Before the Expert Panel appointed under the Fast-track Approvals Act 2024

Under	the Fast-track Approvals Act 2024 (**Act**)
And	
In the Matter of	an application for approvals by Matakanui Gold Limited to establish, operate, rehabilitate and ultimately close an open pit and underground gold mining operation known as the Bendigo-Ophir Gold Project

Statement of Evidence of **Peter Robin O'Bryan** on behalf of **Matakanui Gold Limited** in response to Section 53 Feedback

Geotechnical

Dated: 17 April 2026

Lane Neave
Level 1, 2 Memorial Street
PO Box 7348
Queenstown
Solicitors Acting: Joshua Leckie/Sarah Anderton/Mia Turner
Email: joshua.leckie@laneneave.co.nz/
sarah.anderton@laneneave.co.nz/mia.turner@laneneave.co.nz
Phone: 03 409 0321

lane neave.

INTRODUCTION

1. My name is Peter Robin O'Bryan.

2. I hold the following qualifications:

   (a) Bachelor of Engineering (Mining) 1982 University of New South Wales; and

   (b) Master of Engineering Science (Rock Engineering), 1990 James Cook University of North Queensland.

3. I have worked as a rock mechanics engineer (geotechnical engineer) in mining from 1982 to the present variously for operating mining companies, in applied geomechanics research and in consulting roles. I have been employed as Principal Geotechnical Engineer for Peter O'Bryan & Associates since 1994.

4. I have been involved in geotechnical investigations and assessment in open pit and underground operations in numerous commodities and in a wide range of ground conditions within Australia and globally. Such involvement has covered geotechnical assessment for mining, varying from scoping level studies through feasibility and operation to mine abandonment.

5. This statement is given as part of Matakanui Gold Limited's (**MGL**) response to comments on the BOGP made under Section 53 of the FTA. This statement responds to specific comments raised by:

   (a) Otago Regional Council (ORC);

   (b) Kā Rūnaka;

   (c) New Zealand Fish and Game Council;

   (d) Sustainable Tarras; and

   (e) Holger Reinecke and Chantel Degril.

6. My original findings are provided in full in:

   (a) B.28 Peter O'Bryan & Associates – Geotechnical Assessment – Open Pit and Underground Mining – Rise and Shine Deposit (POB 2025) report and memoranda:

      (i) No. 24053C Bendigo-Ophir Gold Project, Response to Technical Review (Appendix 07 to Otago Regional Council section 53 (2) written response).

(ii) No. 24053D Bendigo-Ophir Gold Project Rise & Shine Deposit Subsidence Potential Underground Mining (Appendix 10 to ORC section 53 (2) written response).

7. I have prepared this statement in the limited time available for MGL to respond to comments under the Act. If the Panel requires elaboration on any of the matters raised in this statement, I am available to provide further information on request.

8. Although this is not an Environment Court proceeding my confirmation of compliance with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 is included in Substantive Application Document A0.2B.

RESPONSE TO COMMENTS

Responses to Otago Regional Council

Item 45. ORC queried the extent to which critical recommendations from the Peter O'Bryan & Associates (POBA) pit stability report would be implemented, as no consent conditions had been proposed in relation to open pit mining. While the application contains 23 management plans, not one is dedicated to the proposed open pit mining. ORC considered this an important omission.

9. The requirement to prepare both Open Pit and Underground GCMPs has been accepted and reflected in the amended consent conditions provided as Part D to this response package.

10. A generic Ground Control Management Plan (GCMP) can readily be compiled for review. The body of the document would follow the content list as provided in Appendix 07 to ORC section 53 (2) written response. A single Open Pit GCMP can incorporate all operating areas, with inclusion of general geological and geotechnical backgrounds / variations for each deposit. A separate Underground GCMP will be developed.

11. At this stage several components of both the Open Pit and Underground GCMP would remain generic as:

(a) Open pit and underground designs are not finalised.

(b) Monitoring and data acquisition methods can be referred to only generally, yet in the final GCMP these must be detailed, as must Trigger Action Response Plans (TARPs).

