

Report No.	20-30
Decision Required	

LAKE HOROWHENUA UPDATE

1. PURPOSE

- 1.1. This item is to update Council on progress in regard to the Lake Horowhenua Accord to restore Lake Horowhenua. The item focuses primarily on the establishment and operation of a weed harvesting operation on Lake Horowhenua and seeks the new Councils decision on the pathway forward for this.

2. EXECUTIVE SUMMARY

- 2.1. Lake Horowhenua is the largest lake within the Horizons Region and the largest dune lake within New Zealand. Monitoring data shows that the lake experiences poor water quality and many of the parameters monitored are below the One Plan targets and the national bottom line for a number of the attributes that are contained in the National Policy Statement for Freshwater Management (2014). The Lake has had a long complicated history of management and this continues to be a matter that is considered as part of the ongoing Treaty Settlement processes.
- 2.2. The Lake Horowhenua Accord is a collaboration led by the Lake Trust (that are elected to represent the Beneficial Owners of the lake). Other partners include the Horowhenua Lake Domain Board (Domain Board), Horizons Regional Council, Horowhenua District Council, and the Department of Conservation. Horowhenua District Council led the formation of the Lake Horowhenua Accord with the Accord celebrating its sixth anniversary on the 4th of August 2019. The Lake Horowhenua Accord aligns a range of organisations who have various, and in some cases overlapping, responsibilities for Lake Horowhenua.
- 2.3. The regulatory and non-regulatory activity for Horizons was identified in the One Plan including Lake Horowhenua being a catchment included in the nutrient management rules and two non-regulatory methods (see Annex A), Method 5-6 Lake Horowhenua and other coastal lakes and Method 5-7 lake quality research, monitoring and reporting. The [Lake Horowhenua Accord](#) was formed following the completion of lake restoration option reports commissioned by Horizons and completed by [National Institute of Water and Atmospheric Research](#) (NIWA).
- 2.4. This collaborative approach through the Lake Accord has delivered an [Action Plan](#) and significant works to implement the actions within it. The collaboration has been extended to involve Central Government, horticulture growers and the dairy industry across three large work programmes comprising of the Lake Horowhenua Freshwater Clean-up Fund, Te Mana o Te Wai Fund and Freshwater Improvement Fund (FIF) projects. Horizons, the Accord Partners, Universities, NIWA and others have collaborated to undertake science and monitoring to inform restoration options and to measure progress.
- 2.5. Through the Lake Accord, progress has been made in the restoration of Lake Horowhenua. There has however been opposition to some of the monitoring and restoration activity that has slowed progress. The opposition to monitoring and restoration work around Lake Horowhenua predates the Lake Horowhenua Accord and has continued following its formation with court action opposing a range of activities including:
- the establishment of a fish pass to restore fish to access the lake from the sea that was blocked by installation of a weir on the lake outlet;

10 March 2020

- a sediment trap to reduce the amount of sediment and nutrient reaching the lake; and
- the lake weed harvesting project that aims to address in-lake process caused by introduced lake weeds that lead to toxic conditions in the lake for aquatic life and close the lake for recreational use.

2.6. Legal processes in various courts have included cases around the regulatory consents for undertaking restoration programmes, the legality of Horizons being able to access the lake, and related to these matters, governance arrangements of the Lake Horowhenua Trust, including trustee elections. Many of the decisions relating to the obtaining of resource consents and implementation have been appealed to higher courts. These legal challenges have significantly increased costs (including diverting funds from restoration projects) and delayed actions to restore the lake, either on the ground or in the lake.

2.7. This item provides an update on the progress and activities involved to enable the establishment and operation of the weed harvester on Lake Horowhenua. Weed harvesting was identified as one of the key in-lake interventions to improve water quality and aquatic health. In addition, it seeks a Council decision for the next steps for the weed harvesting project.

3. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 20-30 and Annexes.
- b. directs the Chief Executive to:
 - i. proceed with the establishment of the boat ramp to enable lake weed harvesting at Lake Horowhenua and associated works to complete harvesting in spring 2020, including approving the associated additional capex expenditure for the project,
or
 - ii. delay weed harvesting until spring 2021 and complete the construction of the associated infrastructure in **2020** or **2021 [choose 1]**, including approving the associated additional capex expenditure for the project and any action necessary to maintain permissions relating to the works,
or
 - iii. to cease pursuing weed harvesting as a mechanism for water quality improvement in Lake Horowhenua; including selling the lake weed harvesting equipment.
and
- c. directs the Chief Executive to notify the Lake Accord Partners, the Ministry for the Environment and the community of this decision.

4. FINANCIAL IMPACT

- 4.1. This item does have financial impact. The recommendations relate to budget items previously approved by Council, some of which sit outside of Annual Plan processes.
- 4.2. If Council chooses to continue to pursue lake weed harvesting as a mechanism for water quality improvement in Lake Horowhenua there will be costs for the construction of a boat ramp and associated infrastructure. Further, there will be additional costs associated with

enabling the lake weed harvesting activity to occur and the costs for the weed harvesting operation.

- 4.3. If Council chooses not to continue to pursue lake weed harvesting as a mechanism for water quality improvement in Lake Horowhenua there will not be additional costs associated with enabling the weed harvesting activity to occur, including the construction of a boat ramp and operation of the weed harvester. There may be some costs associated with paying back the Ministry for the Environment their share of contribution to the purchase of the weed harvester. There is likely to be some return to Council for the sale of the weed harvester.
- 4.4. Regardless of the decision to continue or not there will be ongoing costs associated with the depreciation of the capital costs to date associated with obtaining regulatory permissions and the purchase of assets to enable weed harvesting including the road access way to the proposed boat ramp.
- 4.5. The costs to date for the lake restoration programme have been reported to Council in a range of items over the last five years including via public excluded items. The budgets for Lake Horowhenua have been part of Long-term Plan and Annual Plan processes and have also been contributed to by multi-agency restoration projects that have included Central Government funding. An overview of these costs is provided in Annex C.

5. COMMUNITY ENGAGEMENT

- 5.1. The Lake Horowhenua Accord has been subject to considerable community engagement. The activities have been reported by various means including via media, public reporting to Council through the Environment Committee Agenda, through publicly notified resource consent hearings, the Lake Horowhenua Domain Board meetings and through various other reporting by the Lake Accord partners. Horizons' involvement in Lake Horowhenua restoration and the funding of this has also been a part of Long-term Plan and Annual Plan processes that have provided for the community to submit to Council.

6. SIGNIFICANT BUSINESS RISK IMPACT

- 6.1. This item is considered a significant business risk impact. The item seeks approval to continue with or withdraw from an activity that has been pursued by Council since 2013.
- 6.2. Horizons and the other Lake Accord Partners signed the Lake Accord in 2013. The Lake Accord and the restoration reports that preceded the Accord identified lake weed harvesting as one of the Management Actions.
- 6.3. Horizons Regional Council originally applied to the Ministry for the Environment Freshwater Clean-up Fund in 2013 and in that application committed funding toward lake weed harvesting as one of the key projects to contribute to restoration of Lake Horowhenua. Over time the costs for this activity have grown, particularly through challenges to Horizons obtaining regulatory permissions to undertake the activity and for the capital and operational costs to undertake the activity. Councils have overtime considered the funding and path forward for the activity in at least six council items over the period from 2013 to 2019 and also in Long-term Plan and Annual Plan processes.
- 6.4. Alongside the direct investment in lake weed harvesting activity there has been other investment in the restoration of Lake Horowhenua. This includes monitoring, science and other restoration activities including work with the Lake Horowhenua Trust, Central Government, the Tararua Growers Association and horticultural growers, DairyNZ and dairy farmers, and Horowhenua District Council. Two of the larger projects have been the installation of the sediment trap and a fish pass.
- 6.5. The lake weed harvesting activity is considered a key activity to improve water quality of the lake to be above national bottom lines for some water quality indicators. The lake

report card included with Annex C overviews the likely improvements from lake restoration work including the weed harvesting and sediment trap as predicted by NIWA Research Scientist Dr Max Gibbs. This includes improvements which move four out of five water quality indicators out of the category of being below national bottom lines in the National Policy Statement – Freshwater Management 2014.

