BEFORE THE FAST-TRACK APPROVALS PANEL

In the matter of the Fast-Track Approvals Act 2024

And

In the Matter of applications by Oceana Gold (New Zealand) Limited for various resource consents and other authorities relating to the Waihi North Project (including the Wharekirauponga Underground Mine)

And

In the matter of the submission on the above applications by Coromandel Watchdog of Hauraki Inc

Brief of evidence of Nic Conland

Dated: 24 August 2025

Qualifications and Experience

1. My full name is Nicholas (Nic) Ashley Conland. I am the director of environmental consultancy, Taiao - Natural Resource Management Limited. I was a Senior Environmental Consultant at Jacobs New Zealand Limited in Wellington and have at least 25 years' experience involved in natural resource planning and regulation, including policy development and evaluation through assessment of environmental effects and catchment modelling.

2. I am a director for The Stream Limited, a specialist science communication and dashboard development company. As part of my role in The Stream projects I have designed tools and dashboards for communicating environmental outcomes and monitoring indices for a broad range of data across marine, terrestrial, aquatic and air domains.

3. I have a Bachelor of Science (Chemistry, Information Systems), Waikato University, Hamilton; a Diploma of Design (3D), Waikato Polytechnic, Hamilton; and a Post Grad Certificate of Proficiency (Environmental Planning and law), Victoria University, Wellington.

4. I have prepared expert evidence for plan change hearings in Otago, Canterbury, Wellington, Hawkes bay, Gisborne, Waikato, Auckland, Bay of Plenty, and Northland for second generation regional plans and attended numerous Environment Court mediation sessions as an expert witness. I have prepared evidence for Boards of Inquiry and prepared and presented expert evidence for the Environment and District Courts.

5. I am informed by my experience at Greater Wellington Regional Council as a compliance programme manager and a water quality specialist responsible for reviewing applications for natural resource use, preparing meaningful and workable consent conditions and setting requirements for mitigation, control and monitoring with contractors in the Wellington region with the Resource Management Act 1991 (RMA) for freshwater effects as a result of land use.

6. Since 2010, I have led science teams and provided strategic direction for numerous public and private organisations, I have presented papers on best practice for Freshwater Accounting Frameworks under the NPS FM 2014, adaptive management and relationship management between local authorities and rural communities.

7. Of particular relevance are catchment projects to determine the effectiveness of planning proposals. Including:

    a. I managed the design, development and preparation of the Selwyn Waihora SOURCE Model, for the Canterbury Land Water Resource Plan (CLWRP) Variation 1 and Central Plains Community Water Scheme.

b. I led the development of the Tukituki SOURCE Model, for the Tukituki Plan Change 6; including the scenario development to test the policy and rule framework for the freshwater limits and catchment landuse capability (**LUC**) load allocations.

c. I prepared the design and scope for the Ruamahanga SOURCE model, the design, development and preparation of the Ruahuwai SOURCE Model (Upper Waikato) used to evaluate the Waikato Regional Plan Change 1 rule and policy framework.

d. I prepared the design and undertook practice reviews for the Waipaoa River SOURCE model and developed the scenarios for the model to test the responsiveness of the natural systems to changes in the catchment landuse and the rule framework in the Tairawhiti Resource Management Plan.

e. I provided guidance, technical advice and review for the design, development and application of the Kaituna-Pongakawa-Waitahanui and Rangitikei catchment models for the National Policy Statement Freshwater Management 2017 requirements for the Bay of Plenty Regional Council.

f. I provided a peer review report (co-authored with Dr Hamilton and Dr Rutherford) for the Auckland Council freshwater management tool (FWMT).

g. In 2019 I was engaged as a peer reviewer for Tauranga City Council freshwater management tool development.

8. Nationally, I have assessed risk and cost components for four different environmental bonds. The bonds for the MV RENA, NZ Steel Landfill, Kate Valley Landfill and Hampton Downs were different in the range of risk elements and cost components, they considered the likely risks from credible events and the present value costs for mitigations, compliance and rehabilitation.

