

Rotorua Te Arawa Lakes Strategy Group

NOTICE IS GIVEN

that the next meeting of the **Rotorua Te Arawa Lakes Strategy Group** will be held in **Committee Room 1, Rotorua Lakes Council, Civic Administration Building, 1061 Haupapa Street, Rotorua** on:

Friday, 15 June 2018 commencing at 10.30 am.

Mary-Anne Macleod
Chief Executive
Bay of Plenty Regional Council Toi Moana

8 June 2018

**Bay of Plenty Regional Council,
Rotorua Lakes Council and
Te Arawa Lakes Trust.**

*Working as one to protect our lakes with funding
assistance from the Ministry for the Environment.*



**ROTORUA
TE ARAWA
LAKES
PROGRAMME**

Rotorua Te Arawa Lakes Strategy Group Terms of Reference

Interpretation

In these Terms of Reference:

“Organisations” means the Te Arawa Lakes Trust, the Rotorua District Council and the Bay of Plenty Regional Council.

“Rotorua Lakes” means Lakes Rotorua, Rotoiti, Rotoehu, Rotoma, Okataina, Tikitapu, Okareka, Tarawera, Rotomahana, Rerewhakaaitu, Okaro and Rotokakahi.

“Group” means the Rotorua Te Arawa Lakes Strategy Group, formed as a Joint Committee under Clause 30 of Schedule 7 of the Local Government Act 2002.

Purpose

The purpose of the Group is to contribute to the promotion of the sustainable management of the Rotorua Lakes and their catchments, for the use and enjoyment of present and future generations, while recognising and providing for the traditional relationship of Te Arawa with their ancestral lakes.

Membership

Six members:

- The Chairperson of the Te Arawa Lakes Trust and one other senior representative;
- The Mayor and one other elected representative of the Rotorua Lakes Council;
- The Chairperson and one other elected representative of the Bay of Plenty Regional Council.

Quorum

As per clause 3.1 of the RLSG Agreement (dated 8 October 2004), the ordinary quorum for a meeting of the Group will be one member from each of the Organisations.

Group Chairperson

The Group has agreed to rotate its Chairperson on an annual basis.

Term of the Committee

This is a permanent joint committee under the Te Arawa Lakes Settlement Act 2006. The *Te Arawa Lakes Deed of Settlement* (December 2004) included clauses establishing the Group (Cultural Redress: Lakes Management and Relationships, clauses 9.1 to 9.3). The Terms of Reference for the Group come from a signed agreement between the three parties (dated 8 October 2004) and included in Part 1 of the Relationship Schedule to the Deed of Settlement.

Specific Responsibilities and Delegated Functions

The Group will have the following functions:

- The provision of leadership to the Organisations and the community in relation to implementation of the Vision of the Strategy for the Lakes of the Rotorua district 2000.
- The identification significant existing and emerging issues affecting the Rotorua Lakes.
- The preparation, approving, monitoring, evaluation and review agreements, policies and strategies to achieve integrated outcomes for the Rotorua Lakes.
- The identification, monitoring and evaluation of necessary actions by the organisations and other relevant organisations.
- The receiving of reports on activities being undertaken by the organisations and other relevant organisations.
- Involvement during the preparation of statutory plans in relation to significant issues. Such plans include but are not limited to iwi and hapū management plans, district and regional plans, reserve management plans and annual plans.
- Involvement in applications for activities in relation to significant issues not addressed by existing policies of the co-management partners. Such activities include but are not limited to resource consents, designations, heritage orders, water conservation orders, restricting access to the lakes (during special events or in particular circumstances), and transferring and/or delegating of statutory authority.

Note:

The Rotorua Te Arawa Lakes Strategy Group reports directly to the Regional Council.

Public Forum

1. A period of up to 15 minutes may be set aside near the beginning of the meeting to enable members of the public to make statements about any matter on the agenda of that meeting which is open to the public, but excluding any matter on which comment could prejudice any specified statutory process the council is required to follow.
2. The time allowed for each speaker will normally be up to 5 minutes but will be up to the discretion of the chair. A maximum of 3 public participants will be allowed per meeting.
3. No statements by public participants to the Council shall be allowed unless a written, electronic or oral application has been received by the Chief Executive (Governance Team) by 12.00 noon of the working day prior to the meeting and the Chair's approval has subsequently been obtained. The application shall include the following:
 - name of participant;
 - organisation represented (if any);
 - meeting at which they wish to participate; and matter on the agenda to be addressed.
4. Members of the meeting may put questions to any public participants, relevant to the matter being raised through the chair. Any questions must be asked and answered within the time period given to a public participant. The chair shall determine the number of questions.

Membership

Chairperson:	Sir T Curtis (Chairman, Te Arawa Lakes Trust)
Deputy Chairperson:	Mayor S Chadwick (Rotorua Lakes Council)
Appointees:	Deputy Mayor D Donaldson (Alternate, Rotorua Lakes Council), W Emery (Alternate, Te Arawa Lakes Trust), Councillor K Hunt (Rotorua Lakes Council), Chairman D Leeder (Bay of Plenty Regional Council), Councillor T Marr (Alternate, Bay of Plenty Regional Council), R Meha (Te Arawa Lakes Trust), Councillor K Winters (Bay of Plenty Regional Council)
Attendees:	S Lewis (Director Operations, Ministry for the Environment)
Committee Advisor:	Y Tatton

Recommendations in reports are not to be construed as policy until adopted.

Agenda

- 1 Opening Karakia**
- 2 Apologies**
- 3 Public Forum**
- 4 Acceptance of Late Items**
- 5 General Business**
- 6 Declarations of Conflicts of Interests**
- 7 Previous Minutes**
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- 8 Reports**
- 8.1 Te Arawa Lakes Trust Update Report**
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9	Consideration of General Business	
10	Closing Karakia	

Previous Minutes

Minutes of the Rotorua Te Arawa Lakes Strategy Group Meeting held in the Council Chamber, Rotorua Lakes Council, Civic Administration Building, 1061 Haupapa Street, Rotorua on Friday, 9 March 2018 commencing at 10.30 a.m.

Present:

Chairman: Sir T Curtis (Chairman, Te Arawa Lakes Trust)

Deputy Chairman: Mayor S Chadwick (Rotorua Lakes Council)

Appointees: Councillor K Hunt (Rotorua Lakes Council), Councillor T Marr (Alternate, Bay of Plenty Regional Council), Councillor K Winters (Bay of Plenty Regional Council), R Meha (Te Arawa Lakes Trust)

In Attendance: Ministry for the Environment: S Lewis (Director Operations), Bay of Plenty Regional Council – Toi Moana: Councillor Thurston, Te Arawa Lakes Trust: R Meha-Rangitauira (Trustee), N Douglas (Manager - Environment), Rotorua Lakes Council: G Williams (Chief Executive) in part, C Dillon (Rotorua Lakes Council), Bay of Plenty Regional Council – Toi Moana: C Ingle (General Manager, Integrated Catchments), S Omundsen (General Manager, Catchment Management), H Creagh (Rotorua Catchments Manager), R Burton (Freshwater Team Leader), R Keber (Marketing and Communications Advisor), T White (Incentives Programme Director), A Grayling (Rotorua Catchments Principal Advisor), G Corbett (Biosecurity Manager), S Grayling (Biosecurity Team Leader), Y Tatton (Governance Manager); D Atkinson (Lakes Water Quality Society),

Apologies: Chairman D Leeder (Bay of Plenty Regional Council)

1 Karakia

Te Taru White opened the meeting with a karakia.

2 Apologies

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Accepts the apologies tendered by Chairman D Leeder.

Winters/Chadwick
CARRIED

3 General Business

The timing of meetings was agreed to be discussed under General Business.

4 **Declaration of conflicts of interest**

Nil.

5 **Previous Minutes**

5.1 **Rotorua Te Arawa Lakes Strategy Group minutes - 8 December 2017**

Matter Arising

In relation to Item 3 General Business, staff advised that invitations to Government Ministers to meet with the Rotorua Te Arawa Lakes Strategy Group had not yet been actioned. Members requested the General Manager, Integrated Catchments extend the invitation as soon as possible to Ministers Sage, Parker and Mahuta.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Confirms the Rotorua Te Arawa Lakes Strategy Group minutes - 8 December 2017.**

**Winters/Chadwick
CARRIED**

6 **Reports**

6.1 **Te Arawa Lakes Trust Update for Rotorua Te Arawa Lakes Strategy Group 9 March 2018**

Refer Tabled Document 1.

Ms N Douglas, Environment Manager, Te Arawa Lakes Trust provided members with a status update and summarised the progress of key projects and activities outlined in the report.

In response to questions pertaining to the Te Arawa Lakes Bylaw that was out for consultation, the Ministry for Primary Industries was responsible for the Bylaw's regulatory monitoring and compliance.

It was noted that the Ministry for the Environment (MfE) had been overwhelmed by the scale and challenges of freshwater quality across New Zealand. Consideration was being given to the current fragmentation of funding across agencies and MfE was looking to pilot intervention programmes which if successful could be rolled out across New Zealand.

Mayor Chadwick tabled Options for New Zealand to adapt to Climate Change – Targeted Engagement – February to March 2018 (Refer Tabled Document 1), recent work from the Local Government New Zealand Climate Change Adaption Technical Working Group.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Rotorua Te Arawa Lakes Programme - Status Report.**

**Hunt/Winters
CARRIED**

- 2 Invite the Ministry for Primary Industries to take a more active role in the monitoring and protection of taonga species in the Rotorua Te Arawa Lakes.**

- 3 Be provided with an MfE update report as a standing item on the agenda.**

**Chadwick/Winters
CARRIED**

6.2 Update Report from Rotorua Lakes Council

Mr G Williams, Rotorua Lakes Council Chief Executive introduced the item which was taken as read.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Update report from Rotorua Lakes Council.**

**Hunt/Chadwick
CARRIED**

6.3 Update on Lake Rotorua Incentives Scheme Activities

Mr T White, Incentives Programme Director reported that the Lake Rotorua Incentives Board had secured ten contracts resulting in 10.7 tonnes of nitrogen at the lake purchased to date. Four additional negotiations were currently underway, one of which could result in an additional 8.5 tonnes reduction to the lake alone. It was noted that agreements in the pastoral sector were proving challenging due to the uncertainty with the Plan Change 10 appeals process.

In response to questions it was noted that land use changes were occurring with landowners seeking optimal utilisation of different land uses.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Update on Lake Rotorua Incentives Scheme Activities.**

**Chadwick/Hunt
CARRIED**

6.4 Consultation on the proposed Long Term Plan 2018 – 2018

Refer PowerPoint presentation Objective ID: A2822558

Ms S Omundsen, General Manager, Catchment Management presented an overview of the Bay of Plenty Regional Council's Draft Long Term Plan (LTP) that was currently out for consultation and invited member organisations and members of the public to make submissions on all aspects of the LTP.

It was noted that Rotorua Lakes Council would be submitting on the establishment of a Freshwater Centre of Excellence.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Consultation on the proposed Long Term Plan 2018 – 2018.**

**Winters/Hunt
CARRIED**

6.5 Low Nitrogen Land Use Fund

Refer PowerPoint presentation Objective ID: A2824511

Ms A Grayling, Rotorua Catchments Principal Advisor presented projects completed to date, which included dNITRO modelling tool for land use change return on investment, Rotorua Land Use Directory, and Good Management Practice video. Ms Grayling proposed next steps for the fund which included filling gaps in the existing directory, extension of the information available throughout the catchment and seeking interest from landowners wanting to undertake trials of low nitrogen land uses.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Low Nitrogen Land Use Fund Report 2017/2018;**
- 2 Approves the broad approach proposed to the LNLUF in 2018 which includes;**
 - a. Completion of further research on identified gaps;**
 - b. Extension of information and education on all Low Nitrogen Land Use Fund tools and land uses;**
 - c. Request Expressions of Interest from land owners wanting to trial one of the land uses contained within the Land Use Directory.**

**Chadwick/Winters
CARRIED**

6.6 **Brown Bullhead Catfish- Incursion Update**

Refer PowerPoint presentation Objective ID: A2825714

Mr S Grayling, Biosecurity Team Leader presented an overview and history of Brown Bullhead Catfish incursion into the freshwater lakes from the time of the initial discovery in 2016 and highlighted operational work undertaken to date.

Members expressed concern at the proliferation and spread of catfish in Lake Rotoiti lately and the potential for them to migrate to other lakes.

In response to questions Mr Grayling acknowledged the responsibility lay with BOPRC to manage the incursion while requiring the collaborative involvement of key stakeholders and reiterated it was a matter of priority on the biosecurity programme. While he believed funding was adequate, the challenge was in prioritising control versus research and innovation.

Members shared their concern of the significant impact catfish were having on the lake and requested increased public communication and education on the seriousness of the situation.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Brown Bullhead Catfish – Incursion Update.**

**Winters/Chadwick
CARRIED**

6.7 **Current State and Management of Rotorua Urban Streams**

Refer PowerPoint Presentation Objective ID A2824509, Tabled Document 2: Your Lifestyle Block and Lake Rotorua; and Tabled Document 3: Working Together to Protect Lake Rotorua.

Ms H Creagh, Rotorua Catchments Manager first responded to questions from earlier in the meeting regarding gorse management in the road reserve, noting the work staff were currently doing with NZTA negotiating an MOU relating to the Regional Pest Management Plan. She also circulated a brochure on Plan Change 10 and Lifestyle Block Guide recently circulated and offered to rural landowners in the Lake Rotorua catchment.