- 6.6. The significant business risk impacts if the work is further funded include likely feedback from the community around the increasing cost of this activity and uncertainty around it progressing. Further, there are risks in progressing this activity in the field. These risks include the risk of the project not progressing due to weather type delays or delays caused via protest type action, including potential physical harm to staff or contractors. There is always a risk of the planned intervention not delivering the outcome it is forecast to do or the activity not being perceived to have had produced the outcome it is seeking to do. Note, the outcome sought is for the lake to have reduced toxicity. The lake will likely continue to turn green with algae in the summer, however, the difference is there will be fewer instances of the algae being toxic to aquatic life or closing the lake for recreation.
- 6.7. The significant business risk impacts of not proceeding with the lake weed harvesting include reputational damage with Lake Horowhenua Accord Partners, the community, funding partners (e.g. the Ministry for the Environment) and others due to the inability to progress what is viewed as a key intervention (identified by NIWA) that Horizons has actively pursued and invested in. Horizons would also not be implementing (at least through this activity) work to achieve legislative requirements for water quality in the Lake. There is also risk that not progressing this work will result in the Lake Accord partnerships no longer functioning.
- 6.8. There is also a risk of not meeting Horizons legislative requirements through the **National Policy Statement for Freshwater (NPSFW)** to restore water quality that is below the national environmental bottom lines to be above national bottom lines.

7. BACKGROUND

- 7.1. Lake Horowhenua is the largest lake within the Horizons Region and the largest dune lake within New Zealand. The lake is shallow at maximum of approximately two meters deep and has a sole outlet through the Hōkio Stream which enters the Tasman Sea at Hōkio township. The lake has had a long and complicated history of management. The last in-depth update on Lake Horowhenua to Council was provided in September 2018. The Council resolutions from that item are included as Annex B and the item is provided as Annex C.
- 7.2. Under the Regional Council administration and prior to the One Plan Lake Horowhenua was managed under the Lake Horowhenua and Hōkio Stream Catchment Strategy (1997). During the development of the One Plan Lake Horowhenua was identified as a catchment for the management of nutrients through the management of activities which are defined as intensive land use. Additionally, the non-regulatory methods of the One Plan included Methods 5-6 and 5-7, (Annex A) which directed that Lake Horowhenua and coastal lakes were identified for further effort around science monitoring and restoration efforts.
- 7.3. In 2011 and 2012 Horizons commissioned NIWA to produce a report establishing the current state of the lake, and considering potential restoration options ([Gibbs 2011](#), [Gibbs and Quinn, 2012](#)). These reports identified that restoration of the lake was possible and these reports along with a number of other factors led to Horowhenua District Council taking the lead on the formation of the Lake Horowhenua Accord. These reports were the basis for many of the actions that were identified in the Lake Horowhenua Accord and Action Plan and the subsequent work programmes.
- 7.4. The Lake Horowhenua Accord, the associated Action Plan and the collaborative approach that the Accord has taken has resulted in three successful bids to Central Government Funds to enable works to be completed. The Lake Horowhenua Clean-Up Fund project

was led by Horizons, Te Kakapa Manawa o Muaūpoko (Te Mana o te Wai) was led by the Lake Horowhenua Trust, and the Lake Horowhenua Freshwater Improvement Fund project also led by the Lake Horowhenua Trust. All of these projects have or will deliver on the ground works to improve the health of the lake (including cultural health and connections). These projects and progress on them are overviewed in Annex C.