(c) Mining contracts have not been awarded hence specific personnel and standard operating procedures cannot be listed.

(d) Information from advanced assessment is required but not yet available, including further open pit slope analysis and numerical modelling assessment of proposed underground mining and potential for subsidence in response to underground mining.

(e) Site geotechnical training procedures are yet to be decided / defined.

(f) Underground backfilling procedures are to be included in the Underground GCMP; however, it is expected that a stand-alone Backfill Management Plan will also be compiled.

Item 50. ORC considers that development and implementation of Ground Control Management Plans (GCMP) is an appropriate means to manage operational stability risks of open pit mining. The GCMP should be prepared by a suitably qualified and experienced geotechnical engineer and provided to ORC for certification; recommended consent conditions are in Appendix 4.

12. As noted in the response above, I agree with ORC except to note that there are components of Ground Control Management Plans (**GCMP**) that are not within the purview of a geotechnical expert. Accordingly, the geotechnical expert need only approve, or amend as required, the geotechnically related content and requirements of the GCMP. The Open Pit and Underground GCMPs, are pre-requisites for both open pit and underground mining and will be finalised and provided to ORC for certification well in advance of commencement of mining. This has been reflected in the updated consent conditions provided in Part 4 of this response package

Item 55. ORC has recommended a consent condition (in Appendix 4) to ensure that the RAS GCMP applies to the Come in Time, SRX, and SRX East satellite pits, or that separate GCMP addressing the same key matters are provided.

13. I consider a single Open Pit GCMP can incorporate all operating areas, with inclusion of general geological and geotechnical backgrounds/ variations for each deposit.

Item 60. Although POBA notes a 40 m exclusion zone as an approximation, ORC considers it necessary and appropriate from a geotechnical perspective to determine the exact width of the post-mining exclusion zone through geotechnical assessment following completion of mining and recommends consent conditions to this effect.

14. I agree with ORC in that ongoing assessment will be required to confirm exclusion zone dimensions. As part of the assessment for more specific definition of abandonment barrier positioning exposed rock mass conditions and stability performance will be monitored during mining. Wall displacements will be monitored quantitatively. Findings will enable refinement of stability analysis input and improve

assessment of long-term pit wall performance. Behaviour of the upper walls of the open pits will inform appropriate design of final post – mining pit access prevention landforms. The necessary widths of exclusion zones will vary around the mining excavations, dependent on geology, geological structure and rock weathering grades.

Item 63. Preliminary information would indicate that any instability in the CIT, SRX, or SRE pits is not expected to result in destabilisation of adjacent Public Conservation Land; however, ORC recommends that this be confirmed by detailed assessment.

15. The planned SRX and SRE pits are remote (from the nearest Public Conservation Land – being greater than 1 km from the Ardgour Conservation Area and approximately 870 m away from the Bendigo Conservation Area.

16. The separation between the sector of the CIT Pit closest to the Public Conservation Land (being the Bendigo Historic Reserve) is greater than 175 m, at which point the pit wall is entirely within more competent Textural Zone 4 (**TZ4**) rocks. The angle between the toe of the 70 m high wall and the boundary of the Bendigo Historic Reserve is 8°. West of this point the separation between the CIT pit crest and Bendigo Historic Reserve increases and the wall remains in TZ4. The highest CIT Pit southwestern wall plus natural slope height is approximately 150 m (120 m wall and 30 m natural slope). The crest of the natural ridge is approximately 70 m from the Bendigo Historic Reserve while the pit crest is 245 m from the reserve boundary. As such, failure of the natural slope is the only means by which the Bendigo Historic Reserve could be breached at this position. The CIT Pit cannot influence this portion of the natural slope.

Item 64. ORC recommends consent conditions requiring: (a) a minimum Factor of Safety of 1.5 under static loading for all ground beyond the project site; and (b) prior to excavation of any open pit, a geotechnical assessment by a suitably qualified engineer to model potential failure surfaces, assess FoS for land outside the site boundary, and identify any mitigation or monitoring necessary.