9. The bonds for NZ Steel (Auckland), Hampton Downs (Waikato) and Kate Valley (Christchurch) were all contested through the Environment Court and resolved as an agreed figure for financial assurance relative to the agreed risks from the activity being consented.

10. In 2017 I presented expert evidence on the environmental bond for the MV RENA on behalf of Bay of Plenty Regional Council. My bond evaluation was adopted by the parties to provide a guaranteed environmental bond to respond to a range of environmental risks with a costed range of mitigation responses.

11. I have recently been engaged by Auckland Council on behalf of the Kaipara Moana Remediation fund to project manage the development of operational tools to support the restoration of the Kaipara Moana, assessing landscape risks and the available toolbox of mitigation options.

12. Recently, I have prepared whenua environment plans for ahu whenua to provide a risk assessment framework to achieve trustee goals within an adaptive management or Titiro Whakatika framework.

13. I have undertaken this work with reports and data supplied by other parties and rely on the accuracy of this information to make my assessments and conclusions.

14. As a result of my qualifications and experience, I have considerable factual knowledge and expertise in the areas of water quality impacts and catchment management, science communication and the effectiveness for adaptive management principles.

Code of Conduct

15. I have complied with the code of conduct when preparing this statement of evidence and will do so if required to give oral evidence before the Expert Panel considering the application by Oceana Gold (New Zealand) Limited (**Applicant**) under the Fast-track Approvals Act 2024 (**Act**) to expand its existing gold and silver mining operations at sites in the Waihi North area of the Coromandel Peninsula, being Fast-track Application No. FTAA-2504-1046 (the **Waihi North Project Application**).
16. My qualifications as an expert are set out above.

17. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Summary

18. This document is compiled for Coromandel Watchdog of Hauraki and outlines critical risks and inconsistencies in the applicant's expert evidence and mitigation recommendations for the proposed Waihi North Project (WKP) in the Wharekirauponga catchment of the Coromandel Forest Park.
19. Drawing on the technical reports lodged by the applicant—for ecology and biodiversity assessments, groundwater and hydrology modelling, and management plans—it is evident that:

- Residual effects remain uncertain and potentially irreversible.
- Mitigation relies heavily on adaptive management, which is reactive, not preventive.
- Offsets and compensation are proposed before avoidance is demonstrated, breaching best-practice environmental hierarchy.
- Conditions are vague, broad, and not enforceable, contrary to the requirements of the Fast-track Approvals Act 2024.

20. For these reasons, the Panel can—and should—exercise its powers to decline the proposal.

Fasttrack Approvals Act 2024

21. Fast-track Act enforceability requirement: Conditions must be specific, measurable, and enforceable. The applicant's conditions are framed in broad, aspirational terms ("plans will be prepared," "offsets will be delivered"), without binding performance standards. This falls short of the Act's legal threshold.
22. Expert Code of Conduct: Ecological evidence acknowledges uncertainty (frog responses to vibration, pest-control lag times), but management plans downplay these uncertainties. This mismatch undermines the reliability of expert evidence before the Panel.
23. **Why it matters**: Where conditions are not precise and uncertainties are downplayed, the Panel cannot discharge its duty to ensure adverse effects are adequately avoided, remedied, or mitigated.

Observations on Ecological and Biodiversity risks

Threatened species at risk

24. Confirmed presence of Hochstetter's frog and suitable habitat for Archey's frog within the project footprint.
25. Residual uncertainty acknowledged by ecology experts, requiring large-scale pest control and compensation.
26. **Why it matters**: Frogs are highly threatened species with limited offsetting potential; even "low but uncertain" risks exceed acceptable thresholds in DOC estate.