- 7.5. With the establishment of the Accord and the successful bid to the Freshwater Clean-Up Fund project, a targeted rate was established for Lake Horowhenua to allow for the completion of the works. This targeted rate was used to contribute to Horizons share of the co-funding requirements of the Deeds of Funding with the Ministry for the Environment, and the continuation of the work under the Lake Horowhenua Accord. Originally labelled the Lake Horowhenua Weed Harvesting Rate, it was later changed to the Lake Horowhenua Restoration Rate to provide the ability to utilise the funds on a wider range of Lake Horowhenua restoration projects.
- 7.6. As a package of work for the Freshwater Clean-Up Fund projects Horizons was required to obtain resource consents from Horizons and Horowhenua District Council to enable the construction of the sediment trap, fish pass, the infrastructure to enable the operation of the weed harvester (access road and boat ramp), and also for the operation of the weed harvester. These consents were granted by an independent commissioner following a joint hearing for the Regional and District Councils, with those decisions (and the consents) subsequently confirmed on appeal by the Environment and High Courts. A broad timeline of regulatory and court processes is provided in the Table below. Many of the challenges to the works have related to some parties concerns around the effects of the proposal, including cultural effects. There has been a range of evidence provided to the Court about the cultural effects, with the Lake Horowhenua Trust and Muaūpoko Tribal Authority providing evidence in support of the projects proceeding. The Environment Court and High Court appeal decisions found in favour of the activities proceeding. There has also been objection to Horizons accessing the Lake Trust land to complete certain works, with proceedings issued in the Maori Land Court. The Maori Land Court, and then the Appellate Court (on appeal), refused to issue an injunction preventing access. Copies of these Court decisions have been made available to Councillors via the Hub.
- 7.7. Since the development of the One Plan, Central Government has released and implemented the **National Policy Statement for Freshwater Management** (NPSFM). The NPSFM (both 2014 and 2017) contain a number of attribute states that relate specifically to lakes. Monitoring and comparison of these monitoring results against these attributes shows that Lake Horowhenua falls below the national bottom line (Band D) for total phosphorus, total nitrogen, ammonia (annual maximum), chlorophyll a (annual maximum), and cyanobacteria (80th percentile). The NPSFM requires action to be taken to move those waterbodies that fall into a Band D attribute state out of that state.
- 7.8. Analysis by Dr Max Gibbs from NIWA based on the lake restoration activity including the lake weed harvesting and sediment trap predicts four out of five of the attributes currently below national bottom lines in the National Policy Statement for Freshwater Management 2014, improve to above national bottom lines. The attribute that will not lift above national bottom lines is Total Nitrogen. This is further overviewed in the Lake Horowhenua Report Card which is included in Annex C.

10 March 2020

Table 1: Indicative timeline for the Lake Horowhenua Accord activity with a focus on the regulatory processes. Please note the timeline is not intended to be a complete record of activity.

