



**TE ARAWA LAKES TRUST**

# **CULTURAL IMPACTS ASSESSMENT 2**

for Tarawera Wastewater  
Reticulation Scheme



## CULTURAL IMPACT ASSESSMENT REGARDING THE PROPOSED LAKE TARAWERA WASTEWATER RETICULATION SCHEME

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on behalf of

Te Arawa Lakes Trust, Nga hapū o Tūhourangi, Ngāti Hinemihi, Ngāti Rangitihi

for the

Rotorua Lakes Council

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# Preamble

*Tohi ki te wai, e Para, Hei āhua te tāngaengae ko te wai*

*i tēnei tangaengae Ki te mātāpuna o te wai*

*Kai te mahi kotahi o te wai*

*Kai te whatu whakapiri Ki te hauora me te toiora o te wai*

*Tarawera, Ōkāreka, Tikitapu, Rotomahana, Rotokakahi nga roto e homai, whakairi ora,*

*Tūturu, whakamaua kia tina! Haumi e, hui e, taiki e!*

Te wehi ki te atua te timatanga o te whakaaro nui, heoi ano, he honore he kororia kit e atua he maungarongo ki runga kit e mata o te whenua, he whakaaro pai ki a tatau katoa.

Kai te mihi ki ratau kua hinga atu ki tua o te aria, koutou kua wheturangitia, moe mai ra. Ki nga tini aitua o te wa kei tena, kei tena wa tatau iwi, kei poroporoakihia, kei tangihia atu ano ki a ratau, haere, haere, e oki, kati ake ki a ratau

Ka mihi kau ana ki a koutou katoa e whakapapa mai nei ki enei whenua, ki enei roto o Tarawera. Otira me mihi ki nga whānau, nga hapū me nga iwi honohono o te whenua nei, ka tika. Na wera kawai whakapapa ka tuku mai enei whenua ki a tatau. No reira Ngāti Umukaria, Ngāti Tutea, Ngāti Taoi, Ngāti Tama, Ngāti Wahiao, Ngāti Apiti, Ngāti Puta, Ngāti Te Amo, Ngāti Uruhina, Ngāti Te Ipu, Ngāti Huarere, Ngāti Tuohonoa, Ngāti Tawake, Ngāti Rangitahi, Ngāti Hinemihi nei ko tenei te mihi atu. No reira nga te mahi kotahi tatau ka ora ai te wai. Tena kautou, tena kautou, tena tatau katoa.

This report has been compiled by a collective of Mana Whenua groups who have an intergenerational connection to the waters and lands associated with the Tarawera catchment. The role of Mana whenua is significant as it is the hapū associated with the land that has the right to the expression of tino rangatiratanga and mana whakahaere. The tribal and ancestral lands and waters of Tūhourangi, Ngāti Rangitahi and Ngāti Hinemihi also require expression of our rangatiratanga where we exercise our responsibilities as kaitiaki.

Mana Whenua continue to be active throughout Lake Tarawera and the surrounding catchments, practicing cultural values with a deep spiritual connection through mahinga kai, wānanga, and kaitiakitanga. The burial places of ancestors are known to Mana Whenua and to this day they remain of the utmost sacredness. The stories of the past have been handed down from generation to generation, from family to family, never to be forgotten. Mana Whenua continue to administer lands and waterways with a solemn vow to return home.

To understand the current situation within the Tarawera catchment and the genuine need to reticulate wastewater for the community living on the shores thereof, the reader first must understand the tribal history of the land. This Cultural Impact Assessment is undertaken on of the Mana Whenua who continue to be active kaitiaki within the Tarawera catchment and is essentially a story of the impacts upon the Mana Whenua of Tarawera, Rotokākahi and Tikitapu.

Disclaimer:

While care has been taken in the preparation of this document, no responsibility is accepted for the accuracy of the content (whole or any part of).

Front Cover: Lakes Tarawera, Ōkāreka, Rotokakahi, and Tikitapu with hapū and iwi land boundaries.

# Statements of association

## Te Arawa Lakes Trust

*'All the freshwater within the Te Arawa boundary – belongs to Te Arawa emphatically. Te Arawa owns it but we all need it. Pakeha ownership of a natural resource is to turn it into a saleable commodity. Māori take care of it and pass it on to the younger generation.'*

*Ta Toby Curtis  
Chairman, Te Arawa Lakes Trust*

Piki mai rā, kake mai rā  
Hōmai te waiora kia tū tākiwai tākiwai tākiwaiora e

For generations Te Arawa have lived in the embrace of the land surrounded by water, be it thermal, natural or for bathing. The question must be, how can we reciprocate? We must be cognisant of the origins and the significance of water, we must allow the water to flow and contribute to the environment as a whole, we must build a pathway that ensures that the relationship we have with water and that water has with us endures.

Water is central to life. It symbolises the lifeblood of Papatūānuku (earth mother) and the tears of Ranginui (sky father). It is the element that binds the physical and spiritual realms together. Whakapapa encapsulates the Māori world view and acknowledges our connection with the gods, the natural world and with each other. All things whether animate or inanimate are connected through whakapapa and have mauri (life force). It is the foundation for mātauranga Māori that binds whānau, hapū and iwi together. This is reflected in our guiding Te Arawa values – Te Whakapapa o te Wai are: Wai, Waiariki, Waiora, Wairua, Waiata

*The lakes are part of us. Every nook and cranny we have a name for, they are named after prominent ancestors and those names are still used today as though they are still living,*

*Ta Toby Curtis  
Chairman, Te Arawa Lakes Trust*

## Ngāti Rangitihī

Our objective is the restoration and enhancement of Lake Tarawera - to restore, maintain and protect the mauri of this taonga and resource. We advocate sustainable management of freshwater to meet the basic health and safety needs of people.

“Our natural resources embody wairua and mauri, they are living and interconnected. It is imperative to stop paru leaking into the lake. Our people connect to the whenua and the awa – healthy maunga, healthy waterways, healthy people and it is currently out of balance. As kaitiaki we have a duty of care for the protection and sustainable use of our natural resources.”

Ken Raureti

Te Mana o Ngāti Rangitihī

## Tūhourangi

*Tera te auahi  
Tera te auahi  
Tera te auahi  
ka patua i Tarawera  
kai raro iti iho  
Ko Ngāti Taoi i moe ra i te whenua  
Haere ra e te iwi  
Ki te po uriuri ki te po tangotango  
Ki te iwi ki te po  
Arohirohi ana taku nei titiro ki te puke i te  
kumete  
Kai raro iti iho ko te tini a te kura i a  
Tūhourangi  
Whakapukepuke ai nga ngaru o Tarawera ko  
te rite i aku kamo  
Ka whati mai te ngaru ka oho ra te marino ko  
te rite i te iwi  
Ehara noa mai ra te rae ki mōura haere ra e  
te iw  
Ki wiwi ki wawa ki raro ki te reinga ko wai au  
ka kite  
Kai kinikini ai te mamae i taku kiri ki te iwi ka  
wehe  
whakarehurehu ana taku nei titiro ki  
whakapoukorero  
Kai raro iti iho ko Ngāti Rangitihī toku hoa  
moenga  
Na Ngatoroirangi i taki mai te mana o te atua  
Ka hau kai te whenua  
Hurahia e nga tohunga ka maranga kai runga  
ka ru ko te whenua  
Te riri o te atua i whiua ki te tangata i whiua ki  
te whenua  
E hora noa mai ra i te po uriuri i te po  
tangotango  
Waiho nei te aroha waiho nei te mamae  
Ka kai kino i taku kiri  
I maringi a wai te roimata i aku kamo  
ki te iwi ka wehe.*



# EXECUTIVE SUMMARY

People from all over the world are drawn to Lake Tarawera for its iconic landscape and its recreational features. The cultural significance of this landscape necessitates the careful consideration of development activities that may adversely impact on cultural values.

Before colonisation, the Rotorua Lakes including Tarawera provided food, shelter, economic resources and primary transport routes for the many hapū and iwi who settled following the arrival of the Te Arawa waka. The shores and surrounding areas of Lake Tarawera were occupied by hapū of Tūhourangi and Ngāti Rangitīhi. There were areas for mahinga kai (food gathering), urupa (burial grounds), pa sites (settlements), trade and transport routes, bathing areas, and wāhi tapu (ceremonial and sacred areas).

After colonisation, the “Hot Lakes” district attracted tourists from all over the world as stories of the boiling mud, geysers and other geothermal wonders spread. In particular, the Pink and White Terraces (Otukapuarangi and Te Tarata) on the shores of Lake Rotomahana were becoming known as one of the natural wonders of the world. Te Arawa played a major role in developing tourism in Rotorua and acted as guides for visitors. They kept a significant degree of control over access and transport to the attractions of the area.

Developments in the late nineteenth century led to an increase in nutrients flowing into the lakes from clearing forestry, farming and septic tanks. The environmental degradation of the lakes has affected their mana and wairua<sup>4</sup>.

Over the years, Te Arawa negotiated with the Crown for ownership of the Lakes, customary fishing rights, trout fishing licences and a co-management approach to the restoration of the Te Arawa Lakes.

Lakes Ōkāreka, Ōkātaina, Rotokakahi, Rotomahana and Tikitapu all drain into Lake Tarawera, either via surface water or groundwater flows. Lake Ōkaro and Lake Rerewhakaaitu drain first to Lake Rotomahana, then to Lake Tarawera. Because of this interaction between lakes, the catchment of Lake Tarawera (the Tarawera System) is made up of an inner catchment and an outer catchment:

- Inner catchment – includes the land, surface water and groundwater that drain directly to Lake Tarawera.
- Outer catchment – includes the land, surface water and groundwater that drain to the seven other lakes in the Tarawera System before draining to Lake Tarawera.

The approach up until now has been to address each lake in isolation, without consideration of the interaction between lakes<sup>1</sup> Lake Tarawera as the destination of the nutrients and work is underway to build a groundwater model of the area, which will provide more information on the interactions between lakes. With so little known about the outer catchment and its contribution to the nutrient load to Lake Tarawera, the best approach is to reduce nutrients from known sources while the groundwater model is finalised.

The Tarawera Lakes Restoration Plan as developed by the Bay of Plenty Regional Council for the Rotorua Te Arawa Lakes Strategy Group, focuses on addressing lake water quality and the number one priority of the Plan is to reticulate houses in the Lake Tarawera urban community.

The Rotorua Lakes Council (RLC) is seeking to install a reticulated wastewater scheme in the Lake Tarawera communities. Lake Tarawera Ratepayers Association (LTRA) together with Mana Whenua and Iwi Authorities, (henceforth known as the Collective), have been reviewing several options to protect the environment for future generations.

There is agreement that the reticulation of the wastewater from the urban community at Tarawera must happen to mitigate the current effects of the leaching of nutrients and e-coli to Lake Tarawera. These effects impact on the mauri of the Lake and the relationship of mana whenua with the Lake and the surrounding area.

Mana whenua have expressed deep concern and regret that the current situation of allowing the ongoing use of defunct and sub-standard systems in the Tarawera urban area has continued for so long; there is a commitment to ensuring that solutions are found. There is however the need to ensure that any solution will be both environmentally and culturally appropriate for the catchment.

This document will examine actual and potential effects of the proposed activities on physical sites of significance, cultural values and tangata whenua relationships with its natural resources. It will guide RLC on key cultural issues and act as a tool for activities relating to planning, implementation, operation and management over the full lifecycle of the preferred option to be assessed.

It is not possible to foresee and understand all potential impacts of the preferred option. It is equally challenging to convey adequate measures to address identified impacts, especially over the full life of any preferred scheme, where both information and cultural perspectives are certain to evolve. Additionally, some information critical to future decision making is not yet available.

However, what is essential is Mana Whenua are embedded in the process and adequately resourced to engage with decision makers in order to avoid or mitigate potential negative impacts. Some of the essential factors are;

- To be informed of planned activity well ahead of schedule and have time to consider potential impacts.
- When necessary, have access to enough technical support and expertise, undertake research where there are potential unknowns and contribute to ensure activity is well understood, impacts are considered adequately, and decisions are shared with iwi stakeholders.
- The principles of Kaitiakitanga be adopted by Council and applied to the process henceforth with emphasis on:
  1. Working with mana whenua – obviously this is the best way to understand kaitiaki principles and put these into practice
  2. Promoting kaitiaki values, objectives and principles to the wider public

The benefits for all stakeholders will be a seamless and unified approach which will enable all to move forward into the future with confidence and understanding to ensure the long-term protection of the environment and lake for generations to come.



# 1.0 INTRODUCTION

## 1.1. Purpose

The purpose of this Cultural Impact Assessment is to inform, guide and provide recommendations based on the cultural position of Tūhourangi, Ngāti Hinemihi, Ngāti Rangitahi and all affected Mana Whenua within the Tarawera catchment with respect to the proposed options for the reticulation of wastewater from the Tarawera community. For the purposes of this report, the group is identified as 'the Collective'.

The primary objectives of this document are to:

- Outline the history; describe cultural values and traditional relationships with ancestral lands, water, sites of cultural significance and other taonga.
- Reflect the Collective's cultural position in relation to the scheme.
- Highlight Mana Whenua concerns relating to wastewater and the scheme and its potential impact on cultural assets, land and geological features.
- Recommend processes, methods and solution options to ensure outcomes align with the cultural position of affected hapū and iwi.
- It will recommend methods and solution options to avoid, or at least mitigate foreseeable negative comments and cultural offence.

## 1.2 Ko Wai matou

Tangata whenua and Mana Whenua as represented by:

- Te Arawa Lakes Trust
- Tūhourangi
- Ngāti Rangitahi
- Ngāti Hinemihi
- Rotomahana Parekarangi 6 Block owners
- Ruawahia 2B

### 1.3 Context

The Rotorua Lakes Council (RLC) are proposing to install a reticulated wastewater treatment scheme in the Lake Tarawera community starting at the end of Spencer Road to the north, then in a south easterly direction linking with Tarawera Road. The proposed pipeline will then link to the established pumping station at Lake Ōkāreka for a transfer to the Rotorua Wastewater Treatment plant (WWTP) at Te Arikiroa.

The Cultural Impact Assessment aims to guide decision making by the Rotorua Lakes Council for a reticulated wastewater scheme in the Lake Tarawera catchment. If consents are required, the report will contribute to the consent authority's decision-making process whether to grant or decline consents.

Overall this document looks at foreseeable, potential and probable impacts and how these may be avoided or mitigated in ways acceptable to Mana Whenua. Mana Whenua make up most landowners over the scope of the Scheme and are obligated to preserve and protect their areas of interest as kaitiaki

The objectives of this CIA are to:

- Document the cultural values /effects associated with the proposed wastewater treatment options for Tarawera,
- Identify the potential effects on cultural values/ effects as a result of the proposed treatment options,
- Recommend next steps to ensure the cultural values, views and issues identified can be addressed.

In meeting these objectives, the report will:

- Provide all parties with an understanding of cultural matters related to the proposed activity,
- Outline engagement to date and recommendations for the process going forward,
- Provide a foundation for future discussions between Iwi and Mana Whenua affected and the Rotorua Lakes Council.

## 1.4 Methodology

- A review of the provisions of the Resource Management Act 1991, the Te Arawa Lakes Settlement Act 2006, Affiliate Te Arawa Iwi and Hapū Claims Settlement Act 2008 (Te Ariki, Te Wairoa) and other relevant statutes and regulations.
- A review of historical cultural information and other written references relevant to this assessment.
- A review of Tūhourangi Tribal Authority Enhanced Iwi Environment Resource Management Plan 2011.
- A review of Ngāti Rangitihī Iwi Environmental Management Plan 2011, specifically policies on sewage disposal, discharge to water, and freshwater management.
- Cultural Advisory Panel set up, representative of tangata whenua and iwi organisations to consider cultural impacts of proposed options
- Discussions with tangata whenua with knowledge and experiences of the area and values.
- Discussion with Māori landowners within the proposed site area and catchment.
- Analysis of information gathered, and report developed.

