**BEFORE THE EXPERT PANEL** **FTAA-2507-1089**

**I MUA I TE ROOPU TOHUNGA**

**IN THE MATTER** of the Fast-track Approvals Act 2024 (the Act)

**AND**

**IN THE MATTER** of an Application made under the Fast-Track Approvals Act 2024 by Matakanui Gold Limited (Santana Minerals)

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# STATEMENT OF EVIDENCE OF MARK HUGH PIZEY (MINE ENGINEERING AND ENVIRONMENTAL MANAGEMENT) ON BEHALF OF KĀTI HUIRAPA RŪNAKA KI PUKETERAKI, TE RŪNANGA O MOERAKI, TE RŪNAKA O ŌTĀKOU, AND HOKONUI RŪNANGA (KĀ RŪNAKA)

**10 APRIL 2026**

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## INTRODUCTION

### Qualifications and experience

1. My name is Mark Hugh Pizey. I am a retired Mining Engineer having completed 45 years in the industry both in New Zealand and overseas.

2. I hold undergraduate degrees in Physics, Biology and Geology, a Master of Engineering in Rock Mechanics and Excavation Engineering (Newcastle upon Tyne) and a Master of Professional Studies (Environmental) (Lincoln University). During my professional career I have been a Registered Professional Mining Engineer (UK), a member of the Australasian Institute of Mining and Metallurgy and am a current Fellow of the Institute of Quarrying.

3. Between 2010 and 2013 I was elected to the position of Chair of the Business and Biodiversity Offset Program, an International program comprising business, NGO and Government entities based in Washington DC, which has the mission to provide leadership in the mitigation of impacts on biodiversity.

4. I oversaw the rehabilitation and management of acid mine drainage from the opencast Stockton Mine and the design of biodiversity offsetting practice adopted for mine development within Solid Energy NZ's development and operational sites for 17 years.

### Involvement in project

5. I was engaged by Puketeraki Limited (on behalf of Kā Rūnaka) in January 2025 to assist Kā Rūnaka in the evaluation of applications for consents associated with mining projects within their rohe. Specifically, in relation to the Application by Matakanui Gold Ltd for consents to undertake surface and underground mining at the Bendigo site, I have been contracted to provide an evaluation of the associated mining and environmental impacts associated with the proposed development.

**Purpose and scope of evidence**

6. This evidence is provided to assist the decision-maker by addressing technical and operational matters raised in the Application and supporting documentation.

7. In preparing this evidence, reference has been made to the following documents:

- Greg Ryder Consulting: Water Quality Compliance Limits.
- BECA: Bendigo Ophir Gold Project CIA Assessment Support Review.
- Alliance Ecology: BOGP Assessment of Ecological Effects - Terrestrial ecology 31 July 2025 - 95_ DRAFT.
- Engineering Geology Ltd: BOGP Site Geotechnical Factual Report Final Rev 2.
- Komanawa Solutions Ltd: Groundwater Modelling Analysis for Mining Bendigo Ophir Gold Deposit.
- Mine Waste Management: Bendigo Baseline Water Report.
- Mine Waste Management: Factual Report - Geoenvironmental Hazards.
- Mine Waste Management: Engineered Landform Design Philosophy.
- Mine Closure Management: Bendigo-Ophir Gold Project Mine Closure Plan.
- Mine Waste Management: Net Percolation Assessment for the Proposed Bendigo-Ophir Gold Project Mine Waste Storage Facilities.
- Mine Waste Management: ELF and Water Treatment Options Assessment.
- GeoSolve: Review of RFI Responses (Rev 1) Bendigo-Ophir Gold Project Fast-Track Application Assessment.

**Expert Witness Code of Conduct**

8. Although these proceedings are not before the Environment Court, I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving oral evidence before the Hearings Panel. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

**SUMMARY OF THE PROJECT**

9. With a disturbed footprint of approximately 600ha, the Matakanui Gold Project's proposed Bendigo site ranks amongst the largest mining operations in New Zealand (cf: OGL Macraes, Waihi Mine Projects and the Stockton open cast coal mine).