Ms Creagh, provided information on the state and management of a number of streams in the Rotorua urban area following concerns raised by iwi at the October 2017 Komiti \ Māori meeting. In response to the concerns raised regarding sediment build up, health warnings related to swimming, loss of kai and weed management (terrestrial).

In response to a query regarding the “Let’s Clean Rotorua” initiative direction was provided to apply to the MfE Waste Minimisation Fund to support the project.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Current State and Management of Rotorua Urban Streams;**
- 2 Notes that staff will continue to work with locally led initiatives to improve the health of urban streams in Rotorua.**

**Hunt/Winters
CARRIED**

6.8 Programme Status Update and Six Month Report (2017 – 2018)

Refer PowerPoint presentation Objective ID: A2824509

Ms H Creagh, Rotorua Catchments Manager and Ms A Grayling, Rotorua Catchments Principal Advisor provided a status update of activities since the last meeting and the Six Month Report for the Programme, to December 2017.

Members requested monitoring of the impact on Waitangi Stream when the outlet pipe was flowing at full capacity be carried out.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 Receives the report, Programme Status Update and Six Month Report (2017 – 2018).**
- 2 Approves the Six Month Report (2017-2018) for submission to the Minister for the Environment, in accordance with the Deed of Funding for the Programme.**

**Winters/Hunt
CARRIED**

7 General Business

A request to change the start time of Rotorua Te Arawa Lakes Strategy Group meetings from 10:30 am to 9:30 am was supported.

Mr D Atkinson, Lakes Water Quality Society was invited to comment on the matter of catfish incursion and highlighted the devastating escalation of growth. He requested maximum resourcing to control the increase in catfish and considered the current funding for control intervention inadequate.

Councillor Thurston, Bay of Plenty Regional Council representative for the Rotorua Constituency, was invited to address the meeting and reiterated the members concerns and urgency for appropriate action to be taken to control the prolific spread of catfish in the lakes.

Resolved

That the Rotorua Te Arawa Lakes Strategy Group:

- 1 In relation to Item 6.6 Brown Bullhead Catfish - incursion update, request a report from the Bay of Plenty Regional Council Chief Executive be presented to the Rotorua Te Arawa Lakes Strategy Group as a matter of urgency, identifying a comprehensive response of actions to date and advice on appropriate intervention measures and associated allocation of resources for the control of brown bullhead catfish.**

**Chadwick/Winters
CARRIED**

8 Karakia

Sir Toby Curtis closed the meeting with a karakia.

The meeting closed at 12.30pm.

Reports

ROTORUA LAKES COUNCIL

Chairperson and Members
ROTORUA TE ARAWA LAKES STRATEGY GROUP

UPDATE REPORT FROM ROTORUA LAKES COUNCIL

Report prepared by: Jean-Paul Gaston, Group Manager Strategy and Partnerships

Report approved by: Geoff Williams, Chief Executive

1. PURPOSE

To provide a short update on Rotorua Lakes Council (RLC) activity that relates to lake water quality.

2. EXECUTIVE SUMMARY

RLC activity currently underway that impacts the Lakes Programme includes:

- *Wastewater treatment and stormwater projects*
- *Planning Policy*

This report provides a brief update against each of these areas.

3. RECOMMENDATIONS:

- 1. That the report 'Update Report from Rotorua Lakes Council' be received.**

4. WASTEWATER TREATMENT AND STORMWATER PROJECTS**Rotomā / Rotoiti Sewerage Scheme**

- The construction of the wastewater treatment plant and land disposal system is progressing, well within clearing and forming of the building platform and access roads almost complete. Supply contracts for long lead equipment, has been confirmed.
- The construction of the Rotomā reticulation started in late April 2018. About 2 kilometres of sewer trunk main that will link Rotorua to the wastewater treatment plant has been laid to date.

Rotorua Wastewater Treatment Plant

- The resource consent renewal application for the Rotorua Wastewater Treatment Plant is being finalised for lodgement to the Bay of Plenty Regional Council in a months' time.

Tarawera Sewerage Scheme:

- The Tarawera Sewerage Steering Group made submissions to the Long Term Plan process of both Rotorua Lakes Council and Bay of Plenty Regional Council seeking funding subsidy for the proposed Tarawera Sewerage Scheme. The result of the funding subsidy application from both Council's will be confirmed after the adoption of their Long Term Plans.

Rotorua Urban Area Comprehensive Stormwater Resource Consent

- A draft resource consent application has been submitted and an initial review has been completed by the Bay of Plenty Regional Council. The application is being finalised to reflect the comments of the review. The application is planned to be lodged to the Bay of Plenty Regional Council in two months' time.

5. PLANNING POLICY AND STRATEGY**Bay of Plenty Regional Council - Plan Change 10: *Lake Rotorua Nutrient Management (PC10)*:**

- A Pre Hearing Conference was held on 12 April with Judge Kirkpatrick setting his expectations. There was clear direction to parties to spend time in advance of the hearing getting definitional matters, datasets and expert caucusing completed. Included was the requirement for the Natural Capital Group* to provide details on the alternative allocation methodology being proposed. This was provided week beginning 5 June. Work is underway to agree definitions and a caucusing timetable has been set. Evidence exchange will follow this and current estimates are that the hearing will occur at the very end of this year.

* CNI IHL, the Māori Trustee (Te Tumu Paeroa), RLC, Te Pumautanga o Te Arawa Trust, Te Kōmiti Nui o Ngāti Whakaue, Te Maru o Ngāti Rangiwewehi Iwi Authority, Kaingaroa Timberlands, Hancock Forests, and PF Olsen.

Vision 2030 – The Rotorua Way and the Rotorua Spatial Plan:

- Rotorua Lakes Council is intending to complete deliberations for the Spatial Plan at their June Strategy Policy & Finance Committee meeting. A final document will be prepared following this meeting.

6. CONCLUSION

Rotorua Lakes Council continues to work across multiple areas towards improved lake water quality as a partner in the Rotorua Te Arawa Lakes Programme.



Update Report from Ministry for the Environment - receive report only

Report To: Rotorua Te Arawa Lakes Strategy Group

Meeting Date: 15 June 2018

Report From: Shaun Lewis, Director, Mana Honohono – Investments and Partnerships

PURPOSE

This report provides an update on the Ministry for the Environment's (the Ministry) work programme and any other items of wider interest.

Overview of Work Programme

The Government's priorities for the environment are waste minimisation, fresh water, climate change and urban development.

- **Waste minimisation:** The long term goal of transitioning towards a circular economy is well underway. An early focus is to reduce waste to landfill through better implementation of the Waste Minimisation Act. This will be addressed by investing waste disposal levy money more strategically, improving the data we have available on waste, and looking at expanding the waste disposal levy to all landfills, and looking at a different levy.
- **Fresh water:** In response to the Government's commitment to improve water quality, the Ministry is developing a detailed work plan with a particular focus on sediment, land use intensification, wetlands and estuaries, water sensitive land use, stronger compliance, monitoring and enforcement, and science that supports good decision making.
- **Climate change:** Following the announcement that the Government will be introducing a Zero Carbon Bill later this year, the Ministry is consulting on the scope of the Bill during June and July. The Ministry is also supporting councils to implement the recently released Coastal Hazards and Climate Change guidance.
- **Urban development:** The Ministry has a significant role in the cross-government housing and urban development work programme, which includes a number of changes to system-level settings to improve housing and urban development outcomes. This work programme incorporates the Urban Growth Agenda, KiwiBuild and the Housing Commission.

Items of wider interest

- **The Waste Minimisation Fund:** The Waste Minimisation Fund closed in mid-May, with this round having a particular focus on the Circular Economy and generating significant interest.
- **Environmental Reporting:** 'Our Land 2018', the latest report in the Environmental Reporting Series was released on 19 April 2018. The report is now available on the Ministry's website and shows the effects we are having on our soils, native plants and animals. The next reports to be released will be 'Our Air 2019' to be released in October and 'Environmental Aotearoa 2019' expected to be released in April 2019.
- **National Planning Standards:** The draft first set of National Planning Standards were released for public consultation on 6 June. Officials will be meeting separately with council staff to discuss the draft planning standards.



Report To: Rotorua Te Arawa Lakes Strategy Group
Meeting Date: 15 June 2018
Report From: Chris Ingle, General Manager, Integrated Catchments

Rotorua Te Arawa Lakes Strategy Group Terms of Reference Review

Executive Summary

A resolution to review the Strategy Group's Term of Reference was approved at the 8 December 2017 meeting. The key issue for review was the governance structure and membership.

Recommendations

That the Rotorua Te Arawa Lakes Strategy Group under its delegated authority:

- 1 Receives the report, Rotorua Te Arawa Lakes Strategy Group Terms of Reference Review;**
- 2 Reinstate the current Terms of Reference rotation of the Chair on an annual basis.**
- 3 Selects System B as the voting system to appoint a new Deputy Chairperson.**
- 4 Appoints _____ as the Chair to preside at the next meeting for a period of one year.**

1 Background

At 8 December 2017 meeting the Rotorua Te Arawa Lakes Strategy Group (RTALSG) agreed to review the current Terms of Reference following a request from Te Arawa Lakes Trust to review the representation model.

Te Arawa Lakes Trust proposed a change to the RTALSG membership with an appointment of an Independent Chair to enable both Te Arawa members to fully participate in the meetings.

Under the Te Arawa Lakes Settlement Act 2006 section 50 each of the organisations and the Group jointly must comply with the terms of the Rotorua Lakes Strategy Group Agreement (Agreement). The Agreement informs the Terms of Reference and in

particular the membership of RTALSG. The Agreement forms part of the Relationship Schedule as Schedule 1, Part 1 of the Te Arawa Lakes Deed of Settlement.

The Te Arawa Deed of Settlement is a legal arrangement between Te Arawa Lakes Trust and the Crown. Any change to the RTALSG's Terms of Reference or membership structure would require a change to the Settlement Deed and agreed to by the Crown.

Due to the procedural complexity above, as an alternate solution in order to respond to Te Arawa Lakes Trust request, RTALSG members could reinstate the current Terms of Reference rules for the chairing of meetings by ensuring the appointment of the Chair is rotated on an annual basis.

2 Voting Systems

RTALSG must resolve to use one of the following voting systems, as set out in Standing Orders 5.2:

“System A

- (a) *requires that a person is elected or appointed if he or she receives the votes of a majority of the members of the Forum voting; and*
- (b) *has the following characteristics:*
 - (i) *there is a first round of voting for all candidates; and*
 - (ii) *if no candidate is successful in that round there is a second round of voting from which the candidate with the fewest votes in the first round is excluded; and*
 - (iii) *If no candidate is successful in the second round there is a third, and if necessary subsequent round of voting from which, each time, the candidate with the fewest votes in the previous round is excluded; and*
 - (iv) *In any round of voting if 2 or more candidates tie for the lowest number of votes, the person excluded from the next round is resolved by lot.*

System B

- (a) *requires that a person is elected or appointed if he or she receives more votes than any other candidate; and*
- (b) *has the following characteristics:*
 - (i) *there is only one round of voting; and*
 - (ii) *if 2 or more candidates tie for the most votes, the tie is resolved by lot.”*

It is recommended that the Forum selects System B as its voting system.

3 Council's Accountability Framework

3.1 Community Outcomes

This proposal directly contributes to the Regional Collaboration and Leadership Community Outcome/s in the council's Long Term Plan 2015-2025.

3.2 Long Term Plan Alignment

This work is planned under the Governance Activity in the Long Term Plan 2015-2025.

Current Budget Implications

This work is being undertaken within the current budget for the Governance Activity in the Annual Plan 2015/25.

Future Budget Implications

Future work is provided for in Council's Long Term Plan 2015-2025.

Yvonne Tatton
Governance Manager

for General Manager, Integrated Catchments

7 June 2018



Receives Only – No Decisions

Report To: Rotorua Te Arawa Lakes Strategy Group

Meeting Date: 15 June 2018

Report From: Chris Ingle, General Manager, Integrated Catchments

Brown Bullhead Catfish Incursion Project Update

Executive Summary

At the last Rotorua Te Arawa Lakes Strategy Group meeting the Group heard from the Team Leader Biosecurity, Shane Grayling that there had been a significant increase in the number of catfish caught on Lake Rototiti and an increase in the coverage of the catch around that lake, including through the Ohau Chanel. The Group expressed their collective extreme disappointment in this news and their desire to see a swift and well-resourced response to situation, to both reduce the numbers of catfish on Lake Rotoiti and also stop their spread to other taonga lakes. A team has been established to work on this response and progress is outlined below.

Recommendations

That the Rotorua Te Arawa Lakes Strategy Group under its delegated authority:

- 1 Receives the report, Brown Bullhead Catfish Incursion Project Update ;**

1 Purpose of Report

The purpose of this report is to update the Group on the response to the catfish incursion. A programme of work is underway with a number of work streams, an update on each of these is provided below.

2 Research and Innovation

A number of research activities are currently being planned or scoped to support the programme. The University of Waikato are currently scoping up the costs to develop environmental DNA technology (eDNA). eDNA is technology that analyses water samples to determine what species are present in a particular lake or river. It is hoped that once developed eDNA will make the detection of invasive species much easier and cheaper. It has been estimated that the technology should be available for testing by the end of 2018.

