GUARDIANS OF LAKES
MANAPOURI, MONOWAI & TE ANAU

49th Annual Report
to
the Minister of Conservation

For the period 1 July 2021 to 30 June 2022

Lake Monowai, photo credit Madeleine Peacock

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Kia ora Minister Prime.

It is my pleasure to present to you the 49th Annual Report of the Guardians of Lakes Manapouri, Monowai & Te Anau (the Guardians). This report outlines the work we have undertaken in the reporting period and contains recommendations as per our mandate as outlined in Section 6X of the Conservation Act 1987. You may find it helpful to review the previous Annual Report for context. I recognise this report is somewhat delayed in being finalised and note this was due to clarification of some of the content.

The Guardians of the Lakes were established in 1973, a surprise appointment by the incoming Norman Kirk led Labour Government in response to the Save Manapouri Campaign that had galvanised the nation demanding protection of New Zealand's cherished southern lakes from destruction by the development of a hydro-electric power scheme. At the time, the appointment of a group such as the Guardians was a world-first and sent a strong message that in New Zealand conservation and development would henceforth co-exist. The Guardians of the Lakes have a proud and enduring legacy that is now enshrined in Section 6X of the Conservation Act 1987. In due course I will schedule an appointment to meet with you and provide advice and further information as per our role.

On a personal note, I wish to thank my colleagues on the Guardians and John Lucas (area manager for DOC Fiordland) for their support and work over the course of the reporting period. The Guardians were deeply saddened by the death of Sandra Cook (Ngāi Tahu) in late 2021. Sandra brought an important skillset, depth of experience and wisdom to the work of the Guardians. The Guardians convey their sympathy to her whānau, friends and iwi. In the reporting period Guardian Dave Riddell resigned. We had the appointment of Ailsa Cain (Te Rūnanga o Ngāi Tahu) and David Barnes. Prior to the reporting period in May 2021 Guardian Tom Ives resigned, this was not reported in the previous report.

I also acknowledge Andrew Feierabend and his team at Meridian Energy who continue to work closely with the Guardians, and Fraser Jonker and his team at Pioneer Energy for the same. The Guardians value a strong and open relationship with the operators of the respective schemes.

Ngā mihi

Madeleine Peacock

Chairperson

Guardians of the Lakes 1 July 2021 – 30 June 2022

David Barnes (Lower Hutt)

Dr. Sue Bennett (Te Anau)

Ailsa Cain (Ngāi Tahu, Queenstown)

Sandra Cook (Ngāi Tahu, Rangiora) *Sandra passed away in September 2021*

Bill Jarvie (Te Anau)

Dr. Jane Kitson (Ngāi Tahu, Invercargill)

Madeleine Peacock (Chairperson, Te Anau)

Dave Riddell (Winton) *Resigned in 2021*

Darryl Sycamore (Deputy chairperson, Dunedin)

Appendix

1. Submission to the Regional Forum December 2021
2. Request for Service 10 April 2020
3. Pictorial of gazetted Guidelines for Lakes Manapouri & Te Anau

Introduction

The Guardians operate under two pieces of legislation, namely the Manapouri-Te Anau Development Act 1963 and the Conservation Act 1987. Our legislated function is to make recommendations to the Minister of Conservation on a wide range of issues related to the operation of the Monowai and Manapouri Power Schemes, including the operating guidelines for the lakes.

In the reporting period, the Guardians held one publicly notified meeting and met most months via Zoom to further our workplan; these meetings are reported on in our public meetings and no voting is taken. Outside of these meetings, we also provided input on relevant issues to Meridian Energy Limited, Pioneer Energy Limited, the Waiau Working Party, the Department of Conservation (DOC), Environment Southland, Southland District Council, and a number of other stakeholders as an affected or interested party.

The Guardians receive and review monthly reports on the hydrological operation of both power schemes and in particular the relevant lake levels, inflows and outflows and generation. It is the lake levels, drawdown rates and variation that underpin our key interests in the effects on the ecology and lakeshore processes.

The Guardians of the Lakes are also represented on the Waiau Working Party and the Eel Working Group. Dr. Sue Bennett is our representative on these groups.

The Guardians are proud of our work in assisting two major power schemes to operate whilst maintaining the iconic conservation, ecological and environmental values of their surroundings. Whilst we consider the Guardians' oversight is critical to maintaining the natural values of the respective lakes and rivers, we often find ourselves constrained by limited time, resources and competing and sometimes contradictory understanding of the role, function and mandate of the Guardians.

Key work streams over reporting period

1. Resourcing
2. Guardians mandate
3. Monowai Power Scheme (Pioneer)
4. Engagement with mana whenua
5. DOC engagement

6. Waiau Freshwater Management Unit – Regional Forum (Southland Water & Land Plan)
7. Submissions on resource consent applications
8. Engagement with Environment Southland
9. Low water event, Lake Te Anau, March 2021

1 Resourcing

Over the reporting period, and prior to, the Guardians have been significantly bolstered by the allocation of technical support from DOC. Dr. Ellery Mayence and Mr. Brian Rance have provided invaluable input into a review of the lakeshore vegetation monitoring programme that is a consent condition for Meridian. Also, their input into the low water event in March this year (see below) was appreciated. We are pleased to have assurance from the Department that this resourcing will continue to remain available to us as needed.

As noted in earlier Annual Reports the Guardians face ongoing challenges with resourcing. The Guardians are appointed by the Minister of Conservation and act in a voluntary capacity. The annual budget for the Guardians is $14,000 and covers a small meeting fee ($150 for public meetings only), administrative costs, hire of meeting venues, catering, accommodation, and transport within the Otago/Southland region. Guardians who live outside the region fund their own travel into the region.

Typically, the Guardians would hold public meetings at least twice a year. We try and schedule meetings for two days to include engagement with Meridian, Pioneer and the public, and where possible other stakeholders and experts such as iwi, Environment Southland, DOC etc. In the reporting period we were only able to hold one public meeting due to Covid restrictions.

It is unclear when the Guardians budget or meeting fees were set or last reviewed however our ability to undertake effective engagement with power scheme operators, the public and other stakeholders is constantly under pressure.

In terms of administrative resourcing from the Department we feel that this is insufficient. There appears to be a high turnover of staff appointed to the role of secretary and limited training and handover. This leaves the chairperson in the position of having to provide direction to secretarial staff which is another drain on unpaid time. Section 6X of the Conservation Act clearly outlines procedural guidelines for the Conservation Authority and Conservation Boards but does not provide the same level of detail for the Guardians which we see as problematic when trying to access support from the Department. The Guardians feel they cannot effectively fulfil their mandate due to this lack of resourcing.

Request: That the Department carry out a genuine review and improvement of Guardians budget and administrative resourcing.

2 Guardians mandate

As noted in the previous Annual Report the Guardians are often asked to engage in situations that are not strictly related to the operation of the power schemes but which we are viewed as 'interested' or 'affected' parties. This is detailed further below.