10. In terms of employment, the mine will also rank as one of the largest mining employers in the Country. The gold production at Macraes, since the start of operations there in 1990, has averaged approximately 150,000 ozs of gold pa, whilst the average production from the Waihi projects has been around 100,000 ozs per annum since 1988. The modelled production for the Matakanui Gold Project averages circa 90,000 ozs per annum.

11. The Matakanui Gold Project will be the largest mining development in the Otago Region since the Macraes Project was developed in the early 1990s and, given the historic increases in gold prices and relatively limited current exploration data, is likely to increase in size over time to exploit currently uneconomic or unknown resources.

**EXISTING ENVIRONMENT**

12. Historic alluvial and then hard rock gold mining occurred at the site of the proposed development between the mid- late 19th Century and the late 1930s, all ceasing on there being an exhaustion of then economically viable resource. These historic developments have altered the environment and resulted in increased concentrations of some contaminants, areas of disturbed ground and altered vegetation patterns. Agricultural developments in the same area

have also impacted on indigenous flora and fauna. There are various vertebrate pest species that are present in the locality which are also impacting the baseline for the site.

**ASSESSMENT OF EFFECTS ON THE ENVIRONMENT**

13. The project, as described, will create a very significant impact on the existing environment with a footprint of more than 600 hectares and with the creation of permanent water bodies, waste rock disposal areas and tailings storage facilities. In addition to having an impact on the landscape values of the area, these features will also be associated with the discharge of elevated concentrations of potential contaminants of concern, alterations to the local hydrological regime, long term public safety and, potentially, landform stability risk. The site is to be rehabilitated for pastoral use over the majority of the impacted area with smaller areas restored for their ecological values.

14. There will be significant impact on the recreational and amenity values of the area during the mine's operation which will extend, in some areas, in perpetuity (for example, areas of limited public access for reasons of safety associated with residual mine pit highwalls). Access to historic sites and recreational areas will be impacted, although it is acknowledged access to current public spaces will be maintained.

15. There will be a displacement or loss of indigenous flora and fauna associated with the development and operation of the mine. In some cases, this loss is significant from a national perspective with several species being poorly represented or absent outside the area of the proposed development.

16. Current surface and groundwater water quality reflects the impact of historical mining activities. Modelling of the geochemical environment both during and post mining shows a potential for elevated concentrations of contaminants of concern in surface water at the site. It is proposed that the Applicant is required to meet the ANZG standards except where site specific criteria have been developed (sulphates). These standards are appropriate given the baseline water quality and its pre mining impact on the receiving environment.

**EFFECTS MANAGEMENT AND PROPOSED CONDITIONS**

17. The Applicant recognises that several impacts associated with mining activities will extend beyond the end of the mining itself. A post closure period is recognised as requiring varying degrees of management input, principally in the areas of water management, site rehabilitation and offset management.

**Uncertainties**

18. The Application for consents covers both surface and underground mining. 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.

19. As detailed below, uncertainty exists in the rehabilitation techniques to be utilised at the site and frequent reference is made to adaptive management practice in regards to rehabilitation, water management and geochemical management. MGL's experts make reference to the necessity to undertake further studies in a number of areas (eg: baseline hydrology, rehabilitation methodology, baseline geochemistry) and until this work is undertaken, the associated Management Plans may change. This uncertainty makes assessment of the effects difficult for Kā Rūnaka.

20. I am of the opinion that whilst there remain areas of water and geochemistry where further baseline information is required, the uncertainties (risks) identified are able to be managed during the operational phase of the proposed mine. The Application makes reference to adaptive management methodologies that will need be developed as the mine progresses and I consider this approach

to be realistic. I am, however, concerned that post closure, at a time when a set of pre-determined rehabilitation criteria have hopefully been met, that the long term, intergenerational impacts will remain with no mechanism established for their management. Closure standards will be established on the basis of the known data set, which is acknowledged to be deficient in some areas. Criteria established in the absence of a full, relevant data set may not reflect the reality of the situation 20 or 30 years hence. The Panel should exercise caution and take a conservative approach when establishing what constitutes a sustainable, post closure, environment. To mitigate the risk that standards adopted at this stage of the project are not appropriate at closure, and very long term impacts remain to be managed, a funding mechanism, beyond the conventional performance bond, should be established. The mechanism to deliver this outcome should be such that it is able to ensure sufficient funds are available in the long term (perpetuity?) to enable management of these impacts. The creation of this mechanism should be a condition of grant of the consents.

