

10 April 2026

Hon Matthew Muir KC
Expert Panel Chair

bendigoftaa@fasttrack.govt.nz

Tēnā koutou,

Attention: The Chair and Members of the Expert Panel for the Bendigo-Ophir Gold Project

Matakanui Gold Limited – Fast-track Consent Application – Otago Regional Council comment on the substantive application for the Bendigo-Ophir Gold Project [FTAA-2507-1089] under section 53(2) of the Fast-track Approvals Act 2024.

Otago Regional Council has reviewed the substantive application for the Bendigo-Ophir Gold Project Fast-track application and provides the following written comments, made in accordance with section 53(2) of the Fast-track Approval Act 2024.

These comments summarise ORC's overall feedback on the proposal. The comments are supported by Appendices 1-51.

Nāku iti noa, nā



Anita Dawe
General Manager Regional Planning and Transport

SECTION A: EXECUTIVE SUMMARY

1. In accordance with s53(2) of the Fast-track Approvals Act 2024 (**FTAA**) Otago Regional Council (**ORC**) has been invited to provide comment on the substantive application for the Bendigo-Ophir Gold Project (**the application**) lodged by Matakanui Gold Limited (**the Applicant**).
2. This document represents ORC's 'comments' provided under s53(2) of the FTAA.
3. These comments have been prepared by Principal Consents Planner Shay McDonald of ORC.
4. The purpose of these comments is to summarise ORC's assessment of the application to assist the Panel in making a decision on the application under s81 of the FTAA.
5. The approvals sought are controlled, restricted discretionary, or discretionary activities under the relevant regional plans or national environmental standards. The Applicant has not sought approval for any activity that would be prohibited under any regional plan or national environmental standard.
6. These comments summarise the actual and potential adverse effects of the proposal, as ORC understands them, and then considers any positive effects and whether these are regionally or nationally significant. Consideration is given to whether the purpose of the FTAA would be met by granting the approvals sought, on appropriate conditions.
7. ORC considers that the proposal is a development project with economic benefits that are of regional and national significance. Accordingly, ORC considers that the purpose of the FTAA would be met by facilitating delivery of the proposal (leaving to one side the adverse effects of the proposal and the issue of whether they are sufficiently significant to be out of proportion to the proposal's regional or national benefits).
8. ORC has also identified potential adverse effects of the proposal and has assessed these carefully to determine their nature and significance.
9. ORC understands that the FTAA imports most RMA provisions relevant to the assessment of resource consent applications, with necessary modifications. Accordingly, and to assist the Panel, ORC has also provided an assessment of the proposal against the relevant objectives and policies of statutory instruments, as well as an assessment against the sections of the RMA that direct decision making. ORC further notes a number of 'other matters' that it considers relevant and reasonably necessary to consider in order to determine this application.
10. ORC has identified key issues with the proposal and summarises these in Table 1. For the avoidance of doubt, this is not an exhaustive list of issues, nor is it a summary of ORC's conclusions or final opinions on these issues. It is simply a list of matters relevant to ORC's jurisdiction that ORC recommends the Panel consider carefully as this process continues and in

its deliberations. These issues and others are discussed at length in subsequent sections of these comments.

Table 1 Summary of key issues identified by ORC

Key issue	Risk
Mechanisms to ensure long-term management / maintenance / monitoring obligations in relation to various mining components	Geotechnical instability, public safety, erosion, scour, water quality impacts
Lack of important design information for diversion channels and other long-term or permanent sediment management devices	Erosion, scour, unmanaged discharges of sediment
Management of mine-impacted water (MIW)	<p>Deviation from anticipated (by water load model) quality could lead to difficulties treating MIW to a suitable standard prior to discharge from site (in closure phases)</p> <p>Greater than anticipated (by water balance model) quantities of MIW could lead to early development of a mine water surplus with corresponding risk of unmanaged discharges of MIW from the site</p>
Load balance modelling indicates critical requirement for active water treatment of MIW prior to discharge from site, but the water treatment plant is still in pre-feasibility stage	Uncertainty as to whether MIW can be treated to an appropriate standard.
Containment of untreated MIW	Seepage from the tailings facility and engineered landforms could bypass seepage collection systems and migrate offsite via groundwater
Usage efficiency of groundwater	Important not to allocate more water than is required for the use, but equally important not to underestimate use given the key role of water on site (processing and operational use, and dust suppression)
Appropriateness of proposed numerical compliance standards for surface water quality	The Applicant's proposed limits are substantially higher than what modelling would indicate is necessary to operate the mine and, if fully implemented (i.e. if contaminant concentrations approached the compliance limits) would likely result in significant adverse toxicity effects, and nuisance periphyton blooms

Absence of aquatic ecological monitoring / absence of synthesis assessment of impacts on aquatic ecology from all site activities affecting water	Poorly managed aquatic ecological effects
Uncertainty inherent in survey methods and findings and hence uncertainty in assigned ecological value and population estimates (relevant to different vegetation species / habitats and indigenous fauna)	Unreliable survey data could lead to inaccurate assessment of effects and inappropriate effects management
Moderate-very high (i.e. significant) residual adverse effects on numerous vegetation species and some habitats, wetlands, lizards, and invertebrates that cannot be further reduced and are not balanced by positive effects elsewhere	Net loss of indigenous biodiversity
Scale at which landscape effects should be assessed; management of residual landscape effects	Unaddressed high adverse residual landscape effects
Overlapping areas of regulatory responsibility / interest	Inefficient and inconsistent consent conditions if due care is not taken
To a variable extent across all management plans: poorly defined outcomes, insufficient and unclear actions (who, when, how would undertake actions), complex interactions between plans, inconsistencies between plans	Management plans not fit for purpose i.e. not adequate to inform operational site management or decision making
To a variable extent across all proposed consent documents: absence of measurable outcomes, undue reliance on management plans, wording that provides no certainty of outcome	Unenforceable consent conditions, uncertainty of effects management, and uncertainty of environmental outcomes
Rehabilitation bond conditions do not cover several critical matters	Activities (and effects of those activities) that should be bonded are missed, with consequential effect on the ability of councils to close / rehabilitate / monitor the site in the event that the consent holder defaults on its obligations
Inconsistency with national and regional policy direction, particularly so in respect of ecology / indigenous biodiversity and to some extent freshwater policies	Policies generally represent nationally accepted best practice, rely on best available information, or are set up to deliver desirable future outcomes. Proposals that are inconsistent with national policy direction may have poorer environmental outcomes, if

	equivalent or better alternatives are not proposed.
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SECTION B: INTRODUCTION

11. ORC assumes that all information pertaining to the application that is available on the Bendigo-Ophir Gold Project Fast-track substantive application webpage is taken as read.¹ These comments have been prepared with consideration of the information available on the aforementioned webpage, as well as the additional information, attached as Appendices 1-31, provided directly to ORC by the Applicant.
12. Following lodgement of the application, communication between ORC and the Applicant has been open and helpful.
13. Following lodgement but prior to receiving an invitation to provide comment under s53(2) ORC and its expert advisors have invested significant time and effort into:
 - a) understanding the application as it proposed;
 - b) identifying key issues and areas of disagreement or contention; and
 - c) attempting to narrow those issues through various mechanisms, including written requests for information, multiple meetings between the Applicant, ORC, and their respective expert advisors, in-person workshops, and site visits.
14. The purpose of this work was to enable ORC to provide its comprehensive and considered opinion as part of its s53(2) comments, with a view to providing the greatest possible assistance to the Expert Panel (**the Panel**) and the decision it must ultimately make on this application.
15. A brief summary of the engagement process that has occurred since the application was lodged is provided below:
 - a) November – December 2025: ORC engaged expert advisors to undertake an initial peer-review of the application material, focussing on key issues and areas where further information would be helpful. All peer-review reports were provided to the Applicant promptly;
 - b) December 2025 – January 2026: ORC issued the Applicant with seven separate letters (one general ‘topic’ per letter e.g. landscape effects) requesting further information on various matters;
 - c) January – February 2026: the Applicant responded to the information requests;
 - d) February 2026: three days of ecology workshopping (including site visits) in Cromwell, attended by representatives of the Applicant, Central Otago District Council (**CoDC**), the Department of Conservation (**DoC**), and ORC;

¹ <https://www.fasttrack.govt.nz/projects/bendigoophir-gold-project/substantive-application>

- e) February 2026: two days of water workshopping (including site visit) in Cromwell, attended by representatives of the Applicant and ORC;
 - f) March 2026: one day landscape workshop (including site visit) in Cromwell, attended by representatives of the Applicant, ORC, CODC, and DoC;
 - g) March 2026: online lizard workshop, attended by representatives of the Applicant, ORC, and DoC;
 - h) March 2026: ORC's expert advisors prepared final / updated peer-review reports to inform ORC's comments under s53(2). All peer-review reports were provided to the Applicant promptly;
 - i) March 2026: periodic exchange of questions and responses between ORC and the Applicant, as well as provision of additional information by the Applicant in response to agreed actions during the various workshops; and
 - j) March 2026: online meeting in relation to air quality monitoring, attended by representatives of the Applicant and ORC.
16. To assist other known participants in this process, ORC proactively shared all of its peer-review reports with CODC, DoC, Otago Fish and Game Council, and legal counsel for Kāi Tahu.
17. Following the issue of Minute 3 from the Panel regarding invitations to comment, ORC also shared copies of its peer-review reports with any other participant who requested this information from ORC.
18. These comments are structured in the following way:
- Section C: Assessment of effects
 - Section D: Positive effects
 - Section E – Regional or national significance
 - Section F: Purpose of the FTAA
 - Section G: Policy assessment
 - Section H: Management plans
 - Section I: Consent conditions
 - Section J: Other matters
 - Section K: Other legislation that directs decision making
 - Section L: When an Approval must or may be declined
 - Section M: Conclusions
19. The following documents are provided as appendices to these comments:
- **Appendix 1:** Approvals sought
 - **Appendix 2:** ORC recommended conditions – changes to D.02
 - **Appendix 3:** ORC recommended conditions – changes to D.03
 - **Appendix 4:** ORC recommended conditions – changes to D.04

- **Appendix 5:** EGL Response to Otago Regional Council Geotechnical Engineering, Surface Water, Erosion and Sediment Control Requests for Information, dated 30 January 2026
- **Appendix 6:** MWM Letter report, dated 30 January 2026
- **Appendix 7:** Peter O'Bryan & Associates Technical Memorandum Response to Technical Review, dated 02 February 2026
- **Appendix 8:** EGL Response to Otago Regional Council Shepherds Valley Creek Realignment, dated 17 February 2026
- **Appendix 9:** EGL Response to Otago Regional Council River Engineering Requests for Information, dated 10 March 2026
- **Appendix 10:** Peter O'Bryan & Associates Technical Memorandum Rise and Shine Deposit Subsidence Potential Underground Mining, reference 24053D, dated 11 March 2026
- **Appendix 11:** Kōmanawa Solutions Limited Memorandum: Responses to ORC Technical Review in terms of the Fast-Track Approvals Act and RMA, dated 30 January 2026
- **Appendix 12:** Greg Ryder Consulting: ORC Request for Further Information – Matakanui Gold Limited fast-track application for the Bendigo-Ophir Gold Project, dated 27 January 2026
- **Appendix 13:** Santana Minerals Limited Memorandum: ORC Request for Further Information, dated 30 January 2026
- **Appendix 14:** Boffa Miskell Memorandum: Bendigo Ophir Gold Project: Assessment of freshwater ecological effects, dated 30 January 2026
- **Appendix 15:** Hydrogeochem Group Memorandum: BOGP MWSF Seepage Risk Assessment, dated 5 March 2026
- **Appendix 16:** Boffa Miskell Memorandum: Bendigo Ophir Gold Project: Assessment of freshwater ecological effects, dated 16 March 2026
- **Appendix 17:** Kōmanawa Solutions Limited Memorandum: Instituting Water Quality Monitoring of Lindis River and Bendigo Creek, dated 11 March 2026
- **Appendix 18:** Kōmanawa Solutions Limited Memorandum: Instituting an Alluvium – Weathered Rock Depth Drillhole Fence at SC-01 Monitoring Site, dated 11 March 2026
- **Appendix 19:** Record of actions and responses: Water workshop held 24-25 February, undated, provided to ORC on 19 March 2026
- **Appendix 20:** Tabulated response to questions, prepared 14 January 2026 and updated 30 January 2026
- **Appendix 21:** Santana Minerals Limited Memorandum: ORC reference RMFT25.007, dated 6 February 2026
- **Appendix 22:** Ecological Impact Measures Management Schedule (spreadsheet), undated, provided to ORC on 6 February 2026
- **Appendix 23:** Summary documents of discussion points from ecology workshops (1-3), provided to ORC on 17 March 2026
- **Appendix 24:** Summary notes of lizard workshop, provided to ORC 17 March 2026
- **Appendix 25:** Boffa Miskell Limited Memorandum: Response to ORC Landscape Questions, dated 30 January 2026
- **Appendix 26:** PDP Memorandum: Bendigo-Ophir Gold Project Air Quality Assessment: Response to Otago Regional Council Information Request, dated 29 January 2026

- **Appendix 27:** PDP Memorandum: Bendigo-Ophir Gold Project Air Quality Assessment Addendum: Cement and Concrete Batching, dated 4 February 2026
- **Appendix 28:** PDP Memorandum: Bendigo-Ophir Gold Project Air Quality Assessment Addendum: Visual Dust Monitoring and Instrumental Arsenic Dust Monitoring C051440001M004_Final_170326, dated 17 March 2026
- **Appendix 29:** Email: Jeff Bluett to Shay McDonald *et al.* Matakanui Gold Proposed Arsenic Ambient Air Sampling Programme, sent 19 March 2026
- **Appendix 30:** Mitchell Daysh Memorandum: Further Information Response Part 1 (planning) – Bendigo-Ophir Gold Project Fast-track Application, dated 5 February 2026
- **Appendix 31:** Mitchell Daysh Memorandum: Further Information Response Part 2 (planning) – Bendigo-Ophir Gold Project Fast-track Application, dated 11 February 2026
- **Appendix 32:** GeoSolve Geotechnical Engineering Assessment Memo, dated 3 December 2025
- **Appendix 33:** GeoSolve Review of RFI Responses Bendigo-Ophir Gold Project Fast-Track Application Assessment, dated 18 February 2026
- **Appendix 34:** GeoSolve Review of RFI Responses (Rev 1) Bendigo-Ophir Gold Project Fast-Track Application Assessment, dated 20 March 2026
- **Appendix 35:** GeoSolve Surface Water and River Engineering Assessment Memo, dated 3 December 2025
- **Appendix 36:** GeoSolve Revised Surface Water and River Engineering Assessment Memo, dated 20 February 2026
- **Appendix 37:** GeoSolve Revised Surface Water and River Engineering Assessment Memo, dated 19 March 2026
- **Appendix 38:** e3 Scientific Technical Review: Fast-Track Bendigo Ophir Mine, dated 20 March 2026
- **Appendix 39:** Torlesse Environmental Ltd Technical Review: Matakanui Gold Limited (the Applicant) substantive fast-track approval application for the Bendigo-Ophir Gold Project: Technical review on freshwater matters, dated 3 December 2025
- **Appendix 40:** Torlesse Environmental Ltd Technical Review: Matakanui Gold Limited (the Applicant) substantive fast-track approval application for the Bendigo-Ophir Gold Project: Update to technical review on freshwater matters, dated 16 March 2026
- **Appendix 41:** e3 Scientific Technical Review: Matakanui Gold Terrestrial Ecology- Technical Review Terrestrial Ecology Final Response, dated 18 March 2026
- **Appendix 42:** SLR (New Zealand) Limited Memorandum: Bendigo Ophir Mining Project – Landscape Architectural Review, dated 1 December 2025
- **Appendix 43:** SLR (New Zealand) Limited Memorandum: Memorandum: Bendigo Ophir Mining Project – Landscape Architectural Review - Response to Applicant’s Memorandum (30 January 2026), dated 16 February 2026
- **Appendix 44:** SLR (New Zealand) Limited Memorandum: Bendigo Ophir Mining Project – Landscape Architectural Review – Site Visit (11th March 2026), dated 20 March 2026
- **Appendix 45:** SLR (New Zealand) Limited Technical Memorandum Bendigo-Ophir Gold Project: Assessment of Environmental Effects from the Discharge of Contaminants to Air Peer Review Report, dated 12 December 2025

- **Appendix 46:** SLR (New Zealand) Limited Letter: Bendigo Ophir Project Air Quality Assessment Review, dated 18 February 2026
- **Appendix 47:** SLR (New Zealand) Limited Letter: Bendigo Ophir Project Air Quality Assessment Review, dated 20 March 2026
- **Appendix 48:** Sense Partners Limited Peer Review: Matakanui Gold FTAA – Report for Otago Regional Council, dated November 2025
- **Appendix 49:** Otago Regional Council Transport Team Comments, dated 20 March 2026
- **Appendix 50:** Qualifications and Experience of s53 comments author and ORC expert advisors
- **Appendix 51:** Damwatch Engineering Limited Report: Bendigo-Ophir Project: Review of Bond Introduction for 2025-2026, dated 5 December 2025

SECTION C: ASSESSMENT OF EFFECTS

C.1 STRUCTURE OF THIS SECTION

20. The application material is extensive. Further, ORC has been provided with a suite of additional information as a result of requests for information, various workshops with the Applicant and other agencies, and other information volunteered by the Applicant. This additional information is referenced throughout – and attached to – these comments.
21. Taking all of this information into account, this section seeks to summarise ORC’s understanding of the proposal and its adverse effects (in sufficient detail that the reader does not have to make frequent reference to other documents) and to provide ORC’s comments on the proposal against that background.
22. ORC’s comments are informed by the opinions of experts it has engaged to advise on various technical matters. The written advice provided by these experts is referenced in the relevant sections below and is attached to these comments. The qualifications and experience of these experts are summarised in Appendix 50.
23. ORC has limited its assessment to the actual and potential adverse effects of activities that would otherwise require regional resource consents from ORC under the RMA.

C.2 LIMITATIONS OF ASSESSMENT

C.2.1 Matters not Assessed by Council

24. Council has not assessed the following subject matters, on the basis that these matters are not directly related to an approval that would otherwise be sought from ORC, or because these matters are better assessed by others:
 - a) Heritage

- b) Roading and traffic
- c) Noise and vibration
- d) Lighting
- e) Recreation
- f) Cultural effects

C.2.2 Effects on Cultural Values, Practices, and Beliefs

25. Council has not undertaken an assessment of the potential adverse effects that the proposal may have on cultural values, practices, and beliefs. This is not to diminish the importance of these effects, but to recognise that it is for mana whenua to determine how a proposal impacts on their cultural values.
26. The enduring kaitiakitaka responsibility of mana whenua in relation to te taiao is acknowledged by ORC.
27. ORC understands that the following groups have been invited to provide comments on this application:
- Relevant iwi authorities, namely Te Rūnanga o Ngāi Tahu, in accordance with s53(2)(b);
 - Relevant Treaty settlement entities, namely Te Rūnanga o Ngāi Tahu, Te Rūnanga o Waihao, Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Ōtākou, Hokonui Rūnanga, Waihōpai Rūnaka, Te Rūnanga o Awarua, Te Rūnanga o Ōraka-Aparima, in accordance with s53(2)(c).
28. ORC considers that these are the appropriate persons to speak to the actual or potential effects of the proposal on Kāi Tahu cultural values, practices, and beliefs.
29. ORC seeks to assist the Panel by providing commentary on the regional planning context applicable to any views that may be expressed by Kāi Tahu. Please refer to Section G of these comments.

SECTION C.3 – APPROVALS SOUGHT

30. The Applicant seeks approvals under the FTAA for activities that would otherwise require resource consent from ORC under the RMA. These are listed in Appendix 1.

SECTION C.4 – GEOTECHNICAL EFFECTS

C.4.1 Introduction

31. Potential geotechnical effects include:

- a) Slope instability
- b) Loss of containment
- c) Ground deformation and subsidence

32. In this section, potential geotechnical effects are assessed for:

- a) Open pits
- b) Engineered landforms
- c) Tailings Storage Facility
- d) Silt ponds
- e) Underground mine

33. ORC understands that geotechnical stability is an issue that also relates to territorial authority functions under s31 of the RMA and may therefore be of interest to CODC.

C.4.2 Information received and assessed

34. The following application documents are of relevance to this assessment:

- a) Application Report B.20
- b) Application Report B.21
- c) Application Report B.22
- d) Application Report B.23
- e) Application Report B.24
- f) Application Report B.25
- g) Application Report B.26
- h) Application Report B.27
- i) Application Report B.28
- j) Management Plan G.01
- k) Management Plan G.14
- l) Management Plan G.15
- m) Management Plan G.16
- n) Management Plan G.17

35. In addition to the updated application material provided by the Applicant under cover of a Mitchell Daysh memorandum dated 10 March 2026, the information listed below has been provided directly to ORC by the Applicant:

- a) **Appendix 5:** EGL Response to Otago Regional Council Geotechnical Engineering, Surface Water, Erosion and Sediment Control Requests for Information, dated 30 January 2026
- b) **Appendix 6:** MWM Letter report, dated 30 January 2026
- c) **Appendix 7:** Peter O'Bryan & Associates Technical Memorandum Response to Technical Review, dated 02 February 2026

- d) **Appendix 8:** EGL Response to Otago Regional Council Shepherds Valley Creek Realignment, dated 17 February 2026
- e) **Appendix 9:** EGL Response to Otago Regional Council River Engineering Requests for Information, dated 10 March 2026
- f) **Appendix 10:** Peter O'Bryan & Associates Technical Memorandum Rise and Shine Deposit Subsidence Potential Underground Mining, reference 24053D, dated 11 March 2026

36. For transparency and to assist the Panel, the above listed information is attached to these comments as Appendices 5-10.

C.4.3 Advice received

37. ORC sought expert advice from GeoSolve Limited (**GeoSolve**) in relation to the potential geotechnical effects of the proposal. This advice was provided by:

- a) Colin Macdiarmid – Geotechnical Team Leader
- b) Neil Williman – Senior Water Resources Engineer

38. The following peer-review reports have been provided by GeoSolve to ORC:

- **Appendix 32:** GeoSolve Geotechnical Engineering Assessment Memo, dated 3 December 2025
- **Appendix 33:** GeoSolve Review of RFI Responses Bendigo-Ophir Gold Project Fast-Track Application Assessment, dated 18 February 2026
- **Appendix 34:** GeoSolve Review of RFI Responses (Rev 1) Bendigo-Ophir Gold Project Fast-Track Application Assessment, dated 20 March 2026
- **Appendix 35:** GeoSolve Surface Water and River Engineering Assessment Memo, dated 3 December 2025
- **Appendix 36:** GeoSolve Revised Surface Water and River Engineering Assessment Memo, dated 20 February 2026
- **Appendix 37:** GeoSolve Revised Surface Water and River Engineering Assessment Memo, dated 19 March 2026

39. These are attached to these comments as Appendices 32-37. These peer-review reports were provided to the Applicant promptly following their dates of preparation. Please note these peer-review reports also discuss natural hazard and river engineering topics. These matters are discussed in Section C.5.

40. The below assessments are informed by the expert opinions of Messrs Macdiarmid and Williman.

C.4.4 Open pit stability effects

C.4.4.1 Rise and Shine Pit stability

41. Predicted pit stability of the Rise and Shine (**RAS**) pit has been assessed in Application Report B.28, prepared by Peter O'Bryan & Associates (**POBA**).
42. This report notes that pit stability will be influenced by defects within the rock, particularly the schist foliation and the various shear zones associated with known faulting, and groundwater pressures. It is possible that pit stability may also be affected by transient seismic disturbances over the life of mine. Natural seismicity will be an intermittent and transient, but unpredictable, hazard to mine stability at RAS; hence, allowance for possible earthquake disturbance has been included in the mine design.
43. Instability risks within the bounds of the pit during mining operations are likely to be well controlled, as ensuring pit stability is critical to ensure both the safety of workers (managed separately by Health and Safety legislation) and continuity of mining. However, pit walls inevitably deteriorate with time, due to stress conditions and / or ongoing relaxation; weathering / alteration causing shear strength changes in wall materials; physical wastage via wind and rainfall run-off (or flooding) erosion; re-establishment of hydrostatic pressures in pit walls; influence of underground voids; and potentially intermittent transient seismic disturbance. Degradation of pit walls, however, does not necessarily lead to wall collapse. At RAS it is expected that debris derived from slope degradation would be contained within the pit, largely on the pit slopes.
44. The B.28 POBA report presents a preliminary stability assessment and acknowledges that additional investigations and analysis are required to fully assess pit stability. Recommendations as to critical investigations and analysis are made throughout the POBA report.
45. ORC queried the extent to which these critical recommendations would be implemented by the Applicant, as no consent conditions had been proposed in relation to open pit mining. Additionally, while the application contains 23 different management plans, not one of those management plans is dedicated – either partially or entirely – to the proposed open pit mining. ORC considered this to be an important omission and raised it with the Applicant.
46. In a response to the request for further information, POBA described the additional geotechnical drilling that has been and is currently being undertaken in relation to the proposed open pit mining. The response further explained that observation of pit wall behaviours during pit development is fundamental to expanding knowledge of rock mass characteristics and hence improving prediction of the response of the ground to mining. The process of confirming and / or amending wall design parameters will be ongoing throughout the life of the mine, as it is the essential link to understanding the complexities of the rock mass and slope systems.
47. This process would be informed by information obtained from wall mapping (confirmation and extension of the geological and structural geological models) and quantitative wall monitoring

(of displacement rates and deformation patterns). Further modelling would be a component of this process.

48. Further, in response to ORC's concern about the absence of any management plan relating to open pit mining, and how the implementation of the recommendations for ongoing monitoring, modelling, and assessments would be ensured, POBA has subsequently advised that ground control management plans (**GCMP**) will be developed. The purpose of the GCMP is to prevent ground-related injuries, damage, and loss of access by systematic management of geotechnical risk. To do so, these plans would require a range of appropriate geotechnical investigations, monitoring, modelling, risk assessments, and management measures, including trigger-action-response plans.
49. POBA states that GCMP can only be developed when detailed designs are developed, although fundamental framework and descriptions of procedures may be done later. An example of the contents of a GCMP is provided in the POBA Memorandum attached as Appendix 7.
50. ORC considers that development and implementation of GCMP is an appropriate means by which to manage the operational stability risks associated with open pit mining, and to ensure that fundamental investigations / assessments / monitoring are undertaken as recommended by geotechnical experts. The GCMP should be prepared by a suitably qualified and experienced geotechnical engineer and provided to ORC for certification. Accordingly, ORC has made initial recommendations as to a suitable consent condition within Appendix 4. ORC recommends that geotechnical experts review and suggest whether refinements are needed in respect of this consent condition.
51. Provided suitably enforceable consent conditions, based on those recommended by ORC in Appendix 4, are imposed, ORC is satisfied that the stability of RAS pit can be managed appropriately during the active mining phase.
52. The potential for pit instability to propagate beyond the pit crest is discussed in Section C.4.4.3 below.

C.4.4.2 Stability of satellite pits

53. Report B.28 does not assess the stability of any of the other open pits that are proposed as part of the application, being the Come in Time (**CIT**), SRX, and SRX East (**SRE**) pits. A preliminary assessment of pit stability was requested from the Applicant, and a response was provided by POBA (Appendix 7).
54. In relation to the absence of an assessment of slope stability at the CIT, SRX, and SRE pits, POBA responded that preliminary analysis of slope stability has been performed for these pits using current geological interpretation and material properties derived for the RAS pit. Site-specific investigations have not yet been performed for these pits, but POBA considers that extrapolation of properties for initial analysis is reasonable given the consistency of conditions observed at

RAS. Pit wall stability in these pits will be influenced by the geological structure and rock mass (material) shear strength of the same lithologies that will be encountered at RAS. The influence of the Thomson Gorge Fault on the satellite pits is anticipated to be significantly less than predicted for RAS. GeoSolve did not raise any concerns in relation to this assessment.

55. The GCMP described for RAS pit will include sub-sections that address the management CIT, SRX, and SRE open pits. ORC has recommended a consent condition (in Appendix 4) to ensure that the RAS GCMP applies to these pits, or separate GCMP – addressing the same key matters – are to be provided.
56. Provided suitably enforceable consent conditions, based on those recommended by ORC in Appendix 4, are imposed, ORC considers that stability in the satellite pits can be managed appropriately.

C.4.4.3 Land stability beyond pit crest

57. Open pit mine slopes are deliberately designed to be stable for a finite operational life, rather than in perpetuity, in order to minimise waste stripping while maintaining acceptable level of safety during mining.
58. Wall stability in the long term is reliant on residual rock mass strength and block interlocking and is also influenced by groundwater conditions. Stress redistribution over time leads to gradual dilation of joints, opening of existing discontinuities, and reduction in shear strength along structural planes. In the absence of ongoing monitoring and maintenance, localised failures may progressively coalesce.
59. The risk of instability in the open pits (those that are not backfilled) extends beyond the pit crest. Typically, this risk is most prevalent following closure / abandonment of the open pit, once the stringent monitoring / management actions required to ensure the health and safety of in-pit workers are reduced or removed. While the risk of destabilisation from hydrostatic pressures within wall rocks would be somewhat reduced by the presence of a pit lake (as will form in RAS and SRX pits), some risk of destabilisation beyond the pit rim remains. Typically, this risk is mitigated by an exclusion zone around the pit crest whereby public access to this zone is prevented via permanent barriers, such as a bund or a fence.
60. Although POBA notes a zone of 40 m as an approximation, ORC considers that it is necessary and appropriate, from a geotechnical perspective, to determine the exact width of the zone through geotechnical assessment following the completion of mining. ORC recommends consent conditions (in Appendix 4) to this effect (if the Panel is minded to grant the approvals sought).
61. Relatedly, it is important that any destabilisation of ground surface beyond the pit crest doesn't extend onto any land outside the mine, either during active mining or during closure. One of the primary concerns raised by GeoSolve was potential for instability in the RAS pit to destabilise adjacent Public Conservation Land. Typically, a factor of safety (**FoS**) of at least 1.5 under static

loading conditions would be required for land accessible to the public. It was not clear from Report B.28 that this could be achieved on the neighbouring DoC Public Conservation Land.

62. A response to a further information request was provided by POBA and this included some cross sections through this boundary. These indicate that overall final slopes through the boundary are relatively shallow for rock, and it appears that the main plane of weakness (the Thomson Gorge Fault) does not daylight within DoC land. This means that should any instability occur along this feature during mining, DoC land should not be affected.
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.
64. To ensure an appropriate stability outcome for adjacent land is achieved, ORC recommends consent conditions as follows:
 - a) A minimum FoS of 1.5 is maintained under static loading for all ground beyond the project site
 - b) Prior to excavation of any open pit, a geotechnical assessment must be prepared by a suitably qualified and experienced geotechnical engineer to model potential failure surfaces, assess FoS for land outside the site boundary, and identify any mitigation measures or monitoring necessary to maintain the minimum FoS.
65. In summary, ORC is satisfied that any instability or ground deformation that extends beyond the pit crest following closure of the pit can be managed appropriately from a geotechnical perspective via identification of an exclusion zone and installation of a permanent barrier, and through requiring pit design to achieve a FoS of at least 1.5 on all adjacent land. However, the practicalities of maintaining an exclusion barrier in perpetuity should be considered. ORC suggests that this could be managed via a condition placed on the enduring land use consent administered by CODC or managed and secured in perpetuity via a covenant on the relevant title(s) in favour of CODC. This is a new matter that has not previously been raised with the Applicant (or CODC) and thus it has not had an opportunity to consider these issues and respond. ORC would invite the Applicant to address this issue in its s55 response.

C.4.4.4 Conclusions and recommendations

66. The majority of the potential adverse effects of geotechnical instability are likely to be experienced within the open pits. ORC recommends that GCMP are utilised to manage these risks. With respect to the destabilisation of land extending beyond the pit crest, ORC recommends that an exclusion zone be established and permanently demarcated around RAS and SRX pits following closure of those pits. ORC further recommend that minimum FoS be required for all adjacent land, and that a geotechnical assessment be prepared prior to excavation of each pit to ensure that the pit design and mining methodologies deliver this outcome.

67. ORC has recommended preliminary conditions to address the above. Subject to these conditions, or alternative conditions that deliver the same or better outcome in an enforceable manner, ORC is satisfied that the geotechnical instability risk can be managed satisfactorily.

C.4.5 Stability of engineered landforms

68. Geotechnical stability of engineered landforms is assessed in Application Report B.27, which was prepared by Engineering Geology Limited (**EGL**).

69. The un-mineralised waste material from the open pits and a small amount of material from the development of the underground mine will be permanently stored in engineered landforms (**ELFs**).

70. There are four ELFs proposed:

- a) Shepherds ELF (85 Mm³ capacity)
- b) CIT backfill (3.9 Mm³ capacity)
- c) Western ELF (5.2 Mm³ capacity)
- d) SRX ELF (4.2 Mm³ capacity)

71. Shepherds ELF is the largest of the proposed ELFs and will contain the majority of the un-mineralised waste rock excavated from RAS Pit. Shepherds ELF is located immediately downstream of, and will buttress, the Shepherds Tailings Storage Facility (**TSF**).

72. Report B.27 only presents analysis for the Shepherds ELF, and not for any other ELF, on the basis that this is the worst-case from a stability perspective. GeoSolve agree that the Shepherds ELF represents the worst-case scenario.

73. All ELFs will be constructed using the same design philosophy and will remain in place in perpetuity. Final ELF surfaces will be constructed at batters of 3:1 (horizontal: vertical).

74. Preliminary static and seismic stability analyses undertaken by EGL confirm that ELFs constructed in accordance with the design described in Report B.27 will be stable in closure and in a 1 in 2,500-year seismic event.

75. GeoSolve are satisfied that there are no significant issues with the geotechnical stability of the ELF that have not been considered by EGL and, provided the conditions recommended by EGL are imposed, GeoSolve considers that the risk of instability should be minimal.

76. The application contains a management plan specific to ELFs – the Engineered Landform Management Plan (**ELFMP**). This is Application Report G.15.

77. The ELFMP objectives extend more broadly beyond management of geotechnical stability. Aspects of the ELFMP relating to geochemical stability, rehabilitation, ecological, and landscape are discussed elsewhere in these comments.
78. The consent conditions proposed by EGL in Section 15.0 of Application Report B.27 are considered to be appropriate and have already been incorporated into the Applicant's proposed consent condition document D.04.
79. ORC does not have any concerns it wishes to raise relation to the geotechnical stability of the ELFs.

C.4.6 Stability of the Shepherds Tailings Storage Facility

C.4.6.1 Design overview

80. Application Report B.21, prepared by EGL, discusses the proposed design, construction, operation, maintenance and surveillance of the proposed Shepherds TSF.
81. Shepherds TSF will be formed by a 108 m high downstream constructed earth and rockfill embankment dam with a proposed crest at 690 m RL. As the embankment is developed it will be buttressed downstream by the Shepherd ELF.
82. The Shepherds TSF will remain in place in perpetuity. Ensuring that this TSF is designed appropriately – and that it is constructed in accordance with that design – is of fundamental importance. Poor design or poor construction could result in reduced performance, significantly increased management requirements or, ultimately, failure of the TSF, with potentially catastrophic environmental consequences.

C.4.6.2 Design standards

83. The relevant design standards and criteria are set out in section 12.0 of Report B.21. In summary, these are:
- a) The Building Act 2004 (**Building Act**) sets out the minimum design and safety requirements for classifiable dams.² The Applicant states that the design of the TSF will comply with this act.
 - b) The Building (Dam Safety) Regulations 2022 (**Dam Safety Regulations**) deal with the safety of existing dams, and will apply to the Shepherds TSF once it is commissioned. The Applicant states that the TSF will be operated in accordance with these regulations.
 - c) The New Zealand Society for Large Dams (**NZSOLD**) has produced the New Zealand Dam Safety Guidelines (**NZDSG**) which are based on international guidance and represent current

² A classifiable dam to which the Building (Dam Safety) Regulations 2022 apply is a dam with a height of 4 or more metres and which stores 20,000 or more cubic metres volume of water or other fluid.

practice in New Zealand. The Applicant states that TSF will be designed and operated in accordance with the NZDSG.

84. The NZDSG has a dam consequence classification system – the potential impact classification (**PIC**) – that reflects the consequences (but not the likelihood) of dam failure and includes engineering design advice relevant to the hazard posed by the dam. The assessment of PIC aligns with the Building (Dam Safety) Regulations 2022. A high PIC (which is the highest classification) has been used in developing the design standards and criteria for the Shepherds TSF.
85. Report B.21 also states that the design aims to achieve general alignment with the guidance recommendations contained within the Global Industry Standard for Tailings Management (**GISTM**) published by the International Council on Mining and Metals, United Nations Environment Programme and Principles for Responsible Investments in August 2020. The design criteria for flood and earthquake load conditions required by the NZDSG for a High PIC dam equal or exceed the design requirements for a High consequence TSF in the GISTM.
86. In addition to the approvals sought via this fast-track application, the TSF will require a building consent. As the TSF is a High PIC dam, an independent peer review of the detailed design is required to support an application for the Building Consent. Environment Canterbury is the agency responsible for issuing building consents for large dams in Waitaha / Canterbury, Otago, Southland, the West Coast, and Rēkohu Chatham Islands.
87. ORC therefore take some comfort in the fact that the Shepherds TSF will be designed in accordance with legislative requirements and with best practice for large dams in New Zealand.

C.4.6.3 Stability under static and seismic loading

88. As required by NZDSG, EGL has considered two earthquake loading scenarios:
- a) Operational basis earthquake (**OBE**) – taken to be an earthquake with average return period of 150 years
 - b) Safety evaluation earthquake (**SEE**) – taken to be the 10,000-year average return period earthquake. Following the NZDSG, an aftershock one magnitude less than the main rupture is also considered
89. The design achieves the required FoS for all stages of construction and operation.

C.4.6.4 Potential failure modes

90. Report B.21 explains that a potential failure mode is defined as a specific chain of events or set of circumstances that could result in the uncontrolled release of all or part of the contents of a reservoir. The identification and assessment of potential failure modes for a dam is an important part of the design process for dams and is recommended by the NZDSG.

91. The failure modes that are identified are not failures that are expected to occur but are hypothetical failures that could occur if appropriate design, construction, monitoring, and surveillance methods were not followed. By adopting appropriate design and construction methods, the risk of these failures is reduced to a very low and acceptable level.

92. EGL has identified 11 potential failure modes, including those that could occur under normal operation, be initiated by extreme rainfall, or be initiated by seismic events.

a) Potential Failure Modes under Normal Operation

- i. Internal erosion / piping through the embankment due to concentrated seepage (FM1).
- ii. Instability from construction-induced weak layers, either from construction pauses or unsuitable fill materials (FM2, FM3).
- iii. Instability due to rising piezometric pressures within the foundation or embankment (FM4).
- iv. Static liquefaction of tailings leading to instability or large deformations (FM5).
- v. Rising groundwater triggering failure of northern slopes into the impoundment, generating a wave that overtops the dam (FM7).

b) Potential Failure Modes Initiated by Extreme Rainfall

- i. Loss of freeboard and overtopping due to Probable Maximum Precipitation (**PMP**) event, causing erosion of embankment face and potential failure (FM6).³
- ii. Rainfall-triggered failure of northern slopes into the impoundment, generating a wave that overtops the dam (FM7).

c) Potential Failure Modes Initiated by Seismic Events

- i. Seismic-triggered slope failure of northern slopes into the impoundment, generating a wave that overtops the dam (FM7).
- ii. Seismic shaking causing deformation or settlement, potentially resulting in instability or overtopping (FM8, FM9).
- iii. Liquefaction of tailings resulting in instability of the upstream shoulder of the embankment (FM10).
- iv. Seismic-induced differential settlement leading to cracking and internal erosion (FM11).

93. EGL considers that none of these failure modes are credible. GeoSolve agree with this assessment, noting that this is so even without accounting for the significant additional stability

³ PMP represents the greatest depth of precipitation that is meteorologically possible at a specific location, for a given duration, under the most extreme combination of atmospheric conditions considered reasonably possible (for a region).

provided by the Shepherds ELF which has conservatively not been accounted for in the design of the TSF by EGL.