Planning is very advanced for the acoustic tagging trial which is planned for August/September. Acoustic receivers will be strategically placed around Lake Rotoiti. Acoustic tags will be implanted into 30 large male catfish and their movement will be tracked for up to one year. Data from the trial will help inform control operations through a better understanding of catfish seasonal movement and the utilisation of the lake at key times of year such as spawning.

The National Institute of Water and Atmosphere are investigating a number of research opportunities currently. These include the development of a catfish specific pheromone bait which could make netting more effective and electric barriers to prevent catfish moving between water bodies. They also plan to research the use of acoustic barriers or attractants as catfish are highly vocal animals. Scoping of these projects will take place in the next few months.

3 Community Engagement

Bay of Plenty Regional Council has entered into a three year contract with the Te Arawa Lakes Trust to lead the Community Engagement aspect of the response. This response enables the Lakes Trust to employ a dedicated co-ordinator to engage with the community and co-ordinate volunteer effort to the catfish response. The Trust will be able to provide a verbal update on their progress with this workstream at the Strategy Group meeting.

4 Operational Response Since March

Since the last Rotorua Te Arawa Lakes Strategy Group meeting, netting has been undertaken over 32 nights. The results of that netting are outlined in the table below:

Site	Nets set	Catfish caught	Percentage of total catch	Catch per unit effort
Te Weta Bay	153	13,353	76.66%	187.25
Okawa Bay	37	83	0.47%	2.24
Okere Inlet	51	1,416	8.12%	27.76
Otaramarae	22	6	0.03%	0.27
Northern Shore	136	670	3.85%	4.93
Southern Geothermal	111	148	0.84%	1.33
Delta	55	55	0.32%	1.00
Ohau Channel	690	1,687	9.69%	2.44
Lake Rotorua	24	0	0.00%	0.00
OTHER	0	0	0.00%	0.00
TOTAL	1,280	17,418	100.00%	13.61

Catch rates during the months of March and April remained reasonably high with consistent catches across most sites including the Ōhau Channel. Recently, catch rates have reduced due to the lowering water temperature.

As the figure for nets set shows significant effort was targeted within the Ōhau Channel to remove as many fish as possible and reduce the population that could easily move over the weir into Lake Rotorua. A small number of nets were placed in Lake Rotorua, close to the weir, though no catfish were caught. More comprehensive netting of Lake Rotorua and the Kaituna River will be undertaken in Spring.

On the 29th of May the University of Waikato undertook electric fishing of the Ōhau Channel to trial the effectiveness of the method in the shallower channel. They completed 140 minutes of electric fishing throughout the channel but only managed to catch a single catfish.

5 Communications

The draft communications plan has been presented at the Regulatory Direction and Delivery Committee. The development of a communications ‘tool kit’ is currently underway.

The first ‘awareness’ video was filmed on Tuesday 5th June, and will be shown through social media, shared online and also played in cinemas at strategic times of the year. Future videos will delve deeper into the issue and our response.

Outdoor lifestyle magazines have been engaged with and a reduced rate has been negotiated as buy in to help promote the issue. This covers print, digital and social media from 1 September till the end of March 2019.

A meeting has also been held with Te Arawa Lakes Trust about tailoring messages for tangata whenua. This campaign relies on community buy in so it is key that we create collateral that they can use.

6 Long Term Plan Alignment

This work is planned under the Biosecurity Activity in the Regional Council’s Long Term Plan 2018-2028.

Current Budget Implications

This work is being undertaken within the current budget for the Biosecurity Activity in the Annual Plan 2017/18 or Year 3 of the Long Term Plan 2015-2025.

Future Budget Implications

Future work is provided for in Council’s Long Term Plan 2018-2028.

Fiona Wood
Programme Coordinator Integrated Catchments

for General Manager, Integrated Catchments

7 June 2018



Receives Only – No Decisions

Report To: Rotorua Te Arawa Lakes Strategy Group

Meeting Date: 15 June 2018

Report From: Chris Ingle, General Manager, Integrated Catchments

Programme Status Update, Three Year Plan and Annual Work Programme

Executive Summary

Provided in this report is an update on activities of the Rotorua Te Arawa Lakes Programme since the last meeting of the Strategy Group in March this year. Also included are the new Three Year Plan (2018/2019-2020/2021) and Annual Plan (2018-2019) for approval, as required by the Deed of Funding with the Crown.

An update on the response to the Catfish incursion on Lake Rotoiti is included in a separate report to this paper.

Recommendations

That the Rotorua Te Arawa Lakes Strategy Group under its delegated authority:

- 1 Receives the report: Programme Status Update, Three Year Plan and Annual Work Programme.**
- 2 Approves the Three Year Plan (2018/2019-2020/2021) and Annual Work Programme 2018-2019 for submission to the Minister for the Environment in accordance with the Deed of Funding for the Programme.**

1 Status Update

Advice and Support

Landowners are continuing to engage constructively with the Advice and Support Service. Currently 140 landowners are working with Land Use Advisors to understand the nitrogen leaching from their current farm system and, where necessary, develop Nutrient Management Plans to show how a property's 2032 Nitrogen Discharge Allocation will be met. This includes 83 properties over 40 ha in size which is 87% of the estimated 95 properties in this category within the catchment.

55 previously signed Nutrient Management Plans are in the process of being reworked by Land Use Advisors to reflect the changes to the allocation methodology following

the decision of the Commissioners on the Plan Change 10 hearings, including further detail on phosphorus mitigation.

Incentives Scheme

The Lake Rotorua Incentives Scheme has secured 10.7 tonnes of in-lake nitrogen. The Incentives Committee is currently being asked to consider approving an Incentives Agreement with a large landowner that will yield a further 8.5 tonnes of in-lake nitrogen. Negotiations have completed with a landowner securing an additional 1.2 tonnes of in-lake nitrogen. When these two deals are finalised it will bring the Incentives deals settled to 12 agreements.

Staff are continuing to engage with landowners and actively developing pipeline opportunities. There appears to be heightened interest in the Incentives Scheme in light of the Government's 1 Billion Trees programme and the current price of carbon.

Along with considering the landowner agreement documents to secure nitrogen, the Incentives Committee will be reviewing the Incentives Scheme Pricing and Negotiation Strategy and, aligned with its Terms of Reference, receiving a report related to the annual review of its operations.

Plan Change 10 Implementation

To date two resource consents have been granted under the provisions of Plan Change 10 and a further three applications are currently being processed. Further applications are expected in the near future as Nutrient Management Plans are finalised.

In March a letter and brochure was sent to 1555 rural land owners in the Lake Rotorua Catchment outlining their obligations under Plan Change 10 and asking for them to engage with staff for assistance to meet these. To date 37 phone calls have been received from landowners in response to the letter, of whom 8 have registered for Advice and Support, including three new properties over 40 ha.

Further landowner engagement is planned at the Rotorua Home Show on 13-15 July 2018 where Rotorua Catchments staff will be promoting all aspects of the Rotorua Te Arawa Lakes Restoration Programme.

Low Nitrogen Land Use Fund

The Low Nitrogen Land Use Fund work programme for 2018 was approved by this Committee in March this year. Since then the Te Arawa Primary Sector have been contracted to deliver the key components of the programme which includes research and preparation of material on tourism, forestry and combined land uses; this research will be disseminated through publications, online resources and workshops. The audience is not limited to existing land owners but their advisors and potential business partners. A launch is planned for 3 July 2018 with an inspirational speaker lined up to kick-start a series of workshops in July. Expressions of interest will be sought late September early November from people wishing to implement change or trial new land uses.

Gorse

Recent analysis of high resolution aerial photography estimates that there are approximately 330 ha of mature gorse available for conversion in the Lake Rotorua Catchment through the Lake Rotorua Gorse Conversion Project.

To date the uptake of the Gorse Programme has been impeded by the reluctance of some owners of Māori land to agree to the requirement for a 999 year encumbrance on land titles.

An updated Implementation Policy (2018-2022) has recently been approved by the Programme Steering Group which enables scattered gorse that is difficult and uneconomic to convert to be controlled through other Council funding streams such as the Regional Council's Sustainable Land Use Fund. However a 999 year encumbrance will remain a requirement for higher value gorse conversions accessing Crown Deed Funding on advice from the Ministry for the Environment.

It is planned to negotiate an annual work plan with the New Zealand Transport Agency to control roadside gorse (as part of the Regional Pest Management Plan) and with the Department of Conservation to control gorse within conservation areas.

The original aim of the Lake Rotorua Gorse Conversion Project was to control mature gorse existing in the catchment in 2001-2004. However, from a practical perspective it makes sense to control mature gorse existing in the catchment today as the gorse that existed in 2001-04 no longer has practical relevance, other than for calculating progress towards the Integrated Framework Targets. Therefore, gorse conversions will be reported as total ha of current gorse removed by the Gorse Programme.

Two new Gorse Agreements are currently under negotiation which will remove an additional 120.5 ha of gorse, bringing the total area of gorse removed by the Gorse Programme to 221.6 ha.

Tarawera Lakes Restoration Plan

All actions in the Tarawera Lakes Restoration Plan are now well underway.

Te Arawa Lakes Trust have commenced work to deliver the Tarawera System Cultural Health Assessment, funded by the Bay of Plenty Regional Council. This work will establish a set of indicators to measure cultural health of the lake, a pilot study will then be run on Lakes Tarawera and Ōkataina.

In relation to Acacia Control, the plan for the 2018 winter is to control the remaining mature stands of acacia in the Te Ariki block and then to move into the 2015 control area to complete follow up control. Unfortunately the herbicide (Meturon) used in 2015 was not as effective as hoped so this will require extensive follow up work.

Lead by the Project Rerewhakaitu Incorporated (Chaired by Mr Chris Sutton), Farm Environment Plans have been developed for all willing farms in the Tarawera Lakes Catchments. Fonterra have developed plans for dairy farms, for drystock farms the Beef and Lamb industry template has been used. These plans are backed by Overseer files. While the Programme won't have access to individual farm data, collated catchment data will be provided to the Programme, this is critical to understand catchment nutrient inputs and nutrient budgets for future decision making in the Tarawera catchments.

Te Arawa Lakes Trust are currently leading the establishment of a Collective Impact Model for the future management of the Tarawera Catchments. They have been talking to stakeholders and potential collaborators to this project and have good support to pursue the concept.

Weed Harvesting and Alum Dosing

No weed harvesting has been undertaken this year due to weed availability. In particular on Lake Rotoehu it appears that algae growth has prevented light entering the water column and therefore the growth of weed. Lake Rotoehu water quality remains a challenge for the Programme and other actions will be needed based on advice from the Programme's Water Quality Technical Advisory Group.

Alum dosing will continue on both Lakes Rotoehu and Rotorua, this activity requires a replacement resource consent for the expiring consents.

Lake Ōkāreka Land Use Change

In 2016 Strategy Group approved budget for funding of further land use change in the Lake Ōkāreka catchment. Excellent progress has been made on this project and an agreement for approximately 60 hectares of further land use change in the catchment is nearing completion. Negotiations are continuing to secure further land use change.

Sewerage Reticulation – Lake Rotorua

There remain a number of properties in the Lake Rotorua catchment not yet connected to sewerage reticulation although it is available at the gate. A number of these are in the Rotokawa/Brunswick area, but also scattered around the lake. Rotorua Lakes Council and Bay of Plenty Regional Council have commenced a joint project to require those properties under 2 hectares, not yet connected but have reticulation available, to connect to reticulation. Most properties will be required to pay the costs of the connection themselves as it is available at the gate. However, we expect that some properties will not have the funds to connect and we will need to explore options to assist those properties, hence funding is set aside in the Annual Work Plan.

2 Three Year Plan

In accordance with the requirements of the Deed of Funding with the Crown, the Programme is required to prepare a Three Year Plan. This plan sets out, at a high level, the planned Deed funded activities over that period on each of the priority lakes: Rotorua, Rotoiti, Rotoehu and Ōkāreka. These Three Year Plans are developed at the same time as the Long Term Plans for each Council, so both align. Both Councils have recently developed their Long Term Plans for 2018-2028 and as such the Three Year Plan for the Programme needs to be renewed. The Three Year Plan presented here for approval by the Strategy Group is for 2018-2019 until 2020-2021.

None of the activities set out in the Three Year Plan will be unfamiliar to the Strategy group, they are focussed on the implementation of the Integrated Framework plus engineering solutions for Lake Rotorua. Continued phosphorous locking, weed harvesting (subject to weed availability) and further land use change in the Lake Ōkāreka catchment is also planned.

The Three Year Plan is provided in Appendix One.

3 Annual Work Plan

In accordance with the requirements of the Deed of Funding with the Crown, the Programme is required to prepare and Annual Work Plan. This plan sets out, in detail, the planned activities over the year on each of the lakes. For completeness Deed and Non-Deed funded lakes are included, plus a description of the activities proposed in relation to catfish control. The Annual Work Plan for the 2018-2019 financial year is attached in Appendix Two.

As for the Three Year Plan, the focus for the Programme for the 2018-2019 financial year is the implementation of the Integrated Framework plus engineering solutions.

4 Council's Accountability Framework

4.1 Community Outcomes

This work directly contributes to the Water Quality and Quantity and Environmental Protection Community Outcomes in the Regional Council's Long Term Plan 2015-2025.

4.2 Long Term Plan Alignment

This work directly contributes to the Water Quality and Quantity and Environmental protection Community Outcomes in the Regional Council's Long Term Plan 2015-2025.