During the reporting period the Guardians have been, and continue to, undertake work towards legal clarification on the scope of their role. There are several pieces of legislation that the Guardians sit under (Conservation Act, Manapouri Te Anau Development Act, Ngāi Tahu Treaty Settlement Act) and other legislation and planning processes that they engage with. Within each of these pieces of legislation and processes there are slight differences so no one clear legal pathway. This is a result of fifty years of immense political, social, cultural, regulatory,

and environmental flux. A Request for Service for legal advice has been submitted to the Department of Conservation at the time of writing this report.

The Guardians are aware that Meridian Energy's consents come up for renewal in 2031 and to avoid any potential risk of jeopardised involvement, as well as for more certainty for ourselves, we wish to have our legal mandate clarified, and possibly reviewed.

3. Monowai Power Scheme (Pioneer Energy Ltd)

The Guardians welcomed the opportunity to visit with Fraser Jonker and Tony Jack from Pioneer Energy at the Monowai Power Station in October 2021. It was the first time in some years the Guardians had been onsite. During the course of the day, we toured the power station, saw the fish pass which operates on the Monowai River, the canal which diverts the Monowai River to the power station, the lake outflow gates and dam. The site visit was followed by a productive meeting with Fraser and Tony on continuing to develop the relationship between Pioneer and the Guardians and to understand the conditions under which Pioneer operates.

It is worth noting that Pioneer's operation of Lake Monowai is dictated solely by consent conditions under the RMA as opposed to Meridian which operates Lakes Manapouri and Te Anau as outlined in the Manapouri Te Anau Development Act 1963 and consent conditions.

During the reporting period there had been issues of dam slumping at Lake Monowai, which was remediated and actively monitored with no ongoing concerns. Pioneer had also been working with Ryder Consulting on eDNA monitoring of kanakana/lamprey.

Due to the size and scale of the Monowai Power Station compared to the Manapouri Power Station the relationship between Pioneer and the Guardians is quite different to that of Meridian and the Guardians. There is less scale and nuance of operation to be reported on and we continue to work with Pioneer to ensure we have adequate information to make a sound assessment of the impacts of the Monowai Power Station.

The Guardians are conscious that Pioneer operates with less oversight from the Guardians. We are actively looking to enhance monitoring and understanding of specific matters to ensure our understanding of the effects arising from the scheme are sufficiently understood.

4. Engagement with mana whenua

The Guardians recognised in recent years that although we have representation from Ngāi Tahu we have not been actively engaged with local runaka and that doing so would be of benefit to our work, as well as to the work the runaka are involved with.

In March 2022 with the assistance of Guardian Dr. Jane Kitson, the Guardians met with members of Ōraka Aparima Rūnaka by Zoom (due to Covid). This was a valuable opportunity for us to share with the Rūnaka the work we had been doing and what we were currently working on, concerns we had at the time and to also hear from runaka about their interests. Time did not allow for a full hui so we scheduled another meeting to be held in person for later in 2022. Although outside the reporting period I am pleased to note that we were hosted by Ōraka Aparima at the waka landing in Aparima/Riverton to further korero. There are certainly mutual areas of interest and concern. Ōraka Aparima noted that it was helpful to understand the Guardians position on various matters as it helps inform their work in other spaces such as within their consultancy Te Ao Marama Incorporated who acts on behalf of Ōraka Aparima and other runaka within Southland.

The Guardians are looking forward to continuing to strengthen the relationship with mana whenua.

Monowai Power Scheme, photo credit Madeleine Peacock

5 Engagement with DOC

In the previous reporting period John Lucas was appointed as Area Manager for Department of Conservation, Te Anau. Over the past year Mr. Lucas and the author have worked at improving communication and relationship between the local area office and the Guardians, recognising that there are often matters that the Guardians are asked to participate in that should also be engaged with by the Department at a broader level.

An example of this is where the Guardians were identified by the Fiordland Trails Trust and the Southland District Council as an affected party in the development of a stage of the cycle trail from Te Anau toward Te Anau Downs. The Guardians made a neutral submission based on transects for lakeshore monitoring however felt the Department should be engaging with the process also due to the potential for impact to native fisheries, wetland areas, flora and fauna that were not within the Guardians remit. The Department promptly engaged with the process.

Mr. Lucas and the author have been and continue to work on tidying up procedural matters. Over years of staff and Guardians turn over and with little in the way of documented processes, policies and procedures the ability for the Guardians to operate efficiently and effectively is impacted. As resource allows Mr. Lucas has been forthcoming with the support he is able to offer, of which the Guardians are grateful.

Brittany Ball acted as secretary for the Guardians during the reporting period. With Ms. Ball's help we were able to have a page added to the Department of Conservation website on the Guardians of the Lakes. You can visit the page here.

As noted earlier the Guardians also greatly value the ecological resource made available to us. This will be invaluable in the future.

6 Waiau Freshwater Management Unit (FMU) – Regional Forum

In December 2022 the Guardians of the Lakes were invited to present to the Regional Forum on the Waiau Freshwater Management Unit (FMU) which includes the lakes and rivers in the Guardians rohe.

The Regional Forum is a community-based group that was established to advise Environment Southland and Te Ao Marama's board on how they can achieve the communities' aspirations for freshwater. The Regional Forum has since completed and submitted their recommendations to Environment Southland and Te Ao Marama.

The Guardians raised the following points in their presentation:

- Since the establishment of the Manapouri Power Scheme (MPS) there has been serious and ongoing degradation of the lower Waiau River due to the extreme reduction in flow (approx. 95%) and lack of sustainable flow regime relative to the natural flow.
- Flushing flows as required by Meridian's consent conditions to help manage nuisance periphyton e.g. didymo, are infrequent due to often low lake levels at the time a flow is required, therefore Meridian is not obliged to release the flow.
- The Guardians support calls for a broad scientific programme to be established to gain an accurate picture of the health of the river and inform through an evidence-based approach measures that would improve hauora for the river.
- Reaffirmed our opposition to the change in status for the Manapouri Power Scheme from Discretionary to Controlled (see 48th Annual Report for more information).
- The Waiau FMU sits largely within a National Park and UNESCO World Heritage site, and this must be given due consideration in decision making.

Of significant concern to the Guardians was that we were the only statutory conservation body representing the Waiau FMU at the Regional Forum. The Department was not present and it is our understanding that DOC was invited to attend but had not responded to the invitation. Given the national and international significance of the areas as noted above it was disappointing that the Guardians were the only voice for the local conservation values at the table. I understand from Mr. Lucas that DOC did later engage with the process however their absence from the Regional Forum hui was noted.

Manapouri Lake Control: Waiau Arm centre riget, Mararoa channel from the right, photo credit Madeleine Peacock

7 Submissions on Resource Consent Applications

During the reporting period the Guardians were identified as an affected or interested party for a number of resource consent applications.