C.4.6.5 Dam Safety Management

94. The Applicant proposes that the following safety management procedures and systems will be implemented as required by legislation and / or New Zealand best practice:
- a) Submission of a PIC assessment, certified by a Recognised Engineer,⁴ to ORC within three months of commissioning the dam, as required by the Building Act;
 - b) A Dam Safety Management System (**DSMS**) as recommended in the NZDSG which will encompass a Dam Safety Assurance Programme (**DSAP**) as required by the Building Act and the Dam Safety Regulations. The DSAP has to be certified by a Recognised Engineer, and provided to the Regional Authority (ORC) for approval;⁵
 - c) An Operations, Surveillance, and Maintenance (**OSM**) Manual as recommended in the NZDSG;
 - d) An annual inspection and assessment of monitoring data and dam safety, termed an Intermediate Dam Safety Review, as required by the Dam Safety Regulations and recommended in the NZDSG; and
 - e) A detailed review every five years of the safety of the dam including design, construction, operation, maintenance, surveillance, and emergency preparedness, termed a Comprehensive Dam Safety Review, as required by the Dam Safety Regulations and recommended in the NZDSG.
95. Where the above-listed reports and plans are requirements of other legislation, ORC does not consider that it is necessary for them to be duplicated into consent conditions via this fast-track process. However, the OSM Manual is an important document that is not otherwise mandatory for the Applicant to prepare and maintain.
96. In Report B.21, EGL states that the OSM Manual will include surveillance requirements for the dam as well as guidance on management of surveillance records, presentation of data, performance evaluation, and reporting. The most important activities in the dam surveillance program are frequent and regular inspections for abnormalities or deterioration in conditions and the recording, collection, analysis and evaluation of monitoring data. The NZDSG recommend that the Manual be prepared ahead of dam construction.
97. Accordingly, ORC recommends a consent condition requiring an OSM Manual to be prepared by a suitably qualified and experienced engineer in accordance with the NZDSG, be peer-reviewed by a suitably qualified and experienced independent engineer, appointed in consultation with ORC, and be submitted to Council no less than one month prior to commencing construction of

⁴ A Recognised Engineer is an engineer who meets the requirements of s149 of the Building Act 2004.

⁵ Approval may only be refused if the Regional Authority is satisfied that the engineer who provided the certificate is not a Recognised Engineer (s143).

the TSF. Requirements for annual reviews and provision of information required by the OSM Manual are included in this condition.

Specific risk - Landslide

98. Landslide potential into the impoundment exists. This is considered in potential failure mode 7 (failure of northern slopes into the impoundment). The landslide movement can be managed through tailings and landslide underdrainage in combination with tailings beaching⁶ against landslides, which together provide a buttressing effect. Specific measures to mitigate the risk of landslides into the reservoir will form part of the Detailed Design stage.
99. Landslide risk mitigation and operational controls will be documented within the DSMS and particularly the OSM.
100. Through the further information process, and in response to queries from ORC, two additional conditions were recommended by EGL in relation to landslide risk:
- a) “The Consent Holder must investigate and identify active or potentially active landslides within the TSF impoundment area and assess landslide risk to the TSF. The findings must be included in the TSF Detailed Design Report.”
 - b) “The Consent Holder must develop and implement a Landslide Monitoring and Management Plan (**LMMP**) as part of the TSF DSMS. The objective of the LMMP is to ensure the landslides are monitored in a way that protects people and the environment, throughout the mine operation, active closure and passive closure phases of the BOGP. This LMMP shall be subject to a peer review by a SQEP as part of the detailed design of the TSF.”
101. On the advice of GeoSolve, the condition in paragraph 100 should be extended to site as a whole, on the basis that landslides may interact with other site infrastructure.
102. ORC accepts these conditions (amended as suggested by GeoSolve) are appropriate and has duly included them in its recommended changes to the conditions proposed by the Applicant in Appendix 4.

C.4.6.6 Conclusions

103. Report B.21 is a comprehensive document which covers all critical aspects of dam design including dam stability (under static and seismic loading), seepage and drainage, flood passage, and assessment of potential failure modes. A substantial level of detail is provided for the dam including a suite of drawings that are close to detailed design standards.

⁶ Beaching refers to the formation of a tailings ‘beach’ within the TSF impoundment. A beach is a dry or semi-dry area of coarser-fraction tailings that forms against the embankment. Finer fractions settle further from the embankment closer to the decant pond.

104. The design includes zoned construction for seepage control, a comprehensive drainage system, and measures to withstand extreme rainfall events and major earthquakes. Consent conditions require at least one metre of freeboard above the maximum flood level to be maintained, and operational water levels will be kept well below the crest.
105. As the embankment is developed it will be buttressed downstream by the Shepherds ELF. This ELF provides a large buttress to the TSF embankment such that there is no credible long-term failure mode that could result in breach and release of tailings.
106. GeoSolve are satisfied that the geotechnical risks associated with the construction of the TSF have been adequately addressed by the Applicant. The key points that support this conclusion are:
- a) A comprehensive report has been prepared by an experienced dam engineer, who ORC understand will prepare the detailed design of the dam. There are significant details already provided for the dam including a suite of drawings that are close to detailed design standards.
 - b) The final design will be subject to a detailed peer review by a second experienced dam engineer.
 - c) The dam will require a DSAP, and compliance to the DSAP will be certified annually by a recognised engineer.
 - d) During construction and implementation, the dam will be subject to regular monitoring and inspection as required by New Zealand legislation.
 - e) The dam will be buttressed by a significant quantity of rockfill, which means that on closure of the mine there is no credible failure mechanism for the dam.
 - f) EGL has not accounted for the additional stability provided by the waste rock buttress in their design, which is conservative.
107. ORC accepts this expert opinion that the Shepherds TSF will be geotechnically resilient and there are no credible long-term failure modes that could result in breach and release of tailings. ORC therefore considers that the risk of the Shepherds TSF failing in a way that could give rise to adverse effects is negligible.

C.4.7 Shepherds silt pond

C.4.7.1 Design and function

108. Application Report B.23, prepared by EGL, discusses the proposed design, construction, operation, maintenance and surveillance of the proposed Shepherds silt pond.
109. The Shepherds silt pond is an engineered dam intended to capture sediment-laden runoff from a 179-ha area of the Shepherds ELF and provide backup process water storage.

110. The design incorporates two spillways. The primary spillway consists of decant tower and outlet pipe, with the decant tower designed to retain sediment and pass a 1 in 10-year AEP rainfall event.
111. The auxiliary spillway allows passage of a 1 in 1,000-year AEP rainfall event and allows for the situation where the primary spillway is blocked and the northern diversion drain has failed, increasing the catchment area from 179 ha to 634 ha.
112. The Shepherds silt pond is classified as a large dam under the Building Act.

C.4.7.2 Stability effects

113. GeoSolve have reviewed the design information and state that Report B.23 is comprehensive, and that they have no concerns relating to the stability of the dam.
114. ORC accepts this expert opinion.

C.4.7.3 Dam PIC

115. A dam breach assessment has been undertaken, and EGL has assessed the Shepherds silt pond as a Low PIC dam. EGL states that the design, construction, operation, maintenance, surveillance and closure will be undertaken in accordance with the NZDSG, the Building Act, and the Dam Safety Regulations. As a Low PIC dam, peer review of the design is not required; however, a detailed design report, specification and drawings will be required.
116. EGL states that Shepherds silt pond will be operated under the site Pond and Water Reservoir Management Plan (Application Report G.17) and have a specific OSM Manual and Emergency Action Plan.
117. GeoSolve have reviewed the EGL assessment and do not agree that the Shepherds silt pond is a low PIC dam.
118. Through a process of requesting and reviewing further information, the position reached by ORC is that it is currently unclear what the PIC for Shepherds silt pond should be:
- a) EGL contend that it is a low PIC dam, but acknowledge that it could be medium or even high PIC if the detailed design of the processing plant, which is located downstream of the silt pond, results in a processing plant arrangement that differs from the indicative design provided for consenting;

- b) GeoSolve state that based on the information currently available the PIC should be medium or high based on the population at risk and potential loss of life assessment items for the Sunny Day Breach Scenario.⁷

119. The difference is not trivial; if the PIC is medium or high there are additional peer-review and ongoing monitoring and management requirements that would apply to the Shepherds silt pond. ORC acknowledges, however, that current uncertainty about the dam PIC does not necessarily render the Shepherds silt pond an unsafe structure.

120. As a large dam, the Shepherds silt pond requires a building consent, and this will require that the PIC is assessed – and the dam is designed to the appropriate standard to manage dam safety risk in design and construction – using the NZDSG. As noted in paragraph 86 above, this process is administered by Environment Canterbury separately from the fast-track process.

121. Further, together under the Dam Safety Regulations and the Building Act the PIC is required to be certified by a Recognised Engineer and this certification must be submitted to ORC within three months of the commissioning of the dam, and thereafter reviewed every five years. Any changes to the PIC during operation and in closure will require the management of risk through a DSAP.

C.4.7.4 Conclusions and recommendations

122. GeoSolve and EGL have not been able to reach a position of agreement with respect to the PIC of the Shepherds silt pond.

123. Resolution of this issue appears to require detailed design information for the processing plant, to understand the increase in ‘population at risk’, potential increase in ‘potential loss of life’, and potential increase in ‘damage level (including to commercial or industrial facilities)’ assessment criteria to reliably inform the PIC.

124. In summary, ORC does not have any residual concerns about the likelihood of instability of the Shepherds silt pond. The current disagreement about the PIC relates solely to the consequences of the failure, not the likelihood. It would be helpful to resolve the PIC matter via this fast-track process; however, if this cannot be done in an efficient manner, or if the required detailed design information is not available at this time, ORC is of the view that this need not delay the process of deciding this application.

125. The Shepherds silt pond is discussed later in this report in the context of the design storm it accommodates via the primary spillway.

⁷ The ‘sunny day breach scenario’ is failure occurring during normal hydrologic conditions i.e. not during a storm event. As there is no triggering storm or flood event there is potentially no advanced warning of failure, and potential consequences are higher to downstream populations. PIC does not give consideration to the likelihood of a sunny day breach, only the consequences.

C.4.8 Geotechnical effects of the Rise and Shine Underground Mine

C.4.8.1 Potential surface-level effects

126. Application Report B.28, prepared by POBA, discusses the development of the proposed RAS underground mine, but only from a mining perspective, i.e. it does not consider the potential external effects of the underground mining, such as mining-induced subsidence.
127. In a response to a request for further information, the Applicant via POBA indicated that it would provide an assessment of possible underground mining-induced subsidence when mining method, stoping extents, pillars, sequence and backfill strategy are defined, and more structural/rock mass data are available. POBA stated that such an assessment would be risk based, aiming to identify potential subsidence mechanisms, and would be undertaken via a hybrid approach of monitoring and modelling. The implication was that this assessment would be undertaken post-consenting.
128. While possibly acceptable from a geotechnical perspective, ORC considers deferring an assessment of potential environmental effects until after consents to be poor process. Thus, ORC requested a preliminary assessment of the potential surface-level effects of the underground mining activity, in particular the potential for mining-induced subsidence to adversely affect land stability, surface watercourses, or mine infrastructure such as the processing plant and TSF.
129. A preliminary subsidence assessment was duly provided by POBA. This is attached as Appendix 10. In summary, this report indicates that while some deformation of the rock mass surrounding underground excavations is inevitable, several factors – which all reflect standard mining practices to avoid stope failure and thus meet health and safety and practical requirements – significantly limit the potential for this deformation to propagate to the surface. These factors are summarised below:
- a) Large depth of cover – any failure mechanism would need to propagate through approximately 250 m of rock. This level of cover typically attenuates deformation;
 - b) Progressive mining and backfilling – Stopes will be mined sequentially and backfilled with cement paste as soon as practicable after extraction. Progressive mining significantly reduces the likelihood of developing continuous voids that could initiate extensive caving;
 - c) Development of arching – stable compressive arches above the mined Panel are a principal control on stability;
 - d) Bulking and choking of caved material – if a localised break of the hanging wall occurs the fragmented rock will progressively fill void space, choking the void and preventing upward progression of the failure mechanism;
 - e) Cement backfill support – cemented paste backfill provides structural support to the hanging wall; and
 - f) Timing of backfilling – minimisation of the delay between stoping and backfilling to limit relaxation and overbreak of ground over and around the void.

130. In this preliminary assessment, a screening-level assessment using empirical methods was employed to define a potential zone of surface disturbance within which subsidence could theoretically occur. This zone overlaps substantially with the RAS pit but does not overlap with the Shepherds ELF or TSF. Consequently:

- a) due to the proximity of the up-dip stopes to the RAS open pit wall, the most credible deformation pathway and surface disturbance is the walls in the northeastern sector of RAS pit;
- b) dedicated pit wall monitoring and trigger-action management plans (**TARPs**) must be incorporated into the GCMP for the RAS underground. The proximity of the open pit to stoping does not materially increase the likelihood of catastrophic wall collapse;
- c) surface water flow between the north-eastern crest of the pit and the toe of the ELF feeds naturally into Shepherds Creek. Disturbance due to subsidence of the north-eastern RAS pit wall, if it occurred, could divert flow into the pit. POBA expect that a bund would be constructed around the periphery of the pit crest and that such a bund would continue to direct surface flows towards the creek; and
- d) subsidence, if expressed at the surface, is not expected to impact the TSF or the main body of the Shepherds ELF.

131. POBA's overall view is that there is no credible risk of extensive surface deformation.

132. Further investigation and analysis, including in situ stress measurement and numerical modelling of mining sequences are required to refine this preliminary assessment. Modelling is critical to improving prediction of overbreak extent and assessment of potential for surface subsidence.

C.4.8.2 Peer-review assessment

133. GeoSolve considers that the POBA assessment provides an indication of the likely nature and magnitude of surface level effects that is appropriate for this stage of the project. The empirical methods utilised in the assessment are likely to be conservative. GeoSolve recommends a consent condition requiring preparation of a Subsidence Assessment Report prior to the commencement of any underground mining activities.

C.4.8.3 Conclusions and recommendations

134. In summary, ORC considers that the RAS underground mine:

- a) will not result in subsidence leading to significant surface deformation;
- b) is more likely to result in deformation of the northeastern RAS pit wall than at the natural ground surface;
- c) will not impact the Shepherds ELF or TSF;
- d) may alter surface runoff patterns such that water could flow into RAS pit, but this could be mitigated by bunding; and

- e) further investigation, analysis, and modelling is required to refine this preliminary assessment. This would inform the Subsidence Assessment Report which is recommended in consent conditions.

135. Subject to the imposition of the recommended consent conditions, ORC is satisfied that potential adverse effects from mining-induced subsidence are low and acceptable.

SECTION C.5 – NATURAL HAZARD EFFECTS

136. ‘Natural hazard’ is defined in the RMA as any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding), the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment.

137. This proposal does not constitute a natural hazard, but it is noted that mining activities can potentially exacerbate natural hazard risks. Mining activities can also be affected by natural hazards.

138. The proposed activities will not impact on any rivers managed or monitored by the ORC Engineering or Natural Hazards teams.

C.5.1 Information received and assessed; advice received

139. Please refer to Section C.4.2 for a list of information received and to and Section C.4.3 for a list of advice received.

140. The below assessment has been informed by the expert opinions of Messrs Macdiarmid and Williman.

C.5.2 Natural hazards that may affect mining activities

141. The impact of natural hazards on individual mining features is discussed in Section C.4 above. A brief summary of the two most relevant natural hazards is provided below.

C.5.2.1 Seismicity

142. EGL has provided in Application Report B.20 a site-specific seismic hazard assessment for the site, which provides recommendations in relation to seismic loading to be used for design of the various infrastructure proposed. This assessment uses the 2022 National Seismic Hazard model and appears to be in line with current good practice.

143. The stability of various mining structures and features under appropriate earthquake scenarios is addressed in section C.4 above. Seismic hazard is not anticipated to result in any significant stability effects for any mining component / infrastructure.

C.5.2.2 Landslides

144. There are a number of landslides within the site boundaries. These are clearly visible on site and have been identified by EGL as part of its factual reporting.
145. These landslides are generally quite ancient and are unlikely to have undergone any recent movement. Landslides are common in schist terrain due to the foliation present within that rock type which leads to highly anisotropic behaviour (exhibiting different properties, such as strength, when measured in different directions), with significantly lower strengths being observed within the schist parallel to the foliation. These landslides are typically triggered when the toes of a slope are subject to erosion.
146. The main risk associated with the mine development would be if any of the proposed pits were to further undermine the toe of one of these landslides, which could trigger movement. There are two mapped landslides that coincide with the RAS pit. It appears that a significant portion of these landslides will be excavated out as part of the mining and therefore the presence of the landslides is something that will need to be considered during initial excavation works. As the landslides are entirely within the mining site, there will be no external effects.
147. The portal for the underground mining will be constructed at the toe of an ancient schist landslide. The excavation of the portal has the potential to reduce the stability of the landslide, although this may be offset by placement of the spoil within the valley; hence, the overall impact may be neutral. As part of the detailed design of the portal this issue should be considered. The stability of various mining structures and features that interact with existing ancient landslides is addressed in section C.4 above. Landslide hazard is not anticipated to result in any significant stability effects for any mining component / infrastructure.

C.5.3 Mining activities that may affect natural hazard risk

C.5.3.1 Introduction

148. To accommodate the mining activity, the application proposes that a network of water management perimeters will be established to intercept and manage creek flows, stormwater, surface runoff water, and shallow groundwater on the site. Some of these will be temporary diversion channels which will be disestablished when active mining ceases, while others will be rehabilitated and remain as permanent stream diversions. Temporary and permanent sediment management features such as silt ponds, sumps, and sediment retention ponds will also be established.
149. Appropriate sizing and maintenance of these water and sediment management features / devices is a critical factor in preventing erosion, scour, aggradation, and flooding and consequential instability, water quality, and aquatic ecological effects.

150. The application contains a thorough design report for the Rise and Shine Diversion Channel, but equivalent information is not provided for other diversion channels or sediment management devices. This is discussed below.

C.5.3.2 Rise and Shine Creek diversion channel

151. The RAS pit will intercept the Rise and Shine Creek. An engineered diversion channel will be constructed to:

- a) maintain the baseflow in RAS Creek; and
- b) minimise flood waters entering the RAS Pit. This has three purposes: minimising the mixing of RAS catchment water with Shepherds catchment water, maintaining a water balance deficit for the operation, and reducing impacts on RAS open pit wall stability.

152. The application contains a standalone report for this diversion channel – Report B.24 *Rise and Shine Creek Diversion Technical Report*, by EGL. This report contains an ‘options assessment’ for the management of Rise and Shine Creek flows where they are intersected by the RAS pit. In this report the diversion channel is referred to as ‘Option 2’. Option 1 has been disregarded by the Applicant since Report B.24 was written and is therefore not discussed any further here.

153. EGL proposes an open channel with a design depth of between 1.6 m and 1.8 m, depending on whether the channel will be concrete lined or riprap lined. The channel would divert the Rise and Shine Creek water around the pit bench at 700 m RL. The channel would allow passage of water at a maximum flow rate of 22 m³/s, which is equivalent to the predicted peak flow in a 1 in 100-year AEP event. Flows exceeding 1 in 100-year events would spill into RAS pit.

154. GeoSolve considers that the sizing of the diversion channel is appropriate. On the advice of GeoSolve, ORC recommends that the riprap lined option is progressed in preference to the concrete lined channel as this is likely to reduce (but not eliminate) post-closure monitoring and maintenance requirements.

155. It is noted that EGL has stated ‘a smaller channel with higher flows is likely to be achievable following detailed design’. Due to the relatively conservative hydrological calculations (predicting comparatively higher flood flows) appearing to balance out the relatively un-conservative hydraulic calculations (predicting comparatively shallow flow depth), ORC recommends that a smaller channel is not implemented at detailed design.

C.5.3.3 Other diversion channels and sediment management features

156. The permanent diversion of Shepherds Creek into an engineered diversion channel, and the various other temporary and permanent diversions within this catchment, are a key part of the application. These enable the permanent infilling of the Shepherds Valley, the development of the Shepherd Service Corridor, the siting of the processing plant, and the establishment of the Shepherds ELF and the TSF.

157. Despite the significance of the diversions in this catchment, the application does not contain a detailed description of the design of any of the proposed diversions i.e. there is no equivalent to the Rise and Shine Diversion Channel Report B.24. Also noted is the absence of any design information for the SRX diversions, located higher up in the Rise and Shine catchment.
158. To provide confidence that these diversions can and will be designed and constructed appropriately, ORC requested further information from the Applicant in relation to:
- a) Channel diversion / realignment path design details
 - b) Engineering drawings
 - c) Channel lengths, gradients and alignments
 - d) Proposed construction methodology
 - e) Erosion control or armouring details specific to the channel
 - f) Hydraulics / flood design calculations to support channel sizing
159. ORC also requested justification for the proposed sizing of the Shepherds silt pond.
160. The Applicant responded (via EGL) by providing some of this design information for the diversion channels on the northern side of Shepherds Valley.
161. A series of back-and-forth requests and responses ensued. Despite best intentions, this process did not result in the provision of adequate design information for any of the diversion channels or sediment retention devices, nor adequate assessment of any potential adverse effects stemming from the design choices. The information provided by the Applicant was helpful but incomplete, and caused some confusion for ORC due to the inconsistent descriptors used for the various diversion channels on site (compared with Map C.36 and Report B.26). For its part, ORC acknowledges that the questions it asked of the Applicant perhaps unduly focused on diversions on the northern side of Shepherds Valley, losing track of some of the key issues initially raised by GeoSolve.
162. ORC does not consider that these are irreconcilable differences; rather, time constraints simply did not allow these matters to be resolved fully.
163. ORC would invite the Applicant to provide the following information via its s55 response to s53 comments:
- a) For every proposed diversion channel in Shepherds Creek catchment or Rise and Shine Creek catchment (except the Rise and Shine Diversion Channel discussed in Report B.24) that will be onsite for two years or more:
 - i. channel diversion / realignment path design details
 - ii. engineering drawings
 - iii. channel lengths, gradients and alignments

- iv. proposed construction methodology
 - v. erosion control or armouring details specific to the channel
 - vi. hydraulics / flood design calculations to support channel sizing
- b) For each sediment management device (e.g. sediment retention pond, silt pond, sump) in Shepherds catchment or Rise and Shine Creek catchment that will be onsite for two years or more:
- i. Justification for the rainfall event used in the design of the device
- c) For every diversion channel and sediment management device, where the selected design size allows for / anticipates uncontrolled overtopping during a storm event of a given magnitude, an assessment of the frequency of overtopping and the potential adverse effects from (and potential mitigation options for):
- i. Erosion and scour
 - ii. Aggradation and reduction in diversion channel capacity
 - iii. Channel re-routing
 - iv. Potential for seepage to daylight further downslope when channels are cut into rock fill, and consequential scour / erosion / instability
- d) For every temporary diversion channel, the consequences of disestablishing the diversions. For example, the potential consequences of introducing variable gully flows to the surface of the TSF, which is an artificial flat surface.
- e) The response should provide a figure or figures that clearly identify a single name for each diversion channel or sediment retention device and consistently use those names throughout the response. This is required because the application information that has been produced by different authors, or by the same authors at different times, is inconsistent in its naming of the various diversion channels throughout the site. For example, Report B.26 is internally inconsistent, as well as being inconsistent with Map C.36, Report B.18,⁸ and with responses to further information provided by EGL.
164. If not provided in its s55 response, ORC recommends that the Panel request this information from the Applicant directly.
165. ORC is willing to participate in any conferencing (or similar process, as may be directed by the Panel) as needed to minimise or eliminate points of disagreement relating to these issues.
166. As a reference point for the Applicant's response, ORC's current position – based on the advice of GeoSolve – is that:

⁸ B18 is Boffa Miskell's *Assessment of Freshwater Ecological Effects*

- a) any erosion and sediment control measure that is to exist for the operational life of the mine should be sized to a 20-year ARI (5% AEP) storm unless appropriate scour mitigation cannot be established downslope of the erosion or sediment control measure in which case a 50-year ARI (2% AEP) is appropriate; and
- b) any permanent erosion and sediment control measure should be designed to a 100-year ARI (1% AEP) storm.

C.5.3.4 Conclusions and recommendations

167. The sizing of diversion channels and sediment management features / devices is an important matter that warrants further discussion between experts. This is because of the potential flow-on implications of inappropriate sizing, primarily for water quality but also for stability of infrastructure and continuity of mining. With the exception of the Rise and Shine Diversion Channel, this information has not been provided.

168. Given the amount of information outstanding, ORC reserves its position on consent conditions, other than to advise that it considers the conditions currently proposed by the Applicant to be entirely inadequate. Excepting Condition 31 in document D.04 (which deals with a single diversion channel on the northern margins of the TSF), the conditions, as proposed, do not address any aspect of any diversion channel design, construction, operation, or maintenance. D.04 contains a small number of conditions that address some aspects of the Shepherds silt pond design. No other sediment management devices are discussed. No consideration appears to be given (in conditions) to the different purposes of the permanent diversion channels throughout the life of the consent; namely, the channels function as erosion and sediment control devices (clean / dirty water channels, respectively) during active mining operations, but transition to functioning aquatic ecosystems following cessation of mining. The risk of incompatible consent conditions is high if the differing demands placed on the same diversion channels during the different mining phases is not explicitly accommodated.

169. ORC considers this to be an important matter to be worked through. As above, ORC and its expert advisors are willing to participate in any conferencing (or similar process, as may be directed by the Panel) as needed to develop appropriate consent conditions.

SECTION C.6 – WATER-RELATED EFFECTS

170. This section of ‘water-related effects’ presents a series of topics that are intrinsically linked. It is neither feasible nor appropriate to manage groundwater and surface water as discrete or disconnected features at this site; hence, these assessments are presented together so that effects are understood and management of effects is efficient and cognisant of flow-on impacts.

171. The topics covered in this section are:

- a) Geochemistry effects
- b) Hydrological and hydrogeological effects

- c) Groundwater quality effects
- d) Surface water quality effects
- e) Aquatic ecological effects

C.6.1 Information received and assessed

172. The following application documents are of relevance to this assessment:

- a) Application Report B.02
- b) Application Report B.03
- c) Application Report B.04
- d) Application Report B.05
- e) Application Report B.06
- f) Application Report B.06A
- g) Application Report B.06B
- h) Application Report B.07
- i) Application Report B.17
- j) Application Report B.18
- k) Application Report B.41
- l) Application Report B.42
- m) Application Report B.43
- n) C-series maps
- o) Proposed conditions D.02
- p) Proposed conditions D.03
- q) Proposed conditions D.04
- r) Management Plan G.01
- s) Management Plan G.13
- t) Management Plan G.14
- u) Management Plan G.15
- v) Management Plan G.16
- w) Management Plan G.17
- x) Management Plan G.20

173. In addition to the updated application material provided by the Applicant under cover of a Mitchell Daysh memorandum dated 10 March 2026, the information listed below has been provided directly to ORC by the Applicant:

- a) **Appendix 11:** Kōmanawa Solutions Limited Memorandum: Responses to ORC Technical Review in terms of the Fast-Track Approvals Act and RMA, dated 30 January 2026
- b) **Appendix 12:** Greg Ryder Consulting: ORC Request for Further Information – Matakanui Gold Limited fast-track application for the Bendigo-Ophir Gold Project, dated 27 January 2026
- c) **Appendix 13:** Santana Minerals Limited Memorandum: ORC Request for Further Information, dated 30 January 2026

- d) **Appendix 14:** Boffa Miskell Memorandum: Bendigo Ophir Gold Project: Assessment of freshwater ecological effects, dated 30 January 2026
- e) **Appendix 15:** Hydrogeochem Group Memorandum: BOGP MWSF Seepage Risk Assessment, dated 5 March 2026
- f) **Appendix 16:** Boffa Miskell Memorandum: Bendigo Ophir Gold Project: Assessment of freshwater ecological effects, dated 16 March 2026
- g) **Appendix 17:** Kōmanawa Solutions Limited Memorandum: Instituting Water Quality Monitoring of Lindis River and Bendigo Creek, dated 11 March 2026
- h) **Appendix 18:** Kōmanawa Solutions Limited Memorandum: Instituting an Alluvium – Weathered Rock Depth Drillhole Fence at SC-01 Monitoring Site, dated 11 March 2026
- i) **Appendix 19:** Record of actions and responses: Water workshop held 24-25 February, undated, provided to ORC on 19 March 2026
- j) **Appendix 30:** Mitchell Daysh Memorandum: Further Information Response Part 1 (planning) – Bendigo-Ophir Gold Project Fast-track Application, dated 5 February 2026

174. For transparency and to assist the Panel, the above listed information is attached to these comments as Appendices 10-19, and 30.

C.6.2 Advice received

175. ORC sought expert advice from:

- a) e3 Scientific Limited (**e3**) in relation to the water modelling and potential hydrological, hydrogeological, geochemical, and groundwater quality effects of the proposal; and
- b) Torlesse Environmental Limited (**Torlesse**) in relation to surface water quality and aquatic ecological effects of the proposal.

176. This advice was provided by:

- a) Alexandra Badenhop – Technical Director – Water & Environmental Management
- b) Dr Michael Greer – Principal Scientist, Director

177. The following peer-review reports have been provided by e3 and Torlesse to ORC:

- a) **Appendix 38:** e3 Scientific Technical Review: Fast-Track Bendigo Ophir Mine, dated 20 March 2026
- b) **Appendix 39:** Torlesse Environmental Ltd Technical Review: Matakanui Gold Limited (the Applicant) substantive fast-track approval application for the Bendigo-Ophir Gold Project: Technical review on freshwater matters, dated 3 December 2025
- c) **Appendix 40:** Torlesse Environmental Ltd Technical Review: Matakanui Gold Limited (the Applicant) substantive fast-track approval application for the Bendigo-Ophir Gold Project: Update to technical review on freshwater matters, dated 16 March 2026

178. These are attached to these comments as Appendices 38-40. These peer-review reports were provided to the Applicant promptly following their dates of preparation.

179. The below assessments are informed by the expert opinions of Ms Badenhop and Dr Greer.

C.6.3 Geochemistry effects

C.6.3.1 What is mine-impacted water

180. Large scale mining results in the mobilisation of naturally occurring metals and other substances from the rock mass, giving rise to impacts on water quality. Acid and metalliferous drainage (**AMD**) is a general term used to describe waters that are chemically impacted by mining activities, and which can contain significant quantities of toxic metals, salts, and acidity.

181. AMD is typically generated by the excavation of rocks that contain sulphide minerals such as pyrite. When these minerals are exposed to oxygen and water, they undergo weathering processes and oxidise, generating acidity and releasing toxic metals. Once acidity and metals are generated, they can then be mobilised by any water sources, including rainfall, surface runoff water, water from dust suppression, or processing water. AMD waters can be categorised into three general types depending on their pH and the concentration of sulphate and metals.

- a) Acid rock drainage – has high acidity, low pH, and has occurred due to the oxidation of acid-producing sulphide minerals. Acid rock drainage generally contains significant concentrations of dissolved toxic metals.
- b) Neutral metalliferous drainage – the acid produced by the oxidation of sulphide material has been neutralised by other minerals such as carbonates, with resultant waters having high toxic metal concentrations but circum-neutral pH.
- c) Saline drainage – waters close to neutral-to-alkaline in pH with elevated sulphate.

182. At this site, all materials are classified as non-acid forming, with circum-neutral pH drainage expected from mine components that contain the materials. Acid rock drainage is not expected. The waste rock does have the potential to generate neutral metalliferous drainage (**NMD**) that may have elevated levels of contaminants such as arsenic, sulphate, and trace metals.

183. MWM have undertaken various tests to identify the geochemical hazards and key contaminants of concern for this site. This is contained in Application Report B.06A Appendix F Geoenvironmental Hazards Factual Report. MWM recommend monitoring for a suite of contaminants including metals, sulphates, and nitrogenous compounds, and this is reflected in the Applicant's proposed consent conditions.

C.6.3.2 What are the main sources of MIW

184. The proposed mining activities are expected to impact water within the project site. These effects will include:

- a) Elevated TSS in surface waters
- b) NMD that may have elevated concentrations of metals and sulphate
- c) Nitrate-rich drainage, which may also include ammoniacal nitrogen, due to the use of ammonium nitrate fuel oil (**ANFO**) explosives and cyanide (in gold recovery)

185. Collectively, these impacted waters are termed mine impacted waters (**MIW**). Pathways for MIW to enter the receiving environment and generate adverse effects include:

- a) surface runoff (for example from ELF's or soil / rock stockpiles) – with adverse effects primarily relating to sediment; and
- b) seepage to groundwater (for example through the base and toe of ELF's and the Shepherds TSF) – with adverse effects primarily relating to NMD and nitrate-rich drainage.

186. The ELF's are expected to have the largest impact on water quality. This is because they will contain very large volumes of waste rock, which is a source of NMD and nitrate-rich drainage (these combined drainage waters are hereafter termed '**seepage**'). The largest impacts are expected to be observed in the Shepherds Creek catchment, as this catchment houses both the Shepherds ELF (which is by far the largest ELF), the Shepherds TSF (which will also contribute significantly to mine-impacted seepage waters), and the Shepherds Valley infill (which is essentially a flat-topped, capped ELF).

187. The remainder of this section focuses on the proposed management of waters impacted by NMD and nitrate-rich drainage i.e. seepage. The management of sediment-laden waters is discussed in sections C.5 and C.6.6.

C.6.3.3 Factors that influence the quality and quantity of seepage that is generated

188. Oxidation of sulphide minerals within waste rock materials when exposed to atmospheric oxygen and the subsequent mobilisation of sulphates and trace metals by water results in seepage from the toe of mine waste features such as ELF's. The minimisation of oxygen and water ingress into ELF's is therefore a critical management requirement. Collectively these are termed 'source control methods' because they seek to minimise the causes of seepage at their source.

Oxygen ingress

189. A series of construction controls are proposed to minimise oxygen advection, including limiting tip heights in the bulk fill zones, truck compaction of the outer fill zone, layer thickness near the surface of the ELF, and design of underdrainage pipe outlets to prevent oxygen advection.⁹ These methods are partially adopted in the Applicant's proposed consent conditions. ORC recommends some modifications to these conditions to more comprehensively

⁹ Report B.27 EGL report *Shepherds, Western, and SREX Engineered Landforms, and Come in Time Backfill Technical Report*

require these controls to be implemented and has included these as tracked changes in Document D.04.

190. The ELFMP outlines the construction methods and performance monitoring activities in relation to the various proposed ELFs. ORC considers that the ELFMP covers a suitable range of topics in relation to construction and management of the ELFs but uses inappropriately non-committal language which undersells the importance of the specific construction methodologies and performance monitoring activities and does not allow for clear and non-negotiable outcomes to be set in relation to oxygen ingress.
191. ORC recommends that a performance standard for oxygen ingress be included within consent conditions to reflect the critical importance of this source control method. ORC suggests that this be based on the recommendations of MWM and require that oxygen is reduced to < 5% within maximum of 20 m (horizontally) inwards from the surface of the ELF and that the oxygen profiles (from oxygen probe monitoring) demonstrate that oxygen ingress is diffusion controlled. This is also recommended in changes to D.04.

Water ingress

192. Seepage is generated from water (primarily rainfall) infiltration into waste storage facilities such as the ELFs. The percentage of rainfall that percolates (moves through a porous structure) through the ELF is termed 'net percolation'. Lower percolation corresponds to reduced mobilisation of contaminants, and therefore lower quantities of contaminants seeping from the base and toe of the ELF to potentially enter groundwater.
193. Net percolation can be reduced through judicious design and implementation of a cover system for the ELFs. A cover system is the layer of material (rock and soil) that will be placed over the top of the waste rock stored in the ELF.
194. MWM has assessed the expected performance of the proposed cover system¹⁰ – which is 0.3 m of moderately weathered mine rock (brown rock) and then 0.2 m of topsoil/subsoil – with respect to anticipated net percolation. During operations, when the ELF is exposed i.e. not covered, the net percolation is expected to range from 60-80 % (of annual rainfall). After mine operations cease and the ELF is covered as proposed, MWM estimates that the cover system will achieve a net percolation performance of 30-50%.
195. Importantly, despite the estimated net percolation of 30-50%, MWM assumes a net percolation of 20% for all rehabilitated ELFs (and the TSF) in the water load and balance modelling it has undertaken to inform the water quality impacts of the mine. The predictions of this modelling have also informed the proposed water quality compliance limits (and the site water balance, discussed later in Section C.6.4.6). If this percolation rate is not achieved, it is

¹⁰ Proposed by EGL in B.27 Shepherds, Western, an SREX Engineered Landforms and Come in Time Backfill Technical Report

likely that there will be early development of a water surplus condition, capacity issues with the water treatment plant, and an increased risk of untreated or inadequately treated waters being discharged from site. Furthermore, a longer active treatment phase may be needed.

196. To support this assumption, MWM references data from Macraes Mine which indicate that a net percolation of 10-20% could be achieved with a different cover system design, such as thicker layers or a lower-permeability layer at the base of the cover. However, MWM notes that more work and site-specific trials are required to understand whether this is achievable at this site.
197. Based on the information provided ORC does not consider this to be a conservative assumption. No evidence has been provided to demonstrate that a 20% net percolation is achievable with the specific rock and soils available on this site.
198. MWM recommends that comprehensive cover system trials be undertaken within the first few years of operations. ORC understands that the Applicant has adopted this recommendation,¹¹ but this intent has not been captured in consent conditions, nor is it discussed in the ELFMP.
199. ORC considers it critical that these trials are undertaken as soon as appropriate types and quantities of rock / soil become available so that:
- a) there can be confidence that 20% net percolation is achievable with site materials and / or
 - b) the water treatment plant design (which is also the subject of trials, see Section C.6.3.4) is designed with sufficient capacity to treat the volume and contaminant profile of the seepage waters.
200. ORC recommends that these cover system trials be explicitly required by conditions (if and to the extent that they cannot be conducted sooner than that) and that commencement of these trials be time-bound i.e. not left to the discretion of the consent holder through use of terms such as 'as soon as possible / practicable'. A suggested framework for such a condition is provided in Appendix 4.
201. ORC emphasises the importance of these trials because the ELFs are expected to be the biggest contributor of mine-impacted seepage waters on the site, and if the assumed net percolation performance cannot be achieved there are potentially significant flow-on consequences for water management at the site, including:
- a) the amount of seepage water needing to be contained on site; and
 - b) the feasibility and timing of any active water treatment system.
202. These matters are discussed in detail later in this section.

¹¹ Report A.13 Assessment of Environmental Effects, page 302

C.6.3.4 How will MIW be managed on site

203. Seepage waters have significantly elevated concentrations of sulphates, metals, and nitrates, and are not suitable to discharge into the environment with treatment.
204. During the operational phase (from start-up until active closure) all seepage waters will be retained on site for reuse or storage and will not be discharged into the environment. The only discharge of impacted water from the site during the operational phase would be runoff from haul roads and ELF surfaces and the infrastructure area. Seepage containment is discussed further below.
205. During active and passive closure phases, seepage from ELFs and the TSF, along with mine-impacted pit void water will be collected and treated prior to discharge. Treatment would be with an active water treatment plant (to be located in the Shepherds Creek catchment), until contaminant loads have reduced such that passive treatment can be utilised to meet water quality objectives. Water treatment is discussed further below.
206. After mine closure, MIW would drain via gravity to the water treatment plant from the TSF, Shepherds and Western ELFs, underground mine workings, and CIT backfill.
207. SRX pit water includes seepage from the SRX ELF and will have partial passive treatment prior to discharging into Rise and Shine Creek.

Seepage containment

208. To prevent mine impacted seepage waters being discharged from site in an uncontrolled manner, seepage from any mine waste storage facility needs to be intercepted and directed to the processing plant for reuse or to the TSF for storage. To achieve this, the design of the Shepherds and Western ELFs, the Shepherds TSF, and the Shepherds Valley Fill will incorporate seepage collection infrastructure.
209. Primary seepage collection elements vary for each of these waste storage facilities, but would collectively include:
- a) Underdrains
 - b) Low permeability toe bunds (to 'dam' seepage within the rock mass)
 - c) Chimney drains
 - d) Cutoff drains
 - e) Perimeter drains
 - f) Pipes and sumps
210. These are termed primary seepage collection systems to indicate that they are part of the design of the waste storage facility, and to differentiate them from secondary or contingency

seepage collection systems that could be implemented in the future if required to intercept seepage bypass of the primary systems.

211. As discussed in Appendix 15, the hydrogeological conditions underlying the mine waste facilities are favourable for high proportions of seepage collection by these primary systems. Only a minor proportion of seepage is expected to bypass collection systems in the valley.
212. Seepage that is not captured in primary systems could move through the underlying unconsolidated alluvium or the consolidated weathered schist. The Water Management Plan (**WMP**) describes a quarterly groundwater performance monitoring programme that includes monitoring wells sited in locations likely to detect seepage that has bypassed collection systems. This monitoring programme is not included within the Applicant's proposed consent conditions. It is ORC's preference that performance monitoring requirements are specified in consent conditions to reflect the critical role they play in the effects management process.
213. Following the February water workshops, the Applicant proposed to install a 'fence' of nested piezometers (across five drill holes) in the Shepherds valley, downstream of SC01, to provide further confidence that any uncaptured seepage would be detected before it migrated further down Shepherds valley. This is detailed in Appendix 18. ORC recommends that this site is added to the groundwater performance monitoring in the WMP and also secured by consent conditions.
214. Additionally following the workshops, the Applicant has agreed to prepare a consent condition which would require the installation of secondary / contingency seepage collection systems in the event that monitoring shows seepage bypass of primary systems to an extent that could result in offsite adverse effects. These measures could include, but are not necessarily limited to:
- a) Shallow rock filled interception drains (<5 m deep) to intercept near surface pathways
 - b) Interception wells to intercept deeper groundwater pathways
 - c) Lower permeability cut off walls to enhance hydraulic control of seepage interception.
215. Long groundwater travel times will ensure that these solutions can be installed before contaminants would migrate offsite and into downgradient groundwater.¹²
216. The Applicant has confirmed that they will commission contaminant transport modelling studies to support the detailed design of the ELFs and the TSF, to validate the predicted contaminant transport times, and to ensure that the most appropriate seepage collection elements are ultimately installed. ORC considers this to be appropriate and recommends that a consent condition captures this.