## 1.5 Engagement Process

- **Cultural Advisory Committee**  
A cultural advisory panel was set up, as recommended in the first Cultural Impact Assessment. Representatives from tangata whenua, iwi organisations and Te Arawa Lakes Trust attended the Tarawera Steering Committee meetings and held workshops to discuss and evaluate the cultural and associated impacts of the proposed wastewater options.
- **Interview Survey**  
Mana Whenua representatives from land blocks within the Tarawera catchment and iwi authorities representing Tūhourangi, Ngāti Hinemihi and Ngāti Rangitihī were invited to participate in an interview survey to gather information and greater understandings about the cultural impacts of the proposed options. Participants were provided with background information on the options and the process to date. They were then interviewed kanohi ki te kanohi or by phone conference. Data was gathered and formed part of the analysis shown in the CIA matrix.
- **Hui-a-Hapū Tuesday 26 March 2019**  
Hui-a-hapū was held at the Millenium Hotel and was attended by 25 people from various hapū of Te Arawa including Tūhourangi and Ngāti Whakaue. A technical overview of the options to be considered under this Cultural Impact Assessment was highlighted to hapū representatives in attendance. Taira Wichman attended and provided independent technical advice upon request. The hui was recorded, and the responses have been analysed and included within the CIA matrix

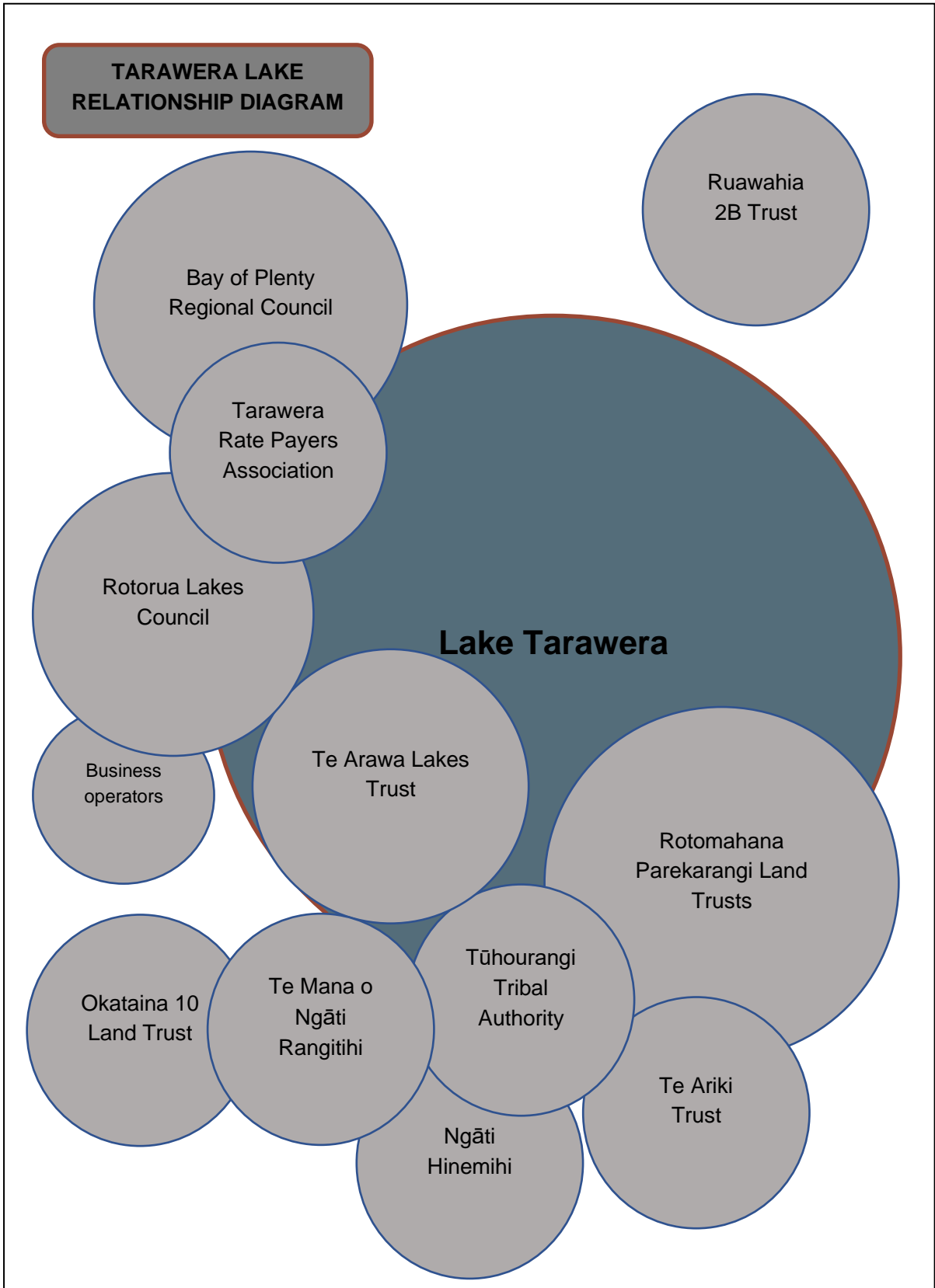


Figure 1 Tarawera Lake Relationship Diagram

## 2.0 BACKGROUND

### Lake Tarawera

Lake Tarawera is the second largest lake of the fourteen Te Arawa/Rotorua Lakes included in the Te Arawa Lakes Settlement 2006. It is part of the Lakes Restoration Programme managed by the Bay of Plenty Regional Council in Partnership with Te Arawa Lakes Trust and Rotorua Lakes Council.

At a glance:

- Lake size: 4,138 ha
- Catchment area: 14,472 ha
- Elevation: 298 m
- Average depth: 50 m
- Deepest point: 87.5 m
- Formed: 5,000 years ago
- Outflow: Surface via the Tarawera River

About 391 houses are located at the lake with about 25% occupied all year round by 290 residents. The remaining 75% of houses are used as holiday accommodation. There are anecdotal reports of an emerging trend of bach owners that have been holidaying at the lake for the past few decades, retiring and living at the lake permanently.

Lake Tarawera is a popular lake, providing a variety of recreational uses for residents and visitors:

- Water activities – kayaking, sailing, water-skiing, ski-biscuiting, jet-skiing, swimming.
- Fishing – Lake Tarawera has a well-stocked trout fishery.
- Walking, tramping and camping – there are several walking and tramping tracks around Lake Tarawera with camping grounds located at The Outlet, Humphries Bay and Hot Water Beach.
- Tourist attractions – the Buried Village of Te Wairoa, Hot Water Beach, trout fishing and an ascent of Mount Tarawera attract visitors to the lake.
- General activities – parks and reserves adjacent to the lake provide public facilities such as boat ramps, playgrounds and public toilets. The inner catchment includes the land, streams, and groundwater that run directly into Lake Tarawera. Land cover in the inner catchment is mostly native and exotic forest with some pasture.

Lakes Ōkāreka, Ōkātaina, Rotokakahi, Rotomahana and Tikitapu all drain into Lake Tarawera, either via surface water or groundwater flows. Lake Ōkaro and Lake Rerewhakaaitu drain first to Lake Rotomahana, then to Lake Tarawera. Because of this



interaction between lakes, the catchment of Lake Tarawera (the Tarawera System) is made up of an inner catchment and an outer catchment:

- Inner catchment – includes the land, surface water and groundwater that drain directly to Lake Tarawera.
- Outer catchment – includes the land, surface water and groundwater that drain to the seven other lakes in the Tarawera System before draining to Lake Tarawera.

The approach up until now has been to address each lake in isolation, without consideration of the interaction between lakes<sup>1</sup>. This approach is effective, as a reduction in nutrients in the catchment of any of the outer lakes will benefit both the immediate lake and Lake Tarawera. However, it doesn't consider the interactions between lakes or Lake Tarawera as the destination of the nutrients.

Work is underway to build a groundwater model of the area, which will provide more information on the interactions between lakes. This work is expected to be completed in about twelve months; at which time a more accurate nutrient budget can be prepared with updated reduction targets.

With so little known about the outer catchment and its contribution to the phosphorus load to Lake Tarawera, the best approach is to reduce phosphorus from known sources while the groundwater model is finalised. In the meantime, discussions with landowners in both the inner and outer catchments will improve our knowledge of the current phosphorus load to the lake from this source, and lead to voluntary reductions.<sup>1</sup>

Unless otherwise referenced, the information in this section following has been sourced from *Tarawera: The Volcanic Eruption of 10 June 1886*.

Before colonisation, the Rotorua lakes provided food, shelter, economic resources and primary transport routes for Te Arawa. The iwi used Mount Tarawera as a burial ground for chiefs and other persons of importance and the mountain is considered tapu.

Te Arawa is made up of iwi and hapū, based predominantly in Rotorua, tracing their ancestry back to the Arawa waka. Presently, Te Arawa has a population of about 35,1273. After colonisation, the "Hot Lakes" district attracted tourists from all over the world as stories of the boiling mud, geysers and other geothermal wonders spread. In particular, the Pink and White Terraces (Otukapuarangi and Te Tarata) on the shores of Lake Rotomahana were becoming known as one of the natural wonders of the world.

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<sup>1</sup> [Lake Tarawera Restoration Plan](#)

Te Arawa played a major role in developing tourism in Rotorua and acted as guides for visitors. They kept a significant degree of control over access and transport to the attractions of the area. Settlers introduced trout and other exotic species into the Rotorua lakes, which depleted indigenous fish stocks and forced a reliance on the introduced species. The introduction of fishing licences led to further hardship for some members of Te Arawa already affected by the reduction of indigenous species.

Over the years, Te Arawa negotiated with the Crown for customary fishing rights, trout fishing licences and burial reserves in the lakes. Developments in the late nineteenth century led to an increase in nutrients flowing into the lakes from clearing forestry, farming and septic tanks. The environmental degradation of the lakes has affected their mana and wairua.

The degradation of Lake Tarawera and its surrounding catchments, is of concern to all tangata whenua who are connected to the lake by whakapapa (genealogy) within their rohe (tribal boundaries). The extent to which the land-use changes and declining water quality has impacted on tangata whenua values is currently unknown.

The Rotorua Lakes Council (RLC) is seeking to install a reticulated wastewater scheme in the Lake Tarawera communities. The current effluent disposal system is via onsite effluent tanks and disposal trenches with a total of 169 properties non-compliant. Evidence suggests septic tanks contribute to increased nitrogen (N), phosphorus (P) and e-coli which in turn contributes to water quality deterioration. To reduce the risk to public health and protect the water quality of Lake Tarawera, the RLC, Bay of Plenty Regional Council (BOPRC), Lake Tarawera Ratepayers Association (LTRA) together with Mana Whenua and Iwi Authorities, (henceforth known as the Collective), are reviewing a number of options to protect the environment for future generations.

## 2.1 Declining Water Quality and the drivers for reticulation

### **Tarawera Lakes Restoration Plan**

The Tarawera Lakes Restoration Plan was developed by the Bay of Plenty Regional Council as part of the wider Lakes Restoration Partnership programme and focuses on addressing lake water quality. It has been adopted by the Rotorua/Te Arawa Lakes Strategy Group. The number one priority of the Plan is to reticulate wastewater in the Lake Tarawera urban community.

#### ***Importance to tangata whenua***

*For Māori, water is a taonga, a treasure, and is very highly regarded. Māori identify themselves in terms of their ancestors and their rivers and mountains. Māori consider water bodies to be their ancestor, a part of their family and a part of them. When a freshwater body is mismanaged, it hurts not only the water body itself, but the tangata whenua who identify with it.*

*In Māori environmental management, all resources have mauri (an energy which binds and supports life). The mauri of each water body is a separate entity and cannot be mixed with the mauri of another. This conflicts with the traditional western view that water can be diverted, dammed and used to take away waste. The pollution and alteration of a water body diminishes its mauri and affects its ability to provide food from this source.*

*Practices, or tikanga, are used to maintain the mauri of resources. The ongoing observation of these tikanga has led to the development of the ethic of kaitiakitanga. Kaitiakitanga is most simply translated as guardianship, but it also includes care, wise management and the use of resource indicators (where resources themselves indicate the state of their own mauri).*

*The degradation of Lake Tarawera and its surrounding catchments, is of concern to all tangata whenua who are connected to the lake by whakapapa (genealogy) within their rohe. The extent to which the land-use changes and declining water quality has impacted on tangata whenua values is currently unknown.*

### **Lake Tarawera Sewerage Steering Committee**

The Lake Tarawera Sewerage Steering Committee is made up of representatives from a range of key stakeholders including Rotorua Lakes Council (RLC), Bay of Plenty Regional Council (BOPRC) and the Tarawera Ratepayers Association; representatives from iwi authorities Tūhourangi Tribal Authority, Te Mana o Ngāti Rangitihī, Te Arawa Lakes Trust, Māori land trusts.

## LTSSC - Purpose

The LTSSC is tasked to:

- Investigate and recommend the most appropriate wastewater disposal option to the community and Rotorua Lakes Council. The final recommendation must be sustainable and help to improve the health of Lake Tarawera.

To date, the LTSSC has:

- Been presented with evidence that septic tanks contribute to the increased nitrogen (N), phosphorus(P) and e-coli discharged into the lake which causes water quality deterioration.
- Looked at ways to achieve a reticulated wastewater scheme.
- Identified five possible and viable wastewater options.
- Commissioned a cultural impact assessment for the options

## 2.2 The proposed options for a resolution

The proposed service area: (Number of properties: Current - 423; Ultimate - 546)

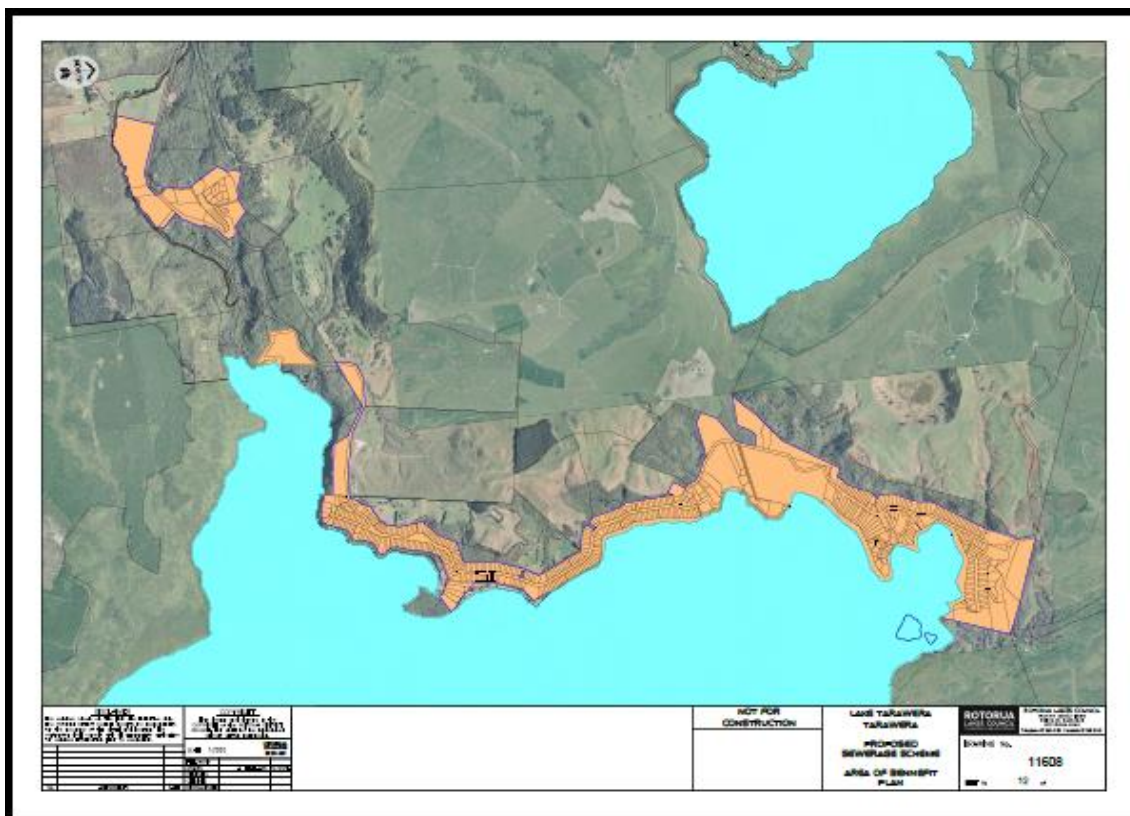


Figure 2. Rotorua Lakes Council Drawing No. 11608. Lake Tarawera, Proposed Sewerage Scheme, Area of Benefit Plan

## **The proposed options:**

1. A Septic Tank Effluent Pump (STEP) system located on each property. A STEP system is a 3800 litre septic tank with a filter and pump inside the tank. The effluent is pumped through pressure pipes to a local Wastewater Treatment Plant.
2. A STEP system where the effluent is pumped to Ōkāreka and from there to the Rotorua Wastewater Treatment Plant.
3. A Low-Pressure Grinder Pump (LPGP) located on individual properties connected to a local pipeline and Wastewater Treatment Plant.
4. A Low-Pressure Grinder Pump located on individual properties with a pipeline connected to Ōkāreka for transfer to the Rotorua Wastewater Treatment Plant.
5. If a decision is made not to reticulate this community, then each individual property owner would need to;
  - a. Install an Aerated Wastewater Treatment System with Nutrient Reducing capabilities (AWTS+NR). The effluent from this system would be discharged to near surface soils. This system would be an improvement in performance over septic tanks but would not fully remove the N and P from the catchment.
  - b. This option may cost each property owner up to \$20,000 and is not eligible for subsidy.
  - c. Not all properties will be able to accommodate one of these systems because of land slope and stability, available space, proximity to ground water and unsuitable soils. A report is currently being prepared on these issues. Property owners in this category would need to apply for a resource consent which would seek to mitigate the effects of the discharge.

### **Note:**

- 1) If the preferred option is to connect to the existing Ōkāreka scheme, then resource consents will not be required.
- 2) If the preferred option is to establish a Wastewater Treatment Plant and Land Disposal System within the area, then resource consents will be required for the construction and operation of the plant - discharge to air (odour) and land (land disposal field).

## LOW PRESSURE GRINDER PUMP SYSTEM

- Houses at Tarawera connected by low pressure grinder pumps
- About 1500 installed within the district over the last 9 years

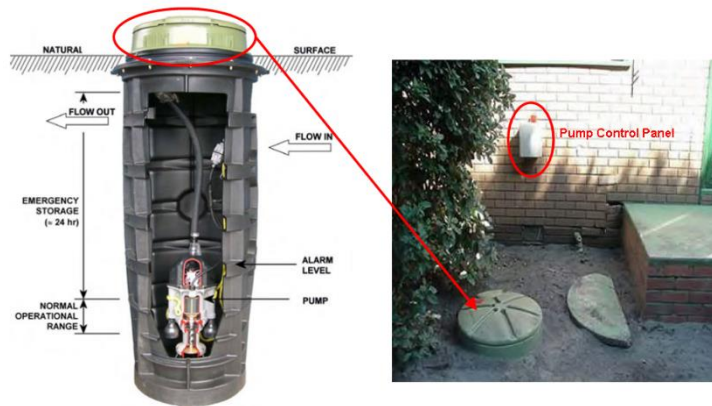


Figure 3. Low Pressure Grinder Pump System, Rotorua Lakes Council, Sewerage Options for Tarawera, Manzano 2017

## STEP SYSTEM

- Underground septic tank (about 4000 litres) provides primary treatment (solids settling) so only liquids go to treatment plant.
- Most of the solids settle and remain in tank for years decomposing under anaerobic process. Remaining solids pumped every seven years (approximately.)
- Solids filtered out.
- 25mm line connects property to main sewer in street.



