ROTORUA TE ARAWA LAKES PROGRAMME

Six Monthly Report 2012/2013

Proud Partners

DESTINATION ROTORUA
ROTORUA DISTRICT COUNCIL

Bay of Plenty REGIONAL COUNCIL

TE ARAWA LAKES TRUST

Contents

Introduction

This Report presents progress against the Annual Work Programme for the Rotorua Te Arawa Lakes programme for the financial year ending 2013.

The overarching goal of the programme is to reach community aspirations for water quality. This is measured annually by the Trophic Level Index and therefore the six months achievements made to December 2012 are not included in the annual water quality results. This report contains the long term quality trend as at June 2012.

Deed funded projects have contributed to these water quality trends. Various scientific techniques, including modelling and physical sampling, have been used to qualify the individual project outcomes. As scientific methods advance, the forecast as well as outcomes within individual projects will vary. The results for the six month period to December 2012 will be peer reviewed by the Technical Advisory Group in March and any changes will be updated accordingly.

Also included below is information on non-deed funded lakes, communication and engagement, science and research, policy and planning and programme management. These activities are key to the succesfful implementation of Deed funded projects. Information on maritime activities and aquatic pest plant management are also included as these programmes impact on use of the lakes which is also important to the Rotorua Te Arawa Lakes Programme.

In the report actions, achievements and financials for Deed Funded lakes are as at 31 December 2012. However further updates have been made to non-deed funded components of the programme up to March 2013.

Key achievements

During the first six months of the year we achieved the following deliverables as planned:

- Installing aeration devices in Lake Rotoehu
- Completed 501 ha (3027kg/N) of planting in Lake Rotoehu which completes the total agreement for 668ha (4036 kg N)
- Established Stakeholder Advisory Group to oversee Lake Rotorua incentives and rules development
- Completed Hamurana Sewage Scheme with 525 households connected
- Embedding project management principles into the management of the programme co-ordination.

The milestones not reached include the targeted nutrient reduction from land in the Rotorua catchment and the Tikitere de-nitrification pilot plant. Gisborne point sewage scheme was re-baselined in the programme plan as a result of Environment Court decisions on sewage treatment plant.

Despite delays in Rotorua projects the overall water quality objective for Lake Rotorua was reached.

Rotorua Te Arawa Lakes water quality trend

All work undertaken in the Rotorua Te Arawa Lakes Programme is to achieve water quality targets set in consultation with the community. Of the 12 Rotorua lakes in the programme, tracking of the long-term water quality trend shows:

- Water quality in Lakes Rotorua, Rotoiti and Rotoehu is improving
- Water quality in Lakes Rotoma, Okataina, Tikitapu and Okareka is stable
- Water quality in Lakes Tarawera, Rotomahana and Rotokakahi is declining
- Water quality in Lake Okaro fluctuates and investigation is needed.

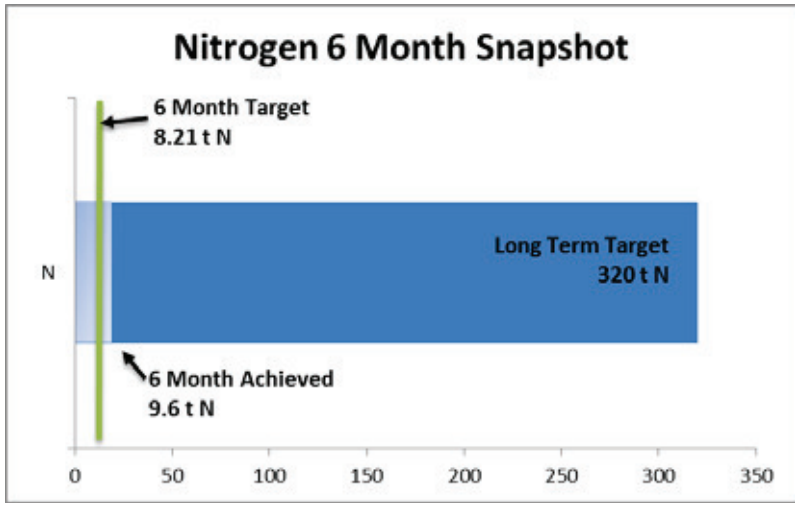
These results clearly show that of the 12 lakes in the programme the three showing improving trends are those that are being actively restored through the Deed Funding programme of works. Lake Ōkāreka, while not improving, is stable and we hope to see improvements as land use change and sewage reticulation works take effect.

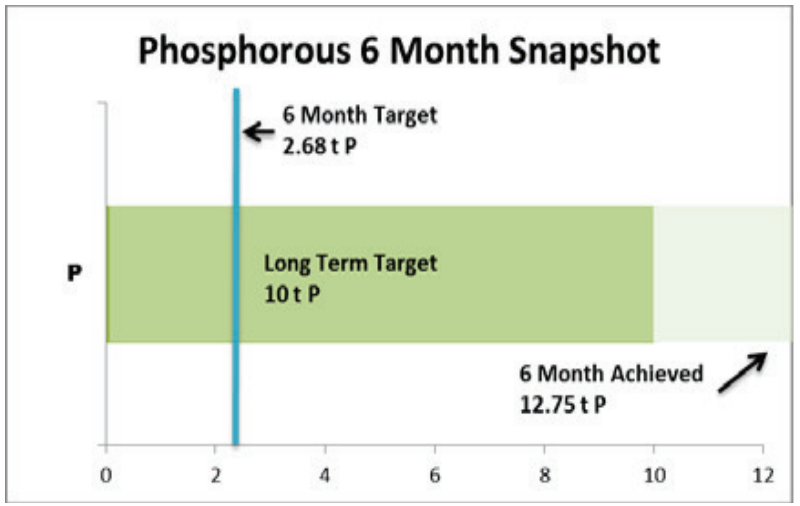
Deed funded lakes

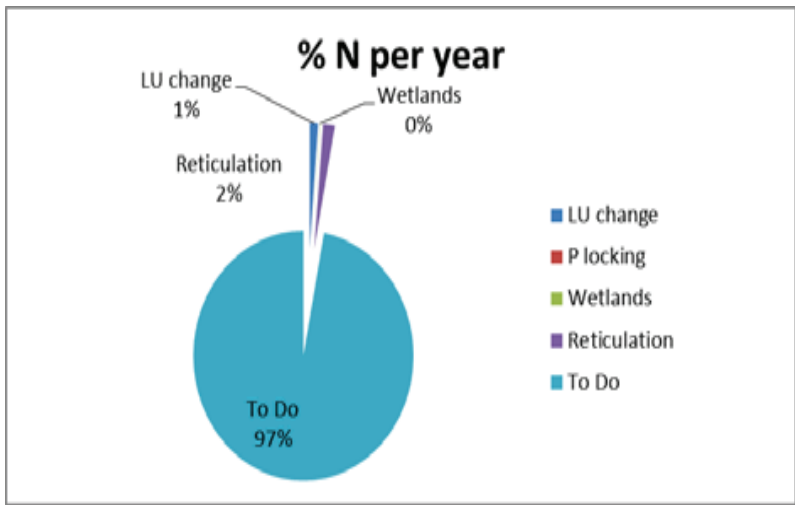
Lake Rotorua

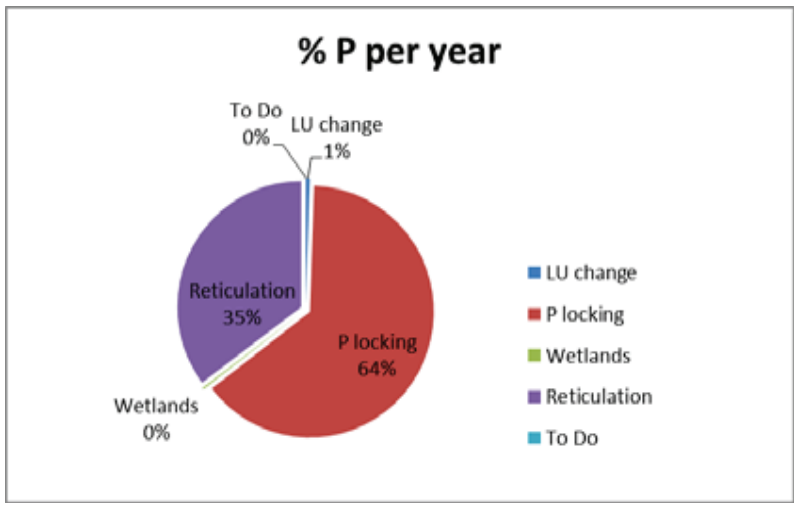
To meet community expectations for Lake Rotorua nitrogen inputs need to reduce by a total of 320 tonnes and phosphorus to reduce 10 tonnes per year. We also need to reduce the impact of nutrients already in the lake. To achieve water quality targets for Lake Rotorua we are undertaking both short term and long term interventions. Short term interventions have resulted in the lake reaching its water quality objectives however the lake will decline again if these are not carried out annually. The solution to sustainable improvements is reducing the amount of nutrients entering the lake.