¹² HGG BOGP MWSF Seepage Risk Assessment, dated 5 March 2026, Table 3

217. In summary, the geological and topographical setting of the Shepherds ELF and TSF in conjunction with the seepage collection and management proposed are conducive to maximising capture of seepage. With the addition of the groundwater monitoring 'fence' the likelihood of uncaptured seepage escaping detection is low. Further, should seepage bypass be detected, there are engineering options available to detain and treat contaminated groundwater prior to adverse effects manifesting in the downgradient / downstream groundwater or surface water environment.

Active water treatment plant

218. Following cessation of active mining, seepage waters would drain from the TSF, Shepherds and Western ELF, underground mine workings, and the CIT backfill via gravity to a proposed active water treatment plant (**WTP**) which is proposed to be located within the Shepherds Valley Fill area in or around the processing plant footprint. Treatment is required for nitrogenous compounds, sulphate, metals and metalloids, and cyanide.

219. Active water treatment is an engineered, controllable process, typically requiring a continual source of power to effect various chemical and mechanical processes such as dosing, precipitating, or mixing. It is expected that active water treatment will be required for a period of at least 50 years, before transitioning to a passive water treatment process.

220. The application contains an order of magnitude study (Report B.41) to inform the likely water treatment processes necessary to achieve the proposed water quality compliance standards for groundwater and surface water. This study is a literature review of known water treatment process technologies primarily for the treatment of sulphate and metals.

221. This report suggests a preliminary-level process design for the purpose of selecting plant options. The preliminary process design indicates that an active WTP would likely consist of the following processes:

- a) Surge sump
- b) Pontoon mounted pumps for plant feed
- c) Metal hydroxide precipitation and settling
- d) Gypsum precipitation and settling
- e) Ettringite precipitation and settling
- f) Carbonation and pH trimming
- g) Treated water sump
- h) Sludge management

222. The following processes are also likely to be needed in addition to the active WTP:

- a) Cyanide destruct on the Shepherds TSF influent stream; and
- b) Potential additional nitrate removal after WTP via biological processes.

223. The importance of the proposed active water treatment should not be underestimated; the Applicant's modelling and assessments confirm that appropriate water quality outcomes cannot be achieved without treatment. While the order of magnitude study presented in B.41 makes a recommendation as to a suitable process, based on a literature view, ORC considers that a study of this type provides little certainty that water quality objectives can be achieved in practice.
224. Report B.41 strongly recommends that detailed testing of actual BOGP water quality be undertaken. It is recommended that this testing simulate each of the required precipitation steps which would give real data to input into the design, provide certainty that the treatment process will be effective, and assurance that the WTP can accommodate the flows and quality of water needing to be treated.
225. ORC has not identified in the Applicant's proposed consent conditions any condition that requires testing or trials to be undertaken, nor any conditions that apply to the detailed design, construction, operation, performance monitoring, or ongoing maintenance requirements for the active WTP. ORC considers this to be a significant omission and has suggested a framework of conditions in Appendix 2. This includes a requirement to undertake bench trials, pilot trials at the site, and operational trials.
226. ORC has not engaged an expert to review the feasibility of a proposed active water treatment plant to achieve the proposed surface water compliance standards. This is largely because there is no specific plant to review the performance of, nor is there site-specific mine-impacted water sample information available as an input. ORC has instead focussed on the suitability of the proposed water quality limits for groundwater and surface water, and the extent to which they align with relevant guidelines and are protective of human and ecological health. This is discussed in Section C.6.5 and Section 3.6.6.

Passive water treatment

227. ORC understands (from Appendix 30) that in the Rise and Shine Creek catchment partial passive water treatment is also required to treat SRX Pit Lake overflow (before it discharges to the Rise and Shine Creek) to ensure water quality objectives are met in the downstream receiving waters.
228. Passive water treatment systems are biological and / or chemical processes that do not require regular human intervention or maintenance and should operate with low to no electrical power.
229. ORC understands that the likely location for any passive treatment system is within the SRX Pit (i.e. outside the bed of Rise and Shine Creek).

230. MWM in B.06C Appendix M states that additional studies / works will need to be undertaken to confirm the final passive treatment system details, but anticipates that a system could include:
- a) Sediment management to mitigate any residue sediment and prevent the passive treatment system from being overwhelmed with sediment.
 - b) Oxidation to encourage Iron(III) oxide-hydroxide precipitation and adsorption of metals such as arsenic and vanadium.
 - c) Anaerobic treatment to remove nitrate, reduce sulphate concentrations, and precipitate metals as sulphides.
 - d) A polishing pond to remove secondary contaminants generated in the anaerobic treatment stage (e.g., sulphide, ammoniacal nitrogen, and low dissolved oxygen).
231. ORC is not sure if this potential system is proposed for SRX or for the eventual transition from active water treatment to passive treatment in the Shepherds Valley, or both.

C.6.3.5 Geochemistry conclusions

232. The following key points are noted:
- a) The oxidation of sulphide minerals within waste rock materials when exposed to atmospheric oxygen and the subsequent mobilisation of sulphates and trace metals by water results in seepage from the toe of mine waste features such as ELF's.
 - b) Recognising that the ELF's will be the largest contributor of seepage, minimisation of oxygen and water ingress into ELF's is a critical management requirement.
 - c) Methods to prevent oxygen ingress are described throughout technical reports in the application; ORC has recommended consent conditions to provide greater surety that these will actually be implemented.
 - d) The ELF cover system is the primary means by which to reduce water ingress and hence seepage.
 - e) Assumptions in modelling around the performance of the ELF cover system with respect to achieving net percolation of 20% are poorly supported
 - f) The consequences of higher net percolation are increased seepage from ELF's, increasing the load placed on the active WTP.
 - g) ELF cover system trials should commence as soon as possible following commencement of mining. ORC recommends that the panel give consideration to setting a performance standard in consent conditions i.e. that the ELF's must be constructed and designed to achieve a net percolation of < 20%.
 - h) Water treatment trials should commence as soon as possible following commencement of mining and be informed by the ELF cover system trials.
 - i) The Applicant's modelling and assessments confirm that appropriate water quality outcomes cannot be achieved without active treatment, but the order of magnitude study included with the application provides little certainty that water quality objectives can be achieved in practice. This is a critical matter to be considered.

- j) ORC would be concerned if large-scale mining could commence pursuant to the approvals without more certainty on the performance of ELF cover with respect to net percolation and the feasibility of the proposed water treatment.

C.6.4 Hydrogeological and hydrological effects

C.6.4.1 Introduction

233. This section discusses the hydrogeological and hydrological changes that are expected to manifest as a result of the proposed mining activities. This section also considers the potential implications of these changes in terms of water management at the site, both during active operations and during the closure phases.
234. Potential implications of hydrogeological or hydrological changes for flood hazard, water quality, or aquatic / wetland ecology, are discussed elsewhere in these comments.

C.6.4.2 General description of hydrogeological and hydrological changes

235. Open pits and underground mine workings will penetrate the fractured rock groundwater system. All four of the open pits are likely to require dewatering via bores in and around the pits as well as wall depressurisation to ensure that the pit slopes remain stable during the active mining phase. This will result in a lowering of the water table and piezometric surface around the open pits, and consequent depletion of hydrologically connected creeks, and potentially wetlands if they are connected to the groundwater system. The underground mining may contribute to fracturing of the rock above the workings and potential subsidence effects, although this is not anticipated to be an issue of significance in relation to stream depletion (refer Section C.4.8).
236. During the operational phase, additional reduction in stream flows would occur as a consequence of mining-induced changes to catchment landforms. Substantial stream reclamations, surface water diversions, and the development of open pits and the underground mine will physically alter the landform, with consequential hydrological changes in both Shepherds and Rise and Shine catchments.
237. Stormwater / surface runoff water, MIW, and shallow groundwater will be intercepted or retained by perimeter diversion controls around the developing mine workings, reducing surface recharge of natural watercourses.
238. The most significant hydrological change will result from the permanent diversion of Shepherds Creek into an engineered diversion channel, and the various other temporary and permanent diversions within this catchment. Upper catchment flows would be conveyed via new diversion drains around the TSF, Shepherds ELF and silt pond, and into the realigned Shepherds Creek, which will sit at a higher elevation upslope of the Shepherds Valley fill area, eventually rejoining the original flow path downstream of the Shepherds Valley.

239. Following cessation of mining, both Shepherds and Rise and Shine Creeks will continue to experience altered hydrological regimes, with significantly increased flows. A number of surface water diversion channels will be disestablished, including the northern and central diversion channels in the Shepherds Creek catchment, allowing water to flow across and pond on the TSF, forming a wetland. The RAS pit would form a lake, buffering flows to the environment via flooded underground mine workings, ultimately discharging via the access portal into Shepherds Creek. The pit and underground workings outflows would be a mixture of runoff entering the pit lake from the sides and residual seepage inflow from the hard rock groundwater system. A lake will also form in SRX pit, discharging to Rise and Shine Creek. The TSF and ELFs will remain as large internally draining rock masses, contributing seepage of mine impacted water to creeks in both catchments.
240. Post-closure alterations to land surfaces of former mining areas following rehabilitation would result in changes to the hydrological function of the affected areas and the mode of surface water runoff. The addition of more permeable and porous materials in affected areas of waste rock and backfilled overburden is projected to lead to a higher proportion of creek flow being made up of base flow at the expense of high creek flows. The former mining area's water balance would also change in terms of the balance of evaporation, evapotranspiration, and infiltration.
241. The Water and Load Balance Model (MWM, B.06C Appendix N) predicts that creek flows will increase, with average flows increasing by approximately 60% at Shepherds Creek (at SC01) and 50% at Rise and Shine Creek (at RS03).¹³ Low flow conditions will also increase, with the seven day mean annual low flow increasing by approximately 530% and 280%, for SC01 and RS03 respectively.
242. The water table will be permanently changed from the pre-development condition. It is not clear to what level the water table will stabilise following mine closure; however, it is expected that groundwater gradients and hence groundwater flows will be permanently altered.

C.6.4.3 Stream depletion effects

243. In Report B.03 KSL estimates the creek flow losses as a result of pit void dewatering (but not including any depleting effects of underground mining), with models making the following predictions for the compliance monitoring locations in Shepherds and Rise and Shine Creeks:
- a) SC01 – creek flow reduction for RAS pit 3.5 L/s and CIT pit 1.7 L/s
 - b) RS03 – creek flow reduction for RAS pit 2.0 L/s and SRX pit 15.3 L/s
244. In Application Report B.06C Appendix N MWM estimates that the change in creek flows in response to changes in catchment areas reporting to SC01 and RS03:

¹³ SC01 and RS03 are surface water compliance monitoring locations

- a) SC01 – 17% reduction in mean flows, and 27% reduction in low flows
- b) RS03 – 13% reduction in mean flows, and 15% reduction in low flows

245. Hydro Geochem Group (**HGG**) in Application Report B.43 states that MWM have estimated that groundwater inflows to the RAS underground workings would be approximately 10 L/s. ORC is unable to reconcile this figure with the MWM report (B.06C Appendix N) referenced by HGG. In KSL B.03 estimates that 30 L/s of active pumping would be required to remove water from the underground workings. It is not clear if this is an operational pumping rate or if there is a prediction of 30 L/s of inflows to the workings.

C.6.4.4 Flow augmentation

246. The anticipated reduction in stream flows could have adverse effects on stream aquatic values or on the ability of downstream surface water users to access water. The Applicant proposes to mitigate these potential consequences of stream depletion by introducing water (sourced from the Bendigo Aquifer) to both Shepherds and Rise and Shine Creeks at a rate equivalent to that which stream flows are reduced by mining. This is termed flow augmentation.

247. The proposed methodology for this flow augmentation is described in Application Report B.43. In summary, water will be discharged via a pipe outlet to the two creeks at a location upstream of any stream-depleting mining activity, at a rate that will ensure that the pre-mining mean monthly flow rates for each creek is maintained, when measured at SC01 and RS03.

248. The augmentation infrastructure will include a pipeline from the Bendigo borefield, a water storage tank at the augmentation locations to achieve a smooth discharge, a variable flow valve to alter flow rates as needed, and an inline flow meter to record flow augmentation rate and volumes. Exact infrastructure needs will be confirmed during detailed design.

249. Augmentation will commence from month six of the development and will continue until such time as flows in Shepherds and Rise and Shine Creeks exceed their pre-mining flows. This is anticipated to occur following cessation of active mining. Report B.43 sets out the minimum augmentation rates that will apply from the commencement of augmentation, which are based on the estimated stream flow reductions expected in the early stages of mining.

250. The flow augmentation proposal has been translated into the Applicant's proposed consent conditions (Document D.02). The conditions also provide for appropriate variability in the augmentation rate to account for real-world conditions, where complex groundwater-surface water interactions and actual stream depletion rates may deviate from the predictions of models, and to provide for any stream depleting effects of the RAS underground mine. This will ensure that for all stages of mining the augmentation rate will be sufficient to maintain the pre-mining mean monthly flow rates for each creek.

C.6.4.5 Justification for proposed flow augmentation procedure

251. The Panel may consider the introduction of water upstream of impacts to be a somewhat convoluted or illogical proposition. Introducing flows upstream of impacts leads to a complicated loop of estimating impacts, introducing flows, measuring success, and feeding back to vary flows accordingly. It may appear more logical to introduce water to creeks *after* stream depletion has occurred, as it would then be straightforward matter of measuring the flows immediately upstream and immediately downstream of the mine, calculating the difference between the two, and introducing the exact amount of water to counter any reduction, all essentially in real time. Indeed, this was the proposal that the Applicant initially put forth.
252. To assist the Panel, ORC provides relevant background information about surface water allocation in these catchments, which has informed the current augmentation proposal proposed by the Applicant. ORC notes that it was involved in pre-lodgement discussions with the Applicant in relation to this matter, in the context of ORC fulfilling its obligations to identify existing resource consents for the same activity, as required by s30 of the FTAA.
253. Via the Regional Plan: Water for Otago (**RPW**), ORC sets allocation limits for surface water catchments. An allocation limit is the maximum flow or quantity of water in a water body which is able to be allocated to resource consents for taking. For surface water, the RPW also defines primary allocation, which is an allocation limit calculated in accordance with a method detailed in Policy 6.4.2.
254. The RPW also describes in Policy 6.1.4A the situations where groundwater is to be allocated as surface water. In the case of this proposal, the groundwater taken to dewater the pits and underground workings would typically be allocated as surface water (but for an exemption discussed below).
255. Where the primary allocation limit for a catchment is reached, or when a proposed abstraction would cause this limit to be reached, it becomes a prohibited activity under rules 12.0.1.1 or 12.0.1.2 to apply for primary allocation.
256. Both the Lindis River Catchment (in which Shepherds Creek is located) and the Bendigo Creek catchment (in which Rise and Shine Creek is located) are already fully allocated, and there is no primary allocation available to apply for. In fact, both catchments are currently over-allocated, the Lindis River catchment substantially so. This is largely a consequence of historic mining water rights being converted to resource consents.
257. However, the RPW provides for situations where an abstraction of water would be exempt from primary allocation calculations:
- a) Policy 6.4.1 enables surface water or connected groundwater takes in defined allocation quantities, except when water is being taken which has been delivered to the source water body for the purpose of that subsequent take.

- b) Policy 6.4.2 describes how to calculate primary allocation for a catchment, and this includes specifically deducting any quantity of water where all of the water being taken had been delivered to the source water body for the purpose of that subsequent take.
258. The RPW goes on to provide for, as a restricted discretionary activity under rule 12.1.4.1, the taking and use of surface water from any lake or river which has already been delivered to that lake or river for the purpose of this subsequent taking.
259. It is this rule that has informed and enabled the Applicant's current proposal to introduce water to Shepherds and Rise and Shine Creeks upstream of the anticipated stream depleting activities, at a rate that equals or exceeds the depletion.
260. ORC is comfortable with the augmentation methodology proposed as set out in B.43 and as translated into consent conditions in D.02. This is because the methodology will ensure that the augmentation rate is adjusted to ensure that pre-mining mean monthly surface flow rates in both Shepherds and Rise and Shine Creeks will be maintained at all times. The 'takes' of water are not prohibited, no downstream user of water should be impacted, and instream values should be protected (in the context of other major changes to Shepherds creek).
261. Report B.42 assumes that swamp and marsh, hillslope, and gully fen wetlands could be impacted by drawdown. Augmentation water is proposed to be introduced to swamp / marsh wetlands, but no mitigation is proposed for the hillslope or gully fen wetlands. While the predicted drawdown estimates are considered conservative, performance monitoring is recommended to establish whether there is a reduction in groundwater levels in or around the wetland that affects their extent or values.
262. The ecological implications of wetland drawdown are discussed in Section C.7.4.2 of these comments.

C.6.4.6 Site water balance – deficit and surplus conditions

263. A comprehensive understanding of the amount of water that is on site, and efficient management of that water, is critical to effective site operation and ability to control offsite effects, particularly discharges of water and contaminants.
264. Certain water inputs, such as the amount of water delivered to site from the Bendigo bore site, are easy to control. Others, such as rainfall, or the amount of water abstracted via in-pit dewatering bores, or the amount of mine-impacted seepage generated via unrehabilitated ELFs, are more difficult to control, as their quantity is variable.
265. Application Report B.06C Appendix N sets out a water and load balance model developed by MWM for this project. The water balance model is a tool that simulates all inputs, outputs, and storage of water within the site, and it is used to forecast water surplus or deficit at a given point in time.

266. While the amount of water necessary to conduct mining operations will vary through the different mine stages, at any time the state of the site with respect to its water needs will fall into one of two scenarios:
- a) A site water deficit, which means that the water use needs of the site cannot be met from the water that is available on the site at that time, and the importation of water from elsewhere is necessary to maintain operations. Excepting rainfall, the only external source of water proposed for this application is groundwater proposed to be abstracted from the bore field on the Bendigo Terrace.
 - b) A site water surplus, which means that there is more water on site than is needed for all operational uses and evaporative losses combined.
267. Although fluctuations in water balance will occur, generally speaking the site is not expected to ‘flip-flop’ between deficit and surplus conditions from year to year. Rather, the initial phases of mining are expected to occur in deficit conditions because there will be little to no water generated within the site. As mining progresses and water is abstracted from in-pit and ex-pit bores, pit sumps, underground workings, and as seepage rates from ELF’s increase, the water deficit will reduce and then ultimately move into surplus condition.
268. Once a water surplus condition occurs, water will need to be treated and discharged from site, unless other mechanisms are adopted to temporarily reduce the surplus.
269. The water balance model was run for both a ‘low case’ and a ‘high case’ to account for the uncertainty in the water quality and quantity for some sources and to show the range in potential water balance at the site.
270. The largest sources of water include rainfall on the TSF, seepage from the Shepherds ELF, dewatering of the RAS pit, and process plant raw water demand.
271. Calculations for the low case indicate that a water deficit can be maintained for the operational life of the mine, with a small deficit predicted from year 12 onwards.
272. Key assumptions for the low case include:
- a) A 60% net percolation performance for unrehabilitated ELF’s, reducing to 20% for Shepherds and Western ELF’s following rehabilitation
 - b) Significant error in KSL’s predictions of inflows into underground tunnels (4 L/s instead of the 30 L/s predicted by KSL)
 - c) Dewatering water from CIT, SRX, and SRE pits is of suitable quality to use for dust suppression
 - d) Annual average rainfall is assumed

273. None of these assumptions are certain to occur, and of these assumptions, only the net percolation is capable of being controlled (via ELF cover system).
274. The water balance calculations for the high case suggest that the site will be in a water deficit condition until year 8. After this time, dewatering from SRX pit and to a lesser extent CIT pit may push the site into a water surplus condition for the last few years of the mine life, unless additional controls are implemented. The high case predicts a water surplus of approximately 1 million cubic metres in year 12.
275. Back-to-back wet years and changes of water balance assumptions (e.g., dust suppression water sources) may also move the site into a water surplus condition.

C.6.4.7 Consequences of water surplus

276. A mine water surplus means there is more mine impacted water on site than can be consumed by the mine operations. If this is not addressed, the worst-case scenario would see water storage facilities filling to capacity and untreated mine impacted water discharging into the environment. Significant adverse effects on water quality and aquatic ecology would result.

C.6.4.8 Management of water surplus

277. Engineering controls that could be implemented to manage surplus water, should the site enter a consistent water surplus condition earlier than expected, include:
- a) Use of evaporation cannons to increase evaporative losses
 - b) Increase water storage capacity on site for additional water storage prior to an active water treatment plant being commissioned
 - c) Commission the water treatment plant during operations rather than at closure to allow discharge of water surpluses
278. While it may be possible to commence use of evaporation cannons at short notice, this is not the case for the construction of new MIW storage facilities or commissioning of the water treatment plant. The detailed design of the water plant is dependent on the outcomes of trials, which cannot commence until mining starts. It is therefore critical that the mine operator can reliably forecast the site water balance condition to facilitate timely implementation of management solutions.
279. The site needs to be maintained in a water balance deficit for a length of time sufficient to test net percolation rates (via cover trials) and treatment train efficacy (via bench and pilot trials with MIW, and scaled-up operational trials) if the proposed water quality compliance limits are to be met.
280. ORC understands (from Appendix 6) that the Applicant is initiating workstreams to develop a site-wide transient water balance model to support the detailed design of the TSF and site

water infrastructure. This model will provide a more detailed understanding of the site water balance with variable climatic and seasonal conditions to inform the detailed design process.

281. The Applicant has further proposed to commission, prior to the start of the development phase, a site-wide transient water balance model to compare actual effects with predicted effects. ORC supports this proposal but also recommends that this water balance modelling, and the reconciliation of effects, be undertaken for each mine stage, to ensure site water balance is well understood and water deficit is maintained.

282. Conditions requiring early commencement of ELF cover trials and water treatment plant trials were recommended in Section C.6.3.3, and their importance is reinforced here.

C.6.4.9 Groundwater abstraction from Bendigo Aquifer

283. The potential adverse effects associated with the proposed abstraction of up to 110 L/s of groundwater from the Bendigo Aquifer can be considered somewhat discretely from the effects of the wider mining proposal. This is because of the large physical separation between this water abstraction and the other mining activities.

284. An assessment of the potential adverse effects associated with the groundwater abstraction is provided in Application Report B.02 prepared by Kōmanawa Solutions Limited (**KSL**).

285. The potential effects include:

- a) Long-term depletion of aquifer levels
- b) Stream depletion (and wetland depletion)
- c) Drawdown on nearby bores

286. There is 12,774,145 m³/year of groundwater allocation available in the Bendigo Aquifer. The application states that the maximum instantaneous rate of take from the production bores must not exceed 110 L/s, but does not specify a daily, monthly, or annual volume of water that is sought.

287. Assuming that 110 L/s is abstracted 365 days a year, the maximum volume to be abstracted would be 3,468,960 m³/year, which is approximately 27% of the available allocation in this aquifer. This is well within the available allocation limit which has been set at a level that will allow long-term aquifer levels to be sustained.

288. The application does not provide clear justification for the rate of water sought to be abstracted. Application Report A.10 at section 3.16.1 states that estimated peak water consumption at the commencement of processing operations (i.e. the peak dust suppression period) is 110 L/s, comprising:

- a) 53 L/s for processing plant water

- b) 34 L/s for peak dust suppression for the haul roads and the three ELFs
- c) 23 L/s for other uses

289. It then goes on to state that, once the mining operation ramps up, water demand is expected to decline to a range of 50 to 70 L/s as more recycled water becomes available from the processing and mining operations, and that once the processing plant is commissioned and a decant pond forms in the TSF, this should provide almost all the water demand for the processing plant (approximately 46 L/s).

290. No explanation as to how these numbers were derived was able to be identified by ORC in any application report, nor do these numbers align with the water requirements for dust suppression as calculated by Pattle Delamore Partners Limited (**PDP**) in the Air Quality Report (B.33). Three time periods are considered by PDP in this report, with estimated water demand for each times period shown below:

- a) Startup and project development years 1 and 2: 129 m³/hour or 36 L/s
- b) RAS pit mining years 3-5: 114 m³/hour or 32 L/s
- c) RAS pit plus CIT or SRX pit mining: 152 m³/day or 42 L/s.

291. ORC acknowledges that a mine of this scale requires a significant volume of water from a reliable source. Nonetheless, it would be helpful if the Applicant could provide the following details to justify the proposed abstraction rate and demonstrate that water will be used efficiently:

- a) Anticipated daily volume of water required to service the site needs for different stages of the project, with supporting calculations
- b) Confirmation of frequency of abstraction (throughout the day and across the year)
- c) Any anticipated seasonal (or other) variation in the abstraction
- d) Confirmation of any water storage facilities that may be used to store water prior to use
- e) Whether it is feasible for consent conditions to provide for a staged reduction in abstraction rate and volume as mining progresses as the availability of recycled mine impacted water reduces the requirement for groundwater.

292. ORC invites the Applicant to provide these explanations in their s55 response to s53 comments.

293. Ms Badenhop states that depletion of nearby creeks (Chinamans, School, and Bendigo Creeks) is not anticipated because they are perched approximately 20 m above the aquifer and are known to dry out as they exit the mountains and cross the alluvium.

294. Depletion of the Clutha River / Mata-au is estimated to be 70 L/s after 365 days of pumping. This is insignificant in the context of the approximately 43,700 L/s of available allocation in the 'Unnamed Tributaries of Clutha River above Lake Dunstan' catchment. No drawdown effects are

anticipated on the riparian wetlands in the Clutha River / Mata-au floodplain, including the Regionally Significant Wetland 'Bendigo Wetland' at the head of Lake Dunstan.

295. The potential drawdown / interference effects on nearby existing water users are considered in Report B.02. While the proposed abstraction is expected to have a measurable drawdown effect on the dozen operating bores within 1.65 km of the MGL bore field, KSL consider that this drawdown would not interfere with the bore operation. ORC's confidence in this assessment is somewhat tempered by the fact that aquifer testing was not consistent with ORC's recommended aquifer testing guidelines.
296. In a response to a further information request (attached as Appendix 11) KSL confirmed that the Applicant intends to drill a second production bore approximately 150 m from the test production bore CB13/0215 and additional observation bore(s). As part of commissioning the bore field, it is intended to undertake a structured, long-duration pumping test as a 'shake out' for bore field infrastructure and analysis of bore field groundwater hydrology.
297. The proposed commissioning aquifer test would provide fresh and focused interpretations of intensity of drawdown throughout the aquifer surrounding the BOGP water supply bore field, including adding to the best information available to guide responses of specific measures of effects minimisation and any offsetting and / or compensation for reduced access to groundwater.
298. Should the above cumulative drawdown assessment point to single, or multiple existing groundwater user bores being affected, then the following consultation, investigation and remedial actions would be triggered:
- a) In the case that the above cumulative drawdown assessment indicates a vulnerability to project-induced drawdown and difficulties to the pumping operation of surrounding water bore, follow-up consultation and a request to investigate remedial actions would be made to the affected bore owner
 - b) Investigations may include:
 - i. Detailed measurements of the affected bore(s):
 1. Reference to bore log, bore construction and drilling records
 2. Pulling the pump unit and making essential measurements, and
 3. Measuring the internal decline in bore water level during pumping of the subject bore (specific capacity or step rate testing)
 - c) Remedial action recommendations may include:
 - i. Lowering of the pump unit within the original bore (where feasible)
 - ii. Re-drilling of the bore and setting a deeper, larger diameter screen so as to allow lower setting of the pump unit and higher screen loss efficiency
 - iii. Provision of a replacement, high reliability water supply of equal or better water quality in the case of elevated risk of bore water supply interruption that cannot be remedied by any other means.

299. If the aquifer test indicates that drawdown effects would be such that the bore user is unable to access their consented water allocation (or the full permitted volume, if operating under permitted activity rules) ORC considers that the process set out in paragraph 298 is an appropriate mechanism to remedy or compensate for the effects. For clarity, ORC recommends that this condition include an additional requirement that the Consent Holder must consult the affected bore owner and implement the most practicable and effective remedial option, taking into account the preferences of the bore owner.
300. Overall, ORC considers that effects of the proposed take on long-term sustainable aquifer levels, stream flows, and wetland hydrology will be low and acceptable. Drawdown at nearby bores to the extent that it prevents nearby water users from accessing their full allocated (or permitted) volumes of water is not expected. However, to counter any uncertainty associated with the lack of a comprehensive aquifer test, the Applicant has proposed a stepwise process of investigative and remedial / compensatory actions to redress any such drawdown effects.
301. The only residual concern ORC has in respect of this groundwater take is the efficiency of the proposed use. Clarification from the Applicant may assist in resolving this matter, from ORC's perspective.

C.6.5 Groundwater quality effects

302. Adverse effects on groundwater quality within the site are anticipated. Seepage from mine waste features will migrate into shallow groundwater (alluvium and shallow weathered bedrock) and report to valley bottoms thereafter migrating toward seepage collection systems.
303. As discussed earlier in these comments, favourable topography and the proposed primary seepage collection systems are expected to be effective in capturing seepage. In the scenario that some seepage does bypass the primary collection systems, this would be detectable in monitoring. Installation of secondary / contingency measures could occur before MIW migrated offsite.
304. ORC recommends inclusion of consent conditions in relation to the detection of, and responses to, seepage bypassing primary collection systems. On the basis that enforceable conditions of the type indicated by ORC are imposed, offsite groundwater quality effects resulting from migration of contaminants via groundwater are not anticipated. Plumes of contaminated groundwater emanating from mine waste features are not expected.
305. The Applicant has proposed groundwater quality compliance limits that align with the maximum acceptable value (**MAV**) the New Zealand Drinking Water Standards for the relevant contaminants. These limits are contained within consent conditions. Compliance is proposed to be assessed at two locations:
- a) MW-01 in the Shepherds Creek alluvium and Ardgour Valley Aquifer; and
 - b) 'Base Bore' located within the Bendigo Aquifer bore field.

306. ORC considers that these limits and locations are appropriate.
307. Additionally, the Applicant proposes performance monitoring in the Water Management Plan at a series of other locations that are sited to monitor bypass of seepage collection systems as well as groundwater drawdown.
308. It is ORC's preference that performance monitoring requirements are specified in consent conditions to reflect the critical role they play in the effects management process.
309. The Ardgour Valley Aquifer is recharged by subsurface flows of Shepherds Creek. Hence, Shepherds Creek provides a conceivable pathway for contaminants to enter the Ardgour Valley Aquifer. There is a dearth of baseline water quality information for this aquifer; hence, it is not known to what extent any contaminants transported by Shepherds Creek might result in a change in water quality for this aquifer. Regardless, provided the proposed water quality compliance standards for groundwater are achieved, the aquifer water will be suitable for drinking.
310. Adverse effects on groundwater are expected to be low and acceptable, subject to the imposition of ORC's recommended consent conditions.

C.6.6 Surface water quality effects

C.6.6.1 Assumptions and introduction

311. The assessment set out below assumes the following:
- a) The water quality predictions by MWM are accurate;
 - b) The proposed active WTP is capable of treating the MIW to achieve the proposed compliance limits; and
 - c) The surface water compliance monitoring sites are sited to capture all impacts.
312. If any of the above assumptions are not true, this assessment is likely to need revising.
313. Potential effects on surface water quality could result from:
- a) Discharges of sediment – during start up, project development, active mining, and active closure
 - b) Hydrological changes
 - c) Unintentional discharges of untreated mine-impacted water
 - d) Discharges of treated mine-impacted water
 - e) Contamination of hydrologically connected groundwater

C.6.6.2 Predicted water quality effects

314. Baseline water quality investigations are described in the application, and these indicate that a number of the streams in and around the project site have elevated concentrations of metals. This is ascribed to a combination of historical mining activities or natural baseline conditions.
315. MWM state in Application Report B.06 that Shepherds Creek is elevated in copper, and Rise and Shine Creek is elevated in copper, arsenic, cobalt, and iron.
316. During project start up and development, the primary potential adverse water quality effects are expected to result from sediment. During the main operational phase, sediment, NMD, and nitrates are likely to be the primary source of potential adverse water quality effects. During the closure phases any potential adverse effects would generally arise from NMD and nitrates.
317. Application Report B.06C (Appendix N) describes a water balance and load modelling exercise undertaken by MWM to forecast – amongst other things – instream water quality at the proposed resource consent compliance locations SC01 in Shepherds Creek and RS03 in Rise and Shine Creek for a period of 200 years.
318. The modelling makes predictions for water quality at SC01 and RS03 for untreated and treated waters.
319. For Shepherds Creek, modelling indicates that:
- a) During the operational phase, peak and average concentrations of most contaminants are not expected to increase or are only expected to increase to a small extent (<10%) when compared with the measured baseline at SC-01;
 - b) Significant increases are predicted for nickel, lead, and molybdenum, although concentrations of nickel and lead are expected to meet the Australian and New Zealand guidelines for fresh and marine water quality 2018 (**ANZG (2018)**) 99% default guideline value (**DGV**) and 95% DGV, respectively, and molybdenum exceedances are interpreted to be an artifact of the model;
 - c) During the closure and post-closure phases (years 11-200), contaminant concentrations, in particular nitrate-nitrogen, nickel, iron, lead, and arsenic, are expected to increase, even with treatment;
 - d) With the proposed treatment, average toxicant concentrations should remain below 95% DGVs, and nitrate concentrations are not expected to increase to the extent that the risk of nuisance periphyton blooms will be materially changed.
320. For Rise and Shine Creek, modelling indicates that:
- a) During the operational phase, average concentrations of all toxicants are expected to remain under the ANZG 95% DGV;

- b) During the closure and post-closure phases (years 11-200), contaminant concentrations are expected to increase, even with treatment.
 - c) With the proposed treatment, average toxicant concentrations should remain below 95% DGVs, and nitrate concentrations are not expected to increase to the extent that the risk of nuisance periphyton blooms will be materially changed.
321. Essentially, although water quality will be fundamentally altered by the proposed mining activities, modelling predicts that, with treatment, water quality is unlikely to deteriorate to the extent that even minor adverse effects on aquatic life would occur.
322. However, the Applicant has proposed surface water compliance limits that allow for increases in contaminant concentrations far beyond what the proposed activities are expected to generate. The opinion of Dr Greer is that full implementation of these limits would degrade water quality to the extent that there would be a risk of significant adverse effects on aquatic life.
323. Setting water quality limits that are substantially higher than necessary to undertake the proposed activity creates unnecessary risk of adverse effects. In this case, an active water treatment plant is proposed to establish a water treatment system to treat mine impacted water before it is discharged to the environment. It is expected that any plant would be designed to achieve water of a quality that complies with any numerical thresholds set out in consent conditions. Setting the compliance limits well above what is necessary to undertake the activity would not incentivise the Applicant to achieve a better water quality outcome, even where modelling would indicate that this is possible.
324. The effect of this is that there are two scenarios to consider:
- 1. The likely effects based on the best available information. These are the effects as predicted by models, noting that these are subject to a degree of uncertainty; or
 - 2. The potential effects based on the Applicant's proposed compliance limits.
325. These important matters were the subject of an exchange of written information via requests for information and responses to these requests. Further discussion occurred at the water workshops held in February 2026.

C.6.6.3 Specific effects

Nitrogen limits

326. The primary risk stems from the increase of nitrate-nitrogen and ammoniacal nitrogen allowed for by the proposed limits. In terms of median concentrations of dissolved inorganic nitrogen (the sum of ammoniacal nitrogen and nitrate-nitrogen medians), the proposed limits are approximately 30 times higher than the current state, and approximately 10 times higher than MWM modelling would indicate is necessary for Shepherds Creek. For Rise and Shine Creek,

the proposed limits are approximately 88 times higher than the predicted average concentration after cessation of mining.

327. The potential for nuisance periphyton growth and associated significant adverse effects on aquatic life are discussed in more depth in Section C.6.7.2 of these comments.
328. Dr Greer recommends that nitrate-nitrogen and ammoniacal nitrogen limits align with the modelled outcomes presented by MWM in Application Report B.06C Appendix N, with an appropriate buffer to account for model uncertainty. ORC supports this approach.

Other toxicants

329. The Applicant proposes adopting the ANZG (2018) 90% species protection DGVs as compliance limits for other toxicants on the basis that both Shepherds and Rise and Shine Creeks are highly disturbed systems.
330. Dr Greer does not agree that these creeks should be classified as *highly disturbed systems*; instead, he considers that they are better classified as *slightly to moderately disturbed systems*. Good practice would therefore be to adopt the ANZG (2018) 95% species protection DGVs as the default position, or alternatively to derive site-specific guideline values.
331. However, taking into account that this application proposes a large-scale modification of the site and its watercourses, and that applying the 90% species protection DGVs as absolute maximums is arguably comparable in protectiveness against chronic toxicity effects to applying the 95% species protection DGVs as 95th percentiles (and provides a higher level of protection against acute toxicity events), Dr Greer considers that adopting the 90% species protection DGVs as absolute maximums is unlikely to result in a materially worse environmental outcome.
332. Provided the final conditions formalise the toxicant limits as absolute maximums and include clear ecological trigger mechanisms requiring management responses to address water quality issues, this this matter can be considered resolved from ORC's perspective. Suggested ecological conditions are discussed in Section C.6.7.

Relationship of surface water and groundwater compliance limits

333. Ms Badenhop identified that some of the groundwater compliance limits, which are set to align with the New Zealand Drinking Water Standards, are lower (i.e. more conservative) than the corresponding surface water (set to align generally with 90% DGV) limit for that parameter. As surface water in Shepherds Creek will directly feed the Ardgour Valley Aquifer, and limited dilution is expected in this aquifer, Ms Badenhop suggested that it would be appropriate for the surface water standards to align with the groundwater standards, where the groundwater standards are more conservative. This is the case for arsenic, antimony, molybdenum, and sulphate.

334. This matter was discussed at the water workshop. The Applicant has subsequently responded (Appendix 19) that the proposed groundwater compliance limit for antimony, molybdenum, and sulphate is achievable in surface waters at all surface water monitoring locations. However, it states that it is not possible to achieve the groundwater limit of 0.01 mg/L for arsenic in surface waters, because this limit is already breached in Rise and Shine Creek at RS03 and at the further upstream RS01 (not a compliance site) i.e. the baseline concentration is higher than the groundwater limit even before any mining activities are occurring.
335. It is not clear whether the Applicant considers that 0.01 mg/L arsenic is achievable at the Shepherds Creek compliance location SC01, nor is it clear whether the Applicant has interrogated any existing groundwater water quality data to understand whether the current groundwater quality meets the NZ Drinking Water Standards i.e. does the higher arsenic concentration at RS03 translate into concentrations of arsenic in the downgradient aquifer that exceed 0.01 mg/L.
336. ORC notes that the Order of Magnitude Study in B.41 recommends that the active WTP design should be based on the more stringent water quality criteria for surface and groundwaters, to ensure that treated waters comply with both criteria.
337. ORC recommends that the lower groundwater MAV applies to the surface water compliance locations, except for arsenic at RS03 where the 0.042 mg/L ecological guideline could apply.

Turbidity

338. Proposed consent proposes a turbidity limit to apply at SC01 and RS03 of 5 NTU, with this only to be applicable during baseflow conditions (specifically when river flow is below the median).
339. Having the limit only apply to baseflow conditions does not control sediment inputs during rainfall events, when the sediment ponds will actually be operating. It simply requires that the discharge not result in sufficient sediment deposition to increase baseflow resuspension rates. Furthermore, it allows for conspicuous changes in visual clarity when the discharge is operating and it poses a compliance risk to the Applicant as by the time the proposed limit is exceeded the discharge would have occurred and cannot be prevented, and remediation would likely require instream works to remove sediment from the stream bed.¹⁴
340. An end-of-pipe total suspended solids (**TSS**), paired with a narrative instream limit, is a better approach to managing sediment pond discharges on the site than the turbidity limit proposed in consent conditions.

¹⁴ Removal of sediment from a stream may require resource consent under the RPW. This is not included as part of this application as the Applicant has not actually proposed to undertake any stream clearance activities. Stream clearance can be undertaken as a permitted activity in certain specific circumstances.

341. In short, the proposed turbidity limit introduces unnecessary complexity to the management of sediment pond discharges, is unlikely to deliver robust environmental outcomes, and materially limits the Applicant's ability to ensure compliance through real-time operational control.
342. This was discussed at the workshop in February, and it is a recorded action for the Applicant to propose a TSS limit to replace the turbidity limit. The Applicant has indicated that they are working through this process and has invited ORC to propose revised consent conditions. Dr Greer has made recommendations to this effect in his report, and these are incorporated into ORC's suite of recommended consent conditions in Appendix 4. Input from the Applicant is necessary to prescribe a specific TSS limit.
343. Dr Greer further recommends that the G.14 Erosion and Sediment Control Management Plan include the development of site-specific relationships between turbidity and TSS, enabling real-time turbidity data to trigger management responses when TSS concentrations are likely to approach the compliance limit. Formal compliance would then be confirmed through TSS sampling. ORC agrees recommends this approach be implemented.