**Landscape and Ecological Rehabilitation Management Plan (Boffa Miskell / Landcare) Aug 2025**

21. *Sec 8.2; Sec 10.1.3; Sec 10.3.3;* It is noted that much of the mitigation offered for the absolute loss associated with proposed development relies on the effective control of pests and predators within designated areas. The applicant proposes there be targets established for the reduction of pest / predator species, monitoring of the success of the measures taken and the creation of "Sanctuary Measures" where predator proof fencing, permanent mesopredator (eg: cats, possums) control and biodiversity protocols will ensure success. In my opinion such measures will provide for an increase in native biodiversity within the areas subject to control. This net gain will only be sustained so long as the control measures adopted are in place. A significant risk exists where post closure of the mine, the efforts associated with maintenance of these measures will decline with a commensurate loss of the biodiversity gain achieved. To retain the gain in biodiversity values, a long term commitment (potentially in perpetuity) is required. The commitment to this work is proposed to extend beyond mine life but there is no

explicit reference to a mechanism that will secure these activities in perpetuity.

22. *Sec 10*.3.5; Mining of the CIT pit is contingent on a method for the establishment of cushionfield rehabilitation although it is noted that initial site development will result in a partial loss of the existing cushionfield in this vicinity. Assuming a proven cushionfield restoration methodology is identified, and CIT is mined in its entirety, then the ongoing management of the new cushionfields which will presumably require browsing as part of their maintenance regime, will require long term, ongoing management. Apart from the risk that the conditions that exist to enable cushionfield development are not able to be recreated, the post closure resourcing of this work is not identified in the application.

23. *Sec 12*.1; It is acknowledged by the Applicant that the "collecting, collating and reporting" of rehabilitation data is fundamental as there is "limited precedent for rehabilitation in this dryland environment". This statement highlights the uncertainty in the proposed rehabilitation outcomes that underwrite the overall biodiversity management philosophy. Given sufficient time and resources, most rehabilitation issues may be resolved, and adaptive management is proposed as part of the rehabilitation management. However, this approach does not give confidence that the Applicant has adequate knowledge of the requirements to achieve the desired outcome. Given the "novelty" of the project, this uncertainty is accepted but it is associated with increased risk of not achieving the outcome. This uncertainty should be reflected in provision of funding to cover a period post closure.

24. Sec 10.2; The applicant notes that vehicle access will be required to be maintained for a significant period post closure, potentially for decades, for the implementation and management of water treatment facilities. It is considered unlikely that MGL will continue to have a presence post mine closure however there is no proposed mechanism to manage the actual and financial implications of this long term commitment. MGL suggest the cost of this work will be met by bond and consent conditions. The bond is normally required to enable the Regulator to access funds in the event of default by the consent holder. It is unusual for a bond to become the source of

projected / planned expenditure by the consent holder. It is usual practice for a bond to be relinquished once closure criteria are met, however the long term water management systems proposed will require ongoing maintenance for periods beyond mine closure.

25. As it stands, the Panel are required to consider whether the Consents required should be granted on the basis of incomplete data sets and unproven rehabilitation mythologies. The proposal sets out that the mine site, post operations, will be restored to a state where there will be a mix of predominantly grazing land and "ecological areas". I believe where topsoil has been stockpiled appropriately that the re-establishment of grazing land use will be technically feasible and once established, sustainable. (Inappropriate stockpiling of topsoil will lead to anaerobic conditions and loss of soil fertility that will require remediation prior to its use in rehabilitation). However, the Application makes little reference to the techniques to be employed for the restoration of "ecological areas" but refers to trials to be undertaken concurrent with mining operations. The absence of established methodologies for the rehabilitation of those areas that are not for "pastoralism" is of concern. As with other areas of post mine closure management, it is presumed that methodologies will be developed to deliver the outcomes stipulated in consents. The degree of this uncertainty over rehabilitation methodology is such that I consider the Panel should withhold consent until further work is conducted to enable more detailed rehabilitation methodologies to be trialled and proven.