Set out below are the total targets for the life of each project on an annual average, as well as what we planned versus achieved for the six months to December 2012. The table also forecasts achievements and budget for the six months to 30 June 2013.









PROGRAMME UPDATE – LAKE ROTORUA

Project	Deed Funded	Total Target	Total achieved to date	6 month Target	6 month result	Explanation of variance	Forecast	Project Status	Budget Status
Land use and land management change- rules and incentives	Yes	270 T N 10 T P	4.6 T N .239T P	2.5 T N TBC P	0 T N TBC P	6 months behind schedule. No reductions in N have been achieved. 3 modest phosphorus detainment bunds were established and monitoring will inform outcomes. See below for further explanation.	Forecast no expenditure against budget and 5 tonne behind annual forecast for nitrogen. 0 N and 0P forecast		
Sewage Reticulation – Hamurana	Yes	5.8 T N 1.3T P	2.9T N 0.65T P	2.9T N .65T P	2.9T N .65T P	Completed Hamurana / Awahou sewerage scheme. 525 households connected.	No further work planned. 2.9TN .65TP forecast		
WWTP Options Analysis	Yes	0		0		Assesses options to minimise the discharge of nutrients from wastewater treatment plan.	Investigation report due in June 2013. Expenditure on track.		
Tikitere geothermal treatment	Yes	30T N	0	0	0	Design proving difficult due to extreme PH.	High probability that plant will not be established by end of financial year, so budget and project behind. 0 N & 0 P		
Phosphorus locking	Yes	4T P	20T P*	2T P	10T P	8 tonnes more achieved than forecast for 6 months to December 2012. Greater than anticipated effectiveness of treatment.	Budget will be on track by June 2013. 10T P forecast		

Project Status *Green = on track* *Amber = some delays* *Red = major delays*
Budget Status *Green = on budget* *Black = underspent* *Red = overspent* ** updated with new modelling results*

PROGRAMME UPDATE – LAKE ROTORUA

Project	Deed Funded	Total Target	Total Achieved	6 month Target	6 month result	Explanation of variance	Comments and forecast	Project Status	Budget Status
Sewage Reticulation		5.5T N 1.2T P	5.5 1.2	2.75T N 0.6TP	2.75T N 0.6T P		Complete		
Brunswick/ Rotokawa	Yes								
Hinemoa Point	Yes								
Tarawera Road	Yes								
Paradise Valley	No								
Floating wetland (Tanner et al 2010)	Yes	.180T N .30T P	.180T N .30T P	.06T N .015T P	.06T N .015T P		Complete		
Total		**311.5T N 16.53T P**	**13.18T N 22T P**	**8.2T N 3.26T P**	**5.7T N 3.26T P**	**2.5 Tonne behind nitrogen target due to land use change**	**16.7T N 22.7T P**		

Project Status	*Green = on track*	*Amber = some delays*	*Red = major delays*
Budget Status	*Green = on budget*	*Black = underspent*	*Red = overspent*

Comments on behind schedule projects – Rotorua

Reducing nutrients from rural land

A decision was made by Regional Council to integrate the Deed of Funding incentives project with the development of regional rules to control discharges. This recognises the independencies between the two projects. The project is behind as the policy for rules needs to be developed before the incentives policy and framework can be finalised. Further contributing to the delay in planned expenditure is the deferral from Cabinet in making a decision to approve the funding transfer from in-lake interventions to catchment land use reductions.

To support land use change Rotorua District Council's proposed District Plan includes Transferable Development Rights (TDRs) to reduce nutrients entering the Rotorua Te Arawa Lakes. The intent of TDRs is to encourage land use change from high nutrient intensive practices such as dairy farming to lower nutrient activities such as residential living. TDRs propose that if a landowner can demonstrate that a proposed change to their land will reduce nutrient losses by 500kg N below the benchmark, then a TDR may be granted by the Rotorua District Council and registered to that property. The nutrient reduction creates the opportunity for extra lots which allows a higher density development than would normally be approved in a rural area. The landowner may sell the right to subdivide their land to another owner in a specified area within the rural zone so that the income can help finance a change in land use. It is proposed there should be a "cap" on the number of TDR lots that can be created so that supply does not exceed demand.
Key achievement over the past six months includes the establishment of a Stakeholder Advisory Group to provide oversight, advice and recommendations on rules and incentives options. Active engagement with all stakeholders reflects a more collaborative approach being taken within the programme.

Several small scale detainment buds have also been established to mitigate phosphorus with very minor reductions and budget.

Tikitere

The Tikitere pilot is behind schedule because of issues with equipment and plant malfunctions due to extreme PH levels in the inflow.
An alternative option using Zeolite is being trialled. This option was explored several years ago but as there was no use for the waste product the option was discarded. With changes in the fertiliser industry in New Zealand there is now potentially a use for the waste product. So zeolite trials began in early 2013.

The 2013 zeolite trial will extend the original work undertaken six years ago where zeolite demonstrated to be effective at absorbing ammonia. The new trial will test a range of flow configurations to find the optimal operating conditions. When these are established and if the results of the trial are positive, then further testing will be undertaken on a larger scale. Results for the two trials will be available mid-2013 to enable full scale plant assessment and design. No significant nutrients are being removed by the small scale trials. It is unlikely that the full scale plant will be built by 30 June 2013, so budget and project are behind are not likely to meet deadline.

P-locking plants

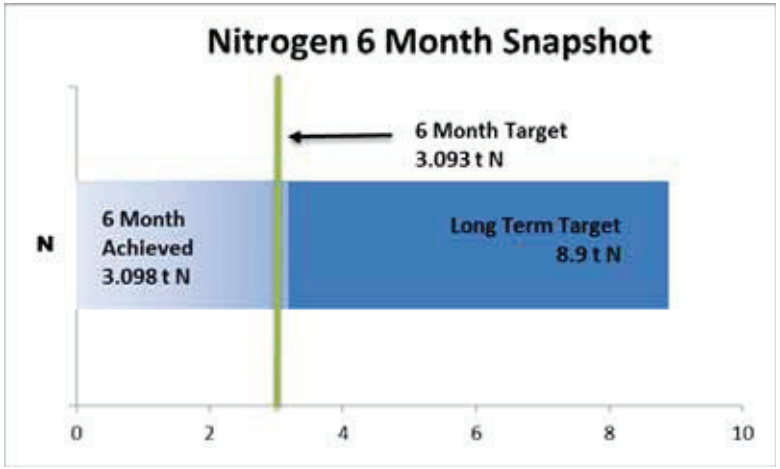
There has been additional alum applied over the past six months which has resulted in an overspend of budget. Less alum will be used over the next six months to bring budget in-line. Expected outcomes remain high due to higher than anticipated impact in lake.