Current Budget Implications

This work is being undertaken within the current budget for the Rotorua Catchments Activity in the Annual Plan 2017-2018 or Year 3 of the Long Term Plan 2015-2025.

Future Budget Implications

Future work is provided for in the Rotorua Lakes Council and Bay of Plenty Regional Council's Long Term Plan 2018-2028.

Helen Creagh
Rotorua Catchments Manager

for General Manager, Integrated Catchments

8 June 2018

APPENDIX 1

DRAFT 2018 - 2021 Three Year Plan Rotorua Te Arawa Lakes Programme



Rotorua Te Arawa Lakes Programme

Three Year Plan 2018/2019 - 2020/2021

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Bay of Plenty Regional Council, Rotorua
Lakes Council and Te Arawa Lakes Trust.
Working as one to protect our lakes
with funding assistance from the
Ministry for the Environment.

The Rotorua Te Arawa Lakes Programme

The Rotorua Te Arawa Lakes Programme was established following Te Arawa's Treaty of Waitangi settlement with the Crown in 2006. As part of that settlement the Crown committed to restoring the lakes of Te Arawa. That commitment included a Funding Deed which provided \$72 million of Crown funds to a restoration programme on four priority lakes: Rotorua, Rotoiti, Ōkāreka and Rotoehu. The total Crown funding commitment was also matched by the councils (Bay of Plenty Regional Council and Rotorua Lakes Council).

The Rotorua Te Arawa Lakes Programme which results from this funding commitment (plus additional Council commitments for the remaining 12 Te Arawa lakes) operates as a partnership between Te Arawa Lakes Trust, the Bay of Plenty Regional Council and Rotorua Lakes Council.

The Vision and Strategy for the lakes of the Rotorua District was last reviewed in 2012. This strategy sets a clear direction for the gains that need to be made for the Te Arawa Lakes until 2022, when most of the projects funded under the Deed are due to be completed.

The vision of the Rotorua Te Arawa Lakes Programme is:

E tiakina ana, e manaakitia ana hoki nga rota o te rohe o Te Arawa hei painga mo tatau me ngā whakatipuranga e ara mai nei, a, me te aro ana ki te hononga tuku iho o Te Arawa ki o ratau rota.

The lakes of the Rotorua district and their catchments are preserved and protected for the use and enjoyment of present and future generations, while recognising and providing for the traditional relationship of Te Arawa with their ancestral lakes.

All work in the Programme is also guided by Te Tuapapa o ngā wai o Te Arawa, the Te Arawa Cultural Values Framework. This Framework was developed in 2016 by the Te Arawa Lakes Trust with funding from Bay of Plenty Regional Council and is described as a values-based Policy Statement for Te Arawa. Te Tuapapa sets out Te Arawa's values in relation to the long term aspirations for the Te Arawa Lakes.

Purpose of Three Year Plan

The purpose of this Three Year Plan is to meet the requirements of the Deed of funding agreement between the Crown and the council partners who jointly fund programme activities.

The Three Year Plan sets out by year, the activities of the programme which will draw on funding from the Crown to be completed. The Three Year Plan covers activities only on Deed funded lakes, known as the priority lakes. There are a number of other activities on non-Deed lakes funded by the Councils only and in some cases delivered by the Te Arawa Lakes Trust, these include:

- Funding of the Chair of Lake Water Quality through the University of Waikato, including ongoing research projects which support lake restoration projects and monitoring and science work, e.g. a network of monitoring buoys across the lakes.
- Policy and plan making, e.g. Plan Change 10 (Lake Rotorua nutrient rules).
- Implementation of all actions within the Tarawera Lakes Restoration Plan including: development of Farm Environment Plans, Acacia control, sewerage reticulation, development and piloting of a cultural monitoring framework for these lakes.
- Lake weed management for aesthetic and recreational reasons.
- Management of lake level control structures in Ōkāreka, Rotorua and Rotoiti.
- Response to the catfish incursion on Lake Rotoiti.
- Enhancement and maintenance of biodiversity and other land sites across the Rotorua catchments, working with landowners and community groups.
- Funding and management of public access infrastructure, events, lake reserves and other assets across the Rotorua Te Arawa Lakes.
- Maintenance of Ōhau Diversion Wall.

This Three Year Plan aligns to the Long Term Plans of each Council which are reviewed every three years. The Long Term Plans for 2018-2028 have recently been adopted by Bay of Plenty Regional Council and Rotorua Lakes Council. Therefore it is time to submit another Three Year Plan for the Rotorua Te Arawa Lakes Programme which is consistent with these Long Term Plans.

As mentioned, this Three Year Plan only covers Deed funded activities in detail and there are a number of other non-deed funded activities that combine to form the Rotorua Te Arawa Lakes Programme, overseen by the Strategy Group. It is noted that a priority for the Programme moving forward is to consider the ability of the Programme to meet its Deed objectives to 2022 for priority lakes and also where further funding may be required for lakes which are not currently Deed funded, i.e. considering the long term programme plan as a whole.

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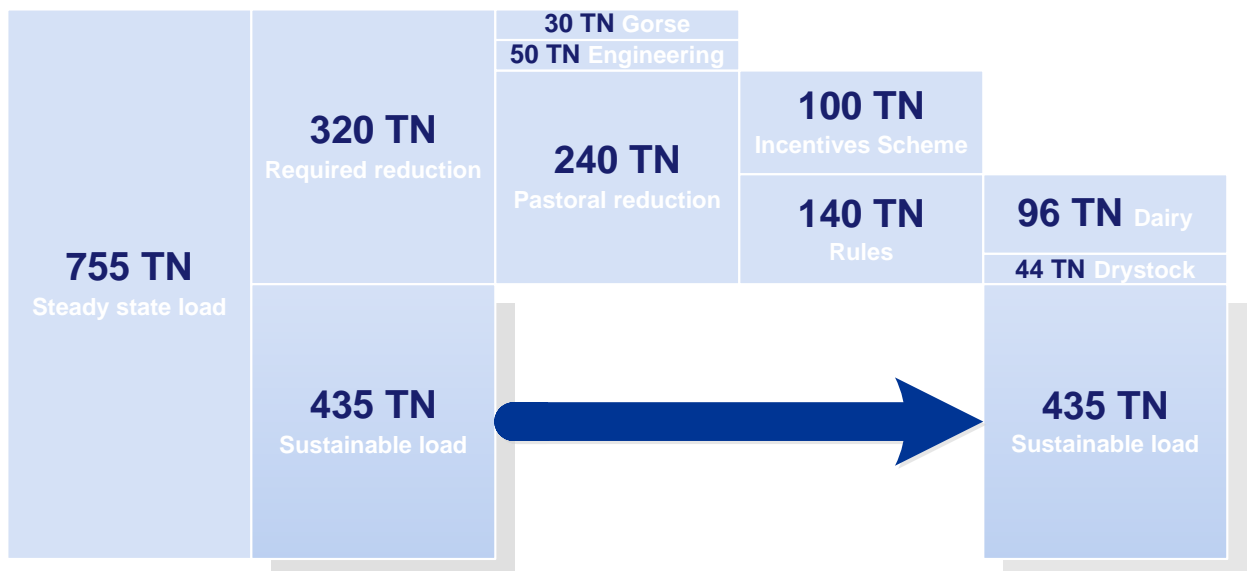
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Lake Rotorua

Background to solution

Lake Rotorua is the lake with the most extensive and complex work to remedy water quality within our programme. The city of Rotorua sits on the shores of the lake, along with a variety of pastoral and horticultural land uses. The lake has traditionally suffered from direct discharges of sewerage and significant land use change since the 1940's. The restoration of Lake Rotorua is challenging but is supported by a significant body of science and knowledge, dating back to the 1960's, about how activities in the catchment affect the lake. Today this understanding has enabled us to confidently take policy action to improve water quality in Lake Rotorua. Specifically the Bay of Plenty Regional Policy Statement sets a steady state target for nitrogen entering Lake Rotorua of 435 tonne annually by 2032. The current load to the lake is around 755 tonne.

The actions to achieve the 320 Tonne reduction in nitrogen entering Lake Rotorua annually, as required by the Regional Policy Statement, is known as the Integrated Framework + Engineering Solutions and has been adopted by the Rotorua Te Arawa Lakes Strategy Group after a significant stakeholder collaboration process known as the Lake Rotorua Stakeholder Advisory Group. The Integrated Framework + Engineering Solutions is outlined in the diagram below.



Lake Rotorua projects

The specific projects for the restoration of Lake Rotorua are outlined below. Included in the table is the required funding for each over the next three years, this is the total funding, each project will be 50% Crown funded and 50% Council funded. Most sewerage reticulation around the lake is now complete, although we estimate there are around 200 unconnected properties and Bay of Plenty Regional Council and Rotorua Lakes Council will work together to connect those properties over this Three Year Plan.

Project	Outcome	2018/2019 Budget \$000	2019/2020 Budget \$000	2020/2021 Budget \$000
Advice and Support Service	The Advice and Support Service assists landowners to make the reductions required by the Integrated Framework on their land. These may be reductions required by Plan Change 10 and/or the Lake Rotorua Incentives Scheme. The service pays Independent Land Use advisors with suitable skills and experience to develop Nutrient Management Plans. In some cases it also provides business advisory support to landowners who need to, or are interested in making, land use change or other significant change to reduce their nutrient footprint to the lake and may be eligible for the Incentives Scheme.	500	500	160
Low Nitrogen Land Use Fund	The Low Nitrogen Land Use Fund is aimed at investing in the trial and uptake of low nitrogen land uses in the Lake Rotorua Catchment. Round one of the fund was run in 2017 and is now complete, having invested in research and practical tools to assist landowners. The next steps for the fund have been approved by the Strategy Group and include extension of the information gathered in round one to the public, e.g. through field days etc. and then seeking for Expressions of Interest for trials of alternative land uses.	500	500	500
Gorse Conversion Scheme	Mature gorse fixes nitrogen and leaches it to land. This project funds the conversion of mature gorse land to trees (plantation or native) in the Lake Rotorua Catchment in exchange for an in-perpetuity encumbrance on the land. The aim of the project is to remove all mature gorse from the catchment.	221	221	396

Project	Outcome	2018/2019 Budget \$000	2019/2020 Budget \$000	2020/2021 Budget \$000
Tikitere Zeolite Plant	The construction of this plant is part of the engineering solutions. The plant will take water from a geothermal stream and remove the ammonia (including nitrogen) using zeolite, before discharging the water back to its natural flow. The budget includes detailed design and planning and then construction with the aim of having the plant operational in 2021, subject to cost and detailed design.	500	4,300	2,800
Lake Rotorua Incentives Scheme	The Lake Rotorua Incentives Scheme has a target of removing 100 tone of nitrogen entering the lake annually. It will do this by purchasing nitrogen from landowners below their Nitrogen Discharge Allowance set by Plan Change 10.	7,558	7,558	7,558
Remaining Sewerage Connections	Connection of properties in the catchment to sewerage reticulation is part of the engineering solutions. This work is largely complete but it is estimated that 200 properties remain unconnected. These remaining connections will be pursued.	180	495	175
Engineering Solutions	Investigate and pursue options to achieve the remaining nitrogen required to achieve a 50 tonne total engineering reduction. A paper will need to be presented to the Strategy Group outlining the options to secure the remaining target and then implementation of the preferred option/s will need to commence.	500	30	30
Phosphorous Locking (Alum dosing)	Phosphorous locking occurs using two alum dosing plants situated on the Utuhina and Puarenga streams which enter Lake Rotorua. These plants lock phosphorous into sediments entering the lake and are a short-term intervention aimed at maintaining water quality in Lake Rotorua at its target TLI of 4.2, until the effects of the Integrated Framework + engineering solutions are evident in lake water quality.	770	665	665

Rotorua Te Arawa Lakes Programme is a partnership between Bay of Plenty Regional Council, Rotorua Lakes Council and Te Arawa Lakes Trust with funding from Ministry for the Environment