- Fiordland Trails Trust RMA2021/53314: land use consent for the construction, maintenance and operation of Legs 2 and 3 of the Te Anau Downs multi use trail. The Guardians

consulted with Meridian Energy as there was some concern that construction may cause disturbance to lakeshore vegetation monitoring transects. It was deemed there would be no issues at this stage but may be in future. A neutral submission was made outlining these concerns.

Of note: the Guardians notified DOC Area Manager John Lucas of this consent application and strongly recommended that DOC make a submission based on potential impact to native fisheries in side streams and wetland-type areas. The Guardians felt this was not within their mandate to submit on. It is understood that DOC subsequently became involved in this process.

- Real Journeys: For the installation and use of a temporary slipway on the Lower Waiau River. The Guardians considered the application and provided written approval for the activity. The chairperson stepped aside from this process due to a conflict of interest.

8 Engagement with Environment Southland

During the reporting period the Guardians reached out to Environment Southland on a number of occasions to enquire about several issues that were of interest or concern.

These were: the timeframe and process for the renewal of Meridian Energy's consents which expire in 2031, the change in status of the Manapouri Power Scheme from Controlled to Discretionary and the implications of that change to the reconsenting process, how the FMU planning and limit setting will affect the consent renewal process, the importance of input from DOC into the Waiau FMU planning process.

There was a concerning delay in response from Environment Southland however the Guardians have subsequently met with planning and policy managers and the conversation continues.

The Guardians also submitted a letter of concern at the level of invasive weed species in the Monowai catchment that borders Fiordland National Park. Environment Southland replied that they are aware of this issue and allocate resources as they can.

9 Low water event March 2022

Between the end of December 2021 and April 2022 the Waiau catchment experienced two 'droughts; of 33 days and 68 days respectively, interrupted by a small inflow event in early February that provided some relief but not enough to ensure stability during the second 'drought'. This, along with ongoing low-inflows and ongoing generation resulted in a low-water event requiring extra-ordinary measures by Meridian to manage.

On the 23rd March 2022 the chairperson of the Guardians received a courtesy phone call and follow up email from Andrew Feierabend of Meridian Energy to alert the Guardians to a critical low lake level in Te Anau which if not resolved by inflow within the next day or two may result in action needing to be taken to avoid a breach of the Guidelines – the proposed action being to reduce the flow from the Te Anau Lake Control structure (TLC) below the minimum consented flow level of 115cumecs.

At the time, the lakes were subject to the equinoxial requirements of the Guidelines – that they must not be allowed to go below the second bracket of the Low Operating Range (LOR) during March and April; this is to protect vulnerable shorelines and freshwater mussel beds from damage by higher than usual winds at this time. As always, the requirement of the Guidelines is based on the "best endeavours test". At the time Meridian outlined that steps had already been taken to reduce electricity generation at the Manapouri Power Station (MPS) and flows from Lake Te Anau.

On the 24 March with a revised forecast Meridian increased the risk rating and decided to trigger the condition 2 consent 96020 to reduce the flow from the TLC below 115 cumecs to

avoid the risk of breach of the Guidelines. This condition requires agreement from the chairperson of the Guardians and in consultation with Fish & Game and iwi. Satisfied that consultation had been completed, the Guardians via the chairperson approved a step-down of the drawdown rate by 10 cumecs per day to 85 cumecs, and on the 29th March the Guardians approved for drawdown to 80 cumecs which is the limit of the consent conditions. At this time the Guardians requested updates including hydrology and generation reports every three days (this is usually received monthly) which were dutifully produced.

The chairperson received calls of concern from members of the public and tourism operators on the Waiau River. One operator was unable to safely launch their vessel at Queens Reach public boat ramp due to the low river level and had to do remediation work at their own cost which was later reimbursed by Meridian Energy. It can be assumed that private vessels were also unable to be launched from the ramp during this time.

The chairperson also fielded media calls. A discussion was held with Meridian regarding their responsibility to adequately communicate with the community at critical times and to be available to the media during weekends in a situation such as this. Improvements were subsequently made.

On 2nd April 2022 Meridian sought direction from the Regional Council to undertake a step-down of flows in the upper Waiau River below 80cumecs as per the consent conditions, the purpose being to use best-endeavours to maintain levels in Lake Te Anau within the equinoxial requirements of the Guidelines. A step-down rate of 10 cumecs/day was given interim approval. The Guardians were consulted as part of this process. Our approval was given based on the valued opinion of Mark James (Meridian Environmental Consultant), Dr. Ellery Mayence and Mr. Brian Rance (DOC) who all agreed that it was preferable to reduce river flow over lake levels as the impact on immobile freshwater mussel beds around the lakeshore would be greater than impacts on aquatic species able to relocate in a low river.

On 4th April 2022 Neal Barclay, Chief Executive Officer for Meridian Energy alerted Minster for Energy Megan Woods and Minister of Conservation Kiri Allan to the situation and the measures Meridian was taking to manage the event.

On 5th April 2022 the Upper Waiau River reached a minimum flow of 59 cumecs, the lowest inflow recorded since 1991.

On 6th April after some small inflows and while the upper Waiau River was still below 115 cumecs Meridian increased generation at the MPS. The Guardians expressed to Meridian that we considered it potentially risked Lake Manapouri being exposed to an equinoxial Guideline incursion. The Guardians noted they would not support this as a "best-endeavours" action. Meridian believed there was no risk of an equinoxial incursion in Lake Manapouri noting they believed generation was managed prudently through this phase of the event. Generation was only stepped up to 5+GWh per day once the lakes were both back in the Main Operating Range.

At this time there was negative sentiment within the community regarding Meridian's use of water, particularly at a time when farmers were being required by the Regional Council to reduce their own water use for a declared agricultural drought. It should be noted the two issues are in some regard unrelated with irrigation for farms coming from aquifers and our understanding of the connectivity between ground and surface water is limited.

On 20th April Meridian advised that Lake Te Anau would re-enter the Main Operating Range (MOR) the following day and that flows at the TLC would be increased accordingly, by 26th April the flow had increased to 120 cumecs. As the lake was returned to the MOR and the flow at the TLC increasing, the crisis situation would be considered ended.

In order to understand Meridian's actions leading up to and during this event and to identify any steps that could be taken in future events the Guardians requested historical data for comparison. Meridian have been obliging in providing any information the Guardians have requested and this has been appreciated. In August this year (outside this reporting period but of note) Meridian provided a presentation to the Guardians including background, generation, flows, levels and historic comparisons. There was also some commentary provided on forecast and climatological considerations. Meridian stressed the point that the lakes by their nature cannot be managed as large storage reservoirs given their limited ranges, the recognised climatic volatility within the catchment and the risks associated with both flooding and drought conditions. Management in this catchment is very nuanced given the regulatory obligations that are at play.

The Guardians have reached the following conclusions regarding the event and how future events can be better managed.