RS03

344. During the workshop, it became apparent that the proposed location of compliance site on Rise and Shine Creek (RS03) receives dilution water from Clearwater Creek. That is, RS03 is located downstream of the confluence of Rise and Shine Creek with Clearwater Creek. Clearwater Creek is a watercourse that should be unaffected by the proposed mining activities and would therefore introduce diluting flows to the compliance location.
345. This is an issue because RS03 is sited to identify potential water quality effects associated with all mining activities in the Rise and Shine catchment. If diluting waters are introduced upstream of some of the potential contaminant sources, impacts may be less detectable.
346. This is not so much an issue in terms of absolute water quality; if the compliance standards are achieved at RS03 then water quality that enters the offsite receiving environment is acceptable. However, the dilution water may present an issue in terms of ability to identify whether any seepage is bypassing the primary seepage collection systems. The feature of most concern in this catchment is the Western ELF.
347. A solution could be to include an additional surface water monitoring location in Rise and Shine Creek immediately upstream of its confluence with Clearwater Creek. This would enable the concentrations of relevant parameters to be determined above and below the confluence and provide better resolution as to the likely source of any increased contaminant concentrations. ORC is not able to comment on access constraints or other practical considerations that might prevent this approach. If this cannot be done, ORC considers that an explanation should be provided as to how it would be possible to detect effects and ascribe them to a particular mining component using only data from RS03.

348. This matter remains unresolved. ORC would invite the Applicant to provide further discussion on this matter in their s55 response to s53 comments.

Uncaptured seepage risk and consequences

349. Neither the application nor the initial responses to ORC's requests for further information sufficiently acknowledged or discussed the potential implications of uncaptured seepage for surface water, including the Lindis River, the lower reaches of which are sustained by groundwater discharge from the Lindis Alluvial Aquifer. As the Ardgour Valley and Lindis Alluvial Ribbon aquifers are hydraulically connected, there is a plausible pathway by which untreated seepage could ultimately enter the Lindis River.

350. This topic was discussed during the workshop, during which the Applicant's experts from EGL and HGG provided a convincing explanation as to why seepage bypass of primary collection infrastructure is unlikely, but if it occurs it will be possible to identify this occurrence and install secondary seepage collection systems to capture the seepage before it crosses the site boundary. While these explanations did not introduce new information, they did pull together important facts and discussions from various application documents into one coherent picture.

351. Cognisant that the potential for long-term persistent groundwater and surface water contamination as a consequence of seepage from mine waste infrastructure is likely to be of significant concern to the wider community, ORC requested that the Applicant translate these verbal explanations into a written document that could be submitted as an update to the application. This is the HGG Memorandum in Appendix 15 attached to these comments and also available on the EPA Bendigo-Ophir Gold Project webpage since 10 March 2026.

352. In Appendix 19 MGL have committed to including a consent condition that will require the installation of secondary / contingency seepage interception measures in the event that monitoring identifies higher than expected levels of contaminants which would indicate that seepage is bypassing collection systems. This will require appropriate trigger levels to be developed, and which the Applicant considers this is best achieved via expert caucusing. ORC agrees with this approach, but as a starting point has suggested a framework for these conditions in Appendix 4.

353. Provided monitoring and management measures described in the HGG memorandum are formalised through consent conditions and / or management plans Dr Greer considers that the risk of untreated seepage materially affecting water quality of the Lindis River is low.

Additional receiving environment monitoring

354. Also discussed at the workshop was the value of downstream surface water quality monitoring in the Lindis River and Bendigo Creek. In the context of the low-risk of seepage bypass as discussed above, there is a corresponding low-risk of seepage migrating to

downstream surface water receptors such as the Lindis River (via seepage from the Shepherds Creek catchment) or Bendigo Creek (via seepage from Western ELF and other mining features in Rise and Shine catchment). Nonetheless, ORC suggested that the Applicant consider the value in monitoring water quality in these rivers to provide additional surety to the community and local water users that mining contaminants are not having an impact on water quality in those rivers. Discussions included any such sites being performance monitoring sites, rather than compliance sites, with sample results being compared to pre-established trigger levels that would be indicative of seepage bypass.

355. The Applicant has subsequently proposed such monitoring. This is detailed in Appendices 17 and 19 and Appendix 17. In summary, the Applicant proposes monthly monitoring in the Lindis River at Ardgour Road, which is also an existing ORC monitoring location, and at a new location in Bendigo Creek, at or about NZTM2000 coordinates E1314160 N5018620, which is upstream of the location where Bendigo Creek infiltrates the ground and the Bendigo Aquifer. The parameters to be analysed at both locations align with all other water quality monitoring proposed in this application.

356. In the Lindis River, no impacts from mining are anticipated under normal conditions. Therefore, ORC suggests that monitoring results in this river should be interrogated with a focus on identifying a contamination 'fingerprint' which, if present, would be indicative of MIW and would differentiate potential impacts of mining activities from other activities in the catchment. It is not expected that such indicators would be present; however, if it were the case, management actions should be initiated. This could, for example, include inspections of seepage collection infrastructure and undertaking any remedial actions as required. These actions should be clearly identified in the Water Management Plan and in consent conditions.

357. In Bendigo Creek the situation is slightly different, as Bendigo Creek is expected to be impacted to a small extent by mining activities in the Rise and Shine Catchment. Compliance with water quality limits must be achieved at the upstream RS03, but it is likely that indicators of mining would be present in Bendigo Creek at the proposed new monitoring locations, albeit at concentrations that should be well below the compliance standards. Therefore, presence of contaminants indicative of mining would be expected in the samples. ORC expects that the Applicant will use the Bendigo Creek performance monitoring location to identify water quality trends, noting that a deteriorating trend would be expected in this creek (within the bounds of the compliance standards) as this is what is proposed by this application. However, any deviation from an established trend could trigger a management response by the Applicant.

358. ORC supports the additional monitoring proposed by the Applicant on the basis that it would provide additional assurance to the community that mining activities are being well managed and are not resulting in unanticipated effects on the downstream surface waterbodies. ORC recommends that this additional monitoring is captured in consent conditions and in the Water Management Plan.

359. Application Report B.04 suggests that the existing abstraction by Tarras Farm Limited Partnership of surface water from Shepherds Creek for the purpose of irrigation, authorised by Water Permit RM17.301.15, would be removed before commencement of mining. At the water workshop, it became apparent that this may not be the case, although it would appear that this information was not available to Kōmanawa at the time B.04 was written. Additionally, there are a number of groundwater abstractions downgradient of the site for which the water is used for irrigation.
360. Ms Badenhop has reviewed the ANZECC (2000) guidelines for irrigation water and compared these guidelines to the proposed surface water and groundwater compliance standards. For some parameters, namely boron, iron, manganese, molybdenum, and uranium, the water quality compliance standards proposed in this application are higher than the irrigation guidelines for long term use. Use of water where contaminants exceed the long-term irrigation water quality guidelines causes build-up of contaminants in surface soil over time, and uptake of unacceptable concentrations of the contaminant in the crop. In the case of the short-term scenario, contaminants may cause foliar injury.
361. Other parameters expected to be elevated in mine impacted waters but not currently proposed to be monitored include chloride, sodium, and electrical conductivity. Elevated concentrations of salts could cause soil structure degradation and foliar injury if used on crops.
362. This is a new matter that has not previously been raised with the Applicant and thus it has not had an opportunity to consider these issues and respond. ORC would invite the Applicant to address this issue in its s55 response. It would be helpful if the Applicant could specifically consider whether:
- a) the short or long-term irrigation guidelines would be most applicable, given the long-term impacts of the mine but the relatively short-term duration of the existing water permits held for irrigation;
 - b) irrigators abstracting surface water versus groundwater could be impacted differently;
 - c) the proposed water treatment plant(s) could produce satisfactory water quality with respect to irrigation standards (and what mitigation measures might be proposed this isn't achievable in respect of downstream irrigation takes);
 - d) the existing water quality in streams complies with the irrigation guidelines;
 - e) any monitoring for sodium, chloride, or electrical conductivity is warranted; and
 - f) the proposed surface and groundwater limits remain appropriate for all relevant contaminants.

C.6.6.4 Conclusions

363. Water quality will be fundamentally altered by the proposed activities. Ultimately, both Shepherds and Rise and Shine Creeks will have poorer water quality as a result of the proposed

mining activities, as compared to the current state. However, water will remain of a quality that is consistent with relevant guidelines protective of ecological health.

364. The proposed treatment is absolutely necessary to ensure increases in nitrate-nitrogen, arsenic, nickel, iron, and lead do not generate significant adverse effects on aquatic life.
365. ORC is satisfied with the compliance limits proposed by the Applicant for groundwater (NZ Drinking Water Standards).
366. For surface water, the Applicant's proposed limits (ANZG (2018) 90% DGV applied as absolute maximums) are acceptable, with the following modifications:
- a) nitrate and ammoniacal nitrogen which should be lower (and align with the modelled predictions with an appropriate buffer);
 - b) antimony should match the groundwater MAV;
 - c) molybdenum should match the groundwater MAV;
 - d) sulphate should match the groundwater MAV
 - e) arsenic should match the groundwater MAV in Shepherds Creek but remain as 90% DGV for surface water in Rise and Shine Creek; and
 - f) irrigation standards should be considered but further information would be helpful before ORC would recommend a change to the compliance limits.
367. It is ORC's preference that performance monitoring requirements are specified in consent conditions to reflect the critical role they play in the effects management process.
368. The assessment above relies on the modelling of the water quality and hydrological effects of the proposed activity being accurate. It also relies on the proposed compliance location sites being placed to capture the full extent of those effects. If any of these factors are not true, this assessment may need revisiting.

C.6.7 Aquatic ecology effects

C.6.7.1 Introduction

369. The key drivers of stream health are water quality, habitat, and flow regime. All of these factors are predicted to change as a consequence of this proposal.

C.6.7.2 Consequences of water quality changes

370. As discussed in Section C.6.6.2, modelling indicates the water quality in both Shepherds Creek and Rise and Shine Creek will deteriorate from current state as a consequence of the proposed mining activities.

371. During the operational mining phases, peak and average concentrations of most contaminants are not expected to increase or are only expected to increase to a small extent compared with the current measured baseline and remain within the ANZG 95% DGV. During closure and post-closure phases (years 11-200) contaminant concentrations are expected to increase, even with treatment.
372. For most toxicants, the surface water quality compliance limit will be set at the 90% species protection DGV, with those concentrations to be applied as absolute maximum limits. The opinion of Dr Greer is that this is arguably comparable in protectiveness against chronic toxicity effects to applying the 95% species protection DGVs as 95th percentiles and provides a higher level of protection against acute toxicity events.
373. The proposed compliance limits for nitrate-nitrogen and ammoniacal nitrogen are inappropriately high, being set 10 – 88 times higher than modelling would suggest is necessary after treatment. These limits exceed the saturation threshold for periphyton which means that, if fully implemented, periphyton growth would not be limited in any way by nitrogen availability.
374. Proliferation of periphyton can significantly compromise habitat and instream biodiversity by clogging up rivers, smothering riverbeds, and affecting sensitive invertebrate communities, as well as reducing dissolved oxygen in water. This would undermine the ecological benefits anticipated from the Applicant's proposed stream diversion and enhancement works, described below.
375. As advised by Dr Greer, ORC recommends that nitrate-nitrogen and ammoniacal nitrogen limits are set to align with the modelled water quality outcomes predicted in Report B.06C Appendix N, with an appropriate buffer to account for uncertainty in the modelling. This appears to be the most reliable way to reduce the risk of nitrogen-driven periphyton growth.
376. Reduced limits should be coupled with long-term periphyton monitoring and modelling, with clear triggers for additional management actions if the revised compliance standards are ultimately found not to be protective against nuisance blooms. ORC suggests a monitoring and response framework for this monitoring in Appendix 4.
377. ORC invites the Applicant to propose new, more appropriate compliance limits for nitrate-nitrogen and ammoniacal nitrogen in its s55 response.
378. If more appropriate limits are not imposed, ORC remains of the view that the proposal is likely to result in nuisance periphyton growth and associated significant adverse effects on aquatic life, undermining the ecological benefits anticipated from the Applicant's proposed stream diversion and enhancement works, described below.

C.6.7.3 Consequences of hydrological changes

379. As discussed in Section C.6.4.3, the modelling by MWM predicts that creek flows will increase, with average flows increasing by approximately 60% at Shepherds Creek (at SC01) and 50% at Rise and Shine Creek (at RS03). Low flow conditions will also increase, with the seven day mean annual low flow increasing by approximately 530% and 280%, for SC01 and RS03 respectively.
380. Dr Greer advises that the hydrological changes predicted for both Rise and Shine Creek and Shepherds Creek could increase the risk of peak periphyton biomass even if nutrient concentrations do not increase. Significantly higher base flows without a corresponding increase in flood flows are expected to increase the return period of bed-mobilising events, meaning the streambed will be disturbed less frequently. This will increase the amount of time periphyton has to grow and the biomass it can accumulate before being removed by high flows.

C.6.7.4 Habitat changes – Sedimentation and sediment quality

381. Discharges from sediment ponds or poorly controlled site runoff causing aggradation in natural and constructed onsite rivers could result in adverse effects on instream life, smothering habitat and degrading water quality. ORC considers that the conditions discussed elsewhere in these comments should be imposed to minimise aggradation.¹⁵
382. Metals can be toxic to benthic fauna both when suspended in the water column and when bound to bed sediments. Sediment accumulation and subsequent release from bed sediments are inherently variable and not directly controllable in real time. Dr Greer recommends annual sediment sampling at surface water compliance sites with comparison of results to the ANZG (2018) Guideline Value–High (**GV-high**) thresholds, with these thresholds to operate as management triggers rather than compliance standards. This would support ecological monitoring, separately recommended by Dr Greer, which would provide a direct measure of adverse ecological effects. ORC acknowledges that this is a new recommendation not previously put to the Applicant for consideration and accordingly invites the Applicant to consider this recommendation and respond via its s55 response.
383. Subject to appropriate conditions, adverse effects on aquatic habitat associated with aggradation and sediment quality will be low and acceptable.

C.6.7.5 Habitat changes – River reclamations and diversions

384. Report B.18 Assessment of Freshwater Ecological Effects by Boffa Miskell assesses the effects of the proposed stream diversions / reclamations on habitat and the effectiveness of the proposed rehabilitation and compensation measures.

¹⁵ End-of-pipe TSS limit, coupled with a narrative standard, supported by real-time turbidity monitoring (with trigger derived from site-specific TSS-turbidity relationship); Appropriate sizing of erosion and sediment control devices.

385. To accommodate the mining activity on site significant stream reclamations are necessary, primarily in the Shepherds Creek catchment, but also the Rise and Shine catchment.
386. There is a functional need to locate the BOGP, including its open pit and underground components, in the location(s) where the gold resource occurs in order to facilitate the extraction of the gold-bearing ore. Not all of the ore can be extracted by one mining method; hence, there is a need for both underground and open-pit components.
387. The development of the mine via open pit and underground methods, and the processing of ore to extract the gold, generates significant quantities of waste rock and tailings, which require storage in ELF's and the TSF, respectively. The topographical constraints of the site limit the potential suitable locations for these substantial waste storage facilities.
388. In that respect, there is a functional need to locate both extractive, and certain associated, activities in locations that result in reclamation of rivers, with consequential losses of river extent and values.
389. The proposal will result in the permanent loss of:
- a) 7,799 m of perennial and intermittent stream length in Shepherds Creek catchment
 - b) 1,483 m of perennial stream length in Rise and Shine catchment.

Minimisation and remediation of effects

390. For the reasons described above, the loss of river extent cannot be avoided. Adverse effects on extent and values will be minimised through diverting as much as possible of Shepherds Creek to form a functioning watercourse. This is the Shepherds Creek diversion which will be an extension of the upstream clean water diversion channels that divert water around the Shepherds TSF and ELF. Similarly in the Rise and Shine catchment, up-catchment water will be diverted into creeks.
391. The Applicant proposes that the constructed diversion channels be rehabilitated and retained as functioning ecosystems:
- a) The Shepherds Creek diversion will be rehabilitated and retained as a functioning ecosystem; 9,558 m of functional stream will be created, including the reinstated stream on the TSF at closure; and
 - b) Within Rise and Shine catchment, 1,599 m of stream length will be re-established and rehabilitated.
392. The application states that rehabilitation of the diversion channels be guided by a suite of diversion design principles, and subsidiary diversion design guidelines, that are described in Report B.18 and also in G.13 Freshwater Ecological Management Plan. In essence, these principles and guidelines describe the 'design' of the constructed diversion channels in terms of

stream length, width, area, depth, and substrate, mimicking the natural meanders and hydrology of the existing streams, creation of flow and habitat complexity via features such pool-run-riffle sequences, and planting of riparian vegetation. ORC notes concerns it raised about diversion channel sizing and incompatible consent conditions in Section C.5.

393. In addition to the design principles and guidance which will apply to both catchments, the G.13 Freshwater Ecological Management Plan includes a Rehabilitation Plan for Shepherds Creek, prepared by Growplan. This is a detailed plan to guide the planting of riparian vegetation throughout the different reaches of Shepherds Creek.

Compensation

394. The remediation actions are expected to ensure that there will not be a loss of stream extent or values. However, the remediation activities are not instantly effective; they will take time to implement, and there would be a further time lag before values equivalent or better than those lost are established in the new constructed diversion channels. Accordingly, following the remediation for length of stream, there remains a residual adverse effect in relation to values.

395. Additional enhancement of approximately 6,700 m of Bendigo and Clearwater Creeks, located in the Bendigo Historic Reserve near the Come-in-Time Stamper Battery immediately west of the project site, is proposed. Proposed enhancement includes the management of crack willow trees and enhancement of the riparian margins of the creeks. Report B.18 considers this will provide substantial benefit to the aquatic ecological values of these watercourses within fewer than 10 years, and due to this time lag, this is proposed as a compensation measure, rather than an offset.

396. ORC is comfortable with this compensatory measure.

Summary of reclamation outcomes

397. ORC agrees that, if the stream diversions, rehabilitation, and enhancements are undertaken as described in Report B.18 and Management Plan G13, there would not be a loss in stream extent or habitat value as a result of this proposal. However, ORC considers that the wording of the proposed consent conditions, in particular Condition 22 in Consent Document D.04, is not strong enough to achieve any certainty of outcome, using phrases such as ‘as much as practicable’, ‘preferably’, ‘as much as possible’, ‘should’, etc.

398. Dr Greer has recommended changes to proposed Condition 22 in D.04 to include a requirement that the permanent diversion channels be required to achieve a higher Stream Ecological Value (**SEV**) score than the reaches that they intend to replace. Dr Greer advises that the SEV is a standardised, science-based methodology used in New Zealand to quantify the functional health of streams. It is widely applied in Wellington and Auckland when assessing stream offsets associated with reclamation or realignment. The SEV generates a composite score derived from a range of hydraulic, biogeochemical, habitat and biodiversity indicators. In this

context, it could be used to provide measurable assurance that the final design and construction of the permanent diversion channels will not result in a net loss of ecological function.

399. ORC accepts this recommendation and makes changes accordingly to Condition 22 in D.04. It is noted that this proposal was discussed with the Applicant and their representatives at the water workshop in February 2026 and the Applicant seemed amenable to the idea of utilising SEV; however, has not confirmed acceptance. ORC would invite the Applicant to address this in their s55 response to s53 comments.

400. The G.13 Freshwater Ecological Management Plan (**FEMP**) would need to be updated to reflect the SEV methodology, if adopted.

401. As discussed in Section C.5, ORC considers that the two functions of the stream diversion channels (as erosion and sediment controls during active mining and as functional ecosystems following cessation of mining), is an important matter to be considered by the Panel.

C.6.7.6 Overall effects on aquatic ecology values

402. A notable deficiency of the application is that it does not contain an assessment of the overall effects of the mining activities on stream values after all of the predicted water quality, hydrology, and habitat changes are realised, and all proposed mitigation measures are implemented. This is of particular importance for Shepherds Creek, where the largest changes are expected.

403. The application contains four reports on water quality / aquatic ecology from four different authors, each of which only focuses on one issue – one for current state of rivers on site, one for hydrological impacts of mining, one prescribing water quality standards, and one assessing the effects of reclaiming rivers in both Shepherds Creek and Rise and Shine catchments.

404. None of those reports discuss the effects on aquatic ecology from the discharge of treated mine impacted waters from the site after closure, nor does any report provide a description of what the new Shepherds Creek will actually look like once the predicted changes in habitat, water quality, and hydrology are realised. Such a report would be expected to describe the plant and animal communities likely to be supported by a larger stream with poorer water quality and more stable flows once all mitigations are fully implemented, and how these will differ from the current state.

405. Following responses to further information requests, and advice from Dr Greer, ORC understands that the ‘new’ Shepherds Creek i.e. the constructed diversion channel, will be an entirely different river; the stream will shift from having a hill-fed hydrology, with ecological communities heavily influenced by drought frequency, to a more spring-fed hydrology with higher, more stable baseflows and lower flood frequency. This shift will almost certainly influence the plants and animals the stream supports. This represents a significant departure from natural state.

406. Despite this, provided the consent conditions recommended by ORC throughout this section C.6 are adopted, there is little evidence that habitat quality or macroinvertebrate health will be worse than current conditions when measured using traditional indices; in fact, they may improve. This is because, aside from water quality, the key drivers of stream health (habitat and flow regime) are predicted to change in a manner that would generally be considered an improvement, even if the hydrological changes represent a departure from the natural state.

407. Whether an improvement in stream health metrics can be considered a positive outcome when taken in the context of a significant divergence from natural state, is an interesting scenario to contemplate.

408. Taking into account the description of Shepherds Creek provided in Report B.17 Assessment of Effects on Aquatic Habitat (Water Ways Consulting):

In the wider Dunstan Mountains stream setting Shepherds Creek supports moderately diverse macroinvertebrate fauna but is lacking some of the diversity of taxa that are present in streams with more boulder and cobble riffle habitat, such as Clearwater Creek and Bendigo Creek. Therefore, Shepherds Creek is considered representative of a low gradient Dunstan Mountains perennial small stream

as well as the statement from Dr Greer that Shepherds Creek is not a rare or threatened habitat, ORC is of the view that this long-term outcome is more positive than adverse, when considered from a scientific instream values perspective. Whether the outcomes provide for mana whenua relationships and naturalness values is a matter that should be revisited at a later date in light of any views that may be expressed by Kāi Tahu.

C.6.7.7 Ecological monitoring and maintenance

409. The application does not propose any ecological monitoring to identify any adverse effects that might arise as a consequence of the discharge of treated seepage water from the site which will occur following cessation of active mining.

410. This is a deficiency in the application that was discussed at the February water workshops. The Applicant appeared amenable to including annual (summertime) periphyton and macroinvertebrate monitoring within their broader monitoring programme. A recorded outcome from the workshops is that the Applicant sent out a request for tender to several parties in March 2026 to undertake a freshwater SEV for Rise and Shine and Shepherds Creeks and are now undertaking discussions to complete the work in the coming month. This will form a baseline of stream value prior to any disturbance within the streams in the direct disturbance footprint.

411. Dr Greer has suggested a monitoring and response framework for an annual macroinvertebrate and periphyton monitoring programme, including reference to suitable

methodologies. ORC has tentatively included this programme as a recommended consent condition in Appendix 4 and invites the Applicant to indicate their in-principle agreement to such a condition in their s55 response to s53 comments.

C.6.7.8 Conclusions and recommendations

412. Provided the myriad consent conditions described throughout Section C.6 in relation to minimisation and / remediation of water-related effects are imposed, ORC is relatively comfortable that the adverse effects of the proposal on aquatic ecology will be low and acceptable during all phases of mining and closure.
413. Furthermore, in the long-term, and following implementation of stream rehabilitation and enhancement measures (compensation), measurable stream health metrics are likely to improve in both Shepherds and Rise and Shine catchments. Whether the proposed future state can be considered an overall positive outcome for freshwater is a matter that should be revisited once the views of Kāi Tahu are understood.
414. Importantly, if the conditions recommended by ORC are not imposed – in particular, the substantially reduced nitrate nitrogen and ammoniacal nitrogen compliance limits – ORC considers that there is potential for significant degradation of plant and macroinvertebrate communities associated with nuisance periphyton growth.

SECTION C.7 – TERRESTRIAL ECOLOGY AND WETLANDS

415. This section considers the potential adverse effects on terrestrial ecology, including wetlands, that may arise from the proposed mining activity. This section also considers the proposed management of those effects, including measures to avoid, minimise, remedy, offset, or compensate for adverse effects.
416. ORC acknowledges that there is shared regulatory responsibility in respect of terrestrial ecology and indigenous biodiversity matters. This section should be considered alongside comments provided by CODC and DoC.

C.7.1 Introduction

417. The application contains numerous reports and management plans focussed on the assessment of ecological values, the way in which the proposed mining activities would impact those values, and how the Applicant proposes to manage these effects.
418. The primary assessment report is B.08 *Assessment of Ecological Effects: Terrestrial Ecology*. This report provides an assessment of effects on terrestrial ecological and wetland values.
419. The ecological reports refer to the Direct Disturbance Footprint (**DDF**) which comprises the 568-ha project site and a ‘buffer’ zone around each of the proposed mining components. This

buffer zone is of variable width, ranging from 0 – 100 metres (**m**) for different project components.¹⁶ This results in a total DDF of 610 ha.

420. ORC does not consider that this is a true buffer zone; rather, it is a contingency zone that is delineated to accommodate minor deviations from the preliminary design put forward for consenting, if those changes are found to be necessary through the detailed design process or as a result of unanticipated real-life ground conditions during the mining phase.
421. Additionally, the Applicant's proposed consent conditions specifically allow habitat clearance to occur within this buffer zone.¹⁷ Thus, they are not truly buffers but are rather contingency areas that could be disturbed if the approvals sought via this process are granted.
422. ORC considers that the approach taken in the ecological assessments – that is, to assess effects as if the entire 610 ha area would be disturbed – is appropriate. Report B.08 assigns an overall ecological value for different vegetation communities as well as for individual threatened or at-risk species of flora and fauna that have been identified on site or within the Ecological Study Area (**ESA**).
423. The report then outlines a series of measures taken, or proposed to be taken, to avoid or minimise adverse effects. A conservative assumption that these measures will not be successful is made and accordingly all terrestrial and wetland habitat within the DDF is assumed to be lost.
424. An important feature of the application is delaying the open-cast mining of the 23.26 ha CIT Pit to allow implementation of a cushionfield and spring annuals research programme. Except for a 2.7 ha early-disturbance area required for enabling works, mining within the CIT Open Pit is proposed to proceed only if populations of these threatened spring annuals within the CIT Open Pit footprint are less than 1% of the known populations within the Dunstan Ecological District (**ED**), demonstrated via either:
- a) Propagation and species recovery at offset / compensation sites, as informed by the Applied Research Plan for Conservation Management, Rehabilitation and Expansion of Cushionfield; or
 - b) The discovery of further spring annual populations within the wider Dunstan ED.
425. Ecological management plans – including the Habitat Impact Management Plan coupled with the Avifauna, Lizard and Invertebrate Management Plans, the Landscape and Ecological Rehabilitation Plan, and Applied Research Programme – will guide the implementation of these measures. No explanation for this 1% threshold is provided in any application report (to the best of ORC's knowledge).

¹⁶ The buffer zones are inconsistently described in application reports. For example, the A.02 Legal Overview references buffers of 0-10 m but A.10 Project Description and B.08 Assessment of Ecological Effects state 0-100 m.

¹⁷ D.01 Proposed Land Use Consent and Conditions for Activities within the Jurisdiction of Central Otago District Council, condition 56(d).

426. The B.08 report goes on to describe the measures proposed to remediate / rehabilitate the DDF. Rehabilitation of 480 ha of the post-mining landform is proposed, with a focus on the highest value habitats and species, to reinstate key terrestrial vegetation communities and habitat features.¹⁸ The Landscape and Ecological Rehabilitation Management Plan will guide the implementation of these measures.
427. An assessment of the magnitude of adverse effect on ecological values is made after taking into account the measures to avoid, minimise, or remedy adverse effects. As will be discussed below, ORC does not consider that an appropriately conservative approach has been taken in assigning the magnitude of effect.
428. An overall level of effect is then provided for each vegetation community and for individual threatened or at-risk species of flora and fauna. The assigned level of residual effects is set out in Tables 23 and 24 of Report B.08. Again, as will be discussed below, ORC considers that level of effect is underestimated for some vegetation communities and species of flora and fauna.
429. Where the level of residual adverse effect is moderate or higher, the Applicant proposes biodiversity offsetting or compensation (in accordance with the National Policy Statement for Indigenous Biodiversity (**NPS-IB**), where feasible) including adherence to the effects management hierarchy and limits to offsetting or compensation.
430. Ecological management plans – including the Landscape and Ecology Rehabilitation Management Plan (in relation to the MRZs), the Ardgour Restoration Area Management Plan, and the Matakau Sanctuary Management Plan – will guide the implementation of these measures.
431. For this project, habitat restoration and enhancement measures outside the DDF are classified as offsets or compensation, as they provide ecological benefits but do not directly reduce the severity of adverse effects at the point of impact. The exception is the proposed measures within the Mine Regeneration Zones (**MRZ**) which are directly adjacent to the DDF and will also function to minimise adverse effects (via minimising ecological or disturbance edge effects) and remediate adverse effects (via being a source of ongoing seeds, propagules, and colonising fauna).
432. Report B.08 finds that there are only four ecological values for which biodiversity offsetting is an appropriate approach i.e. where the offsetting accounting model could demonstrate net gain. Offsetting was not considered appropriate for most ecological values primarily because insufficient knowledge exists regarding the distribution of the species across the site, or insufficient knowledge exists on how to salvage, relocate, restore, conserve or manage that ecological feature. Biodiversity compensation is proposed for the effects on values that cannot be offset.

¹⁸ 480 ha is the area available for rehabilitation after excluding the majority of the two permanent pit lakes, the majority of pit walls, and permanent infrastructure such as roads and water treatment facilities.

433. Report B.08 states that these measures aim to reverse what its authors consider to be the ongoing decline of key native habitats and associated species, supporting a large-scale transition from exotic-dominated to native-dominated ecosystems. Restoration efforts will prioritise the reinstatement of species that are rare, under-represented, or locally extirpated,¹⁹ as well as resilient native species capable of persisting under harsh and variable conditions. Long-term biodiversity outcomes will be supported by a combination of extensive weed and pest control, pest exclusion, habitat enhancement, and browsing pressure management, tailored to the specific requirements of each area.
434. ORC notes that the offsetting and compensation package proposed by the Applicant hinges on the alleged ‘ongoing decline’ of native habitats and species in the surrounding landscape. This position does not appear to be well substantiated in Report B.08, nor (to the best of ORC’s knowledge) in any other report. The NPS-IB additionality principle dictates that offsetting and compensation must achieve gains above and beyond those that would have occurred without intervention i.e. in the absence of the offset or compensation.
435. The offset and compensation measures are proposed as a package of ecological restoration and enhancement actions across 2,219 ha of habitat within the surrounding landscape, specifically:
- a) The 889 ha MRZ. The objective of restoration within the MRZ is to enhance native woody vegetation and protect and improve depleted herbfield (cushionfield) and grassland habitats and associated species.
 - b) The 1,263 ha Ardgour Restoration Area (**ARA**). The objective of this Ardgour Restoration Area Management Plan is to enhance both woody ecosystems and sustain indigenous dominated herbfield (cushionfield) ecosystems.
 - c) The 38 ha Ardgour Sanctuary and the 29 ha Bendigo Sanctuary. The objective of restoration within the sanctuaries is to protect and improve depleted herbfield (cushionfield) and grassland habitats and associated species, and to enable the translocation of threatened flora and fauna that are dependent on the elimination of introduced mammalian predators and/or intensive management to persist in the landscape.
436. The offsetting and compensatory actions proposed in these areas are dependent on the available habitat types currently being present within those areas.
437. Notably, Report B.08 states that the offset and compensation package provides for ‘trade-up’ gains in the restoration of threatened ecosystems or translocation of endangered species that are not impacted by the project, but which were historically present in the area. As will be discussed below, ORC supports this approach in principle but identifies substantial barriers to success.

¹⁹ ‘Locally extirpated’ means a species has been completely lost from the local habitat, but still exists elsewhere.

438. Table 26 of Report B.08 summarises the expected outcome for vegetation communities and the numerous threatened or at-risk flora and fauna species present on the site.
439. It is recognised in Report B.08 that there are some biodiversity values for which the residual adverse effects cannot be effectively offset or compensated for and that good ecological practice would see the activities resulting in these effects being avoided. As the activities will not be avoided, these effects remain as significant residual impacts of the proposal for which there is no ecological balancing action.
440. In summary, in addition to rehabilitation within the DDF, an offset and compensation package is proposed over a substantial area of land surrounding the DDF. The Applicant expects this to result in net ecological benefit for some habitats and species, uncertain effects on some, and net loss of extent and / or values for others. This is discussed further below.
441. Biodiversity outcome monitoring is proposed to be managed via the Biodiversity Outcome Management Plan (**BOMP**).
442. Additionally, and separately to the proposed offset and compensation package, the Applicant proposes a \$5 million biodiversity and heritage enhancement fund to be paid to the local DoC office over a period of ten years. As will be discussed below, the ecological benefits of this fund are in contention.
443. The potential ecological effects and the proposed effects management are complex.
444. ORC is aware that other regulators and agencies intend to provide discussion (informed by expert opinion) on the potential ecological effects, and their management. ORC considers that other invited commentors are also likely to provide expert assessment in relation to this topic.

C.7.2 Information received

445. The following application documents are of relevance to this assessment:
- a) Application Report B.08
 - b) Application Report B.09
 - c) Application Report B.10
 - d) Application Report B.11
 - e) Application Report B.12
 - f) Application Report B.13
 - g) Application Report B.14
 - h) Application Report B.15
 - i) Application Report B.16
 - j) Application Report B.42
 - k) C-series maps
 - l) Conditions D.01-D.04

- m) Management Plan G.02
- n) Management Plan G.03
- o) Management Plan G.04
- p) Management Plan G.05
- q) Management Plan G.06
- r) Management Plan G.07A
- s) Management Plan G.07B
- t) Management Plan G.08
- u) Management Plan G.09
- v) Management Plan G.10
- w) Management Plan G.11
- x) Management Plan G.12

446. In addition to the updated application material provided by the Applicant under cover of a Mitchell Daysh memorandum dated 10 March 2026, the information listed below has been provided directly to ORC by the Applicant:

- a) **Appendix 20:** Tabulated response to questions, prepared 14 January 2026 and updated 30 January 2026
- b) **Appendix 21:** Santana Minerals Limited Memorandum: ORC reference RMFT25.007, dated 6 February 2026
- c) **Appendix 22:** Ecological Impact Measures Management Schedule (spreadsheet), undated, provided to ORC on 6 February 2026
- d) **Appendix 23:** Summary documents of discussion points from ecology workshops (1-3), provided to ORC on 17 March 2026
- e) **Appendix 24:** Summary notes of lizard workshop, provided to ORC 17 March 2026

447. For transparency and to assist the Panel, the above listed information is attached to these comments as Appendices 20-24.

448. This section considers the effects on vegetation, wetlands, avifauna, invertebrates, and lizards in separate subsections, but provides an integrated assessment of the proposed offsetting and compensation package.

C.7.3 Advice received

449. ORC sought expert advice from e3 Scientific Limited (**e3**) in relation to the potential terrestrial ecological, wetland, and indigenous biodiversity effects of the proposal, as well as in relation to the proposed ecological effects management. This advice was provided by:

- a) Rebecca Teele – Technical Director – Terrestrial Ecology
- b) Trudy Anderson – Senior Environmental Scientist
- c) Lisa Milliken – Ecologist

450. The following peer-review report has been provided by e3 to ORC:

- a) **Appendix 41:** e3 Scientific Technical Review: Matakanui Gold Terrestrial Ecology- Technical Review Terrestrial Ecology Final Response, dated 18 March 2026

451. This report is attached to these comments as Appendix 41. This report was provided to the Applicant promptly following its date of preparation.

452. The below assessments are informed by the expert opinions of Ms Teele, Ms Anderson, and Ms Milliken.

C.7.4 Effects assessment

C.7.4.1 Vegetation

Ecological value

453. Within the ESA the following seven vegetation communities have been identified. These are listed below, with the ecological value, as assigned by Report B.08, in brackets beside each habitat:

- a) Exotic pasture or herbfield: (low value)
- b) Mixed depleted herbfield (cushionfield) and grassland, supporting a disproportionately large number of plant species ranked as nationally threatened and at-risk (21 species, including spring annual herbs) as well as nationally threatened or at-risk fauna: (very high value)
- c) Mixed tussock shrubland and exotic grassland: (moderate value)
- d) Mixed scrubland: (moderate value)
- e) Native dominant tussockland: (high value)
- f) Native taramea herbfield and shrubland: (high value)
- g) Native dominant scrubland: (very high value)
- h) Wetlands (including moderate value seepages and fens and high value swamps/marshes).

454. These terrestrial and wetland habitats support a diverse assemblage of native flora and fauna species. Many of these species are nationally or regionally threatened or at-risk. These are described in Report B.08 Table 5.

455. The ecological value assigned to these vegetation communities differ between the B.13 *Vegetation Values Assessment* and Report B.08. It is understood that this is a result of methodology differences; B.08 employed the Ecological Impact Assessment Guidelines (**EciAG**) methodology to assign values to each habitat type, whereas in B.13 a different method was used. This method is not 'named' but is described in this report. Where these differences exist, B.08 has consistently assigned the lower overall value. The Applicant confirmed during Ecology

Workshops that that the values described in report B.08 are the values on which it has based its effects assessment.

456. There is some disagreement between e3 and the Applicant's ecologists about the assigned values, and e3 considers that the ecological value of the following vegetation communities may have been underestimated in Report B.08:

- a) Mixed tussock shrubland and exotic grassland: should be high instead of moderate
- b) Mixed scrubland: should be high instead of moderate

457. Underestimation of the ecological value would have flow-on implications for the overall level of effect for that vegetation community.

458. All seven vegetation communities satisfy the criteria as significant indigenous vegetation or habitats of indigenous fauna under the NPS-IB and the Otago Regional Policy Statements.²⁰ While there is disagreement between e3 and the Applicant's ecologists about the application of the 'representativeness' criteria, ORC notes that under the NPS-IB (and both Otago Regional Policy Statements) significance is binary rather than a continuum; a habitat is either significant or not. That all seven vegetation communities would qualify as significant natural area (**SNA**) is not in dispute.

459. At the workshop it became apparent that, subsequent to the application being lodged, the Applicant is continuing to undertake additional baseline vegetation surveys in and around the site, for the purpose of developing a more robust baseline data set in relation to threatened spring annual plants. It was suggested that this survey effort may have identified additional populations of notable plants and plant species that had not previously been recorded at the site. This introduces some doubt as to the appropriateness of the vegetation assessment that has been included in the application.

460. The two major risks with incomplete / inadequate baseline information are the underestimation of ecological value and missing the presence of a species entirely.

461. If additional reliable and complete baseline survey information is now available that would better inform and potentially change an assessment of vegetation values – with flow-on implications for assessment and management of effects – then ORC considers that this information could be valuable to have (with an opportunity to comment), particularly in the context of threatened spring annuals, for which there is large amount of uncertainty and low confidence in the assessment of values.²¹

²⁰ Otago Regional Policy Statement 2019 and the proposed Otago Regional Policy Statement 2021

²¹ B.13 identifies a list of limitations to the assessment of values for threatened species within the DDF, which include but are not limited to, varied levels of survey effort, timing of surveys in comparison to ideal seasons for identifying certain species; the small and cryptic nature of some species; works undertaken prior to baseline surveys; limited knowledge of the population and distribution of these species outside of the ESA i.e. in the Dunstan ED, Central Otago, and nationally.

Effects

462. B.08 conservatively assumes that none of the avoidance or minimisation measures will be successful, and therefore that the seven habitat types will be lost in their entirety from the DDF. The project is assumed to result in the loss of 610 ha of variable quality habitat and associated species that includes:

- a) 79.3 ha of low value exotic pasture and herbfield
- b) 103.8 ha of very high value mixed depleted herbfield (cushionfield) and grassland (or up to 81 ha if the CIT pit mining does not proceed under the proposed consent conditions relating to spring annual populations).
- c) 187.4 ha of moderate value mixed tussock, shrubland and exotic grassland
- d) 124.1 ha of moderate value mixed scrubland
- e) 25.3 ha of high value native dominant tussockland
- f) 1.86 ha of high value native taramea herbfield and shrubland
- g) 85.6 ha of very high value native dominated scrubland
- h) 0.19 ha of moderate value seepage wetlands
- i) 0.84 ha of moderate value gully fen wetlands
- j) 2.42 ha of high value swamp/marsh wetlands.