Figure 4. Step System, Rotorua Lakes Council, Sewerage Options for Tarawera, Manzano, 2017

## PROPOSED WASTEWATER TREATMENT PLANT AND LAND DISPOSAL SYSTEM CONCEPT

- Wastewater Treatment – Membrane Bio-Reactor Plant (600m<sup>3</sup>/day approx.)
- Land Disposal System – Trench based Rapid Infiltration and/or reuse
- Approximate area requirement  
- 5-6 hectares (depending on soil characteristics and buffer requirements)
- Solids management – Stored on site and transported offsite
- Odour management – Enclose all odour generating processes with foul air extraction and treatment.
- Noise management – Blowers house inside blower room with acoustic silencers
- Indicative cost - \$6.0M to \$6.50M

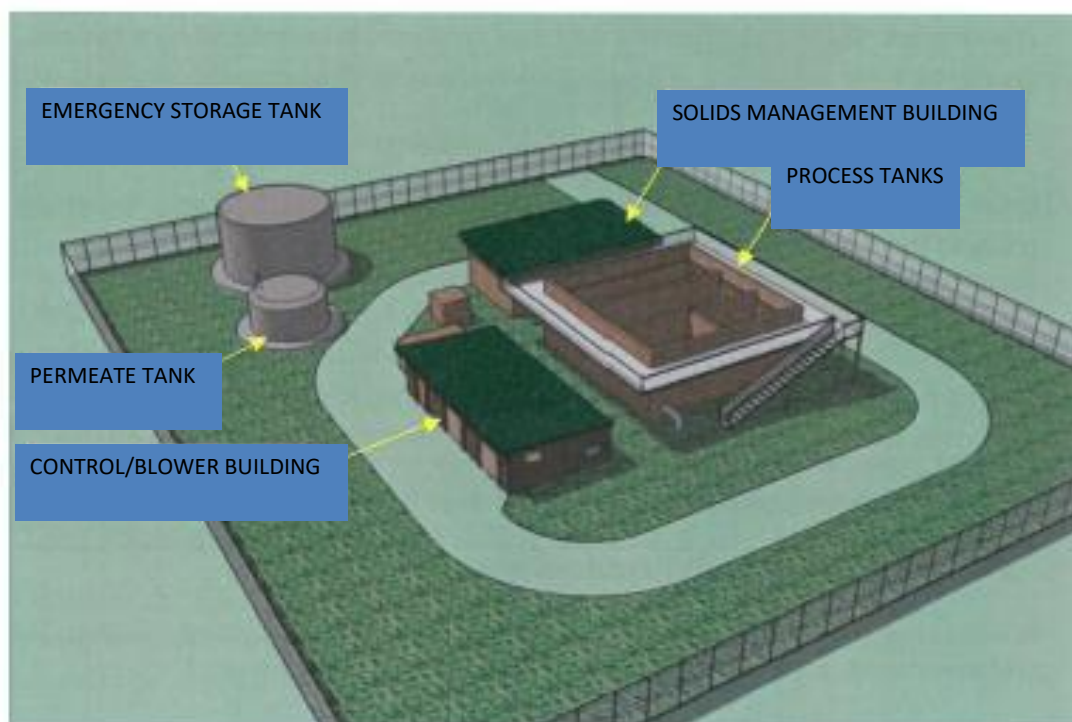


Figure 5. Indicative perspective view of Tarawera Wastewater Treatment Plant Rotorua Lakes Council, Sewerage Options for Tarawera, Manzano, 2017

## 2.3 Preferred Option – Tarawera Sewerage Steering Group and community

At the meeting of the Tarawera Sewerage Steering Group on 15 October 2018, the group reviewed and discussed the cultural, environmental, financial and social issues related to the options.

<b>Consideration of on-site options</b>	
<p><b>STEPS</b></p> <ul style="list-style-type: none"> <li>- More culturally acceptable</li> <li>- Tank large size – 4 cub. Meters, 4000 litres</li> <li>- Ground stability compromised</li> <li>- Rotomahana mud</li> <li>- Section sizes</li> <li>- Terrain too steep</li> <li>- Ground water limiting depth</li> <li>- More cost</li> </ul>	<p><b>LPGP</b></p> <ul style="list-style-type: none"> <li>- Not so culturally acceptable</li> <li>- Smaller footprint</li> <li>- Cheaper cost</li> <li>- Better ground stability – less disturbance</li> <li>- Already in use at Ōkāreka</li> <li>- Easier access machinery</li> <li>- Only 1000 litres</li> <li>- Community acceptable</li> </ul>
<b>Consideration of Disposal – Local Treatment Plant</b>	
<ul style="list-style-type: none"> <li>- Culturally more acceptable</li> <li>- Does not remove effluent out of the catchment</li> <li>- Cost is prohibitive, nearly twice</li> <li>- Would require local Maintenance Contract to operate</li> <li>- Requires a local site and disposal are</li> <li>- Required resource consent</li> <li>- Add considerable time to proceed – 2-3 years</li> </ul>	
<b>Consideration of pipeline route – Playnes Farm</b>	<b>Consideration of Pipeline Route – Tarawera Road</b>
<ul style="list-style-type: none"> <li>- Culturally less preferred – significant sites</li> <li>- Cost difference \$2.2M - less expensive but many costs not included</li> <li>- Costs of legal and access agreements unknown</li> <li>- Cost of infrastructure not known – roading</li> <li>- Geotech investigation and cost unknown</li> <li>- Access agreement or lease of land unknown</li> </ul>	<ul style="list-style-type: none"> <li>- Culturally acceptable -road already there</li> <li>- owned by Council</li> <li>- Known alignment</li> <li>- Easier to work for machinery</li> <li>- Better long-term security</li> <li>- No cost of access or land agreements</li> </ul>



The preferred option subsequent to discussion and careful consideration being as follows:

- (i) That the Tarawera Sewerage Steering Group strongly supports the onsite LPGP systems for each property at Lake Tarawera based on the cultural, physical, technical aspects. (Unanimous decision)
- (ii) that the Tarawera Sewerage Steering Group agreed that the best practicable option on balanced deals with Iwi issues and affordability for the connection to lake Ōkāreka is via Tarawera Road. (Unanimous decision)
- (iii) The Tarawera Sewerage Steering Group does not believe that OSET is a viable option for the community given that 170 properties will not be able to comply, there is considerable on-going cost and there will be limitations to several sections on the operation of an onsite scheme.

A public meeting was held at Tarawera on 20 October 2018 with over 100 people attending. The community resolved unanimously to support grinder pump and the road connection back to Ōkāreka.

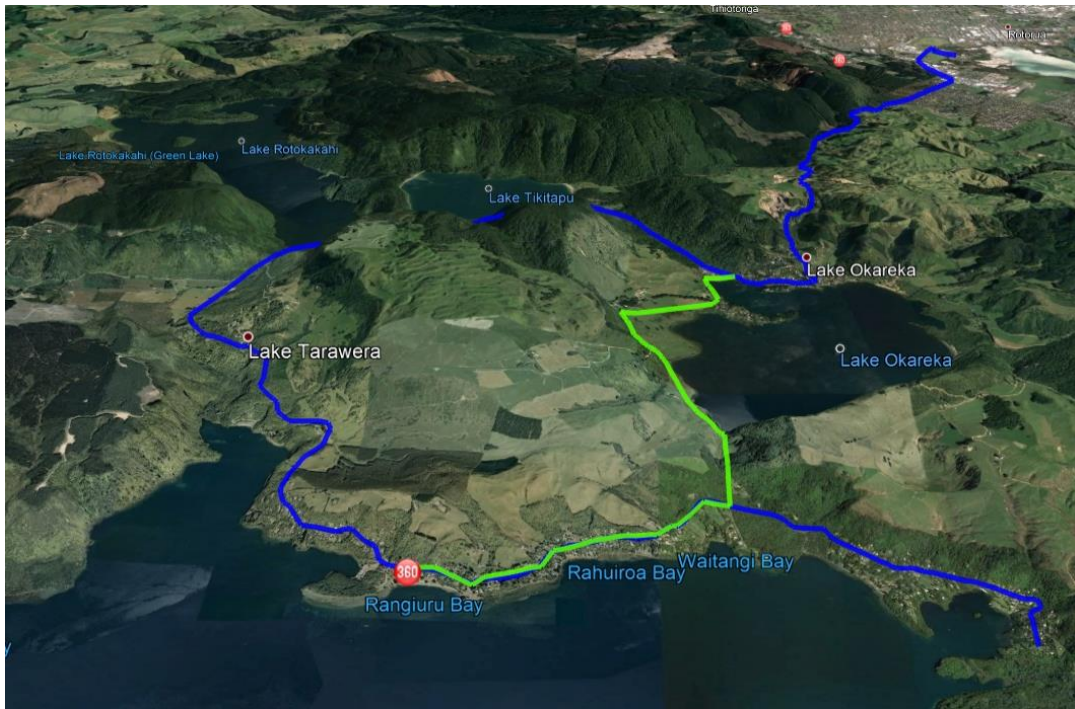


Figure 6. Indicative pipeline routes

**Note:**

- 1) If the preferred option is to connect to the existing Ōkāreka Wastewater system, resource consents will not be required.
- 2) If the preferred option is to establish a Wastewater Treatment Plant and Land Disposal System within the area, then resource consents will be required for the construction and operation of the plant.

Regardless of the system to be implemented, there will be considerable earthworks in areas of cultural significance to the Collective. It is presumed these works will involve site evaluation, geotechnical testing, excavation, directional drilling, and pipeline installation with the construction of pump stations. There is potential for the discovery of sites of cultural and historical significance, tāonga tuturu (ancient/ traditional artefacts of value) or koiwi (bones/human remains) around all areas of the proposed earthworks. If mana whenua and iwi are adequately resourced and embedded in the key areas of the project, there is the utmost confidence that all aspects of the scheme can be implemented without significant cultural offence and/or cultural harm.

At the forefront of our minds must always be to improve and protect the water quality of Lake Tarawera. The system eventually assessed as appropriate by the Committee, will enable Mana Whenua aspirations to return to and potentially develop their traditional and ancestral lands. In time this will be reflected in housing growth and the development within the community.

## 2.4 Funding

The options have been broadly costed and range from \$15m to \$18m. This translates into a cost per property of approx. \$40k. Subsidies have been received from the Rotorua Lakes Council of \$1,500 per property and \$6.5m from the Freshwater Fund administered by Ministry for Environment. Payment options will be advised once a preferred treatment options has been settled and grants and subsidies are confirmed.

### **Timeframe objectives**

1. Once the Cultural Impact Assessment (CIA) is completed, the committee will revise property cost estimates.
2. Engage with RLC and BOPRC to ensure the Lake Tarawera scheme is included in their respective Long-Term Plans.
3. Decide on a preferred option and recommend it to the community and to RLC.
4. In a position to construct the preferred option from 2020 onwards.

### **Considerations**

- The proposed options are costly and need to be environmentally sustainable well as help towards reducing N and P in the lake.
- The committee wants to identify a preferred option, after it has considered a cultural impact assessment (CIA) on the five options.
- This Cultural Impacts Assessment has been carried out by the Te Arawa Lakes Trust.

## 2.5 The role of the Cultural Impact Assessment

The role of the CIA is to inform, guide and provide recommendations to the RLC based on the cultural position of the Collective regarding the preferred Lake Tarawera Sewerage Reticulation Scheme.

Consequently, this second CIA aims to guide all activity within the limits of the Resource Management Act 1991 having particular regard for Part 2 Sections 6, 7, 8 and is applicable over the full lifecycle of the option or options that may eventually be agreed upon.

In this context its objectives are:

- To convey Mana Whenua expectations.
- To ensure where practicable solutions are aligned with Mana Whenua expectations.
- To highlight cultural sensitivities and potential issues.
- To ensure cultural aspects are adequately considered with all activity.
- To provide guidelines that ensures works are carried out in a culturally acceptable manner.
- To avoid unnecessary cultural impacts in relation to affected Mana Whenua and Iwi.
- Where impacts are unavoidable, provide an agreed means to ensure activity is carried out in a way that minimises cultural impact.
- To minimise potential for cultural offence.

The document will examine actual and potential effects of the proposed activities on physical sites of significance, cultural values and tangata whenua relationships with its natural resources. It will guide RLC on key cultural issues and act as a tool for activities relating to planning, implementation, operation and management over all aspects and stages of development and within the full lifecycle of the scheme.

Mana Whenua aim to ensure its cultural position, as represented within the TSSC forum, is not undervalued, misinterpreted or unduly compromised in its implementation relating to the preferred scheme.

## 3.0 MANA WHENUA OF TARAWERA CULTURAL VALUES

### 3.1 Historic Context for Mana Whenua

#### **Mana Whenua and Settlement Entities**

This Cultural Impact Assessment is to be read in conjunction with the first Cultural Impact Assessment for Tarawera Wastewater Treatment Plant October 2017. Under Part 1 Preface of the preceding document, Tangata Whenua are named as being represented by:

- Te Arawa Lakes Trust
- Tūhourangi
- Ngāti Rāngitihī
- Rotomahana Parekarangi No. 6 Block owners
- Ruawahia 2B

It is acknowledged and recognised that the above-named entities excluding the Rotomahana Parekarangi 6 Block owners have interests and Statutory Acknowledgements associated with the Lake Tarawera Catchment and are named as Tangata Whenua. The Roto-Pare 6 Block owners will herein be regarded as Mana Whenua.

The residential developments built since the early 1900's and the associated problems with wastewater reticulation has occurred primarily on land previously known as Rotomahana Parekarangi No. 6 from the Native Land Court hearings of 1882 and the re-hearing of 1887.

Ngāti Rangitihī has significant interests in the Tarawera area.

Ngāti Rangitihī is currently completing its Treaty Settlement with the Crown. It has signed an Agreement in Principle with the Crown and will soon initial a Deed of Settlement. Should the Deed be ratified by our Iwi we will be able to describe the many sites of cultural significance that will be awarded to Ngāti Rangitihī around lakes Tarawera and Rotomahana.

*These sites will define our interests and responsibilities for restoring and sustaining the Mauri of this special part of our rohe.*" - Leith Comer Chairman Te Mana o Ngāti Rangitihī Trust.

#### **Kaitiakitanga of our natural environment**

The significant waterways of importance to Mana Whenua lakes, rivers, streams and wetlands are important cultural taonga for the Hapū of Mana Whenua. Our responsibilities as 'kaitiaki' are inter-woven with the natural environment including our sacred rivers and

maunga (mountains); this is the expression of the Treaty of Waitangi principle of Tino Rangatiratanga. The right of tangata whenua to take part in managing freshwater resources is formally recognised and legislated in the Resource Management Act (1991), in Sections 5, 6(e), 7(a), and 8.

### **Customary Land Use**

In the traditional Māori world view, everything in the natural world possessed a mauri or life force. A kinship existed between all elements of the natural world of which people, land and fisheries were part of a holistic order. This view of the world was reflected in the way Māori managed all their natural resources. The early settlers of Roto-Pare land maintained their rights to the land by way of continuous occupation (Ahi Kaa)<sup>2</sup> The most visible signs of their mana were their settlements and cultivation sites and their activities ranged from hunting and gathering to extensive horticulture.<sup>3</sup>

Māori used land to uphold customary obligations within and between whānau, hapū and iwi, the fulfilment of these duties depending on them safeguarding the land and its resources by means of a system of practical rules, checks and balances to manage these vital assets.

### **Tūhourangi Tribal Area of Interest**

The Tūhourangi tribal boundaries and sites of cultural significance are vast and to get an idea of the scale of the area, mountain landmarks will be used in this instance, for immediate identification.

They are Moerangi, forming the northern boundary and encompassing the Whakarewarewa forest. Haparangi and the Horohoro bluffs and further west to the Waikato River, the northern flanks of the Paeroa ranges then south to Kakaramea or Rainbow Mountain and the eastern identity of Ruawāhia, more commonly referred to as Mount Tarawera. It must also be noted that the Tūhourangi boundaries are not exclusively within these identifiable landmarks as Hapū of Tūhourangi also reside in the Te Puke area.

The history of the Tūhourangi people and where they lived throughout the Rohe of Te Arawa is rich and varied and more often than not involves times of significant warfare but also of alliances, marriages and peace. Tūhourangi hapū can trace their occupation of Tarawera and the surrounding lakes to a specific moment of history. That being the murder of Umukaria, the father of our famous ancestress Hinemoa.

During the 1700s the Tūhourangi Tribe settled the shores of Lake Tarawera sharing their occupation with Ngāti Rangitihi. Two chiefs of this period were Tionga of Ngāti Rangitihi and Te Rangikatukua of Tūhourangi. The normal fighting formation adopted by Tūhourangi during battle was the wedge or arrow formation at the point of which could always be found either or both of these warriors.<sup>4</sup>

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<sup>2</sup> Smith 1942 : 54

<sup>3</sup> Kawharu 1977 : 37

<sup>4</sup> Waaka K. 1996 Pers. Comm.

**(Tūhourangi)**

Ngaurumotu

|

**Rangikatukua**

|

Te Hurinui

|

Te Kohika

**(Ngāti Rangitihi)**

Mahora

|

**Tionga**

|

Mokonuiarangi

|

Paerau

Towards the end of the 1700s these two joined forces on a number of occasions in warfare against the Tuhoe tribe living in the Urewera ranges

Te Rangipuawhe and Rangiheuea held authority over lakes Rotomahana and Tarawera controlling numerous cultivations, ngawha and duck snaring locations.<sup>5</sup> Te Rangipuawhe owned a house called Rangaapawa situated on Te Puai island in the middle of Lake Rotomahana. Both Te Puai and Te Pukura islands were blown out of Lake Rotomahana during the Tarawera eruption of 1886 killing all the inhabitants.<sup>6</sup>

Ngaurumotu

|

Hinepapa

|

Te Rangikaingahuhu

|

Nawaina

|

Te Rangipuawhe

Ngaurumotu

|

Hinepapa

|

Rauotehuia

|

Rangiheuea

Tūhourangi and Ngāti Rangitihi continued to live in close proximity on the shores of Lakes Tarawera and Rotomahana, but the close camaraderie shared by their forebears was not to last. During the early 1800s, both tribes clashed in battle at Kauaehapa at the foot of the Tarawera mountain.<sup>7</sup>

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<sup>5</sup> RMB 31 1894 : 213

<sup>6</sup> RMB 31 1894 : 233

<sup>7</sup> RMB 31 1894 : 218

The hapū of Tūhourangi spread themselves over the whole of the Roto-Pare area with major pa sites in all of the strategic locations. Fortified pa were the scene of many battles that raged between Tūhourangi and their neighbours Ngāti Rangitihi. Once they secured mana over this block Tūhourangi faced minor intrusions and challenges from their traditional rivals Ngāti Whakaue. These battles had significant cultural value relating to the concept of 'whenua toto'. (When blood was spilt on the land it imbued it with the mana and memory of those who had been killed there).<sup>8</sup> Thus pa and other sites were often regarded as wāhi tapu (places of spiritual/cultural value). Other wāhi tapu included traditional urupa and burial caves, tuahu (altars) and historic places (e.g., landing places and boundary markers of the original explorers).

Tūhourangi set up Motutawa Island as their principal pa in memory of their previous homeland at Mourea called Motutawa. It was here, according to Taupopoki,<sup>9</sup> that Tūhourangi enacted their laws, conducted their political meetings and defended their occupancy rights and mana. On a domestic level Motutawa was surrounded by the food rich Rotokakahi lake while the nearby lakes and forests were also abundant with food and raw materials.