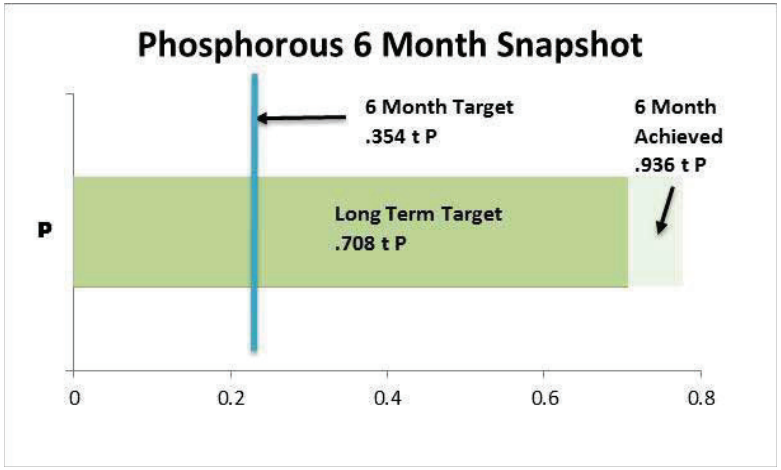
The Water Quality Technical Advisory Group has agreed on an alum dosing protocol for the two dosing plants in Lake Rotorua as a result of the success of these plants. The key priority is to reduce alum dosing to necessary levels based on keeping the lake P concentration below the target of 0.020 ppm, which is the level needed to meet the target TLI of 4.2.

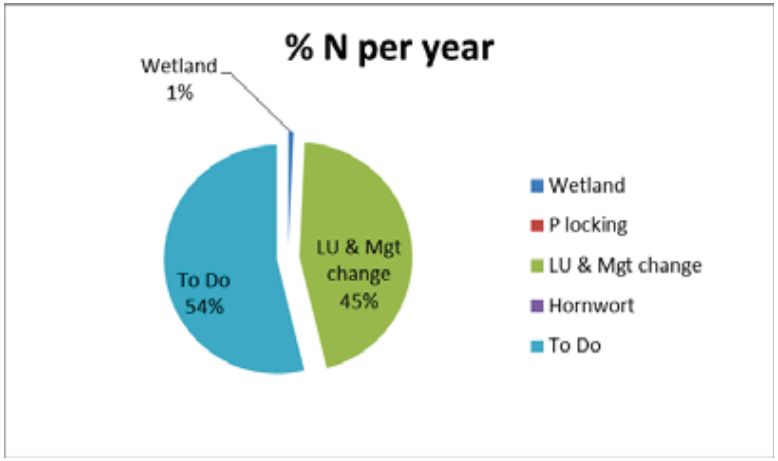
Lake Rotoehu

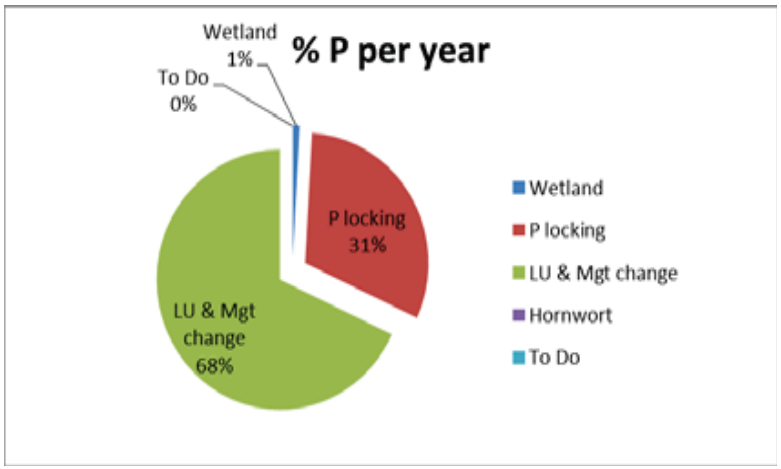
To meet community expectations for water quality Lake Rotoehu needs a reduction of 8.9 tonnes of nitrogen and 708 kg of phosphorus. The main long term intervention in Lake Rotoehu is land management change which is complemented by some short term interventions.

Set out below are the total targets for the life of each project on an annual average, as well as what we planned versus achieved for the six months to December 2012. The table also forecasts achievements and budget for the six months to 30 June 2013.

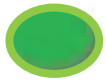
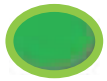








PROGRAMME UPDATE – LAKE ROTOEHU

Project	Deed Funded	Total Target	Total achieved	6 month Target	6 month result	Variance	Comments and forecast	Project Status	Budget Status
Land use and land management change	Yes	6.6 T N .460T P	4.036 T N .768 T P	3.027T N .576T P	3.027 T N .576T P		Land use change agreement for 668 ha has been completed and audited. No work or expenditure planned for next 6 months.		
Weed Harvesting	Yes	3.5T N	0	0	0		Forecast 3.5 tonnes of N in next 6 months and on budget.		
Phosphorus locking plant	Yes	.700T P	.700 T P	.350T P	.350T P		Phosphorus locking on track, plant operational. Business as usual.		
Aeration	Yes	0		0	0		Budget on track and monitoring report due within next 6 months. Machines installed. Some delays due to anchoring issues.		
Floating wetland	Yes	.132T N .021T P (Tanner *et al* 2010)	.066T N .010T P	.066T N .010T P	.066T N .010T P		Complete		
Total		**13.23TN 1.18TP**	**4.102 1.478**	**.066T N .010T P**	**.066T N .010T P**				

Project Status	*Green = on track*	*Amber = some delays*	*Red = major delays*
Budget Status	*Green = on budget*	*Black = underspent*	*Red = overspent*

Comments on behind schedule projects – Rotoehu

Aeration trials

Testing of the Lake Rotoehu de-stratification (aeration) equipment is well advanced. Machine installation was completed in September 2012. Extensive testing was undertaken in February 2012 using pink dye to show how far the air pushes the water and how this mixes up the water.

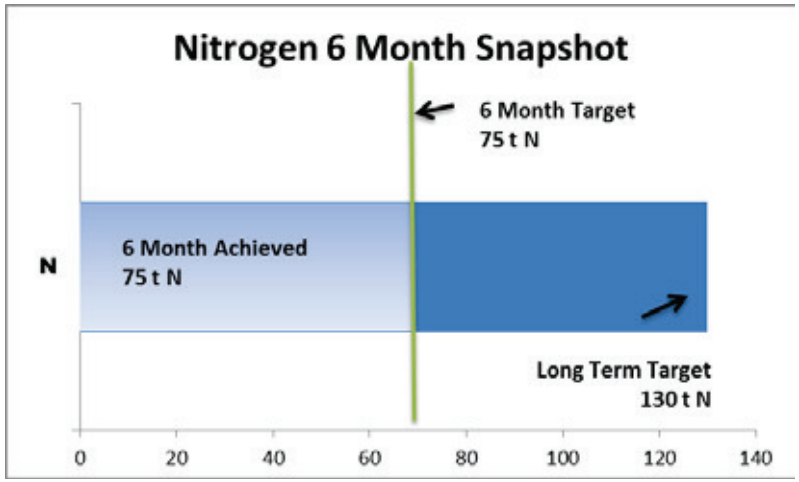
The trial work is being undertaken by a number of scientists from University of Waikato, National Institute of Water and Atmosphere, Bay of Plenty Regional Council, and a specialist water quality engineer from Osaka Japan to assist with the modelling work.

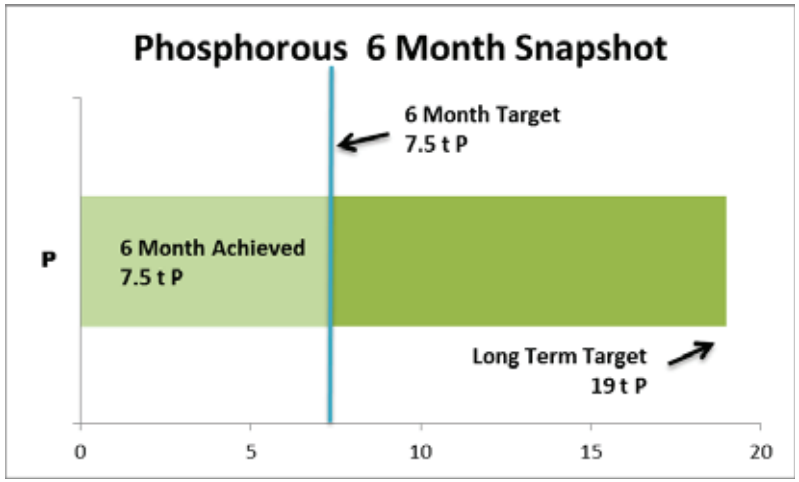
Reporting will be available later in 2013. This will include the update to the lake model programme to evaluate suitability of this intervention to other lakes and in particular Lake Rotorua.