- The Guardians recognise that low-water events are more unpredictable and harder to manage than high water events. Droughts have no easily predicted end point.
- The Guardians acknowledge it is easier to assess actions by Meridian in hindsight and there are challenges in making 'live' decisions as the time.
- The Guardians recognise that the controlled outflow at the TLC was reduced at a greater rate than would have occurred naturally and that the natural course of this event (i.e. the lake outflow not being controlled) would have resulted in the Lake exceeding the minimum gazetted lake level. Although not unprecedented this has not occurred during the period of control (from when the TLC was built).
- The Guardians are interested in pursuing an ongoing conversation with Meridian regarding response to climate change and how the operation of the MPS is managed in extreme events.

- There were some immediate learnings that have been agreed to by both the Guardians and Meridian. Those being:
    - that communication with the Guardians will begin earlier in future if there may be a developing situation instead of being asked to agree to an action that may have been avoided had there been earlier consultation,
    - that Meridian have PR resource more readily available at such times,
    - that it is preferable to step-down the drawdown rate earlier out of the TLC.

As chairperson the author wishes to acknowledge the communication received by Andrew Feierabend during this period. Mr. Feierabend was proactive in his communication with the Guardians about the developing situation, the measures Meridian were looking at taking and any requests for approval. He was also forthcoming with data and reporting that we requested as well as offering the input from colleagues at Meridian. We do appreciate Meridian have reviewed the situation and have presented us their findings.

From Te Anau Lake Control 17 April 2022, lake level 201.48 masl – 2cm into LOR, 62cm above absolute allowed minimum (see Appendix 3), photo credit Madeleine Peacock

Southern shoreline of Lake Te Anau 17 April 2022, photo credit Madeleine Peacock

10 **Lakeshore Vegetation review**

As reported in the previous Annual Report the Guardians lodged a Request for Service in April 2020 to support the review of the ecological status on the lakeshores of Manapouri and Te Anau (see appendix 2). Dr. Ellery Mayence and Brian Rance both of DOC undertook a peer review of the Manaaki Whenua Landcare Research Lakeshore Vegetation Monitoring programme (as per consent conditions) and considered the concerns of the Guardians as

outlined in the Request for Service. The concern being that there may have been changes to the lakes' hydrological regimes associated with the operation of the MPS whereby Lake Manapouri was operated more within the limits of the MOR, rarely venturing into the HOR or LOR potentially leading to the compression of vegetation zonation patterns around the lakes margins. Lake Te Anau is being operated more as a storage unit typically higher than would have been the case naturally also potentially leading to disruption to natural zonation of vegetation.

Dr. Mayence and Mr. Rance undertook this RFS:

1. An analysis and assessment of the extent to which elevational distributions of individual shoreline plant species may have changed during the period of which data is available.
2. An assessment of the ecological monitoring and reporting consent conditions of the existing resource consents and whether they are sufficiently robust for their purpose.
3. An assessment on whether an additional focussed lakeshore study of threatened plant species would be worthwhile.

They also spoke to four key concepts to provide additional context, these being: dynamism and stability of the lakeshore, representativeness of the existing monitoring regimes, spatiotemporal scales, and inherent variability of the lakeshore.

The outcomes and recommendations from their analysis, assessment and review (see full Response in Appendix 3) note that:

- They agree with NIWA and Manaaki Whenua Landcare researcher's position that there are no obvious changes or trends to the lakeshore vegetation that are of concern at this time and based on the evidence to hand which may be limiting. Any changes observed are within the natural variability of the system (or at least this cannot be ruled out).
- They noted that at this time they believe the existing resource consents are sufficiently robust for their purpose, with one exception being that of a lakeshore study focussed on endemic and/or threatened plant species. The assumption being that the consent conditions and lake level guidelines are being followed. The Guardians have no reason to believe this is not the case.
- In addition, Dr. Mayence and Mr. Rance also noted that, whilst there was only one HOR breach on Lake Te Anau in the period pre-control (ie before 1974), post-control there have been seven HOR breaches on Lake Te Anau. For Lake Manapouri, during the corresponding period, there were no HOR breaches pre-1974, and four breaches post-1974. The Guardians remain concerned at this fact and plan to pursue this as part of our ongoing review of the Guidelines.
- Dr. Mayence and Mr. Rance also noted that they felt there was a need for better public education on the role of the Guardians and the work they do and that in order for this to occur as well as any future research into endemic/threatened plant species a fundraising campaign should be launched. (Note: the Guardians agreed with the need for greater awareness of their role however did not agree that it was the role of the Guardians to fund and undertake the mentioned study, but rather this should sit with the Department if they viewed it of importance).

Dr. Adrian Monks, the author of the 2020 5-yearly MWLR Lakeshore Vegetation Monitoring Report provided additional input in response to questions we raised of the report. We wish to express our gratitude to Dr. Monks for the work he put into this.

This conversation is ongoing, and we are grateful for the offer of Meridian to host a field trip with the Guardians, Dr. Mayence, NIWA and MWLR to further discuss observations and findings in the field. This is scheduled for February 2023.

Shoreline Brod Bay, Lake Te Anau 11 Nov 22, 202.49 masl (upper MOR) – note vegetation profile from submerged macrophytes, oioi/rushes, manuka, beech forest. This is a natural profile which the Guidelines were established to preserve

Reporting Period Conclusion

This reporting period saw an increased period of activity with the Guardians addressing short term matters e.g., consent applications, medium to long term matters e.g., Lakeshore Vegetation Monitoring review, and critical matters e.g., low water event. It is pleasing to see the Guardians moving in a more intentional direction putting in planning to ensure our focus remains on the health of the Waiau catchment in relation to the two hydro-electric power schemes as well other matters affecting overall health.

The Guardians continue to have a high level of interest and in some cases concern at the longer-term implications of the operation of the Manapouri Power Scheme on the Waiau catchment. These areas of interest and concern, along with clarifying fundamental questions about our role and mandate make up the bulk of our workplan which continues well into the next reporting period and no doubt beyond.

As always, the author is available to the Minister to discuss any matters raised in this report or in general.

AUTHOR:
Madeleine Peacock

Chairperson
Guardians Lakes Manapouri, Monowai & Te Anau

Appendix 1 – Submission to the Regional Forum December 2021

Introduction

The Guardians Lakes Manapouri, Monowai & Te Anau welcome the opportunity to be involved in today's panel discussion.

The Guardians of the Lakes are a statutory body established in 1973 following the Save Manapouri Campaign and fall-out from the proposed raising of Lakes Manapouri and Te Anau for power generation. The terms of reference for the Guardians are now enshrined in Section 6 of the Conservation Act 1987. The Guardians also have responsibilities from section 4 of this Act - to give effect to the principles of the Treaty of Waitangi.

The thrust of the legislation we sit under allows for the Guardians to make recommendations to the Minister of Conservation on any matters arising from the environmental, ecological and social effects of the construction and operation of the Manapouri power scheme on the townships of Manapouri and Te Anau, Lakes Manapouri and Te Anau and their shorelines, and on the rivers flowing in and out of these lakes, having particular regard to the effects of the operation on social values, conservation, recreation, tourism and related activities and amenities. The Act also provides the same for Lake Monowai and for the Guardians to make recommendations about the operating guidelines for the Lakes. It is also worth noting the Guardians are members of the WWP.