### **European Contact**

Prior to the arrival of the first European at Tarawera in the 1840s the main activities here had been kumara cultivation, the gathering of aruhe (fern root), fishing and duck snaring.<sup>10</sup> Christianity arrived in 1844 with the reverend Seymore Spencer setting up an Anglican mission at Whareroa. He encouraged Tūhourangi to familiarise themselves with the agricultural and horticultural techniques of the Pakeha. The 1850s saw an outbreak of an influenza epidemic in the central Bay of Plenty causing widespread suffering and loss of life especially among children.

At this time Ngāti Rangitihi set up flax trading industries to take advantage of the growing demand for flax by European traders. One such trader, Abraham Warbrick, arrived at Rotomahana in the early 1850s and was given a piece of land at Rotomahana by the Ngāti Rangitihi chief, Paerau, on which to set up a trading station. The Tūhourangi Chief Rangiheuea disputed Ngāti Rangitihi's rights to this land. Warbrick was assaulted, his house destroyed and he was evicted.<sup>11</sup> Paerau was incensed at this action and challenged Rangiheuea to a battle over the rights to Rotomahana. Warfare continued between these two former allies until 1855 and during this time no one lived outside the main fighting pas. Peace was finally sealed between the two tribes in 1855 and two years later, a lockspit was made in the ground near the mouth of the Tarawera river. This was a small trench dug along a survey line and was a sign that peace had been made over the land.<sup>12</sup>

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<sup>8</sup> Kawharu 1977 : 47

<sup>9</sup> RMB 13 1887 : 96

<sup>10</sup> RMB 13 1887 : 100

<sup>11</sup> RMB 31 1894 : 212-24

<sup>12</sup> RMB 13 1887 : 123-25



## Pink and White Terraces

For many generations the people of Tarawera and Rotomahana enjoyed sole occupation and use of the waters issuing forth from the pink and white terraces. With the arrival of Europeans word started to spread to the outside world of the unsurpassed geothermal spectacle on the shores of Lake Rotomahana and was regarded at the time as the eighth wonder of the world. Almost overnight they inherited a commercial enterprise so lucrative that less than a decade later, they were being hailed as the most affluent tribe in the country.<sup>13</sup>

On one side of the lake lay seven and a half acres of white silicate terrace formed by the cascading waters of the Te Tarata geyser. On the other side lay a five-and-a-half-acre expanse of indescribable beauty known as the Pink Terraces, the smooth steps of which had been formed over the years by the waters of the Otukapuarangi geyser.<sup>14</sup>

Tūhourangi, under their chiefs Rangiheuea and Rangipuawhe, held complete authority over Tarawera, Rotomahana and the terraces controlling both the tourist traffic and the accompanying recompense.<sup>15</sup> The young men of Tūhourangi were rostered on the whale boats used to ferry tourists across Lake Tarawera while guiding duties were carried out by certain women of the tribe. From guiding and boat fees alone, it is estimated that the tribe had an annual income of 6000 pounds.<sup>16</sup> The Te Wairoa village was developing as the main Tarawera settlement to service the tourist industry. By the 1880s there were two hotels, a schoolhouse, a flour mill and a bakery operating here. So affluent were the people of Te Wairoa during this period that the eyes of the carved figures on the meeting house Hinemihi were made of gold sovereigns.<sup>17</sup>

On 9 November 1887 Tūhourangi asked the court to divide No. 6 into 18 separate sections (6A to 6S with no 6I to be distributed among 18 already defined groups. The Court agreed and on 11 November 1887, a schedule of subdivisions was issued to Tūhourangi.

These No. 6 blocks are named in alphabetical order along with their traditional names and the Mana Whenua hapū who lived on the shores of Ōkāreka, Tikitapu, Rotokakahi, Tarawera and Rotomahana prior to the eruption of Wahanga, Ruawahia, Tarawera and Rotomahana:

- 6B - Maungarawhiri, Ngāti Uruhina

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<sup>13</sup> Kuru Waaka 1996 Pers. Comms.

<sup>14</sup> Denman 1968 : 16

<sup>15</sup> RMB 13 1887 : 100

<sup>16</sup> Denman 1968 : 16

<sup>17</sup> Ibid

- 6C - Ohorongo, Nga Hapū o Tūhourangi
- 6D - Ōkāreka, Ngāti Uruhina, Umararoa, Te Anumatao
- 6E - Te Marua/Opawhero/Ōkāreka, Nga Hapū o Tūhourangi
- 6F - Waitangi, Nga Hapū o Tūhourangi
- 6G - Tokiniho, Nga Hapū o Tūhourangi
- 6H - Tokiniho/Tikitapu, Ngāti Umukaria
- 6J - Te Wairoa/Karikaria, Hinemihi, Ngai Tawake
- 6K - Te Wairoa/Otupoto, Hinemihi, Ngai Tuohonoa
- 6L – Moerangi, Nga Hapū o Tūhourangi
- 6N - Te Kumete, Ngāti Umukaria, Taoi, Wahiao, Tuohonoa
- 6O - Matakana, Nga Hapū o Tūhourangi
- 6P - Wairua, Ngāti Huarere, Tukiterangi
- 6Q - Te Ariki, Nga Hapū o Tūhourangi, Ngāti Rangitihī

The history on the alienation of Tūhourangi land will not be included in this report. However, residents of Tarawera now enjoy their idyllic setting as a result of dubious Crown purchasing of individualised shareholdings, survey liens and other Māori land alienations practices including but not limited to the Public Works Act.

## Hinemihi

By the middle of the 19th century Anglican, Roman Catholic and Wesleyan missionaries from Europe and North America had begun turning the Māori into God-fearing Christians. In 1852 the Revd. Seymour Mills Spencer, an American-born Anglican minister, established a mission station in Te Wairoa. His wooden Te Mu Mission church was built next to his parsonage on the brow of a hill overlooking the settlement.<sup>18</sup>

Spencer also began changing the outward appearance of things at Te Wairoa. He encouraged local Māori to construct fences around their homes, creating English-style gardens with vegetable plots, flowers and trees. They built narrow roads and pathways connecting properties to each other and to the church.<sup>19</sup>

Eventually the settlement began to resemble a conventional English village, with local children attending a native school, a mill producing flour from locally grown grain and the first foreign visitors arriving asking to be taken on boat rides to see coloured formations they had

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<sup>18</sup> Gallop, A. (1998); *The House with The Golden Eyes*: Pg 19

<sup>19</sup> Ibid

heard about from others passing this way. Few knew it then, but the tourism boom had begun.<sup>20</sup>

## **Te Wairoa**

With the establishment of a village at Te Wairoa so too were the many European entrepreneurs who came to Te Wairoa to take advantage of the close proximity to the Pink and White Terraces building hotels (Rotomahana Hotel, Terrace Hotel, Temperance Hall, a school, 3 shops, houses, a flour mill, Te Mu Mission Church and a Hall. “And by 1880 Te Wairoa was home to over 100 members of the Ngāti Hinemihi/Tūhourangi whānau.”<sup>21</sup>

### **Aporo Te Wharekaniwha: Pink and White Terraces**

Everyone from Mark Twain, Anthony Trollop and other eminent Victorian commentators fell over themselves to describe these lost marvels of natural architecture.<sup>22</sup>

The white terrace Te Tarata (tattooed rock) was located at the north east corner of the lake covering some 3 hectares, crowning it was a large boiling geyser with emptying and refilling action. The pink Terrace known as Otukapuarangi (cloudy atmosphere) appeared as about 50 large stairs, tinted in tons of rose, pink and salmon. Rising to a height of 40 metres, 120 feet, above the lake, they covered an area of 2.2 hectares, 5 1/2 acres. The unusual colours were believed to have been caused by ferric ion oxides contained in the water. The warm, clear blue waters running down the terraces invited visitors to take a dip or simply relax and gaze across to the majestic of Mount Tarawera rising out of the water on the far side.

Aporo Te Wharekaniwha was the chief of his people Ngāti Hinemihi a sub tribe of Tūhourangi. It was his idea to create a special place at Te Wairoa allowing tourist to get a first-hand view of Māori culture that had been permitted before, at the same time providing his people with a hall for private events and a place where community matters could be debated.

What Aporo had in mind was something on a more grander scale designed to make a visit to Te Wairoa every bit as memorable as a trip to the pink and white terraces a place where Māori and for “a price’ pakeha could visit which would stand for generations as a carved memorial to his family and himself and an ancient and respected ancestor from long ago called Hinemihi, and in the spring of 1880 he set about constructing the whare.

A wharenuī is a meeting house. It is a spiritual symbol of nobility, a living link with the past and a reminder that life goes on after death and usually bears the name of the heroic tribal ancestral chief.

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<sup>20</sup> Ibid

<sup>21</sup> Ibid; Pgs. 20/21

<sup>22</sup> Ibid; Pg. 12

A meeting house is also architectural, artistic and cultural expression of the people who built it and a powerful statement about their identity.

Part of the problem, at least during 1880, lay in the division of the Te Wairoa people; the Tūhourangi occupying the western half of Te Wairoa village, running back towards Lake Rotokakahi, and the Ngāti Hinemihi holding the major and eastern portion, which included the land running down to Lake Tarawera, and thus the embarkation point for the terraces.<sup>23</sup>

At the beginning of September, 1880 Ngāti Hinemihi erected a toll-gate leading from the village to Lake Tarawera charging a fee of 2 pounds per head. Dissention between Ngāti Hinemihi and Tūhourangi ensued thereby causing upheaval within the community. With the aide of Robert Graham and Wi Maihi Te Rangikaheke a deal was brokered with the two tribes coming to an agreement that the toll-gate be demolished and a set charge be placed on all tourists.

### **Hinemihi Te Ao Tawhito: The Great Ancestress**

Te Wairoa was where New Zealand's Tourism began in the middle years of the 19<sup>th</sup> century, so becoming NZ number 1 tourism resort, and in the centre of this busy hub would stand a magnificent single story carved native building in which visitors would pay to watch performances of traditional Māori songs and dances. It would be the most photographed building in town, the oldest and most famous. Aporo Te Wharekaniwha named her after a famous ancestress Hinemihi o Te Ao Tawhito - Hinemihi of the old world. Hinemihi was a noted female chief who lived in the Hot Lakes area in pre-European times, some 250 years before the tourism invasion. She was a descendant of Ngatoroirangi, priest of the Te Arawa canoe which brought the original members of the tribe to Aotearoa during the great migration over 1000 years previously.<sup>24</sup>

Few meeting houses bear female names, but Hinemihi was obviously an exceptional woman of high rank, famous for having at least three husbands and keeping a giant lizard, or taniwha, named Kataore, as a domestic pet. Stories about Kataore, sometimes described as half man-half fish and with an appetite for human beings, frequently appear in Māori legends.<sup>25</sup>

### **Carvers**

Aporo hired two of the area's best known and respected artisans, Wero Toroi and Tene Waitere.

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<sup>23</sup> Stafford, D.M. 1986; *The Founding Years in Rotorua*: pg. 242

<sup>24</sup> Gallop, A. 1998; *The House With the Golden Eyes*. Pg. 27

<sup>25</sup> Ibid, pg. 36

By the time Aporo was planning Hinemihi, Wero was nearly 80 years old. He was born in Okataina and grew up among canoe builders and carvers from the famed Ngāti Tarawhai hapū, a subtribe of the Te Arawa people. Assisting the old master carver with the carving of Hinemihi was a young former pupil of the carving school, 23-year-old pupil Tene Waitere. Aporo paid Wero and Tene for their work 'by the square foot' - an agreed sum of money for every twelve inches of carving produced by the old craftsman and his young protégé. Each carving was crafted from a single block of wood. At no time was any piece joined with another to form a single carved unit. The carvings were a visual way for Aporo's tribal history to be passed on to future generations and for people with no written skills to understand their origins.<sup>26</sup>

Work on Hinemihi was completed in March 1881. On the morning of 10 June 1886, Hinemihi was to play a pivotal role in the survival of 62 people. Due primarily to the traditional methods of construction, Hinemihi stood fast and it was here that Māori and Pakeha survived that most dreadful night.

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<sup>26</sup> Ibid, pg. 28/9

### 3.2 Te Tūāpapa o ngā Wai

Te whakapapa o te wai describes the relationship between Te Arawa and ngā wai o Te Arawa; in this case Tarawera and the waters associated with the Lakes. The values associated with this relationship are then outlined and the alignment with the wellbeing of the lakes. This relationship requires that these values are upheld, and the mauri of the lakes and people are interconnected.

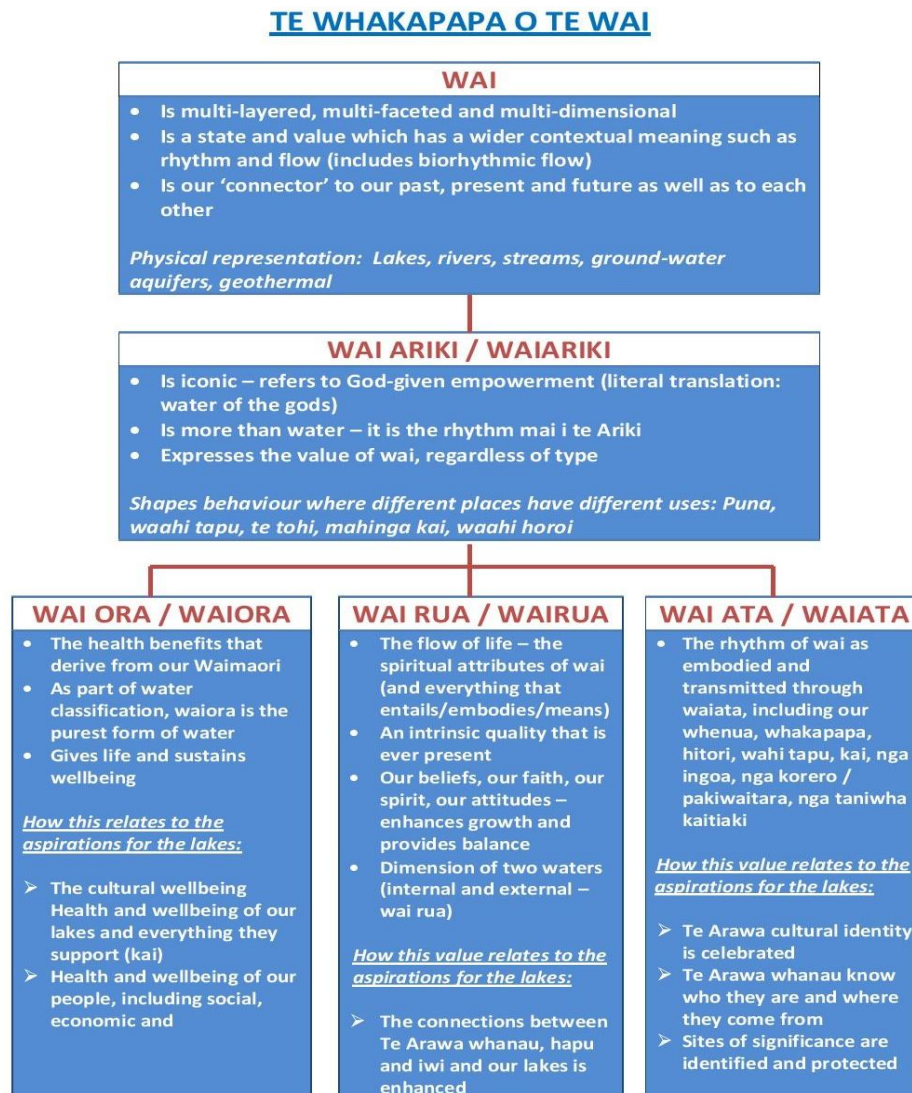


Figure 7. Te Whakapapa o Te Wai (Te Arawa Lakes Trust, 2017)

## TE ARAWA LAKES TRUST - PRINCIPLES

Te Tūāpapa o ngā Wai o Te Arawa sets the Principles which decision makers will need to be aligning to with regard to the Te Arawa/Rotorua Lakes.

1. Value the role that Te Arawa has to play - Te Arawa has a long standing physical and spiritual connection to the Te Arawa lakes since settling in the rohe. Example of this Principle in Action – Projects incorporating Mātauranga Māori.
2. Value Te Ao Māori - The Māori world view, culture and values are a core element of what it means to be Te Arawa. An example of this Principle in Action is the use of Mātauranga-based tools to measure and monitor the health of the lakes.

These Principles can be specifically articulated as a core set of values as outlined below. They are **are multi-dimensional in meaning and application and are interrelated and affect each other.**

<p><b>Kaitiakitanga (sustainable protection of taonga- resources)</b></p>	<p>Ensures the current and future care, conservation, protection and maintenance of relationships with the taonga as well as the use of resources through responsible actions, behaviour, conduct and practices. An active approach ensures the ability to interact with the resources in a manner that is beneficial to both the resources and the welfare of the people. Example: Participating at all levels of resource management; technical, management, governance, application, education.</p> <p>Is the collation and transfer of knowledge (Mātauranga) between generations and across hapū and whānau. Focuses on specific area of interest and traditional practice(s).</p>
<p><b>Mana Whenua/Mana Whakahaere</b></p>	<p>Whānau/hapū/iwi determination of resources. Recognition through ancestral right by lands and waters occupied (includes seasonal use). Influential and primary principle in terms of where you belong, where you count, where you are important, and where you can contribute. They are essential for Te Arawa well-being.</p>
<p><b>Manaakitanga</b></p>	<p>Contribution, hospitality, mutual respect, support, encourage, generosity, enhancement and maintenance of integrity). The ability to care and provide support is integral to working together to achieve aspirations while maintaining the integrity and upholding the mana of others. Example: Hakari: a celebratory dinner of banquet proportions</p>

	after a significant event recognizes and acknowledges the importance of the event and those who participated.
<b>Mauri</b>	Essence, life giving - encapsulates vitality and liveliness and has the ability to attract and deter, as well as be maintained, enhanced and diminished, purely through one's actions, behaviour and conduct. Example: original state of wellbeing for the lakes is diminishing, therefore what ability and added value can we give for it to continue to exist and revitalize.
<b>Orangatanga</b>	State of Wellbeing, health - to be in good health and vigour is to essentially have balance and sustenance to perform the correct functions for livelihood and continued existence. Example: continued lack of nutrients or too much nutrients can cause imbalance and subsequent changes in original state.
<b>RaNgātiratanga</b>	Leadership, guidance, direction, integrity, honesty. Recognition and implementation of values and attributes that build long lasting foundations and can be exercised in a way that has mutual benefit, respect and purpose for all people, now and in the future.
<b>Tikanga</b>	Being responsible for the safety and wellbeing of ourselves and others. Provides for a process and guidelines of what is deemed appropriate for that particular occasion.
<b>Wairuatanga</b>	Spiritual- recognition, acknowledgement and belief that spiritual links exist between people, places and purpose. It is an acknowledgement of the relationship with people to their maunga, awa, moana, marae, tūpuna and atua. Example: Karakia (prayer) conducted and received for gratitude, knowledge, thanks and good intentions.
<b>Whakapapa</b>	Genealogy - maintaining ancestral links between Te Arawa, whenua/moana, atua and acknowledges and defines the relationships and connectedness with the physical and spiritual elements when analysing and synthesising information and knowledge. Example: Te Arawa Lakes Settlement Act 2006- acknowledges the traditional, spiritual, cultural and economic importance and of the Te Arawa lakes and its resources (taonga) to Te Arawa.
<b>Whānaungatanga</b>	Relationships, Inter-relationships. Underlying principle that binds whānau, hapū and iwi and affirms the values of the collective. Examples: formal protocols, integrated management committees, which may be established, maintained, encouraged, enhanced and sustained for the betterment of people, places and purpose.