463. Despite the conservative assumption of total loss, ORC considers it is important that the avoidance and minimisation measures are undertaken to the best possible extent, and that this is required by management plans and conditions, as appropriate. This is to avoid an outcome whereby the worst-case effects situation manifests, when it is possible to achieve a better outcome. That is to say, while assuming full loss of the seven habitat types from the DDF is appropriately conservative, it is still appropriate to attempt to avoid or minimise effects as much as possible, as this may have some success.

464. The proposed rehabilitation of the 480 ha will involve targeted actions in specific areas of the DDF which are differentiated into Land Management Units (**LMU**).²² These are shown on Map 2 in the LERMP (G.07A).

465. Rehabilitation outcomes within the DDF will be supported by management actions including specific pest animal and browser management, targeted pest plant control, establishment of salvaged and nursery-grown plants, and facilitation of natural establishment and spread of targeted native plants, including control of competing plants and specific micro-site preparation if needed

466. B.08 describes in Table 14 the remediation measures proposed for the DDF, and Table 15 describes the rehabilitation approach for specific threatened and at-risk flora. Tables 16 and 17 set out the magnitude of effect on the habitat types, and threatened or at-risk flora, respectively.

²² For the avoidance of doubt, these are not the same LMU that are assigned alphanumeric codes in the Ardgour Restoration Area.

467. Based on the advice of e3, ORC has some reservations as to whether the rehabilitation outcomes set out in Condition C39 of D.03 *Common Conditions which apply to all of the Resource Consents within the jurisdiction of the Central Otago District Council and Otago Regional Council* are achievable. This is primarily because rehabilitation of dryland vegetation, especially at this scale, is essentially experimental. Particular concerns are held about the non-shrub species that are not usually used for rehabilitation. ORC also has concerns about the feasibility of salvaging and successfully storing up to 25,000 tussocks for later reuse in mined areas. The logistics of storage along are likely to be significant, and the expected success of transplantation is not well justified.

468. The consequences are that the level of effect would be higher for some species, further increasing the residual adverse effects of this proposal.

Offsetting and compensation

469. The goal of the offsetting and compensation package is to reverse the ongoing decline of native habitat, supporting a large-scale transition from exotic-dominated to native-dominated ecosystems. Similarly to the rehabilitation activities proposed for the DDF, ORC has some reservations about the extent to which this goal is achievable. This is because restoration processes for many species have not been established in this difficult dryland environment, the reliance on natural regeneration, and because, in reality, this package relies heavily on compensatory actions for which no attempt has been made to quantify the outcome.

470. Most importantly, however, ORC note that even if the Applicant's offsetting and compensation package was delivered in full and achieved all of its goals, there would remain a significant number of ecological values that will experience a net loss. These values are the Threatened – Nationally Vulnerable / Threatened – regionally endangered *Myosotis brevis*, the Threatened – Nationally and Regionally Critical *Ceratocephala pungens*, and 22 other native plant species that are threatened or at-risk. A net loss for the habitats 'native-dominated tussockland' and 'Mixed depleted herbfield (cushionfield) and grassland' is also anticipated.

471. Hence, even if the mining of CIT pit did not go ahead, there would remain a significant loss in indigenous biodiversity with respect to vegetation, and this loss is likely greater than the application suggests.

Conclusions and recommendations

472. In general, the advice of e3 is that:

- a) the value of some vegetation communities / species could be underestimated;
- b) the assessment of magnitude of effect (post-implementation of remedial measures) is not conservative because there is significant uncertainty as to whether the rehabilitation actions will be successful;

- c) the overall level of effect may be understated; and
- d) accordingly, the offsetting or compensation measures may not be adequate, noting that a substantial net loss for indigenous vegetation is already anticipated with the current offsetting and compensation proposal.

473. The implication is that the degree of indigenous biodiversity loss, which is already acknowledged by the Applicant as being significant, may be even larger. This would need to be considered during the overall weighting assessment that the Panel must undertake.

474. ORC recommends that the Panel consider requesting further information from the Applicant that could reduce the uncertainty inherent in the effects assessment and effects management proposal, such as:

- a) Provision of any reliable and available additional baseline vegetation survey data, with appropriate interpretation by the Applicant's ecologists;
- b) If the above is available, an updated tracked-change version of Report B.08 to indicate any consequential changes to the assessment of effects or proposed effects management;
- c) Provision of quantitative (or semi-quantitative) net gain / net loss assessment for vegetation communities and habitats to better understand the relative degree of this gain or loss and to inform the overall weighting exercise that the Panel must undertake; and
- d) Discussion on the national context for cushionfields and the associated spring annual species – e3 indicates that the significance of the populations at this site may be understated in the national context.

475. ORC would seek an opportunity to review and provide additional comment in respect of those materials.

C.7.4.2 Wetlands

Values

476. Report B.12 *Wetland Values Assessment* states that 290 natural inland wetlands with a cumulative area of 11.3 ha were identified in the Wetland Survey Area (**WSA**)²³, including:

- a) 94 individual wetlands (3.12 ha) in the DDF
- b) 21 individual wetlands (2.37 ha) in the dewatering drawdown zone (**DDZ**)

477. ORC notes that the 3.12 ha of wetlands in the DDF does not exactly align with Report B.08, which has a cumulative total of 3.45 ha of wetlands. The reason for this difference is not clear to ORC.

²³ WSA is the areas within which wetland presence was assessed on the ground within the ESA. Outside of the DDF and DDZ, representative sub-catchments only were surveyed in detail for wetlands, not the entire ESA.

478. Three wetland types – seepages (on hillside), fens (mainly in gullies), and swamp / marsh (in valley floors and gullies) – were identified in the DDF and DDZ.
479. All three wetland types satisfy the significance criteria in both Otago Regional Policy Statements.
480. Wetland values are high for swamps and fens in the SLSW, with seepages of moderate value. In the DDF and DDZ, swamps are high value, while fens and seepages have moderate values.
481. E3 have identified a number of relatively minor issues which nonetheless collectively suggest that wetland values may be underestimated:
- a) Despite information requests, uncertainty about the classification of two onsite ponds as constructed ponds, rather than natural inland wetlands, remains
 - b) Wetland surveys done outside of springtime may have missed season-dependent species such as *Carex tenuiculmis* and *Thelymitra* species
 - c) Invertebrate surveys were not undertaken in wetlands
 - d) Wetlands values may be underestimated – ‘high’ values for DDF and DDZ seepage wetlands and ‘very high’ is recommended for swamp / marsh wetlands in the surrounding landscape. Seepage wetlands are an Endangered Naturally Uncommon Ecosystem²⁴ with a unique hydrology that cannot feasibly be recreated once lost.²⁵
 - e) There is no proportional loss percentage presented for wetlands, nor any reason for this omission. For all other vegetation habitats, Report B.08 presents the actual loss (in hectares) as a percentage of that habitat type in the surrounding landscape and in the Dunstan ED (the proportional loss). No such assessment is provided for wetlands, but the report concludes, without any substantiation, that the proportional loss in the wider ED is assumed to be negligible.

Effects and effects management

482. Wetlands within the DDF are assumed to be lost as a result of the proposed land disturbance during mining. Wetlands within the DDZ are conservatively assumed to be lost due to hydrological changes induced by mining activities, despite little conclusive information being available for the hydraulic connection of the wetlands to the schist groundwater system.
483. Therefore, 94 individual wetlands (3.12 ha) are assumed to be lost from the DDF, and 21 individual wetlands (2.37 ha) are assumed to be lost from the DDZ.
484. To remediate adverse effects on wetlands, the Applicant proposes to re-establish indigenous wetland communities totalling 7.5 ha, comprising at least 2 ha of swamp wetlands (including 0.5

²⁴ Holdaway et al. 2012 <https://conbio.onlinelibrary.wiley.com/doi/epdf/10.1111/j.1523-1739.2012.01868.x>

²⁵ Tabulated response to questions, prepared 14 January 2026 and updated 30 January 2026

ha of open water) and 4 ha of marshlands on the TSF, along with three smaller areas of marsh/swamp wetland (of at least 0.4 ha each) in the Ardour Terrace, Lower Shepherds Valley, and Processing Plant areas.

485. The establishment of wetlands is a very complex process. There is little detail to show that this has been taken into account or to provide confidence that it can be achieved on this site. The Applicant's responses to requests for information included examples (photographs, but no reporting) of instances where wetlands had been successfully established elsewhere; however, no examples were provided for Central Otago.
486. Accordingly, ORC considers that the Applicant's claim that there is no residual effect (and ultimately a net gain in extent and condition) for swamp / marsh wetlands within the DDF is poorly supported by the available information, and unlikely to be achieved.
487. Swamp / marsh wetlands in the DDZ (outside the DDF) will receive augmentation water as necessary to remediate any effects. The source of this water is the groundwater abstraction from the Bendigo bore field. ORC agrees that this is an appropriate mitigation measure, provided this outcome and a suitable level of process methodology is secured in consent conditions.
488. No remediation is proposed for seepage and gully fen wetlands. A moderate overall level of adverse effect for seepage and gully fen wetlands is assigned by the Applicant. Based on the potential underestimation of seepage wetland values as described above, ORC considers this level of effect to be too low.
489. There is no standalone wetland management plan proposed. Instead, the effects on wetlands are proposed to be managed by the G.01 Water Management Plan (in terms of augmentation for swamp / marsh wetlands in the DDZ) and G.07 LERMP (in terms of creation of swamp / marsh wetlands). Potential sedimentation effects on wetlands that bisect the DDF / DDZ boundary, and wetlands entirely within the DDZ, will be managed via site-specific erosion and sediment control plans.
490. The Applicant does not consider that offsetting is achievable for seepage and gully fen wetlands. A net loss in extent and values is anticipated. The Applicant expects that general compensatory actions such as weed and mammalian pest management, livestock management, and native plantings are considered likely to benefit indigenous biodiversity values to some extent in the DDF, but a net loss (from both the DDF and DDZ combined) of 0.84 ha of gully fen wetland and 0.19 ha seepage wetlands is assumed.

Conclusions and recommendations

491. The Applicant considers that a net positive outcome can be achieved for high value swamp / marsh wetlands via creation of at least 2 ha of swamp wetlands (including 0.5 ha of open water) and 4 ha of marshlands on the TSF, along with three smaller areas of marsh/swamp wetland (of at least 0.4 ha each) in the Ardour Terrace, Lower Shepherds Valley and Processing Plant areas.

Based on the information provided to date, ORC is not satisfied that this outcome is achievable.

492. ORC recommends that the Panel carefully consider the likelihood that swamp / marsh wetlands can be successfully created and sustained within the site and request any information necessary to form a definitive position on this matter, for example, evidence of successful establishment of such wetlands in similar setting. The Panel may also consider whether this uncertainty warrants further information on the available offsetting and then, if necessary, compensation measures for swamp / marsh wetlands. If the swamp / marsh wetlands cannot be successfully created and sustained, this application would result in a significant loss of high value swamp marsh wetland extent (2.42 ha) and values.

493. A net loss (from both the DDF and DDZ combined) of 0.84 ha of gully fen wetland and 0.19 ha seepage wetland is assumed. This is notable given New Zealand has already lost over 90% of its wetlands, and hill seepage wetlands are an Endangered Naturally Uncommon Ecosystem which have a unique landform and hydrological regime that cannot be replicated. This is a residual loss that the Panel will need to weight against the positive effects of this proposal.

C.7.4.3 Avifauna

Effects

494. Report B.14 *Avifauna Values Assessment* states that during general and targeted surveys, 30 bird species were detected within the DDF, including 11 native species, one nationally threatened species (New Zealand falcon / kārearea) and two nationally at-risk species (New Zealand pipit / pihoihoi and black shag / kawau).

495. An additional five nationally or regionally threatened or at-risk bird species were recorded or are likely to be present as residents or as occasional visitors (silveryeye / tauhou, South Island pied oystercatcher / tōrea, little shag / kawaupaka, black-billed gull / tarāpuka, and black-fronted tern / tarapirohe).

496. NZ falcon, South Island fernbird, NZ pipit, South Island pied oystercatcher and black-fronted tern are 'specified highly mobile fauna' per the NPS-IB.

497. Potential effects of the Project on avifauna include direct effects such as habitat loss, nest mortality or bird strike in the DDF, and indirect effects outside the DDF relating primarily to disturbance which may be caused by blasting noise and lighting.

498. Report B.08 considers potential adverse effects on avifauna and briefly describes in general terms the proposed management of these effects.

499. Some minor discrepancies between Reports B.14 and B.08, and internally within Report B.08, have been identified by e3 in terms of the threat status and assessment of effects on black shag and little shag, black-fronted fern, fernbird, and black-billed gull.

500. The Avifauna Management Plan (**AMP**) provided as document G.04 in the application, describes the way in which effects on native avifauna will be avoided or minimised. This plan is by no means a comprehensive management document for avifauna; instead, it largely serves to cross-reference other management plans that have been provided with the application.
501. Although it would be intuitive to look to the AMP to locate specific effects management methodologies for avifauna, it is not necessarily an issue to cross-reference to other management plans if the management measures for birds overlap with management measures for other biodiversity values. For example, the AMP refers to four other management plans for measures proposed to remedy, offset, and compensate for residual effects on avifauna. These measures appear to be relatively non-specific for birds; rather, they are broader vegetation and habitat restoration measures that are expected to result in favourable outcomes for birds. It is therefore understandable that these measures with more generic / widely applicable biodiversity outcomes are contained within these plans.
502. However, it is an issue when this cross-referencing simply refers the readers in a loop back to the AMP. For example, the AMP at section 2.3 states that habitat impact protocols to minimise the potential for effects outside the disturbance footprint are managed by the G.03 Habitat Impact Management Plan (**HIMP**), but the HIMP does not appear to contain any such information. In fact, every reference to avifauna within the HIMP is simply to refer back to the AMP (or other management plans).
503. As an overarching comment, the plans outline reasonable effects management measures with respect to avifauna, but do not provide the necessary detail to understand how any of these actions would actually be implemented.
504. After accounting for measures to avoid, minimise, or remedy adverse effects, Report B.08 finds that only kārearea / eastern falcon, pīhoihoi / New Zealand pipit, and tauhou / silvereye have a residual level of adverse effect which is moderate, with effects on all other species found to be low or very low.
505. ORC considers that the most significant risk to birds is likely to be the disturbance of nests during habitat clearance. Bird nest surveys are proposed, and this is appropriate; however, advice from e3 is that undertaking pre-clearance surveys five working days ahead of vegetation clearance is too long, and that surveys should occur no more than 72 hours prior to clearance.
506. ORC is unable to comment on the practicality of this 72-hour timeframe in the context of active mine operations but suggests that for each relevant bird species the timeframe should be supported by recommendations from a suitably qualified and experienced ornithologist / avifauna specialist. Further, any timeframe should be measured in hours rather than working days, as a working day is an artificial construct that has no relevance to bird nesting behaviours.

507. Following offsetting and compensation actions, Report B.08 states that a ‘net positive’ effect is expected for kārearea / eastern falcon, pīhoihoi / New Zealand pipit, and tauhou / silvereye. ORC does not necessarily disagree that this outcome is feasible but notes that a significant improvement in the amount of detail in the management plan is required to demonstrate that, and to ensure that this outcome is actually achieved.

Recommendations

508. ORC recommends that:

- a) The AMP, and any other management plan referenced by the AMP, be updated to describe effects management measures that will be implemented to address each of the potential effects summarised in Section 2.2 of the AMP, including any species-specific management measures; and
- b) The effects management measures be described in such detail that a reader could, after reading the AMP and any other plans that are cross-referenced in the AMP, understand what needs to be done, when it needs to be done, how it needs to be done, and who needs to do it.

509. ORC is aware that a wildlife approval (as defined in Clause 1 of FTAA Schedule 7) to disturb, injure, incidentally kill and disturb the habitat of avifauna species is also sought as part of this application. While ORC has read the s51(2)(c) wildlife approval report prepared by DoC and has not identified any significant areas of inconsistency, the Panel will no doubt satisfy itself that the requirements of all relevant approvals (if granted) are aligned and not in conflict with one another.

C.7.4.4 Lizards

Introduction

510. Alongside adverse effects on vegetation and habitats, adverse effects on lizards are one of the most significant adverse effects of this proposal.

511. The application documents of most relevance to lizards are:

- a) Report B.15 Lizard Values Assessment which describes the lizard values within the DDF, and compares these lizard values to those of the ESA.
- b) Report B.08 considers potential adverse effects on lizards and briefly describes in general terms the proposed management of these effects.
- c) G.05 Lizard Management Plan (**LMP**) which has been prepared to describe the methods to avoid or minimise adverse effects on indigenous lizards during construction and operation of the mine.
- d) G.07A and G.07B LERMP describes the proposed rehabilitation of habitat for lizards (and other biodiversity values).

- e) G.08 Ardgour Restoration Area Management Plan (**ARAMP**) and G.09 Matakanui Sanctuary Management Plan (**MSMP**) describe offsetting and compensation measures for lizards (and other biodiversity values).
- f) G.12 Biodiversity Outcome Monitoring Plan (**BOMP**) describes lizard monitoring before and after implementation of effects management measures in the DDF, MRZ, ARA, and the two sanctuaries.

512. Similar to avifauna discussed above, the necessity of all these assessments and management plans is understood and not considered to be inappropriate by ORC. However, as for avifauna, it is critical that these plans are consistent with each other, and that they together present clear and unambiguous outcomes for lizards, and similarly clear and unambiguous effects management protocols for lizards to ensure that the required outcomes are achieved.

Values and issues

513. Three lizard species were identified on site. These are listed below alongside their threat status:

- a) Tussock skink – nationally and regionally at-risk – declining
- b) Kawarau gecko – nationally and regionally at-risk – declining
- c) McCann’s skink – not threatened

514. While the presence of additional species cannot be ruled out, the Applicant considers the presence of other species to be unlikely due to the level of survey effort applied to the DDF and wider landscape.

515. e3 agree that the likelihood of additional species being present in the DDF is low; however, they consider that the survey methodology was not sufficient to conclusively exclude the presence of some species that would be notable, for example Lake’s skink and Mokopirirakau “Roys Peak” / Orange-spotted gecko.

516. Accordingly, ORC recommends that the LMP include contingency planning and salvage methodology that target possible additional species and their habitats, including ‘stop work’ protocols if these species are found.

517. The ‘stop-work’ protocols are of particular importance, because only the three species listed in paragraph 513 are specified in Schedule 4 of D.11 Wildlife Act Authority and Conditions. ORC understands that, in the event that additional species were found in the DDF, the Applicant would need to obtain a separate approval under the Wildlife Act to authorise the salvage, relocation, disturbance, incidental killing, or habitat disturbance of any species other than the three species listed in Schedule 4. This should be confirmed with DoC.

518. Report B.15 states that a coarse estimate of lizard abundance within the DDF is:

- a) McCann's skink low 100,000s
- b) Tussock skink low 1,000s
- c) Kawarau gecko High 10,000s

519. ORC has low confidence in these population estimates because of deficiencies in survey coverage, insufficient explanation as to the way the survey data informed the population estimates, and complications introduced by the presence of a local McCann's colour morph. Combined, these factors suggest that total lizard numbers may be underestimated, the relative proportion of each species within the total may be inaccurate, and there is a risk that cryptic species may not have been identified at all.

520. An alternative estimate of approximately 500,000 lizards is provided in Report B.08. ORC is not sure what data has informed this estimate.

Effects management and issues

521. The potential effects on lizards are mortality, injury, disturbance, and loss of habitat. Most effects will occur during the construction and operational phases, with largest impact on lizards occurring as a result of earthworks and vegetation clearance.

522. Report B.08 and the LMP refer to measures that would avoid or minimise adverse effects on lizards. ORC has not identified in these documents any measures that could be considered to 'avoid' effects on lizards but acknowledges that avoidance of effects on lizards within the DDF is unlikely to be possible.

523. The primary mechanism by which the Applicant proposes to minimise effects on lizards is by the salvage of lizards and their subsequent relocation to an appropriate release site.

524. The application proposes to salvage 102,000 lizards from the 233-ha area mapped as high and moderate lizard value habitats within the DDF.

525. The Applicant has committed to salvaging and relocating:

- a) 70,000 McCann's skink
- b) 2,000 Tussock skink
- c) 30,000 Kawarau gecko

526. This is a significant undertaking that is expected to take a minimum of 2,330 person hours of search effort. Even so, this number is estimated to represent 10-30% of the total number of lizards actually present on site.

527. Salvaged lizards are proposed to be relocated within the 1,263 ha Ardour Restoration Area at sites that include suitable habitat for the species. The LMP describes in general terms how the

salvage and relocation will occur, although ORC considers the level of detail is inadequate for the implementation of these activities.

528. While the Applicant has committed to this salvage and relocation exercise, for the purpose of assessing effects the Applicant has assumed that salvage and relocation will be unsuccessful i.e. 100% mortality of translocated lizards is assumed. Further, all lizards in the DDF that were not salvaged are expected to be killed during the construction and operation of the mine. The possibility that the release of 102,000 lizards into an area already occupied by other lizards could have adverse effects on the existing populations has not been discussed by the Applicant.
529. The proposed mining activities will therefore likely result in the mortality of hundreds of thousands of lizards. The Section 51(2)(c) wildlife approval report prepared by DoC states that this scale of loss is unprecedented. ORC is not aware of any evidence to the contrary.
530. The proposal will also result in the loss of 610 ha of variable quality habitat from the DDF. During the lizard workshop held on 13 March 2026, DoC advised that the DDF provides approximately 7% of the known national habitat for the Kowarau gecko. E3 also advise that the Bendigo area is a stronghold for the Kowarau gecko, with Thomson Gorge being the currently described population boundary.
531. As discussed in sections above, the Applicant proposes to rehabilitate 480 ha of the DDF and, in respect of lizards, expects that this will result in a higher quality habitat and approximately the same lizard carrying capacity, within a 35-year timeframe. Report B.08 classifies this as a considerable reduction in the severity of effect but notes the moderate to long-term time lag between loss and reinstatement of lizard habitat. Accordingly, a moderate magnitude of residual effect is assigned to all three lizard species. ORC notes that no attempt has been made by the Applicant to quantify this 'significant reduction in severity' to justify the moderate magnitude of effect.
532. ORC does not agree with the magnitude of effect assigned to Kowarau gecko and considers that it materially underestimates the significance of the impacts at the local, regional, and potentially national scale.
533. An overall high level of effect is assigned for Tussock skink and Kowarau gecko, while a low level of effect is assigned for McCann's skink, reflective of its 'not threatened' status.
534. The Applicant does not consider that biodiversity offsetting for lizards is possible but proposes biodiversity compensation. The proposed compensation for lizards is integrated within the wider offsetting and compensation package, but lizard-specific actions include construction of rock refugia (rock stack with surrounding sparse rocks and clusters of tussock and shrubs) in both the Bendigo and Ardour Sanctuaries, with more focus on Ardour Sanctuary due to its less structurally complex state. Rubble pits and 'vegetation nodes' are proposed to be created, with the latter relying on translocation of previously salvaged vegetation (which, as discussed in Section C.7.4.1, is a process for which success is far from

certain). Mammalian pest elimination is also proposed in the sanctuaries. Despite these compensatory measures, a net loss is predicted for all three species.

535. Discussions during the ecology workshops and the specific lizard workshop focused on whether the Applicant could quantify the success of the compensation measures to any extent. In these workshops the Applicant indicated that compensation may provide approximately 20% redress for effects on lizards. ORC has not been provided with any written confirmation of this 'claw back' of effects and thus places very little weight on this number.
536. No other form of compensation is proposed by the Applicant and therefore the significant loss of individual lizards and their habitats remain as a residual effect of the proposal. For Kawarau gecko this loss is significant at the local and regional scale, and potentially the national scale. For tussock skink, the loss is likely to be significant at the local scale, although the deficiencies in the habitat mapping and possible misidentification of tussock skink as McCann's skink during surveys introduces uncertainty into this conclusion. McCann's skink will be lost in the greatest number but of the three species this loss is of comparatively low significance due to the 'not-threatened' status both regionally and nationally and its broad distribution across Otago and Canterbury.
537. The Applicant acknowledges these residual effects. During workshops, the potential for other effects management measures for lizards was discussed. There appeared to be a general agreement between experts that the best / most reliable outcomes for lizards are achieved via dedicated predator-proof fenced sanctuaries. Although two predator-proof sanctuaries are proposed by the Applicant, these are not dedicated lizard sanctuaries; rather, they are intended to serve multiple ecological functions. Enhancement of lizard habitat is proposed within the sanctuaries, which is likely to benefit any lizards already present within those areas, but neither sanctuary is intended to receive salvaged lizards from the DDF. Some discussion was had in relation to the potential for establishing a dedicated lizard sanctuary, which might have a particular focus on achieving better outcomes for Kawarau gecko, but these discussions did not progress beyond the concept-level. The Applicant indicated they would give some thought to the potential for a third sanctuary; however, ORC has not placed any weight on this for the purpose of the assessment presented in these comments. Should the Applicant wish to progress discussions in relation to a dedicated lizard sanctuary (if within the scope of the current FTAA application), ORC would seek an opportunity to review and provide additional comment in respect of these matters, including involvement for its experts in any conferencing.
538. ORC notes that the application claims 'trade-up benefits' in relation to Otago skink (nationally threatened – endangered, threatened – regionally endangered), Grand skink (nationally threatened – endangered, threatened – regionally endangered), and Jewelled gecko (nationally – at risk, regionally at-risk regionally endangered). These three species were not identified within the DDF.
539. The proposal is not well discussed in Report B.08, and not discussed in management plans relevant to lizards, but ORC understands that the Applicant intends to identify a source

population of these species and then salvage and translocate them into the Bendigo / Ardgour sanctuaries to achieve a net gain. Despite the absence of any significant discussion or any actual implementation plan, or indeed the relevant Wildlife Approvals to undertake these activities, the Applicant claims that this proposal will result in a net-gain for these three species. Consent conditions go so far as to require net-gain to be achieved. While ORC is supportive of the outcome – a net gain for endangered species of lizard – based on current information, ORC considers that the consent condition is unachievable, and no weight should be put on the net gain claim for these three endangered species. If the Applicant wishes to develop this aspect of the proposal through this fast-track process, ORC would seek an opportunity to review and provide additional comment in respect of these matters.

Conclusions and Recommendations

540. In summary, ORC considers that the proposed mining activities will result in adverse outcomes for all lizard species found within the DDF. The potential loss of up to 500,000 lizards is an adverse effect without precedent. Substantial uncertainty remains about the degree to which the proposed rehabilitation activities reduce the level of adverse effects for each species, and the degree to which the proposed offsetting and compensation activities can provide an ecological balancing effect for each species. At this point in time, a significant net loss is assumed for all three species of lizard.

541. ORC recommends that:

- a) The Applicant provide any available data or assessment that would provide more certainty in population numbers and undertake compensation modelling to understand unbalanced effects in quantitative sense.
- b) The Panel consider whether there are any other mechanisms that would be within the scope of the application as lodged that could better manage effects on lizards, whether it is possible to put a monetary figure to the loss and consider financial compensation, ideally with ecological focus for lizards elsewhere.
- c) If there are no such mechanisms, then the effects described in this section will remain as significant residual adverse effects of this proposal that will need to be carefully balanced against project benefits. The loss of up to 7% of national habitat for Kawarau gecko at the known edge of its habitat is an effect of potentially national significance.

C.7.4.5 Invertebrates

Values Assessment

542. Report B.11 *Terrestrial Invertebrate Survey* describes a comprehensive invertebrate survey conducted across the ESA to assess terrestrial invertebrate presence, richness, diversity, and community composition across the ESA to ultimately inform the assessment of ecological effects (Report B.08).

543. Key findings of the survey were:

- a) A total of 29,565 invertebrate specimens were collected during field surveys, representing at least 119 families across 25 orders. 222 native species and 29 introduced species were identified, with the remaining taxa being indeterminate at the species level.
- b) 18 notable species were identified, including moths (Lepidoptera), grasshoppers (Orthoptera), beetles and weevils (Coleoptera). These comprised:
 - i. Four 'Threatened' species of moth (one 'Nationally Critical', one 'Nationally Endangered' and two 'Nationally Vulnerable')
 - ii. Four new species: one species of weevil and three species of ground beetles
 - iii. Nine 'At Risk' species: eight moth species (six 'Declining' and two 'Uncommon') and one 'Declining' species of grasshopper.
 - iv. One unassessed species of moth thought to be of conservation importance.
- c) Of the above species, only one was found exclusively within the DDF. This was the 'At Risk – Declining' grasshopper, *Phaulacridium otagoense*, represented by 15 specimens found at six sites throughout the DDF.

544. ORC is satisfied that the level of survey effort and the range of survey methods were employed are appropriate for the scale of this project. Based on the advice of e3, ORC has not identified any significant issues with the ecological value assigned to any invertebrate species (which are all very high or high).

Nature of adverse effects

545. A Terrestrial Invertebrate Management Plan (**TIMP**) is provided as Application Document G.06. The potential adverse effects on invertebrate species include:

- a) Vegetation and habitat loss through clearance and earthworks.
- b) Direct mortality or injury to eggs, larvae, pupae or adult specimens which may be harmed during clearance and earthworks activities.
- c) Creating habitat edges can alter the composition and health of adjacent vegetation (i.e. habitat degradation), making the area less suitable for invertebrates.
- d) Habitat fragmentation and isolation caused by the loss, reduction, and severing access to different habitat types. This reduces the ability of invertebrates to disperse across the landscape for food, shelter, and breeding purposes.
- e) Immediate and ongoing disturbances, particularly on habitat margins/edges, through noise, dust, artificial lighting and blasting can impact invertebrates. e.g increased invertebrate vulnerability due to mammalian predators that exploit disturbed habitats and edges.
- f) Introduced exotic plant species can displace native host plants and alter habitat structure.

Magnitude of effects

546. With respect to the magnitude of effect assigned to species, ORC makes the following observations:

- *Meterana exquisita* – ‘low’ magnitude of effect is not supported, as the successful colonisation of created habitat is not guaranteed, nor the effect of the planned *Olearia* planting. The magnitude of effect should be higher;
- *Ichneutica sistens* – ‘low’ magnitude of effect is not supported, as the numbers at site may represent an important population stronghold, and no effects management is proposed. The magnitude of effect should be higher;
- *Asaphodes recta* – ‘low’ magnitude of effect is too low, as it is uncommon and no effects management is proposed. The magnitude of effect should be higher.

547. An increase in the magnitude of effect from low to moderate or high would result in a change of overall level of residual effect from low to high or very high, respectively.

Overall level of residual effect

548. A very high level of residual adverse effect is assigned for six invertebrate species. Three other species have high residual adverse effects, and three more have moderate residual adverse effects. All others are classified as low or very low. As noted in paragraph 546 above, ORC considers that this is underestimated for the three species listed in that paragraph.

Management Plan

549. The TIMP sets out the methods proposed to be used to avoid or minimise adverse ecological effects on indigenous terrestrial invertebrates, focussing on measures designed to protect the highest-risk species first. Targeted management measures include pre-clearance habitat assessment; salvage and relocation for the grasshopper and newly discovered weevils; host plant and habitat protection, enhancement, and relocation; experimental breeding programmes.

550. E3 have identified numerous deficiencies in this management plan, which collectively suggest that it is unlikely that invertebrate values will benefit from the proposed management package.

Offsetting and compensation

551. Following implementation of the offsetting and compensation package – which does not include any measure tailored to any invertebrate species – outcomes for all invertebrate species are assessed as ‘uncertain’ i.e. it is not certain whether there would be a net positive or net loss outcomes. On the advice of e3, ORC considers that this is not a conservative assessment; if

residual adverse effects are very high and no known method or action is known to benefit that species, then a net loss should be assumed.

552. This is particularly salient for the four new invertebrate species (weevil and ground beetles) identified on site because, logic would suggest, if this is the first identification of a species, there can't be any existing knowledge to draw on to inform a suitable offset or compensatory action. ORC considers that anything other than a net loss assumption in this scenario is not appropriate.

553. A 'limits to offsetting and compensation' assessment is presented in Report B.08 for ground beetle *Harpalus* new sp. and weevil *Inophloeus* new sp. This finds that neither offsetting nor compensation is likely to be appropriate for these species. The report does not explain why the other two new ground beetle species were excluded from this assessment.

Conclusions and recommendations

554. The Applicant considers that there will be a very low to very high level of residual adverse effect on invertebrate species. These adverse effects are loss of habitat and injury / mortality for individuals in the DDF. ORC agrees with this assessment, excepting that ORC considers the effects on the three species listed in paragraph 546 may be underestimated.

555. The Applicant is uncertain as to whether any of the ecological offsetting or compensation measures will provide any redress for adverse effects for any species. ORC considers that there is sufficient uncertainty in the success of any of those measures to justify a 'net loss' outcome, rather than an 'uncertain' outcome for all invertebrate species.

556. For at least two newly discovered species, neither biodiversity offsetting nor compensation is likely to be appropriate under good ecological practice.

557. In summary, ORC considers that the proposed mining activities will result in adverse outcomes for all invertebrate species found within the DDF, some of which are significantly adverse, and none of which would be reduced by offsetting or compensation. These adverse effects would need to be balanced against any positive effects of the application.

C.7.5 Offsetting and compensation package

558. The Applicant proposes as part of this application a multi-purpose ecological offsetting and compensation package, the overall objective of which is to achieve, where possible, demonstrable benefits to indigenous terrestrial and wetland biodiversity that outweigh impacts within 35 years of granting of approvals. The proposed offsetting and compensation measures include ecological restoration and habitat enhancement across a 2,219-ha area of habitat in the landscape surrounding the mine footprint.

559. Biodiversity offsetting is proposed to address residual adverse effects on ecological values where net gain outcomes can be demonstrated through offset modelling. For ecological values

where no contemporary like-for-like replacement or enhancement is available, the Applicant proposes biodiversity compensation.

560. Offsetting / compensation measures specific to vegetation and habitats, wetlands, avifauna, lizards, and invertebrates have been discussed in the sections above. It is noted that the majority of the purported benefits for avifauna, lizards, and invertebrates rely on the success of the vegetation and habitat enhancement measures in combination with pest management activities. As discussed in sections above, ORC considers that the success of the proposed habitat regeneration and enhancement actions is far from guaranteed, due to the difficult dryland environment where restoration processes have not previously been well established. Some of the measures are proposed as experimental actions which, while supported from a scientific perspective, cannot really be relied on to offset or compensate for adverse effects.
561. The majority of the ecological management plans refer to adaptive management measures or contingency measures, but it is not abundantly clear to ORC what these measures might be, or how any such measures would be implemented in practice. Successful implementation of adaptive management processes requires certainty that issues can be managed if they arise. This requires identification of likely issues, as well as potential remedial or corrective actions that can be implemented should these issues eventuate. It also requires appropriate thresholds to be established to ensure that problems in effects management can be identified, and remedial or corrective actions can be implemented in a timely matter. An example is the proposed salvage, storage (potentially for many years), and translocation of 25,000 tussocks. The successful translocation (and ongoing survival) of these tussocks is relied on in the rehabilitation and offsetting / compensation package to support the biodiversity outcomes claimed by the Applicant. ORC is not aware of any 'back-up plan' or adaptive management process that could be implemented if any part of the salvage-storage-translocation process partially or completely fails.
562. Given the scale of this proposal, and the fact that the adverse ecological impacts will occur well in advance of any indication as to the success of offsetting or compensation actions, ORC considers that adaptive management measures need further work before they can be relied on to increase the certainty of ecological outcomes.
563. Setting aside any uncertainty, ORC emphasises that even if the proposed offsetting and compensation package delivered fully on all outcomes, the proposal would still result in a significant net loss of indigenous biodiversity for several habitats and numerous species, for which no compensatory measures have been proposed. The habitats and species that will be lost are:
- a) The nationally vulnerable *Myosotis brevis*
 - b) The nationally critical *Ceratocephala pungens*
 - c) 22 other native plant species that are threatened or at risk
 - d) Seepage wetlands and gully fens

- e) The nationally and regionally at risk – declining Tussock skink and Kawarau gecko, as well as the McCanns skink (not threatened)
- f) Native-dominated tussockland habitat
- g) Mixed depleted herbfield (cushionfield) and grassland

564. Even without factoring in any of the uncertainties or doubts about the effectiveness of remediation, offsetting, or compensation measures, this is a significant adverse effect of the proposal. No attempt has been made to quantify this loss, either overall for indigenous biodiversity or on a species level. ORC recommends that quantification exercise be undertaken, to the extent that is possible to do so, to assist the Panel in their decision making.

565. The application does not explain why, for the species that are not ‘limits to offsetting’ or ‘limits to compensation’ cases (as described in Report B.08) no further attempt to compensate for adverse effects is proposed. As an example of what could be considered, e3 have suggested that a non-wasting endowment fund be established. This could serve two purposes:

- a) To address one of the substantial barriers to the delivery and ultimately the success of the currently proposed offsetting and compensation package, which is long-term funding; and
- b) To provide a source of funds to deliver ecological benefits elsewhere in the ecological district i.e. additional biodiversity compensation.

566. Should the Panel be minded to grant the approvals, ORC notes that the management plans that are proposed to be used to deliver the biodiversity outcomes are currently located exclusively on the CODC Land Use Consent D.01. However, all of the ecological management plans manage effects that arise as a consequence of activities requiring regional resource consents (in addition to district council consent) and therefore should be certified by both councils. ORC considers that all of the conditions 53 – 122 relating to the certification and implementation of these plans of these plans be moved onto D.03.

C.7.6 Overall conclusions – terrestrial ecology and wetlands

567. For a small number of habitats and species, a net gain or net positive outcome may be achievable; however, net loss or uncertain outcomes are expected for numerous other habitats and species.

568. ORC has made various recommendations throughout Section X in relation to potentially helpful additional information that could be requested from the Applicant, and in some cases potential improvements to management plans. However, in light of the significant adverse effects of the proposal, ORC has not undertaken to provide a comprehensive list of recommended changes to management plans or consent conditions at this time.

569. ORC recommends the Panel focus on identifying any areas where the adverse effects can be reduced further, or where new / alternative offsetting or compensation measures can be

570. While in general, it is ORC's position that the current versions of the management plans are not yet fit for purpose, ORC has not undertaken to furnish the Panel with a detailed list of deficiencies and suggested improvements, as this would seem to be somewhat trivial at this point in time, given that further information is likely to be required from the Applicant.

SECTION C.8 – LANDSCAPE EFFECTS

C.8.1 Information received and assessed

571. The following application documents are of relevance to this assessment:

- a) Application Report B.19
- b) Application Report B.19A
- c) Application Report B.19B Parts 1-4
- d) C-series maps
- e) Conditions D.01-D.04
- f) Management Plan G.07A
- g) Management plan G.07B

572. In addition to the updated application material provided by the Applicant under cover of a Mitchell Daysh memorandum dated 10 March 2026, the information listed below has been provided directly to ORC by the Applicant:

- a) **Appendix 25:** Boffa Miskell Limited Memorandum: Response to ORC Landscape Questions, dated 30 January 2026

573. For transparency and to assist the Panel, the above listed information is attached to these comments as Appendix 25.

C.8.2 Advice received

574. ORC sought expert advice from SLR (New Zealand) Consulting Limited (**SLR**) in relation to the potential landscape effects of the proposal. This advice was provided by:

- a) Nigel Parker – Technical Director Landscape Architecture

575. The following peer-review reports have been provided by SLR to ORC:

- a) **Appendix 42:** SLR (New Zealand) Limited Memorandum: Bendigo Ophir Mining Project – Landscape Architectural Review, dated 1 December 2025
- b) **Appendix 43:** SLR (New Zealand) Limited Memorandum: Memorandum: Bendigo Ophir Mining Project – Landscape Architectural Review - Response to Applicant's Memorandum (30 January 2026), dated 16 February 2026

- c) **Appendix 44:** SLR (New Zealand) Limited Memorandum: Bendigo Ophir Mining Project – Landscape Architectural Review – Site Visit (11th March 2026), dated 20 March 2026

576. These are attached to these comments as Appendices 42-43. These peer-review reports were provided to the Applicant promptly following their dates of preparation.

C.8.3 Effects Assessment

C.8.3.1 Introduction

577. The below is ORC's understanding of how the proposal will impact landscape values which has been informed by both the Applicant's assessments and the peer-reviews by Mr Parker, which are attached.

578. For the avoidance of doubt, ORC notes that the landscape assessment employs the following timescales:

- a) Startup: Year 0-3. Project startup and development. Construction of initial infrastructure and preparation works.
- b) Mining activity: Year 3-11. Main extraction period. All components of the proposal will be operational during this stage of the project.
- c) Closure: Year 11-30. Project closure and rehabilitation following completion of extraction.

579. The Landscape Assessment Report B.19 provides a comprehensive assessment including plans and visual simulations to illustrate the extent of the proposal. Landscape effects have been assessed over an appropriate timescale and in accordance with Te Tangi a Te Manu, New Zealand Landscape Assessment Guidelines 2022, which is accepted best practice for this field.

