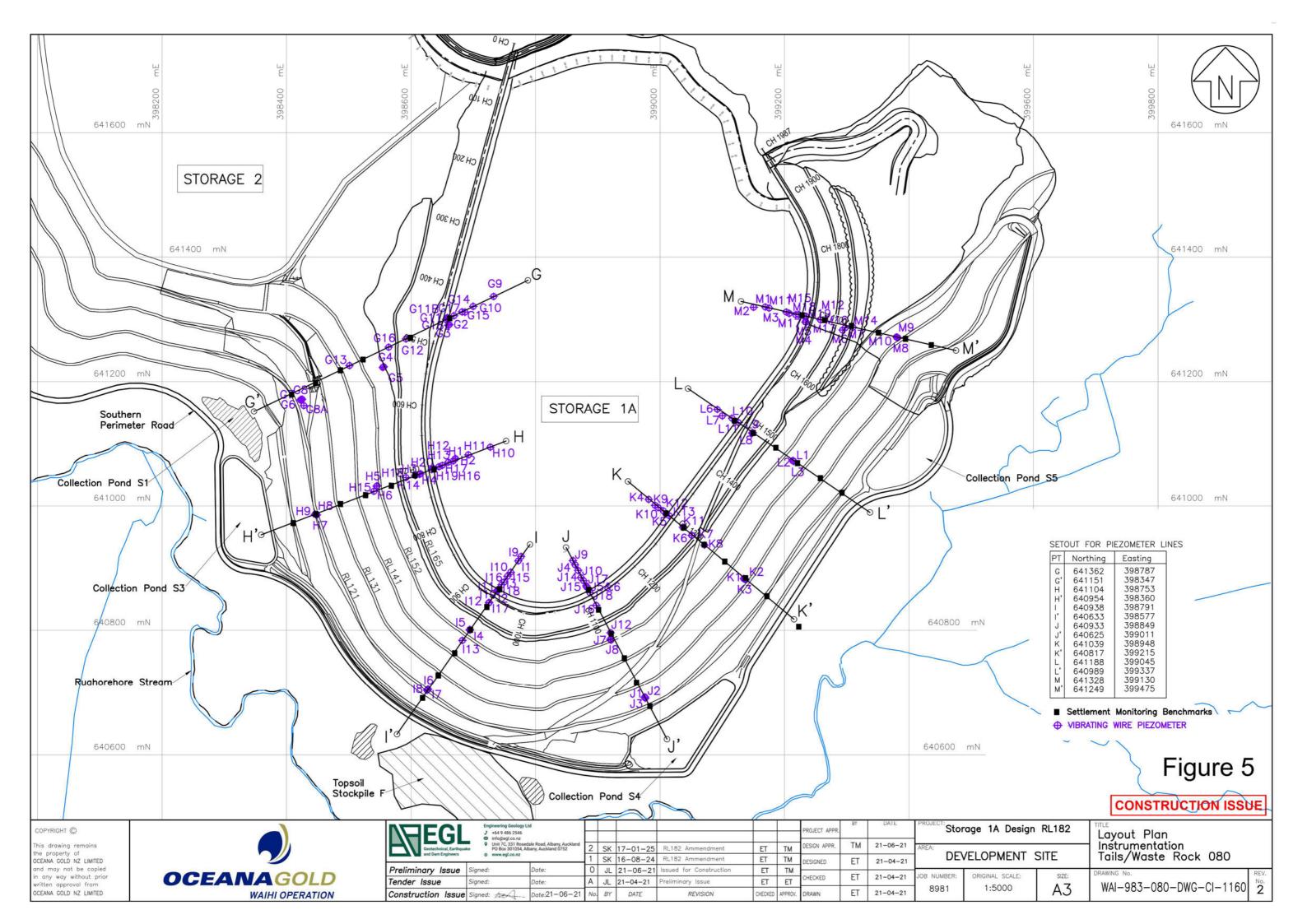
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FIGURE 2