Figure 8 Te Arawa Lakes Trust – Lakes Structure Policy 2017



**CULTURAL ACTIVITIES UNDERTAKEN ON THE ROTORUA TE ARAWA LAKES**

<p><b>Pa sites</b></p>	<p>Pa are fortified villages. Many pa sites still exist around the shores of the Rotorua Te Arawa lakes and all are archaeological sites identified by the NZ Archaeological Association (NZAA) on their Archsite website. All archaeological sites recorded or unrecorded are protected by the Historic Places Act.</p>
<p><b>Wāhi tapu</b></p>	<p>Wāhi tapu are scared sites. Not all wāhi tapu are archaeological sites. Some natural features around the lake shores, such as kohatu (rocks), repo (swamps), ana (caves), puna (springs), ngawha (hot pools), motu (islands) are regarded as wāhi tapu by various hapū for many different reasons, for example, Iriirikapua, Te Kuri a Te Roi, Motutara, Te Rua o Umukaria, Te Ana o Tunohopū. Most of the above natural features have, at some time in local Māori history, been associated with death, burials, or battles, taniwha, or blood spillage.</p> <p>Over centuries and fluctuating lake levels, many of these wāhi tapu may now be above or below a lake surface or margin.</p> <p>The Historic Places Act defines wāhi tapu as "places sacred to Māori in the traditional, spiritual, religious, ritual or mythological sense": a very broad definition that encompasses all sites significant to Māori. There are very few sites in the Te Arawa region that are registered with the NZ Historic Places Trust as wāhi tapu. Many, however, are listed on the ROC's District Plan</p>
<p><b>Mahinga kai</b></p>	<p>Mahinga kai are traditional food gathering or collection areas. Te Arawa Lakes (Fisheries) Regulations 2006 sees the return of management of customary non-commercial fishing to Te Arawa. The fisheries regulations provide for kaitiakitanga, establishment of Komiti</p> <p>Whakahaere (Fisheries Committee) and the development of the Mahere Whakahaere (fisheries plans) for Te Arawa's five taonga species, koura, koaro, kākahi (freshwater mussel), tuna (eel), and inānga, including morihana (carp). Traditional species of fish and shellfish are still gathered at certain times of the year from most lakes.</p> <p>Some lakes were more renowned than others for their abundance of koura, inānga, kākahi, morihana, toitoi (bully), or tuna. Other native species have disappeared since the introduction of trout. Traditional methods of gathering these native species are still used. The materials used to make the traditional snare or net device may have changed but the methods used to make the catch are the same.</p> <p>Koura is probably the most desired of all the traditional food sources. Koura is often referred to as a "kinaki"; a delicacy to add relish to a</p>

	<p>feast. Most of the lakes and streams in the Te Arawa district have koura. The traditional tau or koura trap is still used as well as the "rama koura" method. Rama koura is where a gatherer will use a lamp/torch and walk along shallow lake edges at night when the koura come into the shallow waters to feed during the late spring and summer months. The gatherers catch them either in their hands or with a korapa (long handled scoop net). In areas where there is a high density of lakes structures, this practise is almost impossible</p>
<p><b>Mahinga raranga/whatu</b></p>	<p>Mahinga raranga/whatu are traditional plant gathering places. Harvesting of traditional resource plant materials from many lakes is still practised, but not as often as it once was.</p> <p>Harvest is mainly for weavers of traditional Māori garments, artefacts and art works, who gather harakeke, raupo, toetoe, paopao, and paru from traditional harvesting places around the lake edges. Weavers of traditional garments, mats, and kits will gather plant materials from their own lake resource areas first. If there are none they will go to the lake of a related iwi/hapū. Lists are provided of the tribes which belonged to each lake. This custom also relates to traditional foods. The two plants that grow best in the lakes are paopao (also known as kuta) and raupo. The deeper the water where these plants grow, the longer the whenu (weft and warp strips) that weavers can work with. Both raupo and kuta once grew prolifically around all the lakes in the district and would have helped to filter nutrients out of the water.</p>

Figure 9 Te Arawa Lakes Trust – Lakes Structure Policy 2017

### 3.3 Tarawera framework

The purpose of the development and presentation of the CIA phase 2 has been to allow mana whenua who maybe potentially affected by the establishment of a Tarawera wastewater treatment system to:

1. Establish a relationship with the Bay of Plenty Regional Council, Rotorua Lakes Council, the Tarawera Ratepayers Association and the TSSC.
2. Understand the activity and the proposed options.
3. Identify and articulate the relationships with taonga.
4. Identify the effects of the proposed activity and options on mana whenua through a values-based framework.
5. Assess the impact of the effects identified and any associated risks.
6. Assess where possible whether and how these can be avoided, remedied or mitigated.
7. Frame recommendations on the preferred measures mana whenua would like local authorities to consider mitigating the adverse effects.
8. Report back to mana whenua on the results of the cultural impacts assessment.
9. Present findings to the local authority

Note – through this process the maintenance of an ongoing relationship should be continued as good practice and valuable to all parties.

## **The CIA Analysis Framework**

Information was gathered through the workshops held with a cultural advisory panel (representing mana whenua and iwi organisations), individual interviews with Māori landowners and hui-a-iwi. Technical information was provided by an independent engineer.

From the first Cultural Impacts Assessment Phase 1, four priority areas were considered:

- The quality of the water at Lake Tarawera
- Te hokinga mai ki Tarawera - The Return Home
- Tikanga
- Sites of Significance

In addition to the above, through the engagement process in the development of this Cultural Impacts Assessment Phase 2, the following key areas were also considered:

- Protecting Papatuanuku
- Working with Council

Participants were asked to consider the cultural impacts including issues and opportunities with regards to the above key areas of the proposed options, the status quo and provide mitigations or remedies.

The Cultural Assessment matrix (appendix 1) was constructed to

1. Address key issues as above
2. Identify potential impacts against key cultural variables
3. Provide a summary of recommendations

### 3.4 Statement of Key Values

Through the journey of the development of this Cultural Impacts Assessment (Phase 2), we have collected the dialogue of Mana Whenua through historical information and an interview process and identified these as the Key Values:

#### **Kaitiakitanga**

*Ensures the current and future care, conservation, protection and maintenance of relationships with the taonga as well as the use of resources through responsible actions, behaviour, conduct and practices. An active approach ensures the ability to interact with the resources in a manner that is beneficial to both the resources and the welfare of the people. Example: Participating at all levels of resource management; technical, management, governance, application, education.*

*Is the collation and transfer of knowledge (Mātauranga) between generations and across hapū and whānau. Focuses on specific area of interest and traditional practice(s).*

Tūhourangi have never relinquished their mana or sense of kaitiakitanga in the Tarawera rohe. Mana Whenua have always maintained their relationship with ancestral lands, waterways and taonga fish species. Hapū members were aggrieved upon learning of the poor wastewater disposal methods that have been allowed to continue to pollute Lake Tarawera. This has a negative impact on the ability of Mana Whenua to exercise their cultural value of kaitiaki.

Ngāti Whakaue hapū members have also expressed their sense of kaitiakitanga as it pertains to their ancestral land. Ngāpuna already receives the wastewater from the Rotorua community. The Ngāpuna lands and community is already suffering as a result and further inputs from outside of the Rotorua catchment will not be accepted by the Ngāti Whakaue hapū of Ngāpuna.

The Rotorua community has its own, current issues to deal with. The consensus is, this is an issue for the Tarawera community to resolve and pay for.

#### **Manaakitanga**

*Contribution, hospitality, mutual respect, support, encourage, generosity, enhancement and maintenance of integrity). The ability to care and provide support is integral to working together to achieve aspirations while maintaining the integrity and upholding the mana of others. Example: Hakari: a celebratory dinner of banquet proportions after a significant event recognizes and acknowledges the importance of the event and those who participated.*

Our ability to manaaki our visitors is being brought into question. Our families, children and visitors from all over the world are unaware the water they swim in has excessive levels of e-coli. This is a matter of national importance.

Visitors who rent book-a-batch or holiday homes must be made aware if the water they drink whilst residing at Tarawera, comes from the lake or from reticulated and appropriately treated water sources. Our manaakitanga dictates that our guests should not be unknowingly drinking water contaminated with fecal coliform and e-coli.

Mana Whenua hold proud traditions of being able to supply food for our guests. Taonga species such as Koura and tuna (including trout) are still caught and prepared for special occasions. The protection of the habitat and ecosystem in which our taonga species live and reproduce must be protected to ensure future generations are able to continue with their cultural tradition of manaakitanga.

### **Rangatiratanga**

*Leadership, guidance, direction, integrity, honesty. Recognition and implementation of values and attributes that build long lasting foundations and can be exercised in a way that has mutual benefit, respect and purpose for all people, now and in the future.*

As an expression of rangatiratanga during the hui a iwi on 26 March 2019, motions were passed from attendees to emphasise Mana Whenua distaste at having to deal with degradation of their taonga. The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga:

- 1 No effluent from Tarawera be traversed back to the Rotorua catchment. It is culturally and naturally wrong to run it against the natural flow of the land/water which is out through the Tarawera river. Annie Balle, Betty Hona
- 2 Treatment plant at spot x with tangible benefits to mana whenua. Jim Schuster, Gail Lee
- 3 Papakainga development according to our tikanga out at Tarawera. Peter Mohi, Michelle Hawe

A lengthy discussion and discourse also occurred around the approximately 177 properties that require immediate attention. Abatement notices must be served on properties with a limit on the number of people who can reside in the property at any one time

The customary rights of Mana Whenua must be protected through the key value of and expression of Rangatiratanga.

## **Wairuatanga**

*Spiritual- recognition, acknowledgement and belief that spiritual links exist between people, places and purpose. It is an acknowledgement of the relationship with people to their maunga, awa, moana, marae, tūpuna and atua. Example: Karakia (prayer) conducted and received for gratitude, knowledge, thanks and good intentions.*

Wai meaning water and rua meaning two. In a simple sense this means the physical and spiritual awareness of living. Spirituality is a sense of connection and knowing there is something greater than ourselves. A moral compass to guide the living and to have regard for other people and the environment in which we live.

To Māori, the physical and spiritual world are intertwined, which leads back to wai, water. Mana Whenua continue to return to their lakes within the Tarawera catchment due to a spiritual connection with the land and water, which can never be extinguished.

It is known that residents in Tarawera take their water directly from lake Tarawera. The flow of poorly treated wastewater into lake Tarawera, then taking that water again for human consumption to sustain the physical then contaminates the spiritual. All who enjoy the waters, especially throughout the summer are also unknowingly affected. The responsibility for this situation rest within the Tarawera community. The cultural value of Wairuatanga must guide the ethical stewardship and moral compass of future development.

## **Tau utuutu**

*Utu and Muru set the context for the consequences of decisions and/or actions outside of the prescribed laws. Utu is the compensation, consequence or a reciprocal exchange for some wrong-doing or non-compliance with tika and pono or tikanga and kawa.*

*Balance is provided for and can be restored through the practice of utu and muru. The law (tika and pono or tikanga and kawa) is known and there is transparency in the system of asserting compliance and retrieving compensation. We are all part of the same system of tikanga and kawa although our circumstances may be different.*

*There is also the side of reciprocity which instils a reward or positive acknowledgement for generosity, maintaining what is tika and pono or upholding tikanga and kawa. There is an expectation that everyone is required to do their part, and all will thrive when this happens.*

*The care for the land and for each other will mean all will be rewarded with a greater outcome.*

Used in this regard, tauutuutu helps to complete the circle of mauri. Tauutuutu is the restoration of balance to the environment through the reciprocal actions of the community. The privilege of living in the shadow of Ruawahia comes with the responsibility of giving back to the land and water in a much more sustainable manner.

Our Rangatiratanga determines this journey will not be completed in isolation of each other.



### 3.5 Impact of Wastewater Discharge on Mana Whenua

There is consensus that the current situation, whereby the ongoing discharge of untreated wastewater from most of the properties in the Lake Tarawera catchment is unacceptable.

The negative impacts are felt by Mana Whenua and are expressed in the following ways:

- It is detrimental and harmful to the natural resources associated with the Lake. This then extends to being harmful and offensive to our people and culture.
- The mauri of the lake and the life within it is negatively impacted – the life force of the lake and environment is not in balance and therefore the mauri of the people is impacted,
- The mana of the Lake and the people who are regarded as kaitiaki is negatively impacted
- The tapu/noa relationship is negatively impacted - the ability for the Lake and environment to flourish is significantly diminished. The ability of kaitiaki to restore the balance is impacted.
- Kaitiakitanga is negatively impacted – the role of kaitiaki is diminished by the control of the discharge by others and the Lake and environment are not protected

Consequently, there is a detrimental effect on the well-being of mana whenua that is reflected alongside the diminishing well-being of the Lake.

## 4.0 STATUTORY AND POLICY CONTEXT

### 4.1 The Treaty of Waitangi

Tangata whenua interests relating to freshwater management are recognised and provided for within a statutory and planning framework, whereby decisions relating to freshwater management (including discharges to water) are made.

Application of the Treaty is implemented through established Treaty principles. The four following principles are ones most commonly applied through the work of Regional Council:

- **Active Protection**

To actively protect that which is most important to Māori. This may include their rights (including citizenship), property, treasures, special places, culture, language, relationships with another iwi and whānau, or other.

- **Tribal Authority**

Guarantees Māori the right to manage, control and enjoy their own resources and taonga in accordance with their cultural preferences.

- **Redress for past breaches**

To address past actions or omissions of the Crown that led to harmful effects for Māori.

- **Duty to Consult**

Ensuring Māori are effectively consulted on matters of importance to them.

### 4.2 Resource Management Act 1991

The RMA provisions include recognising and having regard for the relationship Māori have with land, water, sites of cultural significance, kaitiakitanga, iwi management plans etc. Under the RMA, engaging with Māori is required within the Regional Policy Statement (RPS) and Regional Plan development, and through resource consent processes.

Specific provisions with the RMA relevant to this activity are:

#### **Section 2**

Defining and having regards for kaitiakitanga.

#### **Section 6 (e)**

Recognising and providing for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga.

#### **Section 7 (a)**

Having particular regard for kaitiakitanga

## Regional Policy Statement

The Regional Policy Statement (RPS) is prepared under the RMA and contains provisions specifically for Māori. <sup>27</sup>

Policy IW 7D	Cultivating partnerships between iwi and statutory management agencies are "essential if the sustainable management of the region's resources is to be achieved."
Policy IW 1B	Enabling development of multiple-owned Māori land?
Policy IW 2B	Recognising matters of significance to Māori
Policy IW 3B	Recognising the Treaty in the exercise of functions and powers under the Act.
Policy IW 4B	Taking into account iwi management plans.
Policy IW 5B	Avoiding adverse effects on matters of significance to Māori
Policy IW 6B	Encouraging tangata whenua to identify measures to avoid, remedy or mitigate adverse cultural effects.

Figure 10. Table of RPS Iwi Resource Management policies (BOP RC, 2014)

## Resource Consent Processes

Engagement with Māori under the resource consent application process includes obligations under Sections 6(e), 6(f), 7(a), and 8 of the RMA.

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<sup>27</sup> [https://www.boprc.govt.nz/media/566892/operative-rps-1-october-2014\\_part-three-amended-19-sept-16.pdf](https://www.boprc.govt.nz/media/566892/operative-rps-1-october-2014_part-three-amended-19-sept-16.pdf)

### 4.3 Other legislation

#### **Local Government Act 2002 (LGA)**

The Local Government Act 2002 gives local authorities responsibility for taking an informed and long-term approach to how decision making can benefit the economic, social, cultural and environmental well-being of Māori.

Specific provisions relevant to this activity relating to Māori under the LGA are:

#### **Section 4**

Treaty of Waitangi

#### **Section 81**

Contribution to decision making and capacity building

#### **Section 82 (2)**

Principles of consultation - processes for consulting with Māori

#### **Section 14 (1) (D)**

Building capacity

### 4.4 Iwi Management Plans

There are specific legislative requirements in the RMA that require decision makers to take iwi management plans into account. Hapū and iwi resource planning documents provide for tangata whenua interests to be considered in Council processes, including resource consent processes.

#### **Ngāti Rangitahi Environmental Management Plan**

<b>NGĀ RAWA WHAKAHIRAHIRA</b>	
<b>Resource</b>	<b>Issues</b>
Water bodies	Rivers, streams, lake beds and banks have been dramatically altered to provide for land - use.