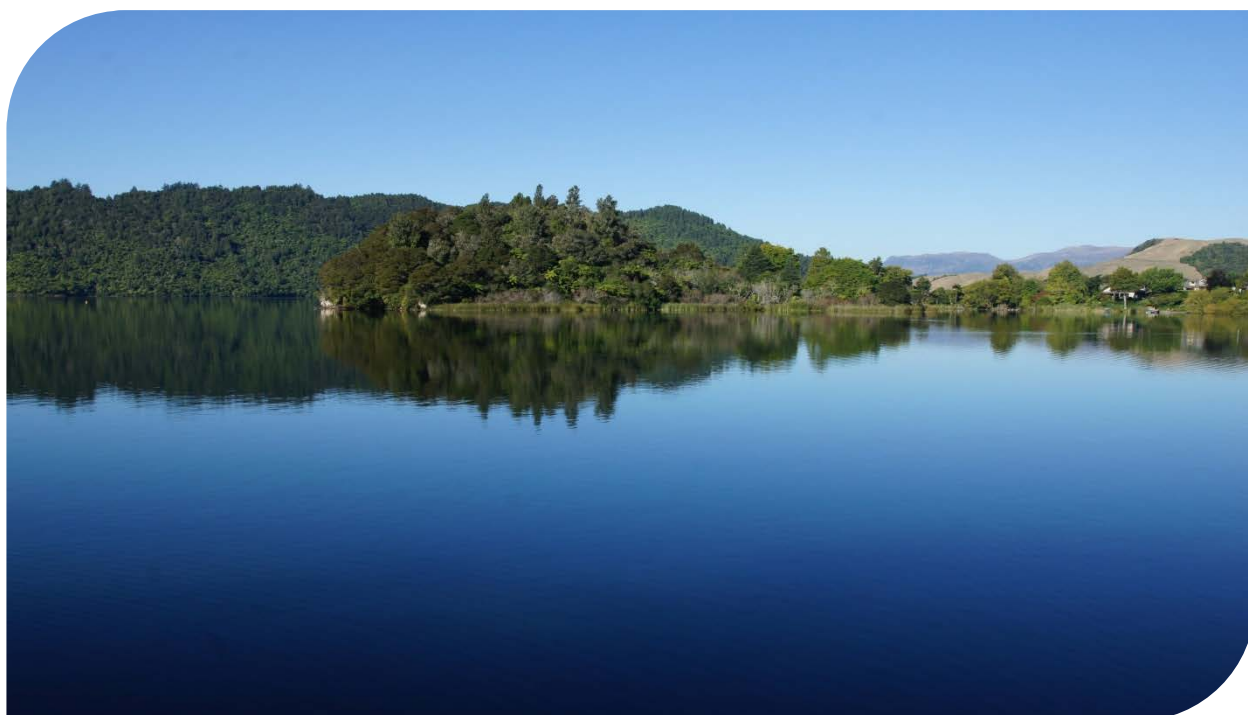
Project	Outcome	2018/2019 Budget \$000	2019/2020 Budget \$000	2020/2021 Budget \$000
Plan Change 10	This work is not Deed funded but is included here for completeness. Plan Change 10 sets limits on the loss of nitrogen from rural land on the Lake Rotorua Catchment and requires landowners to make reductions in their nitrogen loss, using sector averages to allocate nitrogen. The total nitrogen reduction to the lake that will be delivered by Plan Change 10 by 2032 is 140 tonne, less than 50% of the Integrated Framework + engineering solutions. Plan Change 10 is subject to Environment Court appeals and is currently in a Schedule One Environment Court process being directed by the Court.	Not Deed Funded	Not Deed Funded	Not Deed Funded

Lake Ōkāreka

Lake Ōkāreka has a very active community in lake wellbeing, including Lake Ōkāreka Landcare and the Lake Ōkāreka Community Association. Landcare Ōkāreka has a number of projects around the lake which enhance the amenity values of the lake and the catchment contribution to water quality.

All of the actions specified in the Lake Ōkāreka Action Plan are complete, including sewerage reticulation and land use change. However, in 2016 the Rotorua Te Arawa Lakes Strategy Group approved a further land use change project in the catchment as the Trophic Level Index of the lake had remained one or two points stubbornly above its TLI for a number of years subsequent to the changes. Staff are making good progress with this further land use change in the Lake Ōkāreka Catchment and auditing of compliance with Rule 11 Benchmarks in the catchment (Rule 11 requires no intensification of land use in the catchment from the 2001-2004 levels).

Project	Description	2018/2019 Budget \$000	2019/2020 Budget \$000	2020/2021 Budget \$000
Lake Ōkāreka Land Use Change	Incentivised land use change projects to encourage landowners in the catchment to convert areas of pastoral land to trees.	320	320	145



Lake Rotoiti

The main action for Lake Rotoiti was the construction of the Ōhau Diversion Wall. The wall diverts the flow from the Ōhau Channel/Lake Rotorua directly down the Kaituna River so it doesn't flow into Rotoiti, affecting the quality of that lake. This wall has been in place for over 10 years, and was recently granted a new consent for 35 years. Unfortunately corrosion has been identified in the wall, a maintenance plan is in place to manage that corrosion and ensure the integrity of the wall. Sewerage reticulation on part of Lake Rotoiti is also complete, however some remaining reticulation is required as detailed below.

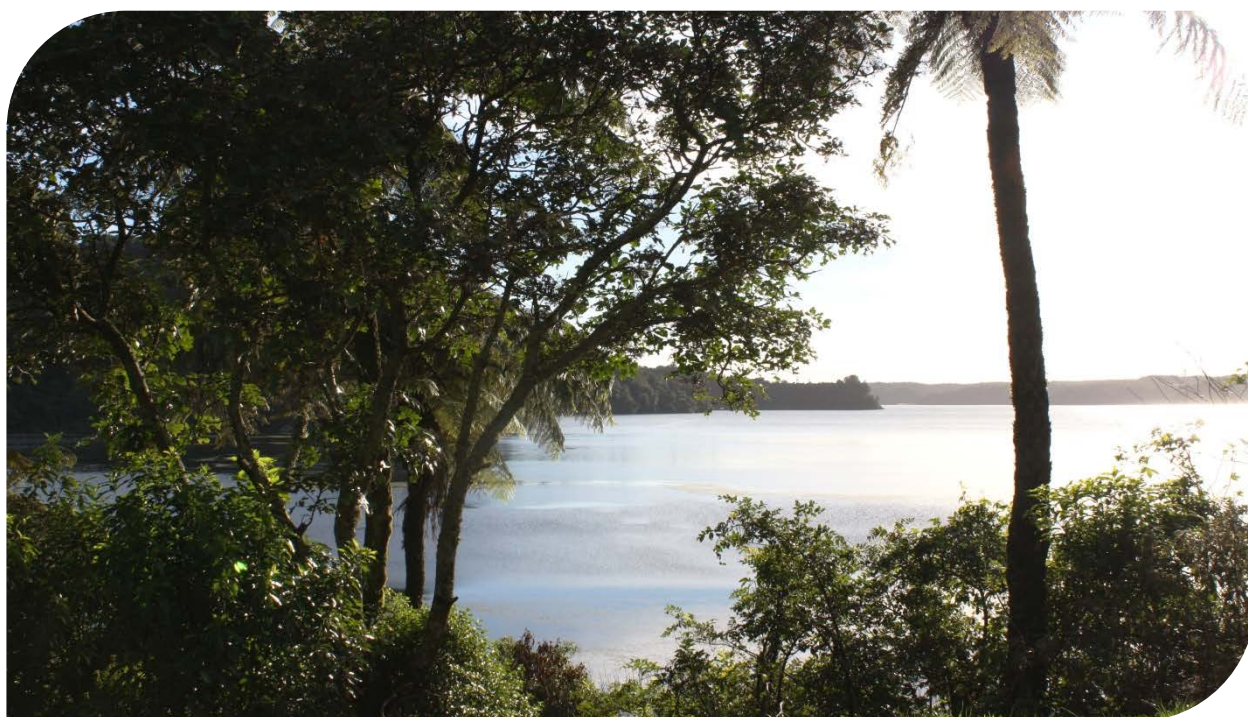
Project	Description	2018/2019 Budget \$000	2019/2020 Budget \$000	2020/2021 Budget \$000
Sewerage Scheme	Construction of a stand-alone wastewater treatment plant and land disposal system to service the remaining non-reticulated areas of Lake Rotoiti (Gisborne Point/ Hinehopu) and Lake Rotoma (not budgeted here).	11,445	6,045	45



Lake Rotoehu

Land Use Change in the Lake Rotoehu catchment is complete but it may take some time for the effects of that to be seen in the lake. Ongoing investigation is required at Lake Rotoehu as the lake still presents challenges to the Programme with seasonal algal blooms. There are two ongoing actions budgeted for Lake Rotoehu, weed harvesting and phosphorous locking. An additional possible action (not currently budgeted for) is sewerage reticulation in 2020/2021. This is still being discussed with the community.

Project	Description	2018/2019 Budget \$000	2019/2020 Budget \$000	2020/2021 Budget \$000
Weed Harvesting	Harvest in-lake weed as seasonally available.	50	50	50
Phosphorus Locking	Dose alum at Waitangi Stream for phosphorous locking. Phosphorous locking will continue as required to maintain that lake at its target TLI (3.9).	335	235	235



APPENDIX 2

DRAFT 2018 - 2019 Rotorua Te Arawa Lakes Programme Annual Work Plan



Annual Work Plan

2018/2019

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**Bay of Plenty Regional Council, Rotorua
Lakes Council and Te Arawa Lakes Trust.**

*Working as one to protect our lakes
with funding assistance from the
Ministry for the Environment.*

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Part 1:

Purpose

The purpose of the Annual Work Plan is to outline the interventions planned for the 2018/2019 financial year for the Rotorua Te Arawa Lakes Programme (the Programme). The Programme encompasses 12 Te Arawa lakes; four of these lakes are known as priority lakes and receive funding from the Ministry for the Environment, as per the Deed of Funding Agreement between the Crown, Bay of Plenty Regional Council and Rotorua Lakes Council.

Table 1 below is a list of Deed and non-Deed lakes and their respective Target Trophic Level Index (as set through the Bay of Plenty Regional Water and Land Plan).

Table 1 Deed and non-Deed Lakes Target Trophic Level Index (TLI).

Deed lakes	Non Deed lakes
Rotorua (Target TLI 4.2)	Tarawera (Target TLI 2.6)
Rotoiti (Target TLI 3.5)	Ōkaro (Target TLI 5.0)
Rotoehu (Target TLI 3.9)	Rerewhakaaitu (Target TLI 3.6)
Ōkāreka (Target TLI 3.0)	Rotomā (Target TLI 2.3)
	Rotokakahi (Target TLI 3.1)
	Ōkātina (Target TLI 2.6)
	Tikitapu (Target TLI 2.7)
	Rotomahana (Target TLI 3.9)

This report will be submitted to the Minister for the Environment for formal approval of the Deed funded interventions as required by the Deed of Funding Agreement. While the Minister only approves this annual plan in relation to the Deed funded lakes it covers the details of work on all lakes within the Programme, Deed and non-Deed funded, for completeness.

Part 2:

Overview

Overview

The Rotorua Te Arawa Lakes Programme (the Programme) is administered through a partnership between Te Arawa Lakes Trust (TALT), Rotorua Lakes Council (RLC) and Bay of Plenty Regional Council (BOPRC). The Programme is established to deliver the strategy for the lakes of the Rotorua District.

The Rotorua Te Arawa Lakes Programme works in an environment of evolving science and technology. The interventions planned in the Annual Work Plan and the estimated nutrient targets for those interventions can be subject to change. The Programme is adaptive to new information and ideas and has a comprehensive change management process in place to enable it to be responsive to these. What is proposed in this Annual Work Plan may change throughout the year in response to a variety of factors. These changes will be approved and documented, as required.

Lake Rotorua

The implementation of the approved integrated framework plus engineering solutions for reducing nitrogen input to Lake Rotorua remains the focus for the Programme until 2022. The integrated framework plus engineering solutions comprises long-term interventions for reducing the nitrogen entering Lake Rotorua. The aim of this water quality solution is to reduce the nitrogen input to Lake Rotorua to the sustainable load of 435 tonne, as required by the Bay of Plenty Regional Policy Statement. The current estimated load to the lake is 755 tonne, so the reduction required is 320 tonne.

The interventions of the integrated framework (planned to deliver a 270 tonne nitrogen reduction), include a change to the Regional Natural Resources Plan (Plan Change 10) which requires landowners to reduce and manage the nitrogen and phosphorous contribution of their activity to the catchment. It also includes the Lake Rotorua Gorse Conversion Project which pays for the conversion of mature gorse land to trees, and the Lake Rotorua Incentives Scheme which buys nitrogen from landowners below their nitrogen discharge allowance set by Plan Change 10.

Reduction of phosphorus input from the catchment is also necessary to achieve sustainable improvements in lake water quality and this is being achieved through the mechanisms in place within the Integrated Framework, e.g. land use change and identification of critical source areas and mitigation measures within the Nutrient Management Plan for each farming activity.

In terms of engineering solutions, the Tikitere Zeolite¹ Plant is currently scheduled for construction in 2020/2021. During the 2018/2019 financial year work will continue on site preparation and plant design. The Tikitere Zeolite Plant is expected to contribute an annual nitrogen reduction of between 20-25 tonne. Work will also occur during the financial year to determine other appropriate engineering solutions to deliver the 50 target for this intervention (sewerage reticulation has already been achieved).

Phosphorous locking continues as a short-term intervention for nutrient reduction in Lake Rotorua, in accordance with the dosing protocol. The protocol is reviewed by the Water Quality Technical Advisory Group as required. Phosphorous locking will continue until the long-term interventions to reduce nitrogen and phosphorous entering the lake (the Integrated Framework plus engineering solutions) are realised in the lake.

¹Zeolite minerals can be used to filter out nitrogen. The Zeolite Plant is proposed for a geothermal stream entering Lake Rotorua at Tikitere.

Because of the average age of groundwater in the catchment, this is likely to be decades. As such, during the financial year staff of the Programme will continue to prepare and submit resource consent applications to replace expiring consents for alum dosing, this includes community consultation and preparation of environmental and cultural effects assessments. Whether alum dosing continues on Lake Rotorua will depend on the outcome of these consent applications.

The aim for the Incentives Scheme will be to have another 20 tonne of in-lake nitrogen secured through agreements and have gorse management agreements in place with the New Zealand Transport Agency and the Department of Conservation to manage mature gorse in the Lake Rotorua Catchment on their land. It is also expected that several other gorse agreements could be signed.