26. In the event however, the Panel consider these risks are manageable and consents should be granted, then the uncertainties around the development of appropriate rehabilitation methodologies should be managed by the provision of sufficient funding, made available via a suitable mechanism, for the post closure management of the site and ongoing research and trials.

**Baseline Water Quality Report - Mine Waste Management – Aug 2025**

27. *Exec Summary p ii* and *p viii*; It is noted that the existing baseline water quality data will be augmented by further baseline studies prior to commencement of development and mining activities to better "understand baseline water quality and seasonal

fluctuation." This implies that the data set on which the evaluations that have been conducted for the Application are incomplete. Further baseline monitoring is unlikely to significantly alter the existing data set, but it should be noted that further information is proposed to be obtained prior to final design.

28. By advocating for the adoption of standards derived from the ANZG and Drinking Water Standards for water quality at closure, the Applicant is accepting some degree of risk given the absence of a full data set reflecting baseline water quality. Should water treatment costs be greater than anticipated, this risk will be borne by the Applicant during operations however the costs will potentially transfer to a third party following mine closure, if treatment is required to continue.

**Recommended water quality compliance limits for the Bendigo-Ophir Gold Project – G Ryder Consulting – Jul 25**

29. As part of the disturbance associated with the development and operation of the mine, a number of springs (waiora) that are located within the footprint will be disturbed or lost. MGL state that the primary mitigation will be avoidance, but where this is not possible, the restoration of any spring affected after mining is finished will be undertaken. This will include the restoration of flora and of flows. Given the primary cultural value associated with springs, is the pristine nature of the associated water, there is no explanation how this will be achieved or indication of its likely success.

30. The National Standard for nitrate-N concentration in drinking water is 11.3mg/lt. There is however significant debate as to whether this standard should be much lower than this figure. The evidence to support a lower National Standard is ambivalent, but it is considered that this presents an opportunity for the Applicant to take a precautionary approach and undertake to reduce nitrate concentrations below the current National Standards. Certainly, baseline nitrate concentrations observed in the surface and ground water are lower than the current National Standard.

31. The Applicant proposes that in the event average dissolved iron levels in the surface water exceed baseline concentrations by 20% then it will trigger a requirement for a "literature review". This control

provides no absolute limit to dissolved iron in surface water, albeit predicted concentrations are below ANZEC water quality guidelines. It is considered that, in addition to the trigger for the literature review, the creation of an absolute upper limit for dissolved iron in surface water is required.

32. Further information should be sought of the applicant to understand the restoration of the existing freshwater springs within the mine footprint. As it stands there is no evidence provided as to how the restoration will be achieved and the loss of some or all of the springs post mining seems inevitable.

**CIA Assessment Support - BECA - Apr 2025**

33. Cyanide will be utilised to extract gold from the milled ore. Cyanide has the potential to cause harm to the personnel in and around the site in the event of a release of cyanide gas and to the environment if it is released as a solution to surface or ground water. The Processing Plant is proposed to be located adjacent to Shepards Creek and there exists a risk that cyanide might enter the receiving environment through accidental spills or breakages. There is no mention of a stormwater / spillage containment plan, but this should be mandatory even though mention is made of the adoption of "industry best practice changes over time". Conditions requiring the Applicant to adhere to established standards, such as the International Cyanide Management Code, should be attached to any consent granted.

34. Longterm water management of the discharge from the RAS lake and the ELF and TSF sumps will utilise a water treatment plant to be established in the lower Shepards Creek. A period of 50 years is proposed for the management of water in this catchment, with the treatment moving to a passive system over time. The duration of the proposed water management is linked to performance criteria which will rely, in part on the ongoing management of the passive treatment system. The Applicant's Technical Advisor confirms the passive water treatment system will require maintenance to ensure ongoing efficiency through monitoring of the performance of the system, the management of accumulated sludge and the ongoing physical maintenance of the structures due to normal or flood

associated "wear and tear". The mechanism to achieve this long term (post MGL involvement) commitment is unclear. Kā Rūnaka considers an appropriate financial "vehicle" needs to be established to provide for these intergenerational impacts and their management.