Offsetting before avoidance

27. Pest-control and habitat compensation are proposed upfront, while avoidance/minimisation alternatives (e.g., portal placement, vent location) are not fully demonstrated.
28. Why it matters: The mitigation hierarchy is clear: avoid, then minimise, then rehabilitate, and only then offset. Skipping to offsets undermines ecological integrity.
29. Contradictions in risk assessments:

- Air discharges (Beca): vent emissions risk to frogs is "very low."
- Ecology (Boffa Miskell): vent emissions carry "low but uncertain residual risk," requiring compensation.

30. **Why it matters**: Internal contradictions erode confidence in conclusions of “less than minor.”

Net gain claims vs. time lag

31. Ecology reports promise “Net Gain” and “Nature Positive” outcomes.
32. Pest-control benefits for frogs may take 5–10 years to materialise.
33. **Why it matters**: Ecological harm is immediate, while claimed benefits are delayed. This undermines the credibility of a “net gain” position.

Hydrological and Groundwater Grounds

Predicted flow reductions within error margins

34. 7-day MALF reductions 2–13%, wetted-width reductions 0–5%.
35. Modelling admits 10–20% uncertainty at low flows, with weakest calibration in headwater streams.
36. **Why it matters**: In pristine Natural State streams, even small reductions are ecologically significant. If predicted effects are within model error, effects are effectively unquantifiable.

‘Warm Spring’ and spring systems

37. Applicant predicts Warm Spring (~3.5 L/s) will cease and later recover, with elevated sulphate.
38. Conceptual model concedes Warm Spring effects “cannot be accurately predicted at this time.”
39. **Why it matters**: Springs are highly visible ecological features. Drying, recovery uncertainty, and post-closure water-quality risks pose unacceptable ecological impacts.

Identified risk zone vs. “minor” conclusions

40. Reports identify a 1.2 km reach of potential effect where connectivity risk is higher.
41. Yet overall conclusions still say effects are “less than minor.”
42. **Why it matters**: A defined risk zone contradicts a blanket “minor” conclusion; this is grounds for precautionary decline.

Adaptive management reliance

43. Water Management Plan relies on alert/respond triggers and reactive measures.
44. **Why it matters**: For Natural State waterways, “monitor and fix later” is inadequate. The legal and policy expectation is to avoid impacts upfront.

Incomplete post-closure geochemistry

45. Assessments of post-closure water chemistry are ongoing; sulphate risks acknowledged but not quantified.
46. **Why it matters**: Long-term water quality cannot be left unresolved in a decision to permit mining in DOC land.

Cumulative and Integrated Risks

47. Stacked stressors (vibration + vent discharges + dust + water loss) are assessed separately, not cumulatively.
48. Residual risks to threatened frogs, headwater streams, and springs overlap spatially, compounding effects.
49. Adaptive management assumes risks will be detectable and reversible—but effects on frogs and headwaters may be subtle, delayed, or irreversible.
50. **Why it matters**: The true ecological footprint is likely greater than the sum of isolated assessments. Lack of cumulative analysis leaves a critical knowledge gap.

Conclusion of summary

51. The applicant's own evidence reveals material uncertainties about effects on threatened species, Natural State waterways, and spring systems. Mitigation relies on reactive adaptive management and offsetting before avoidance, while post-closure risks remain unresolved.
52. For highly protected ecosystems in the Coromandel Forest Park, this does not meet the legal, ecological, or policy thresholds of the Fast-track Approvals Act 2024.
53. The Panel therefore has a robust evidential and legal basis to decline the Waihi North Project's application for mining in the Wharekirauponga catchment.

