

**Before an Expert Panel  
Bendigo-Ophir Gold Project**

**FTAA-2507-1089**

**Under the**

Fast Track Approvals Act 2024

**In the matter of**

an application for approvals to establish,  
operate, and remediate an open pit and  
underground gold mine at Bendigo and  
Ardgour Stations

**By**

**Matakanui Gold Limited**

Applicant

---

**SUPPLEMENTARY STATEMENT OF EVIDENCE OF NICHOLAS JOHN HEAD  
TERRESTRIAL ECOLOGY**

**17 AUGUST 2026**

---

**Environmental Defence Society Inc**  
PO Box 91736 Victoria Street West Auckland 1142  
Shay Schlaepfer, COO  
Email: [REDACTED]

**Counsel Acting**

Rob Enright

Email: [REDACTED]

Jen Vella

Email: [REDACTED]

## Introduction and scope

1. My full name is Nicholas John Head.
2. I have been asked by the Environmental Defence Society Inc. (EDS) to provide supplementary expert evidence on the document “Results of a survey of spring annual herb species on Bendigo and Ardgour Stations, 2025 (updated)” prepared by the Bioeconomy Science Institute (**Spring Annuals Survey**). The Spring Annuals Survey was filed by the Applicant of the Bendigo-Ophir Gold Project (**Project**) on 26 June 2026.
3. My qualifications and experience are set out in my evidence of 10 April 2026.

## Code of conduct

4. I understand that this is not a hearing under the Resource Management Act (RMA). However, I have read the code of conduct for expert witnesses contained in the Environment Court's Practice Note 2023 (the Code). I have complied with the Code when preparing this written statement of evidence. The data, information, facts, and assumptions I have considered in forming my opinions are set out in my evidence. Unless I state otherwise, this evidence is within my sphere of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

## Material considered

5. This evidence responds to the Spring Annuals Survey, which was disseminated to other parties on 6 July 2026 via an email from the Environmental Protection Authority. I have also reviewed the evidence filed by Max Crowe (dated 13 August 2026) on behalf of the Department of Conservation. I generally agree with the assessment and recommendations made in Mr Crowe's evidence.
6. The Spring Annuals Survey was undertaken to map the locations of various native spring annual herbs within the Bendigo and Ardgour Stations. These native species were *Ceratocephala pungens* (classified as Threatened – Nationally Critical), *Myosotis brevis* (Threatened – Nationally Vulnerable), the mousetail *Myosurus minimus* subsp. *novae-zelandiae* (At Risk – Declining), and *Myosotis antarctica* subsp. *antarctica* (At Risk – Naturally Uncommon). Together, these species are referred to as “spring annuals”.
7. These species had previously been recorded within earlier surveys undertaken by RMA Ecology in November 2023 and November 2024 (Alliance Ecology 2024; Milner et al

2025). Those surveys found all species within the Direct Disturbance Footprint (**DDF**) of the mines, across both stations.<sup>1</sup>

8. Given the seasonal nature of these species, their cryptic appearance, and the difficulty in locating them within a large footprint area, the additional Spring Annuals Survey was needed to provide more certainty around population and distribution information.

### **Spring Annuals Survey**

9. The Spring Annuals Survey provides additional information on the distribution and abundance of spring annual populations within and around Bendigo and Ardgour Stations. In my opinion, the findings reinforce and strengthen the concerns expressed in my earlier evidence regarding the very high residual adverse effects of the Project on nationally threatened and at-risk spring annual species.
10. While the survey has identified larger populations and a wider distribution of these species than was previously known, it does not materially reduce uncertainty regarding the magnitude of effects or the effectiveness of proposed management measures. Significant uncertainties remain because further survey work is still required across the wider area to fully understand the distribution, abundance, ecological importance and implications of these populations.
11. The Spring Annuals Survey was not a comprehensive survey of all spring annual habitat within the DDF. Rather, it focused on areas considered most likely to support spring annuals. The Ecological Study Area was identified through a combination of desktop assessment of aerial imagery and reference to the ecological study areas previously surveyed by RMA Ecology<sup>2</sup>. Consequently, the survey should not be regarded as a complete assessment of spring annual populations within the DDF and wider Project area, and uncertainty regarding the full extent of these populations remains.
12. This high level of uncertainty is reflected in the Spring Annuals Survey, which notes that spring annual species are difficult to detect because they emerge sporadically from soil seedbanks and have a very short life cycle<sup>3</sup>. Important factors such as seedbank size, distribution, viability, and longevity remain poorly understood. I therefore agree with the Survey's conclusion that multi-year surveys are necessary to adequately characterise these populations.<sup>4</sup> Without such information, the true extent of populations and the

---

<sup>1</sup> Section 2 Background, page 1.

<sup>2</sup> Section 4.1 Pre-field methods, Page 2 and 3.

<sup>3</sup> Spring Annuals Survey, section 6.1, page 22.

<sup>4</sup> Spring Annuals Survey, section 6.1, page 22.

full magnitude of the Project's very high effects cannot be reliably assessed, either within the Project area or across the wider Dunstan Ecological District.