35. A feature of the Application is the reference to long term, post closure management of key elements of site restoration. The Application does not provide any information as to how these long term, post closure management issues will be dealt with. I consider that this post closure management may extend for a period that will be intergenerational in nature, albeit declining overtime. As these management steps are critical to the success of the rehabilitation and water management, and the Application provides no detail as to how these will be achieved, the Application should be declined. If however, the Panel are minded to grant Consent, they should include conditions that make specific reference to the provision of appropriate resources available to Kā Rūnaka and other Authorities to facilitate management of these long term impacts.

**ELF and Water Treatment Options Assessment – Mine Waste Management – Jun 2025**

36. The water treatment plant will create a by-product in the form of a sludge that will need to be periodically removed and disposed of. It is proposed there will be a disposal cell(s) created to handle this material or it will be disposed of off-site. The costs associated with this activity are proposed to be met by way of the bond. A bond is more usually utilised by the Regulator in the event there is default on the part of the consent holder. The management of a "sludge" arising from water treatment is more of an operational consideration than a default on the part of the consent holder. A more appropriate financial "vehicle" should be established to cover the long term, potentially on-going, maintenance costs of the site. Kā Rūnaka should be a party to the management of this "vehicle".

37. In the absence of any specific mechanism to manage the long term, post closure costs associated with rehabilitation and management of water, the Application may be considered deficient. Until such time as the Applicant provides detail on how

the long term, post closure impacts will be managed, the Application should be declined.

**Assessment of Ecological Effects – Alliance Ecology – Jul 2025**

38. A suite of activities is proposed to address the absolute loss of some 600ha of existing habitat within the mine footprint. The activities are designed to achieve a biodiversity offset for this loss comprising approximately 2000ha within the "Mine Regeneration Zone" and the "Ardgour Restoration Area". In addition, two predator proof areas totalling approximately 70ha will be established with pest / predator eradication as a precursor to receiving translocated materials. Kā Rūnaka accepts this approach is appropriate, but the net gain that should be achieved will only be sustained if there is ongoing management beyond the mine closure period. Maintenance of the fencing and pest / predator control systems will be required post closure to avoid the reversion to a pre-mining state. There is no mention as to how this long term gain will be maintained and it is Kā Rūnaka's position that as mana whenua they should take a lead role in this phase of the project and be able to access appropriate resources to enable this work to be carried out into perpetuity.

39. The establishment of a predator / pest exclusion area as part of the overall biodiversity offset proposed for the mine is appropriate. However, as previously stated, this net gain will only be sustained so long as the control measures adopted are in place. The Application is silent on detail as to how these facilities will be managed in the post closure / long term and consequently may be considered to be deficient. Further information should be sought of the Applicant or the Consents declined pending provision of detail as to how this long term management will be achieved.

**CONCLUSIONS**

40. There are a number of residual impacts associated with the proposed project which will extend over a period greater than the project life itself. The Applicant acknowledges a post closure period is required to manage these residual impacts, however it is assumed these will cease to exist at a point in time when the closure criteria have been met. For some of these impacts, there will be a long term commitment required to ensure the closure criteria continue to be

met. The Application is silent on how these issues will be managed where an intergenerational impact exists. Conventionally, a bond is put in place to secure the actions required to meet closure and post closure standards in the event of default by the consent holder. Once closure conditions have been met, the bond is normally relinquished. Where ongoing management is required to ensure compliance with the closure standards an alternative mechanism is required. For mana whenua, who hold kaitiaki status over the project area, this ongoing management is critical to ensure there is no degradation of environmental values and that where gains have been achieved, then these are maintained. Kā Rūnaka submits that as mana whenua, they have responsibilities in this area that are required to be discharged, and that some form of financial indemnification is required to enable them to meet this commitment.

41. The Application acknowledges that there are data deficiencies in some areas, principally associated with baseline water quality, post closure management of mine impacted water and rehabilitation. These deficiencies may lead to inappropriate standards being established for the closure of the mine which will need review as further information becomes available. Alternatively, the Application may be declined pending the provision of further information. The Application makes reference to post closure management of impacts arising from the mining activity but makes no reference as to how these long term, potentially inter-generational commitments are to be managed. This uncertainty also provides grounds for the decline of the Consents until such time as further, more detailed information as to how the management of the post closure, long term mine site will be achieved and funded.

**Mark Hugh Pizey**

10 April 2026