Observations on the Waihi North Proposal – ecological management context

Fasttrack Approvals Act 2024

54. Inconsistent with Fast-track Act tests:
    a. The Act requires that conditions be specific, measurable, enforceable.
    b. The A.10 report frames mitigation in broad, aspirational terms ("EMP will be prepared," "offsets will be delivered") without 'SMART' metrics.
    c. Residual effects are pushed into offset/compensation schemes without first demonstrating avoidance/minimisation hierarchy. This runs contrary to national biodiversity offsetting guidance.
55. Expert conflicts from the ecology experts acknowledge data gaps and uncertainty (frog vibration responses, long lag times for pest-control benefits), but management reports downplay them. This undermines the reliability of evidence presented to the Panel.

Ecological and Biodiversity Grounds

56. Threatened species at direct risk:
    a. Confirmed presence of Hochstetter's frog and suitable habitat for Archey's frog within the mine footprint.
    b. The B.36 report (Bioresearches) states effects are uncertain but potentially significant; A.10 reframes these as "manageable."
57. Uncertainty exceeds mitigation certainty:
    a. Pest control may take 5–10 years to show frog population benefits. Project effects (vent discharges, blasting vibration, noise/light) are immediate and potentially irreversible.
    b. This time lag undermines claims of net gain or "nature positive."
58. Offsets before avoidance:
    a. Pest-control and habitat compensation are proposed upfront, yet alternatives analysis for vent locations, tunnel portals, or tailings site placement is thin. This suggests offsets are substituting for avoidance, contrary to best-practice hierarchy.

Physical and Operational Risk Grounds

59. Vibration thresholds inconsistent:
    a. Vibration assessment (B.53 Heilig) proposes a 15 mm/s surface limit but admits data on frog sensitivity is inadequate. Ecology (B.37 Boffa Miskell) relies on a precautionary >2 mm/s impact footprint.
    b. Conflicting thresholds mean residual risk cannot be reliably quantified, and adaptive management lacks enforceable "stop" points.
60. Air discharge contradictions:

    a. B.22 (Beca) air assessment calls frog risk from vent emissions “very low,” while B.37 (ecology) insists residual risk justifies large-scale compensation.
    b. Such contradictions create reasonable doubt that mitigation can ensure “less than minor” ecological effects.

61. Dust and noise risk near Willows farm:
    a. B.22 (Air discharges) report identifies moderate–high nuisance risk at 111 Willows Rd, requiring strict stop-work triggers.
    b. Yet B.37 (ecology) characterises effects at Willows as “Low–Very Low.”
    c. This inconsistency undermines the credibility of the “residual effects are minor” conclusion.

Cumulative Effects Grounds

62. Stacking of multiple stressors ignored:
    a. Reports assess dust, vibration, noise, lighting, hydrology largely in isolation.
    b. No integrated cumulative-effects assessment for frogs, lizards, bats, or hydrological systems.
    c. The absence of this integration leaves significant uncertainty around the true ecological footprint.

Precedent and Policy Grounds

63. Outstanding Natural Area (ONA) & public conservation land:
    a. The mine sits within the Coromandel Forest Park, a high-value conservation landscape.
    b. Even if effects were “low” or “uncertain,” the public interest test in the Fast-track Act allows the Panel to weigh irreversible biodiversity and cultural heritage risks over uncertain economic gains.
64. Limits to offsetting threatened species:
    a. NZ offsetting guidance recognises “limits to what can be offset” for species with high vulnerability or low replacement potential (e.g., Archey’s frog).
    b. Because the project admits residual frog risk, and frogs cannot be feasibly offset, the project crosses those ecological “red lines.”

Recommendation

65. The Panel can decline consent on these grounds:
    a. Legal insufficiency: Conditions are not specific or enforceable, contrary to the Fast-track Act.
    b. Residual uncertainty: Expert evidence acknowledges material unknowns; mitigation does not remove them.
    c. Hierarchy breach: Compensation and offsets are proposed before avoidance/minimisation are proven feasible.
    d. Contradictory evidence: Technical reports disagree (air vs. ecology; vibration vs. ecology). This undermines reliability.

e. Biodiversity limits breached: Residual risks to Archey's and Hochstetter's frogs cannot be offset.
f. Cumulative effects untested: Stacked risks across noise, vibration, air, and habitat fragmentation remain unassessed.