The Guardians are very much concerned with the impact of the operation of the power scheme on the catchment and in this instance particularly the lower Waiau River – there is no greater impact on this catchment than through the operation of the MPS. The Guardians recognise that since the development and operation of the MPS there has been ongoing and serious degradation of the lower Waiau. Although some gains were made when the minimum flow regime was initiated by the 1996 resource consents those gains were eroded through 2MTT and MTAD, as well as the infrequent nature of voluntary supplementary and flushing flows often due to low lake levels at key times. Despite a minimum flow regime and mitigating measures put in place by the resource consent requirements, the health of the river remains of serious concern.

The principle of ki uta ki tai requires a wholistic approach to addressing the issues of the catchment. No one factor can be considered in isolation from any other, however there are some glaringly obvious factors that can be addressed and would be critical to restoring mauri to the river for example improved flow and water quality. This is widely accepted by most stakeholders.

The Guardians support calls by other stakeholders for the Regional Forum to undertake a broad scientfic programme to gain an accurate picture of the health of the river and to inform through an

evidence based approach any gains that could be made through an improved flow regime. Although there is pressure from Meridian for improved minimum flows not to be considered by the RF due to impact on power generation the only fair and reasonable way forward is to be led by science with a focus on hauora – on what the river and associated waterbodies need to be resilient rather than using the baseline of 'above degarded'. Without the baseline around hauora the RF is not in a position to recommend either way that flow should be increased or not.

The Guardians strongly opposed the change in activity status of the MPS from Discretionary to Controlled and still maintain this is an unsatisfactory situation for the lakes and rivers as it gives little ability for any measures for improvement of the catchment to be considered when it comes to reconsenting. As noted in Claire Jordan's paper to the RF for this panel discussion the Regional Forum can recommend the Council change this, and we strongly encourage this to be pursued.

We note here that the Waiau catchment sits largely within or borders New Zealand's largest National Park, it also largely sits within and alongside a UNESCO World Heritage site. The Waiau FMU is part of a region of international significance because of its outstanding natural features and this must be factored into consideration by the Regional Forum.

The lower Waiau River has and continues to experience death by a thousand blows. This river sits within the framework of TMOTW meaning that the health and the well-being of the water must be considered before anything else. The Regional Forum has before them a once in a generation opportunity to restore hauora and mauri to the river for health and wellbeing of the people who live alongside it, the habitat of fish, eels, plants and birds – many of which are taonga species, and the catchment as a whole. The Guardians hope to see bold thinking and brave decisions being made.

Madeleine Peacock

Chairperson

Guardians of the Lakes

Appendix 2 – Request for Service April 2020

GUARDIANS OF LAKES MANAPOURI, MONOWAI & TE ANAU

Chairman: Dave Riddell
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Re: Request for Service

The Guardians of Lakes Manapouri, Monowai and Te Anau (The Guardians) are appointed under Section 6X of the Conservation Act (1987) and our functions include:

> "*to make recommendations to the Minister on any matters arising from the environmental, ecological, and social effects of the operation of the Manapouri-Te Anau hydroelectric power scheme on the townships of Manapouri and Te Anau, Lakes Manapouri and Te Anau and their shorelines, and on the rivers flowing in and out of those lakes, having particular regard to the effects of the operation on social values, conservation, recreation, tourism, and related activities and amenities" (s.6X (2a)) and*
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> *"to make to the Minister, and to the Minister responsible for the administration of the Manapouri-Te Anau Development Act 1963, recommendations on the operating guidelines for the levels of Lakes Manapouri and Te Anau, for the purposes of section 4A of that Act" (s.6X(2c)).*
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> *The purpose of the lakes' operating guidelines is as detailed in s.4A (1) of the Manapouri-Te Anau Development Act 1963, being "to protect the existing patterns, ecological stability, and recreational values of their vulnerable lakeshores and to optimise the energy output of the Manapouri power station*."

The Guardians take our legislated responsibilities very seriously and have collectively become increasingly concerned about the ecological health of the shorelines of Lakes Manapouri and Te Anau over recent years, particularly in relation to their lakeshore vegetation sequences, and the ecological stability of their distinctive and characteristic vegetation zonation patterns.

Background

We perceive that there have been changes in the lakes' hydrological regimes associated with the operation of the Manapouri-Te Anau hydroelectric power scheme in recent years, whereby Lake Manapouri is now operated mostly within the limits of its Main Operating Range - rarely venturing into its High or Low Operating Ranges; and we consider this may have led to a compression of the vegetation zonation patterns around this lake margins. In the meantime, Lake Te Anau is being operated more as a hydro storage lake, typically at more elevated lake levels than previously was the case. Consequently, we consider the zonation patterns and continuum of lakeshore vegetation communities around this lake have potentially been disrupted to an extent that is no longer acceptable under either the Conservation Act (1987) nor the Manapouri-Te Anau Development Act 1963.

We make this Request for Service to seek to validate and quantify our concerns regarding the ecological health of these valuable shorelines.

RMA context and Monitoring Obligations

In addition to s6X of the Conservation Act, there is also a planning context to the operation of the Manapouri Power Scheme (MPS), under the provisions of the Resource Management Act 1991.

The first resource consents for the scheme were issued in 1996, with further consents, known as the Manapouri Tailrace Amended Discharge (MTAD) consents, issued in 2010. These MTAD consents allow for the use of additional lake water over and above the amounts consented in 1996, and this became possible following the construction and commissioning of the second tailrace tunnel at the power station in 2003.

Monitoring conditions are attached to both the 1996 consents and the MTAD consents and Appendix 1 (amended July 2012) sets out the environmental monitoring programmes associated with the 1996 consents, whilst Appendix A sets out the monitoring programmes associated with the MTAD consents, including:

Appendix 1A details the 1996 Monitoring conditions for Lakes Te Anau and Manapouri, noting that

> "Guidelines for lake level management are overseen by the Guardians of Lakes Manapouri, Te Anau and Monowai. These guidelines are derived by monitoring aspects of the shoreline vegetation and beach morphology. Ongoing monitoring of these aspects is necessary to allow the Guardians to continue their assessment and refinement of the Guidelines."

Appendix 1A(1) addresses the Shoreline Vegetation Monitoring, as follows[1]:

> "1 Shoreline Vegetation
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> *Objective*: To assess the effects of the lake level management regime on the shoreline vegetation of Lakes Manapouri and Te Anau.
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> *Methods*: Monitoring will be undertaken using the transects and photo points set out in the previous monitoring report for Lakes Te Anau, Manapouri and Lake Hauroko (Landcare 2010). Methods of data collection and analysis are to be the same as set out in the Landcare, 2010, monitoring report, so that the results are directly comparable. Lake Hauroko shall be used as

[1] *Landcare. 2010. Lakes Manapouri and Te Anau: Shore Vegetation Monitoring*

the control site to identify any observed changes that may be due to a regional climatic phenomenon, rather than lake management. Any alterations to the transects, photo points, methods of data collection or analysis shall be discussed with the Guardians of Lakes Manapouri, Te Anau and Monowai, and shall require approval from Environment Southland prior to implementation.