Date	Description
2010	Lake Horowhenua ranked 7 th worst out of 112 monitored lakes in New Zealand for Tropic Lake Index (TLI).
2011	Lake Horowhenua Restoration Options report completed for Horizons by NIWA (Gibbs 2011) with input from the Lake Trust.
2012	Lake Horowhenua Restoration Plan report completed for Horizons by NIWA (Gibbs & Quinn 2012).
August 2013	Lake Horowhenua Accord signed.
February 2014	The Fresh Start for Freshwater Clean-up Fund project was announced with the Government's Freshwater Clean-up Fund contributing \$540,000. The balance of the funding is from local government (Horizons, Horowhenua District Council) and . support from industry (Tarauna Growers Association and DairyNZ). The project was project managed by . Horizons Regional Council.
August 2014	Lake Horowhenua Accord Action Plan launched. The Action Plan contains a series of key management actions to restore the lake. These included: <ul style="list-style-type: none"> • Completion of a sediment trap to remove sediment inputs into the lake; • Lake weed harvesting; and • Installation of a fish pass at the Hōkio Stream/Lake weir (these were collectively known as the 'restoration activities' for the consenting process).
2015	Resource consent applications for the restoration activities lodged with Horizons and District Council regulatory teams, with the support of the Accord, including the Lake Trust.
Nov. 2015	Government announces \$980,000 of funding towards the Lake Horowhenua Te Mana o Te Wai Fund project with cofounding contributions from Horizons Regional Council, Horowhenua District Council and the Lake Horowhenua Trust. The project was project managed by the Lake Trust.
9 Dec. 2015	Independent Commissioners grant consents for restoration activities.
19 Jan. 2016	Hōkio Trust file Notice of Appeal against grant of all consents.
22 Sep. 2016	Decision of Environment Court - [2016] NZEnvC 185. Appeal of Hōkio Trusts denied and consents confirmed (subject to conditions).
18 Oct. 2016	Hōkio Trust files Notice of Appeal against Environment Court decision.
21 Apr. 2017	Environment Court confirms amended conditions lodged by MWRC.
21 June 2017	Decision of the High Court – [2017] NZHC 1355, dismissing Hōkio Trust appeal of the Environment Court decision.
August 2017	Government Announces \$842,750 of funding toward the Lake Horowhenua Freshwater Improvement Fund project with co-funding to be provided by Horowhenua District Council, Horizons Regional Council and the Lake Horowhenua Trust. The project is to be project managed by the Lake Trust.
29 Aug. 2017	Award of costs by the High Court against Hōkio Trust, Hōkio A Trust, Hōkio Part A Trust and Hōkio Maori Township Trust: MWRC (as applicant) the sum of \$10,157.16; and MWRC (as respondent) the sum of \$13,065.50 – [2017] NZHC 2076
27 Sep. 2017	Award of costs by the Environment Court against Hōkio Trust, Hōkio A Trust, Hōkio Part A Trust and Hōkio Maori Township Trust: MWRC (as applicant) the sum of \$75,500; and MWRC (as respondent) the sum of \$36,500 – [2017] NZEnvC 159.
2017/2018	Fish pass and sediment trap restoration activities undertaken.
April 2018	Construction of an access road started across Horizons land (which contains the sediment trap) towards the lake. Once fully constructed the access road will traverse Horizons and Lake Trust land. This road is intended to provide access to the boat ramp to be constructed at the lake edge (for the weed harvester), with a turn-around bay.
24 Apr. 18	Application for Interlocutory Injunction filed by Vivienne Taueki - to prohibit the construction of the boat ramp and access way forming part of the weed harvesting consent.
April 2018	Discovery of Midden. Heritage New Zealand Accidental Discovery procedure initiated.
17 May 2018	Maori Land Court dismissed injunction application due to the statutory rights of access afforded to MWRC under the Reserves and Other Lands Disposal Act 1956 (ROLD).
16 July 2018	Notice of Appeal against the decision of the Maori Land Court filed by Vivienne Taueki.
12 Sep. 2018	Maori Appellate Court issue a judgment quashing the order to appoint trustees on 19 May 2016.

10 March 2020

Date	Description
	Mr Hemana appointed as Responsible Trustee in absence of any trustees officially in office, with former trustees acting as advisory trustees. These issues have resulted in several adjournments of the appeal and created delays with HeritageNZ process.
24 June 2019	Maori Appellate Court dismisses appeal of the Maori Land Court decision in favour of Horizons on the basis that the Appellant does not have standing to seek an injunction under s 19(1)(a); and upholds the Maori Land Court decision.
8 July 2019	MWRC application for costs filed.
17 July 2019	Maori Appellate Court award \$15,000.00 in costs against Vivienne Taueki.
23 July 2019	Application for recall of Maori Appellate Court costs decision filed by Vivienne Taueki.
26 July 2019	Memorandum of MWRC filed in response to recall of judgment.
29 Oct. 2019	Maori Appellate Court award \$10,000.00 in costs against Vivienne Taueki after the rehearing on papers.
Dec. 2019	Completion of the access track to the boat ramp location.

