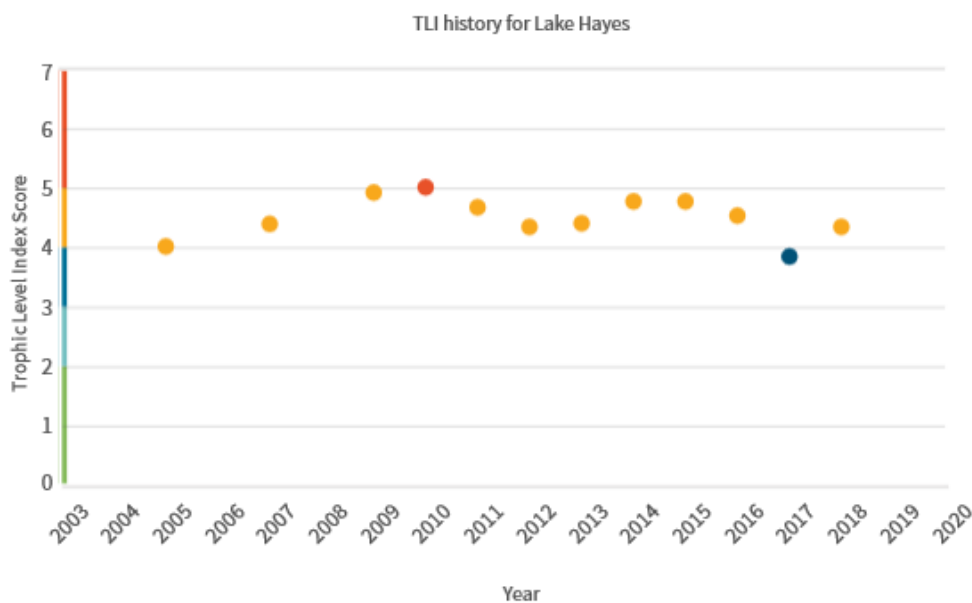


Chairman's Report

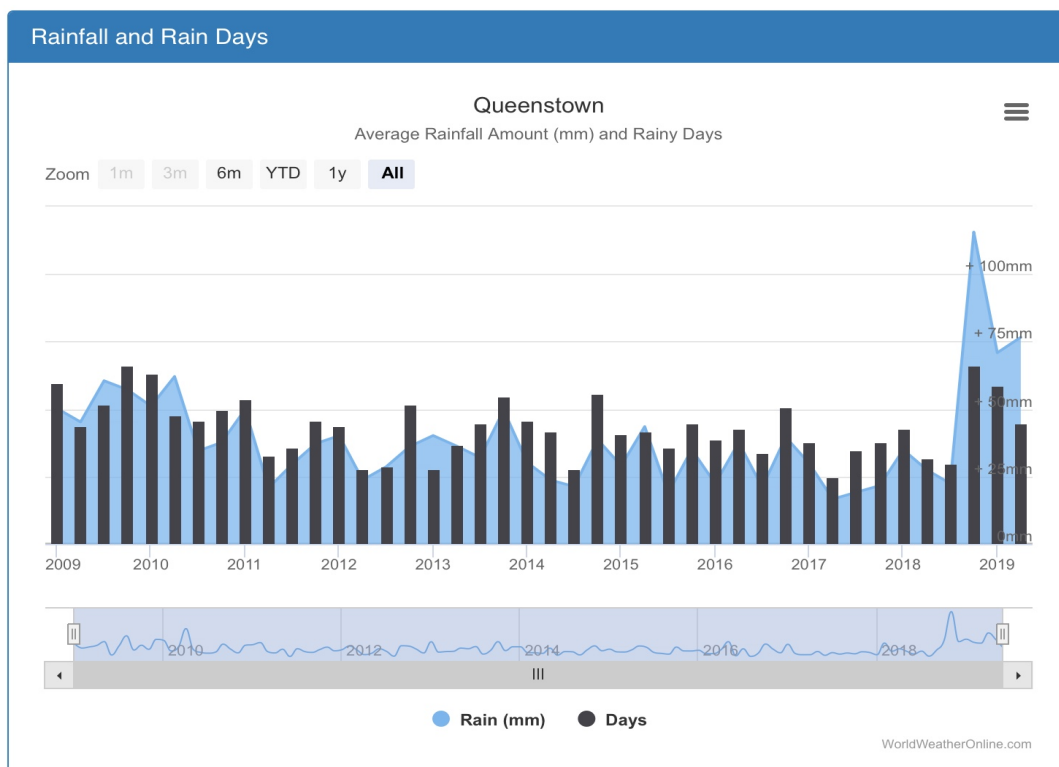
Friends of Lake Hayes AGM, 29 August 2019.