66. The Panel can reasonably conclude that the project creates unacceptable residual risks to threatened species and fails to demonstrate avoidance/minimisation before relying on offsets. Under the Fast-track Act, with enforceability and precautionary principles in mind, the Wharekirauponga underground mine should be declined.

Inconsistencies in the Ecology reports

Vent-raise emissions and effects on frogs — "very low risk" vs "low but uncertain risk requiring compensation"

67. Air discharges (Beca): concludes "the risks of discharges to native flora or fauna, particularly the Archey's frog, near to the proposed tunnel raises is considered to be very low."

68. Terrestrial ecology (Boffa Miskell): repeatedly says there remains a low but uncertain residual risk to Archey's & Hochstetter's frogs from vent-raise air/water vapour and surface expression of blast vibration, and therefore proposes large-scale pest control (633 ha) plus research funding as compensation.

69. **Why it matters**: If ecological experts say residual effects are uncertain enough to require compensation, an air report saying "very low" could look dismissive. You'll want an integrated position (e.g., adopt ecology's conservative framing and tie air-quality monitoring/trigger actions to it).

Which vibration limits actually apply where (and why)? — clarity vs mixed messages

70. Heilig (vibration): proposes no amenity-based criteria for the Dual Access Tunnels because they're remote, and describes any tunnel-development vibration under frog habitat as "low amplitude and transient"; monitoring not proposed for the dual tunnels.

71. Project-wide conditions (A.09): still frames frog management around a mapped 315 ha area >2 mm/s at surface and locks in a 15 mm/s 95-percentile surface limit for WUG production blasting (any time).

72. **Why it matters**: Not contradictory, but easy to confuse. For evidence, spell out the three regimes plainly: (i) GOP/borrow pits 5/1 mm/s at residences; (ii) Willows/Plant access tunnels 5/1 mm/s at residences; (iii) WUG production 15 mm/s at ground above mine with an ecology-driven >2 mm/s footprint used for pest-control targeting.

How "immediately reversible" are noise/light effects?

73. Terrestrial ecology: describes several stressors (lighting; drilling/heli noise; continuous vent-raise noise) as "localised, temporary and immediately reversible upon completion of works."

74. **Why it matters**: "Immediately reversible" sits awkwardly with continuous emissions planned for years; effects may end when works cease, but their duration is long. An

expert could press for clearer duration descriptors and for outcome-based performance standards (e.g., species behaviour metrics near vents).

Air-quality dust risk near Willows vs ecology's "Very Low–Low"

75. The B.22 Air discharges report: flags moderate–high short-term risk of nuisance dust to 111 Willows Rd (and moderate at 122), recommends a new met/TSP station and enforceable wind-trigger responses (5 m/s alert; 7.5 m/s alarm, stop dusty works within 200 m).

76. Terrestrial ecology (Willows farm): overall terrestrial effects at Willows are rated Low–Very Low after standard site controls and minor riparian planting.

77. **Why it matters**: Not strictly inconsistent (different receptors), but the air report implies stricter operational controls may be needed than the ecology summary conveys.

"Net gain / nature-positive" claims vs residual-effects admissions

78. B.37 Terrestrial ecology report aims for a "Net Gain" and "Nature Positive," integrating landscape and ecological responses.

79. However the same report simultaneously acknowledges residual uncertainty for frogs, requiring compensation (not only offsetting).

80. **Why it matters**: To defend "net gain," ensure the accounting excludes purely visual landscaping and transparently shows that frog-focused compensation (pest control + research) is additional and commensurate with the scale of uncertain effects (The ecology report does say only initiatives addressing ecological effects are counted).

Use of Golden Cross as the key analogue for frog vibration sensitivity

81. The A.09 report (assessment of effects) vibration section: leans on Golden Cross experience (<5 mm/s typically; up to ~10 mm/s) and reports frogs remained "abundant," to justify low likelihood of harm.

