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Bendigo-Ophir Gold Project Expert Panel
Environmental Protection Authority
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RESPONSE TO RFI 11 – FAST TACK APPROVALS APPLICATION FTA-2507-1089 – ITEM 5.

Tena koe

Hydro Geochem Group Limited (HGG), Boffa Miskell Limited (BML), Komanawa Solutions Limited (KSL), and Geocontam Risk Management (GRM) are pleased to provide this report in response to the Request for Information 11 (RFI 11) – Item 5 raised by the Environmental Protection Authority (EPA) on 25 June 2026, following the conclusion of expert hearings held during 8 – 19 June 2026, with respect to Matakanui Gold Limited's (MGL) Bendigo-Ophir Gold Project (BOGP) Fast-Track Approval Application FTA-25 07-1089.

RFI 11 – Item 5 specifically requests that an updated expert assessment is provided with respect to the potential adverse impacts of the BOGP on the Ardgour and Bendigo Aquifers based on the findings RFI 11 – Items 1 to 4, which required provision of the following additional information including:

- Item 1: "*the downstream catchment's baseline environment including a) water quality and b) aquatic ecology*".
- Item 2: "*the hydrogeological characterisation of the site and wider receiving environment in terms of groundwater and contaminant movement from the site and the ultimate effects on the surface and groundwater receiving environment. This requires additional baseline data collection and modelling, including but not necessarily limited to a) general hydrological field data, b) three-dimensional groundwater contaminant modelling and c) quantification and demonstration of uncaptured seepage, including details of the seepage scenarios through the site and wider receiving environment*".
- Item 3: *"a contaminant load water balance model taking into account the above findings and the full array of potential climatic outcomes for the following phases: a) operations, b) active water treatment closure period, and c) passive water treatment closure*.
- Item 4: "*models (that are) appropriately calibrated against existing conditions with consideration of a) a range of potential geological scenarios that may realistically be foreseen, and b) variable environmental conditions which demonstrate the range of effects possible."*

Further investigation, aquifer testing, groundwater sampling, and modelling has been undertaken to inform the updated assessment of potential adverse impact on the Ardgour and Bendigo aquifers and the associated receiving water environments. The results of these assessments, which incorporate the associated risk assessments that address RFI 11 – Item 5, are provided in in Table 1 along with reference to relent RFI item described above.

Table 1: Summary of additional studies informing RFI 11-5.

REPORT TITLE	DESCRIPTION	ITEM
Downstream Catchment Baseline Water Quality Assessment (GRM, 2026)	Evaluation of surface baseline water quality from monitoring stations established in Bendigo Creek and the Lindis River at Ardgour Road. Comparison of water quality results at these downstream locations with longer-term baseline water quality monitoring from BOGP project area surface water compliance monitoring locations SC01 and RS03 and assessment of risks from the site to downstream surface water receptors.	1a
Bendigo-Ophir Gold Project – Lindis River and Bendigo Creek Freshwater Ecology Survey (Boffa Miskel, 2026)	Provision of additional baseline information on the freshwater ecological values of the proposed downstream monitoring sites within Bendigo Creek (SW13) and the Lindis River (SW14) for the Bendigo Ophir Gold Project (BOGP). The assessment draws on existing ecological information, field surveys undertaken in July 2026, freshwater fish records and environmental DNA (eDNA) analyses, with a particular focus on the ecological values and conservation status of fish and macroinvertebrate communities within the downstream receiving environment.	1b
BOGP Groundwater Site Investigation Memorandum (HGG, 2026)	Documents hydrogeological field investigations to enhance the understanding of baseline groundwater conditions at the BOGP.	2a
Updated Groundwater Modelling for Bendigo Ophir Gold Deposit (KSL, 2026)	Three-dimensional groundwater contaminant model that quantifies the potential impacts from uncaptured seepage within the site and the wider receiving environments of within the Shepherds Creek catchment including the Ardgour Aquifer and underlying schist aquifer.	2b, 4
Water Load Balance Model Report (MWM, 2026)	Updated to the operational phase site-wide water and load balance model to identify risks associated with unrecovered seepage and support predictions of water management demand, stream water quality at the proposed resource consent compliance locations during the Operational Phase and forecast changes in stream flow along Shepherds Creek and Rise and Shine Creek.	3, 4

POTENTIAL ADVERSE IMPACTS OF THE BOGP ON THE ARDGOUR AND BENDIGO AQUIFERS

Details supporting the following assessment of environmental effects on the Ardgour and Bendigo Aquifers are provided in the aforementioned reports. Based on the findings of these studies the following assessment of potential adverse impacts on the Ardgour and Bendigo aquifers is provided.