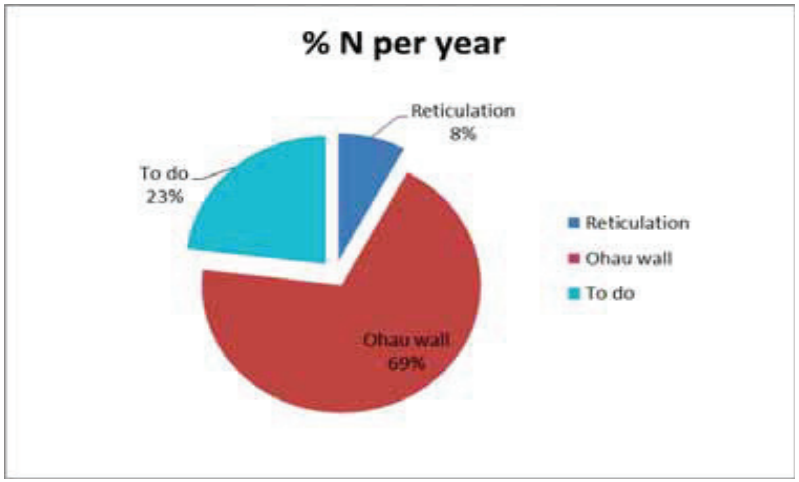
Lake Rotoiti

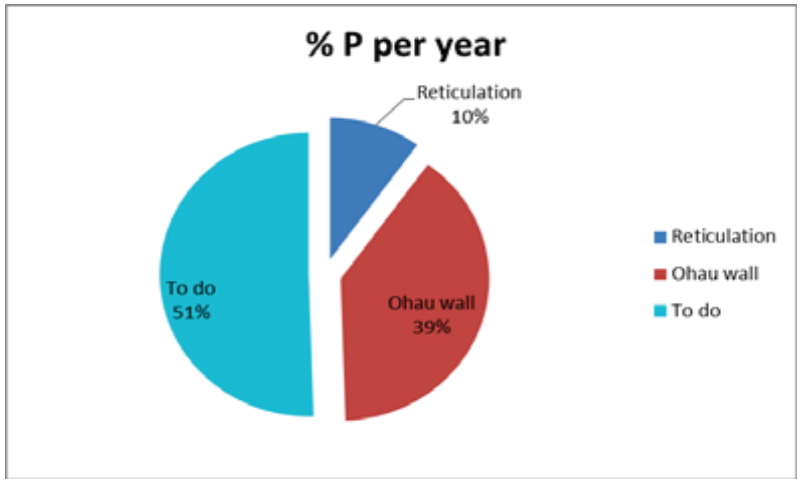
To meet community expectations for water quality Lake Rotoiti needs a reduction of 130 tonnes of nitrogen and 19 tonnes of phosphorus. The Ohau diversion wall is established and protecting the lakes water quality while nutrient reductions to lake Rotorua are achieved. Additional sewage reticulation is the only outstanding action.

Set out below are the total targets for the life of each project on an annual average, as well as what we planned versus achieved for the six months to December 2012. The table also forecasts achievements and budget for the six months to 30 June 2013.









PROGRAMME UPDATE – LAKE ROTOITI

Project	Deed Funded	Total Target	Total achieved	6 month Target	6 month result	Variance	Comments and forecast	Project Status	Budget Status
Sewerage Scheme – Curtis Road to Hinehopu	Yes	4.9T N 1.1T P	0	0	0		No expenditure or works forecast. Works have been delayed due to resource consent appeals in the Environment Court for the proposed wastewater treatment plant.		
Ohau Diversion wall	No	130T N 15T P	150T N	75T N 7.5 T P	75T N 7.5 T P		Project complete		
Sewage schemes complete Okere/Otaramarae /Whangamarino Mourea/Okawa Bay	Yes	8.5T N 1.9T P	8.5T N 1.9T P				Project complete		
Total		**143.4 T N 18T P**	**158T N 1.9T P**	**75T N 7.5T P**	**75T N 7.5T P**				

Project Status	*Green = on track*	*Amber = some delays*	*Red = major delays*
Budget Status	*Green = on budget*	*Black = underspent*	*Red = overspent*

Lake Okareka

To meet community expectations for water quality Lake Okareka needs a reduction of 2.5 tonnes of nitrogen and .08 tonnes of phosphorus.

No actions are planned for Lake Okareka this financial year. Nitrogen and phosphorus targets have been met according to models. On-going monitoring of existing interventions will inform if further actions are required in later years of the programme.

PROGRAMME UPDATE – LAKE OKAREKA									
Project	**Deed Funded**	**Total Target**	**Total achieved**	**6 month Target**	**6 month result**	**Variance**	**Comments and forecast**	**Project Status**	**Budget Status**
Sewage	Yes	2.4 T N .02 T P	1.9 T N .02 T P				Project complete		
Land use change	Yes	.9 T N .06 T P	1.1 T N .231 T P				Project complete		
Total		**3.3 T N** **.08 T P**	**3 T N** **.233 T P**						

Non-deed funded lakes

Tikitapu

No actions are being undertaken for Lake Tikitapu. The main action of sewerage reticulation was completed in October 2010 and it will take time to see improvements in water quality from this action.

Ōkataina

An action plan has been developed for Lake Ōkataina. A draft action plan was notified in October 2012 with two main actions:

1. Investigate impact of understory browse
2. Communication with the catchment stakeholders.

Staff have proposed two additional actions to reduce nutrient input through land use change as a result of public feedback. These actions are designed to meet the Lake Ōkataina nitrogen reduction target and to contribute to the overall phosphorus reduction. The additional actions were considered by the Partnership Steering Group on the 15 March 2012 and a paper will be presented to the next OMR Committee.

BOPRC has agreed to fund a PhD study on Lake Okataina. It was identified during the Action Plan process that there was uncertainty around the origin of nutrients reaching the lake. This study will be used to inform a review of actions and will:

- Identify the level of nutrient leaching in the steep catchment
- Identify the impact of exotic forest harvesting
- Develop a lake model for Ōkataina that will assist in advising management decisions around possible interventions.

Rotokakahi

An actions plan for Rotokakahi will progress following consultation with iwi.

Tarawera

An action plan is in development and will progress after further consultation with iwi and the community.

GNS is developing models for the Tarawera catchment, including:

- A geological model due to be completed by mid-2013
- A flow model for groundwater
- A land use model due to start October 2013.

Ōkaro

Water quality in Lake Okaro has fluctuated over the last 10 years. All actions in the action plan have been completed. Despite this Lake Okaro continues to experience algal blooms. A prolonged algal bloom and health warning has been in place since July 2012.

Additional alum dosing took place during August 2012 to address phosphorus levels in the lake. 15 tonnes of aluminium sulphate were applied by boat.

A retention dam is being constructed in the catchment of the lake to reduce peak storm flows to the lake and reduce the times when stream flows exceed the capacity of the wetland and require by passing. It has been estimated the performance of the wetland can be enhanced by up to 40% by this improvement.

University of Waikato is undertaking lake modelling to identify medium term changes expected as a result of interventions already completed, as well as understand why there has been a decline in water quality since meeting the target briefly during 2010.

Rotoma

No actions are being currently being undertaken for Rotoma.

The main action in the action plan for Rotoma is sewerage reticulation. No work can be undertaken on this until the Waste Water Treat Plant Upgrade is resolved.