It has been another busy year for FOLH.

Land development in the catchment continues to put sediment/nutrient /e-coli pressure on the lake with latest TLI score (Trophic Level Index) showing the lake remaining in a eutrophic condition. See graph below. (Source ORC/LAWA).



Mother nature delivered an unusual environmental backdrop with an “above average rain fall” in the catchment of Lake Hayes over the last 12 months. See last 10 years’ rainfall graph below. As a result above average flows in Mill Creek delivered significant increased flows into the lake.



Most obvious observations resulting from these conditions were:

- Sustained high Lake Hayes levels. The data it shows that the outflow culvert installed in 2010 was not of sufficient capacity to cope with sustained above average rainfall. This has a negative impact on the lake in terms of health, erosion, recreation, and impact on sensitive wildlife habitat. FOLH are lobbying ORC and Transit to increase the size of the outflow of Lake Hayes to ensure Lake levels remain in a narrow band, allowing flows through the lake to increase without affecting the ecosystem.
- Water temperature during the spring/summer arriving at the lake was on average lower with rain events having a cooling effect on Mill Creek. However, regular temperature monitoring at Hunter Road highlighted an up to 10°C increase in Mill Creek in the bottom half of the catchment. Having cool oxygenated water arriving at the lake in spring/summer is an important part of improving lake health and this increase over what is a very short distance needs to be investigated further.
- Later appearance of algae *Cirratium Hirundinella*, with record counts measured between April and June.
- Hypoxic zone extended from the bottom to 10-metre depth with temps at this time and depth recording 16°C. Although a few dead trout were observed this season, they can survive these conditions albeit sluggishly. Evidence of this was seen with trout being observed swimming in the lake recently.

This summer's weather reinforced the proposed action strategy in the FOLH commissioned Lake Hayes Restoration and Monitoring Plan 2017 (Schallenberg & Shcallenberg) and subsequent ORC commissioned peer review Lake Hayes Water Quality Remediation Options March 2018 (NIWA Gibbs)

First priority identified in these documents was to implement a catchment management plan based on actions as identified in the 1995 Lake Hayes Management Strategy prepared jointly by ORC and QLDC.

The physical changes in the lake this summer highlight the direct link between catchment management and lake health. The 1995 Lake Hayes Management Strategy outlined a clear set of actions to implement. These actions include physical works driven by landowners, community, FOLH, ORC and QLDC.

The 1995 Lake Hayes Management Strategy is still relevant today. FOLH recognise the importance of this document and are therefore driving an initiative to refresh this strategy and to recommence catchment improvements initiatives identified back then.

An ORC Regional Policy Statement (RPS) has set objectives and policies that recognise the need to avoid or mitigate adverse effects as mandated by the RMA (1991).

ORC have a Water Plan Change (6a) in place. This plan needs to be improved to recognise the specific needs of the Mill Creek catchment. This could easily be achieved with existing scientific knowledge, including nutrient budgets, controls on septic tanks, controls on creek diversions and damming to reduce water temp and include mitigation options focusing on wetland reconstruction, creek shading, riparian management and strict controls of sediment.

Nutrient levels in Mill Creek are at or above maximum levels and total phosphorous arriving at the lake remain at levels well above targets set back in 1995. Therefore, any development in the catchment will have an impact of more than minor nature on the health of the lake and unless measureable positive actions are taken at the time of development such as putting wetlands back into catchment.

QLDC recognised in the 1995 Strategy that “Regulatory mechanisms associated with land use need to be included in QLDC District Plan and associated Plan changes.”

Although some general rules appear in the plan, nowhere in the current District Plan is there any reference to the special needs of Lake Hayes, so this objective is yet to be achieved.

There needs to be specific nutrient targets and management processes to ensure that during and after any land development the water quality entering Lake Hayes has improved. Example of these sorts of mechanisms already exist e.g. Lake Taupo where impacts from developments are calculated and mitigated through change in use in other parts of the catchment e.g. building of new wetlands etc.

The current review of the District Plan Stage 2 covers Lake Hayes and its catchment.