	Water bodies are unable to support living ecosystems including fish and bird habitats.
<b>Objectives</b>	
<p>Preserve or restore and maintain the natural form and character of water bodies including the margins and fauna.</p> <p>The restoration and enhancement of the Tarawera River, Rangitaiki river, Lake Tarawera, Lake Rerewhakaaitu, and Lake Rotomahana. <sup>28</sup></p>	

Figure 11. Policies for Environmental Management, Nga Rawa Whakahirahira (Ngāti Rangitihi, 2011)

<b>He Wai - Water</b>		
<b>Resource</b>	<b>Issues</b>	
Wai Kino - Wastewater	<p>Matters of concern to Ngāti Rangitihi include protecting the mauri of water. Ngāti Rangitihi state that mauri is the essence within water that ensures the continuation of life that dwells within it. In order for future generations to gain benefits from both the sea and freshwater, the mauri of water must not be defiled.</p> <p>Contaminants of particular concern are: Sewage and effluent discharges; rural, industrial and urban discharges; stormwater and sediment runoff; ... Mixing of wastewater with waterbodies directly maybe spiritually and culturally offensive.</p>	
<b>Objectives</b>	<b>Policies</b>	<b>Methods</b>
Water is avoided as a medium for transporting treated waste	The appropriate treatment of wastewater (to remove solids, changes in colour, smell, bacteria) and its discharge and penetration to land, avoiding direct discharge to rivers, lakes and the sea	<p>Waste reduction programmes.</p> <p>Trialling composting toilets in appropriate situations including public areas, rural situations remote areas with no infrastructure.</p>

<sup>28</sup> Te Mana o Ngāti Rangitihi Environmental Management Plan page 28

	<p>The minimisation of use of water to transport waste.</p> <p>The minimum standards for water quality outputs from wastewater treatment increase over time.</p> <p>Encourage and promote new technologies that utilise different mediums for treating waste (rather than water) and minimising the use of water.</p> <p>Preference for treating wastewater at source.</p>	<p>Conduct clean -up programmes.</p> <p>Work with consent authorities to ensure consent conditions relating to water quality and quantity of consent holders being adhered to through regular monitoring and response to compliance issues and complaints.</p> <p>Submissions to LTCCP, annual plan, designations and consent applications regarding wastewater treatment systems and plants.</p> <p>Work with joint -agencies to improve lake water quality in Rotorua lakes, Tarawera and Rangitaiki Rivers.<sup>29</sup></p>
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Figure 11. Policies for Environmental Management, Hei Wai (Ngāti Rangitahi, 2011)

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<sup>29</sup> Te Mana o Ngāti Rangitahi Environmental Management Plan page 30

## 5.0 FINDINGS and RECOMMENDATIONS

### 5.1 Summary

The Lake Tarawera catchment is significant to not only Mana Whenua, Tangata Whenua and the settlement entities of Te Arawa Lakes Trust, Te Mana o Ngāti Rangitihī and the Tūhourangi Tribal Authority but also to residents of Tarawera, our local community and the wider public of New Zealand and international visitors.

International tourism in Aotearoa New Zealand was first established at Te Wairoa with Tūhourangi show casing the pink and white terraces prior to the eruption of the Rotomahana lakebed. The stories of our ancestors continue to be the backbone of the wider tourism industry in Rotorua.

There are seven lakes with natural flows into Lake Tarawera and subsequently the Tarawera River. The options for consideration in this cultural impact assessment are for reticulated wastewater to flow in an unnatural direction. Our tikanga compels mana/tangata whenua to hold to the natural flows, avoiding lengthy pipelines and the possibility of infrastructure failure.

The Taupo District Council are currently experiencing an environmental disaster due to poor monitoring and placement of their sewerage reticulation infrastructure. The cost of this failure is yet to be determined in both financial and cultural terms.

Local Councils around the country are also experiencing environmental disasters due to establishing waste dumps on the banks of rivers and coastal margins. Rising sea levels and severe weather events due to global warming are highlighting decisions from previous generations that have now become a burden for current generations. It is incumbent on this generation to get our infrastructure right for future generations. This will require different thinking. The privilege of residing on the shores of Lake Tarawera also comes with the responsibility of looking after the environment.

The residents of Tarawera are not solely responsible for the current seepage and effluent discharges into Lake Tarawera. The Rotorua Lakes Council and the Bay of Plenty Regional Council must also shoulder responsibility which leads back to Central Government's powers of delegation to their local authorities.

The Onsite Effluent Treatment Regional Plan 2006 has assessed Lake Tarawera as a 'Maintenance Zone,' pending Plan Change 14. Septic tanks must be pumped out every three years. If the tank size is a good size, the pump out frequency can be reduced to four, five or six-yearly. An outlet filter must be installed. Soak holes must be replaced by a trench system. 43% of properties within the current Lake Tarawera maintenance zone are illegal with no room for an OSET upgrade. 56% of properties require significant upgrades.

This management regime is not sufficient to stop the nutrient discharge to Lake Tarawera. The Bay of Plenty Regional Council must enforce legal action immediately and both Councils must act to manage this issue until the reticulation is in place.

There is general agreement and acceptance that reticulation of wastewater is needed to mitigate the issues of nutrient discharge and e-coli to the Lake. There is concern however that the preferred option does not reflect the views and values of the mana whenua of

Tarawera. This CIA outlines those views and values and offers some insight into the matters to be addressed moving forward.

It is important that Tangata whenua maintain and exercise the right to have their say in a manner and form that is relevant to them. The history provided in this report is first and foremost to provide a more balanced outlook to the resource consenting process. The adverse environmental effects caused to their land from the past, present and into the future must be acknowledged in order to eliminate, isolate or minimize further potential environmental degradation.

At a meeting of Landowners, tribal representatives, hapū and whānau members of Tūhourangi, Ngāti Rangitahi, Ngāti Hinemihi, Ngāti Whakaeu at the Millennium Hotel on Tuesday 15th October there was unanimous support for a rejection of the Steering Group preferred proposal (denoted by the Blue Line) presented on pg 27 in Fig 6. The Findings and Recommendations presented here were also supported and the report was approved by the meeting to be presented to the Project Working Group.



## 5.2 Findings

The following actions will support and uphold the cultural values as outlined in this CIA;

Value	Action
<b>Kaitiakitanga</b>	Identify and implement ways to recognise our relationships with agencies, allowing mana whenua and hapū to be represented and engaged in ongoing processes.
	Ensure we are involved in strategic decision making.
	Develop meaningful ways in how we in how we connect, articulate, monitor and report on behaviors, activities and impacts in the environment.
	Construct and utilise a conceptual framework that encompasses cultural values to understand the issues, identify appropriate tools and support responses, allowing tikanga to be addressed.
<b>Manaakitanga</b>	Ensure manaaki is written into council processes.
	Share this value and understanding of mutual respect with our Tarawera neighbours and demonstrate how we respect and honour their mana and this can be reciprocated
	Grow understanding about our values that protect our shared environment so that we can grow as a people and a community.
<b>Wairuatanga</b>	Host wananga and learning opportunities to grow understanding about our values such as wairuatanga and the connection between the spiritual and physical world, the people and the environment and their respective well-being that is contingent on maintaining in balance.
	Install relevant signage and/or symbols to increase knowledge and understanding of wairuatanga, mauri and mana of the environment.
<b>Rangitiratanga</b>	Include mana whenua in decision making at all levels associated with the wastewater treatment scheme; the role must be defined.
	Develop and implement a tikanga based process for consultation, communication and representation, to enable whānau and hapū to be engaged, invited and informed.
	Ensure Māori knowledge and values are incorporated in process, solution, design and implementation
	Uphold rangatiratanga and associated rights so that we can demonstrate leadership and decision making for the greatest good and highest value – that is the restoration of lake water quality for future generations.

<b>Tau utuutu</b>	Develop and practice better communication between mana whenua, rate payers and council, leading to better understanding about the current situation to identify shared values about the protection of the lake and the privilege and responsibilities of living there.
	Recommend local councils under the RMA consider putting a consents process in place for rate payers to ensure such effects on the environment are managed more sustainably.

### 5.3 Recommendations

The feedback and response provided by ngā uri o Tūhourangi me Ngāti Rangitahi have recommended:

1. Avoidance, mitigation and remedial options are assessed and implemented immediately for those properties that are currently non-compliant and are discharging to Lake Tarawera. The allowance of ongoing discharge with no action is considered a failure by Councils to uphold their role and a failure of the community to act in good faith. This could be options such as limiting the number of people living in a dwelling, if a dwelling is not used as the primary abode then the dwelling cannot be utilised, restricting access to holiday rentals and accommodation in homes not occupied by the owner. Houses cannot be sold or rented until the remediation action has taken place.
2. Rotorua Lakes Council assesses the viability of an in-catchment treatment plant in partnership with Mana Whenua. Alternative options for in-catchment treatment can be implemented in the interim.
3. Rotorua Lakes Council acknowledge the roles and responsibility of tangata whenua as kaitiaki and engage in a direct conversation with Tūhourangi, Ngāti Hinemihi and Ngāti Rangitahi on the way that this role and these responsibilities can be enabled in the ongoing management of Lake Tarawera and the surrounding lands.
4. The start-up cost of the reticulation is shared amongst the parties that have contributed to the issue. All new development in the catchment will be required to connect to the scheme; Where Marae developments and Papakainga have an alternative option that meets the same standard this will be considered.

# APPENDICES

## 1. CIA 2 Assessment Matrix

<b>Quality of Water at Lake Tarawera</b> <i>'Water is paramount. It is sacred and life giving.'</i>			
<b>Issues/opportunities</b>	<p>Through whakapapa, waiata, karakia, cultural practices we continue the relationship with Tarawera.</p> <p>The lake is included in our <b>whakapapa</b> – it has mana as our <b>ancestor</b>.</p> <p>Wastewater and human waste diminish the <b>mauri</b> (life force and well-being) of our lake.</p>	<p>'Water is life, everything revolves around water, our bodies are 70% water. Without water nothing can survive. Water quality is reflective of the people that live around it. If our water degrades or becomes toxic, then it's a reflection of us, of people in society.'</p> <p>'We agree with that objective, to actually making sure that our wai is healthy, but not that the cost of our own health and well-being'</p> <p>Water quality – 'it has to be high enough to enable us to continue our cultural practices, our traditional methods of harvesting kai, and also our own sense of kaitiakitanga.'</p> <p>'From my personal experience, that lake {Tarawera} was one of the key foods suppliers. Even as a very young person I recall we used to fish for the koura and the tuna... some of the biggest tuna ever came out of Tarawera.'</p>	<p>Kaitiakitanga</p> <p>Mauri</p> <p>Tikanga</p> <p>Orangatanga</p> <p>Wairuatanga</p> <p>Mana whenua</p> <p>Whakapapa</p>

<p><b>Status quo</b></p>	<p>Concern was raised that pollution is occurring and that local/regional authorities are allowing that to continue without consequence or accountability</p> <p>Mana whenua asked why residences that were red stickered were allowed to continue to discharge and why had abatement notices not been issued.</p>	<p>‘Lake water quality is most important, so too is holding those to account that have allowed these practises to continue – residents, ratepayers, RLC, BOPRC.’</p> <p>‘If you put together as one, all the output sites that are being discharged and it was being discharged into any other lake, they would have to cease and desist immediately.’</p> <p>‘The residents have been red-stickered – why can’t they be closed down?’</p>	<p>Whānaungatanga</p>
<p><b>LPGP via Tarawera Road</b></p>	<p>Agreed this option will improve, protect water quality at Lake Tarawera</p> <p>Mana whenua confirm support for the objective to improve the health of the wai, but not at the expense of the health and well-being of the people.</p>	<p>‘This will likely affect other lakes. Where is DoC in this process? DoC has to empty and manage their toilets. Why can’t these 177 out there sort it out instead of piping? We have Tarawera river on the other side that has already been polluted.’</p> <p>‘Which is more important, getting the water clean, or the process? So long as the process doesn’t lead to getting para back into the lake’</p>	
<p><b>STEP via Tarawera Road</b></p>	<p>Agreed this option will improve, protect water quality at Lake Tarawera</p>	<p>Not all properties will be able to accommodate a STEP system due to the slope of the land and stability, available space, proximity to ground water and unsuitable soils.</p>	

<p><b>Local Treatment Plant</b></p>	<p>Agreed this option will improve, protect water quality at Lake Tarawera</p> <p>Whilst traditional Māori did not have to deal with modern, urban issues of wastewater management, current belief is that wastewater disposal directly onto land is the accepted practice. This because of Papatuanuku (earth Mother) has the power to cleanse these waters and utilise effluent nutrients to increase land fertility</p>	<p>‘Adding Tarawera discharge to the town wastewater adds to the problem, we wanted our own.’</p> <p>‘If the hapū at Tarawera make the mess it’s our fault. We make the mess we look after it’</p> <p>‘We are not talking about money, we are talking about what’s best for the whenua and our Roto’</p>	
<p><b>Summary</b></p> <p>Within the natural environment, all things of the earth have a <b>Mauri</b>, a life force connected to the survival of our planet/Papatuanuku. The continued discharge of water contaminated with human waste affects not only the physical part of a human being, but also the spiritual being. Residents of Tarawera currently draw their drinking water directly from Lake Tarawera which leads us back to an ethical responsibility in dealing with the discharge of poorly treated human waste directly to water. The general public are relatively unaware that during the summer months, they are enjoying recreational activities within a heightened e-coli contamination zone. All agree Tarawera must be reticulated. However, the problem was created by the residents of Tarawera and should be dealt with by the residents of Tarawera through a land treatment system based in Tarawera.</p>			

## Te hokinga mai ki Tarawera - The Return Home

*Mana whenua have not been home for 140 years. Colonialism and the eruption whilst having a devastating effect, has not diminished the determination to return home to Tarawera.*

<b>Issues/opportunities</b>	<p>Tūhourangi, Ngāti Hinemihi whānau/hapū/iwi are progressing plans (at concept drawing stage) to re-establish residence and presence at Lake Tarawera, through the development of up to 3 marae (of various capacity/size).</p> <p>Up to 300 people per day onsite for events such as hui, tangi</p> <p>Papakainga built alongside proposed marae</p>	<p>‘Te Ariki was seen as a place where we could relocate some of our people. If they are going to be hunter gatherers all the time then why not have them close to that area then around by the hot water beach and those areas, where you’ve got natural environmental systems.’</p> <p>‘It’s where we belong, it’s our land. It’s a collective instinct, belonging and personal. It would be great for our people to be able to go back there, but it is expensive. We have to find a way to enable our return.’</p>	<p>Mana whenua</p> <p>Whakapapa</p> <p>Rangitiratanga</p>
<b>Status quo</b>	<p>Concern/interest raised about the councils plans for future development (including Playnes Farm and other pastoral land) and what impact that will have on any treatment system for Tarawera and the lake ecological environment.</p>		<p>Kaitiakitanga</p>
<b>LPGP via Tarawera Road</b>	<p>This is considered most practicable by the iwi organisations. Tūhourangi Tribal Authority, Te Mana o Ngāti Rangitihī and TALT, also some of the landowners not in the immediate vicinity.</p>		

	Affordability was signalled as important to some mana whenua, but not all.  <b>However, at hui-a-iwi, many shareholders from land blocks near Te Wairoa were unanimous in voting against this option.</b>		
<b>STEP via Tarawera Road</b>	Reticulation is unanimously agreed	The Ōkāreka reticulation scheme is based on an LPGP system. ‘Can a STEP system be connected to an LPGP system at Ōkāreka’? No.	
<b>Local Treatment Plant</b>	Mana whenua have plans for the repatriation of Hinemihi (meeting house), the development of papakainga and kaumatua flats, as well as tourism and business opportunities associated with the trail and the Buried Village.	‘Having those utilities in place can only be good for Ngāti Hinemihi development. There are plans for 3 marae to go out there.’	
<b>Summary</b>			
<p>Tūhourangi have never forgotten their history and long association with Tarawera. It is encapsulated in the waiata we sing during family occasions and tangihanga. Waiata when sung remind us all of our history and continues to fire mana whenua ambitions to return to Tarawera and resettle their lands. This is known in cultural terms as <b>ahi kaa</b> or home fires.</p> <p>Mana Whenua have maintained an ongoing association with Lake Tarawera and other surrounding lakes long before the Treaty of Waitangi and land alienation for European settlement. The potential additional cost of a wastewater reticulation scheme, according to Tūhourangi is not based on cost as Tūhourangi and other hapū and Iwi connected with Lake Tarawera did not create the current dilemma.</p> <p>However, any future development or subdivision of land must have provision to enable Mana Whenua to return home unencumbered.</p>			



## Tikanga

*‘From Māori point of view, perspective, really trying to safeguard, protect and look after Papatuanuku*

*... we go for the best system’*

<b>Issues/opportunities</b>	<p>The current leaking, seepage and uncontrolled discharge is offensive and unacceptable.</p> <p>Taking responsibility for the breach is not apparent. The Government must take responsibility</p>	<p><i>‘So long as we do our best to hold to the notions of tapu and noa, the best we can... It’s to keep things in balance, so that life can be sustained.’</i></p> <p><i>‘It comes back to Papatuanuku, mother earth, the way we were raised, the way we were born, the way we will die, the way we will return. Otherwise without these values, it’s a licence to pollute and destroy. If we practise these values, we are practising kaitiakitanga.’</i></p>	<p>Tikanga</p> <p>Wairuatanga</p> <p>Orangatanga</p> <p>Kaitiakitanga</p>
<b>Status quo</b>	<p><b>It is abhorrent for Māori that human waste is entering waterways from which drinking water is sourced, where natural resources (mahinga kai, raupo, harakeke) are traditionally gathered, and people swim.</b></p>	<p><i>We knew well from a very young age that you did not mix para with the needs of the living’.</i></p> <p><i>‘If you mixed para with things that went into your mouth you were attacking the wairua in the person’.</i></p>	<p>Whānaungatanga</p> <p>Kaitiakitanga</p> <p>Rangitiratanga</p>
<b>LPGP via Tarawera Road</b>	<p>Mana whenua is aware the proposed Rotorua Lakes Council treatment plan is not well supported by affected iwi, hapū</p>	<p><i>‘The transfer of human waste from ‘our’ rohe to another rohe is not acceptable.’</i></p>	

	<p>in Rotorua. There is cultural concern that we do not add to their problem.</p> <p>Concern that there are risks of infrastructure pipe failure along a significant distance that could impact on two other taonga lakes – Rotokakahi, Tikitapu.</p>		
<b>STEP via Tarawera Road</b>	The transfer of wastewater from one tribal rohe to another.	It is preferred that each catchment deals with its own waste, rather than constructing a 20km pipe which traverses a number of tribal lakes and boundaries	
<b>Local Treatment Plant</b>	<p>The development of the Rotoiti Haumingi 9B3B treatment plant was discussed at length.</p> <p>The cultural advisory committee visited the council site to see and learn about the STEP and LPGP technology; this was followed by a visit to the Rotoiti plant under development.</p> <p>Risk – An onsite treatment plant may not be appropriate due to topography and other constraints at Lake Tarawera. Risk being that contaminants end up back in the lake.</p>	<p><i>‘Preferred treatment would be land based dispersal on our site.’</i></p> <p><i>‘We would prefer to deal with it ourselves.’</i></p> <p><i>‘We do not ‘flush and forget’.</i></p> <p><i>‘Traditionally, everything went back to the land, it certainly didn’t go back to the water.’</i></p>	

## **Summary**

Tikanga is based on ethical responsibilities and how we treat not only one another but also our natural environment. Our tikanga sets rules to prevent contamination of our physical and spiritual being that might compromise generations to come. The enjoyment of our natural resource should not be compromised by limited and virtually non-existent wastewater disposal practices.