13. Further, with regard to *Ceratocephala pungens*, the Spring Annuals Survey identifies further research as a priority, given its status as the most threatened spring annual species and the considerable uncertainties that remain regarding its ecology, population dynamics, and long-term conservation requirements<sup>5</sup>. The Survey notes that such research requires sufficient numbers of plants and therefore identifies habitat within the proposed DDF as a priority focus, as populations outside the DDF may not occur in adequate numbers to support meaningful investigation.<sup>6</sup>
14. Based on current information, the DDF contains some of the most important known populations of the species internationally. Mining (including preparatory works such as topsoil stripping) would remove these populations, further increasing extinction risk. Max Crowe has identified key priorities for further information and assessment.
15. Notwithstanding these limitations, the survey demonstrates that both the population sizes and distributions of the four spring annual species are substantially greater than identified during the 2024 survey (Milner 2025), both within and outside the DDF.

#### **Greater population loss than previously understood**

16. Despite the survey not covering all potentially suitable habitat, 60% of *Ceratocephala pungens*, 37% of *Myosotis antarctica*, 40% of *Myosotis brevis*, and 63% of *Myosurus minimus* recorded during the 2025 survey were located inside or within 200m the DDF (excluding Ardgour Rise).<sup>7</sup> These figures indicate that the DDF supports a disproportionately large component of the known populations of these species. Based on current information, the concentration of spring annuals within and adjacent to the DDF is therefore not typical/representative of the wider Dunstan Ecological District but instead reflects an area of particularly high importance for their conservation not replicated more widely.
17. These figures demonstrate that a substantial proportion of the known populations occur within, or immediately adjacent to, the area affected by the Project. The survey therefore indicates that the Project will affect a greater proportion of these populations than was previously understood when the application was lodged, the assessment of ecological

---

<sup>5</sup> Spring Annuals Survey, section 8, page 28.

<sup>6</sup> Spring Annuals Survey, section 8, page 28.

<sup>7</sup> Note that these figures were provided from analysis undertaken by Max Crowe (DOC) of data provided in the spring annual surveys.

effects undertaken and proposed conditions (particularly regarding the mining of the Come-in-Time Pit (CITP)) were developed.

18. Rather than reducing concerns regarding adverse effects, the survey findings suggest that the actual scale of impact may be substantially greater than previously assessed. In particular, the results reinforce the conclusion that the DDF supports a nationally significant stronghold of *Ceratocephala pungens* and supports substantial proportions of the known populations of the other spring annual species.

#### **Increased risk to population viability**

19. In my opinion, the loss and degradation of such a substantial proportion of the known populations of at-risk and threatened spring annual species would materially increase the extinction risk faced by these species.
20. Significant reductions in population size can reduce ecological resilience, limit recovery potential, and increase susceptibility to environmental variability, stochastic events, and ongoing pressures. The greater the proportion of a population affected, the greater the likelihood that population viability thresholds will be exceeded.
21. Given the scale of loss associated with the Project, the remaining populations may become less resilient and less able to recover from natural fluctuations and disturbance events. In my opinion, this would result in a disproportionate increase in extinction risk for these nationally threatened and at-risk species.

#### **Implications for the Applicant's effects assessment**

22. The Spring Annuals Survey indicates that, across the Ecological Study Area, more than 20% of *C. pungens*, 35% of *M. brevis*, and 25% of *M. minimus* occur in habitats other than depleted herbfield.
23. In the case of *C. pungens*, this includes habitat beyond the proposed CITP. The presence of *C. pungens* in the CITP was a key reason for assigning a very high level of effect within the Applicant's assessment. However, if habitat outside the CITP supports the same nationally threatened species and contributes materially to the known population, those areas should likewise be recognised as supporting highly significant and potentially irreplaceable ecological values, warranting avoidance.
24. This raises a fundamental inconsistency in the Applicant's effects assessment and mitigation package and goes directly to the core of my concern that the Project's overall ecological effects have been understated.

25. The new survey information indicates that the original magnitude of effects assessment was based on an incomplete understanding of species distribution and abundance within the Project area. Consequently, the conclusion that residual effects outside the CIP can be adequately mitigated and/or compensated is not supported by the available information.
26. While the Applicant's experts acknowledge that the new information alters their assessment of the magnitude of effects on spring annuals,<sup>8</sup> because these data were not available when the original effects assessment and offset and compensation package were developed, the significance of affected spring annual populations outside the CIP has not been adequately recognised within the mitigation framework.
27. In my view, this reinforces the deficiencies identified in my evidence in chief. Even after accounting for the proposed offsetting and compensation measures, the Project would still result in very high adverse effects on nationally threatened species and habitats, as acknowledged in the Ecologists' Joint Witness Statement (JWS)<sup>9</sup>. Given the scale of loss, the irreplaceability of affected values, and the uncertainty surrounding mitigation effectiveness, these effects are most appropriately characterised as severe and irreversible. As noted by Mr Crowe, the "very high" signifier for residual adverse effects under the EclAG Guidelines does not discriminate between materially different levels of residual adverse effect.