82. B.53 Heilig + B.37 ecology reports, despite the Golden Cross comparator, still impose 15 mm/s cap and a wide pest-control buffer due to data gaps on leiopelmatid vibration perception.

83. **Why it matters**: Golden Cross isn't directly comparable (geology, blast geometry, habitat). Precautionary approach required for remote setting; frog-specific cap (trigger) and monitoring; adaptive management triggers that reduce impacts not off-set them.

Residual uncertainty about frogs vs. confidence in monitoring/management

84. Bioresearches: Hochstetter's frog surveys were conducted, but detection relied on specific microhabitats (shaded, stony streams). Habitat exists within the project footprint, and frogs were confirmed in surveyed streams.
85. A.10 (management/monitoring): frames residual effects as manageable through standard monitoring, without fully stressing detection limitations or false negatives in frog surveys.
86. **Why it matters**: If monitoring plans assume detection = absence of effect, they may understate residual risk. Stronger adaptive triggers may be needed (e.g., assume presence until robust evidence of absence).

Offset/compensation before full avoidance/minimisation demonstration

87. Bioresearches: acknowledges At-Risk/Threatened fauna (frogs, lizards, bats, birds) but argues no "significant" invertebrates are expected; impact is treated as localised.
88. A.10: moves quickly to outline offset/compensation programmes (pest control, planting, monitoring) rather than documenting in detail what avoidance alternatives were considered for each site.
89. **Why it matters**: This risks looking like compensation is a substitute for avoidance, not a last-resort step in the hierarchy.

Different emphasis on threatened species sensitivity

90. Bioresearches: carefully notes survey effort for frogs, lizards, bats, and explicitly ties methods to DoC datasets and threat classifications.
91. A.10: describes management frameworks generically (Ecological Management Plans, Biodiversity Offset Plans) without reiterating the high conservation status of the same species.
92. **Why it matters**: Downplaying threat status in monitoring/management summaries weakens the case for precautionary conditions.

Confidence in "net gain" vs. disclosure of monitoring timeframes

93. Bioresearches: acknowledges frog population responses to pest control can take 5–10 years to show measurable change.
94. A.10: emphasises "nature positive" outcomes without caveats about these lag times.
95. **Why it matters**: Claims of "net gain" may appear premature without explicit recognition of long ecological response horizons.

Condition enforceability

96. A.10: mitigation/management measures are described in broad terms (plans, monitoring programmes, adaptive management).
97. Fast-track Act (Schedule 5 & 7): requires that conditions be specific, measurable, and enforceable.

98. **Why it matters**: If conditions are vague ("pest control will be implemented"), they risk being unenforceable; Bioresearches provides enough detail (target species, methods, site mapping) to anchor enforceable conditions.

Observations on the Hydrology reports

Predicted flow effects

99. The hydrology modelling in B.32 (GHD) expects the 7-day (mean annual low flow) MALF at monitored sites to reduce ~2–13%, with wetted-width reductions 0–5%; effects are "most noticeable" in small headwaters like Edmonds and Thompsons.
100. The B.32 Wharekirauponga model notes limited calibration data in these headwaters and an overall 10–20% uncertainty at low flows.
101. **Why it matters**: Reductions of 2–13% in low flows may sound small on paper, but in fragile headwaters like Edmonds and Thompsons Streams, even slight decreases can mean shallow riffles dry out, fish lose habitat, and aquatic insects decline.
102. These streams (headwater sites) already run close to ecological limits in summer, the model's 10–20% uncertainty leaves a real risk that impacts could be significantly worse than predicted.

Cause of flow loss

103. The groundwater modelling in B.26 (GHD) drives the hydrological settings in the streamflow reductions (constant, peak baseflow-loss assumption across the mining period) — i.e., the water balance is conservative on paper.

