Out of the forest by 2019

Where to from here?

Rotorua Wastewater Treatment Review

Community Consultation

10am-12 noon Saturday 8th November Whakaue Marae, Maketu
10am-12 noon Saturday 22nd November Te Ao Marama Hall, Ohinemutu
plus a Public Open Day at the Wastewater Treatment Plant 10am-2pm
7pm–9pm Tuesday 25th November Sir Howard Morrison Performing Arts Centre (Rotorua Convention Centre), Fenton Street, Rotorua

DESTINATION ROTORUA
ROTORUA DISTRICT COUNCIL
Shaping Rotorua

INFORMATION BOOKLET

Finding an alternative

Objective: To restore the mauri of the water and its life-supporting capacity.

As a result of on-going tangata whenua concerns regarding the impact of the current wastewater land treatment disposal system on the Puarenga catchment, an Environment Court directive in early 2013 saw Council begin an investigation into alternative disposal methods for its treated urban wastewater. Additionally, earlier this year the Rotorua District Council and CNI Iwi Holdings signed a deed which will see an end to the spraying of treated wastewater in Whakarewarewa Forest by the end of 2019.

The forest spraying system is now considered unsustainable as it is much less effective than when first implemented. Concerned stakeholders, including iwi, are now working together to find a better alternative through a project steering committee. It was formed earlier this year and includes representatives from iwi and other stakeholders.

Stakeholder groups chose representatives to go on the committee and Warren Webber, a representative of the Lakes Water Quality Society, was elected as its chair.

The committee has adopted goals aimed at finding an acceptable alternative to the current land treatment system which will contribute to improving water quality in Lake Rotorua, meet the cultural needs of tangata whenua, safeguard public health and be cost-effective.

Community support will be vital to deciding on an alternative and the committee is consulting the public as part of that process.

Reasons for the Project

- Reduced nitrogen-stripping efficiency of the existing Land Treatment System (LTS) since 1995
- Water saturation in some low-lying areas of the forest, with impaired tree growth in some areas.
- Deed of Understanding (May 2014) between RDC and CNI Iwi Holdings Ltd, requires LTS removal from the Whakarewarewa Forest by December 2019.
- The need to find an alternative treated water discharge location which will meet the environmental, cultural, social and economic needs of the Rotorua community; allow for potential future growth; be sustainable in the long-term ; be affordable
- New resource consents will be required so Rotorua District Council (RDC) can continue to discharge treated wastewater.

Project Objectives

To discharge treated wastewater to the environment at a standard which:

- Is life-sustaining and restores the mauri of the water
- Meets standards consistent with the National Policy Statement for Freshwater
- Satisfies regulatory requirements and secures resource consents in partnership with the community and tangata whenua
- Achieves a high level of public health and environmental protection
- Is the **Best Practicable Option** for Rotorua's future wastewater management

Project Steering Committee

The Committee agreed on goals to select an alternative to the LTS that they consider is the overall Best Practicable Option. The seven goals are considered of equal importance.

ROLE	ORGANISATION / IWI	PRIMARY REP	ALTERNATE
Chairperson (voting)	LakesWater Quality Society (LWQS)	Warren Webber	Morris Meha *Deputy Chair*
Facilitator (non voting)	*and* Chair, RPSC Technical Advisory Group (TAG)	Jim Bradley	
Members	Lakes Community Board - Chair	Geoff Palmer	Leo Meharry Phill Thomass
	CNI Iwi Holdings Ltd	Alamoti Te Pou	John Hura
	Timberlands	Piripi Jennings	
	Te Arawa Lakes Trust (also Tuhourangi, Ngati Wahiao)	Roku Mihinui	Leilani Ngawhika
	Ngati Pikiao	Fred Whata	Joe Tahana
	Ngati Makino	Morris Meha	Hare Wiremu
	Tuhourangi Tribal Authority	Rangitihi Pene	Shane Gibbons
	Ngati Rangiwewehi Iwi Authority	Gina Mohi	Rikihana Hancock
	Ngati Whakaue	Anaru Te Amo	Katie Paul
	Tapuika Iwi Authority	Geoff Rice	Dean Flavell
Owhata / Rotokawa iwi	Ngati Rangiteaorere Ngati Uenukukopako Ngati Te Roro o Te Rangi	Arama Pirika	Hera Naera
	Kaitiakitanga (Tuhourangi, Ngati Wahiao)	Wally Lee	
Ngapuna iwi	Ngati Hurunga Te Rangi Ngati Hinemihi Ngati Tumatawera Ngati Te Kahu Positive Rotorua Environmental Society	Piripi Mutu Irihapeti Wineera Peter Staite	Ana Wilson Marama Meikle Te Atatu Epapara Katarina Epapara Carol Leonard Louise Kirk
Ngongotaha iwi	Ngati Tura Te Ngakau Ngati Ngararanui	Hone Newton jr	Guy Ngatai
Governance (voting)	RDC – Deputy Mayor	Cr Dave Donaldson	Cr Peter Bentley
	BOPRC - Councillor	Cr Neil Oppatt	Cr Lyall Thurston
Observers & Council Staff (non-voting)	Toi Te Ora – Public Health Service	Annaka Davis	
	Rotoma Rotoiti Sewerage Steering Committee (RRSSC) - Chair	Ian McLean	
	BOPRC – Lake Operations Manager	Andy Bruere	Reina Meha
	RDC - Director Water Solutions	Andy Bell	
	RDC - Manager Water Planning	Greg Manzano	
	RDC - Director Kaupapa Maori	Mauriora Kingi	
	RDC - Manager Solid Waste and Sustainability	Alison Lowe	
	RDC - Manager Water Operations	Eric Cawte	
	RDC - Business Support Advisor	Hilda King/Isabel Brell	

