

Submission by Friends of Lake Hayes Society Inc. to the proposed ORC 2020-21 Annual Plan (April 23, 2020)

The Friends of Lake Hayes Society Inc. (FOLH) wishes to submit on the proposed *Otago Regional Council Annual Plan 2020-21*.

We would also like to be heard when Council holds public consultation on the draft plan.

Submission

As a community group with a strong interest in water quality in Lake Hayes we strongly support the following statement made by Council in the proposed Annual Plan: *"We want to formalise our assistance for catchment groups and communities working together to look after our waterways by having funds available to support their work."* On this basis we look forward to continuing and increasing support from the Council in the *ORC Annual Plan 2020-21* when it is finalised.

"Managing Fresh Water" - The current unacceptable state of Lake Hayes

We fully support the strengthening of the current *ORC Regional Plan: Water*. Everyone we talk to (i.e., the community, scientists and politicians) agrees that the health of Lake Hayes has continued to decline since its management strategy was transferred from the *1995 Lake Hayes Management Strategy* to the *ORC Regional Plan: Water* in 2003 and that the current state of the water quality in the lake is unacceptable.

Back in 1995 Lake Hayes was identified as an Iconic New Zealand Lake with a very high profile commanding the title of the 'most photographed lake in NZ'. Its eutrophic state has not improved since 2003. If anything, it has got worse with the appearance of regular *Ceratium* and Cyanobacteria algae blooms and occasional fish kills and lake closures to recreation. Evidence of the lack of catchment management was highlighted yet again in February 2020. Then a moderate rain event washed large amounts of sediment and phosphorus into the lake and created perfect conditions for a cyanobacteria bloom. This appeared as predicted by scientists two weeks after the rain event and Lake Hayes was once again closed to the public.

The need for a nutrient budget for the catchment and lake

FOLH fully support ORC Councilors who have individually agreed that the development of an integrated catchment management for Lake Hayes and its catchment should be included in the *ORC 2020-21 Annual Plan*.

Management of the lake now needs to move from a mainly generic *ORC Regional Plan: Water* approach with inputs to the lake managed based only on Mill Creek nutrient concentrations measured only at, or below mean river flows, to a nutrient-budget approach based on total nutrient loads arriving at, and exiting, the Lake. This will provide a much more accurate means to measure, model and manage the water quality and health of the lake over time.

The concept of whole catchment nutrient budgeting and limit setting is not new and an example is already successfully operating for Lake Taupo to manage a massive agriculture-related nitrate problem there. The gathering of Lake Hayes water quality and other environmental information to allow this to happen has been ongoing for 50 years culminating in the recent ORC catchment nutrient study which monitored a number of sites throughout the Lake Hayes catchment. With this new information on catchment nutrient hotspots and hot moments, we now have the opportunity to move forward on a nutrient budget as soon as resource is available to collect and process the final, additional data needed for the budget.

This will update previous similar nutrient budgets for the catchment and lake carried out in 1984, 1990-93 and 1997.

The current *ORC Regional Plan: Water* does not, in our view, provide the policy or regulatory support to develop and implement a nutrient-budget approach.

The need to meet statutory requirements

Our concerns about the *ORC Regional Plan: Water* also relate to its ability to set appropriate water quality standards and to ensure these are met. This is highlighted for us because water quality issues at Lake Hayes will be tested in the *QLDC District Plan* appeal process in the Environment Court later this year.

The *QLDC District Plan* currently states ***“A large part of this area also lies within the Lake Hayes catchment, as shown on Figure 2 below. Our conclusions in Report 18.1 (Section 2.8) were that the time to consider up-zoning of land to Precinct (or any other zone with higher development potential) is when it can be demonstrated that such a zoning would not result in further degradation of water quality feeding into Lake Hayes (and not before then), and that such an approach gives effect to both the Partially Operative RPS 2019 and the NPSFM.”***

We believe that the Council should be actively supporting the current District Plan provisions as well as demonstrably meeting its statutory requirements under its own water plan as well as the NPSFM in relation to Lake Hayes.

The benefits of partnership

Lake Hayes provides ORC with the opportunity to demonstrate strong water leadership on this high-profile lake and catchment through a productive partnership with FOLH.

FOLH fully support the statement, below, from the *2020-21 ORC Annual Plan*.

“We want to formalise our assistance for catchment groups and communities working together to look after our waterways by having funds available to support their work”.

For the past decade we have been working closely with ORC on Lake Hayes and its catchment and having a more formal working arrangement with clear accountabilities will make this process far more efficient.