Staff will continue to progress Plan Change 10 through the schedule one Environment Court process. It is also hoped that a final decision of the Environment Court will be forthcoming during the financial year with no appeals to higher Courts. The Advice and Support Service will continue its work, particularly around finalising the Nutrient Management Plans of those enrolled with it and assisting them to lodge their resource consent applications. The first consents under Plan Change 10 have been granted in the 2017/2018 financial year and for properties over 40 hectares consenting of properties this size will need to be completed in the 2018/2019 financial year. There are estimated 20-30 properties over 40 hectares not enrolled in the Advice and Support and staff will be working through those to make sure they meet their Plan Change 10 obligations during the year.

Given that properties under 40 hectares do not require resource consent until 2022, there is likely to be a lull in new sign ups to Advice and Support in the 2018/2019 financial year as it makes more sense for those properties to have their Nutrient Management Plan developed closer to the consent requirement deadline.

The 2018/2019 financial year will also be a key year for the Low Nitrogen Land Use Fund. Extension of information developed through the public funding round, to the public through workshops and information sharing is planned to occur into the start of this financial year. Once that extension is complete, based on the approvals received from the Strategy Group at their March 2018 meeting, staff will be proceeding to call for landowners to propose trials of low nitrogen land uses in the Lake Rotorua Catchment.

A critical project for all lakes, but particularly Lake Rotorua, is the establishment of the Nutrient Discharge Management System which is a database for tracking nitrogen discharge allowances, nitrogen loss, incentives agreements and nutrient trading across all properties in the lakes catchments. Phase one of this is now complete and running. Phase two which includes enhancements will progress in 2018/2019.

Lake Rotoehu

Lake Rotoehu water quality has recently declined and it is challenging to establish why. A number of long-term and short-term interventions have been completed as agreed in the Lake Action Plan. All land use and land management change through nutrient agreements with landowners are now complete. It will take some time for these changes in land use to result in better water quality reaching the lake as there is a lag time due to the time of travel through ground water.

Over the past two to three years the lake appears to have become more dominated by algal growth and weed growth has declined. This has limited our ability to remove lake nutrients by weed harvesting, which in the past had been highly successful in removing nutrients. Staff will continue to monitor weed growth in the lake. It is likely that a recent shift to algal dominance is affecting the water quality by reducing light penetration. Depending on weed availability during the late summer period of 2018/2019, staff will run the harvester to target hornwort in the lake.

Staff will continue to work with the Lake Water Quality Technical Advisory Group on possible causes and solutions for the problems faced at Lake Rotoehu. This will include a specific workshop with scientists to attempt to identify why the lake recovery has been disrupted and whether adjustments to some of our actions can reinstate the recovery that was apparent about three years ago.

An additional possible action at Lake Rotoehu is sewerage reticulation (not currently budgeted or identified as a key action in the Lake Rotoehu Action Plan). The initial scoping and consultation has been completed and it may be that Lake Rotoehu will plug into the system currently being constructed for the Lake Rotoma and Hinehopu/Gisborne Point.

Lake Rotoiti

All actions on Lake Rotoiti are largely complete, including the Ohau diversion wall (re-consented in 2017 for a further 35 years) and lakeside sewerage reticulation. The only outstanding action on Lake Rotoiti is reticulation at Hinehopu and Gisborne Point, construction of a standalone wastewater treatment plant, disposal and reticulation to these is currently underway. Management of a corrosion issue on the Ohau wall includes installation of new structural components this financial year.

The main challenge for Rotoiti is the recent explosion in the numbers of juvenile catfish caught across the lake, including in the Ohau channel over the 2017/2018 summer. The University of Waikato have been asked to advise us what the potential effects of this catfish incursion on this and other lakes is in terms of lake water quality. Other interventions are planned for catfish management across the lakes, including co-ordination of volunteers to catch catfish, and an intensive communications programme to raise awareness about catfish and how to prevent spread over the summer months, scientific research and interventions into reducing numbers of catfish on Rotoiti and preventing their spread.

The Ohau wall and the sewerage schemes will continue to deliver the necessary nutrient reductions for this lake. During 2016/2017 a new consent for the Ohau wall was approved. Corrosion of the Ohau wall has been identified and a structural management plan has been developed to assist the wall to meet its design life.

Lake Okareka

In 2016 it was agreed by the Rotorua Te Arawa Lakes Strategy Group that further interventions, land use change, would be needed for Lake Ōkāreka. Funding was agreed to achieve this. Previously land use change and sewerage reticulation specified in the action plan for the lake had been completed but the target TLI has stubbornly remained slightly above its target TLI.

Benchmark audits of all properties with a benchmark in the Lake Okareka Catchment are nearly complete and significant further land use change has been negotiated with one landowner. This land use change will need to be paid for largely in the 2018/2019 financial year. Staff will continue to seek further land use change in the catchment during this financial year.

Water quality trends and TLI



Part 2:

Priorities for 2018/2019

Lake operations

- Continue Lake Rotoehu weed harvesting.
- **Continue phosphorous locking at Lakes Rotoehu and Rotorua.**
- **Continue to pursue resource consents, complete engineering design and review cost and nutrient removal feasibility of Tikitere Zeolite Plant in time for scheduled 2019/2020 construction.**
- **Investigate further engineering solutions to achieve the remaining portion of 50 T N.**
- Undertake mitigation works as agreed through the resource consent for the Ohau wall.
- **Re-apply for consent to continue phosphorous locking for Lakes Rotorua and Rotoehu.**
- Responsive weed management as required for amenity purposes across all lakes.
- Continue work to refine the function of the trout barrier at Hamurana Springs.
- Manage the corrosion of the Ohau wall as per the Structural Management Plan.
- Manage the Ohau wall as per the resource consent.
- Continue to monitor impacts from forest harvesting on groundwater at Lake Rotomā.
- Complete catchment and lake modelling work with the University of Waikato for Lake Tarawera to confirm nutrient targets.
- Continue koura monitoring programme on all 12 lakes.
- Install monitoring buoys in Lakes Rotoiti and Okareka. Re-consider management regime for monitoring buoys with the University of Waikato.
- Continue catfish surveillance and potential management.

<p>Land management</p>	<ul style="list-style-type: none"> • Continue to implement the Lake Rotorua Gorse Programme, including signing new agreements and implementing existing ones. • Seek expressions of interest for low nitrogen land use trials in the Lake Rotorua Catchment. Commence trials on three properties. Continue addressing gaps in research for housing and tourism opportunities in the catchment. • Continue to implement the Lake Rotorua Incentives Scheme, including signing up new agreements and implementing existing ones. The nitrogen target for the 2018/2019 financial year is 20 tonne of nitrogen. • Continue to implement the Advice and Support Service for landowners affected by Plan Change 10. • Progress further land use change in Lake Okareka Land Use Project to reduce nutrient loss in the catchment and continue to implement existing agreements. • Continue Tarawera Catchment acacia control in on land adjacent to Isthmus Track. Follow up work to be undertaken at 2015 control site. • Continue to support the farming community to implement farm management plans that concentrate on good management practices in Lakes Rerewhakaaitu, Rotokakahi, Rotomahana and Tarawera catchments.
<p>Policy, planning, communications and IT</p>	<ul style="list-style-type: none"> • Continue schedule one Resource Management Act (1991) process for Lake Rotorua Nutrient Management rules (Plan Change 10) being made operative. • Continue to support the Water Management Area work to consider no-intensification rules for land use in those lake catchments which are not currently covered by Rule 11, e.g. Tarawera. • Continue to embed Te Arawa Values Framework within the Programme, as was adopted by the Programme Strategy Group in October 2015. • Continue implementation of a revised Communications Plan for the Programme. • Progress Phase Two of the Nutrient Discharge Management System which will enable automated nutrient management across all lake catchments. • Complete cultural mapping for all lakes, as required by the resource consent process for existing lake structures across all lakes, e.g. jetties and boat ramps. • Assist Te Arawa Lakes Trust to establish an Iwi Engagement Forum for lakes matters.
<p>Sewerage</p>	<ul style="list-style-type: none"> • Commence a project to connect the remaining un-connected properties in the Lake Rotorua Catchment to sewerage reticulation. • Complete construction of the Rotomā/Rotoiti wastewater treatment plant, land disposal system and reticulation. • Continue community engagement at Rotoehu in relation to sewerage with the aim of agreeing a preferred option. • Assist the community to decide whether sewerage reticulation is a feasible response to declining water quality on Lake Tarawera.

Catfish response

- Implement our comprehensive communications plan to create awareness of the presence of catfish and help prevent their spread.
- Commence the use of pheromone bait in fyke nets.
- Commence the use of eDNA techniques which can establish whether catfish are present in a waterbody more efficiently than netting.
- Investigate the use of electric barriers to prevent the migration of catfish, e.g. through the Ohau Channel/Weir.
- Consider the introduction of long-finn eels and brown trout to predate juvenile catfish. This will require careful consideration and consultation due to potential further adverse effects on native species, e.g. koura.
- Establish a programme to co-ordinate volunteers in the catfish incursion response.
- Continue electric fishing and fyke netting in Lake Rotoiti but particularly the Ohau Channel.

***Deed funded activities are shown in bold.**

Assumptions

Several assumptions have been made in compiling the Annual Work Plan for 2018/2019, these include:

- Interventions planned for 2018/2019 are completed as per any approved change requests.
- That change to legislative or resource consent requirements do not negatively affect the impacts, outcomes or continuation of the various interventions.
- The Programme works on the philosophy of being adaptive to new and changing science, and this Annual Work Plan is prepared on the basis that the interventions will evolve to match the latest scientific knowledge. Application of reserve funding.

The Chief Financial Officers (CFO) Forum² monitors the financial status of the programme quarterly and the application of any reserve funding being held.

Both councils hold reserve funding which has been paid by the Crown for interventions approved in previous annual work plans. The reserve funds will be used (up to an agreed amount) before further drawdowns are undertaken.

The 2017/2018 year end reserve forecast balance as reported to the Chief Financial Officers (CFO) Forum May 2018 is the:

- Bay of Plenty Regional Council is \$718,000.
- Rotorua Lakes Council is \$2,852 million.

² The CFO Forum comprises:

- CFO, Management Accountant and Programme Manager, Bay of Plenty Regional Council.
- CFO and Programme Leaders, Ministry for Environment.
- CFO and Financial Officer, Rotorua Lakes Council.

Part 3:

Annual plan of interventions Deed funded lakes

Lake Rotorua

To meet community expectations for water quality in Lake Rotorua, nitrogen inputs must not exceed 435 tonne annually, as set in the Bay of Plenty Regional Policy Statement. To achieve water quality targets for Lake Rotorua the Programme is undertaking both short-term and long-term interventions. Short-term interventions (e.g. phosphorous locking) have resulted in Lake Rotorua reaching its water quality objective in the past. However, the lake will decline again if alum dosing is not carried out annually. The solution to sustainable improvements is long-term reduction of nutrients entering the lake, this is planned to be achieved through the Integrated Framework and Engineering Solutions.

Completed and planned activities – Lake Rotorua

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Lake Rotorua Gorse Conversion Project	Yes	365.5 ha	127.9 ha 0.82 T N	150 ha	200 ha	<p>The Lake Rotorua Gorse Conversion Project (the Project) is part of the Integrated Framework for land use change in the Lake Rotorua Catchment.</p> <p>Originally the project was aimed at contributing 30 Tonne of nitrogen reduction to Lake Rotorua by paying for the conversion of mature gorse land to trees (native or production forest). Our understanding of gorse coverage in the catchment is better now and the gorse problem isn't as big as we first estimated.</p> <p>There are approximately X ha of mature gorse to remove in the catchment which will generate approximately X nitrogen gain given the estimated density of coverage on those areas.</p> <p>When a gorse conversion agreement is entered in to with the landowner the gorse conversion (including gorse control and planting) generally occurs over a period of 18 months. The Programme pays the cost of this conversion as the work is undertaken over this period; in return a Deed is registered on the land ensuring that it remains in trees in perpetuity.</p>	The cumulative total hectares conversion target for 2018/2019 financial year is 200 hectares.	\$221

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Rotorua Wastewater Treatment Plant – Alternative Disposal Site	No	N/A	N/A	N/A	N/A	A Deed of understanding has been signed between RLC and CNI Iwi Holdings Ltd (landowner of Whakarewarewa Forest). It states that the discharge of treated effluent from the Rotorua Wastewater Treatment Plant in to the Whakarewarewa Forest must be discontinued by December 2019. This means an alternative to the forest disposal needs to be found. A preferred option for discharge was selected by the Steering Committee for the project and has been adopted by the Rotorua Lakes Council. This project will not deliver a net nutrient benefit to the lake but it will ensure that the benefits delivered by the existing plant, in terms of nutrient benefit to the lake, continue to be realised.	The focus for 2018/2019 on this project will be the approval of a resource consent application for the preferred alternative. Tenders for the design, build and operation of the plant upgrade will also be progressed. There is currently no Deed funding applied to this project as it does not have a specified nutrient benefit.	\$0
Connection of Currently Un-reticulated Programme	Yes	TBA	TBA	TBA	TBA	There are 200 remaining properties in the Lake Rotorua Catchment which need to be connected to the reticulation system available in the area. In-particular at Brunswick Park (around 70 connections). When the reticulation system was constructed in the early years of the Programme the scheme was only taken to the boundary of these lifestyle blocks. Funds are now available to make the connections of the individual properties to the scheme, but also connection of all other properties in the catchment or are not connected and could feasibly be and staff will work on these.	Complete connections at Brunswick Park. Engage with all properties in the catchment not currently connected to wastewater reticulation who can be and make connections. The number and type of connections will determine nutrient benefit.	\$180