104. **Why it matters**: The Warm Spring and EG-vein spring are projected to dry up or reduce to a trickle during mining. Springs are not just a source of water—they are cultural features, refuges for native fish, and indicators of aquifer health.

105. The B.33 report states in section 7.4.2 that dewatering effects cannot be accurately predicted at the time of the application.

106. Even if they return after closure, The A.09 (Assessment of effects) predicted sulphate contamination could permanently alter water quality, undermining their ecological and cultural value.

Springs

107. In B.33 (Flo-Solutions) the Warm Spring (~3.5 L/s) and a downstream EG-vein spring (~5 L/s) are expected to cease/reduce during mining, then return post-closure (with elevated sulphate predicted at Warm Spring after recovery).
108. **Why it matters**: The Warm Spring and EG-vein spring are projected to dry up or reduce to a trickle during mining. Springs are not just a source of water—they are cultural features, refuges for native fish, and indicators of aquifer health. Even if they return after closure, AECOM (2024) predicts sulphate contamination could permanently alter water quality, undermining their ecological and cultural value.

Surface–deep connectivity

109. B.27 groundwater reports mostly frame the shallow system as weakly connected to the deep EG-vein system, but identify a 1.2 km "area of potential effect" where rhyolite is at surface and connectivity risk is higher.
110. **Why it matters**: Reports claim the shallow and deep systems are mostly separate, but acknowledges a 1.2 km zone where connectivity could be strong. If fractures in this rhyolite zone provide pathways, mine pumping could draw down shallow streams much more severely than anticipated, threatening surface flows and biodiversity well outside the mapped area.
111. B.33 (Hydrogeology) report also states that Drawdown effects propagate preferentially within and along the vein systems due to their higher permeability relative to the low permeability andesite host rocks.
112. Overall conclusion in the B.27 Groundwater report that effects on surface water are "less than minor," catchment-scale take 2,200–3,300 m^3/d, with recovery of groundwater post-closure (~30 years).
113. **Why it matters**: The project's 2,200–3,300 m^3/day groundwater take may look modest at a catchment scale, but its localised effects could devastate sensitive habitats. The idea that the system will "recover" in ~30 years overlooks the fact that species lost or habitats degraded may never return. For ecological communities, a 30-year hole in the hydrological system is effectively permanent.

Tunnels

114. Methodology relies on pre-grouting; tunnel effects are said to be unmeasurable at surface, though local short-term losses under fracture zones are acknowledged elsewhere.
115. **Why it matters**: While the company says tunnel drainage will be "immeasurable", experience elsewhere shows short-term localised losses through fractured rock can be severe.
116. Even small unanticipated leaks could drain wetlands or headwaters, with changes appearing suddenly and irreversibly.
117. The reliance on pre-grouting assumes engineering will perfectly seal fractures—something history suggests is rarely guaranteed.

Management approach

118. A Water Management Plan (WMP) uses "alert/respond" triggers, adaptive measures (grouting, supplementary water, re-injection), and quarterly reporting; it seeks to protect Natural State streams.
119. **Why it matters**: The proposed Water Management Plan relies on "alert and respond" triggers, meaning damage may occur before interventions kick in. Quarterly reporting is far too infrequent to detect rapid stream declines.

120. While measures like re-injection or supplementary water sound reassuring, they often create artificial flow regimes that do not replace natural groundwater-fed systems, leaving ecosystems altered and vulnerable.