Tarawera is a natural resource that has been and continues to be enjoyed by people from all over New Zealand and the world. Our manaakitanga therefore dictates how we should treat our guests. They should not be unwittingly and unknowingly exposed to contamination from their hosts.

The proposal to transfer waste from one tribal rohe to another does not satisfy tikanga. It is fraught with concerns over the length of the pipeline, and the potential for infrastructure failure and contamination of other pristine water bodies within the Tarawera catchment. The burden of responsibility and cost should not rest within the Rotorua catchment but must remain in the Tarawera catchment.

## Sites of significance

<p><b>Issues/opportunities</b></p>	<p>Wahi tapu are sites of significance that are of cultural importance. They can be areas of land, water, space that hold significance for cultural and spiritual purposes and activities. They can include: old pa sites, excavations and middens (pa tawhito) • old burial grounds and caves (ana tupapaku) • current cemeteries (urupa) • battlefields (wahi pakanga) • sacred rocks, trees or springs (nga toka, rakau tapu) • water courses, swamps, lakes and their edges (waipuna, awa, roto)</p> <p>They can be sites of archaeological importance where taonga tuku iho (e.g. whakairo, toki, hiinaki) are found.</p> <p>They can be both tangible objects and intangible (spiritual), connected by whakapapa.</p>	<p><i>'In a broad sense the whole of the Lake area and surrounding whenua is considered sacred due to the devastation and loss endured by the Tarawera eruption.'</i></p> <p><i>'Some sites may remain hidden and not revealed due to sensitivity and importance.'</i></p>	<p>Kaitiakitanga</p> <p>Wairuatanga</p> <p>Mana whenua</p> <p>Tikanga</p>
<p><b>LPGP via Tarawera Road</b></p>	<p>Following the existing roadway indicated no outstanding concerns regarding historical sites of significance. Most are off road, e.g. old flour mill, stone wall. Wahi tapu protocol should be developed to identify, record and protect wahi tapu.</p>	<p><i>'You've got a metre and a half, in some places 3 metres deep of mud and ash from the eruption. So, you've got room to move within that ash layer before your strike any archaeology below it. Any finds would be accidental.'</i></p>	

	<p>The wāhi tapu protocol should also make provision for accidental discovery and working on discrete sites.</p> <p>An Accidental Discovery protocol should be established prior to the commencement of earthworks and include provisions for the discovery of taonga, koiwi and sites of significance.</p>	<i>(regarding the proposed route along the road)</i>	
<b>STEP via Tarawera Road</b>	<p>The option to traverse Tarawera Road is not seen as a significant obstacle in terms of accidental finds of koiwi or taonga as the roadway, which was once a main walking path has been used for many generations.</p>		
<b>Local Treatment Plant</b>	<p>Mana Whenua pa sites are well known. Any accidental disturbances and finds can be mitigated with Mana Whenua input during the whole process.</p>		
<p><b>Summary</b></p> <p>It is estimated that 153 people died during the eruption of Mount Tarawera on the 10 June 1886. The true figure may never really be known therefore Mana Whenua regard the whole Tarawera catchment to be wahi tapu.</p> <p>Any disturbances can be mitigated through Mana Whenua practices following our kawa and tikanga through karakia. Kaitiakitanga is binding on Tangata whenua.</p>			

Protecting Papatuanuku			
<b>Issues/opportunities</b>	The natural flow of water is into Lake Tarawera and out through the outlet to Tarawera River to the coast.	<p><i>“Our cultural values – flow of water, ki uta ki tai – from the mountains to the sea.”</i></p> <p><i>‘We are going against the natural flow of water, the natural flow is through Te Awa o te Atua, out through Matata.’</i></p>	Tikanga Wairuatanga Orangatanga Kaitiakitanga
<b>Status quo</b>		<p><i>Papatuanuku doesn’t need us, we need her. If we don’t take care, look after her then we will suffer. Our ancestors lived in balance with the land, with our Atua, with Tawhirimatea, Ranginui, with the stars, maramataka, everything was in its place and in its balance, they understood their role in it.</i></p>	Whānaungatanga Kaitiakitanga Rangitiratanga Mauri
<b>LPGP via Tarawera Road</b>	<p>Pumping a high volume of water 26km from Lake Tarawera to Lake Rotorua, against the natural flow of water, to transport human waste goes against natural laws. It has serious impacts on Rotorua lake and upsets the ecological balance and environment.</p> <p>Piping sewage past Rotokakahi is not acceptable (Board), the risks of plant failure and discharge into sacred lakes is of concern.</p>	<p><i>“How much strain would it put on the current capability of the system now.”</i></p> <p><i>‘What is the projected population growth along the full 26km?’</i></p> <p><i>‘What’s the volume of waste going to be ... at every 5km by volume. Real figures for the current population and then the anticipated population, as per 5km stretch all the way to the Ngapuna plant? We are going into danger zones with toxicity and also capacity of proposed new upgraded wastewater treatment plant.’</i></p>	

		<p><i>'I can see huge issues along the pipeline, at the plant – it's going to end up with sub-standard treatment if it's an overloaded situation that affects all the way to the Maketu estuary.'</i></p> <p><i>'The biggest risk I see is with the pipe work – from Tarawera to Ōkāreka to Rotorua, 26km there is potential for busted pipework, fault line, slips, shifts around Rotomahana mud, can create a significant future problem.'</i></p>	
<b>STEP via Tarawera Road</b>	As above		
<b>Local Treatment Plant</b>	<p>Traditional Mātauranga Māori practises of utilising land dispersal for the treatment of effluent have in the past proven sustainable and ecologically sound.</p> <p>Recent treatment systems based on western science, have impacted negatively on local Māori ie saturation of nutrients in the Whakarewarewa forest and toxins in the Puarenga stream, causing ill health and affecting well-being.</p>		

**Summary**

Papatuanuku does not need malpractice from mankind, we need her. We were born from her and we return to her upon death. She sustains us through the life-giving waters and the food we need from her abundant storehouses. We process that water and food and return to her our paru to be returned to the whenua which she processes for us. This is how it has been since time immemorial.

Water flows have their own direction. It is the nature of water to find its own level and natural flow. Mankind has gone against the natural flow for too long and now we suffer the consequences and must pay for our actions. If growth in the Tarawera arena is anticipated, then the ability to process our waste to aid Papatuanuku in sustaining the environment we have chosen to live in, must be done to the natural flow of the water.



## Working with council

Working with council			
<b>Issues/opportunities</b>	<p>Relationship with council –</p> <p>There is a level of distrust and suspicion based on historical issues/grievances with Rotorua Lakes Council that includes the discharge of effluent into Lake Rotorua, the effect of the discharge into the Whakarewarewa forest and Puarenga stream. Current issues of contention with some affected iwi include the new plant and proposed treatment process that is not acceptable to many whānaunga in Rotorua.</p> <p>Questions the capacity of the proposed upgraded WWTP to carry Tarawera catchment loading</p>	<p><i>‘Local iwi, tangata whenua are quite suspicious. They have seen over many decades the quality of the lake water going down; they raised concerns over the years but nothing substantial has been done.’</i></p> <p><i>‘I can remember the old people when I was about 12 or 15, asking the council ‘why are you letting all effluent back into the lake? – we were assured by council the science was reliable’</i></p> <p><i>‘Our experience historically with council and science has been a failure.’</i></p>	
<b>Status quo</b>	<p>Questions are asked by mana whenua:</p> <ol style="list-style-type: none"> <li>1. Who is responsible for issuing consents for sub-standard systems and what is the accountability for this?</li> <li>2. How has it got to the point where 97% are sub-standard?</li> <li>3. If the current cumulative discharge was from a single source would council treat the breach with more urgency/action?</li> </ol>	<p><i>‘This meeting (hui) is concerned that ongoing pollution now is occurring and it’s only by the grace of those local and regional authorities that it’s allowed to continue.’</i></p>	

<p><b>LPGP via Tarawera Road</b></p>		<p><i>‘So, the big winners here are the residents, predominantly European and the big losers are Māori’.</i></p> <p><i>‘How confident are we in terms of a piping system that there won’t be any leaching and/or breakages that then flow into not just Lake Tarawera, but Lake Rotokakahi and Lake Tikitapu because they are all on that route down to the council treatment area. ... With this plan, not just talking about Tarawera but also the impact on the other waterways as part of any proposed route.</i></p>	
<p><b>Local Treatment Plant</b></p>	<p>Mana whenua are keen to discuss and investigate the opportunity to co-partner with council to provide land and cultural expertise for the development of an onsite treatment plant.</p>		
<p><b>Summary</b></p> <p>The Rotorua Lakes Council and the Bay of Plenty Regional Council must engage with Mana Whenua, Tangata Whenua and the settlement entities of the Te Arawa Lakes Trust, Tūhourangi Tribal Authority and Te Mana o Ngāti Rangitīhi. The days of token consultation with Māori are no longer appropriate. The Treaty of Waitangi settlements provide Statutory Acknowledgments and secondly, Te Arawa whānui are significant land holders and economic contributors to the Rotorua economy.</p> <p>Of all regions throughout Aotearoa, the Central Lakes District is the most progressive and forward thinking of all regions. Our relationships are growing more positively than negatively, learning to move forward together rather than work against each other in a reactionary fashion. Effective and progressive partnerships are required if we are to achieve collaborative goals now and for future generations.</p>			

## Additional impacts and risks

Issues/opportunities	
<b>Status quo</b>	<p>Health risks</p> <p>Offence to human waste discharge into water; particularly sacred water</p> <p>Local Māori to consider legal options to stop breaches.</p>
<b>LPGP via Tarawera Road</b>	<p>Lake Rotokakahi Trust Board has signalled grave concern about potential risks piping past their lake front.</p> <p>Mana whenua are adamant they do not want to add to the existing tensions/problems with the proposed Rotorua Lake system</p> <p>Hui – Question to RLC – what is the projected population growth along the proposed 26km pipeline from Tarawera to Rotorua? - taking into account urban development at Lynmore for example. Interested in population growth and the consequent impact on capacity of pipeline, Rotorua plant, toxicity, overload.</p>
<b>Local Treatment Plant</b>	<p>Climate change (increased rain and variable weather patterns) in addition to the topography and scoria, ash soil types may result in effluent contaminants entering the lake.</p>
<b>Mitigation</b>	<p>Consenting body taking responsibility for breaches.</p> <p>Discussion and understanding about immediate remediation.</p>

## 2. Visit to Haumingi 9B3B

**June 16 2018**

**Visit to Haumingi 9B3B as recorded by Martin Hunia (representing Ruawahia 2B Trust and Tarawera CIA Cultural Advisory Panel).**

*'As the newly elected Ruawahia 2B representative on the cultural advisory panel to deal with the Lake Tarawera wastewater plan on Thursday we took a visit to see what options would become available to householders in the Lake Tarawera catchment in the future to deal with their sewage and make the lake clean again.*

*We also got to look at the Rotoiti/Rotoma scheme currently being built and if you have travelled through the area you would have noticed all the road works going on. They are not fixing the road but laying the sewage pipes for their catchment area from the toilets at the bottom of the Rotoma Hills to Curtis road the road to Rakeiao, Tapuaekura Marae or just before you start to climb Tikitere. After an induction at Taurua marae (Ngāti Rangiunuora) we got to visit the site where the sewage tanks would be situated on land administered by Haumingi 9B 3B Ahuwhenua Trust which is on the hill behind the marae and Emerys Store. Just over a month ago where they are building the sewage plant, it was all in pine trees according to Te Ohu Wikingi who is a member of the cultural advisory panel who lifted the tapu for when the works began.'*



### 3. Lake Tarawera: Rotomahana Parekarangi and Ruawahia Blocks

The area around Lake Tarawera sits within two blocks, part within the Rotomahana Parekarangi blocks, and the other part in the Ruawahia block.

The Rotomahana Parekarangi block surrounding Tarawera on the Rotomahana side was known as Rotomahana Parekarangi No.6 and was awarded to Tūhourangi. When the block was sub-divided amongst hapū of Tūhourangi, the blocks surrounding Tarawera were awarded as follows:

Rotomahana Parekarangi 6C	Ngāti Uruhina
Rotomahana Parekarangi 6B	Ngāti Uruhina
Rotomahana Parekarangi 6F	Ngāti Te Amo and Ngāti Tukiterangi
Rotomahana Parekarangi 6G	Ngāti Te Apiti, Ngāti Tuohonoa and Ngāti Hinemihi
Rotomahana Parekarangi 6H	Ngāti Hinemihi, Ngāti Tawake, Ngāti Umukaoria, Ngāti Tuohonoa, Ngāti Te Amo, Ngāti Puta, Ngāti Wahiao
Rotomahana Parekarangi 6J	Ngāti Hinemihi and NgātiTawaka of Tūhourangi
Rotomahana Parekarangi 6O	Ngāti Apiti, Ngāti Tuhono, Ngāti Huare, Ngāti Tukiterangi and Ngāti Te Amo of Tūhourangi
Rotomahana Parekarangi 6P	Ngāti Puta, Ngāti Tawake, Ngāti Tukiterangi, Ngāti Wahiao of Tūhourangi
Rotomahana Parekarangi 6Q	Ngāti Uruhina, Ngāti Te Apiti, Ngāti Wahiao and Ngāti Umukaria of Tūhourangi

*Figure 12. Rotomahana Parekarangi Blocks - Hapū, Iwi*

A small part of Rotomahana Parekarangi No.5B also borders the Lake, which was awarded to Ngāti Rangitihī at 14 Rotorua MB 38, 43-50 dated 2 March 1888.

The Ruawahia block was awarded to Ngāti Rangitihī solely at 4 Whakatane MB 302-303 dated 12 February 1891.

<b>Name of Māori Land Block</b>	<b>Type of Trust</b>	<b>Area in hectares</b>	<b>No. of Shareholders</b>
Ruawahia 2B Ngāti Rangitīhi	Māori Reservation Trust	1897.4	802
Rotomahana Parekarangi 6Q 2B	Ahu Whenua Trust	237.6	2676
Rotomahana Parekarangi 6O 2B	Ahu Whenua Trust	253	1694
Rotomahana Parekarangi 6B (or Maungarawhiri)	Ahu Whenua Trust	129.5	1194
Rotomahana Parekarangi 6C 2B	Ahu Whenua Trust	13.8	595
Rotomahana Parekarangi 6G 2B Kariri Point	Māori Reservation	4.2	315
Rotomahana Parekarangi 6G 3B Marae Site, Spencer Road	Ahu Whenua Trust	68.7	1774
Rotomahana Parekarangi 6G 3B Urupa	Ahu Whenua Trust	.7 5 ha	1756
Rotomahana Parekarangi 6K2B	Ahu Whenua Trust	32.4	524
Rotomahana Parekarangi 6J2B4	Ahu Whenua Trust	19.4	539
Rotomahana Parekarangi 6J2B7B4	Ahu Whenua Trust	33.6	534
Okataina 10 Land Trust	Ahu Whenua Trust	513.5	5191

Figure 13 Rotomahana Parekarangi Blocks - area, shareholders

### **Ahu Whenua Trust**

An Ahu Whenua trust is a common land trust. It is designed to promote the use and administration of one or more Māori land blocks or general land owned by Māori on behalf of its owners<sup>30</sup>

### **Māori Reservation**

A Māori reservation is a very specific type of trust which sets aside (reserves) Māori land or general land for a very specific community purpose, which can include Marae, Urupa, Wahi Tapu and other entities or areas of cultural significance.<sup>31</sup>

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<sup>30</sup> <https://www.Māorilandcourt.govt.nz/your-Māori-land/trusts-and-incorporations/>

<sup>31</sup> <https://www.Māorilandcourt.govt.nz/your-Māori-land/trusts-and-incorporations/#Māori-reservation>