580. The proposal includes significant changes to landform, vegetation patterns, hydrology, and roading patterns, as well as influencing existing and ongoing landscape characteristics and values. The effects of these activities will be most prominent during the active mining phase and gradually reduce as mining is completed.

C.8.3.2 Natural character effects

581. Effects on natural character are assessed in report B.19. Mr Parker, does not disagree with any aspect of this assessment. Report B.19 states that the anticipated adverse effects on natural character are:

- a) Overall effects on the natural character of Shepherds Creek and its tributaries (which have a moderate level of natural character) are considered moderate-high adverse during startup and mining activity;

- b) On closure, this will reduce to moderate adverse effects as the tailing storage facility is rehabilitated, the process plant infrastructure is removed, and new wetlands are established on the TSF, and in the Lower Shepherds Valley and Processing Plant areas;
- c) These moderate adverse natural character effects on Shepherds Creek, and its tributaries, are residual effects of the proposal;
- d) Overall effects on the Rise and Shine Creek and its tributaries (low-moderate level of natural character) are considered neutral during startup, increasing to moderate adverse at the height of mining activity as diversions separate water from active mining activity; and
- e) Effects will likely reduce to low moderate adverse on completion as diversions are removed.
- f) These low adverse natural character effects on Rise and Shine Creek, and its tributaries, are residual effects of the proposal.

582. For the avoidance of doubt, ORC notes that the natural character assessment in B.19 (and the peer-review of Mr Parker) assumes that the ecological rehabilitation programme within the DDF will be successful, and deliver the outcomes set out in the LERMP and the FEMP. As discussed in section C.6.7 ORC is reasonably comfortable that the ecological outcomes for the rehabilitated diversion channels and riparian margins are likely to be achieved as set out in the FEMP. However, the feasibility of recreating wetlands habitats at this site is less certain. ORC is not sure the degree to which the natural character effects described in Report B.19 rely on the successful establishment of wetlands and therefore is uncertain as to the overall effects on natural character, particularly within Shepherds Creek catchment. However, ORC anticipates that the natural character effects would be higher (more adverse) if the wetlands are not successfully established.

C.8.3.3 Visual effects

583. Visual effects, as a subset of landscape effects, are assessed in report B.19. Mr Parker, does not disagree with any aspect of this assessment. Report B.19 states that, in relation to visual effects:

- a) Visual effects from public viewpoints including local roads, State Highways and conservation areas are largely considered no greater than moderate adverse including views from Thomson Gorge Road in close proximity of the road to the Site Workers Camp, Geology Workshop, and Administration buildings and mining elements as these become visible. These effects reduce to low, very low, or neutral at closure; and
- b) Views from private viewpoints and dwellings are identified between moderate-high adverse during mining activity, reducing to low-moderate adverse at closure.

584. ORC accepts these expert opinions as to visual effects.

C.8.3.4 Landscape effects

585. Landscape effects have been assessed at both a site scale in the context of the Rise and Shine and Shepherds Creek catchments encompassing Battery Hill, and the western aspect of

Thomsons Saddle, and at a landscape unit scale in the context of a transition between the north and south landscape character areas of Dunstan Mountains ONL.

586. The Landscape Assessment Report B.19 considers that the overall effects of the proposed mine in the broader context of the Dunstan Mountains ONL are moderate and adverse. Although substantial localised disruption will occur within the Rise and Shine and Shepherds Creek valleys, the coherent interface between the northern and southern Dunstan Mountains will remain. These activities will not significantly detract from the values of the overall ONL. Effects will gradually reduce as the mining activities are completed, and the site is progressively rehabilitated such that at the point of closure effects will be low-moderate and adverse. ORC agrees with this assessment.

587. At the site level, Report B.19 describes a degree of effect for each of the various elements within the proposed development area. This is considered appropriate and necessary to recognise and allow consideration of the different start times, rates of progression, and ultimately effects of the different mining elements.

588. The areas in which ORC disagrees with the assessment presented in B.19 are set out in paragraphs 589-609 below.

Haul roads

589. The degree of effect assigned to each mining element during start-up, mining activity, and closure phases is summarised in Table 2 of B.19. Between years 3 - 11 three substantial elements of the proposal are found to have a high degree of adverse landscape effect, four elements would have a moderate-high degree of adverse landscape effect, and a further five elements would have adverse effects on the landscape. ORC agrees with this assessment, with the following minor exception:

- a) The moderate-high degree of landscape effect for haul roads at the site during start-up and mining activity may be an underestimation of effects, as the extent of the landscape modification for the construction of the roads is not known with certainty. The haul roads are substantial in scale and will interrupt the overall coherence of the landscape and intactness of the underlying landform. Haul Roads will also facilitate transient effects of large mining trucks and other machinery, which are otherwise absent from the Site and broader Dunstan Mountains ONL.

Overall degree of landscape effect at the site level

590. An overall degree of landscape effect for the site in its entirety has not been provided. As noted above, a degree of effect is provided for each individual project component, which is appropriate to understand the effects of each component. However, it does not appropriately recognise that these components will not occur in isolation of each other, and consequently physical and perceptual landscape effects are overlooked.

591. The Applicant contends that providing a whole-of-site degree of effect would be somewhat artificial, as it would not take into account the spatial and temporal separation of activities, nor account for the progressive rehabilitation that is proposed.
592. However, as informed by the peer-review report of Mr Parker, ORC considers that the combined effect of the various elements on site is likely to have a degree of effect that is greater than the sum of its parts, particularly during the main operational period. The site will not, in reality, function as a series of discrete project components; rather, the interstitial spaces between the components will be affected by noise, dust, movement of vehicles and people, and other necessary operational actions such as fencing, temporary storage, or industrial-scale topsoil and rock stockpiles, that are not of a scale to warrant assessment as a project element in their own right but will still contribute to landscape effects.
593. Mr Parker considers that the proposal will have an overall ‘high’ adverse landscape effects at the site level during years 3-11, after taking into account the spatial and temporal distribution of activities and the proposed progressive rehabilitation. ORC agrees with this assessment and notes that it is an unmitigated and significant adverse effect (albeit a temporary one) of the proposal. ORC is not sure, however, whether this effect could be avoided or further minimised; mining activity on this scale will inevitably result in adverse landscape effects, and this alone does not render the project unacceptable. ORC considers that most focus should be on the remediation of adverse effects to ensure that long-term landscape effects are as low as practicable, both at the site level and in the context of the Dunstan Mountains ONL.

Associative effects

594. It is currently possible to experience the topography of the site generally as it was experienced by iwi in pre-European times and as experienced by European settlers on first discovering gold. Although modification has occurred since then, there is currently an immediate and tangible connection of being able to walk through a landscape topography much the same as experienced by the early gold prospectors. The industrial extent of modification proposed to the site landscape will introduce a significant break and reduction of this value. Whilst public access will be restored following the closure of the mine, this reduction of value will remain.
595. The Applicant states that landscapes are inherently dynamic and remain subject to change. Nonetheless, a recognised historic access link through a natural low point along the Dunstan Mountains at Thomsons Saddle will be maintained for the purpose of enabling access to historic and expanded gold mining activity, within which new heritage and recreational opportunities may also occur. Additionally, the associations and degradation associated with pastoral grazing will also be modified to ensure an increase in representative native ecosystems which may otherwise remain depleted.

596. ORC agrees that these are factors that mitigate effects on associative landscape values. However, the visceral and historic connection of walking in the exact same place as previous generations of New Zealanders will be lost, and this is a permanent effect. Accordingly, it is not agreed that these effects dissipate to neutral over time; rather, a low level of adverse effect is considered more appropriate. ORC considers that this is an important effect to note, on the basis of its permanence more so than its scale.

Long-term residual effects

597. As discussed in detail in the Section C.7 of these comments, the application proposes (LERMP G.07A) to rehabilitate approximately 480 ha of the DDF within the Dunstan Mountains ONL by establishing a mosaic of natural ecosystems, enhancing habitat diversity, and supporting native species through strategic revegetation within a reinforced conservation setting. This will include substantial changes to the physical landform and associated vegetation disrupted by mining activity, as well as associated changes to the surrounding landcover including through ecological restoration.

598. The numerous uncertainties and issues raised in the Section C.7 notwithstanding, the proposed rehabilitation outcomes are supported from a landscape effects perspective. However, it is an agreed matter that there will be a lasting high adverse effect to the site landscape resulting from the Rise and Shine Pit despite site wide remediation and revegetation. It is also agreed that there are no practicable measures that the Applicant could take to reduce this level of effect. Thus, it remains as a residual adverse effect of the proposal.

Offsetting

599. A high level of adverse effect is an effect of significance. As there are no practicable measures to reduce this residual adverse effect, offsetting or compensation should be considered. The goal of both offsetting and compensation is to produce positive effects to counteract the residual adverse effects of a development. These positive effects will ideally result in an overall benefit to landscape values. Offsetting provides redress for loss of value by creating 'like-for-like' or 'like-for-better' gains elsewhere. Compensation measures differ from offsets in that they cannot produce benefits that are equivalent to the losses and therefore provide the worst outcomes for the affected values, albeit potentially positive effects for other values.

600. Mr Parker suggested that an appropriate offset could comprise the covenanting and revegetation of an offsite area equivalent to the size of the RAS Pit (approximately 65 ha). This area should be as close to the site as possible, and the revegetation programme should be developed by landscape architects and ecologists to ensure that the planting did not inadvertently introduce adverse landscape effects elsewhere.

601. This proposal was discussed in a meeting between Mr Parker and the author of the B.19 Landscape Assessment and was also the subject of an exchange of written opinion. The Applicant does not support this offsetting proposal. However, ORC does not accept aspects of

the reasoning given. For example, the proposal to offset for effects is not supported by the Applicant because:

- a) It does not reduce the level of effect at the site of impact; and
- b) The ecological offsetting and compensation package, while not advanced as landscape offsetting and compensation, is significant in scale and would therefore ultimately have beneficial outcomes for landscape.

602. In relation to the first concern, ORC notes that this is the nature of offsetting, and offsetting is only proposed here because there is an agreement between parties that nothing can practicably be done to reduce the level of effect at the site of impact.

603. In relation to the second point, while ORC does not disagree that the ecological offsetting and compensation proposal could have positive effects for landscape values, it notes that none of the management plans put forth by the Applicant to deliver the ecological offsetting and compensation package include any specific objectives or goals in relation to landscape values, nor are any consent conditions proposed to this effect. Additionally, as discussed in Section C.7, ORC considers that the proposed offsetting and compensation measures are wholly inadequate to address the ecological effects of the proposal. Insofar as an enhancement in landscape values would correspond to an enhancement of ecological values, ORC does not consider that an acceptable offset for adverse landscape effects would be delivered by the existing ecological effects management package.

604. A suitably designed offset that is specific to landscape values could 'balance the books' more effectively. However, ORC acknowledges that consideration would need to be given to whether any proposal remains in scope of this fast-track application and also acknowledges that there are other parties likely to express an interest in landscape effects and that it may be efficient to consider these views before proposing an action to be set in stone.

605. If not adequately offset, ORC considers that these residual high adverse effects need to be considered in the overall balancing of adverse effects with the benefits of regional and national significance.

C.8.3.5 Conclusions

606. In summary, there is a good level of agreement between the experts advising the Applicant and ORC in relation to the potential landscape, natural character, and visual effects of the proposal. It is agreed that there are residual long-term adverse effects of the proposal that cannot be avoided, minimised, or remedied. In relation to natural character and visual effects, the nature and degree of these effects are agreed.

607. In relation to landscape effects, however, there are three significant issues that remain unresolved. These are:

- a) The level of adverse effect ascribed to haul roads during the mining phase. ORC considers that this effect could be high and adverse rather than moderate-high and adverse;
- b) Whether it is appropriate to assign an overall degree of adverse effect at the site level. ORC considers that this is appropriate and the level of effect would be high and adverse;
- c) The extent to which associative landscape effects reduce following closure of the mine. ORC considers that these effects dissipate to low and adverse, rather than neutral; and
- d) Whether offsetting is an appropriate mechanism to redress high (significant) adverse effects, and if so, whether this is encompassed within the broader ecological offsetting and compensation package proposed by the application. ORC considers that offsetting could be appropriate, and that it is not currently covered by the existing ecological offsetting and compensation package. However, ORC would appreciate the opportunity to consider the views of others in relation to this matter.

608. The above issues have been well traversed between ORC and the Applicant, and their respective landscape architects, in an online meeting, a written exchange of questions and responses, a site visit, and a workshop. The current position is one of a disagreement in expert opinion.

609. ORC anticipates that other invited participants are likely to provide both expert and lay person comment on landscape effects. ORC will consider any opinions raised and is willing to work constructively with the Applicant and any other parties in relation to these matters, in any manner that may be directed by the Panel.

610. The residual landscape, natural character, and visual effects of the proposal should be weighed against the regionally and nationally significant benefits of the proposal.

SECTION C.9 – AIR QUALITY EFFECTS

C.9.1 Information received and assessed

611. The following application documents are of relevance to this assessment:

- a) Application Report B.33
- b) Management Plan B.23

612. In addition to the updated application material provided by the Applicant under cover of a Mitchell Daysh memorandum dated 10 March 2026, the information listed below has been provided directly to ORC by the Applicant:

- a) **Appendix 26:** PDP Memorandum: Bendigo-Ophir Gold Project Air Quality Assessment: Response to Otago Regional Council Information Request, dated 29 January 2026
- b) **Appendix 27:** PDP Memorandum: Bendigo-Ophir Gold Project Air Quality Assessment Addendum: Cement and Concrete Batching, dated 4 February 2026

- c) **Appendix 28:** PDP Memorandum: Bendigo-Ophir Gold Project Air Quality Assessment Addendum: Visual Dust Monitoring and Instrumental Arsenic Dust Monitoring C051440001M004_Final_170326, dated 17 March 2026
- d) **Appendix 29:** Email: Jeff Bluett to Shay McDonald *et al.* Matakanui Gold Proposed Arsenic Ambient Air Sampling Programme, sent 19 March 2026

613. For transparency and to assist the Panel, the above listed information is attached to these comments as Appendices 26-29.

C.9.2 Advice received

614. ORC sought expert advice from SLR (New Zealand) Consulting Limited (**SLR**) in relation to the potential landscape effects of the proposal. This advice was provided by:

- a) Graeme Starke – Technical Director Air Quality

615. The following peer-review reports have been provided by SLR to ORC:

- a) **Appendix 45:** SLR (New Zealand) Limited Technical Memorandum Bendigo-Ophir Gold Project: Assessment of Environmental Effects from the Discharge of Contaminants to Air Peer Review Report, dated 12 December 2025
- b) **Appendix 46:** SLR (New Zealand) Limited Letter: Bendigo Ophir Project Air Quality Assessment Review, dated 18 February 2026
- c) **Appendix 47:** SLR (New Zealand) Limited Letter: Bendigo Ophir Project Air Quality Assessment Review, dated 20 March 2026

616. These are attached to these comments as Appendices 45-47. These peer-review reports were provided to the Applicant promptly following their dates of preparation.

C.9.3 Assessment of effects

617. ORC recognises that the potential air quality effects of a large mine may raise concerns for the local community, particularly in relation to adverse health and amenity effects.

618. ORC takes seriously its responsibilities in respect of air quality within Otago. Further, ORC is not sure whether any other agency or s53 invited party intends to present an expert assessment or peer-review of the potential air quality effects of this application. Hence, ORC has undertaken a comprehensive assessment in relation to this topic.

619. From the outset, ORC advises that there are no outstanding areas of dispute between the experts advising ORC and the Applicant in relation to the potential air quality effects of the proposal. A concise summary of important application and peer-review considerations is presented to assist the Panel – and any other reader – in understanding how this position of agreement has been reached.

620. Air quality effects are assessed in Application Report B.33, which was prepared by Pattle Delamore Partners Limited (**PDP**). In general, this report follows standard New Zealand methodologies for extractive resource air quality assessments.

C.9.3.1 Contaminants to be discharged

621. ORC agrees that the types of contaminants discharged to air from the mining activities are:

- a) Particulate matter (dust) comprising:
 - i. Coarse particulate – deposited dust and total suspended particulate (**TSP**)
 - ii. Fine particulate – PM₁₀
 - iii. Respirable crystalline silica (**RCS**)
 - iv. Fine particulate containing elevated levels of arsenic

- b) Gaseous contaminants comprising:
 - i. Hydrogen cyanide
 - ii. Ammonia
 - iii. Products of combustion from machines and vehicles (PM₁₀ and nitrogen dioxide)

C.9.3.2 Contaminant sources

622. ORC agrees that the sources of particulate matter are:

- a) The establishment and operation of:
 - i. Haul roads
 - ii. Open pit mines
 - iii. Engineered landforms
 - iv. Tailings storage facility
 - v. Soil stockpiles
 - vi. Ore crushing
 - vii. Concrete batching plant and cement paste plant

623. With respect to the TSF, Report B.33 states, at section 5.7, that “*The continuous delivery of the tailings slurry to the TSF keeps the surface damp. Therefore, the operational TSF does not discharge dust.*”

624. This is not entirely consistent with ORC’s understanding of the TSF. As described in Application Report B.21 by EGL, slurried tailings will be discharged sub-aerially (above water level) to ensure that a uniform tailings ‘beach’ will form against the TSF embankment. This is to ensure that water does not pond directly against the embankment or adjacent abutments.

625. Evaporation from the beach surface dries and increases the density of the tailings. This is a favourable outcome from a geotechnical and storage capacity perspective. However, it could

lead to the TSF becoming a source of dust. Only a small part of the impounded tailings will be covered by water.

626. ORC recommends that provision be made for dampening of the tailings beach, for example via a sprinkler system, to prevent the tailings beach becoming a source of dust.

627. ORC agrees that the sources of gaseous contaminants are:

- a) Underground mine vents and portal
- b) The processing plant, including:
 - i. Leaching and adsorption tanks
 - ii. Acid wash and elution columns
 - iii. Electro-winning cells
 - iv. Induction furnace

C.9.3.3 Mitigation measures proposed by Applicant

628. Mitigation measures for dust include:

- a) Maintain 500 m separation between sensitive receptors and the dust-generating activity;
- b) Halting dust-generating activities when windspeeds are greater than 7.5 m/s in the direction of sensitive receptors located within 500 m of the activity;
- c) Minimising drop heights from excavators to dump trucks;
- d) Undertaking dust-generating activities in favourable wind conditions as much as practicable;
- e) Establish vegetative cover on exposed soils e.g. stockpiles and ELFs as soon as practicable;
- f) Manage soils with elevated arsenic concentrations separately from other soils and minimise the stockpiling of these soils;
- g) Implement an engineered surface which minimises free fine material on haul roads;
- h) Restrict vehicle speeds on haul roads to 60 km/h under normal conditions and reduce speeds to 20 km/h if dust is seen crossing the site boundary;
- i) Automated water application to dusty processes in the processing plant;
- j) Apply water to exposed surfaces to suppress dust; and
- k) Monitoring – real-time PM₁₀ monitoring with alert system as well as visual monitoring.

629. Mitigation measures for gaseous contaminants include:

- a) Continuous instrumental monitoring (including alarm system) of the pH within the leaching and adsorption tanks to avoid the generation of hydrogen cyanide;
- b) Airflow monitoring from electro-winning cell and induction furnace. Induction furnace has a reverse jet bag filter system including a pressure-drop gauge to monitor for clogging and bag tears; and
- c) Fume hoods, filtration, extraction, venting to atmosphere from 15 m chimney stack to ensure dilution of contaminants at point of discharge.

C.9.3.4 Site information and baseline data

630. Baseline meteorological and air quality data are described in B.33. These show:
- a) Wind patterns in the Shepherds and Rise and Shine valleys are completely different to the winds in the wider Bendigo area;
 - b) For the valley areas, the predominant winds are north-westerly and south-easterly wind directions (aligning with the direction of the valleys);
 - c) For the Bendigo area, northerly and easterly winds predominate;
 - d) The average monthly rainfall is approximately 30 mm/month, with no clear seasonal pattern, except that slightly more rain falls in spring (September and October);
 - e) There is a clear seasonal pattern where PM₁₀ concentrations are low from April to September and are typical of a rural background site; and
 - f) The PM₁₀ levels from November to April are higher than would be expected for a rural background site, indicating that this is a relatively dusty site
631. The following site-specific factors contribute to an inherently low risk of an offsite discharge of contaminants:
- a) The site is located within complex valley terrain: valley walls would provide shelter from the wider wind patterns in the locations where the bulk of the construction and mining activity are occurring; and
 - b) Stronger winds are blowing from the northwest up the Shepherds valley meaning the most significant winds with dust generating potential are blowing away from sensitive receptors.

C.9.3.5 Sensitive receptors

632. Sensitive receptors include any person, location, or system that may be susceptible to changes in air quality.
633. Application Report B.33 (PDP) identifies sensitive human, horticultural, and ecological receptors at sections 8.4 and 8.5. These receptors all have a high sensitivity to dust impacts. Recreational and historic receptors are also identified, but their relative sensitivity is not explicitly stated.
634. Sensitive receptors are shown on a map (Figure 32) and listed in Table 33. However, beyond identifying these receptors, no discussion is provided in relation to sensitive receptors. Some discussion would have been useful, in particular to explain the methodology used to identify these receptors. Although Report B.33 states (in a note below Table 33) that *“dwellings and buildings have been identified through desktop study using google maps and observations made during the site visit”* it is not clear why multiple dwellings which are clearly visible on google maps have not been identified in either Figure 32 or Table 33. Potential omissions / misidentifications include:

- a) B.33 identifies 'Shed 2' – ORC suggests that this is in fact a dwelling located at 69 Thomson Gorge Road;
- b) 58 Thomson Gorge Road is a dwelling (as evidenced by online real estate listings), located west of 'Dwelling 2', that has not been identified in B.33; and
- c) 60 Thomson Gorge Road, also located west of Dwelling 2, is operated as the Ardour Strawbale Bed and Breakfast accommodation and has not been identified in B.33.

635. Similarly, ORC notes that Sheds 2, Sheds 3, and Dwelling 1 – which are all identified in Figure 32 – are not included in Table 33. It is assumed that PDP has undertaken an exercise to group similar receptors together, with effects represented by the receptor in the group that is nearest the contaminant source; however, it would be helpful if this could be clarified. If grouping of receptors has occurred, it would be helpful if the individual receptors that make up each group could be identified.

636. ORC has not previously raised this minor issue with the Applicant, as this was only identified via a close 'zoom' of Figure 32 when preparing these comments.

C.9.3.6 Potential adverse effects

637. ORC agrees that the nature of the potential air quality effects is as follows:

- a) Amenity effects – coarse particulate matter (dust) being deposited on surfaces
- b) Ecological effects – flora or fauna adversely impacted
- c) Health effects – fine particulate matter and gaseous contaminants inhaled by persons

638. The process undertaken to assess the adverse air quality effects is summarised below.

639. A first review of the application material was undertaken by Mr Starke identified numerous issues and concerns, and further information was requested from the Applicant in relation to these matters. A response was received in two parts, which resolved most but not all of the issues and concerns.

640. A second review was undertaken and the resulting memorandum provided to the Applicant. This elicited a memorandum from PDP and separate confirmation from the Applicant via email in relation to monitoring that would be undertaken.

641. An online meeting was then held between ORC and the Applicant and their respective air quality experts to discuss the practicalities of this monitoring. An email, intended to become an appendix to the PDP memorandum dated 17 March 2026, was produced.

642. A summary of this information exchange and the resolutions reached is provided in Table 2 below.

Table 2 Summary of information exchange and resolutions reached

Issue	Response	Why resolved
The appropriateness of a qualitative assessment of dust effects, as opposed to a quantitative assessment e.g. modelling of dust emission and dispersion rates	Assessment would have orders of magnitude inaccuracy Not required by good practice guide	Satisfactory explanation
Apparent absence of an assessment of construction-phase dust effects, with specific concerns about potential effects on sensitive receptor 'Dwelling 3'	Explanation of how the Report B.33 assesses construction phase effects	Satisfactory explanation
Absence of assessment for cement paste and concrete batching plants	Standalone report prepared Effects well understood and considered to be negligible due to filtration systems and substantial separation from sensitive receptors	Satisfactory supplementary assessment
The feasibility of the proposed visual dust monitoring in a complex valley terrain where methodology relies on workers having diligence to observe dust generation, being able to see boundaries within a tight valley and anticipating conditions outside the valley from inside the valley	Initial response: reiterating combination of visual and instrument monitoring measures already specified in B.33, and general condition prohibiting offensive, objectionable, noxious or dangerous adverse effects beyond site boundary Follow up response: comprehensive visual monitoring protocol to be included in Air Quality Management Plan	Initial response: inadequate – appeared to misunderstand the issue. Follow up response: a detailed workflow process and associated language of identification has been provided that addresses this issue
Choice of 7.5 m/s for high-risk windspeed for FIDOL 'frequency' assessment poorly justified, and unclear reasoning as to why only high-risk winds would be capable of affecting Dwelling 3	Further explanation of the application of various accepted industry assessment methods and explanation as to why only wind speeds exceeding 7.5 m/s would transport larger fraction dust particles (being this question related to amenity effects)	Satisfactory explanation
Unsupported statement indicating that a receptor between 250 m and 100 m from a dust source that is employing good practice dust suppression is unlikely to experience	Amenity dust effects are dominated by coarse-fraction particles which settle rapidly with distance. Separation of sensitive receptors from significant dust sources,	Satisfactory explanation and SLR reviewed additional external data to confirm explanation

<p>detrimental effects on amenity values</p>	<p>proposed mitigation and monitoring measures mean receptors located more than 100 m from site boundary unlikely to experience detrimental amenity effects</p>	
<p>Risks to human health or horticultural crops associated with arsenic not specifically assessed (although likely to be appropriately mitigated, regardless) in the context of community concerns about the onsite disturbance and stockpiling of soils high in arsenic. No monitoring proposed for arsenic in either deposited dust or ambient air</p>	<p>Initial response: mitigation measures for soils high in arsenic identified in Report B.33. Most soils not affected, receptors far away, difficult to establish appropriate trigger level for monitoring. Appears to consider arsenic monitoring to be onerous and unnecessary.</p> <p>Follow up response: PDP remain of the view the arsenic monitoring in air (or in deposited dust) is not justified based on anticipated effects. However, PDP proposed a detailed protocol for measuring arsenic concentrations in ambient air at request of the Applicant.</p>	<p>Initial response inadequate. Still no explicit assessment relating to arsenic-rich soils. Response does not recognise community concerns about arsenic or suggest reasonable monitoring mechanisms to provide surety to the community (and to the Applicant) that the mitigations are working and that effects are low as anticipated. i.e. despite agreement that offsite arsenic effects are not likely, applicant could not demonstrate what offsite effects are without monitoring.</p> <p>Follow up response (including meeting held between MGL, PDP, ORC, and SLR on 19 Mar 2026) – agreed on an ambient air monitoring programme to measure arsenic in dust, including baseline assessment to commence prior to mining. Appropriate monitoring locations agreed: one to measure airborne arsenic at their likely site of generation (stockpiles – far from sensitive receptors) and one to measure airborne arsenic at a site likely to provide confidence to community that arsenic is not leaving the site (downwind of the crushing plant in Shepherds valley).</p> <p>SLR satisfied that this approach will adequately address any risk presented by elevated arsenic concentrations in the mining material. The presence or absence of arsenic in the ambient</p>

		<p>air quality monitoring will be directly analogous to deposited material.</p> <p>ORC to propose conditions for consideration based on methodology and locations volunteered by applicant.</p> <p>Response accepted.</p>
<p>The assessment of negligible adverse effects resulting from the discharge of gaseous contaminants from the processing plant relied entirely on effective implementation of mitigation measures to achieve low emission rates. This did not give any consideration to the management of upset conditions, with those being conditions that deviate from standard or steady-state operating conditions, such as those which occur under fault conditions at the plant or as a result of ineffective application of mitigation measures.</p>	<p>Upset conditions within the gold processing plant are unlikely to occur given the range of continuous monitoring and contingency response systems built into the process i.e. engineering controls</p>	<p>Satisfactory explanation</p>

C.9.3.7 Conclusions and recommendations

643. The risk that dust, fine particulate matter, or gaseous contaminants would be discharged across the site boundary to the extent that it would cause an offensive, objectionable, dangerous, or noxious adverse effect is negligible. This is largely a function of the distance between dust and contaminant-generating activities from sensitive receptors, prevailing wind directions and favourable valley topography, and an assumption that mitigation measures will be diligently implemented.

644. In short, ORC agrees with the assessment of effects provided by the Applicant. That is:

- a) Adverse effects on amenity values associated with the deposition of dust will be negligible for all sensitive receptors;
- b) Adverse effects on human health associated with inhalation of fine particulate matter, including PM₁₀, RCS, and arsenic, will be negligible for all sensitive receptors;
- c) Adverse effects on human health associated with the discharge of gaseous contaminants from the processing plant will be negligible for all sensitive receptors; and
- d) Adverse effects on ecological values from deposited dust will be negligible for the sensitive species onsite and for offsite horticultural and viticultural receptors.

645. This position has been informed by the expert assessment of Mr Starke of SLR and by the further information provided to ORC by the Applicant.
646. This conclusion relies heavily on diligent implementation of the mitigation measures described throughout Report B.33 and the G.23 Air Quality Management Plan (**AQMP**). While ORC agrees that the mitigation measures themselves are best located within the AQMP, ORC considers that the outcomes to be achieved by those mitigation measures should be conditioned. Accordingly, ORC recommends a number of new conditions in Appendix 4, including recommendations for compliance monitoring that are based on the performance monitoring already proposed in the AQMP.
647. ORC highlights the proposed monitoring of airborne arsenic that has been volunteered by the Applicant following the further information request / response process initiated by ORC. ORC recommends a preliminary consent condition in Appendix 4 to secure this monitoring and would invite the Applicant to consider the wording proposed and respond in its s55 response to s53 comments.
648. These additional consent conditions are not considered to be onerous, as they only serve to secure management measures that the Applicant has already volunteered to undertake.
649. ORC recommends that the Applicant consider clarifying the following two minor issues, potentially via their Section 55 response:
- a) Explanation as to the methodology used to identify sensitive receptors, in particular why some dwellings are not specifically identified, and whether any grouping of similar receptors has occurred. Refer paragraphs 634-636 for further explanation.
 - b) Confirmation that a sprinkler system, or other dust suppression method, is available at the TSF, should it be at risk of becoming a source of dust.

SECTION C.10 – ECONOMIC EFFECTS

650. This section describes the potential economic effects of the proposal. As for the assessment of environmental effects, this includes discussion of the significance of these effects.
651. Regional and national benefits of the proposal, as relevant to the purpose of the FTAA and s85, are discussed further in Section E of these comments.

C.10.1 Advice received

652. ORC sought expert advice from Sense Partners Limited in relation to the potential economic impacts of the proposal. This advice was provided by:
- a) Dr Kirdan Lees – economist

653. The following peer-review reports have been provided by Sense Partners to ORC:

- a) **Appendix 48:** Sense Partners Limited Peer Review: Matakanui Gold FTAA – Report for Otago Regional Council, dated November 2025

654. This attached to these comments as Appendix 48. This report has been provided to the Applicant.

C.10.2 Information received and assessed

655. The peer-review report was prepared with consideration to the following documents:

- a) Application report B.01: Economic impacts of the Bendigo-Ophir Gold Project, prepared by Benje Patterson, dated October 2025
- b) Bendigo-Ophir Gold Project Socioeconomic Baseline Assessment, prepared by Rationale, dated 3 May 2024, provided to ORC prior to lodgement of the substantive application.

C.10.3 Economic effects

656. ORC engaged Sense Partners to undertake a peer review of the economic reports listed in paragraph 655 above.

657. Two questions were asked of Sense Partners:

1. Has the Applicant utilised a correct / appropriate methodology to determine the economic benefits of the proposal, and are the stated economic benefits likely to be accurate?
2. Do the economic benefits constitute ‘significant regional or national benefits’, and why?

C.10.3.1 Methodology

658. The Applicant has undertaken an economic impacts assessment, which is an appropriate methodology to determine the economic benefits of the proposal. This method differs from a cost benefit analysis in that it allows for a richer assessment of the net benefits of a project or policy.

659. A cost-benefit analysis has not been undertaken; however, assessment of the adverse effects of the proposal can be done separately. Positive and adverse effects need not be encompassed within a single evaluation tool provided by the Applicant.

660. Increasing Gross Domestic Product (**GDP**) will often but not always be associated with increases in incomes that make workers better off. GDP records production of goods and services in the New Zealand economy. A better measure is Gross National Income (**GNI**) that records changes in the income of New Zealand residents which is closer to the intent of benefits.

661. The total economic benefits associated with the mine are likely to be overstated because of the use of GDP as a metric versus GNI.²⁶
662. The assessment of future national benefits should be discounted to reflect a preference for outcomes today rather than in the future. In his report Dr Lees shows the effect of discounting predicted GDP benefits at a rate of 2%, 5%, and 8%. Discounting makes a material difference to reported benefits that, without discounting, would be overstated. At the highest rate of 8%, discounting reduces GDP benefits by a little under 50%.
663. Benefits may also be overstated because the assessment includes indirect effects that are uncertain and induced effects that rely on a series of behavioural assumptions about how markets might use resources.
664. Based on the advice of Dr Lees, ORC recommends that the Panel consider the quantified direct benefits after discounting, note that there may be some indirect effects, but set aside the quantified estimates of both induced and indirect effects. Even if indirect and induced benefits are set aside, direct benefits comprise over 80% of the total impacts.

C.10.3.2 Regional or national significance of benefits

665. There is no set definition as to what constitutes significant regional or national economic benefits within the Fast Track Approval Act.
666. Dr Lees adopts a definition of significant as: *important or noticeable*.
667. Accordingly, significant impacts might be expected to be distinguishable by their size, value, impact on price or other key economic features. Such a definition implies that the benefits are noticeably different or easily distinguishable from what would occur in the status quo, that is in the absence of approval of the project application.
668. Dr Lees draws on the economics literature and the use of national significance in the Infrastructure Priorities Programme and earlier legislation associated with the Overseas Investment Office to help assess regional and national significance. Dr Lees concludes that past use of the term 'nationally significant' suggests a range of economic metrics have been used with no set threshold for benefits.
669. Despite overstating the benefits in parts, the proposed mine activity would deliver benefits across several dimensions. These include:
- a) New, substantive employment for local workers.
 - b) The track record of the sector suggests these jobs will be well paid.

²⁶ GDP and GNI are measures of economic activity; they are not economic benefits in and of themselves.

- c) More modest benefits for firms in the region that are difficult to quantify but provide new opportunities to support mining activity.
- d) Substantial contributions to tax revenue that can be used to fund other activities.

670. These are important benefits noticeable at a regional and national scale. They include:

- a) An average of 350 workers employed directly by the mine, each year, across the lifespan of the operation.
- b) An average salary of \$140,000 that is significantly higher than the average in the region.
- c) Significant contribution to tax revenue. This is likely to be overstated in Report B.01 but might range between \$1 billion after discounting and some technical adjustment and the \$1.8 billion presented in the report.

671. It is reasonable to conclude that these benefits of the proposed mining activity are regionally and nationally significant.

SECTION C.11 - REHABILITATION BOND

C.11.1 Introduction

672. In this section ORC provides its preliminary assessment of matters relating to the proposed rehabilitation bond.

673. Firstly, ORC agrees that a rehabilitation bond is necessary, and that it is appropriate that it be jointly held by both ORC and CODC. The purpose of the bond is to secure funds that the councils can call on to allow them to close and rehabilitate the mine in accordance with the consent conditions, in the event the consent holder does not do so. ORC considers that a single bond, in favour of both councils, is the most efficient and appropriate means by which to calculate, manage, and if necessary, access and use the funds.

674. The bond is not a fixed bond; rather, the amount of the bond would be recalculated and fixed annually by a suitably qualified and experienced independent assessor, in accordance with a process outlined in consent conditions.

675. The application contains Lane Associates Limited (**LAL**) Report B.44 Bond Introduction Report which sets out a recommended process by which the bond quantum be calculated and also estimates the bond quantum for each year of operation (11 years).

676. ORC engaged Damwatch Engineering Limited (**Damwatch**) to review Report B.44 with the following scope:

- a) The adequacy of the information upon which the bond is based for the first year of the project and where additional information is required.
- b) Assessment of the calculated value of the bond for Year.

c) Any other matters relevant to the setting of the bond for Year 1 or subsequent years.

677. Damwatch are involved in the annual bond negotiations between ORC, Waitaki District Council, Dunedin City Council, and OceanaGold (New Zealand) Limited in relation to the rehabilitation bond for the Macraes Gold Mine. Damwatch are therefore appropriately experienced in such assessments.

678. While Damwatch consider that the methodology used by LAL is generally appropriate, they have identified risks to ORC and made recommendations accordingly. Some of these recommendations have informed ORC's recommended changes to consent conditions, but for the most part the risks identified are matters for ORC (and CODC) to take into account when the councils are fixing the bond each year.

679. Nonetheless, for transparency and to assist the Panel, ORC provides a copy of the Damwatch report as Appendix 51.

680. In respect of matters needing to be traversed by the Panel in relation to the rehabilitation bond, ORC considers that the matters of relevance are limited understand the scope of matters that the bond needs to provide for, and to the crafting of appropriate consent conditions that provide appropriate surety to all parties. ORC does not consider that the Panel has a role in determining the amount of the bond that will be required for the first or any other year of the consent, as the bond conditions would provide for this negotiation between the councils and the consent holder on an annual basis.

C.11.2 Bond conditions

681. The Applicant has proposed conditions detailing the process by which the bond would be calculated and other terms and conditions that would apply to the bond. These conditions are Conditions C51-C61 in Application Document D.03 *Conditions Common to both Central Otago District Council and Otago Regional Council*.

682. ORC considers that the structure of the conditions is largely appropriate and generally aligns with other bond conditions that ORC is familiar with in relation to mining activities. However, ORC recommends a number of changes to these conditions. These are shown as tracked changes in Document D.03 and are summarised below:

- a) The bond must be provided prior to first exercise of the consent, not within 12 months of commencement;
- b) The bond must be sufficient to enable any adverse effect on the environment arising from the consent holder's activities, whether authorised or not, to be avoided, minimised, remedied, offset, or compensated for;
- c) The conditions must have specific reference to dealing with any adverse effect on the environment which may become apparent after the surrender or expiry of this consent;

- d) The conditions must list all of the management plans to be taken into account in calculating the bond – currently the bond conditions only refer to the ecological management plans, but there will be ongoing maintenance and monitoring requirements in relation to geotechnical stability and water quality. Even though there are likely to be future consenting requirements for discharges that impact on water quality, these activities should be bonded via these consents;
- e) Conditions should ensure that the bond remains in place for an appropriate length of time following expiry or surrender of resource consents, and recommends a period of 20 years following expiry of consents as a suitable timeframe; and
- f) ORC considers that the bond should provide for the councils to purchase Industrial and Special Risk Insurance and Public Liability Insurance with the sum insured commensurate to the nature and scale of works required to be undertaken by Councils to achieve the outcomes set in consent conditions, if the bond was called in the following 12 months. This reflects the risk that would fall to the councils in the event that the bond was called and they needed to take responsibility for activities that fall outside their typical council functions.

C.11.3 Conclusions and recommendations

683. ORC has not had the opportunity to discuss the bond conditions or indeed the any process relating to the bond with either the Applicant or CODC but would appreciate the ability to do so to the extent that can be accommodated by this process. ORC suggests a conference, or similar, in relation to the bond would be helpful to ensure that each party is on the same page with respect to the bond conditions and the process that will need to be followed to develop the bond agreement itself.

SECTION D: POSITIVE EFFECTS

D.1 – APPLICANT ASSESSMENT OF POSITIVE EFFECTS

D.1.1 Economic benefits

684. The Applicant considers that the BOGP will deliver the following significant benefits to both Inland Otago (Queenstown Lakes and Central Otago) and New Zealand more broadly:
- a) Generate a significant contribution to the GDP of Inland Otago and New Zealand
 - i. Directly add an average of \$360 million of GDP per year with cumulative GDP effects totalling approximately \$5.8 billion;
 - ii. Contribute approximately \$1 million of GDP per worker which is 7.7 times the current average productivity across Inland Otago
 - b) Generate substantial revenue for the New Zealand Government through royalites, corporate tax, and PAYE in the order of \$1.8 billion at an estimated gold price of USD\$3,138 per ounce at a NZD:USD exchange rate of 0.58;²⁷

²⁷ It is noted that the gold price has increased since this assessment was made by the Applicant

- c) Generate substantial foreign investment, making it one of the largest funded projects in New Zealand's infrastructure pipeline;
- d) Support a wide range of highly paid jobs, bringing with them job security, sustained livelihoods, reduced local unemployment, increased business activity, and indirect employment opportunities;
 - i. 351 jobs per year are anticipated with a peak of 506 jobs as capital investment ramps up to construct mine infrastructure and processing capacity; and
- e) Deliver significant contributions to the regional economy.