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Completed Lake Rotorua Reticulation	Yes	9.74 T N 0.3 T P	9.74 T N 0.3 T P	4.87 T N 0.15 T P	9.74 T N 0.3 T P	This represents completed sewerage reticulation in the Lake Rotorua Catchment. This work is completed and no further funds will be spent. However, annual nitrogen gains continue to be realised by completed reticulation.	No works required in 2018/2019.	\$0
Incentives	Yes	100 T N	19.2 T N	25 T N	35 T N	The Lake Rotorua Incentives Scheme (Incentives Scheme) is part of the Integrated Framework for land use change in the Lake Rotorua Catchment, aimed at reducing nitrogen entering the lake. The Incentives Scheme will contribute 100 tonne of nitrogen reduction to Lake Rotorua by purchasing from landowners nitrogen below their Nitrogen Discharge Allowance (as set by Proposed Plan Change 10 – refer below). To provide governance leadership to the Incentives Scheme, the Lake Rotorua Incentives Committee was re-established following the 2016 Local Authority Elections. The Incentives Scheme has a \$40 million budget over its 7 year lifespan (until 2022) to make this 100 tonne reduction.	Progress further agreements with landowners in the Lake Rotorua Catchment to achieve a cumulative reduction of 35 tonne of nitrogen by year end. Implement existing agreements.	\$7,558

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Tikitere Zeolite Plant	Yes	20-25 T N	N/A	N/A	N/A	<p>The proposed Tikitere Zeolite Plant forms part of the Programme's commitment to reducing nitrogen input to Lake Rotorua by 50 tonne through engineering solutions. These engineering solutions sit alongside the Integrated Framework to deliver the sustainable nitrogen load to Lake Rotorua as set in the Bay of Plenty Regional Policy Statement (435 tonne).</p> <p>The proposed Tikitere Zeolite Plant will require a large capital investment in plant to filter ammonia from a geothermal stream entering Lake Rotorua and replace it back in the stream. It is estimated that this intervention will deliver an approximate 20-25 tonne reduction of nitrogen to the lake, provided it continues to be operated annually.</p>	Continue to pursue resource consents, complete engineering design and review cost and nutrient removal feasibility of Tikitere Zeolite Plant in time for scheduled 2019/2020 construction. A further decision from Strategy Group will be required during the financial year to make a final decision on whether to proceed with the plant based on final cost estimates.	\$500
Further Engineering Solutions	Yes	15 T N 0 T P	N/A	N/A	N/A	Investigations of options (and their feasibility) to achieve the remaining 15 T N not covered by Tikitere and sewerage reticulation.	Investigations include watercress harvest and wetland treatment amongst other options.	\$500
Landowner decision-making support	Yes	N/A	N/A	N/A	N/A	Landowner support refers to assisting landowners to make land use and land management change decisions so they can meet their requirements set through Plan Change 10, but also participate in the Lake Rotorua Incentives Scheme if they desire.	Advice and Support Service: The target for this financial year is that all properties over 40 ha in the Lake Rotorua Catchment will either be enrolled in the Advice and Support Service, consented or in a compliance process.	Advice and Support \$500 Low Nitrogen Land Use Fund \$500

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
						<p>The programme offers assistance in two ways:</p> <ol style="list-style-type: none"> 1 Advice and Support Service (\$2.2 million): The Advice and Support Service pays independent advisors to develop Nutrient Management Plans and provide business support to landowners affected by Plan Change 10. This service assists landowners to understand how they can meet their nitrogen discharge allowance set by Plan Change 10 or how they can reduce their nitrogen footprint to enable them to sell to the Incentives Scheme. Uptake of this service by landowners is voluntary. 2 Low Nitrogen Land Use Fund: For this financial year this fund is aimed at investing in the trial and uptake of low nitrogen land uses in the Lake Rotorua Catchment. To achieve this, expressions of interest for trials of low nitrogen land uses will be called for. 	<p>Low Nitrogen Land Use Fund:</p> <ol style="list-style-type: none"> 1 Call for expressions of interest for trials. 2 Commence trials on three properties. 3 Continue to address gaps in research for housing and tourism. 	
Phosphorous Locking (Utuhina and Puarenga)	Yes	N/A	N/A	As required	As required	The Programme operates two alum dosing plants on streams entering Lake Rotorua. These plants lock phosphorous into sediments entering the lake. This is a short-term intervention aimed at maintaining water quality in Lake Rotorua until land use change takes effect.	The Programme will continue to monitor in-lake phosphorus and adjust the dosing of alum according to the Programme's protocol. That means that the phosphorous targets for this intervention are not fixed, phosphorous locking will continue as required to maintain the lake at its target TLI (4.2), as far as possible.	\$665

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Regional Natural Resources Plan – Plan Change	No	140 T N	0.0 T N	0.0 T N	0.0 T N	<p>Plan Change 10 to the Regional Natural Resources Plan requires landowners to reduce the nitrogen contribution of their land use activity to the Lake Rotorua catchment to reach a Nitrogen Discharge Allowance within.</p> <p>This Plan Change now has legal effect and is being implemented, but is still subject to Environment Court appeals.</p>	<p>The work on the Plan Change this financial year will include:</p> <ol style="list-style-type: none"> 1 Concluding the Schedule One Environment Court process. 2 Implementing the Plan Change as required including establishing resource consents for all properties over 40 hectares and permitted activity compliance monitoring. 3 Continue work on the Science Review as required by the Plan Change. 	\$0
Nutrient Agreements (not Incentives Scheme)	No	N/A	3.9 T N 0.07 T P	1.95 T N 0.03 T P	3.9 T N 0.07 T P	<p>This represents completed and existing nutrient agreements in the Lake Rotorua Catchment. These agreements are completed and no further funds will be spent. However, annual nutrient gains continue to be realised by completed agreements and ongoing monitoring of the agreements is required to ensure the nutrient reductions continue to be realised.</p>	<p>Existing nutrient agreements will continue to be monitored. Figures shown here are reductions at root zone, i.e. nutrient loss of the land use activity as measured at the root zone by Overseer®.</p>	\$0

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Re-consenting of Phosphorous Locking on Lakes Rotorua and Rotoehu	Yes	N/A	N/A	N/A	N/A	Resource consents for alum dosing expire in 2018 and 2019. This project is to progress re-consenting of this activity to continue alum dosing on Lakes Rotorua and Rotoehu until land use change in both catchments impacts water quality.	The application has been accepted by the Regional Council Consents Team. Further work may be necessary during 2018/2019 if the consent is notified and submissions made. At this stage the outcome of the consent process and the information required has uncertainties.	205
Total Deed Funding Required - Lake Rotorua								\$10,829,000
Total non-Deed Funding Required – Lake Rotorua								\$0

Key: T = Tonne
N = Nitrogen
P = Phosphorous

Lake Rotoehu

To meet community expectations for water quality in Lake Rotoehu a reduction of 8.8 tonne of nitrogen and 708 kilograms of phosphorus is required per year. Short-term interventions (phosphorous locking and weed harvesting) continue as required, but as the lake has shown a decline in health, other actions will be needed. As mentioned above, a workshop with the Programme's science advisors is planned to determine this. Community consultation in relation to potential sewerage reticulation will progress in 2018/2019.

Completed and planned activities – Lake Rotoehu

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Land Use and Land Management Change	Yes	6.6 T N 0.46 T Root Zone	8.45 T N 0.8 T P Root Zone	4.22 T N 0.4 T P Root Zone	8.45 T N 0.8 T P Root Zone	This represents completed and existing land use and land management change agreements in the Lake Rotoehu Catchment. These agreements are completed and no further funds will be spent. However, annual nutrient gains continue to be realised by completed agreements and ongoing monitoring of the agreements is required to ensure the nutrient reductions continue to be realised.	Existing nutrient agreements will continue to be monitored. Figures shown here are reductions at root zone, i.e. nutrient loss of the land use activity as measured at the root zone by Overseer®.	\$0
Weed Harvesting	Yes	N/A	N/A	N/A	N/A	The Programme purchased a weed harvester 'Chopper' in 2014. Its main purpose is to harvest hornwort from Lake Rotoehu as a short-term intervention. The weed harvester is also used in other lakes for amenity weed control. Weed is harvested from the lake and transported out of the catchment for composting. The harvesting is generally undertaken at the peak of the weed season, over March and April.	The weed harvester will continue to operate in 2018/2019 on Lake Rotoehu to remove accessible weed. Whether it operates and how long it operates is dependent on weed availability in that season.	\$50

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Phosphorous Locking	Yes	As required	N/A	As required	As required	The Programme operates an alum dosing plant on Lake Rotoehu which locks phosphorous into sediments entering the lake. This is also a short-term intervention to maintain water quality in the lake until the land use and land management change agreements take effect in the long term. Re-consenting is also required for alum dosing on Lake Rotoehu during the financial year as the current consent for this is expiring. This is detailed with above with Lake Rotorua.	Staff will continue to monitor in-lake phosphorus and adjust the dosing of alum in line with the Programme's protocol. This means that the phosphorous targets for this intervention are not fixed, and phosphorous locking will continue as required to maintain the lake at its target TLI (3.9), as closely as possible. Staff will also investigate ways to improve dosing effectiveness.	\$235
Rotoehu Sewerage Reticulation	No	N/A	N/A	N/A	N/A	There is community interest in connecting properties in the Lake Rotoehu Catchment to sewerage reticulation.	Community engagement to be undertaken during the year. The engagement will involve development of options with the community to a point where a preferred option is decided upon.	\$0
Total Deed Funding Required - Lake Rotoehu								\$285
Total non-Deed Funding Required – Lake Rotoehu								\$0

Lake Rotoiti

To meet community expectations for water quality Lake Rotoiti needs a reduction of 130 tonne of nitrogen and 19 tonne of phosphorus. The Ohau diversion wall which has been in place since 2008 is improving water quality by diverting Lake Rotorua nutrients from Lake Rotoiti while nutrient reductions into Lake Rotorua are achieved.

The action that remains on Lake Rotoiti is further reticulation of Hinehopu and Gisborne Point. These areas will connect into the new treatment and land disposal system being developed for them and Lake Rotoma. The total cost of the new Rotomā/Rotoiti Wastewater Treatment Plant and Land Disposal System and the related reticulation is expected to be \$34.24 million. There is a funding subsidy of \$4.46 million from the Ministry of Health which can be applied to the Lake Rotoma portion only.

Completed & Planned Activities – Lake Rotoiti

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Sewerage Scheme Curtis Road to Hinehopu	Yes	4.9 T N 1.1 T P	0.0 T N 0.0 T P	0.0 T N 0.0 T P	0.0 T N 0.0 T P	<p>This scheme represents the final reticulation required for the Lake Rotoiti Catchment. This scheme is combined with reticulation of Lake Rotomā and Ministry of Health Funding applies to the Lake Rotomā portion of the scheme.</p> <p>This scheme will see the development of a stand-alone wastewater treatment plant and land disposal system.</p>	<p>In 2018/2019 construction of the Rotomā/Rotoiti Waste Water Treatment Plant and Land Disposal System, and Rotomā sewerage reticulation will continue.</p> <p>The work is due to be completed in 2020.</p>	\$11,445
Ohau Diversion Wall	No	150 T N 15 T P	N/A	75 T N 7.5 T P	150 T N 15 T P	<p>The Ohau Wall was constructed in 2008 and prevents the flow of water from Lake Rotorua into Lake Rotoiti.</p> <p>The wall has recently been granted resource consent for another 35 years. Corrosion of the wall needs to be managed to ensure this lifespan and a plan is in place to deliver this.</p>	<p>Corrosion of the Ohau wall has been identified and a structural management plan has been developed to assist the wall to meet its expected design life. The key outputs of the management plan include 3-yearly condition inspections and installation of structural components in 2018/2019. The condition monitoring will determine the most effective asset maintenance option to meet the design life requirement for the wall.</p>	\$0
Completed Reticulation	Yes	5.9 T N 0.21 T P	5.9 T N 0.21 T P	2.95 T N 0.10 T P	5.9 T N 0.21 T P	<p>This represents completed sewerage reticulation in the Lake Rotoiti Catchment. This work is completed and no further funds will be spent. However, annual nutrient gains will continue to be realised by completed reticulation.</p>	<p>No works required in 2018/2019.</p>	\$0

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Install Monitoring Buoy	No	N/A	N/A	N/A	N/A	Monitoring buoy to be installed in Lake Rotoiti to provide ongoing monitoring of lake water quality and support the University of Waikato modelling programme for our lakes.	Install buoy and commence monitoring	\$36 (non-Deed)
Total Deed Funding Required - Lake Rotoiti								\$11,445,000
Total non-Deed Funding Required – Lake Rotoiti								\$36

Lake Ōkāreka

Lake Okareka has remained stubbornly slightly above its target TLI despite all the actions in the action plan being completed, land use change and sewerage reticulation. To respond to this, in 2016 the Rotorua Te Arawa Lakes Strategy Group approved a further land use change project to try to achieve further improvements in water quality and this will be the focus for the 2018/2019 financial year.