Rerewhakaaitu

BOPRC agreed to support the Rerewhakaaitu farmers in developing their own catchment plan to improve Lake Rerewhakaaitu's water quality. As such an Action Plan has not been developed for the Rerewhakaaitu.

The primary focus of the catchment plan is to prepare and implement a nutrient management plan for each farm. Farmers have committed to undertake all actions and independent auditing by 2015.

In addition a number of other projects are planned for Lake Rerewhakaaitu:

- Testing a de-nitrification wall to treat nutrients from ground water and heavy rain events
- Developing a Lake Model.

Rotomahana

No actions are being undertaken for Lake Rotomahana as it has not reached the trigger point to need an action plan.

Science and research

The five year agreement for the Chair in Lakes Management and Restoration at the University of Waikato ended in September 2012. A new agreement has been signed with Professor David Hamilton to provide science and research support for the programme. The agreement has been renewed to 2017.

University of Waikato have been engaged to model the reasons behind the significant improvement in Lake Rotorua's water quality with a focus on identifying the role of alum dosing and short term climate effects.

University of Waikato also undertook sediment sampling in Lake Rotorua to compare with two previous samples with the aim of identifying any changes in sediment concentrations of phosphorus and alum. The results do not identify any major changes. This is positive from the point of view of Alum but it does raise questions as to why phosphorus sediment concentrations are not reducing. The Technical Advisory Group recommended regular sediment sampling to get long term trends every three years.

GNS completed ground water investigation work around the RDC sewage disposal area and considered any linkage with Lake Rotokakahi (Green Lake). Main conclusions support initial research that there is no linkage between the sewage disposal area and Rotokakahi.

PhD Student Jonathan Abell completed his PhD thesis on variations in nutrient loads coming to lakes and part of his study looked closely at nutrient loads coming to Lake Rotorua. Some key findings include:

- Storm events can carry un-proportionally high nutrient levels
- The bio-availability of P can be complex but is potentially available in the long term
- 3 D modelling can be used to identify nutrient transport processes and these affect algal distribution.

Policy and planning

Regional Policy Statement

In February 2012 the Lake Rotorua Primary Producers' Collective, Federated Farmers and the Bay of Plenty Regional Council signed the Oturoa Agreement, this is a Memorandum of Understanding (MOU) on a way forward to reduce nutrients entering Lake Rotorua.

Under the Oturoa Agreement, farmers and the Regional Council will cooperate and collaborate to achieve the sustainable nitrogen load by 2032, with 70 per cent of the nitrogen reduction target catchment wide achieved by 2022.

A consent order has been drafted which reflects the conditions agreed in the MOU. This is due to be signed within the next 2 weeks and will put to rest appeals against policy WL 6B.

Strategy for the Lakes of the Rotorua district

The Strategy for the Lakes of the Rotorua district was endorsed with changes at the Full Council on 14 March 2013. The Strategy will be presented to RTALSG in April, following which it will be released for public consultation.

The new Strategy retains the original vision but builds on the commitment of partner organisations to provide an integrated and holistic direction for the management of the lakes catchments.

Rule Needs Analysis

Council agreed to consider rules to manage nutrients in the catchments of the Rotorua lakes, but directed staff to proceed with rules for lake Rotorua as a matter of priority.

A needs analysis for the other lakes will commence by June this year to determine what rules, if any, might be required. This is an important piece of work for lakes currently not protected by intensification of land use, such as Lake Rotomā, Lake Tarawera, Rerewhakaaitu and Rotomahana.

Programme management

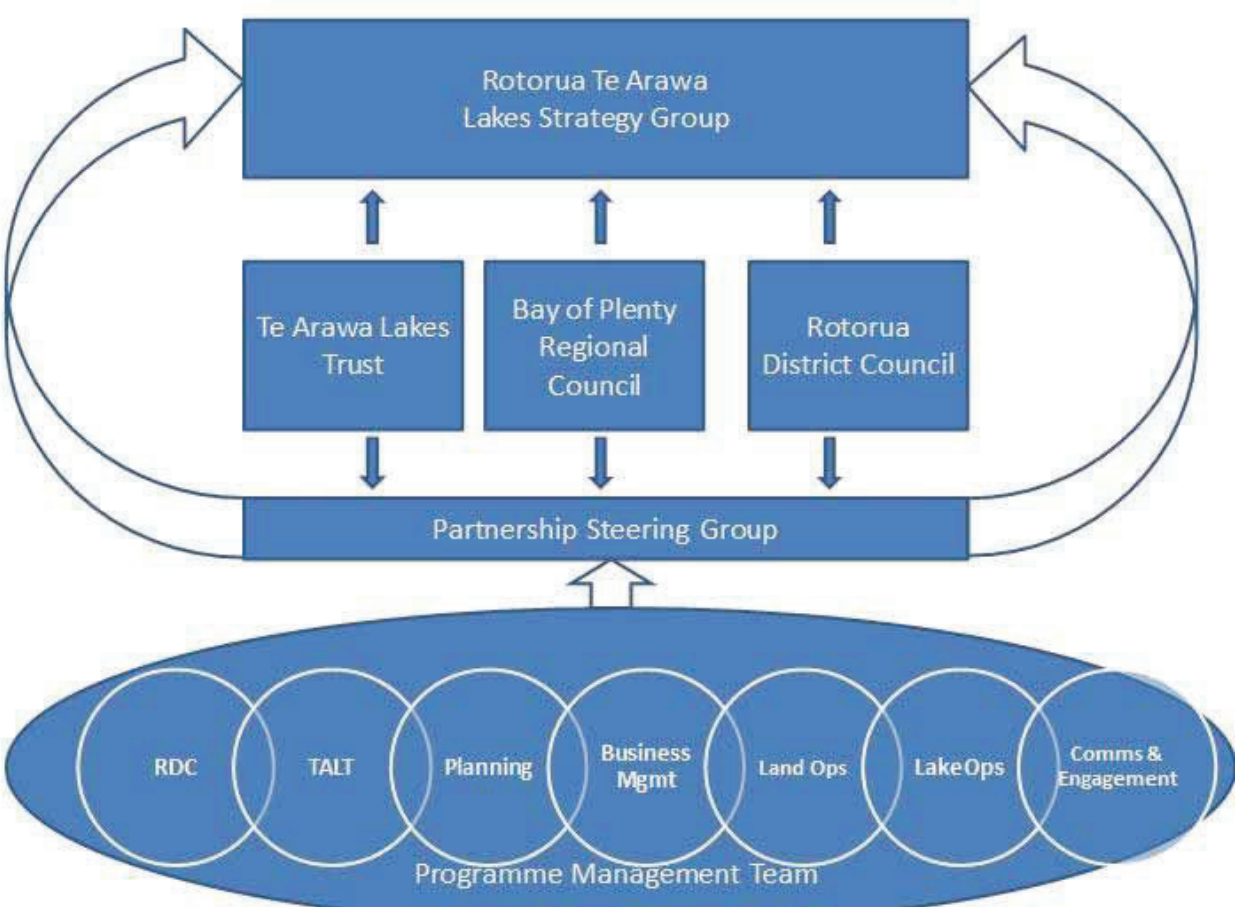
In May 2012 an audit was completed on the programme by IQANZ. Since then significant progress has been made towards implementing the recommendations of that audit.

Key achievements

Implementing a new programme structure that (refer Diagram 1):

- Meets the needs of the programme
- Can deliver MfE reporting requirements
- Reflect the partnership aspect of the programme
- Improve co-ordination between partners.

Diagram 1



A Project Coordinator joined the team in September and the new Programme Manager will commence on 1 May 2013.

Work stream leaders meet fortnightly. Since January 2013 this has included representatives from both RDC and Te Arawa Lakes Trust.

The Partnership Steering Group meets monthly with all representatives from partner organisations in attendance (BOPRC, MfE, RDC and TALT).

A Programme Risk Management Framework has been implemented (based on the BOPRC organisational risk framework) and is included in all reporting.