- 7.9. As covered in the Table above, the sediment trap and fish pass have both been constructed and are operational. The access road to where the boat ramp is proposed to be constructed and the engineering drawings for the boat ramp were completed last calendar year.
- 7.10. To enable the establishment of the weed harvesting operation on Lake Horowhenua a boat ramp needs to be constructed to be able to launch the harvester and unload the harvested weed. Two sites were original selected (and consented) as potential locations for boat ramps with the preferred location being near the confluence of the Arawhata Stream with Lake Horowhenua. This site is preferred over the Lake Horowhenua Domain due to site security and being able to manage the public entering a working site. In addition, to the establishment of the boat ramp a number of work streams need to start as a requirement of resource consent conditions and will require boat access to the lake. The construction of the boat ramp is also to provide an alternative location for staff to access the lake by boat. Staff have ceased using the Lake Domain boat access site due to security concerns.

8. DISCUSSION

Interventions:

- 8.1. Changes in land management practices were also identified as part of the Lake Horowhenua Accord and the Accord has taken an integrated approach to management of the lake. A large component of the Freshwater Clean-Up Fund project was working with the horticulture growers and the associated changes to farming practices through this engagement. The aim of this being to reduce the sediment that left properties combined with the establishment of the sediment trap at the base of the Arawhata Catchment. In addition, an understanding of the drainage network throughout the Arawhata Catchment was developed to identify bottlenecks to water flow and identify areas where the network has never been fully developed. This work, being undertaken by Tonkin and Taylor for Horizons, is ongoing with a current project underway working to identify options to improve the drainage network and options to further reduce sediment and nutrient inputs to the lake. A Sustainable Farming Fund project and Massey PhD project (both supported in-part by Horizons) are also underway in the catchment looking at options to reduce nutrient inputs from Horticultural operations into the lake.
- 8.2. The Freshwater Clean-up Fund project also worked with all dairy farms within the catchment and these have now obtained nutrient management consents through the One Plan framework. These catchment wide interventions continue to progress and can be considered more medium to long-term interventions. Regulatory processes are also ongoing in relation to reducing inputs to the lake such as nutrient management consents

for dairy and horticulture farms and stormwater consenting for Horowhenua District Council. Further research work on the groundwater inputs to the lake are also underway as a part of the work planned via the Freshwater Improvement Fund project.

In-lake processes:

- 8.3. The lake weed harvesting project is viewed as a key in-lake intervention for the health of the lake and for improving the suitability of the lake for recreation. This in-lake activity seeks to address the in-lake processes that lead to toxic conditions in the lake including elevated pH, ammonia toxicity and the cyanobacteria blooms that occur in the lake.
- 8.4. These processes are driven by the presence of the introduced macrophytes (lake weeds) including *Potamogeton crispus*. During spring the macrophytes start to grow and undergo a rapid growth phase resulting in the pH of the water column being raised above 9.2. The pH levels reached in-lake are high enough for Dissolved Reactive Phosphorus (DRP) to be released from sediment. Further, the pH change results in ammonium becoming ammonia and this can result in toxic ammonia concentrations in the water column. The macrophytes continue their fast growth cycle, depleting the water column of all soluble inorganic nitrogen and depending on the climatic conditions, the macrophytes reach their peak in late October through to December. During this growth phase they are reproducing turions (seed equivalents) which are dropped to the lakebed. Once they reach their peak the macrophytes start to collapse as a part of their life cycle. The depositing of the plant material on the lake bed creates low dissolved oxygen (anoxic) conditions on the lake bed. These conditions are suitable for the release of DRP from the lakebed sediments into the water column. The high DRP concentrations in the water column and the low nitrogen levels (due to the uptake by the macrophytes) provides cyanobacteria blooms a competitive advantage over other algal species and cyanobacteria blooms begin to become dominant in the lake causing impacts on aquatic life and closing the lake for contact recreation.
- 8.5. Regardless of catchment wide interventions, without some form of in-lake interventions the lake would continue to experience these conditions due to the presence of the introduced macrophyte. Internationally and nationally alum (or alum based agents) have been used to bind DRP on lake beds and make it unavailable for uptake by cyanobacteria. This is effective for the removal of DRP and essentially locks it up. This was considered as a tool for Lake Horowhenua however, was discounted due to cultural concerns around the discharge of alum to the lake. In Lake Horowhenua, although alum dosing could effectively deal with the DRP concentrations in the lake and the associated cyanobacteria blooms, it would not prevent the pH changes and the associated ammonia toxicity that the lake can experience. Further information on lake weed harvesting is provided in Annex C.
- 8.6. The sediment trap, fish pass, and weed harvesting were all identified as interventions which could be completed in a short time frame and make a meaningful difference to the health of Lake Horowhenua. These interventions have always been considered as a part of a wider long-term restoration programme. The weed harvesting activity is targeting the aspects of lake health that cause toxic effects (ammonia toxicity and cyanobacteria), it is not an intervention that will address the presence of other algae in the lake i.e. the lake will likely continue to have a strong presence of green algae in the lake if weed harvesting is undertaken. The weed harvesting activity aims to eliminate or significantly reduce the toxic form of the algae that impacts on aquatic life and recreational use of the lake.