Completed and planned activities – Lake Okareka

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Further land use Change Project	Yes		N/A	50 hectares secured	100 hectares secured	Incentivised land use change project to encourage landowners in the catchment to convert areas of pastoral land to trees.	Working with land owners to secure at total of 100 further hectares of land use change.	\$320
Install monitoring Buoy	No	N/A	N/A	N/A	N/A	Monitoring buoy to be installed in Lake Okareka to provide ongoing monitoring of lake water quality and support the University of Waikato modelling programme for our lakes.	Install buoy and commence monitoring.	\$36 (non-Deed)

Project	Deed funded	At lake target	Total achieved as at writing AWP	6 month cumulative target this AWP	12 month cumulative target this AWP	Description	Deliverables	Budget \$000
Lake Okareka Stream works	No	N/A	N/A	N/A	N/A	Erosion protection works are required on the Waitangi Stream to protect assets from erosion of that stream.	<ol style="list-style-type: none"> 1 Complete consenting associated with emergency and ongoing flow management. 2 Install erosion protection on Waitangi Stream. 3 Manage lake levels and flow at outlet to protect assets. 	\$150 (non-Deed)
Sewerage Scheme	Yes	1.9 T N 0.02T P	1.9 T N 0.02T P	0.95 T N 0.01T P	1.9 T N 0.02T P	All sewerage reticulation in this catchment is complete. Reductions continue to be realised year-on-year.	Complete	\$0
Previous land Use change	Yes	1.18 T N 0.22 T P	1.1 T N 0.22 T P	0.59 T N 0.11 T P	1.18 T N 0.22 T P	This represents completed and existing nutrient agreements in the Lake Ōkāreka Catchment. These agreements are completed and no further funds will be spent. However, annual nitrogen gains continue to be realised by completed agreements, and ongoing monitoring of the agreements is required to ensure the nutrient reductions continue to be realised.	Complete	\$0
Total Deed Funding Required – Lake Ōkāreka								\$320,000
Total non-Deed Funding Required								\$186

*Note: targets to be confirmed by University of Waikato modelling work.

Part 4:

Annual Plan of Interventions – non Deed funded

Although the focus for the 2018/2019 financial year is implementing the Integrated Framework for Lake Rotorua and the ongoing work on other Deed funded lakes outlined above, work continues on the non-Deed lakes to protect and enhance their water quality, in-particular the Tarawera catchments.

Planned activities

Lake Tarawera

The Tarawera Lakes Restoration Plan was adopted in 2015 by the Rotorua Te Arawa Lakes Strategy Group and forms the basis for actions on this lake, as outlined in the table below. In addition Te Arawa Lakes Trust has asked to lead the implementation of a collective impact model on this lake catchment to engage the community in the response to the declining water quality in this lake. There is support from staff of the partner organisations for Te Arawa Lakes Trust to progress the first steps on this over the 2018/2019 financial year.

Also of note is that this lake is not currently protected by Rule 13 of the Regional Natural Resources Plan. However, upcoming plan changes through the regional council's water management areas are intended to consider this. Modelling currently underway will confirm the nutrient targets for this lake but currently the lake is considered to require a reduction of 12 tonne of nitrogen and 1.2 tonne of phosphorus in order meet its target Trophic Level Index.

³ Rule 11 of the Regional Land and Water Plan applies to Lakes Ōkāreka, Rotoehu, Ōkaro, and Rotoiti and caps the amount of nutrient discharge from properties in the catchment.

Project	Background	Deliverables	Responsibility
Tarawera Lakes Restoration Plan	The Tarawera Lakes Restoration Plan was approved November 2015.	Continue implementation of agreed actions from the Tarawera Lakes Restoration Plan during 2018/2019.	Bay of Plenty Regional Council.
Sewerage Reticulation	The Tarawera Sewerage Steering Committee is a stakeholder committed formed to drive sewerage reticulation at Lake Tarawera. They have secured \$6.5 million of funding from the government's Freshwater Improvement Fund and is seeking funding from both the Bay of Plenty Regional Council and Rotorua Lakes Council for the scheme.	Assist the community to decide whether sewerage reticulation is a feasible response to declining water quality on Lake Tarawera and support them to deliver the project.	Rotorua Lakes Council.
Tarawera cultural health assessment	A cultural health assessment has been identified as an action within the Tarawera Lakes Restoration Plan.	Carry out a cultural health assessment of the Tarawera system.	Te Arawa Lakes Trust, funded by Bay of Plenty Regional Council.
Acacia Control	The Acacia control project has been running for the past three years. Control is undertaken between May and September.	Acacia control is planned for winter and early spring adjacent to the Isthmus Track. This will be follow up work within the 199 hectare 2015 control area.	Bay of Plenty Regional Council.
Farm Environment Plans – Inner and Outer Tarawera Catchments	With the adoption of the Tarawera Restoration Plan, the Lake Rerewhakaaitu Farmers' Group agreed to lead the development of Farm Environment Plans for the inner and outer Catchments of Lake Tarawera, on a voluntary participation basis. This project is nearly complete in terms of the development of these plans, with Fonterra having developed plans for all willing dairy farms and Perrin Ag having been contracted to prepare them for willing drystock farm. The project will also enable the nutrient reductions achieved by landowners to be confirmed, not on an individual basis but by aggregating data.	Finalise development of Farm Environment Plans for all willing landowners. Support implementation of those plans through continued liaison with the Lake Rerewhakaaitu Farmers' Group and individuals.	Bay of Plenty Regional Council with support from Lake Rerewhakaaitu Incorporated Society and Fonterra.
Nutrient Modelling	An updated nutrient model for the greater Tarawera Catchment is nearly completed.	Finalise and present catchment modelling for the Tarawera Catchment.	University of Waikato, funded by Bay of Plenty Regional Council.

Lake Ōkaro

Water quality in Lake Okaro has fluctuated over the last 10 years but has remained under its target TLI of 5.0. The lake reached its target TLI in 2010, 2014, 2015, 2016 and 2017. The target of 5.0 is still classified as a super trophic lake and as such algal blooms are likely to be a regular annual feature.

Project	Background	Deliverables	Responsibility
Farm Environment Plans	<p>With the adoption of the Tarawera Restoration Plan, the Lake Rerewhakaaitu Farmers' Group agreed to lead the development of Farm Environment Plans for the inner and outer Catchments of Lake Tarawera, on a voluntary participation basis. This project is nearly complete in terms of the development of these plans, with Fonterra having developed plans for all willing Dairy Farms and Perrin Ag having been contract to prepare them for willing drystock farm. The project will also enable the nutrient reductions achieved by landowners to be confirmed, not on an individual basis but by aggregating data.</p>	<p>Finalise development of Farm Environment Plans for all willing landowners. Support implementation of those plans through continued liaison with the Lake Rerewhakaaitu Farmers' Group and individuals.</p>	<p>Bay of Plenty Regional Council with support from Lake Rerewhakaaitu Incorporated Society and Fonterra.</p>

Lake Rerewhakaaitu

The Lake Rerewhakaaitu Incorporated Society is an active farmer group focused on improving farm practice to meet community expectations on the protection of water quality. The Programme will continue to work closely with this group and Regional Council will continue to assist willing landowners with the implementation of actions outlined in their individual Farm Environment Plans to restrict nutrient contributions to the lakes, including up to 50% funding for detainment bunds and the retirement and land retirement.

Project	Background	Deliverables	Responsibility
Farm Environment Plans	<p>With the adoption of the Tarawera Restoration Plan, the Lake Rerewhakaaitu Farmers' Group agreed to lead the development of Farm Environment Plans for the inner and outer Catchments of Lake Tarawera, on a voluntary participation basis. This project is nearly complete in terms of the development of these plans, with Fonterra having developed plans for all willing dairy farms and Perrin Ag having been contracted to prepare them for willing drystock farm.</p> <p>The project will also enable the nutrient reductions achieved by landowners to be confirmed, not on an individual basis but by aggregating data.</p>	<p>Finalise development of Farm Environment Plans for all willing landowners.</p> <p>Support implementation of those plans through continued liaison with the Lake Rerewhakaaitu Farmers' Group and individuals.</p>	Bay of Plenty Regional Council with support from Lake Rerewhakaaitu Incorporated Society and Fonterra.

Lake Rotomā

This lake is not currently protected by Rule 11 of the Bay of Plenty Natural Resources Plan, but it is intended that upcoming plan changes associated with the Regional Council's Water Management Areas will resolve this by managing land uses to ensure lake water quality is maintained and enhanced. Lake Rotoma has extremely good water quality and is currently meeting its target Trophic Level Index, as calculated for the average of the last three years.

Project	Background	Deliverables	Responsibility
Forest Harvesting Effects Investigation	An investigation over a four year period to look into the effects of forest harvesting on phosphorous levels.	Ongoing investigation during 2018/2019.	Bay of Plenty Regional Council.
Sewerage Reticulation	A standalone wastewater treatment plant and disposal system, plus associated reticulation is currently under construction for Lake Rotoma and Gisborne Point and Hinehopu on Lake Rotoiti.	Continue construction as planned.	Rotorua Lakes Council.

Lake Rotokakahi

This lake is managed by a private board of control; there is no public access on to the lake.

Project	Background	Deliverables	Responsibility
Farm Environment Plans	<p>With the adoption of the Tarawera Restoration Plan, the Lake Rerewhakaaitu Farmers' Group agreed to lead the development of Farm Environment Plans for the inner and outer catchments of Lake Tarawera, on a voluntary participation basis. This project is nearly complete in terms of the development of these plans, with Fonterra having developed plans for all willing dairy farms and Perrin Ag having been contracted to prepare them for willing drystock farm.</p> <p>The project will also enable the nutrient reductions achieved by landowners to be confirmed, not on an individual basis but by aggregating data.</p>	<p>Finalise development of Farm Environment Plans for all willing landowners.</p> <p>Support implementation of those plans through continued liaison with the Lake Rerewhakaaitu Farmers' Group and individuals.</p>	Lake Rerewhakaaitu Farmers Group.

Lake Ōkataina

This lake is not currently protected by Rule 11 of the Bay of Plenty Natural Resources Plan, but it is intended that upcoming plan changes associated with the Regional Council's Water Management Areas will resolve this by managing land uses to ensure lake water quality is maintained and enhanced. Lake Okataina is considered as having stable water quality but remains above its target Trophic Level Index as measured in the last three year rolling average. There are opportunities for land use change in the Okataina catchment which will be pursued as available.

Lake Tikitapu

This lake is not currently protected by Rule 11 of the Bay of Plenty Natural Resources Plan, but it is intended that upcoming plan changes associated with the Regional Council's Water Management Areas will resolve this by managing land uses to ensure lake water quality is maintained and enhanced.

Lake Rotomahana

This lake is not currently protected by Rule 11 of the Regional Land and Water Plan, but it is intended that upcoming plan changes will resolve this by managing land uses to ensure lake water quality is maintained and enhanced. It is intended that the Programme will progress the development of regional rules to protect the Lake's water quality (through capping nutrient loss) in future plan changes.

Project	Background	Deliverables	Responsibility
Farm Environment Plans	With the adoption of the Tarawera Restoration Plan, the Lake Rerewhakaaitu Farmers' Group agreed to lead the development of Farm Environment Plans for the inner and outer catchments of Lake Tarawera, on a voluntary participation basis. This project is nearly complete in terms of the development of these plans, with Fonterra having developed plans for all willing Dairy Farms and Perrin Ag having been contract to prepare them for willing drystock farm. The project will also enable the nutrient reductions achieved by landowners to be confirmed, not on an individual basis but by aggregating data.	Finalise development of Farm Environment Plans for all willing landowners. Support implementation of those plans through continued liaison with the Lake Rerewhakaaitu Farmers' Group and individuals.	Lake Rerewhakaaitu Farmers Group.

Catfish incursion management

All parties to the Programme are aware of the catfish incursion on Lake Rotoiti, which is a real unwanted pest for the lake, the community and the Programme. Unfortunately over the recent summer there was a dramatic spike in the juvenile fish caught across the lake.

A core component of the response to the catfish incursion is a comprehensive communications plan which is aimed at communicating to the public what must do to prevent the spread of catfish across our other lakes and raise awareness. This communications plan includes traditional measures like signage, social media campaigns and bumper stickers but also includes innovative ideas such as a food truck which serves catfish.

Other responses to the incursion to be investigated and/or implemented include:

- 1 **Using pheromone bait in the fyke nets:** National Institute of Water and Atmospheric Research NIWA have developed a bait for perch which also seemed to increase the catch rates of catfish. We intend to trial this bait in our nets to test if it can increase our catch rates.
- 2 **eDNA techniques will be used to establish whether catfish are present in a waterbody:** The University of Waikato are currently putting a proposal together and have suggested it could be ready for field trial by the end of the calendar year.
- 3 **Electric barriers:** There is some suggestion that catfish are more sensitive to electric currents. Therefore electric currents could be used to prevent the migration of catfish, particularly over the Ohau Weir. There is some concern about this method from fish and game as it could affect the migration of trout and smelt. NIWA and the University of Waikato are currently putting a proposal together to trial the effectiveness of barriers.
- 4 **Introducing long-fin eels and brown trout to further predate catfish:** These additional fish would need to be introduced at the right time to ensure that the catfish can be eaten at the right stage of their lifecycle. There is the obvious potential side effect of adding further predators to native species such as koura, so we will be investigating this option further and proceeding with caution. Previously Ngāti

Pikiao and the Te Arawa Lakes Trust have signalled they would like an environmental assessment completed before approving this approach.

- 5 **Electric fishing:** We will be using this method in the Ōhau Channel to try to prevent the spread to Rotorua.

In terms of impacts on the objectives of the Rotorua Te Arawa Lakes Programme a key question we need to understand the answer to is 'what is the potential effect of catfish on the water quality projects and objectives of the Programme, particularly Lake Rotorua?' The University are working on a response to this for us.