Department of Conservation
Te Papa Atawhai

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22 December 2022

Simon Upton
Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata
PO Box 10 241
Wellington 6140

Tēnā koe Mr Upton

Thank you for your letter of 24 November 2022 in which you make enquiries around the deteriorating trend in the health of Otago's deep-water alpine lakes. You asked for information regarding the extent to which the degrading trend is being monitored and addressed by Te Papa Atawhai – Department of Conservation.

The Department has roles and responsibilities under the Conservation Act 1987 for managing and protecting freshwater ecosystems across Aotearoa New Zealand. This includes, through freshwater advocacy, monitoring, research, and operational activities to control invasive species. The Department's freshwater advocacy role is particularly critical for lake ecosystems, including deep-glacial lakes, which face threats from sediment runoff and nutrient enrichment. These environmental pressures are geographically outside of our direct management influence. Working in partnership with regulatory agencies, our Treaty Partners, industry, and local community is therefore critical to gain outcomes for lakes.

For lakes Wānaka, Whakatipu and Hāwea the agencies primarily responsible for maintaining and improving their water quality and health are the Ministry for the Environment (MfE) and the Otago Regional Council. This is through implementation of the National Policy Statement for Freshwater Management (NPS FM 2020) and Otago Regional Plan. We note that the Otago Regional Council has already responded to your request via an open letter published on the 6 December 2022.

Otago Regional Council, as the key agency monitoring the environmental state of these lakes, has expressed its concern about the increased algal abundance observed at some of these lakes. The 2021 'Wai Wanaka' report you refer to clearly demonstrates that the productivity of these lakes has doubled in the last five years which identifies a need for coordinated action. Your letter essentially asks about three related activities: what DOC does, what DOC supports and partners with, and what DOC's long-term views are. Below we have collated some information that is relevant to these requests.

DOC's contribution to lake management across Aotearoa

A considerable number of New Zealand's lakes occur within land administered by the Department as public conservation land (over 1500 lakes) and a range of advocacy, research, monitoring and operational programmes occur on some of these lakes. Lakes Wānaka, Whakatipu and Hāwea do not occur within a conservation area but are iconic lakes in the New Zealand landscape with high amenity value.

DOC prioritises management of natural ecosystems, including lakes, based on biodiversity values through an ecological management system. Within this system, Lake Whakatipu has been identified as an important ecosystem for the long-term management of biodiversity. However, there are no planned DOC biodiversity monitoring and management activities in the lake. DOC does carry out limited monitoring and management activities of threatened non-migratory fish populations in some lake catchment streams, including some streams in the Lake Whakatipu catchment.

As you noted in your letter, a collective and cooperative approach is required to arrest decline in lake health. A good example of where this is occurring is the Ashburton high-country lakes. We have been investing in a joint project with Environment Canterbury, MfE and iwi/hapū to resolve similar concerns about degrading water quality and ecosystem health (e.g. Lakes Clearwater and Heron).

DOC has focused on supporting collaborative lake research and monitoring programmes. One example of this is the Lakes380 research programme (see Lakes380.com) involving NIWA, Cawthron Institute, GNS and several universities. We were disappointed to see that Lakes380 was not selected for ongoing funding in 2022 through the MBIE Endeavour Research Programme. DOC sees this work as transformative in monitoring the health of lakes across Aotearoa and in 2023 we will be looking to support a re-bid as we consider the development of new monitoring and decision-making tools as crucial.

Within the Otago region, DOC regularly provides support to lake research driven by Prof Gerry Closs, Dr Marc Schallenberg and Dame Carolyn Burns (University of Otago).

DOC's long-term views and insights

The slow degradation of lakes that once sat at the 'pristine' end of lake health is concerning. Given the significant ecological, cultural, and recreational (including tourism) values of these lakes, the Department has an important role to advocate for their conservation. We look forward to supporting, and participating in, the Working Group proposed by the Regional Council to improve lake management.

While the shortfall in Research Science & Innovation (RSI) funding (as %GDP and fragmentation) is well documented, there may also be difficulties getting public good science and services (incl. critical monitoring) funded due to the focus on science excellence and novelty. It is hoped shortfalls will be addressed as part of the current Te Ara Paerangi – Future Pathways RSI system reform and the establishment of National Research Priorities in 2023. We advocate that biodiversity monitoring that underpins good decision-making should

be a national priority. The Department will be engaging in this process over the 2023-2025 timeline laid out in the Te Ara Paerangi White Paper.

The Long-Term Insights Briefing (Long-term insight briefing) we are co-authoring with LINZ considers the critical need to better monitor and direct biodiversity efforts. The briefing posits that the current suite of tools it is not possible (financially or geographically) to achieve a surveillance network with sufficient resolution to inform decision-making. New technologies for monitoring and reporting on lakes is needed. Satellite/LIDAR data (to predict/detect algal blooms remotely and in real-time.) is promising. Likewise, eDNA technologies that profile biota across the 'tree-of-life' (and can also detect elusive native and invasive taxa), are rapidly advancing and helping DOC manage biodiversity.

A future critical need is also to understand the resilience and restoration of lakes to a changing climate. This will necessitate the empowerment of communities and iwi/hapū that hold mātauranga.

In summary we welcome any initiatives that could assist in more funding toward research, coordination and collaboration across the relevant agencies and research institutions to help improve the health of Otago's deep water alpine lakes.

Nāku noa, nā

Mike Tully Acting Director General
Department of Conservation – *Te Papa Atawhai*