The Communications and Stakeholder Engagement Plan was developed and approved by the Partnership Steering Group. The recent launch of the new Rotorua Lakes website is an output of that

plan. Already significant improvements are being seen within both the community and also with our stakeholders as a result of the programme communications.

The six monthly report to the Ministry for the Environment was well received by all partners. This was the first output of the new reporting framework. Programme and Work Stream status reports have been developed and are in use.

A programme of workshops was held with staff and work-stream leads during September, October and November to identify information required to populate the Programme Management Plan. Development of the overall Programme Management Plan is well underway and expected to be finalised end of April

A full review of all programme contracts was completed and a contractor database developed and in use. This will ensure complete transparency of all external contracts and deliverables due.

Communications and Stakeholder Engagement

In November 2012 the Partnership Steering Group approved the Communications and Stakeholder Engagement Plan for the lakes programme. The overall goal of the communication and engagement plan is to provide appropriate information to key stakeholders and partner agencies to create awareness and understanding of the programme and collaborate for a solution when required.

Programme branding

As part of the communication and engagement plan the programme name has changed from 'Rotorua Lakes Protection and Restoration Action Programme' to the more user-friendly 'Rotorua Te Arawa Lakes Programme'. This new name also aligns the programme with the Governance Group 'Rotorua Te Arawa Lakes Strategy Group'.

This led to a rebranding of the logo. A brand guidlines document has been developed and a Proud Partners logo created which will be used on all material produced under the Rotorua Te Arawa Lakes Programme branding. Agreement has been made with Partner organisations when the lakes programme branding will be used.

Website

A stand-alone website www.rotorualakes.co.nz has been created. The website provides a one-stop shop for information on the lakes, the programme, its actions and achievements.

The standalone website also presents a united front to the community and our stakeholders that the programme is a joint partnership and the partner agencies are all of equal importance in protecting and restoring the Rotorua Te Arawa lakes.

The website enables the general public to register for updates on various parts of the programme.

The new website launched on 8 March 2013. In the first week an average of 50 new visitors per day viewed the site and visited on average five pages per visit.

Rotorua rules and incentive campaign

A Rotorua Rules and Incentives campaign commenced on 11 March 2013 to:

- Introduce revised programme name and brand
- Promote the new website
- Raise awareness of Lake Rotorua's need for rules and incentives for sustainable water quality improvement
- Get the community to sign-up for updates on the lakes programme
- Get the rural community to get involved and sign-up to provide feedback on rules and incentive development.

Parter Agency Roadshow

To raise awareness in partner agencies of the programme and to introduce the revised programme branding a Lakes Programme Partner Roadshow is underway. This included:

- Two roadshows at Rotorua District Council, with a total of 45 staff attending
- Roadshow at Te Arawa Lakes Trust

- Roadshow in Tauranga and Rotorua BOPRC offices in March and the roadshow for the Whakatane office is planned in early April.

Positive feedback has been received by staff on the roadshows.

Evaluation

The effectiveness of the Communication and Engagement activities will be measured through six monthly surveys including:

1. Community survey – an on the street survey to measure the wider communities understanding and knowledge of water quality issues and what actions are being taken

2. Stakeholder survey – a web-based survey to measure and track key stakeholder's views on the programme communication and engagement

3. Programme partner staff survey – a web-based survey to measure and track programme staff knowledge, awareness and understanding of the lakes programme.

The community survey was undertaken in January and February 2012 with interviews being conducted in various locations throughout Rotorua city and lakeside areas. The survey results showed:

- 82% of people interviewed used the lakes

- Mixed views on water quality, 28% believed water quality was variable across lakes and at times of year while 34% of people believe water quality was poor across the board. Historical knowledge and/or beliefs about the causes of pollution of Lake Rotorua appear to cloud people's views on the lakes in general.

- The physical presence of rubbish appears to the primary concern to many residents

- Locals are concerned about water quality first and foremost because of the effect on personal health and the potential loss to swim in local lakes

- 30% believe farm-run to be the main pollutant to Rotorua lakes, followed closely with 27% household rubbish and 22% sewage

- 60% residents believe there are plans to restore the water quality in the lakes, but have very little knowledge or understanding of what this could entail

- Nearly half the responders believed Rotorua District Council is responsible for managing the Rotorua lakes and only 4% believed it was the responsibility of multiple agencies.

Overall the survey showed a passionate community on the Rotorua Te Arawa lakes but highlighted large knowledge gaps on water quality issues, causes and actions.

The stakeholder and partner staff surveys are underway and results will be available late March 2013.

Lakes aquatic pest monitoring was completed during the 2012-2013 summer with the following results:

Lake	Days of Surveillance	Summary
Ōkāreka	6	Hornwort incursions found
Ōkataina	6	Part of the 2010 Hornwort Incursion Response Plan. One new infestation found.
Rerewhaakitu	2	No incursions found
Rotomā	4	No incursions found
Tikitapu (Blue Lake)	.5	No incursions found

Lake Ōkāreka Evaluation

Hornwort fragments were found by a local commercial operator in May 2012 and reported to Bay of Plenty Regional Council (BOPRC). The report was immediately followed with surveillance by BOPRC and National Institute of Water and Atmosphere (NIWA). In order to assure that best efforts had been taken to locate fragments and plants, further and more extensive surveillance was completed in March 2013. This is the time of year is when hornwort has new growth and fragments are a light, fluorescent green making the plant more visible to divers.

Monitoring was undertaken using a mix of manta boarding, spot diving, snorkelling and an underwater scooter over a three day period.

Table 1: Lake Ōkāreka monitoring sites and hornwort presence/absence.

Ōkāreka Hornwort site	Site name	2010 results	2011 results	2012 results	2013 results
Site 1	Boyes Beach	No plants found	No plants found	Scattered plants found	Scattered plants found
Site 2	Steep Street Reserve	No plants found	No plants found	Scattered plants found	Scattered plants found
Site 3	Acacia Road Bay	No plants found	No plants found	Not monitored	Small plant (1) found
Site 4	Outlet	No plants found	No plants found	No plants found	Small plant (1) found
Site 5	Weed Cordon	No plants found	No plants found	Small plant found in raupo	No plants found
Site 6	Black House Bay	No plants found	No plants found	No plants found	No plants found
Site 7	DOC Camp	No plants found	No plants found	No plants found	No plants found

The results of the monitoring revealed two additional hornwort infestation areas to those found in the 2011-2012 period (Table 1).

The largest infestations occupy the northern end of the lake (sites 1 and 2) and range from scattered plants (5-10 m^2) to established beds approximately 50 m^2 in size. Plants were found in depths ranging from 2 m to 8 m. The entire Boyes Beach area is classed as one site as it has scattered plants, some up to 50 m^2 in size, along the whole beach (Figure 1).

Two plants were found at the southern reach of the lake (sites 3 and 4); one small plant at the outlet that connects to Lake Tarawera, and one small plant within the bay to the eastern side of Acacia Road point. Plants were found in depths ranging from 4 m to 8 m.

From the monitoring completed it seems relevant that the majority of the small fragments and plants have originated from the larger, established hornwort beds in the northern end of the lake with distribution to the southern end occurring via north, north-western winds.

An Incursion Response Plan will be developed for the Operation, Monitoring and Regulations Committee to consider at the May 2013 meeting.

Figure 1: Map of Lake Ōkāreka showing locations of hornwort.

Lake Ōkataina Evaluation

Monitoring was undertaken as part of the Incursion Response Plan on Lake Ōkataina. Extensive monitoring using a mix of manta boarding, spot diving, snorkelling and an underwater scooter was undertaken over a four day period.