D.1.2 Environmental benefits

685. Further to the substantial economic benefits, the Applicant states that the project will generate demonstrable ecological benefits to terrestrial and wetland biodiversity within the Dunstan Ecological District as a result of extensive weed and pest control, pest exclusion, habitat enhancement and plantings and browsing pressure management, ensuring a net gain in ecological values is achieved for many species.

D.1.3 Other benefits

686. As an additional positive effect of the BOGP, the Applicant proposes an annual payment of \$500,000 (+GST) to DoC's Alexandra office in every year in which gold is produced for a maximum of ten years from the latter of the third anniversary of the commencement of consents or six months after commercial production is declared.

687. The fund is termed the Biodiversity and Heritage Enhancement Fund, the purpose of which is to support the protection of threatened or at-risk species or ecosystems within the Dunstan Ecological District and to enhance heritage values within Central Otago. DOC retains the discretion to set priorities for how the annual payments are spent.

688. The Applicant further notes, in Application Report A.13, that the gold produced by the BOGP contributes to powering the global economy and is essential to the renewable energy and transport sectors, life-saving medical devices, and technology (including computers and cell phones) that connects communities around the world.

689. In the A.01 Legal Overview, at paragraph 25, community benefits such as partnerships and sponsorships to enable community events, and scholarships for tertiary or trade study, are identified as broader benefits of the BOGP.

D.2 – ORC ASSESSMENT OF POSITIVE EFFECTS

690. ORC only partially agrees with the Applicant's assessment of positive effects described in Section D.1 above. ORC considers that the positive effects of the proposal are as set out in paragraphs 691-701 below.

D.2.1 Economic benefits

691. As described in Section C.10, ORC obtained a peer-review of the B.01 Economic impacts of the Bendigo-Ophir Gold Project – October 2025 update report. This peer-review was undertaken by Dr Kirdan Lees of Sense Partners Limited.

692. This report:

- a) finds that the total economic benefits associated with the mine are likely to be overstated because of the use of GDP as a metric to measure economic activity;
- b) suggests that a better measure of economic activity would be GNI, which records changes in the income of New Zealanders which may be closer to the intention of ‘benefits’;
- c) recommends that the Panel considers the quantified direct benefits, notes that there may be some indirect effects, but sets aside the quantified estimates of both induced and indirect effects;
- d) that the direct economic benefits be discounted to reflect a preference for outcomes today rather than in the future; and
- e) considers that the BOGP would deliver benefits across several dimensions, including:
 - i. new, substantive employment for local workers;
 - ii. well-paid jobs;
 - iii. more modest benefits for firms in the region that are difficult to quantify but provide new opportunities to support the mining activity; and
 - iv. substantial contributions to tax revenue that can be used to fund other activities.

693. Based on the advice of Dr Lees, ORC considers that the project will deliver the following economic benefits:

- a) directly employ an average of 350 workers each year, across the lifespan of the mine;
- b) an average salary of \$140,000 per worker that is significantly higher than the average in the region; and
- c) significant contribution to tax revenue, which is likely to have overstated in Report B.01 but might range between \$1 billion after discounting and some technical adjustment and the \$1.8 billion presented in the report.

694. Collectively, these benefits would, after discounting, contribute to an increase in GDP of between \$3.298 and \$4.949 billion over the 14-year life of the mine (an average of \$206 - \$309 million per year).

695. ORC recommends that the Panel considers the quantified direct benefits, note that there may be some indirect effects, but set aside the quantified estimates of both induced and indirect effects.

D.2.2 Environmental benefits

696. ORC considers that the Applicant has significantly overstated the project's anticipated ecological benefits to terrestrial and wetland biodiversity within the Dunstan Ecological District. A net gain outcome may be achievable for a small number of habitats or species; however, this is in the context of significant and likely permanent and irreversible loss outcomes for a much larger number of habitats and species, including some that are irreplaceable or highly vulnerable.

697. Provided the myriad consent conditions recommended by ORC throughout Section C of these comments are imposed, ORC does agree that there will be a net gain in river extent and values as a result of the proposed stream diversion rehabilitation and enhancement in Shepherds and Rise and Shine Creeks, as well as the proposed removal of crack willow and enhancement of riparian margins in Bendigo and Clearwater Creeks.

D.2.3 Other benefits

698. With respect to the proposed \$5 million Ecological and Heritage Enhancement fund, ORC agrees that this is a positive effect of the proposal and discusses its regional or national significance below.

699. ORC notes the Applicant's claim of contribution to the global economy, but is not sure that such a benefit, if measurable, has particular relevance to the delivery of infrastructure and development projects with significant regional or national benefits.

700. The Applicant further stated that gold, such as will be produced by the BOGP, is essential to the renewable energy and transport sectors, life-saving medical devices, and technology (including computers and cell phones). ORC understands New Zealand to consider gold a 'critical mineral';²⁸ however, ORC is not aware of any evidence that the gold produced by the BOGP would directly benefit the New Zealand renewable energy or transport sectors, nor any evidence that the gold would be used to manufacture any of the above-listed devices or technology within New Zealand, or for the direct benefit of New Zealand.

701. ORC does not agree that community benefits such as partnerships and sponsorships to enable community events, and scholarships for tertiary or trade study, are a benefit of the BOGP as these outcomes are not secured by consent conditions.

SECTION E: REGIONAL OR NATIONAL SIGNIFICANCE

E.1 - INTRODUCTION

²⁸ A Critical Minerals List for New Zealand, January 2025 <https://www.mbie.govt.nz/assets/a-critical-minerals-list-for-new-zealand.pdf>

702. The FTAA does not contain a definition of significant regional or national benefits. However, in relation to a referral application, s22(2) lists a number of criteria that the Minister may consider when determining whether a project is an infrastructure or development project that would have significant regional or national benefits. The Minister may consider whether the project:

- (i) *has been identified as a priority project in a central government, local government, or sector plan or strategy (for example, in a general policy statement or spatial strategy), or a central government infrastructure priority list:*
- (ii) *will deliver new regionally or nationally significant infrastructure or enable the continued functioning of existing regionally or nationally significant infrastructure:*
- (iii) *will increase the supply of housing, address housing needs, or contribute to a well-functioning urban environment (within the meaning of policy 1 of the National Policy Statement on Urban Development 2020):*
- (iv) *will deliver significant economic benefits:*
- (v) *will support primary industries, including aquaculture:*
- (vi) *will support development of natural resources, including minerals and petroleum:*
- (vii) *will support climate change mitigation, including the reduction or removal of greenhouse gas emissions:*
- (viii) *will support climate change adaptation, reduce risks arising from natural hazards, or support recovery from events caused by natural hazards:*
- (ix) *will address significant environmental issues:*
- (x) *is consistent with local or regional planning documents, including spatial strategies.*

703. ORC has given consideration to these matters, as well as analysis provided by panels in other FTAA processes (such as the Waihi Norther and Taranaki VTM proposals) in forming a view on whether the positive effects likely to result from the application are of regional or national significance. ORC understands key relevant points made by those panels include that:

- a) The term "*significant*" is not defined in the FTAA, but has been interpreted as meaning "*sufficiently great or important to be worthy of attention; noteworthy*";
- b) Assessing the scale of benefits and whether they are significant is a factual assessment based on evidence and informed by judgement; and
- c) That factual assessment is undertaken against a regional or national reference point which asks whether the benefits are significant to the region or to New Zealand; again, this is a context-dependent question, the answer to which may differ from one region to the next.

704. ORC has not relied on the fact that this Application is a listed project in Schedule 2 of the FTAA as evidence of the proposal significance regional or national benefits.

705. An assessment of each of the positive effects – as described in Section D.2 – is provided below.

E.2 – ECONOMIC BENEFITS

706. As there is no set definition as to what constitutes significant regional or national economic benefits within the Fast Track Approval Act, Dr Lees adopts a definition of significant as: *important or noticeable*.
707. Accordingly, significant impacts might be expected to be distinguishable by their size, value, impact on price or other key economic features. Such a definition implies that the benefits are noticeably different or easily distinguishable from what would occur in the status quo, that is in the absence of approval of the project application.
708. Dr Lees draws on the economics literature and the use of national significance in the Infrastructure Priorities Programme and earlier legislation associated with the Overseas Investment Office to help assess regional and national significance. Dr Lees concludes that past use of the term ‘nationally significant’ suggests a range of economic metrics have been used with no set threshold for benefits.
709. Despite his view that the Application overstates the benefits in parts, Dr Less considers that the proposed mine activity would deliver benefits across several dimensions. These important benefits (employment, salaries, and government tax revenue) which would be noticeable at a regional and national scale are described in paragraph 693 above.
710. Dr Lees states that it is reasonable to conclude that these economic benefits of the proposed mining activity are regionally and nationally significant.
711. ORC accepts this expert opinion and, accordingly, considers that the BOGP will have economic benefits that are both regionally and nationally significant.

E.3 – ENVIRONMENTAL BENEFITS

712. As described in Section D.2.2 above, ORC considers that the claimed ecological benefits to terrestrial and wetland biodiversity within the Dunstan Ecological District are significantly overstated, and that for most habitats and species, the ecological outcome will be adverse.
713. For completeness, ORC advises that it does not consider that any net gain outcome that may be achieved for a particular habitat or species extends to the level of regional or national significance.
714. The net gain in river extent and values is likely to be significant at a catchment scale, but not at a regional or national scale.
715. ORC concludes that there are no regionally or nationally significant environmental effects of the BOGP.

E.4 OTHER BENEFITS

716. ORC does not consider that the proposed Biodiversity and Heritage Enhancement Fund constitutes a benefit of regional or national significance for the following reasons:

- a) the intention of this fund, according to the Applicant, is to make a significant contribution to safeguarding historic heritage, conservation management and recovery of indigenous biodiversity more broadly within the Dunstan Ecological District;²⁹
- b) despite its name and stated intention, this fund is not proposed as part of the broader ecological compensation package described in the application;³⁰
- c) the inclusion of an *Augier* condition securing the Applicant's commitment to establishing this fund notwithstanding, a consent condition cannot bind or direct the actions of a third party (i.e. DoC); as such, there is little certainty in terms of specific ecological outcomes that may arise (although ORC acknowledges that funding received by DoC is likely to be spent on activities aligned with DoC's statutory functions); and
- d) it is therefore more appropriate to treat this fund as a non-targeted financial contribution that may be used to support an administrative or operational function of the Alexandra office of DoC;
- e) even if used in accordance with the intention of the fund, \$500,000 per year for ten years is a relatively small amount of money which would not likely be sufficient to deliver a biodiversity or heritage project of regional or national significance, especially since the funding will cease after ten years; and
- f) as is evident from this application, biodiversity projects in particular often require long-term or even in perpetuity funding to ensure enduring positive biodiversity outcomes are achieved.

717. ORC does not consider that 'contribution to the global economy' constitutes a regionally or nationally significant benefit

E.5 CONCLUSIONS

718. The BOGP will deliver economic benefits that are both regionally and nationally significant.

719. There are no environmental benefits, or other benefits, that are of regional or national significance.

²⁹ A.01 Legal Overview paragraph 10

³⁰ B.08 Assessment of Ecological Effects section 8.5;

SECTION F: PURPOSE OF THE FTAA

720. The purpose of the FTAA is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits.³¹ When taking in account the purpose of the FTAA the Panel must consider the extent of the project's regional or national benefits.³²

721. To assist the Panel, Council has considered:

- a) the positive effects of the application; and
- b) whether the positive effects are regionally or nationally significant.

722. The BOGP is a development project that will deliver the following regionally and nationally significant benefits:

- a) direct employment of an average of 350 workers each year, across the lifespan of the mine;
- b) an average salary of \$140,000 per worker that is significantly higher than the average in the region; and
- c) significant contribution to tax revenue, which might range between \$1-1.8 billion.

723. In broad terms, ORC considers that the purpose of the FTAA would be met by facilitating the delivery of the BOGP. This conclusion flows from ORC accepting the advice of Dr Lees that the project will have significant economic benefits at the required scales.

SECTION G: POLICY ASSESSMENT

724. In accordance with FTAA Schedule 5 Clause 17(b), the Panel must take into account any relevant provisions of the statutory instruments listed in RMA s104(b).

725. ORC considers that the following statutory instruments are of relevance to this Application (and to regional council functions):

- a) National Policy Statement for Freshwater Management 2020 (**NPS-FM**)
- b) National Policy Statement for Indigenous Biodiversity 2023 (**NPS-IB**)
- c) National Policy Statement for Highly Productive Land 2022 (**NPS-HPL**)
- d) National Policy Statement for Natural Hazards 2025 (**NPS-NH**)
- e) National Policy Statement for Infrastructure 2025 (**NPS-I**)
- f) Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-F**)
- g) Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (**NES-AQ**)

³¹ FTAA section 3

³² FTAA section 81(4)

- h) Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007 (**NES-DW**)
- i) Resource Management (Measuring and Reporting of Water Takes) Regulations 2010 and Amendment Regulations 2020 (**NES-Metering**)
- j) The Otago Regional Policy Statement 2019 (**ORPS 2019**)
- k) The Proposed Otago Regional Policy Statement 2021 – including Freshwater Instruments 2021 (**pORPS 2021**)
- l) The Regional Plan: Water for Otago (**RPW**)
- m) Regional Plan: Air for Otago (**RPA**)
- n) Regional Plan: Waste for Otago (**RPWaste**)
- o) Kāi Tahu Ki Otago Natural Resource Management Plan 2005 (**NRMP**)

726. The Applicant has provided in Application Document A.15 an assessment of the BOGP against the relevant RMA planning documents. Application Document H.02 sets out the full list of statutory provisions that the Applicant considers to be relevant.

727. ORC agrees that the Applicant has identified all of the statutory documents relevant to this application that were in play at the time the application was lodged.

728. Since the application was lodged two new national policy statements – the NPS-NH and NPS-I – have come into force. Amendments relating to mining activities were also made to the NPS-FM, NPS-IB, NPS-HPL, and NES-FW. ORC provides an assessment of the proposal against the new and amended versions of these statutory instruments.

SECTION G.1 – NPS-FM

729. The NPS-FM provides a framework for considering an application for an activity which may adversely affect freshwater. The NPS-FM applies to all freshwater (including groundwater) and, to the extent they are affected by freshwater, to receiving environments.

730. The NPS-FM sets out a single objective for freshwater management that reflects the hierarchy of obligations in Te Mana o te Wai. While the hierarchy is no longer relevant to RMA decision-making (s104(2F) of the RMA), the NPS-FM contains 15 policies to support this objective, with Policies 1, 2, 3, 6, 7, 11, 12, 13, and 15 having particular relevance to the BOGP.

731. Policy 1 requires freshwater to be managed in a way that gives effect to Te Mana o te Wai. The proposal will result in permanent hydrogeological and hydrological changes on the site. Water quality and flows in both Shepherds and Rise and Shine Creeks will be fundamentally altered by the proposal. Shepherds Creek in particular will shift from having a hill-fed hydrology, with ecological communities heavily influenced by drought frequency, to a more spring-fed hydrology with higher, more stable baseflows and lower flood frequency. This shift will almost certainly influence the plants and animals the stream supports and represents a significant departure from natural state. ORC understands that a river must generally reflect its natural characteristics and behaviours to sustain the relationship Kāi Tahu have with that watercourse,

to protect mauri, and to give effect to Te Mana o Te Wai. Given the scale and the permanence of the changes from natural conditions, ORC considers the proposal is inconsistent with Policy 1. This is an area of disagreement with the Applicant.

732. Policy 2 requires active tangata whenua involvement in freshwater management. Kāi Tahu have advised that they have not had active involvement in this process, but they wish to do so.³³ The proposal is therefore inconsistent with Policy 2. This is an area of disagreement with the Applicant.
733. Policy 3 primarily relates to regional council functions; however, ORC agrees that freshwater onsite will generally be managed in an integrated way, with consideration given to the effects of the use and development of land on the wider catchment and considering effects on receiving environment. The proposal is consistent with Policy 3, insofar as it is relevant.
734. Policy 6 requires no net loss of natural inland wetland extent, protection of their values, and promotion of their restoration. The proposal is not consistent with this policy because there will be a net loss in gully fen and hill seepage wetlands extent and values. Further, ORC considers that there is significant uncertainty as to the likelihood of net gain outcomes for swamp / marsh wetlands.
735. Policy 7 requires the loss of river extent and values to be avoided where practicable. The proposed rehabilitation of diversion channels into functioning aquatic ecosystems, and the riparian enhancement of other nearby rivers is expected to ensure no loss of river extent or values, over the timescale of the consent.
736. Policy 11 speaks to the efficient allocation and use of freshwater. The Applicant has not provided an efficiency assessment to support the proposed rate of groundwater abstraction from the Bendigo bore field. ORC does not have sufficient information to determine whether the proposal is consistent with this policy.
737. Policy 12 requires the national target for water quality improvement is achieved. The target is to increase the proportion of rivers (and lakes) that are suitable for primary contact to at least 80% by 2030 and 90% no later than 2040. Provided the consent conditions relating to water quality compliance limits are proposed as recommended by ORC, this proposal should not be an impediment to this goal and is therefore consistent with this policy.
738. Policy 13 requires the condition of waterbodies and freshwater ecosystems to be systematically monitored over time, and action taken where freshwater is degraded, and to reverse deteriorating trends. The proposal includes a systematic monitoring programme with reporting to Otago Regional Council and is therefore consistent with this policy.

³³ https://www.fasttrack.govt.nz/___data/assets/pdf_file/0020/19118/Memorandum-of-Counsel-in-Response-to-Panel-Convener-Directions.pdf

739. Policy 15 seeks to enable communities to provide for their social, economic and cultural wellbeing, in a manner that is consistent with the NPSFM. This application prioritises the economic wellbeing of people and communities, and ORC considers that the proposal will provide for the economic wellbeing of employees, contractors, and businesses in the Central Otago district, as well as their social and potentially cultural wellbeing, insofar as that is linked with economic wellbeing. However, ORC does not consider that this will be done in a manner that is entirely consistent with this NPS-FM, for the reasons discussed in Policies 1, 2, 6, and 11 above. The health and wellbeing of waterbodies and freshwater ecosystems and the health needs of people are managed secondarily to mine operations.

740. Overall, ORC considers the proposal to be partially consistent with the NPS-FM.

SECTION G.2 – NPS-IB

741. The objective of the NPS-IB is to maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity after the commencement date.

742. The objective of the NPS-IB is to be achieved through the implementation of the policies, of which the most relevant to this application are 1, 2, 3, 7, 8, 10, 13, 14, and 15.

743. Policy 1 relates to the management of indigenous biodiversity in a way that gives effect to the decision-making principles (in section 1.5(3) of the NPS-IB) and takes into account the principles of the Treaty of Waitangi. ORC does not see any evidence in the application that the decision-making principles have been recognised, let alone given effect to, and therefore considers the proposal to be inconsistent with this policy.

744. Policy 2 provides for tangata whenua to exercise kaitiakitanga for indigenous biodiversity on their land and in their rohe, by identifying taonga biodiversity elements, and by actively participating in decision-making. The proposal will not occur on Māori-owned land, but as noted for the NPS-FM above, Kāi Tahu would appear to consider that they have not had the opportunity for active participation in the manner for which this policy provides. ORC considers the proposal to be inconsistent with this policy.

745. Policy 3 requires a precautionary approach is adopted when considering adverse effects on indigenous biodiversity. In light of the substantial net loss of indigenous biodiversity that would result from this proposal, for which no further attempt to redress effects through compensation has been made, ORC considers that the proposal has not adopted a precautionary approach with respect to biodiversity and is inconsistent with Policy 3.

746. Policy 7 requires protection of SNAs by avoiding or managing adverse effects from new subdivision, use and development. Clause 3.11 provides further context for Policy 7, requiring implementation of the effects management hierarchy when there is a functional or operational need for mineral extraction and ancillary activities within an SNA. The BOGP intersects with two

SNAs; the Bendigo Historic Reserve and the Ardgour Conservation Area are identified in the Central Otago District Plan as being Ecological Areas of Significant Natural Value (**SNV**) and therefore qualify as SNAs. No mining is proposed in these areas. The activities within the Bendigo Reserve include removal of crack willows, riparian restoration, and installation of monitoring bores, and these will not adversely affect indigenous biodiversity values. The Ardgour Rise will be established within the Ardgour Conservation Area, but the effects of this activity are better assessed by DoC and / CODC as the establishment of this road does not require any resource consent from ORC. From ORC's perspective, the proposal is consistent with Policy 7.

747. Policy 8 requires the importance of maintaining indigenous biodiversity outside SNAs be recognised and provided for. Clause 3.16 provides further context for Policy 8 and requires that any significant adverse effects be managed by the effects management hierarchy. Despite the vast majority of the Project Site not being protected by an SNA, the Applicant has concluded that the entire DDF (and surrounding Ecological Study Area) satisfies the criteria for recognition as significant indigenous vegetation or significant habitats of indigenous fauna under Appendix 1 of the NPS-IB. ORC agrees there is a functional need, and considers that the effects management hierarchy has generally, but not entirely, been applied appropriately. For a number of species, compensation for significant adverse effects could be provided in accordance with the NPS-IB compensation principles (because the limits to offsetting are not reached) including financial compensation, if necessary. No such measures are proposed. Further, for a small number of species, adherence to the principles of offsetting or compensation is not possible given the vulnerability or irreplaceability of those species, and the activities resulting in those adverse effects should be avoided. The Applicant does not propose to avoid the activities; hence, the proposal is inconsistent with this policy.
748. Policy 10 requires activities that contribute to New Zealand's social, economic, cultural, and environmental wellbeing to be recognised and provided for as set out in the NPS-IB. ORC considers that the proposal will provide for New Zealand's economic wellbeing, and insofar as they are connected, its social wellbeing. However, inconsistency with Policy 8 would suggest that the proposal cannot be undertaken in the manner set out in the NPS-IB i.e. significant adverse effects are not managed in accordance with the hierarchy. ORC considers the proposal is inconsistent with Policy 10.
749. Policy 13 requires that the restoration of indigenous biodiversity be promoted and provided for. This appears to be a directive for local authorities in relation to preparation of regional plans and policy statements. To the extent that this policy would apply to a single proposal, ORC considers that the proposal does seek to promote the restoration of indigenous biodiversity via its rehabilitation, offsetting, and compensation package, noting, however, that this promotion is in the context of an overall loss in indigenous biodiversity. Therefore, ORC considers that the proposal is not consistent with this policy.
750. Policy 14 seeks to promote increased indigenous vegetation cover in both urban and non-urban environments. This also appears to be a directive for local authorities in relation to

preparation of regional plans and policy statements. Despite the scale the proposed ecological enhancement package, it is not sufficient to balance the loss of indigenous vegetation that would result from the BOGP; therefore, ORC does not consider that in going ahead the proposal would promote increased vegetation cover (as a net effect).

751. Policy 15 requires that areas outside SNAs that support specified highly mobile fauna are identified and managed to maintain their populations across their natural range, and information and awareness of highly mobile fauna is improved. Specified highly mobile fauna have been identified within the DDF but the proposed activities are not expected to impede the maintenance of their populations across their natural range. The proposal is consistent with this policy.

752. Overall, ORC considers the proposal to be inconsistent with the NPS-IB.

SECTION G.3 – NPS-HPL

753. The objective of the NPS-HPL is to ensure that highly productive land is protected for use in land-based primary production, both now and for future generations. Various components of the BOGP within the Ardour Terrace Site (including the general administration area, temporary construction workers accommodation, contractor laydown areas, topsoil stockpiles and aggregate pits) are located within areas of highly productive land identified as LUC 3.

754. Policy 8 of the NPS-HPL requires highly productive land to be protected from inappropriate use and development. The extraction of minerals and ancillary activities that provide significant national or regional benefit are activities that are exempted from being ‘inappropriate’ and therefore is not an activity to be avoided, provided there is a functional or operational need to locate there.

755. ORC agrees the proposal would generate significant regional and national economic benefits.

756. ‘Operational need’ means the need for a proposal or activity to traverse, locate or operate in a particular environment because of technical, logistical or operational characteristics or constraints. ORC agrees that the need to located the activities ancillary to mineral extraction on land that is owned by the Applicant, has suitably flat terrain, and is close proximity to the active mining activities constitutes operational need.

757. ORC also considers that the proposed use of the highly productive land is temporary and will not result in any permanent adverse effects that would prevent the land being used for production purposes in the future.

758. Overall, the proposal is consistent with the NPS-HPL.

SECTION G.4 – NPS-NH

759. The NPS-NH came into force on 15 January 2026 and was therefore not able to be considered by the Applicant, whose application was lodged on 31 October 2025. ORC understands that the Panel has directed the Applicant to assess the proposal against this NPS-NH and provide this assessment by 17 April.
760. ORC considers that the Applicant is best placed to provide a comprehensive assessment against this policy statement; however, ORC provides an initial assessment below.
761. The NPS-NH applies to the following natural hazards: flooding; landslips; coastal erosion; coastal inundation; active faults; liquefaction; and tsunamis.
762. The singular objective is: “Natural hazard risk to people and property associated with subdivision use and development is managed using a risk-based proportionate approach.” Six policies give effect to this objective.
763. Policy 1 requires that natural hazard risk be assessed using a specified matrix and associated tables within this NPS-NH. The Applicant has not done this because this NPS-NH did not exist at the time of lodgement.
764. Policy 2 states that natural hazard risk associated with subdivision, use, and development must be managed using an approach that is proportionate to the level of natural hazard risk. ORC considers that the proposal is generally consistent with this policy, noting the unresolved areas of disagreement in relation to the diversion channels and sediment retention devices, which is relevant to flood hazard.
765. Policy 3 requires that subdivision, use, or development that is assessed as having a very high natural hazard risk must avoid that risk. While a conclusive assessment against this policy would require completion of the risk assessment subject of Policy 1, based on the information provided within the application (which does assess the effects of natural hazards via other methods) ORC does not consider it likely that the proposed use and development of land for the BOGP would be categorised as very high risk.
766. Policy 4 states that where subdivision, use or development, including any associated mitigation measures, will create or increase significant natural hazard risk on other sites, that risk must be avoided or mitigated using an approach that is proportionate to the level of natural hazard risk. ORC does not consider, based on the information available to it, that the proposal would create or increase significant natural hazard risk on other sites.
767. Policy 5 requires that natural hazard risk assessment and decisions must be based on the best available information and must be made even when that information is uncertain or incomplete. ORC considers that the application generally constitutes the best available information in respect of natural hazard risk specific to this site, and that the Panel could make decisions based on this information.

768. Policy 6 states that the potential impacts of climate change to at least 100 years into the future must be considered. ORC has not located within the application materials any evidence to suggest that climate change over the next 100 years has been considered.

769. Overall, the Applicant is best placed to assess the proposal against this NPS-NH but ORC's preliminary assessment suggests that the proposal is generally consistent with the objective and policies.

SECTION G.5 – NPS-I

770. The NPS-I came into force on 15 January 2026 and was therefore not considered by the Applicant, whose application was lodged on 31 October 2025. ORC understands that the Panel has directed the Applicant to assess the proposal against this NPS-I and provide this assessment by 17 April.

771. As the name would suggest, this NPS-I applies to infrastructure. The NPS-I imports the definition of infrastructure from the RMA.

772. Having reviewed the RMA definition of infrastructure, ORC considers that this NPS-I does not appear to be of particular relevance to this application.

SECTION G.6 – NES-FW

773. Approvals are sought under:

- a) Regulation 45D (mineral extraction and ancillary activities in and around natural inland wetlands);
- b) Regulation 57 (reclamation of rivers); and
- c) Regulation 71 (place and use a culvert in the bed of a river).

774. This NES-FW was updated on 15 January 2026. Changes of relevance to this application are:

- a) introduction of a new concept: 'operational need'. This NES-FW imports the definition of operational need from the National Planning Standards 2019:

Operational need means the need for a proposal or activity to traverse, locate or operate in a particular environment because of technical, logistical or operational characteristics or constraints.

- b) the inclusion in Regulation 45D(6)(b) of the concept of "operational need".

G.6.1 Regulation 45D mineral extraction / ancillary activities in / around natural inland wetlands

775. Clause (6) of Regulation 45D is directive:

(6) A resource consent for a discretionary activity under this regulation must not be granted unless the consent authority has first—

(a) satisfied itself that the extraction of the minerals will provide significant national or regional benefits; and

(b) satisfied itself that there is a functional need or an operational need for the extraction of minerals and ancillary activities in that location; and

(c) applied the effects management hierarchy.

776. ORC is satisfied that clause (6)(a) is met – refer Section E of these comments.

777. In respect of clause (6)(b) and functional need, ORC considers that:

- a) there is a functional need to locate the BOGP, including its open pit and underground components, in the location(s) where the gold resource occurs in order to facilitate the extraction of the gold-bearing ore. Not all of the ore can be extracted by one mining method; hence, there is a need for both underground and open-pit components;
- b) the development of the mine via open pit and underground methods, and the processing of ore to extract the gold, generates significant quantities of waste rock and tailings, which require storage in ELFs and the TSF, respectively. The topographical constraints of the site limit the potential suitable locations for these substantial waste storage facilities;
- c) in that respect, there is a functional need to locate both extractive, and certain associated, activities in, or within 10 m or 100 m of natural inland wetlands, with consequential losses of natural inland wetland extent and values.

778. As the functional need test is met, ORC does not assess whether an operational need also exists but notes its understanding that operational need is effectively a lower threshold than functional need.

779. The NES-FW imports the definition of ‘effects management hierarchy’ from clause 3.21 of the NPS-FM:

3.21 effects management hierarchy, in relation to natural inland wetlands and rivers, means an approach to managing the adverse effects of an activity on the extent or values of a wetland or river (including cumulative effects and loss of potential value) that requires that:

(a) adverse effects are avoided where practicable; then

- (b) where adverse effects cannot be avoided, they are minimised where practicable; then*
- (c) where adverse effects cannot be minimised, they are remedied where practicable; then*
- (d) where more than minor residual adverse effects cannot be avoided, minimised, or remedied, aquatic offsetting is provided where possible; then*
- (e) if aquatic offsetting of more than minor residual adverse effects is not possible, aquatic compensation is provided; then*
- (f) if aquatic compensation is not appropriate, the activity itself is avoided*

780. The NES-FW also states in Regulation 37A that a requirement to apply the effects management hierarchy includes a requirement to apply clause 3.22(3) of the National Policy Statement for Freshwater Management as if a reference in that clause to a regional council were a reference to the consent authority.

Every regional council must make or change its regional plan to ensure that an application referred to in subclause (2) is not granted unless:

- (a) the council is satisfied that:*
 - (i) the Applicant has demonstrated how each step of the effects management hierarchy will be applied to any loss of extent or values of the wetland (including cumulative effects and loss of potential value), particularly (without limitation) in relation to the values of: ecosystem health, indigenous biodiversity, hydrological functioning, Māori freshwater values, and amenity values; and*
 - (ii) if aquatic offsetting or aquatic compensation is applied, the Applicant has complied with principles 1 to 6 in Appendix 6 and 7, and has had regard to the remaining principles in Appendix 6 and 7, as appropriate, and*
 - (iii) there are methods or measures that will ensure that the offsetting or compensation will be maintained and managed over time to achieve the conservation outcomes; and*
- (b) any consent granted is subject to:*
 - (i) conditions that apply the effects management hierarchy; and*
 - (ii) a condition requiring monitoring of the wetland at a scale commensurate with the risk of the loss of extent or values of the wetland; and*
 - (iii) conditions that specify how the requirements in (a)(iii) will be achieved.*

781. Noting the functional need to locate mineral extraction and ancillary activities where the gold deposits are located, the Applicant states that:

- a) infrastructure plans were substantially altered to avoid loss of most of the 2.59 ha swamp / marsh habitat in Rise and Shine Creek valley floor. It is not clear if attempts were made to avoid gully fen or hill seepage wetland types;
- b) minimising drawdown effects on surface water-fed swamp / marsh wetlands in the Rise and Shine Creek valley floor through flow augmentation. Augmentation is not proposed for gully fen or hill seepage wetland types due to their unique hydrology which cannot be artificially replicated; and
- c) Re-establishing (remediation of) indigenous wetland communities totalling 7.5 ha, comprising at least 2 ha of swamp wetlands (including 0.5 ha of open water) and 4 ha of

marshlands on the TSF, along with three smaller areas of marsh/swamp wetland (of at least 0.4 ha each): Ardour Terrace, Lower Shepherds and Processing Plant. No remediation measures are proposed for gully fen or hill seepage wetland types due to their unique hydrology which cannot be artificially replicated.

782. Accordingly, ORC agrees that for swamp / marsh wetlands, there will be no residual adverse effects, and no requirement for offsetting or compensation, *provided the proposed remediation is successful*. However, based on the currently available information, ORC has a low level of confidence that this will be successful. Unless further evidence can be provided to support the assumed success of the remediation actions, ORC considers that offsetting and then compensation would need to be considered. The Applicant has not done this; therefore, the requirements of the hierarchy are not met. ORC notes that this is its current (and precautionary) assessment which may be updated if the Applicant can demonstrate a greater certainty of outcome.

783. No avoidance, minimisation, or remediation measures are proposed for gully fen or hill seepage wetlands. The residual adverse effect of the loss of these wetlands is considered by the Applicant to be moderate. As discussed in Section X, ORC considers that the level of effect may be underestimated for seepage wetlands. Nonetheless, the EciAG describes moderate adverse effects as *representing a level of effect that requires careful assessment and analysis of the individual case. Such an effect could be managed through avoidance, design, or extensive offset or compensation actions. Wherever adverse effects cannot be avoided, no net loss of values would be appropriate*. This would typically correspond to ‘more than minor’ adverse effects.

784. No offsetting or compensation measures are proposed for hill seepages or gully fen wetlands; hence, the effects management hierarchy is not appropriately applied by the Applicant.

785. A precautionary assessment would require that the activity (earthworks and vegetation clearance resulting in the loss of swamp / marsh, gully fen, and hill seepage wetlands) be avoided i.e. the granting of consent would be precluded by Regulation 45D (noting the effect of clause 17(4) of Schedule 5 to the FTAA, which allows the panel to grant consent in this case).

786. ORC recommends that the Panel seek further information from the Applicant in relation to the likely success of swamp / marsh wetland remediation and further information as to possible offsetting or compensation actions for hill seepage and gully fen wetlands.

G.6.2 Regulation 57 river reclamation

787. Regulation 70 clause (2) is directive:

A resource consent for a discretionary activity under this regulation must not be granted unless the consent authority has first—

- (a) *satisfied itself that there is a functional need for the reclamation of the river bed in that location; and*
- (b) *applied the effects management hierarchy.*

788. ORC is satisfied that:

- a) there is a functional need to locate the BOGP, including its open pit and underground components, in the location(s) where the gold resource occurs in order to facilitate the extraction of the gold-bearing ore. Not all of the ore can be extracted by one mining method; hence, there is a need for both underground and open-pit components;
- b) the development of the mine via open pit and underground methods, and the processing of ore to extract the gold, generates significant quantities of waste rock and tailings, which require storage in ELFs and the TSF, respectively. The topographical constraints of the site limit the potential suitable locations for these substantial waste storage facilities;
- c) in that respect, there is a functional need to locate both extractive, and certain associated, activities in locations that result in reclamation of rivers, with consequential losses of river extent and values

789. The effects management hierarchy is the same as that set out in paragraph 781 and is not repeated here.

790. The NES-FW also states in Regulation 56A that a requirement to apply the effects management hierarchy includes a requirement to apply clause 3.24(3) of the National Policy Statement for Freshwater Management as if a reference in that clause to a regional council were a reference to the consent authority. This is the same wording as clause 3.22(3), except that it relates to rivers instead of wetlands.

791. The effects management hierarchy has been applied by the Applicant as follows:

- a) given the functional need to locate as proposed, no further avoidance of rivers is possible;
- b) effects are minimised through diverting stream flows into constructed diversion channels;
- c) effects are remedied by rehabilitating the constructed diversion channels into functioning ecosystems;
- d) following the above measures, more than minor residual effects on river values exist, because there will be a substantial time lag before extent (in some cases) and values equivalent or better than those lost are established in the new diversion channel; hence,
- e) like-for-like offsetting was considered unviable due to time lag before net gain could be demonstrated i.e. can't meet offsetting principles; and
- f) compensation is proposed in the form of 6,700 m of crack willow clearance and enhancement of riparian margins. Net gain in values is expected within 10 years.

792. On this basis, the granting of consent for the proposed river reclamations is not precluded by Regulation 57.

G.6.3 Culverts

793. Regulation 71 clause (2) directs:

A resource consent granted for the discretionary activity must impose the conditions required by—

- (a) regulations 62 and 63 (information about structures and passage of fish and about culverts), unless the activity is use; and
- (b) regulation 69 (monitoring and maintenance).

794. The Applicant has proposed a consent condition consistent with the requirements of regulations 62 and 63, but the Applicant has not proposed the conditions required by Regulation 69.

795. ORC assumes, from statements in Application Report A.15, that this is on the basis that fish passage is not required because there are no fish and therefore monitoring and maintenance of the culvert to ensure that there continues to be no fish passage is unnecessary. While ORC acknowledges that no fish have been located in Rise and Shine Creek, ORC considers that the wording of Regulation 69 does not provide for any discretion on the part of the consent authority. Regulation 69(2) requires that a consent authority impose the conditions set out in (a)-(c) of that clause, without exception. ORC has duly included these conditions in Appendix D.02.

796. On this basis, the requirements of Regulation 71 are adequately met.

SECTION G.7- NES-AQ

797. The NES-AQ prescribes ambient air quality standards for a number of contaminants and stipulates the maximum number of allowable exceedances of the concentration limits.

798. The proposal is not expected to result in discharge of contaminants to air that would cause any of the relevant air quality standards to be exceeded.

799. The NES-AQ does not preclude the granting of consents.

SECTION G.8 - NES-DW

800. Regulations 7 and 8 of this NES need to be considered when assessing discharge permits or water permits that have the potential to affect registered drinking water supplies that provide 501 or more people with drinking water for 60 or more calendar days each year.

801. ORC has not identified any such water supplies. Hence, granting of consent is not precluded by Regulations 7 or 8.

802. Regulations 11 and 12 of this NES require the Consent Authority to place an emergency notification condition on relevant consent holders if it is assessed that the activity could pose a risk to the drinking water supply in the case of an unintended event (e.g. a spill or other accident). If the Consent Authority considers that such a risk exists, a condition must be placed on the consents that requires the consent holder to notify the drinking water supplier if such an event occurs. Regulation 11 states that Regulation 12 applies to activities with the potential to affect registered drinking water supplies that supply 25 or more people with drinking water for 60 or more days of a calendar year.

803. ORC has not identified any such water supplies. Hence, an emergency notification condition is not required.

SECTION G.9 – NES-metering

804. These regulations apply to holders of water permits which allow freshwater to be taken at a rate of 5 litres/second or more. Permit holders are required to, in a manner specified by the regulations, measure their water use at a specific location, verify their water measuring device, keep records, and provide records to Council. The 2020 amendments to the regulations introduced measuring and reporting requirements, to be implemented in a staged fashion starting with larger water takes through to progressively smaller water takes, down to 5 L/s.

805. The minimum requirements in the regulations apply directly to the holders of qualifying water permits, and override any less stringent consent conditions, from the date that the regulations first apply to the consent. While these regulations do not require Council to impose specific conditions on a qualifying water permit, Council is required to enforce the regulations.

806. To ensure that the Consent Holder is clear about their water metering and reporting obligations, consent conditions that reflect the minimum requirements of these regulations are routinely applied to resource consents.

807. The Applicant has already proposed conditions that are generally consistent with these regulations. ORC has suggested minor modifications.

808. For the avoidance of doubt, even if these conditions are not applied to the relevant water permits, the Applicant would still be required to comply with these regulations.

SECTION G.10 – ORPS 2019

809. The ORPS 2019 will soon cease to be operative and is therefore not assessed in these comments.

SECTION G.11 – pORPS 2021

810. At the time of writing, all appeals on the freshwater and non-freshwater provisions are resolved, and the pORPS 2021 is expected to become fully operative mid-2026. Hence, for the purpose of this application the pORPS 2021 is given full weight. The ORPS 2019 is not assessed.

811. ORC provides a relatively concise assessment against the most relevant provisions in this pORPS on a chapter level.

G.11.1 Mana Whenua

812. This chapter acknowledges the principles of Te Tiriti o Waitangi and sets out general considerations for the incorporation of Kāi Tahu values and interests into resource management planning, consenting, and implementation processes.

813. The following provisions are relevant to this proposal:

- a) MW-O1 – Principles of Te Tiriti o Waitangi
- b) MW-P3 – Supporting Kāi Tahu hauora

814. ORC expects that important Kāi Tahu values mana, mauri, tapu and whakapapa will be impacted by the proposal. For the proposal to be ‘consistent’ with these provisions, the relationship that Kāi Tahu have with whenua and wai māori needs to be recognised and protected, and the mauri and life-supporting capacity of natural resources requires safeguarding. However, limited assessment can be made by ORC in the absence of any cultural impact assessment endorsed by mana whenua.