Re-measurement of the selected transects in Lakes Manapouri, Te Anau and Hauroko will occur at 5-yearly intervals, commencing from 2010. Re-measurement may also occur if the high-level lake operating guidelines are breached ("event-driven" monitoring).

For "event-driven" monitoring surveys of the shoreline vegetation, the number of transects and/or photo points may vary from those required for the 5-yearly monitoring, depending on the nature and extent of the "event", as agreed with Environment Southland and following consultation by the consent holder with the Guardians of Lakes Manapouri, Te Anau and Monowai."

Appendix 1A(3) addresses the Littoral Macrophyte Monitoring, as follows[2]:

"3. Littoral Macrophytes

Objective: To assess the effects of the lake level management regime on the aquatic macrophytes of Lakes Manapouri and Te Anau.

Methods: Monitoring will be undertaken using transects and photo points as set out by the most recent monitoring report for Lakes Te Anau, Manapouri and Lake Hauroko (NIWA, 2010). Methods of data collection and analysis (including analysis of inter-decile ranges) are to be the same as the NIWA, 2010, monitoring report, so that the results are directly comparable. Lake Hauroko shall be used as the control site to identify any observed changes that may be due to a regional climatic phenomenon, rather than lake management. Any alterations to the transects, photo points, methods of data collection or analysis shall be discussed with the Guardians of Lakes Manapouri, Te Anau and Monowai, and shall require approval from Environment Southland prior to implementation.

Re-measurement of the transects in Lakes Manapouri, Te Anau and Hauroko will occur at 5yearly intervals, with the next monitoring being undertaken in 2012. Re-measurement of the transects may also occur if the low-level guidelines have been breached ("event-driven" monitoring).

For "event-driven" monitoring surveys, the number of transects and/or photo points may vary from those required for the 5-yearly monitoring, depending on the nature and extent of the "event", as agreed with Environment Southland and following consultation by the consent holder with the Guardians of Lakes Manapouri, Te Anau and Monowai, taking into account the timing of the next 5-yearly monitoring survey.

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[2] *NIWA. 2010. Monitoring the potential effects of MTAD on Lakes Te Anau and Manapouri macrophytes; baseline survey.*"

Appendix A, Part B details the MTAD Monitoring conditions for Lakes Te Anau and Manapouri, and the Waiau Arm.

Part B addresses the Lake Macrophytes and broader Lakeshore Vegetation, as follows:

> "(i) *Lake Macrophytes*
>
> Lakes Te Anau and Manapouri Macrophytes
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> 5. The consent holder shall undertake a macrophytes monitoring survey using the existing approach described in Appendix 1 of existing consent CN96022 [Manapouri Power Scheme: Water Permit to Dam and Divert Water from Lake Manapouri and Mararoa River for Hydroelectricity Generation] for each of the first two summers after this consent is first exercised.
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> *(Note 1: This annual monitoring is additional to the existing and event-driven MPS monitoring requirements contained in Appendix 1 of the existing MPS consents. At those times when the survey required under this programme coincides with monitoring required under Appendix 1 of the existing consents, only one integrated survey need be undertaken.*
>
> *Note 2: An initial macrophytes monitoring survey was carried out during the 2009/10 summer.)*
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> (iii) *Lakeshore vegetation*
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> 11. The consent holder shall monitor the potential effects of MTAD on lakeshore vegetation in accordance with the methodology outlined in Appendix 1 of consent no 96022 [Manapouri Power Scheme: Water Permit to Damn [sic] and Divert Water from Lake Manapouri and Mararoa River for Hydroelectricity Generation].
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> *(Note: A study has been commissioned by the consent holder to investigate the relationships between recorded threatened species and lake level data. That study will make best use of historical monitoring records and will provide a useful basis to determine the need for any modifications to scheduled monitoring.)"*

The Guardians draw attention to this note, and the cited threatened plant study (Monks *et al*., 2011); also, the statistical analysis contained therein, and the historical monitoring records it makes best use of.

Regarding the historical vegetation monitoring records which relate to the Te Anau and Manapouri shorelines, and which may be of use in assessing the extent of any changes over time, the Guardians are aware of one report prepared for Lincoln College in 1972 (Daly, 1972), whose Figures 8 and 9 list a number of lakeshore species and indicate their elevational distributions. Otherwise, the early records come almost exclusively from the work of University of Otago Professor (now Sir) Alan Mark and his then-student Peter Johnson, whose studies recorded and identified the species, communities and vegetation zonation sequences which characterise these lakeshores, and whose quantification of the inundation and exposure tolerances of these species formed the initial basis for the development of the Lakes' Operating Guidelines (Johnson, 1972a; 1972b; 1974; 1983; 1988a; 1988b; Mark and Johnson, 1985; Mark *et al*., 1972; 1977).

Additional recorded studies of the lakeshore vegetation include:

- Baseline studies for the Shoreline Vegetation monitoring requirements of the 1996 Resource Consents were undertaken (Johnson *et al*., 1997a; 1997b; 1997c), with the five-yearly monitoring surveys commencing in 2000 (Johnson and Burrows, 2000a; 2000b; 2001; Burrows and Johnson, 2006a; 2006b; Burrows *et al*., 2006; 2010; 2015) and an additional, high-lakelevel event-driven survey completed in 2010 (Burrows and Monks, 2011).
- Studies (baseline studies) of the Littoral Macrophyte communities were carried out by NIWA in both 1993 and 1997, although specific references for each of these studies are yet to be found.
- The 1997 Littoral Macrophyte baseline study also marked the commencement of the fiveyearly monitoring programme for these assemblages, with five-yearly surveys undertaken in 2002 (NIWA - reference yet to be found), 2007 (Sutherland *et al*., 2007), 2012 (Sutherland *et al*., 2012) and 2017 (Champion *et al*., 2018). An additional study was undertaken in 2010, as a baseline for the MTAD project (Sutherland *et al*., 2010), and two additional MTAD-related surveys were carried out in 2013 and 2014 (Sutherland *et al*., 2013; Sutherland and Champion, 2014).

Outside of the MPS consent conditions, the Department of Conservation commissioned two independent, state-of-the-environment-type shoreline vegetation surveys in the low-lake-level summers of 1998/99 and 1999/2000 (Bennett and Whitehead, 1999; 2000), and in 2008 a 'Rapid Reassessment of Selected Sites' was also carried out (Bennett, 2008).

The Guardians note here that the 1996/97 season, which formed the baseline for both the Littoral Macrophytes (NIWA) and the terrestrial Shoreline Vegetation Monitoring programmes (Landcare) coincided with the end of a relatively wet climatic period. Indeed, the "Relatively high lake levels over a long period (3 years) that predated the 1997 sampling event would have had an effect." (James and Hawes, 2012; 2018; p35.))