Table 2: Lake Okataina monitoring sites and hornwort presence/absence

Okataina Hornwort site	Site name	2010 results	2011 results	2012 results	2013 results
Site 1	Exclusion net	Large infestation found	Small plants found around raupo	Small plants found around raupo	Plants found around shallows
Site 2	South Bay (raupo)	Large infestation found	Small plants found around raupo	Large infestation found	Small plants (6) found
Site 3	Haumingi Bay	Large infestation found	Large infestation found	Small plants found (2) in shallows	Small plant (1) found
Site 4	Oruaroa Point (Dogga Bank)	Large infestation found	Large infestation found	Large infestation found	Small plants (3) found
Site 5	Oruaroa Bay	No plants found	No plants found	No plants found	Small infestation found (30 m^2) and scattered plants (5)
Site 6	West of Tikitiki Point	Small single plant found	Small single plant found	No plants found	No plants found
Site 7	Paremata Bay	Small single plant found	Small single plant found	No plants found	No plants found
Site 8	Ngahaua Bay	Small single plant found	Small single plant found	No plants found	No plants found
Site 9	Main beach	Large plant found within weed cordon	Large plant found within weed cordon	No plants found	No plants found
Site 10	Log Pool Bay	No plants found	No plants found - one small fragment found on beach	No plants found	No plants found

The results of the monitoring were that five sites (6 to 10) that had previous hornwort infestations had no signs of plants growing (Table 2). With the exception of the new infestation found at Oruaroa Bay, remaining sites are showing signs of reduction in hornwort presence.

Lake Rotomā Evaluation

Due to hornwort and *Egeria densa* fragments being found within the Matahī Spit weed cordon in January 2013, monitoring efforts for the period of 2012-2013 were increased from previous years. Monitoring was undertaken over a three day period using a mix of manta boarding, spot diving, snorkelling and an underwater scooter.

The initial incursion activated a spot dive within the weed cordon and beach search by BOPRC divers the week the weeds were found. The biosecurity monitoring for 2012-2013 was intensified as a result and included a new site (Otangiwai Point) and extra time on manta boards along Matahī Spit to Anaputa Point and Hikataua Point. Additionally, visibility was excellent (approximately 15-20 m) which aided in the monitoring.

No hornwort or *E. densa* plants were found over the three day period. The origin of the weed fragments found at Rotomā is believed to have occurred via transportation by boat or boat trailer.

Harbour master update

The Lakes Maritime team for the Bay of Plenty Regional Council look after 14 lakes, seven of which are termed high usage.

A pool of volunteer lake wardens (37) assist in educating the public in the safe use of the region's waterways in accordance with the Bay of Plenty Regional Council's Navigation Safety Bylaws.

Lake Wardens are appointed as Honorary Enforcement Officers who advise, educate and occasionally assist the boating public.

Lake Wardens are not enforcement officers but they do have the authority to request the name and address of any person committing an offence against the bylaws. They can also issue warning infringement notices if an offence is deemed serious.

Lake levels and usage

Lake levels fell over the summer months and beaches, jetties and ramps have reappeared. Lake usage has been on the rise since mid-December and more so in January and February as a result of the favourable weather.

There has been significant use on the lakes this summer especially in the evenings.

Jet Ski campaign

In early December the Regional Council launched a major Jet Ski campaign throughout the Bay of Plenty highlighting the risks associated with inexperienced Jet Ski operators and the importance of knowing the rules pertaining to their usage on the waterways.

It may be a bit early to gauge whether the campaign has been effective as a few jet skiers are still not following safety advice and rules.

Summer patrol programme

The summer patrol programme ran from 26 December 2012 to 8 February 2013. Patrols operated seven days a week at random times between the hours of 7am – 8pm and consist of a Patrol Vessel and two Jet Ski's. High usage lakes such as Rotomā, Rotoiti, Tarawera, Ōkāreka and Tikitapu are patrolled more frequently than low usage lakes. Patrols will still continue during the weekends up until the end of March 2013.

The main focus for the 2012-2013 summer season has been speeding, correct use of ski lanes, towing without an observer and Jet Ski behaviour

	INFRINGEMENTS	WARNINGS
Rotoiti	10	9
Rotomā	5	12
Ōkāreka	1	8
Tarawera	3	12
Tikitapu	2	2
Okawa Bay	0	1
Total	**21**	**44**

The most common offences have included, exceeding 5 knot speed limit in certain areas, towing without an observer, causing or allowing self to be towed without an observer and failing to carry or wear appropriate personal flotation devices as required. Of these approximately 35 percent of the infringement warnings involve jet skis.

Exclusion zone

An exclusion zone has been in place at Otangiwai Point Lake Rotoma since the 24 November 2012 on a trial basis and will end 31 March 2013. The exclusion zone was initiated from concerns submitted by dive operators that use Otangiwai Point as a training area for new/novice divers. The concerns raised were boaties/fisherman dropping anchors on divers whilst fishing and Boaties not adhering to dive flag rules (do not exceed 5 knots within 200 knots of a dive flag).

Prior to the end of the exclusion zone trial, submissions will be requested as to whether:

- The exclusion zone is removed
- Another idea is trialled; or
- An amendment is made to the Bylaws to make the exclusion zone permanent.

Positive verbal reports have been received from the dive companies involved about how safe the area has been since the installation of the exclusion zone.

Okawa Bay

Recently the Bay of Plenty Trailer Yacht Squadron boat ramp at Okawa Bay has been opened to general public use. The ramp is being monitored by the Regional and District Councils and the local community on its usage and the impact it is having on the current infrastructure.

During the holiday period the ramp was not used as often as expected perhaps due to people not knowing that is was open and can be used. However it is believed that once awareness increases the boat ramp usage will increase.

Major risks

Intervention	Risk Description	Mitigation
Wastewater Treatment and Disposal Options	Unable to get suitable option agreed to by the community. Option chosen will not meet 30 tonnes of nitrogen limit.	Option analysis paper being prepared and will be considered by partner agencies.
Weed harvest	Contract negotiations for weed harvesting halted. Due to March/April timeframe for weed harvesting, there is a high possibility that this planned intervention will not occur in the 2012/2013 financial year. This will impact on budget being underspent and nutrient targets not being met.	Alternative options being explored. The preferred being we gain an extension on rental harvester from Mighty River Power while we source longer term solution.
Rotorua Incentives scheme	Cabinet do not approve transfer.	Scheme will continue but with significantly less funding available therefore long term targets will be affected.
Land Use Change	If land use change rules are appealed, then there may be significant delays to the land use change component of the programme.	Engage with Stakeholder Advisory Group to get buy in to new rules.
Pristine lake's decline as the focus is on priority lakes	If we only focus on priority lakes we risk the pristine lakes water quality declining.	Complete action plans for non-deed lakes Complete needs analysis for rules on all lakes.

Financials

Financials up to December 2012 are outlined below against forecast expenditure for Deed only in Table 1. This table shows significant underspends in budgets associated with sewage reticulation, land use change and Tikitere de-nitrification plan contributing to a cumulative carry forward of $15M.