815. The Panel should also give consideration to the following two policies that relate to decision-making:

- a) MW-P1 – Treaty obligations
- b) MW-P2 – Treaty principles

816. The policies require the Panel (as the decision-maker) to understand their obligations in relation to the Treaty principles, and to include Kāi Tahu in decision making processes in the manner and to the extent that mana whenua choose.

G.11.2 Integrated Management

817. The following provisions are relevant to this proposal:

- a) IM-O1 – Long term vision (mō tatou, ā, mō kā uri ā muri ake nei)
- b) IM-O2 – Ki uta ki tai
- c) IM-O3 – Sustainable impact

- d) IM-P3 – Providing for mana whenua cultural values in achieving integrated management
- e) IM-P5 – Managing environmental interconnections
- f) IM-P6 – Managing uncertainties
- g) IM-P7 – Cross boundary management
- h) IM-P13 – Managing cumulative effects
- i) IM-P8 – Effects of climate change

818. The objectives seek that the management of natural and physical resources embraces ki uta ki tai, recognising that the environment is an interconnected system that depends on its connections to flourish and achieve a healthy and resilient natural environment. The use, development, and protection of natural and physical resources should support or restore the life-supporting capacities of air, water, soil, and ecosystems for future generations.

819. In order to provide for mana whenua values in achieving integrated management and for the relationship of Kāi Tahu with natural resources, mana whenua must be enabled to exercise rakatirataka and kaitiakitaka. ORC is not clear about the extent to which the Applicant has recognised or provided for this.

820. The Applicant recognises the interconnectedness of land, water, and air resources, and that the use of one resource may affect another, and this is reflected in the proposed practical management of the site, where many different activities are proposed to be managed as one interconnected operation.

821. In general, the application makes use of best available data, including modelling and partial data, to manage uncertainties, although there are several important areas where further information is important to better understand interconnections. These include the groundwater / surface water interactions on the site and in the receiving environment, and how the land-based activities (such as creation of ELFs and the TSF) may influence the site water balance and ultimate water quality.

822. The FTAA is designed to coordinate overlapping or related agency responsibilities.

823. Cumulative effects are generally proposed to be managed via numerical limits for water quality and air quality. Provided the conditions ORC has recommended are imposed, or other similar or more stringent limits are imposed, cumulative effects on water quality and air quality are likely to be low. In terms of indigenous biodiversity, cumulative effects are of particular importance when considering potential project impacts on threatened or vulnerable species and habitats. The proposal will result in net loss in indigenous biodiversity, which would contribute further to the state of indigenous biodiversity decline that the Applicant states is occurring on the site and in the surrounding area.

824. It is not clear to ORC how or if the Applicant has recognised or provided for the effects of climate change within their proposal.

825. Overall, ORC considers that the application is partially consistent with the integrated management provisions.

G.11.3 Air

826. The following provisions are relevant to this proposal:

- a) AIR-O1 – Ambient air quality
- b) AIR-O2 – Discharges to air
- c) AIR-P1 – Maintain ambient air quality
- d) AIR-P4 – Managing certain discharges
- e) AIR-P6 – Impacts on mana whenua values

827. The localised effects (on sensitive receptors) of the proposed discharges of contaminants to air are not expected to compromise (to any significant extent) human health, amenity values, mana whenua values, or the life-supporting capacity of ecosystems, provided dust mitigation measures are diligently implemented.

828. Ambient air quality beyond the site is expected to be maintained. The discharges are not expected to result in any noxious or dangerous effects, nor any offensive or objectionable effects, and the NES-AQ air quality thresholds for contaminants relevant to this site are not expected to be breached. The Applicant has recognised community concerns about air quality, and has volunteered to monitor ambient air for arsenic, to provide assurance to downwind receptors that arsenic is not being discharged from the site in any quantity that could result in acute or chronic health issues.

829. Overall, ORC considers that the application is consistent with the air quality provisions.

G.11.4 Land and Freshwater

830. The following provisions are relevant to this proposal:

- a) LF-WAI-O1 – Te Mana o te Wai
- b) LF-WAI-P1 – Prioritisation
- c) LF-WAI-P2 – Mana whakahaere
- d) LF-WAI-P3 – Integrated management/ki uta ki tai
- e) LF-WAI-P4 – Giving effect to Te Mana o te Wai
- f) LF-FW-O1A – Visions set for each FMU and rohe
- g) LF-VM-O2 – Clutha Mata-au FMU vision
- h) LF-FW-O9 – Wetlands
- i) LF-FW-O10 – Natural character
- j) LF-FW-P7 – Fresh water
- k) LF-FW-P7A – Water allocation and use
- l) LF-FW-P10A – Managing wetlands

- m) LF-FW-P13 – Preserving natural character and instream values
- n) LF-FW-P14 – Restoring natural character and instream values

831. The provisions above largely give effect to the NPS-FM. As assessed in Section G.1 above, the health and wellbeing of waterbodies and freshwater ecosystems and the health needs of people are managed secondarily to mine operations, and ORC considers that the proposal is not consistent with Te Mana o Te Wai. This is not to say that freshwater outcomes will be unacceptable, or that the proposal will compromise the vision for the Clutha Mata-au FMU, just that freshwater will not be managed entirely in accordance with policy direction.

832. In relation to wetlands, the policy requires that mana whenua values are sustained and enhanced, that there is no decrease and preferably an increase in natural inland wetland ecosystems and habitats, and that where degraded there is an improvement in wetland ecosystem health, hydrological functioning, amenity values, extent, or water quality. The proposal is inconsistent with this provision on the basis that there will be a net loss in wetland extent and values for gully fen and seepage wetlands, and there is substantial uncertainty as to the likely success of the creation of new swamp / marsh wetland habitat within the DDF.

833. The proposed conversion of stream diversion channels into functioning aquatic ecosystems, and the proposed riparian enhancement activities in nearby creeks, is expected to ensure that by the end of the consent term there is no net loss of river extent or values (except water quality values, which will be reduced) as a result of the project.

834. Overall, ORC considers that the proposal is inconsistent with these provisions.

G.11.5 Land and Soil

835. The following provisions are relevant to the proposal:

- a) LF-LS-O11 – Land and soil
- b) LF-LS-O12 – Use, development, and protection
- c) LF-LS-P16 – Maintaining soil quality
- d) LF-LS-P17 – Soil values
- e) LF-LS-P18 – Soil erosion
- f) LF-LS-P19 – Highly productive land
- g) LF-LS-P21 – Land use and fresh water

836. In respect of the provisions seeking to protect highly productive land from inappropriate use and development, higher order policy direction would indicate that the proposed activities are not considered inappropriate in this location. Additionally, the activities proposed on highly productive land are relatively low impact (i.e. they are ancillary activities, not extractive mining activities) and not expected to compromise the long-term viability of primary production and rural communities.

837. Topsoil will be stripped from the DDF to facilitate mining. Erosion and sediment control will be controlled in accordance with site-specific erosion and sediment control plans. The Applicant proposes to store topsoil in stockpiles so that it can be used to rehabilitate the site following mining. Even so, soils that are stockpiled are likely to lose many of their key characteristics, such as horizon and micro-structure, that have developed over timescales far in excess of the consent durations contemplated by this application, potentially affecting the life-supporting capacity of the soils.

838. In relation to the relationship between land use and fresh water, the proposal is somewhat consistent with the management practices described in the policy – for example to manage adverse effects of discharges and manage land uses that may impact surface water flows or groundwater recharge – but is not consistent with the overall goal to maintain (or improve if degraded) the health and wellbeing of waterbodies and freshwater ecosystems. Some aspects of health and wellbeing – such as river riparian values, habitat quality, or macroinvertebrate health – are likely to improve but others, such as water quality, will deteriorate from current state (albeit within the bounds of relatively protective compliance limits, assuming ORC’s recommended consent conditions (or similar) are imposed).

839. Overall, ORC considers that the proposal is mostly inconsistent with the provisions in this chapter.

G.11.6 Ecosystems and Indigenous Biodiversity

840. The following provisions are relevant to the proposal:

- a) ECO-O1 – Indigenous biodiversity
- b) ECO-O2 – Restoring and enhancing
- c) ECO-O3 – Kaitiakitaka and stewardship
- d) ECO-O4 – Social, economic and cultural well-being
- e) ECO-P1 – Kaitiakitaka
- f) ECO-P3 – Protecting significant natural areas and taoka
- g) ECO-P4 – Provision for specified new activities
- h) ECO-P6 – Maintaining indigenous biodiversity
- i) ECO-P8 – Restoration and enhancement
- j) ECO-P10 – Integrated approach

841. The interaction between provisions within this chapter is somewhat convoluted, but essentially these provisions seek biodiversity outcomes that are well aligned with those sought by the NPS-IB. In that respect, ORC considers that its assessment and conclusions in Section G.2 above are applicable here.

842. Overall, ORC considers that the proposal is inconsistent with the provisions in this chapter.

G.11.7 Hazards and Risks

843. The following provisions are relevant to the proposal:

- a) HAZ-NH-O1 – Natural hazards
- b) HAZ-NH-P1 – Identifying areas subject to natural hazards
- c) HAZ-NH-P4 – Existing natural hazard risk
- d) HAZ-NH-P5 – Precautionary approach to natural hazard risk
- e) HAZ-NH-P6 – Protecting features and systems that provide hazard mitigation

844. Mining activities can exacerbate natural hazard risks. Risks of relevance for the BOGP include seismic risk, landslide risk, and flood risk. Open pits, ELFs, large dams including the TSF will be appropriately stable under both static and seismic conditions, and conditions are proposed to ensure that an appropriate FoS is maintained for adjacent public land at all times. Landslide risk is assessed and considered unlikely to result in any offsite effects. Flood hazard is considered in the context of large-scale stream diversions and hydrological changes on site. Some information is outstanding in this area; however, ORC does not consider that the mining activities would exacerbate flooding to the extent that any significant offsite effects would result.

845. Overall, ORC considers that the proposal is consistent with the provisions in this chapter.

SECTION G.12 – RPW

846. The RPW is a first-generation plan that predates and does not fully give effect to the relevant higher order planning documents, being the pORPS 2021, the NPS-FM, and the NPS-IB.

847. As such, ORC suggests limited weight should be afforded to this regional plan in comparison to the higher order planning documents. Nonetheless, ORC provides a brief assessment against relevant objectives and policies below.

848. Chapter 5 provides for the natural and human use values supported by Otago's lakes and rivers and their margins. These characteristics are important to, or are an essential part of, ecological communities, or are enjoyed or utilised by people and communities, including Kāi Tahu.

849. Objectives and policies seek to maintain or enhance natural and human use values, and cultural beliefs, values, and uses of significance to Kāi Tahu as they are supported by and relate to Otago's rivers and lakes. As already discussed above, while the proposed rehabilitation and enhancement of diversion channels and the riparian enhancement planned for Bendigo and Clearwater Creeks may result in improvements in habitat quality and health when measured using traditional scientific indices, this occurs as a result of substantial departure from natural state, and ORC does not have enough information in respect of cultural impacts to determine the overall appropriateness of this change.

850. Chapter 6 seeks to ensure that water will be managed in a sustainable manner, recognising the important relationship between water quantity and quality. This is achieved through the regulation of the taking, damming or diversion of water. The provisions relevant to water allocation and the flow augmentation proposal have been discussed in Section X. Other provisions seek to ensure that the quantity of water taken is no more than is required for the use, taking into account local environment and activity-specific factors, and the efficiency of the proposed water conveyance and application system. As discussed in Section X, further justification is required to determine whether the proposed abstraction of groundwater is efficient with respect to its proposed uses.
851. Chapter 6 contains policies which are specific to the Lindis River, and which aim to maintain the life-supporting capacity and enhance natural character of the main stem of the Lindis River by ceasing to grant or renew any water permits for the take and use of water from the Lindis River by various water races, and by imposing specific minimum flows. These policies are of only peripheral relevance to this, as they do not involve direct abstractions from the Lindis River and the flow augmentation proposal will ensure that there are no impacts on minimum flows.
852. Other provisions relate to protecting aquifer properties and water storage and preventing aquifer contamination. In this regard, the proposal is not expected to adversely affect aquifer properties or storage as the proposed take is well within sustainable allocation limits set by the plan for the Bendigo Aquifer. The shallow ‘veneer’ aquifer is likely to become contaminated within the project footprint as a result of seepage from mine waste features. Contamination is not likely to impact the underlying hard rock aquifer, nor is it likely to migrate offsite to contaminate downgradient aquifers.
853. Chapter 7 relates specifically to water quality primarily through management of discharges, complementing those provisions in Chapter 5 which seek to maintain or enhance natural and human use values of rivers and wetlands.
854. Provisions in this chapter seek to avoid objectionable discharges of water and contaminants but to allow discharges which have minor effects or short-term discharges with short-term adverse effects. Regard is to be had to any reasonable mixing zone, and land management practices that reduce adverse effects of discharges are encouraged. Regard must be had to relevant standards and guidelines when imposing conditions on a discharge permit. These requirements are generally discussed and applied appropriately throughout the application.
855. A policy requires the holder of any consent for a dam storing contaminants to completely remedy any adverse effect of the failure or overtopping of the dam structure, either during or after its construction. The application includes substantial discussion as to the measures proposed to avoid failure or overtopping of the TSF, but does not speak to remedial measures on the basis that failure or overtopping is expected to occur.

856. Chapter 8 contains provisions relevant to activities occurring on the margins of lakes or rivers. This chapter contemplates residential, commercial, and industrial activities (including mineral extraction) that may occur in these margins.
857. Provisions generally seek to maintain stability and function of structures, the bed and banks of rivers, flood and sediment carrying capacity, passage of fish, instream attributes such as water clarity, and other values such as amenity or natural character. Policies also promote the creation, retention, and enhancement of appropriate riparian vegetation where it will enhance natural and / or human-use values. The activities proposed generally align with the provisions of this chapter.
858. Chapter 9 relates to groundwater quality, recognising that groundwater is an important resource to many of Otago's communities and is highly valued by Kāi Tahu. Provisions seek to sustain recognised uses of groundwater, maintain quality, site groundwater bores appropriately, and ensure that groundwater is used appropriately to avoid degradation of soils. Within the context of the mining proposal, which will lead to degradation of onsite soils (at least for the duration of the active mining) and contamination of shallow groundwater beneath the site, the proposal is generally aligned with these provisions in terms of avoiding effects that extend beyond the site boundaries.
859. Chapter 10 seeks to maintain or enhance Otago's wetlands and their individual and collective values for present and future generations. Provisions seek to (as a first step) avoid adverse effects on Regionally Significant Wetlands, and where this can't be done, and remediation or mitigation measures are not adequate, to require financial compensation where appropriate. Creation and reinstatement of wetland areas and enhancement of individual and collective wetlands values is promoted. A policy partially giving effect to the NPS-FM clause 3.22 is included, but notably it does not include the wording required by NPS-FM clause 3.22 in relation to mineral extraction activities.
860. The proposal will result in the loss of all wetlands within the DDF. Remediation is proposed for swamp / marsh wetlands via the creation of new wetlands, although ORC has reservations as to the feasibility of this undertaking. Even assuming success of this measure, a net loss for hill seepage and gully fen wetlands is assumed. The proposal is therefore inconsistent with these provisions.
861. Chapter 10A was inserted into the RPW via Plan Change 7 in 2021, becoming operative in March 2022. This chapter seeks to facilitate an efficient and effective transition from the operative freshwater planning framework toward a new integrated regional planning framework by managing the take and use of freshwater, the replacement of deemed permits, and replacement of water permits expiring prior to 31 December 2025.
862. Policy 10A.2.2 restricts the duration of any new resource consent to take and use fresh water to six years. This application seeks 35 years for the abstraction of groundwater from the Bendigo aquifer which is contrary to this policy.

863. ORC considers that the proposal is partially consistent with the RPW.

SECTION G.13 – RPA

864. The RPA contains three objectives in relation to air quality. These seek to maintain ambient air quality where it is already of high quality and enhance it where it is degraded, avoid the localised effects of discharges on human health, cultural and amenity values, ecosystems, and the life-supporting capacity of air, all while allowing for the sustainable use of Otago’s air resource. A number of policies are set out to give effect to these objectives.

865. Expert air quality assessment, supported by peer-review, indicates that ambient air quality beyond the site will be maintained and localised effects of discharges would be minimised or avoided.

866. ORC considers that the proposal is consistent with the RPA.

SECTION G.14 – RPWaste

867. The RPWaste was made operative in April 1997 and seeks to ensure a regionally coordinated approach to waste minimisation and to reduce the quantity of waste produced in Otago. It contains provisions relating to contaminated sites and hazardous substances and wastes.

868. The RPWaste contains few provisions of relevance to this proposal. Relevant provisions seek to avoid, remedy, or mitigate any adverse effects of contaminated sites and to avoid further site contamination. The site does not currently meet the RPWaste definition of a contaminated site, but the mining activities are likely to result in the site, or parts of the site, being classified as contaminated in the future.

869. In relation to hazardous substances and hazardous wastes, provisions generally seek to avoid, remedy and mitigate the risk to the environment, human health, and Kāi Tahu values from hazardous substances and hazardous wastes, including in relation to facilities for the treatment of disposal of hazardous wastes, which includes the Shepherds TSF.

870. The proposal will result in the creation of new contaminated land, which is inconsistent with the RPWaste, but will manage the storage of hazardous wastes (tailings) such that effects are avoided, remedied, or mitigated.

SECTION G.15 – NRMP

871. As noted elsewhere in these comments, the application does not contain any assessment of the potential adverse effects on Kāi Tahu values, beliefs, or enduring relationship with whenua and wai māori.

872. ORC advises the Panel of a relevant iwi management plan, being the Kāi Tahu Ki Otago Natural Resource Management Plan 2005.
873. Provisions that ORC considers are likely to be of particular relevance to the Panel's consideration of cultural impacts, include:
- a) 5.2 Overall Objectives
 - b) 5.3.3 Wai Māori General Objectives
 - c) 5.4.3 Wāhi Tapu Objectives
 - d) 5.4.4 Wāhi Tapu General Policies
 - e) 5.5.3 Mahika Kai and Biodiversity Objectives
 - f) 5.5.4 Mahika Kai and Biodiversity General Policies
 - g) 5.6.3 Cultural Landscapes Objectives
 - h) 5.6.4 Cultural Landscapes General Policies
 - i) 5.7.2 Air and Atmosphere Objectives
 - j) 5.7.3 Air and Atmosphere Policies
874. This NRMP can be used to provide cultural context and guidance as to the natural resource values, concerns, and issues of Kāi Tahu.

SECTION H: MANAGEMENT PLANS

875. Management plans are routinely used to ensure that outcomes prescribed in consent conditions are complied with. They can be a suitable mechanism to provide for a degree of flexibility in the way in which a particular adverse effect may be managed to achieve an outcome required by a consent condition. This is particularly helpful for projects that will be implemented in stages or over long timeframes, as they can provide for a flexible response to circumstances that may develop over the duration of the consent.
876. It is standard practice for ORC to impose consent conditions requiring preparation of management plans, and for ORC to receive and certify (or re-certify) those plans, drawing on in-house or consultant specialist expertise as needed.
877. ORC considers that management plans are likely to be an appropriate, and necessary, means to ensure that adverse effects of this proposal are managed. Management plans should be limited to non-critical operational processes that sit behind a performance or operational standard.
878. The application includes a suite of 23 management plans to manage the effects of the proposal.

879. The application variably describes these as draft management plans³⁴ and final versions of management plans.³⁵ Regardless, the Applicant proposes that these management plans be certified by the Panel as part of the decision on this application, rather than by the relevant council, following the granting of approvals (should they be granted).
880. ORC advises that it has not gone through each of the 23 management plans in forensic detail, as to do would require a substantial amount of time and input from subject matter experts. Further, ORC considers that this could be a wasted effort at this point of the process, when the application is liable to change in response to the views of persons invited to provide comment and / or in response to the Panel's consideration of the application.
881. Nonetheless, ORC has, with assistance from its expert advisors, reviewed the majority of the management plans to the extent necessary to inform its opinion on the appropriateness of any measures proposed by the Applicant to manage adverse effects.
882. This preliminary review has raised significant concerns in relation to the adequacy of the management plans, as they are currently drafted. These concerns have been communicated to the Applicant via information requests, peer-review reports, and at the various workshops held during February and March.
883. It is ORC's view that the management plans are intended to function essentially as guidance documents for operational level activities at the BOGP, to ensure that outcomes in consent conditions are achieved. To achieve this, the management plan needs to inform the persons implementing that plan on what needs to be done, how it must be done, when it must be done, and who needs to do it.
884. ORC considers that the plans describe activities in inappropriately general terms, as if they are providing only a summary of what needs to be done, rather than a comprehensive series of required actions.
885. For example, the ELF Management Plan states at section 5.2:
- “ELF foundations shall have vegetation removed, topsoil stripped, and rock features suitable for rehabilitation structures recovered prior to waste material placement.”*
886. The ELFMP does not provide any indication on how to determine the suitability of rock features for rehabilitation, nor does it cross-reference to any other management plan to provide instructions or context. If the rock features are not recovered, rehabilitation outcomes for lizards would be undermined before mining properly commences.

³⁴ A.02 Legal Overview paragraph 101

³⁵ A.13 Assessment of Environmental Effects, page 278

887. ORC considers that the management plans, in combination with consent conditions, do not secure critical design outcomes. Continuing with the ELFMP as an example, at section 6.1 this states that:

ELF designs shall achieve the design objective of Table 5 unless the risk can be demonstrated to be accepted, and design objective reviewed and approved by a CPEng and SQEP geochemical specialist.

888. Table 5 specifies a range of critical design criteria for geotechnical stability, oxygen ingress, water ingress, MIW management, and erosion and sediment control i.e. factors that have informed the assessment of potential adverse effects.

889. The majority of these critical design criteria are only listed in this management plan and are not replicated in consent conditions. Hence, these criteria could be changed without the need for an application under s127 of the RMA to change consent conditions, despite the critical role they play in ensuring adverse effects do not deviate from those assessed in the application.

890. The Applicant has proposed consent conditions to accommodate such a scenario. These are proposed in conditions C16 and C17 of document D.03. These conditions provide for the consent holder to propose an amendment to a management plan and provide the amended plan to council for certification.

891. A similar example is provided by the AQMP. No consent condition proposed by the Applicant sets any numerical compliance limit for any contaminant discharged to air from the BOGP. This means that the consent holder would be able to alter or remove any performance monitoring trigger level in the AQMP without needing to apply to change consent conditions under s127. Any amended management plan could be provided to ORC for recertification, with this decision being made by a compliance officer who may have little to no familiarity with the site or activities and would require this officer to provide a judgement on the appropriateness of the amendment. This condition would thus appear to set up future delegated decision making that is unlawful (as the Applicant appears to accept ³⁶).

892. While ORC does not dispute that one of the key benefits of management plans is flexibility, ORC emphasises that this flexibility should be constrained to accommodating new or improved mitigation measures to manage effects that have been assessed prior to granting consents, and it should not extend to enabling changes to fundamental design criteria or protective environmental limits.

893. ORC is also concerned about the complex interactions between management plans, particularly in the ecological space.

³⁶ A.02 Legal Overview paragraph 102

894. The need for the different types of ecological management plan is acknowledged; however, ORC considers that as currently drafted the management plans present a complex network of actions that would appear to be almost impossible for operational staff (or council officers) to unravel and implement to achieve the intended ecological outcomes.
895. In their peer-review, e3 stated that a project of this scale and complexity would be expected to utilise project management software to ensure that all targets and outcomes, and actions to achieve the outcomes, are documented in one location.
896. ORC considers that it is the responsibility of the Applicant, and not an administering authority such as a council, to employ suitable data / information management tools to demonstrate that the management plan framework will deliver the required outcomes.
897. ORC raises two further issues in relation to management plans:
- a) With the exception of the LERMP, all ecological management plans are located in D.01 which is the CODC land use consent. ORC does not consider that this is an appropriate location for these conditions on the basis that adverse ecological effects arise from activities that require regional council resource consents. ORC suggests that these conditions are moved to D.03 which is for conditions within the jurisdiction of both CODC and ORC.
 - b) A consent condition should specify what the certification process entails. ORC has suggested a condition to this effect.
898. In short, while ORC is comfortable (in principle) with the proposed use of management plans to ensure compliance with outcomes prescribed in consent conditions, it does not consider that the management plans are currently fit for purpose. Consequently, ORC does not consider it appropriate that these plans are certified as part of this fast-track application process.

SECTION I: CONSENT CONDITIONS

899. Section 83 requires that conditions be no more onerous than necessary to address the reason for which it is set in accordance with the provision of this Act that confers the discretion.
900. ORC provides a suite of recommended consent conditions in Appendices 2-4. These are based on the Applicant's proposed conditions of consent and are intended to be preliminary recommendations in relation to a limited number of matters on which ORC considers it has sufficient information to suggest appropriate changes / new conditions. These have generally been discussed throughout these comments.
901. ORC has not sought to recommend specific changes in relation to the majority of the terrestrial ecology conditions at this time. This is due to the substantial uncertainty in relation

to the management of ecological effects, as well as the overlapping jurisdiction in this area between ORC, CODC, and DoC.

902. ORC considers that substantial work is required on consent conditions and that the process of improving conditions could well benefit from the involvement of regulatory authorities who would be responsible for enforcing those conditions, should the approvals be granted.

903. ORC considers that it is well placed to contribute meaningfully to the development of an appropriate suite of consent conditions for this project and advises that it will make itself and its expert advisors available for any workshopping, conferencing, or similar process that may be directed by the Panel on this matter.

SECTION J: OTHER MATTERS

904. FTAA Schedule 5 Clause 17 part (b) directs a Panel to take into account any provisions of parts 2, 3, 6, 8, 9, and 10 of the RMA that direct decision making on a resource consent application. This includes consideration of any other matter the consent authority considers relevant and reasonably necessary to determine the application as provided for in RMA s104(1)(c).

905. To assist the Panel, Council provides an assessment of the following other matters that it considers relevant to the determination of this application:

- Otago Regional Council Strategic Directions

SECTION J.1 – OTAGO REGIONAL COUNCIL STRATEGIC DIRECTIONS 2024-2034

906. The ORC Strategic Directions 2024-2034 include the following focus areas:

- a) Partnership: Otago Regional Council has effective and meaningful partnerships with mana whenua, creating better outcomes for our region.
- b) Communities: Otago has cohesive and engaged communities that are connected to the environment and each other.
- c) Environment: Otago has a healthy environment ki uta ki tai (from mountains to the sea), including thriving ecosystems and communities, as well as flourishing biodiversity.
- d) Resilience: Otago builds resilience in a way that contributes to community and environmental wellbeing through planned and well-managed responses to shocks and stresses, including natural hazards.
- e) Climate: Otago is a climate-resilient region that plans for and invests in initiatives that reduce emissions and help us adapt to our changing climate.
- f) Transport: Otago has an integrated transport system that contributes to the accessibility and connectivity of our community, reduces congestion and supports community wellbeing aspirations.

907. A brief discussion on each of the focus areas is provided below for the purpose of determining whether the proposal would present any substantial impediment to the goals in these

J.1.1 Partnership

908. Kā Rūnaka³⁷ have expressed concerns about the extent to which they were meaningfully consulted in respect of this Application.³⁸

909. ORC recommends that the Panel take account of the concerns expressed by Kā Rūnaka, and provide for their participation in this process, to the extent and in the manner that that Kā Rūnaka consider appropriate.

910. ORC has sought to maintain an effective and meaningful partnership with mana whenua throughout this process, sharing copies of all further information requests and peer-review assessments with Kā Rūnaka.

J.1.2 Communities

911. ORC understands that the Applicant has undertaken a programme of community engagement in relation to the BOGP.

912. ORC also understands that within the local community there is a range of views held in relation to the BOGP.

913. ORC has sought to provide through these comments a fulsome assessment of the application – including its benefits and deficiencies – that it anticipates will cover a range of views held by the community.

914. ORC recommends that the Panel considers carefully any views that may be expressed (through invited comments) by the community, and that the Applicant provide proportional and genuine responses to these views via their s55 response.

J.1.3 Environment

J.1.3.1 Biodiversity Strategy

³⁷ Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Moeraki, Te Rūnaka o Ōtākou, and Hokonui Rūnanga

³⁸ https://www.fasttrack.govt.nz/_data/assets/pdf_file/0020/19118/Memorandum-of-Counsel-in-Response-to-Panel-Convener-Directions.pdf

915. ORC has two distinct but complementary roles when it comes to supporting indigenous biodiversity in the region: maintaining biodiversity under the RMA and managing pests under the Biosecurity Act 1993.³⁹
916. The NPS-IB provides national direction to inform this role.⁴⁰
917. Council's first Biodiversity Strategy first released in 2018.
918. A draft revised strategy was endorsed by Council in June 2025 and public feedback received between 3-30 November 2025.
919. The draft Biodiversity Strategy aligns with the RMA, national direction, regional policy statement, ORC strategic direction, mana whenua natural resource management plans.
920. The long-term vision is:

Ki uta ki tai, our awa connect our mountains and great lakes to our beautiful coastline and ocean depths, reflecting the mauri of te taiao. Mana whenua as kaitiaki and our communities as stewards work together to achieve healthy, thriving and resilient indigenous biodiversity across our region's catchments, coast and ocean, providing for the health of the people.

921. The following six outcomes are sought to be achieved by 2040 or earlier:
- a) Indigenous biodiversity is maintained and resilient.
 - b) Indigenous biodiversity is enhanced strategically.
 - c) Mana whenua are supported to exercise kaitiakitaka.
 - d) Communities are empowered as stewards.
 - e) ORC is leading proactive responses to emerging issues.
 - f) The decline of indigenous species and ecosystems is reversed.
922. The purpose of the indigenous biodiversity strategy is to provide clarity on what ORC seeks to achieve and how. It sets out the approach to be taken and provides a framework for decision making. It helps to plan actions, allocate resources effectively, coordinate across different areas of responsibility, and build capability and capacity where it is needed.
923. The strategy is a non-statutory document that sets out how ORC intends to give effect to the relevant components of ORC's Strategic Directions and its legislative and statutory responsibilities.

³⁹ RMA s30(1)(ga) the establishment, implementation, and review of objectives, policies, and methods for maintaining indigenous biological diversity; s35 duty to gather information, monitor, and keep records.

⁴⁰ NPS-IB Clause 1.7

924. This strategy includes indigenous biodiversity across land, freshwater, and coastal marine environments, recognising that the environment is an interconnected system ki uta ki tai.
925. This strategy brings together and replaces ORC's previous biodiversity and biosecurity strategies, setting the maintenance and enhancement of indigenous biodiversity as the goal, and recognising biosecurity as a key tool to achieve it. Pests are one of the biggest pressures on indigenous biodiversity, so effective biosecurity is essential to maintain indigenous biodiversity.
926. An implementation plan, including actions to implement the strategy, will be prepared in June 2026. This will inform the Long-Term Plan.
927. As discussed in Section C the proposed activities will result in a net loss of indigenous biodiversity, including the permanent loss of irreplaceable and vulnerable species and habitat values.
928. While the Biodiversity Strategy applies to the Otago region in its entirety, this application does not support the goals set out in the strategy and hence does not align with the 'Environment' focus of the overarching Strategic Directions.

J.1.3.2 Biosecurity and pest management

929. The Biosecurity Act 1993 is the national legislation that sets out how central government and regional councils deal with pests and unwanted organisms in New Zealand. It enables regional councils to develop regional pest management plans to control and manage pests in their region by setting objectives and rules.
930. The Otago Regional Pest Management Plan identifies 51 species to be managed by land occupiers, often with the involvement of Otago Regional Council. It builds on the 2009 Pest Management Plan by introducing new objectives and rules for a range of new species including wilding conifers, wild Russell lupin, and other plant and predator pests, and introduces new rules and controls for many of the existing species such as rabbits and gorse and broom.
931. The Regional Pest Management Plan uses five programmes to manage pests in Otago: exclusion, eradication, progressive containment, sustained control, and site-led programmes.
932. In accordance with section 100B of the Biosecurity Act 1993, Otago Regional Council will prepare an Operational Plan to implement this Regional Pest Management Plan. This Operational Plan will be reviewed annually in accordance with the Act and the monitoring principles outlined in Section 7 of this Plan.
933. Regional councils have a mandate under Part 2 of the Biosecurity Act 1993 to provide regional leadership in activities that prevent, reduce, or eliminate adverse effects from harmful species that are present in their region. Otago Regional Council (ORC) holds this role in the Otago region.

934. The proposal will assist in giving effect to the Otago Regional Council Pest Management Plan 2019 via the G.10 Mammalian Pest Management Plan and G.11 Biosecurity and Pest Management Plan.

J.1.4 Resilience

935. The application has given consideration to, and ORC has reviewed, the way in which the proposed mining activities may exacerbate natural hazards, and the way in which natural hazards may increase risks inherent in mining activities.

936. ORC considers that the proposal as designed will not materially increase the consequences of any natural hazard event. The design of the large dams specifically considers seismic and landslide hazards.

937. Consent conditions are recommended to ensure good resilience outcomes.

J.1.5 Climate Change

938. The designs of the large dams (TSF, Shepherds Silt Pond) incorporate climate change considerations.

J.1.6 Transport

939. This section is informed by *Otago Regional Council transport comments on the Matakanui Gold Limited Bendigo—Ophir Gold Project fast-track application*, prepared by the ORC Transport Team, attached as Appendix 49.

940. As per Land Transport Management Act 2003, ORC's responsibilities as the public transport authority for Otago include:

- Planning public transport networks.
- Designing, procuring and funding public transport services.
- Influencing land use via regional policy statements and regional plans developed in accordance with the Resource Management Act 1991.

941. In fulfilling these responsibilities ORC has an interest in the BOGP as a significant trip generating activity.

942. The application includes an Integrated Transport Assessment (Report B.30).

943. ORC considers that the provision of buses for worker travel from Wanaka, Cromwell, and Alexandra alongside the promotion of ride-sharing arrangements through the Project Traffic

Management Plan is consistent with relevant policy direction in the pORPS 2021 and the Regional Land Transport Plan.

944. ORC does not expect the BOGP to have any notable effect on existing public transport services in the region, including exempt services delivered by commercial operators, noting that ORC does not currently deliver any services near the site area or in Wānaka, Cromwell or Alexandra.

945. ORC is currently investigating the potential for future public transport services in the area including Wānaka, Cromwell and Alexandra as per the Regional Public Transport Plan rural network aspirations (presented from page 59 of the plan). If such services were implemented, ORC consider that the Project to have a similarly negligible impact to existing exempt services.

J.1.7 Summary

946. In summary, the application is not understood to have been specifically designed with ORC strategic directions or strategic plans in mind, but the proposal is generally not expected to be an impediment to the goals in these being achieved. The exception is in relation to the ‘partnership’ and ‘environment’ focus area of the strategic directions, with which the application is poorly aligned.

SECTION K: OTHER LEGISLATION THAT DIRECTS DECISION MAKING

947. Schedule 5 clause 17 states that:

For the purposes of section 81, when considering a consent application, including conditions in accordance with clauses 18 and 19, the Panel must take into account, giving the greatest weight to paragraph (a),—

- (a) the purpose of this Act; and*
- (b) the provisions of Parts 2, 3, 6, and 8 to 10 of the Resource Management Act 1991 that direct decision making on an application for a resource consent (but excluding section 104D of that Act); and*
- (c) the relevant provisions of any other legislation that directs decision making under the Resource Management Act 1991. Council has considered the relevant sections of the RMA, and subsidiary statutory documents, which direct decision making, and makes the following observations:*

948. To assist the Panel, ORC provides an assessment against the relevant provisions of the RMA that direct decision making.

K.1 – RMA S87A(6) – PROHIBITED ACTIVITIES

949. The application does not seek approval for any activity that would be prohibited. Refer Appendix A and Section C.6.4.4 for relevant discussion.

K.2 – RMA S105 – MATTERS RELEVANT TO CERTAIN APPLICATIONS

950. The matters traversed by this section are adequately discussed throughout the application and supporting documents.

K.3 – RMA S106A – CONSENT AUTHORITY MAY REFUSE LAND USE CONSENT IN CERTAIN CIRCUMSTANCES

951. Council does not consider that there is a significant risk from natural hazards that would warrant this application being declined. Consent conditions are recommended in relation to managing activities to avoid or minimise effects that may arise as a consequence of natural hazards.

K.4 – RMA S107 – RESTRICTION ON GRANT OF CERTAIN DISCHARGE PERMITS

952. The application includes discharges of contaminants and water into water and onto land in circumstances which may result in contaminants entering water. Provided the consent conditions recommended by ORC throughout Section C.6 are imposed, ORC does not consider that any of the effects described in RMA s107(1) (c)-(g) are likely.

953. Importantly, if the nitrogen-related limits are not reduced as recommended in Section C.6.7.2, ORC considers that it is likely that the application would result in significant adverse effects on aquatic life.

K.5 – RMA S123 – DURATION OF CONSENT

954. Section 123 of the RMA applies to a decision of the Panel on the consent.⁴¹

955. The Applicant seeks a 35-year term for consents, with a ten-year lapse period.

956. Should the Panel be minded to grant the approvals, Council considers that this duration is appropriate and reflects the scale of the activity and the investment required, will ensure continuity of mining, and recognises that many of the activities will persist beyond the active mining phase. ORC considers that the following activities do not require consent durations of 35 years:

- a) Discharge permit for the discharge of contaminants to air from the gold processing plant – a duration of 15 years is likely more appropriate

⁴¹ FTAA Schedule 5, Clause 17, part (7).

- b) Land use consents for earthworks and vegetation clearance in, and within 10 m and 100 m setbacks of natural inland wetlands – a duration of 15 years is likely more appropriate

957. ORC notes that s127B of the RMA limits the term of any new water permit to take and use water to six-years.⁴² This is discussed in Section K.6 below.

K.6 – RMA S127B – DURATION OF WATER PERMIT IN OTAGO

958. ORC has not identified any effects-management reason that the water permit to take and use water from the Bendigo Aquifer should be limited to six-years. There will be no significant adverse effects on any other user of water (after considering consent conditions), the allocation sought is well within the available allocation for the groundwater resource, and a secure source of water is critical to service the mine, including use in preventing other adverse effects, such as air quality and amenity effects from dust generation. While there remains a question of efficiency of use, there are no other feasible water sources.

959. Despite these important factors, if ORC were the decision maker under the RMA, this permit would not be granted for longer than six years. Nevertheless, for this application under the FTAA, ORC considers that the Panel could validly form the view that a longer duration is appropriate, for the following reasons:

- a) The FTAA modifies the decision-making provisions applicable to a resource consent application;
- b) Under clause 17(1) of schedule 5, among other things the Panel must 'take into account' certain provisions in the RMA 'that direct decision making on an application for a resource consent'. That includes Part 6 of the RMA, which is where s127B is located;
- c) Separately, clause 17(7) provides that section 123 of the RMA "[applies] to a decision of the Panel on the consent." There is no equivalent provision that means that s127B 'applies to' a Panel; and
- d) In the absence of a requirement to 'apply' s127B, the Panel must still 'take it into account', albeit giving the greatest weight to the purpose of the FTAA.

K.7 – NES-FW REGULATION 45D

- a) NES-F Regulation 45D – Discretionary Activities (Natural Inland Wetlands)
 - Based on the information currently available to Council, resource consents sought under clauses (1)-(5) of Regulation 45D could not be granted, if this decision was being made under the RMA. This is because regulation 45D clause (6)(c) has not been met.

SECTION L: WHEN AN APPROVAL MUST OR MAY BE DECLINED

⁴² With the exception of any water permit which replaces a deemed permit associated with hydro-electricity generation infrastructure listed in Schedule 10A.5.1 of the plan on the terms specified in Rule 10A.3.1B of the plan, subject to conditions.

960. FTAA section 85 sets out when a Panel must or may decline an approval.

L.1 – When approval must be declined

961. ORC understands that Kā Rūnaka have signalled that granting the approvals sought may be in breach of Treaty settlements and therefore in breach of s7. This is an important matter for the Panel to contemplate because, if correct, approvals must be declined.

L.2 When approval may be declined

962. S85(3) provides that a Panel may decline an approval if it forms the view that there are one or more adverse impacts in relation to the approval sought and those adverse impacts are sufficiently significant to be out of proportion to the project's regional or national benefits that the Panel has considered under section 81(4), even after taking into account any conditions the Panel may impose or that the Applicant may agree to in order to avoid, remedy, mitigate, offset, or compensate for those adverse impacts.

963. ORC has identified adverse impacts. These are discussed at length throughout Section C.

964. The s85(3) test requires the weighting of incommensurables, being in this case adverse environmental effects and positive economic effects. ORC has not attempted to undertake such a weighting exercise, as to do so would require an understanding of any adverse or positive effects associated with the other approvals sought by this application, and those assessments are conducted by CODC and DoC.

SECTION M: CONCLUSIONS

965. Council considers that the application:

- Meets the purpose of the Act, in that it is a development project with significant regional and national benefits; and
- Will result in adverse effects that have been discussed at length throughout Section C.



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