FOLH would like to highlight the early success of data gathering by a solar-powered buoy on Lake Hayes. This buoy came about through science-supported lobbying carried out by FOLH. Early success came from data gathered concerning a recent cyanobacteria bloom, enabling scientists to understand changes in the lake conditions which ultimately lead to a fish kill in the lake. It also highlighted that as we carry out interventions in the lake and catchment we will see directly how this impacts on key lake health parameters allowing scientist to measure and if necessary adjust interventions.

FOLH proposed work plan

Further to this, FOLH would like to present to Council a prioritised strategy we developed with ORC staff. We appreciate ORC’s support in developing the work plan and would appreciate your support in budgeting resources to begin implementing this work plan in the *ORC 2020-21 Annual Plan*.

Updating and reinstating the 1995 Lake Hayes Management Strategy

The issues addressed in the comprehensive *Lake Hayes Management Strategy (1995)* remain largely unchanged today. However, to bring it up to date, data from the current ORC catchment nutrient study needs to replace the old nutrient load information. Similarly, the catchment land use information needs to be updated to reflect the move away from agriculture to tourism-based activities, resorts, golf courses and residential development. Most of the work needed to update

this document has already been completed - it just needs to be professionally compiled. The 1995 Strategy was widely supported by stakeholders and, therefore, could easily be readopted once updated.

The *Lake Hayes Management Strategy* is not an operational plan but a contextual framework for all the initiatives which together will lead to the recovery of Lake Hayes. In hindsight, had we carried on with it in 2003 the lake would already be well down the track to recovery by now.

The sad thing is that while so much discussion and debate has been going on about the state of the lake, no positive actions have been undertaken lake or catchment since then.

To get things moving, FOLH identified 2 initiatives in the 1995 Strategy, which, if implemented, could begin some positive actions to improve the lake health.

1. *Managing lake water inflows and outflows*

ORC, FOLH and their respective science advisors agreed that targeted augmentation of Mill Creek with cool, low nutrient water from the Arrow River irrigation scheme would benefit lake health at relatively low cost and with little risk. Further to this, the Lake Buoy would be able to measure the effect of this intervention and provide feedback on how and when to augment the water. ORC agreed that this would be a useful management action and built 80% of required infrastructure at Millbrook Resort to allow this to happen. ORC identified the Lake Hayes outlet culvert as a limiting factor in this project and FOLH supports ORC's initiative to review the specs of the culvert with a view to upgrading the culvert to avoid the recent lake flooding issues that have been identified by FOLH. This single culvert replaced 2 smaller culverts which when installed replaced a bridge that had been at the Lake Hayes outlet, allowing stream to flow unconstrained. In the 1960s, lake levels were controlled by the natural lake outlet profile. Lake level does affect lake health, as shoreline flooding releases large amounts of soil phosphorus and erodes lake shores. All this was researched and described in the *1995 Lake Hayes Management Strategy*, which described optimal lake height, lake level variation and culvert design. Considering the substantial time elapsed since the ORC built the infrastructure for flow augmentation from the Arrow River, it is heartening to know that ORC's proposal to review the outlet culvert should be relative simple to carry out because most of the relevant data will be collated as part of the 1995 Strategy update. We appreciate that this work has also been included in the *ORC 2020-21 Annual Plan*.

2. *Spatial catchment mitigation plan*

The second important initiative from the 1995 Strategy which needs reviewing is the section on remediation of non-point source pollution in the catchment. With support from ORC, QLDC and DOC, FOLH commissioned NIWA to identify opportunities within the catchment to reduce fluxes of nutrient and sediment from the catchment to the lake. It also examined the benefits of riparian plantings to cool the waters of Mill Creek during summer months to maintain higher dissolved oxygen levels in the creek, which would provide more oxygen to the bottom waters of the lake. At this stage, a riparian planting initiative is being driven by FOLH and sits outside the proposed *ORC Annual Plan*. FOLH is working with a local environmental consultancy firm to, in the first instance, develop a spatial pollution mitigation plan for the catchment.

This plan will identify where wetlands could be reinstated or constructed, where sediment traps could effectively be located, and where riparian plantings could be beneficial - all of this with a view to reduce nutrient, sediment and E. coli loads to the lake, and reducing the temperature while increasing the oxygen content of Mill Creek. Although not completed yet, this plan will need to link to the updated *Lake Hayes Management Strategy*, and to relevant district and regional plans.

Mike Hanff
Chairman
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