FY13												TOTAL PROJECT TO DATE		
	C/FWD prior year	Budget	Expenditure to Date			Variance to budget	Funding Source					Actual	Budget	Variance to budget
Crown Funded Activities			BOPRC	RDC	TOTAL		Reserves (made up of 50% Crown & 50% BOPRC funding	Crown	BOPRC	RDC	TOTAL			
Lake Rotoehu	**(363,701)**	**930,000**	**745,540**	**0**	**745,540**	**184,460**	**671,000**	**140,000**	**140,000**	**0**	**951,000**	**3,300,077**	**3,650,000**	**349,923**
Weed Harvesting	(12,730)	100,000	4,195	0	4,195	95,805		50,000	50,000		100,000	416,933	500,000	83,067
Land Management Change	61,596	600,000	621,000	0	621,000	(21,000)	621,000	0	0	0	621,000	1,059,484	1,100,000	40,516
P Locking Soda Springs	85,118	100,000	50,089	0	50,089	49,911	50,000	25,000	25,000	0	100,000	655,719	950,000	294,281
Aeration Trial	(378,688)	130,000	70,256	0	70,256	59,744	0	65,000	65,000		130,000	448,944	500,000	51,056
Wetlands Rotoehu	(118,997)	0	0	0	0	0	0	0	0	0	0	718,997	600,000	(118,997)
Lake Ōkāreka	**2,372,304**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8,327,696**	**10,700,000**	**2,372,304**
Sewerage Reticulation	1,813,000	0	0	0	0	0	0	0	0	0	0	7,887,000	9,700,000	1,813,000
Land Management Change	559,304	0	0	0	0	0	0	0	0	0	0	440,696	1,000,000	559,304
Lake Rotorua	**3,489,744**	**13,201,000**	**468,710**	**1,933,000**	**2,401,710**	**10,799,290**	**1,454,357**	**5,637,500**	**2,611,500**	**4,575,000**	**14,278,357**	**27,909,822**	**41,001,000**	**13,091,178**
Phosphorous Locking	1,427,200	601,000	409,831	0	409,831	191,169	176,000	212,500	212,500	0	601,000	3,311,631	5,551,000	2,239,369
Tikitere Diversions	2,626,963	1,250,000	46,684	0	46,684	1,203,316	1,000,000	0	0	0	1,000,000	738,577	2,750,000	2,011,423
Land Management Change	847,355	1,700,000	11,975	0	11,975	1,688,025	(221,643)	850,000	850,000	0	1,478,357	1,164,620	3,700,000	2,535,380
Wetlands Rotorua	(451,774)	500,000	220	0	220	499,780	500,000	0	0	0	500,000	451,994	500,000	48,006
Sewerage Reticulation	(960,000)	9,150,000	0	1,933,000	1,933,000	7,217,000	0	4,575,000	1,549,000	4,575,000	10,699,000	22,243,000	28,500,000	6,257,000
Rotoiti	**10,368,000**	**4,450,000**	**0**	**147,000**	**147,000**	**4,303,000**	**0**	**2,225,000**	**0**	**2,225,000**	**4,450,000**	**39,978,000**	**51,200,000**	**11,222,000**
Sewerage Reticulation	10,368,000	4,450,000	0	147,000	147,000	4,303,000		2,225,000	0	2,225,000	4,450,000	39,978,000	51,200,000	11,222,000
TOTALS	***15,866,347***	***18,581,000***	***1,214,250***	***2,080,000***	***3,294,250***	***15,286,750***	***2,125,357***	***8,002,500***	***2,751,500***	***6,800,000***	***19,679,357***	***79,515,595***	***106,551,000***	***27,035,405***

	FY13											TOTAL PROJECT TO DATE		
	C/FWD prior year	Budget	Expenditure to Date			Variance to budget	Funding Source					Actual	Budget	Variance to budget
			BOPRC	RDC	TOTAL		Reserves (made up of 50% Crown & 50% BOPRC funding	Crown	BOPRC	RDC	TOTAL			
Lake Rotoehu	**(363,701)**	**937,000**	**749,540**	**0**	**749,540**	**187,460**	**671,000**	**140,000**	**147,000**	**0**	**958,000**	**3,303,077**	**3,657,000**	**353,923**
Crown Funded														
Weed Harvesting	(12,730)	100,000	4,195	0	4,195	95,805		50,000	50,000		100,000	416,933	500,000	83,067
Land Management Change	61,596	600,000	621,000	0	621,000	(21,000)	621,000	0	0	0	621,000	1,059,484	1,100,000	40,516
P Locking Soda Springs	85,118	100,000	50,089	0	50,089	49,911	50,000	25,000	25,000	0	100,000	655,719	950,000	294,281
Aeration Trial	(378,688)	130,000	70,256	0	70,256	59,744	0	65,000	65,000		130,000	448,944	500,000	51,056
Wetlands Rotoehu	(118,997)	0	0	0	0	0	0	0	0	0	0	718,997	600,000	(118,997)
sub total	*(363,701)*	*930,000*	*745,540*	*0*	*745,540*	184,460	*671,000*	*140,000*	*140,000*	*0*	*951,000*	*3,300,077*	*3,650,000*	349,923
Non Crown Funded														
Weed Harvesting		7,000	4,000	0	*4,000*	3,000			7,000		7,000	3,000	7,000	4,000
sub total		*7,000*	*4,000*	*0*	*4,000*	*3,000*			*7,000*		*7,000*	*3,000*	*7,000*	*4,000*
Lake Ōkāreka	**2,372,304**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8,327,696**	**10,700,000**	**2,372,304**
Crown Funded														
Sewerage Reticulation	1,813,000	0	0	0	0	0	0	0	0	0	0	7,887,000	9,700,000	1,813,000
Land Management Change	559,304	0	0	0	0	0	0	0	0	0	0	440,696	1,000,000	559,304
Lake Rotorua	**3,489,744**	**13,365,921**	**521,190**	**1,933,000**	**2,454,190**	**10,911,731**	**1,454,357**	**5,637,500**	**2,793,421**	**4,575,000**	**14,460,278**	**27,962,302**	**41,165,921**	**13,203,619**
Crown Funded														
Phosphorous Locking	1,427,200	601,000	409,831	0	409,831	191,169	176,000	212,500	212,500	0	601,000	3,311,631	5,551,000	2,239,369
Tikitere Diversions	2,626,963	1,250,000	46,684	0	46,684	1,203,316	1,000,000	0	0	0	1,000,000	738,577	2,750,000	2,011,423
Land Management Change	847,355	1,700,000	11,975	0	11,975	1,688,025	(221,643)	850,000	850,000	0	1,478,357	1,164,620	3,700,000	2,535,380
Wetlands Rotorua	(451,774)	500,000	220	0	220	499,780	500,000	0	0	0	500,000	451,994	500,000	48,006
Sewerage Reticulation	(960,000)	9,150,000	0	1,933,000	1,933,000	7,217,000	0	4,575,000	1,549,000	4,575,000	10,699,000	22,243,000	28,500,000	6,257,000
sub total	*3,489,744*	*13,201,000*	*468,710*	*1,933,000*	*2,401,710*	*10,799,290*	*1,454,357*	*5,637,500*	*2,611,500*	*4,575,000*	*14,278,357*	*27,909,822*	*41,001,000*	*13,091,178*
Non Crown Funded														
Negotiating LUC		104,534	35,000		35,000	69,534			104,534		104,534	35,000	104,534	69,534
Sediment Capping Trials		60,387	480		480	59,907			60,387		60,387	480	60,387	59,907
Trout Barrier		0	17,000		17,000	(17,000)			17,000		17,000	17,000	0	(17,000)
sub total	*0*	*164,921*	*52,480*	*0*	*52,480*	*112,441*	*0*	*0*	*181,921*	*0*	*181,921*	*52,480*	*164,921*	*112,441*
Rotoiti	**10,368,000**	**4,450,000**	**0**	**147,000**	**147,000**	**4,303,000**	**0**	**2,225,000**	**0**	**2,225,000**	**4,450,000**	**39,978,000**	**51,200,000**	**11,222,000**
Crown Funded														
Sewerage Reticulation	10,368,000	4,450,000	0	147,000	147,000	4,303,000		2,225,000	0	2,225,000	4,450,000	39,978,000	51,200,000	11,222,000
Programme	**0**	**2,416,957**	**1,093,876**	**0**	**1,093,876**	**1,323,081**	**0**	**0**	**2,416,957**	**0**	**2,416,957**	**1,093,876**	**2,416,957**	**1,323,081**
Non Crown Funded														
Research & Development		964,337	278,000	0	278,000	686,337			964,337		964,337	278,000	964,337	686,337
Comms & Stakeholder Engagement		145,264	37,000	0	37,000	108,264			145,264		145,264	37,000	145,264	108,264
General Administration		884,637	508,876	0	508,876	375,761			884,637		884,637	508,876	884,637	375,761
Non Deed Operations		422,719	270,000	0	270,000	152,719			422,719		422,719	270,000	422,719	152,719
TOTAL PROGRAMME	***15,866,347***	***21,169,878***	***2,364,606***	***2,080,000***	***4,444,606***	***16,725,272***	***2,125,357***	***8,002,500***	***5,357,378***	***6,800,000***	***22,285,235***	***80,664,951***	***109,139,878***	***28,474,927***