The Guardians and others first raised our concerns about the deteriorating state of the lakeshore vegetation over a decade ago and, in response to these concerns, Meridian Energy Limited convened a Botanical Round Table (BRT) meeting, held in August 2009, to address the botanical / vegetation concerns being raised, ahead of their Manapouri Tailrace Amended Discharge (MTAD) resource consent application being lodged.

A summary of the BRT process and a critique of Bennett (2008) are provided in the Extreme Lake Events Report (James and Hawes, 2012), where this document was produced as one of the conditions of the MTAD resource consent.

Subsequently, the Extreme Lake Events report was updated in 2018 (James and Hawes, 2018), in response to a request from the Guardians as part of the consultation around Meridian's Waiau Enhancement Project (WEP) proposal at that time. In the event, the WEP proposal, which was framed as being a way to address Guardians' concerns around a lack of excursions into the Low Operating Ranges of both lakes, and which would have required a Guidelines change, was later put on hold, ostensibly pending the outcomes of the proposed Southland Water and Land Plan hearings and the Waiau River Limit-setting process.

As part of the Guardians own response to the WEP proposal, we decided to initiate our own Review of the Lakes' Operating Guidelines and their fitness for the protective purposes which the ManapouriTe Anau Development Act (MTADA) provides, and it was to assist us with this Guideline Review that this Request for Service was originally conceived.

We also mention here that another part of our Review involves looking into earlier changes made to the original Guidelines; changes which have resulted in both the loss of specific recommendations regarding the expected annual frequency of excursions into the Low Operating Ranges of both lakes, and also the loss of reporting of the 5-year running mean lake levels, which was valued information that the Guardians formerly used to receive. We are currently looking into these past changes to the Guidelines, and the circumstances surrounding them, as part of a concurrent workstream currently in progress.

In the meantime, an independent analysis of the long-term changes to the shoreline vegetation remains a high priority for us in facilitating our interactions with Meridian.

How We Understand the Scheme is Operating

To explain our current understanding of the way the scheme is operating -

In earlier times, pre-1999, the Manapouri Power Scheme (MPS) operated mainly as a "baseload" power station, with a steady generation pattern and the lake levels operating largely in tandem and in close response to inflows. This allowed the lakes to vary throughout their full hydrological ranges and with a high degree of lake level variability.

However, since the 1999 advent of a competitive electricity market in NZ, the MPS has operated more as a "peaking" power station, with generation levels responding more closely to market demand – actually a demand which Meridian is able to manipulate via its pricing strategy. (And so, the Power Scheme is being operated to maximise profit, rather than solely to "optimise the energy output", which is what the Manapouri-Te Anau Development Act (MTADA) provides for).

Other features of the electricity market include penalising Meridian for any "unnecessary" spills of water down the Lower Waiau River, which action is required under their operational "Flood Rules" in the event of Manapouri entering its High Operating Range. Accordingly, post-market, the operational response has been to constrain Manapouri as much as possible within its Main Operating Range, and "Security of Supply" requirements mean that the Low Operating Ranges of both lakes are also rarely used post-market.

With the lake level of Lake Manapouri constrained within its Main Operating Range to avoid "unnecessary" spillage into the Lower Waiau River, any water that is surplus to the MPS' immediate power generation requirements are being held back in Lake Te Anau. Here, lake levels have become more elevated in recent years, compared to the pre-market situation, with implications for the elevational distributions and ecological stability of the Te Anau shoreline vegetation.

The Manapouri shoreline vegetation, on the other hand, has responded to the more constrained lake level management of that lake by becoming more compressed in terms of elevational distributions since the electricity market operating regime came into being, and we note that the levels of the two lakes no longer operate in tandem. Accordingly, the vegetation patterns of each lake must be considered separately.

In addition to the lake level management regime imposed by Meridian's compliance with these market requirements, subsequent generation enhancement projects, such as the Manapouri Second Tailrace Tunnel (2MTT, commissioned May 2003) and then the increased throughput of the Manapouri Tailrace Amended Discharge (MTAD, initiated October 2012) will potentially have further shifted the ecological baseline for the respective lakeshore vegetation communities.

And in addition to these baseline shifts, we note that there was also a high lake level Guidelines breach in 2010, reported in Burrows and Monks (2011) and in James and Hawes (2012; 2018), where it was recorded that "Recent observations in October 2011 of changes from the "event-driven" monitoring following the April 2010 high event (Burrows and Monks, 2011) found some areas of turf vegetation had been stripped bare, some shrubs up-rooted and mountain beech seedlings and saplings had died." (James and Hawes, 2012; 2018; p34.)

The 2012 NIWA Littoral Macrophytes Monitoring survey (Sutherland *et al*., 2012) also recorded a loss of lakeshore turf vegetation occurring in the interval since their 2010 MTAD baseline survey, but rather than citing the 2010 high lake level Guideline breach, which was reported only by Landcare, NIWA attributed the loss as follows:

"Lower than typical lake levels during the 2011-12 summer period, as a result of the dry climate, meant that for the 12 months prior to the 2012 survey, water level had the lowest fluctuations and interdecile variance since the start of monitoring surveys. These are likely to be the main contributing factors in the reduction in the percentage occurrence and cover of a number of the dominant aquatic turf species around the lakes as they became exposed to the air. Loss of these species will have resulted in increased available habitat for other turf species to colonise, particularly faster growing amphibious species, although there is also an associated risk of weed invasion." (Sutherland *et al*., 2012; p77.)

A preliminary Guardians' analysis of the historic lake level record, however, indicates that the low lake levels experienced in 2011-12 were not at all unprecedented, either in terms of their magnitude or duration, although we realise that changes to lake level management post-market may have skewed the prevailing hydrology. The Guardians have requested that a full hydrological analysis of the historic lake level record be undertaken by Guardian and Hydrologist Dave Riddell, concurrent with the analysis of the vegetation record currently being requested.

In terms of vegetation, we further note from the 2018 NIWA report (Champion *et al*., 2018) that, since 2012, "Recovery from turf vegetation loss has been slow, with some transects still lacking the dense diverse vegetation supported before 2012." (Champion *et al*., 2018; p34.)

Accordingly, the Guardians are deeply concerned that there have been post-market changes in the lake level hydrological regime that appear to have destabilised the ecology of the lakeshores and their characteristic vegetation sequences.

To further illustrate this point, we note from the Results section of the 2010 Landcare report (Burrows *et al*., 2010; Section 5.1 Re-location and measurement of permanent sampling transects; p 20), that,

"During the sampling (2 – 19 March 2010) lake levels were …

Manapouri	c. 177.2m	[lower quartile of the Main Operating Range]
Te Anau	c.202.9m	[first band of the High Operating Range] and
Hauroko	c.154.6m	"well below the long-term mean."