Assessment of Risks to Downstream Catchments Baseline Environment (Items 1a and 1b)

Baseline water quality of the Lindis River at Ardgour Road (SW14) is predominantly indicative of a freshwater system with the ability to support the protection of sensitive aquatic species and the maintenance of freshwater ecosystem functions, although there is some seasonal evidence of anthropogenic disturbance from pastoral and grazing land use within the Lindis River catchment, with nitrate concentrations seasonally elevated and present at concentrations higher than at the upstream BOGP compliance monitoring location SC01. Nitrate concentrations at SW14 are likely influenced by diffuse agricultural inputs, including livestock activity, soil mineralisation, or runoff from grazed areas. Turbidity and other metals including total and dissolved iron, and dissolved aluminium are also higher at the Lindis River at Ardgour Road monitoring station than the BOGP monitoring location SC01 in Shepherds Creek. These metals are predominantly associated with suspended sediments rather than dissolved in the water column and indicate that natural geological sources, soil erosion, catchment runoff, or other upstream land-use activities are likely contributing to metal concentrations at SW14.

Baseline water quality in Bendigo Creek (SW13) downstream of the Rise and Shine Creek supports high freshwater environmental values and is generally consistent with the protection of sensitive aquatic ecosystems. Water quality characteristics were broadly comparable to those observed at the upstream compliance site RS03, suggesting that historical mining activities are not currently impacting downstream values of the Bendigo Creek. Nutrient concentrations in Bendigo Creek indicate a low level of nutrient enrichment. The principal existing water quality indicators of potential concern at SW13 were aluminium, antimony and iron. These metals were higher than reported at upstream compliance monitoring location RS03 and suggest the influence of localised geological conditions, natural weathering processes, sediment mobilisation, or other catchment-derived sources that are not necessarily associated with historic mining sources within the Rise and Shine Creek.

As supported by the baseline water quality, Bendigo Creek and the lower Lindis River support aquatic communities typical of Central Otago waterways and are generally in fair-to-good ecological condition. The downstream receiving environments contain conservation-significant indigenous fish species, diverse macroinvertebrate communities with strong representation of pollution-sensitive EPT taxa, and recognised fisheries values within the lower Lindis River. Ecological condition within both waterways is influenced by multiple interacting stressors, including hydrological variability, water abstraction, climatic conditions and wider catchment land uses.

Ongoing monthly performance monitoring at both onsite and offsite monitoring locations within Shepherds Creek, Rise and Shine Creek and the receiving environments of Lindis River and Bendigo Creek will continue to characterise seasonal and inter-annual variability, improve understanding of natural catchment processes, and assist in distinguishing these natural influences from any future Project-related effects during commissioning, operation, closure and post-closure phases.

Assessment of Risks from Contaminated Seepage (Items 2b and 2c)

The assessment of risks from contaminated seepage have been evaluated through the development of a three-dimensional groundwater contaminant transport model prepared to quantify the potential impacts from uncaptured seepage within the site and wider receiving environment (KSL, 2026). Model results suggested simulated seepage recovery rate (pre secondary capture) as follows:

- TSF: Between 96 to 92% of the seepage from the TSF is recovered by the primary seepage collection systems.
- Shepherds ELF: Between 90 to 95% of the seepage from the Shepherds ELF is recovered by the primary seepage collection system.
- Shepherds Creek Fill: Between 90 to 95% of the seepage from the Shepherds ELF is recovered by the primary seepage collection system with an underdrainage simulated assuming the planned low permeability toe barrier can sufficiently cut off the weathered schist pathway.
- The RAS Pit and underground workings are interpreted to act as a net sink of water and therefore will not be a potential source of seepage.
- The Silt Pond, with lateral drains, is likely to discharge 250 m^3/day of relatively clean water compared to the other seepage sources, therefore any minor loss of water from the Silt Pond is unlikely to be significant. Additionally, losses from the Silt Pond may discharge to other process drains and will not necessarily be lost to the environment.

Based on the model outcomes, the dominant risk for lost seepage from these domains was determined to be associated with the shallow groundwater system and surface water system in the Shepherds Creek catchment. This is consistent with recent hydrogeological investigations (HGG, 2026) Hydrogeological modelling broadly rejects the hypothesis that substantial seepage may be lost to the deep schist system without being detected by the proposed monitoring network. This provides substantial confidence that even a very unlikely scenario of lost seepage would be detected by the monitoring network.