### **Effects beyond direct habitat loss**

28. For populations located adjacent to the DDF, including those within approximately 200 metres of proposed disturbance areas, the effects of the Project will extend beyond direct habitat loss.
29. These populations will be exposed to adverse edge effects including dust deposition, weed invasion, and changes in local habitat conditions. In dryland ecosystems, dust can have a physical smothering effect but also can act as a nutrient source, favouring exotic species and altering competitive relationships within indigenous vegetation communities.
30. Given the open and wind-exposed nature of these habitats, such effects can be expected to extend beyond the physical limits of the DDF.<sup>10</sup>

---

<sup>8</sup> Joint Witness Statement: Ecology – Effects Management (10 & 11 June 2026), at [115] – [117].

<sup>9</sup> Joint Witness Statement: Ecology – Effects Management (10 & 11 June 2026), at [117]

<sup>10</sup> Walker, S. 2020. Measured edge effects on indigenous grassland and shrubland vegetation on low-relief topography in Canterbury. Contract report LC3866. Manaaki Whenua-Landcare Research. ch.

31. Consequently, spring annual populations adjoining the DDF are likely to experience reduced habitat quality, adversely affecting survival, recruitment, and long-term population persistence.
32. This is particularly important given the substantial proportion of spring annual populations already subject to direct loss. Any additional decline in the condition or productivity of adjacent populations would further reduce species resilience and recovery capacity.
33. Coupled with the uncertainty regarding mitigation effectiveness and the concerns identified in my evidence in chief, there is limited confidence that the remaining populations will be adequately protected from these indirect effects.

### **Impacts on the Bendigo Conservation Covenant**

34. The Spring Annuals Survey shows that all known key populations of the four spring annual species within the Bendigo Conservation Covenant occur within the proposed revocation area, including approximately 60% of all recorded *C. pungens*.
35. This demonstrates that the area proposed for revocation supports a disproportionately important component of the known populations of these nationally threatened and at-risk species.
36. Revocation of the Covenant would remove an important layer of legal protection and expose these populations to direct and indirect mining-related effects. In my opinion, the risk posed to such a substantial proportion of the known populations constitutes a nationally significant adverse ecological effect.
37. The proposed revocation places at risk not only the ecological values currently protected by the Covenant, but also the future ecological gains expected through ongoing management and permanent legal protection.
38. In my view, neither these future gains nor the full value of the Covenant's legal protection have been adequately recognised in the Applicant's offset and compensation assessment.
39. The new survey information strengthens this concern. It demonstrates that the Covenant supports a greater proportion of spring annual populations than was previously understood, increasing both the significance of the values that would be lost and the extent to which the compensation assessment understates those losses.

## Conditions

40. Prior to undertaking the Spring Annuals Survey, the Applicant proposed a condition to the effect that the CIP would not be mined unless it can be shown that no more than 1% of the known population of spring annuals in the Dunstan Ecological District occur within the CIP.<sup>11</sup>
41. This condition does not take account of the significant populations now known to exist outside of the CIP but within and immediately adjoining the DDF, nor any additional populations of spring annuals that may exist within the areas of the DDF that have not been surveyed.
42. In my view, this condition does not address the increased risk to the viability of spring annual populations. Furthermore, no amount of offsetting or compensation, which would in any event be inconsistent with the National Policy Statement for Indigenous Biodiversity, could adequately mitigate or compensate for that risk.
43. I note that the Applicant intends to file updated conditions on 28 August 2026. I have not had the benefit of considering those conditions in preparing this evidence.

## Conclusions

44. The Spring Annuals Survey demonstrates that spring annual populations within the Project area are larger and more significant than previously understood.
45. Importantly, a substantial proportion of the known populations occur within or immediately adjoining the DDF, indicating that the Project would affect a greater proportion of these species than was assumed in the original effects assessment.
46. The survey does not materially reduce uncertainty regarding the full extent of spring annual populations or the effectiveness of proposed mitigation measures. Instead, it demonstrates that there is significant uncertainty as to the full extent of the distribution, abundance, and ecological importance of these populations and it reinforces the importance of the DDF and the Bendigo Conservation Covenant area as nationally significant strongholds for threatened and at-risk spring annual species.
47. In my opinion, the survey findings demonstrate that the magnitude and severity of adverse ecological effects have been underestimated and that the benefits attributed to offsetting and compensation have been overstated.

---

<sup>11</sup> Condition C103 of the Common Conditions set, which enables the consent holder to produce a report on the basis of either the ARP or additional further discoveries of cushionfield populations.

48. Consequently, the Project would result in severe and irreversible adverse effects on nationally significant populations of threatened and at-risk spring annual species and would materially increase their risk of decline and inevitable extinction. This cannot be addressed through conditions, including conditions requiring offsetting or compensation.
49. In circumstances where the effects on significant indigenous biodiversity are uncertain, poorly understood, and potentially irreversible, the National Policy Statement for Indigenous Biodiversity would ordinarily require that the precautionary approach be applied. In my opinion, applying that approach would require further research and assessment of the distribution, abundance, and ecological significance, and rehabilitation potential of spring annual species before mining within the DDF is authorised.

Nicholas Head  
17 August 2026