Thus, we can see that a decade ago, both lakes, and Te Anau in particular, were being kept at artificially high lake levels.

The 2015 Landcare report (Burrows *et al*., 2015) makes no mention of the respective lake levels at the time of survey, and no section corresponding to Section 5.1 of the 2010 report exists. However, there is a paragraph in the Discussion and Conclusions section (p 30) which notes that "During the 2010 - 2015 period, long-term lake levels have trended upwards by c. 0.35 – 0.4m despite the increased tailrace discharge allowable under MTAD." (Burrows *et al*., 2015; p30.)

We note here that the next Landcare 5-yearly monitoring survey is due to be completed during February-March 2020, and that this will now combine with an "event-driven" monitoring survey triggered by the December 2019 high lake level Guidelines breaches. A genuine concern to us now is that the recent breach events could potentially be used to explain and mask the true nature of the cumulative losses of shoreline vegetation that we have been observing over recent times and we are keen to see the separation of any breach effects from the longer-term deterioration of the shoreline vegetation.

Returning to the Littoral Macrophytes Monitoring programme, and the 2018 observation (Champion *et al*., 2018) that, "Recovery from turf vegetation loss has been slow, with some transects still lacking the dense diverse vegetation supported before 2012" (Champion *et al*., 2018; p34), the Guardians have also become concerned that the 5-yearly consented frequency for the vegetation monitoring programmes is too long. We observe that initial anomalies in the vegetation distribution can be interpreted and dismissed as natural system variability, so that it takes at least a further survey to verify that there is a real problem.

We further note an issue raised by James and Hawes (2012; 2018), that, "It is difficult to make predictions of the impact, extent and duration of specific events based on regular long-term monitoring, where the period of monitoring greatly exceeds the response time of monitored communities." (James and Hawes, 2012; 2018; p46). Again, the currently consented monitoring period is five years, but perhaps a three-year period would be more appropriate. James and Hawes reference the threatened plants report by Monks *et al*., (2011) in this regard, where, "Monks *et al*., (2011) suggested that … for perennials the lake level average of the preceding three years might be a better predictor [of species distributions], although one-off extreme events are likely to limit distributions too." (James and Hawes, 2012; 2018; p41.) We note here that most of the lakeshore species of interest to us are perennial species and that, indeed, a three-yearly monitoring interval would be more appropriate than the current five years.

We advise that recent information has come to our attention that has given us further insights and a deeper understanding of the way the Manapouri power scheme is being operated these days, and the implications of such operations for the Manapouri and Te Anau lake levels. Accordingly, we have come to the realisation that it may be the requirements of the underlying market paradigm, rather than the Guidelines themselves, that appear to be the main problem in ensuring the protection of the ecological stability and the zonation patterns of the shoreline vegetation. We intend to explore this issue further.

Conclusion

We recognise that the shorelines of Lakes Manapouri and Te Anau are part of a valued Ecological Management Unit within Fiordland National Park and Te Wai Pounamu World Heritage Area, and that these shoreline habitats host several threatened and endangered plant species.

The Guardians' thinking behind commissioning this Request for Service originally began with the intention of reviewing the Lake Operating Guidelines in the face of our concerns about the condition of the lakeshore vegetation. However, subsequent insights have led us to believe that we really need

to question the whole market-led and profit-motivated platform that underpins the current MPS operation.

We formally request assistance from your Department to assist us with the complex ecological work that underpins our concerns. As previously discussed, we request the Department makes Dr Brian Rance available to carry out a report for the Guardians including:

- an analysis and assessment of the extent to which the elevational distributions of individual shoreline plant species may have changed during the period over which data is available.
- an assessment of the ecological monitoring and reporting consent conditions of the existing resource consents and whether they are sufficiently robust for their purpose.
- An assessment on whether an additional focussed lakeshore study of threatened plant species would also be worthwhile.

The Guardians are considering whether they intend to advance our concerns with the Minister. The support and scientific analysis from Dr Rance will provide invaluable guidance in that decision.

Please do not hesitate to get in touch to clarify any aspects of this Request for Service.

Darryl Sycamore
Chairman

For References and Resources please contact the author

Appendix 3 – Pictorial of gazetted Guidelines for Lakes Manapouri & Te Anau

Figure 1 (A) Level Guidelines for Lake Te Anau

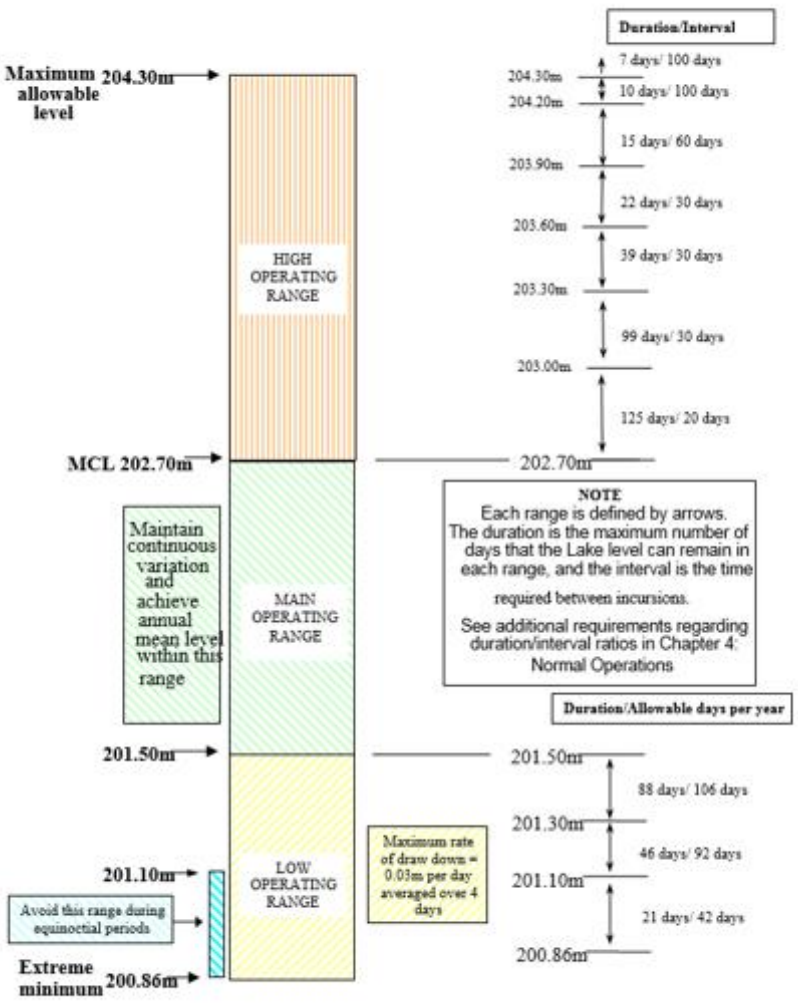

Figure 1 (B) Level Guidelines for Lake Manapouri