Minimisation of seepage risks from these domains can be managed through implementation of the following design criteria:

- Ensure that the Shepherds Creek Fill is adequately under drained to prevent upward seepage from the deeper schist system. This has the additional benefit of creating a second capture zone for any lost seepage from the TSF and Shepherds ELF.
- Ensure that the area of weathered schist under the Shepherds ELF toe barrier (Shepherds Creek Engineered Landform Seepage Collection Sump) is modified to ensure a conductivity of less than 10^{-6} m/s (geometric mean), ideally less than 10^{-7}. This is consistent with the existing plans to remove much of the weathered schist.
- Ensure that the monitoring network is implemented as proposed in the consent conditions, with particular attention to the monitoring of surface water at SC01, groundwater near SC01, and the silt pond.
- Consider the extension of the underdrainage system in the TSF to the upper TSF deep discharge zone to ensure that heads in the TSF are primarily due to infiltration rather than deep groundwater discharge.

Assessment of Potential Effects Associated with Contaminant Migration in Groundwater (Item 3)

Conceptually, surface water discharge from the site has the potential to impact the beneficial use of groundwater via vertical migration of surface water into the underlying Ardgour and Bendigo alluvial aquifers, particularly within the Shepherds Creek catchment where the Shepherds Creek is a losing stream whereby surface water recharges the underlying aquifer through a permeable stream bed. This provides a potential direct pathway for surface water discharges to potentially compromise the beneficial use of water resources. Within the Rise and Shine Creek, recharge to the Bendigo Aquifer occurs via vertical leakage from the stream to the aquifer.

Based on the outcomes of the operational phase water and load balance modelling (MWM, 2026), water quality discharged to the environment during the operational phase is predicted to have a negligible impact on the beneficial use of groundwater resources downstream of the BOGP on the basis that:

- Predicted concentrations of all analytes remained below thresholds considered protective of livestock health and productivity. Accordingly, the beneficial use of surface water and groundwater resources for stock drinking water is expected to be maintained throughout operations. No adverse effects on livestock health, growth, reproduction or agricultural productivity are anticipated as a result of predicted water quality changes.

- No exceedances of long-term irrigation water (LIW) criteria were predicted for any assessed analyte at SC01 or RS03. The assessment indicates that predicted water quality would remain suitable for sustained irrigation use, with no anticipated risks relating to phytotoxicity, soil accumulation of trace elements, or degradation of soil quality. Consequently, the beneficial use of groundwater and surface water resources for irrigation is expected to be maintained over the long term.
- Although peak antimony concentrations exceed the drinking water MAV, the exceedances are predicted to be infrequent and transient rather than representative of prevailing water quality conditions. Any seepage from affected surface waters to groundwater would be expected to undergo dilution through mixing with background groundwater and recharge waters, resulting in lower concentrations than those observed in source waters. Consequently, while localised short-term exceedances cannot be entirely discounted immediately adjacent to seepage pathways, the potential for sustained groundwater concentrations exceeding drinking water criteria is considered low, and the beneficial use of water resources for potable supply is unlikely to be materially compromised. The overall risk to human health is therefore considered low, particularly where normal drinking water treatment and source management practices are applied.

Summary

The results of the assessment of environment effects associated with impacts to the Ardgour and Bendigo Aquifer suggests that the BOGP project presents a low risk to these water resources. Regardless, the proposed ongoing surface water and groundwater compliance and reference site monitoring programs, as well monitoring of local ecology will provide a robust dataset to validate model predictions, identify potential emerging risks to receptors, and support the development and implementation of adaptive management strategies, where required, to manage the risk of long-term impacts to the receiving environment.

CLOSING REMARKS

We trust that the information provided adequately addresses the matters raised in the Request for Information. Should the assessing authority require any further clarification or additional information, we would welcome the opportunity to assist. We appreciate your consideration of this response in progressing the assessment of the application.

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REFERENCES

Boffa Miskal, 2026. Bendigo Ophir Gold Project Lindis River and Bendigo Creek freshwater ecology survey.

Geocontam Risk Management, 2026. Downstream Catchment Baseline Water Quality Assessment. J-H-NZ0238-006-M-Rev0

Hydro Geochem Group (HGG), 2026. BOGP Groundwater Site Investigation Memorandum. J-H-NZ0238-010-M-Rev0.

Kōmanawa Solutions Ltd (KSL), 2026. Updated Groundwater Modelling for Bendigo Ophir Gold Deposit. Report number Z24002.m3.

Mine Waste Management (MWM), 2026. Operational Phase Site Wide Water and Load Balance Model - Bendigo-Ophir Gold Project. J-NZ0488-015-R-Rev0.

ATTACHMENT A – BASELINE SURFACE WATER QUALITY AND AQUATIC DATA

ATTACHMENT B – GROUNDWATER AND CONTAMINANT LOAD BALANCE MODELS