Conclusions on Internal inconsistencies

121. Certainty about Warm Spring vs. admitted uncertainty
    a. Effects narrative: spring will cease then return; water quality "similar," but sulphate higher.
    b. Conceptual model caveat: "cannot be accurately predicted at this time"; more structural/hydrochem (incl. isotopes) work is needed. That undercuts the confident impact/mitigation story.
122. "Less than minor" at surface vs. explicit identification of at-risk reach
    a. A global "less-than-minor" conclusion sits beside a mapped 1.2 km area where the protective andesite cover is absent and vein–stream connectivity could occur—prompting "more intensive monitoring."
    b. That is a residual risk zone, not de minimis.
123. Modelled flow effects are small—but within model uncertainty
    a. Low-flow reductions up to ~12–13% are comparable to the hydrology model's 10–20% uncertainty band at low flows and are largest exactly where calibration is weakest (Edmonds/Thompsons).
    b. That weakens reliability for headwater Natural State streams.
124. Adaptive management reliance vs. Natural State policy intent
    a. The WMP is explicitly adaptive ("anticipate and react," with triggers based on anomalies and a flowchart for "materially greater" inflows persisting >1 week).
    b. That may be standard practice, but it doesn't front-load avoidance of effects; it waits for triggers to act—hard to reconcile with a high bar for Natural State protection.
    c. Proposed consent conditions themselves envisage adaptive measures when "Respond" triggers are reached, again signalling effects-then-mitigate.

125. Post-closure geochemistry still not understood
    a. The groundwater/surface-water geochemical mixing for post-closure is ongoing; preliminary results not yet available. Yet the narrative asserts only local sulphate elevation at Warm Spring on recovery.
    b. That's a gap on long-term water-quality risk.

126. Under the Fast-track Approvals Act (and general Part 2/RMA effects principles carried across), the Panel can decline where effects are uncertain, potentially significant, and not credibly avoided—especially for Natural State waters in a DOC estate.

127. The proponent's own conceptual model says Warm Spring effects "cannot be accurately predicted" now, while effects reports assume predictable cessation/recovery

(and even “improved” quality during mining). That is a credibility gap on a key pathway.

128. In headwaters where ecology is most sensitive, predicted low-flow reductions are on the same order as model uncertainty and lack robust calibration. That fails a precautionary evidential standard for Natural State streams.

129. The H.06 WMP and proposed conditions predominantly react to observed changes (trigger/Respond logic; quarterly TARPs), rather than demonstrate up-front avoidance. For protected Natural State waterways, a “monitor + fix” posture is a policy mis-match and a legitimate basis to decline.

130. Post-closure geochemical assessments that would underpin “no long-term effect” claims are unfinished. Approving now would bank on later studies to prove safety—again failing the precautionary bar.

Questions the Panel can put to experts

1. **Warm Spring mechanism & fate:** What level of confidence (quantified) supports predictions of cessation and recovery timing/chemistry, given FloSolutions’ statement that effects cannot be accurately predicted at this time? What additional structural/isotope work is scheduled, and when?
2. **Headwater calibration**: Provide a sensitivity analysis showing how 7-day MALF reductions change under the 10–20% low-flow uncertainty and under alternative calibrations for Edmonds/Thompsons; demonstrate that predicted effects remain below ecological significance thresholds.
3. **Area of potential effect**: For the mapped 1.2 km reach of high connectivity, what pre-emptive (not reactive) design controls are proposed to avoid connectivity and stream-loss—beyond monitoring?
4. **Triggers**: Where (numerically) are Alert/Respond thresholds set for flows, heads, and inflow rates, and how do they tie to ecological limits rather than model expectations? Are supplementary water/re-injection feasible in remote Natural State streams?
5. **Closure**: Until the post-closure geochemistry and mixing models are complete, what enforceable performance standards (receiving-environment) can guarantee no adverse long-term changes (e.g., sulphate increases) at the Warm Spring and downstream?

Conclusion

Given the acknowledged unpredictability at Warm Spring, the uncertainty/calibration limits where effects are largest, the identified at-risk reach, the heavy reliance on adaptive management, and unfinished post-closure water-quality work, the Panel has a robust evidential

basis to find that the adverse effects on Natural State waterways are not adequately avoided nor sufficiently certain to be “minor.”

That meets a rational threshold to decline the application for the WKP catchment elements at this time.