### 3. Māori Land Blocks around Lake Tarawera, Lake Ōkāreka, Buried Village

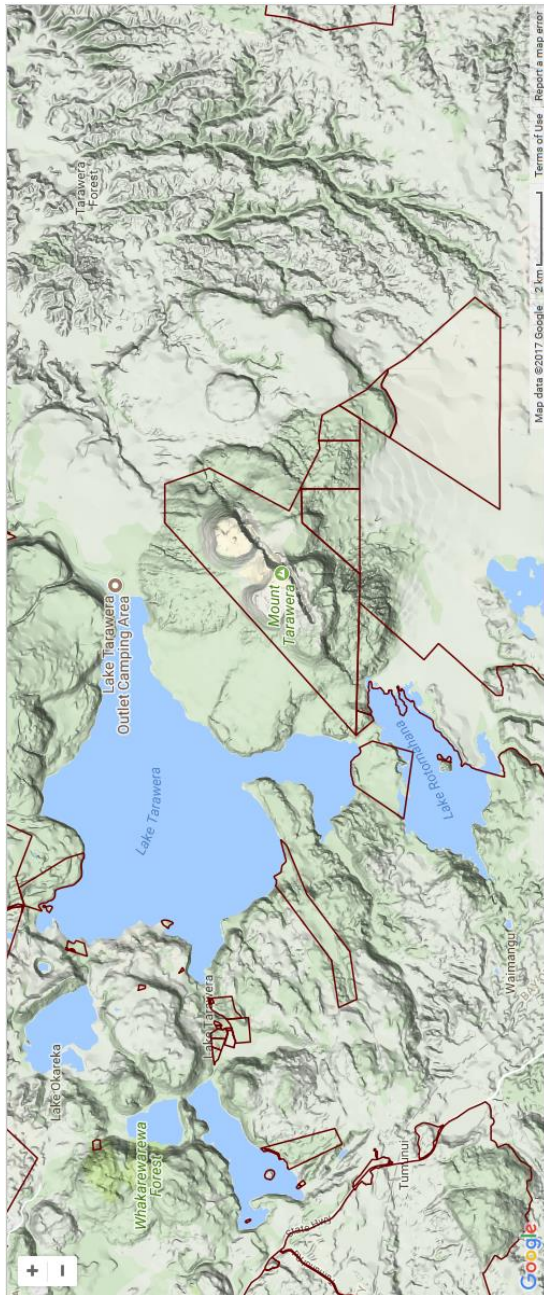


Figure 14 Map - Land Blocks around Lake Tarawera, Lake Ōkāreka, Buried Village



## 5. Tūhourangi - Area of Interest, Sites of Significance

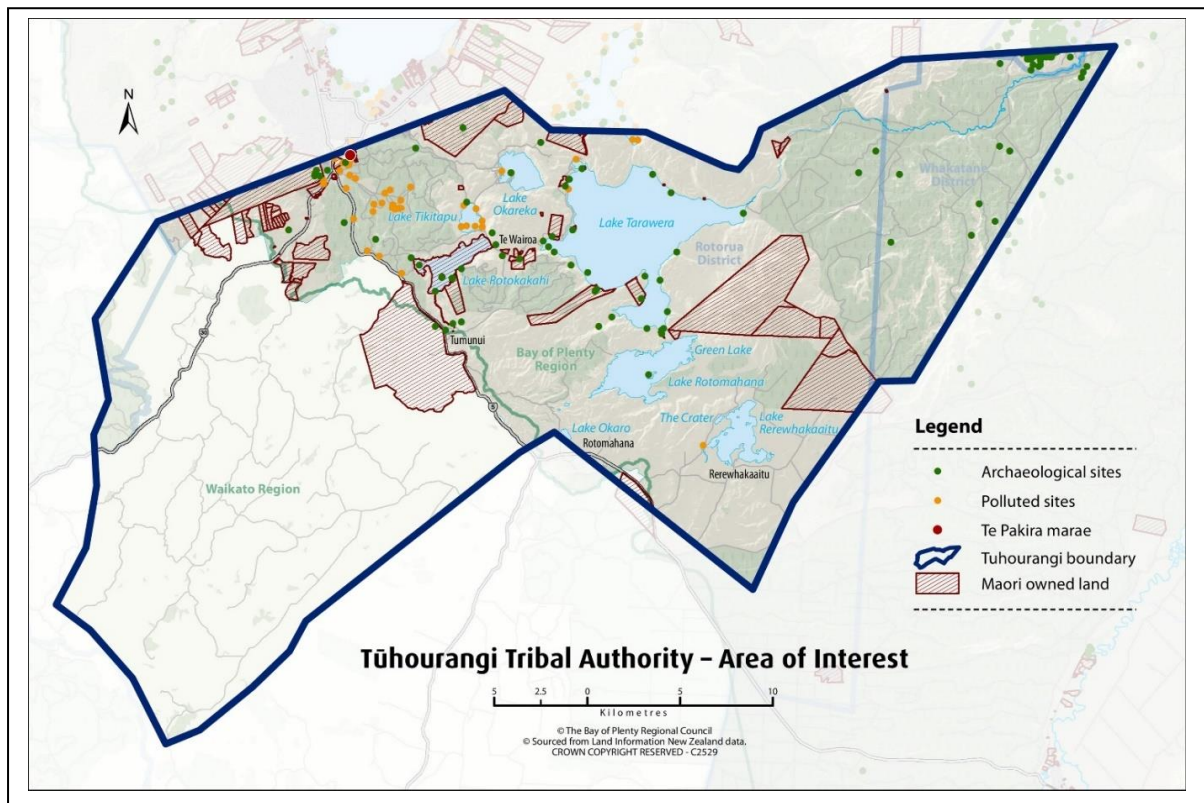


Figure 15 Map of Tūhourangi area of interest

## 6. Technical Information

*As provided by Taira Wichman, Research Engineer, Wera*

Key issues and values identified that are impacted and/affected by the wastewater treatment plans at Lake Tarawera

Key issues and values that should be considered in the development and assessment of options for the wastewater treatment scheme

Key issues and values that should be considered in the implementation and management of the wastewater treatment scheme

### Critical Concerns Relating to Options

Scheme Elements

- Architecture of the scheme
- Choice of scheme elements
- Fit with current industry practice

Scheme elements include:

- Onsite systems - LPGP/STEP/Other (gravity and pump)/connecting pipework/boundary kits
- Cluster holding tanks
- Cluster pretreatment tanks
- Mainline reticulation pipe
- Lateral connectors
- Pumps stations
- Holding tanks
- Emergency and Holding tanks
- WWTP
- Sludge cartage
- Power supply - household/WWTP (performance/capacity/resilience/etc)
- Etc

## failure of scheme Elements

Either individually or as a combination (perhaps as a cause of initial failure event).

Engineered elements and functions possess a non-zero risk of failure

What happens in the event of failure?

## Onsite Systems

### *Desired Attributes*

- What are required of these?
- Affordable
- Robust - does not breakdown / can perform design function / earthquake
- Removable and replaceable
- Use in network failure
  - As either onsite holding tank
  - Connection to local onsite holding tank (lower than house drainage)
  - Connection to local cluster holding tank
  - Connection to local pretreatment cluster tank
  - Onsite temporary disposal
  - Local temporary cluster disposal
- No odour

### *Full Life Costs*

Upfront (as charged)

A - \$5,000 - \$6,000

B - \$6,000 - \$8,000

C - \$8,000 - \$10,000

### **Installation**

- Earthworks
- Concrete ballast
- Single visit

- Double visit -

## **Servicing**

### **Repair and Maintenance**

- Earthworks
- Concrete ballast

## **LPGP**

### **LPGP Benefits**

- Currently used by RLC including at Ōkāreka
- Can be serviced by RLC agents
- Small footprint
- Lower upfront and install cost

### **Cultural Benefits**

- What are these?

### **LPGP Limitations**

- 6-year life as per RLC use
- Has a small retention volume
- Expensive pump
- Heavy pump
- Pump cannot process cloth (clogs or damaged by towels - therefore expensive repair for simple failure mode)

### **Cultural Limitations**

- What are these?

## **STEP**

### **STEP Benefits**

- Will be used by RLC including at Rotoma (currently \$12,500 per installed system)
- Can be serviced by RLC agents
- Slightly higher upfront cost and install

- Higher install costs
- Can be used as a holding tank
- Can use STEG system where gravity flushing systems are applicable
- STEG systems do not have a large retention volume unless an outlet valve is installed allowing them to be used as a holding tank

### **STEP Limitations**

- Has a small retention volume
- Large footprint required to ensure gravity separation processes are performed sufficiently
- Pump protected by filters
- Affordable pump
- Units are slightly more expensive than LPGP
- Installation

### ***Home Use - What can be flushed into the onsite receiving unit?***

Protection of the Onsite Unit (clogged or damaged pump / die off of pretreatment biology / clogging of filter media)

Protection of environment in relation to failure

Protection of WWTP processes

**Anything and everything** that can be flushed including - food scraps/pills/chemicals including toxics/household detergent/paint/bodily waste/kitchen waste and wastewater/clothes wash/water bath water/degreasers/phones/towels/non degradable wipes/emerging contaminants

**Limited Use** preferred - pills/limited chemicals/all household detergent/no paint/bodily waste/kitchen waste/non-toxic chemicals/phones/towels/degradable wipes

**Environmentally Sustainable Use** preferred- pills/non-toxic chemicals/food scraps/limited detergent/no paint/bodily waste/kitchen waste/phones/towels/wipes/no emerging contaminants of concern

### **Failure of scheme Elements**

Either individually or a combination (perhaps as a cause of initial failure event).

Engineered elements and functions possess a non-zero risk of failure

What happens in the event of failure?

### **Attributes of Failure**

**Use** - Full and normal use/.../limited use

**Type of sewage released** - raw ground-up sewage/primary treated/secondary treated/higher level/ all of the above with log retention times (more septic/malodorous than at source)/health hazard

**Odour** - None/Barely Detectable/ Detectable/.../Strong Stench

Scale of failure - volume of sewage released/time that this is released for

**Region of Failure** - Individual household/Multiple localised properties/25% of community Barely Detectable/ Detectable/.../Strong Stench

Scale of failure - volume of sewage released/time that this is released for

**Odour** - None/Barely Detectable/ Detectable/.../Strong Stench

Scale of failure - volume of sewage released/time that this is released for

**Odour** - None/Barely Detectable/ Detectable/.../Strong Stench

Scale of failure - volume of sewage released/time that this is released for

Failure controls -

Scale

Current

## **Drivers for Upgrade:**

- Recent report concluding that on a community basis there are limited options other than reticulation
- Regulatory requirements under the responsibility of BoP Regional Council - Regional Council OSET rules and not being able to get consent for current systems or even upgrades
- Potential health risks - human contact with effluent-borne disease as result of inadequate effluent management (such as disposed effluent from current soak holes and septic tank systems)
- Modern community values - flush and forget, clean property, general sewage system failure concerns, environmental impacts, impacts on lake, affordability,
- Context - Upgrade is a response to regulatory requirements - 170 properties on soak holes, Homes at Te Mu on modern OSET systems as a response to compliance requirements with Regional Council OSET rules
- Science drivers - problem identified and quantified by scientific assessments relating largely to environmental impacts
- Steering committee decisions
- some homes on modern OSET systems
- Growth and development
- Restricted growth and development - some like it just the way it is
- Iwi values
- Māori land values
- Pakeha land values

## **Assumptions:**

- Cultural issues and values are significantly affected in the context of modern wastewater treatment schemes and therefore become essential parameters in decision making.
- Thorough and effective engagement and co-design at a high-level (concepts and architecture) are essential to identifying and assessing options
- It is possible that the overall architecture and solution elements of a WWT scheme can be designed, constructed and managed (operations, maintenance, future upgrades, replacement and decommissioning activity) to respond to relevant values and issues to minimise cultural impacts and avoid cultural offence

Scope

Full life of the scheme - concept development through to decommissioning/replacement

Quantification

Today's solutions are the foundation for the future

Population

## 1. Cultural Considerations Relating to the Preferred Option

### Concepts

- **Local treatment plant.** Sub issues:
  - **Location** - What are the desired site attributes? - offers network resilience (considering localised failure - damage to part of the network)/reuse of effluent/NIMBY - isolated/noise nuisance/minimises odour impacts (isolated/downwind)/allows for growth (land for a larger facility and higher discharge volumes)
  - **Facility Design** - Visual impact of facility - footprint size/height/colours/aesthetics/potential odour impacts/hazardous chemicals/robustness/growth (duplication or modularity)/emergency storage
  - **Other** - proposed treatment processes and technologies/ energy requirements - power usage/raw materials (ethanol/sugar etc)/treatment quality, performance and robustness/controls and operation/size and capacity/engineering resilience/elasticity/operation - automation/disposal methods/effluent reuse/cost
  - Sludge disposal or reuse
  - Pump stations
  
- **Connect to Rotorua.** Sub issues:
  - Rotorua treatment plant issues
  - Local iwi concerns/agreement
  - Pipeline Connection to Ōkāreka Pump Station
    - Sewage spills - currently a **zero risk**
    - Will introduce a **non-zero risk**
    - Failure catchment - requires analysis based on worst case
    - Sites of significance (passing through/within proximity/potential for impact in event of failure i.e. downhill of spill), potential for strong objection to installation of a pipe in certain areas/consideration in choice of alignment
    - Mitigating methodologies (preventing failure) - Solution attributes and engineering options in: design, material selection, construction, network management
    - Failure detection
    - Repair/replacement
  
- **Existing Compliant Systems** - Allowance for continued use of OSET compliant systems (within proximity to pipe, not within proximity of pipe) - compliance managed by RDC
  
- **Mixed Solution** (where practicable) - isolated properties (OSET for individual/clusters for multiple properties)



- **Failure and Resilience**

- Backup options responding to significant failure in one or more of the critical scheme elements (power/connection to main pipe/main pipe failure/local plant failure)
- Resilience to potential failure events - earthquake/slips and landslides/heavy rain events etc - assessment of individual element and
- Consideration for environment change - heavy rains/flooding/high water table/high lake levels (permanent or intermittent)/ permanent baseline changes (increases)
- Potential impacts on

### **Architecture**

- Pretreatment
  - Why? i.e. cultural offence of sending your waste to or past someone else's whenua
  - to minimise impact of failure
  - What are the pretreatment objectives?
    -
  - What solutions are available?
  - What needs to be done?
- Growth aspects - pipe size
- Resilience
- Risk - including cultural risk considerations
- Redundancy
- 
- Physical size - including overall footprint
- Visible footprint
- Robustness and structural integrity
- Odour
- Servicing - simple and affordable, containment of waste products, unobtrusive
- Replacement of mechanical, electrical and control elements (pump, wiring, control systems) - availability and costs of parts, costs
- Replacement (as a result of failure, end of life, new solution) - simple, affordable, unobtrusive
- Resilience - Consideration for Failure (resilience to failure events and continued use in failure events)

Options in a power failure, network failure, other failure (onsite storage, odour, onsite

### **On Site Solution Options**

- Capacity limits - how many people can it take?
- Expected Life - of unit and major components

- Physical size - including overall footprint
- Visible footprint
- Robustness and structural integrity
- Odour
- Servicing - simple and affordable, containment of waste products, unobtrusive
- Replacement of mechanical, electrical and control elements (pump, wiring, control systems) - availability and costs of parts, costs
- Replacement (as a result of failure, end of life, new solution) - simple, affordable, unobtrusive
- Resilience - Consideration for Failure (resilience to failure events and continued use in failure events)
  - Options in a power failure, network failure, other failure (onsite storage, odour, onsite disposal, local disposal, pump out)
  - Resilience of onsite tanks and connections
  - Connection for onsite disposal - yes/no
  - Backup power capability - yes/no
  - Collection from onsite tank / Simple connection to local collection tank (installation of local collection tank in event of significant failure event)

## **2. Implementation of the Scheme**

Placement and connection of onsite equipment

Connection to main pipe or lateral pipe (a secondary pipe connected to the main pipe, that connects to more than one property)

Main pipe connections - resilience of connection at the property boundary

## **3. Management of the Scheme**

Growth

Servicing

Repairs and Maintenance

Replacement

Upgrade

7. Record of attendees at meeting held 15 October 2019, Millenium Hotel, Rotorua

William Roach
Adrian Mathews
Rea Martin
Deliah Balle
Kepa Winiata
Petera Clark
Peter Staite
Kahurangi White-Parsons
Chris Clarke
Warwick Rika
Warena Morgan
Rawiri Daniels
Annie Balle
Vicki Tamati
Te Ohu Wikingi
Tipene Marr

# GLOSSARY

Hapū	sub-tribe
Hui	gathering, meeting
Inanga	whitebait
Iwi	tribe
Kaitiaki	trustee, minder, guardian
Kaitiakitanga	guardianship, stewardship
Kakahi	freshwater mussel
Karakia	prayer, to recite ritual chants
Kaumatua	elderly, old, aged
Koura	freshwater crayfish
Mana	prestige, authority, control, power
Mana Whenua	territorial rights, power from the land, authority over land
Marae	open area in front of the whareniui
Mauri	life principle
Pa	fortified village, fort, stockade
Para	refuse, rubbish, waste, sewage, dirt, mud
RaNgātīratanga	right to exercise authority
Rohe	area of interest
Tangata Whenua	people of the land
Tāonga	property, possessions, treasure
Tapu	sacred
Tikanga	protocol, practice –customary system of values/practices
Tino RaNgātīratanga	self-determination, autonomy
Wāhi Tapu	sacred place
Wai	water
Wai kaukau	to swim, bathe
Wairua	spirit, soul
Whānau	family group

# REFERENCES

Bay of Plenty Regional Council (2015) Tarawera Lakes Restoration Plan

Keam, Ron F; *Tarawera: The Volcanic Eruption of 10 June 1886*

Smith (1942)

Kawharu (1977)

Waaka K. 1996 Personal Comments

Denman (1968)

Gallop, A. (1998); *The House with The Golden Eyes*

Stafford, D.M. 1986; *The Founding Years in Rotorua*: pg. 242

[https://www.boprc.govt.nz/media/566892/operative-rps-1-october-2014\\_part-three-amended-19-sept-16.pdf](https://www.boprc.govt.nz/media/566892/operative-rps-1-october-2014_part-three-amended-19-sept-16.pdf)

Te Mana o Ngāti Rangitahi Environmental Management Plan

## **Websites**

Te Kahui Mangai

<http://www.tkm.govt.nz/>

Te Pumautanga o Te Arawa Lakes Trust

<http://tpota.org.nz/about-tpota/>

Te arawa lakes trust

<http://www.tearawa.iwi.nz/>

Māori Land Online

<http://www.maorilandonline.govt.nz>

# FIGURES

Figure 1. Tarawera Lake Relationship Diagram

Figure 2. Rotorua Lakes Council Drawing No. 11608. Lake Tarawera, Proposed Sewerage Scheme, Area of Benefit Plan

Figure 3. Low Pressure Grinder Pump System, Rotorua Lakes Council, Sewerage Options for Tarawera, Manzano 2017

Figure 4. Step System, Rotorua Lakes Council, Sewerage Options for Tarawera, Manzano, 2017

Figure 5. Indicative perspective view of Tarawera Wastewater Treatment Plant Rotorua Lakes Council, Sewerage Options for Tarawera, Manzano, 2017

Figure 6. Indicative pipeline routes

Figure 7. Te Whakapapa o Te Wai (Te Arawa Lakes Trust, 2017)

Figure 8. Te Arawa Lakes Trust – Lakes Structure Policy 2017

Figure 9. Te Arawa Lakes Trust – Lake Structure Policy 2017

Figure 10. Table of RPS Iwi Resource Management policies (BOP RC, 2014)

Figure 11. Policies for Environmental Management, Nga Rawa Whakahirahira (Ngāti Rangitihī, 2011)

Figure 12. Rotomahana Parekarangi Blocks - Hapū, Iwi

Figure 13. Rotomahana Parekarangi Blocks - area, shareholders

Figure 14. Map - Land Blocks around Lake Tarawera, Lake Ōkāreka, Buried Village

Figure 15. Map of Tūhourangi area of interest



**TE ARAWA LAKES TRUST**