The commissioners’ recommendations which have been accepted by council recognise the importance of Lake Hayes health. (see below)

“A large part of this area also lies within the Lake Hayes catchment. 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.”

This part of the Plan has been challenged and will be heard in the Environment Court in the near future. FOLH fully support any initiative by ORC and QLDC to ensure that further degradation of water quality feeding into Lake Hayes is controlled in the partially Operative RPS 2019 and the National Policy Statement on Freshwater Management (NPSFM).

If we want the health of Lake Hayes to improve we need to encourage ORC to provide a more specific water plan for Lake Hayes and catchment which QLDC can recognise within the District Plan.

2018/2019 Implementation of 1995 Strategy

This year with the help of ORC we have achieved three major milestones in the implementation phase of the 1995 Strategy. These have been more about planning and measuring rather than reducing nutrient and e-coli load and cooling of the creek but none the less they are a very important part of the Journey to a healthy lake. The ability to measure the impact of improvement activity will allow us to gain confidence that the health of the catchment is improving and help us make more informed decisions on long-term lake health.

The installation of the Lake Hayes monitoring buoy by ORC is the first major milestone this year. Live profiling of the lake with six sensors will provide a wealth of information to measure lake health and effects of improvement activities. Monthly sampling will still be required for

nutrients, e-coli as samples for these still need to be analysed in the lab. This sampling regime is also in place now.

ORC are also undertaking a linear study based on a wealth of sampling over a 12 month period. Monthly samples and flow monitoring are being carried out in 10 locations across the catchment and the lake outlet. As well as this, two live time sensors have been installed in Mill Creek, one close to the lake and one at Hunter Road halfway between headwaters of Mill Creek and the lake. These sensors measure turbidity and nitrogen. They are also being calibrated regularly by manual samples analysed in the lab. Lastly earlier studies have shown that over 80% of phosphorous arrives at the lake during rain events. To capture total phosphorous an auto sampling machine has been installed in Mill Creek close to the lake. This machine is triggered by a rising water level in the creek and once it starts samples regularly through the flood event.

FOLH also this year gained support from ORC, QLDC and DOC to carry out a Wetland Study across Lake Hayes catchment. One of the key planks of the 1995 Strategy was to put back wetlands into the catchment of Lake Hayes.

FOLH have commissioned NIWA who have expertise in this field to survey the Lake Hayes catchment and address the following:

1. identify suitable locations where wetlands could be constructed or restored within Mill Creek (Lake Hayes catchment)
2. provide rough order cost estimates of these mitigation works
3. make recommendations for improving vegetated riparian buffer management at sensitive locations in the catchment to enable increased sediment and nutrient attenuation along Mill Creek, and
4. identify likely water quality improvements associated with the wetlands.

We understand that this information will inform future work (including construction and/or restoration of wetlands and riparian plantings) that will ultimately improve the quality of surface water entering Lake Hayes.

It is envisaged that this study will provide the framework for and action plan to developed by FOLH.

It is imagined that these wetlands will be funded through many mechanisms, e.g.

- FOLH community-driven fundraising
- ORC-funded works.
- Works included as part of any new developments as mitigation
- Allowing developers to meet their obligations as to be specified in the new District Plan.

An example of a study carried out on the same basis for Lake Ellesmere and catchment can be viewed on link below.

<https://tewaihora.org/wp-content/uploads/2016/11/Wetland-Nutrient-Attenuation-Assessment-for-Te-Waihora-Final.pdf>

Appreciation

I would like to thank all of the Executive of FOLH for the huge effort put in this year. We have been busy on many fronts but special note to Richard Bowman our secretary for continuing to produce excellent minutes and for researching and coordinating the many submissions made this year.

Thanks for the continued support from Dr Marc Schallenberg who provided technical support and advice in his own time throughout the year.

Thanks also to Robyn La Roche who put a huge effort in building and managing a professional website for FOLH. Robyn did this FOC which we are very grateful for. As we move into the activity phase the website will become a very important part in making things happen and communicating to all on progress.

Thanks also to ORC Councillors Dr Ella Laughton and Michael Laws for their support and ORC staff Rachel Ozanne, Fiona Mangos, Gavin Palmer and Sarah Gardner for recognising the importance of remediation of Lake Hayes and catchment. Thanks also to Mike Theelen, Thunes Cloete at QLDC and Geoff Owen from DOC for their support in making the wetland study happen.

Mike Hanff

FOLH CHAIRMAN