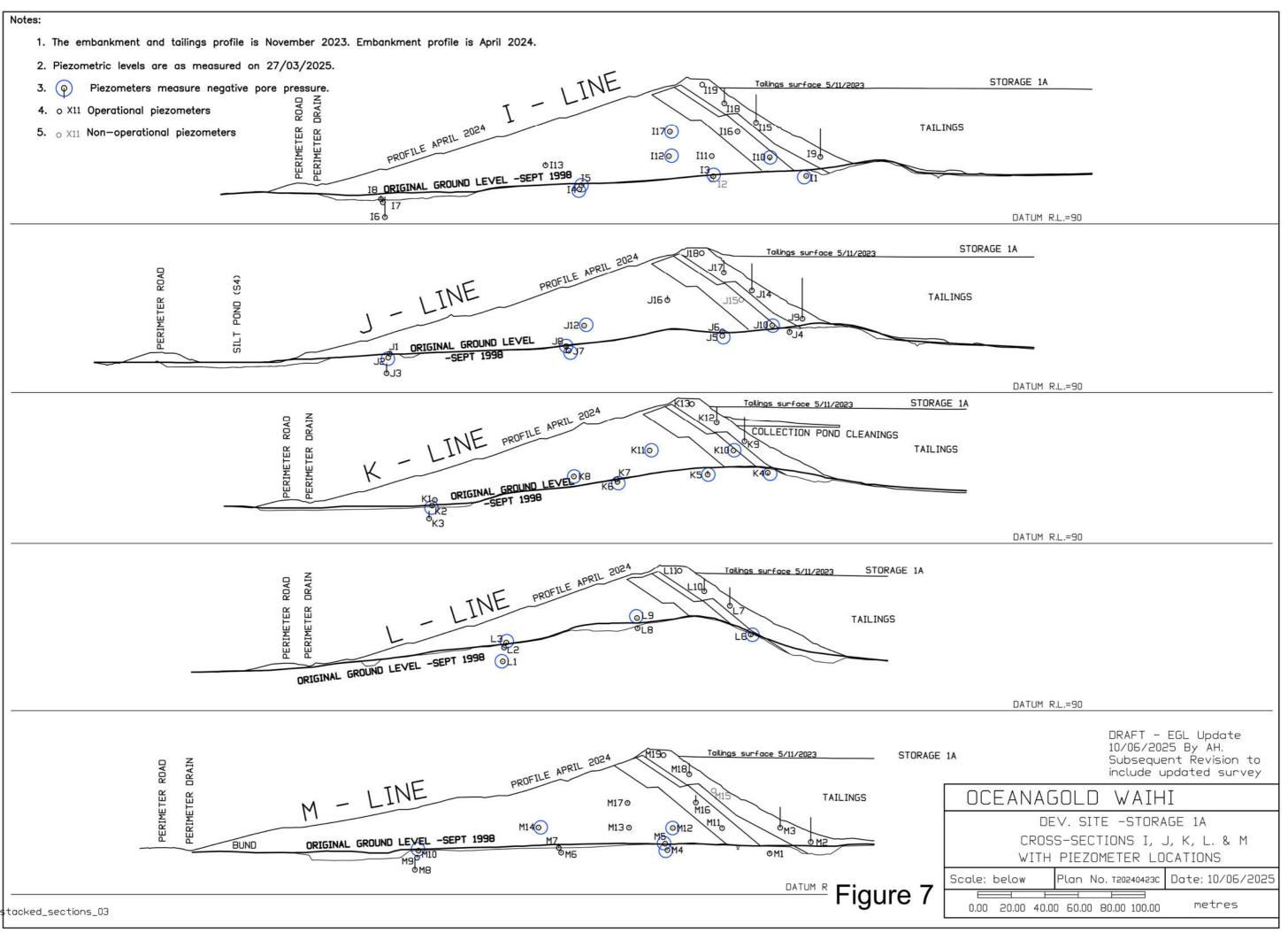


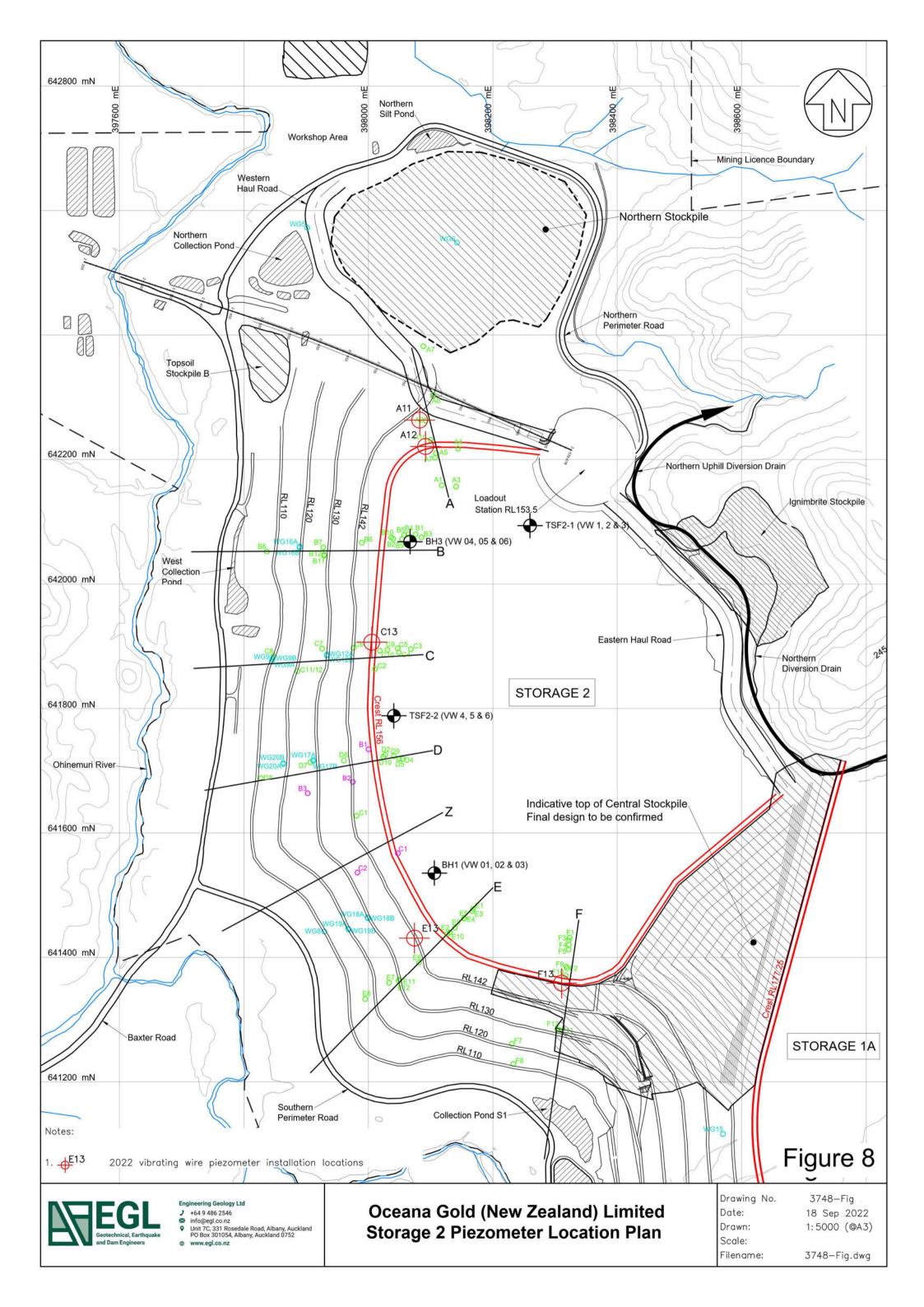


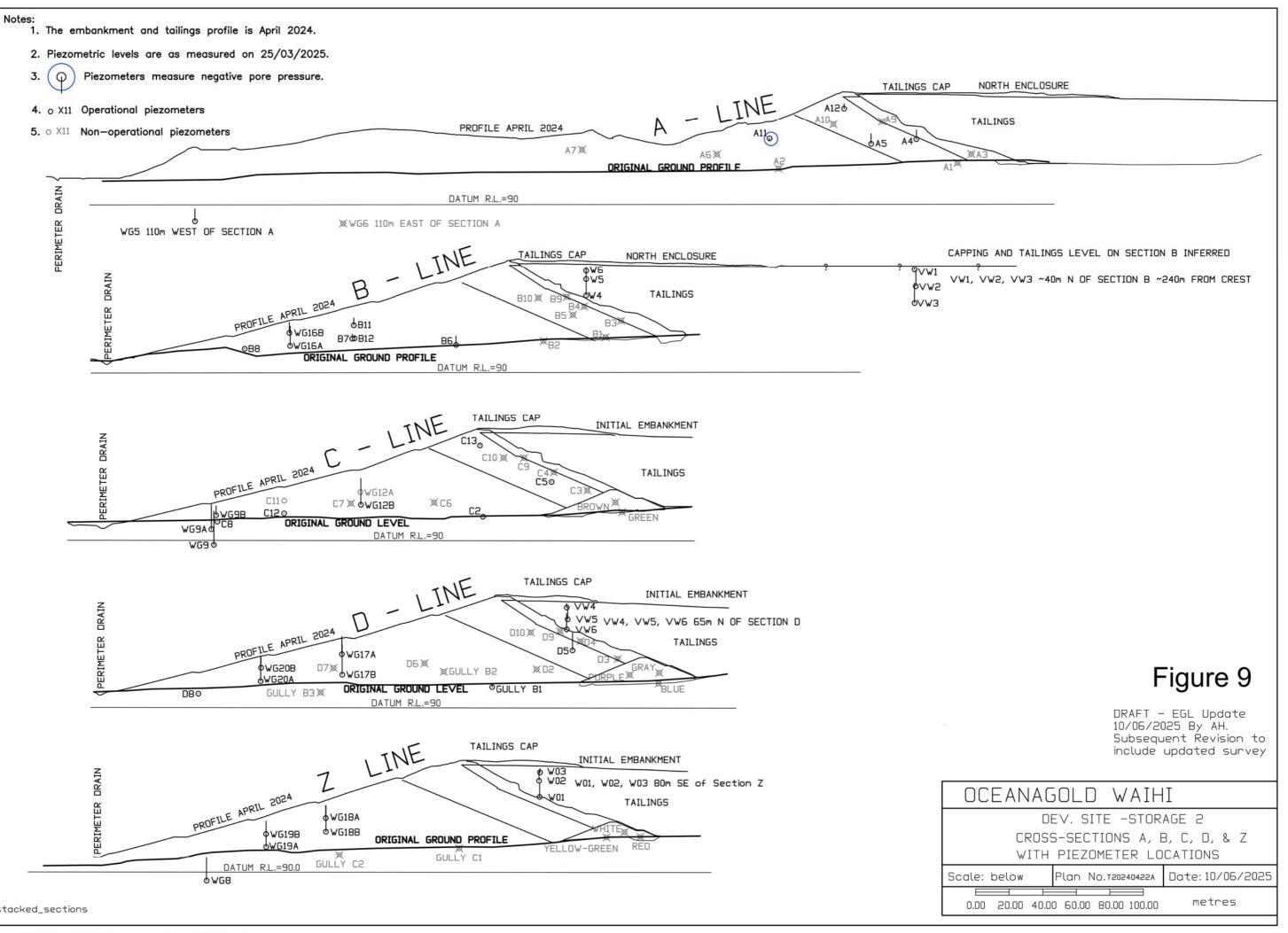
Notes: 1. The embankment and tailings profile is November 2023. Embankment profile is April 2024. 2. Piezometric levels are as measured on 27/03/2025. 3. Piezometers measure negative pore pressure. 4. O X11 Operational piezometers 5. o X11 Non-operational piezometers PROPOSED 'R.L. 182' PROFILE. Tailings surface 5/11/2928 - LINE STORAGE 1A PROFILE APRIL 2024 PERIMETER ROAD OLD STOCKPILE