10 March 2020

9. OPTIONS

- 9.1. There are three main options that are considered as part of this item. These options are:
1. Proceed with the weed harvesting in the spring of 2020 and the construction of the associated infrastructure (boat ramp) to allow this to occur; or
 2. Delay weed harvesting until spring 2021 and complete the construction of the associated infrastructure (boat ramp) in **2020** or **2021 [Choose 1]**; or
 3. Cease pursuing weed harvesting as a mechanism for water quality improvement in Lake Horowhenua.

10. ASSESSMENT OF OPTIONS

- 10.1. Each of these options has a range of advantages and disadvantages and brief overview of these is provided below. It is noted here that the Lake Trust have expressed concern to Horizons around the ongoing delay with progressing the harvesting activity and the regular revisiting of the intent to complete the lake weed harvesting. Further the issue of staff and contractor safety in the field are matters for consideration (see Annex C for more information).
- 10.2. Option 1 is to proceed with the weed harvesting in the spring of 2020 and the construction of the associated infrastructure (boat ramp) to allow this to occur. This option enables Horizons to continue to seek to implement works to achieve regulatory requirements around maintaining and improving water quality and raising water quality parameters to be above national bottom lines and continues the work that has been progressed over many years as a part of the Lake Accord. Disadvantages include the additional costs and workload associated with this option due to the need to procure contractors to undertake construction of the boat ramp and the weed harvesting activity. Further there are costs associated with the regulatory requirements to implement the consents and any additional security measures or potential legal challenges that might still be taken by some parties.
- 10.3. Option 2 is to delay weed harvesting until spring 2021 and complete the construction of the associated infrastructure (boat ramp) in either 2020 or 2021. A disadvantage of this option is that year one of the weed harvesting involves a trial year and this option would effectively delay the benefits to the lake for at least another 12 months compared to option one. There may be further work to ensure various permissions remain in place.
- 10.4. Option 3 is to cease pursuing weed harvesting as a mechanism for water quality improvement in Lake Horowhenua. An advantage of this approach is lower costs and the ability to redirect staff and funding resources to other activities. Disadvantages include that lake would be forecast to continue to stay below national bottom lines for water quality with there being ongoing impacts to the aquatic life (fish, kakahi etc) and recreational suitability of the lake. Further investigation would be required to identify other in-lake interventions to meet Horizons requirements under the NPS-FM. Other disadvantages include the potential harm to the relationships with the Lake Accord Partners, and the perceptions around change of direction in the context of significant expenditure that has occurred to date. In addition, Horizons would need to discuss with the Ministry for the Environment the potential reimbursement of their monetary contribution to the lake weed harvester.

11. TIMELINE / NEXT STEPS

- 11.1. Depending on the resolutions from Council will depend on the next steps for the weed harvesting programme on Lake Horowhenua.

10 March 2020

12. SIGNIFICANCE

12.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Logan Brown

FRESHWATER AND PARTNERSHIPS MANAGER

Jon Roygard

GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

- A One Plan Methods
- B Resolutions of 25 September 2018 Council Item
- C September 2018 Council Item