17. I agree that this is a reasonable consent condition for disturbed areas or excavations at or near the boundary of the Project Site; however I do not agree that the consent condition is necessary as that boundary is remote from all open pit excavations, except where the southeastern sector of the Rise and Shine (**RAS**) Open Pit is locally approximately 70 m from the Bendigo Historic Reserve boundary. West of this point the separation is typically greater than 100 m. The assessment presented in Appendix 07 to ORC section 53 (2) written response, demonstrates that this zone has a minimum FOS greater than 1.5. This assessment for this area is to be

reviewed as pit design is finalised and the structural and geotechnical interpretations of the area are refined.

Item 65. ORC suggests the practicalities of maintaining a post-closure exclusion barrier in perpetuity should be considered, possibly managed via a condition placed on the enduring CODC land use consent or via a covenant on the relevant title(s) in favour of CODC. ORC invites the Applicant to address this in its s55 response.

18. Fabricated barriers such as fences will not be retained in perpetuity without a maintenance schedule. Perpetual post-closure exclusion barriers / abandonment barriers could comprise bunds built using fresh, free-draining waste rock. Bunds would be of appropriate height and shape, for example, at least 2 to 3 m high with a base of 5 to 7 m. Higher bunds may be necessary if / where vehicle access is possible. Specifications for barrier dimensions, positioning and type can be determined during mining and following assessment of as mined wall stability conditions. Rock bund construction, by necessity requires major land disturbance for haulage access to place the waste rock forming the bund. Other barrier types could be used, for example, fence construction can be managed with only minor disturbance to the setting; and walls comprised of fresh rock-filled gabion baskets could also be used in critical or sensitive areas.

Item 128. While possibly acceptable from a geotechnical perspective, ORC considers deferring an assessment of potential environmental effects of underground mining-induced subsidence until after consents to be poor process. ORC requested a preliminary assessment of potential surface-level effects including potential for subsidence to adversely affect land stability, watercourses, or mine infrastructure.

19. A preliminary assessment of potential for surface subsidence in the area overlying planned underground mining is presented as Appendix 10 to the ORC section 53 (2) written response POBA memorandum 24053D Subsidence Potential, Underground Mining. Appendix 10 notes that:

    (a) Further investigation and analysis, including in situ stress measurement and numerical modelling of mining sequences are required to refine this preliminary assessment.

    (b) Modelling is critical to improving prediction of overbreak extent and assessment of potential for surface subsidence. This modelling would be performed prior to commencement of underground mining but after establishment of open pit mining. Ground exposure in the RAS open pit will be highly valuable in adding to the understanding of the character and competence of the rock mass which will lie above the underground stoping panels.

The work outlined in (a) and (b) should be included as consent conditions for underground mining. I understand these works have been reflected in the amended consent conditions provided in Part 4 of the response package.

Item 133. GeoSolve recommends a consent condition requiring preparation of a Subsidence Assessment Report prior to the commencement of any underground mining activities.

20. My response is the same as provided above. Appendix 10 to the ORC section 53 (2) written response, POBA memorandum 24053D Subsidence Potential, Underground Mining notes that:

    (a) Further investigation and analysis, including in situ stress measurement and numerical modelling of mining sequences are required to refine this preliminary assessment.

    (b) Modelling is critical to improving prediction of overbreak extent and assessment of potential for surface subsidence.

Item 181. Appendix 34 Geotech – Review of RFI Responses (Rev 1) (GeoSolve) GeoSolve considers the RFI responses materially address most of the geotechnical concerns raised in its December 2025 report. Remaining concerns relate to: Landslide consent conditions should apply to the entire site, not just the TSF Add GeoSolve's previously suggested consent conditions requiring: A minimum FoS of 1.5 on land outside the site boundary. Detailed geotechnical assessments and monitoring. Clearly defined post-closure exclusion zones and public safety measures. Recommends specific condition requiring Subsidence Assessment Report before underground mining begins