G11(B) [©]G12 613 **TAILINGS** TAILINGS SOUTH GS G4 G7 68B OFF-SET 25 METRES SOUTH DATUM R.L.=90 Callings surface 5/11/2023 - LINE STORAGE 1A PROFILE APRIL 2024 0 H14 H TAILINGS NRIGINAL GROUND LEVEL -SEPT 1998 H8 DATUM R.L.=90 DRAFT – EGL Update 10/06/2025 By AH. Subsequent Revision to include updated survey OCEANAGOLD WAIHI DEV. SITE -STORAGE 2 & STORAGE 1A CROSS-SECTIONS G, & H WITH PIEZOMETER LOCATIONS Scale: below Plan No. 120240423B Date: Figure 6

metres

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Notes:

- 1. The embankment and tailings profile is April 2024.
- 2. Piezometric levels are as measured on 25/03/2025.
- 3. Piezometers measure negative pore pressure.
- 4. o X11 Operational piezometers
- 5. o X11 Non-operational piezometers

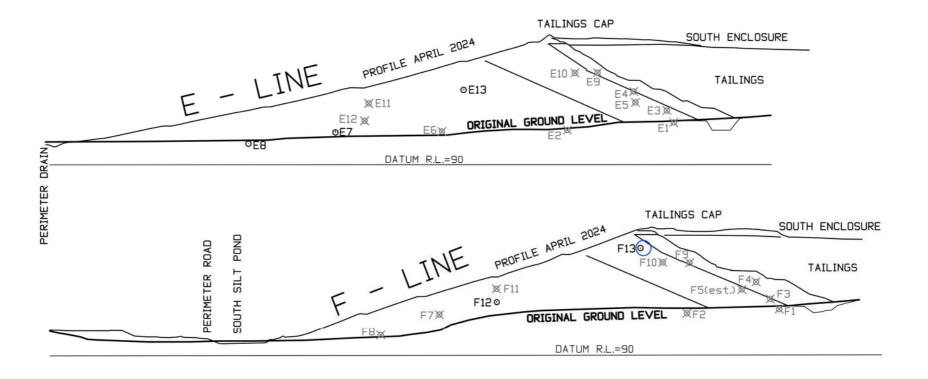


Figure 10

DRAFT - EGL Update 10/06/2025 By AH. Subsequent Revision to include updated survey

OCEANAGOLD WAIHI DEV. SITE -STORAGE 2 & STORAGE 1A CROSS-SECTIONS E, & F WITH PIEZOMETER LOCATIONS Scale: below Plan No.T20240423B Date:10/06/2025