21. Geohazard identification and management will aim to ensure that all slope failure risks, including latent landslides, are identified, avoided, mitigated, or monitored. Such risk assessments and means of mitigating potential associated with the hazards, form part of the GCMP. Stability conditions of land outside and immediately adjacent to the Project Site boundary will be assessed. It is noted that some natural slopes may have FOS less than 1.5. Geotechnical monitoring of excavated and constructed structures, and where necessary, natural earthen features, will be of appropriate type and number and maintained at data collecting, analysis and reporting frequencies required for ongoing safe operation and access. Post-closure exclusion zones will be based on NZ statutory requirements where available. Initial estimates of positioning of barriers can be delineated by Western Australian generic guidelines, with confirmation / amendment of positioning based on assessment of actual ground / excavation exposures. As noted at Item 12, three-dimensional numerical modelling of surface subsidence will be performed in advance of development of underground access. Further details of planned mining and

information on ground stress need to be obtained before analyses can be undertaken.

Response to Kā Rūnaka

Item 43. The level of information available that is pertinent to underground mining is insufficient to adequately evaluate the associated impacts. More work is required to determine the impact of underground mining on surface subsidence and the associated impacts on the ground and surface water hydrology. It is unlikely that the underground mining will have any significant impact on biodiversity within the mine footprint, beyond that associated with surface mining. However, depending on the duration of the underground mining activities, which in turn are dependent on further exploration work and the associated economic evaluation, the surface impacts may extend beyond the current proposed timeframe and area. There is no allowance for this extended impact set out in the documentation that has been seen. [MP18]

22. Preliminary assessment of potential for surface subsidence in response to underground mining indicates that surface settlement would be limited (Appendix 10 to the ORC section 53 (2) written response (POBA memorandum 24053D Subsidence Potential, Underground Mining). Predicted average settlement based on application of conservative methods and conservative input data is approximately 0.2 m. Further analysis is proposed once detailed mining plans have been settled and data regarding in situ rock stress are available. Analyses will use three-dimensional computer modelling following the proposed sequential underground extraction and backfilling. These items of work should be included as consent conditions for underground mining.

Response to New Zealand Fish and Game Council

Item 87. Landslide mitigation is to come at Detailed Design stage. F&G disagree that assessment of this can be deferred to later.

23. I agree it is important that potential for interaction between mining excavation and latent landslides is examined. Potential for instability related to natural slopes and / or latent landslides on the area containing the planned portals to underground access declines will be examined prior to settling on a final design for the access. The planned mining sequence of the open pits mitigates against adverse interaction with latent landslides. Initial mining of the RAS Open Pit progresses northward from the southern crest, progressively down-dip along the Thomson Gorge Fault. The northeastern highwall on the northern flank of Shepherds Valley will be mined as a cut-back (or cuts-back) of the northern wall, from top-down in a series of horizontal cuts. Many of the landslide features which have been identified to date are assessed as being ancient landslides, present as displaced masses without debris fields. This indicates the displaced masses are generally at rest without rapid type instability mechanisms (refer to *B.27 - Engineering Geology Limited - Shepherds, Western and Srex Engineered Landforms, and Come in Time Pit Backfill Technical Report (EGL 2025h*).

Response to Sustainable Tarras

The existing CIT battery ore supply embankment are unstable with sections subsiding potentially from the projects drilling, vehicle movements and road earthworks.

24. This disturbance has been noted by others; however, the area within and surrounding the Come-in-Time battery was not inspected by POBA (being outside the scope of work).

Response to Holger Reinecke and Chantel Degril

Rock blasting/explosions during mine operations could trigger seismic activities or make them more likely in the future due to the vibrations and geological disruptions.

25. Energy levels expended during open pit and underground blasting are very low in relation to levels involved in local or regional seismic events. There is no realistic risk that open pit blasting could initiate a seismic event. Vibrational disturbance might dislodge metastable blocks, e.g., local rockfall or berm crest loss. Underground firings at the shallow depth (associated with low in situ stress magnitude) and small scale of planned stoping have a very low likelihood of triggering seismic events. Areas already near failure (e.g., due to structural

conditions) could be disturbed but would not affect the stability of the mine structure. The probability of blasting initiating a local or regional earthquake is effectively zero.

Peter Robin O'Bryan

17 April 2026