GOAL 1

Contributes to improving the water quality in Lake Rotorua by reducing nutrient and contaminant flows from the Wastewater Treatment Plant

GOAL 2

Acceptably meets the cultural needs of tangata whenua

GOAL 3

Achieves acceptable community environmental outcomes

GOAL 4

Acceptably safeguards public health

GOAL 5

Complies with regulatory requirements - national and regional

GOAL 6

Is acceptably cost effective for local rate payers as well as RDC

GOAL 7

Has acceptable community support

Key Facts

There is now a Deed of Understanding with CNI Iwi Holdings for Rotorua District Council (RDC) to exit the forest by December 2019.

Treated discharge through the "Land Treatment System" (LTS) in Whakarewarewa Forest from 1991 initially worked very well. Nitrogen stripping has since decreased and excess water is affecting the land and trees.

The Nitrogen (N) level in Waipa Stream below the LTS has since 1998 occasionally exceeded the 30tN per annum consent limit.
The Phosphorus (P) level has remained within the 3tP per annum consent limit.

A Project Steering Committee (RPSC) was set up in February 2014 to consider alternative treatment systems and discharge options and to recommend a preferred option.

Technical Advisory Group (TAG) established to provide technical advice to the Steering Committee.
Cultural Assessment Sub-committee established September 2014 to guide cultural considerations.

We are considering various treatment and discharge options as an alternative to the discharge of treated wastewater to the forest.

There have been a number of treatment upgrades since 1973. Reducing nitrogen discharge further will be very expensive.

The nitrogen level in discharge from the Wastewater Treatment Plant (WWTP) is now 5.5ppm. This is the lowest of any city in NZ.

Any treatment option needs capacity to handle growth in the city and district.

Key Facts

The removal of the Land Treatment System (LTS) will require extra treatment of wastewater discharge to reduce Nitrogen, Phosphorus, and pathogens (bugs).

In 2013 the WWTP received 331 tonnes of Nitrogen (tN). 292tN was removed by WWTP treatment, and a further 16tN via the LTS. A total of 308tN was removed (93%). This left 23tN leaching back into Waipa Stream.

In 2013 the WWTP received 44 tonnes of Phosphorus (tP). 19tP was removed by WWTP treatment, and a further 16.6tN via the LTS. A total of 41.6tN was removed (95%). This left 2.3tP leaching back into Waipa Stream.

Treatment Option 1 - Base Upgrade only. Flow balancing, Dissolved phosphorus removal, UV treatment to kill pathogens. Nitrogen to approximately 6ppm. Total capital cost approximately $6.5m.

Treatment Option 2 - Base Upgrade + Particulate Filtration. Nitrogen to approximately 5ppm. Total capital approximately $20m.

Treatment Option 3 - Base Upgrade + Denitrifying Filtration. Nitrogen to approximately 4ppm. Total capital cost approximately $30m.

The Wastewater Treatment Plant (WWTP) receives over 20 million litres of wastewater every day. Flow balancing will be introduced to smooth influent delivery.

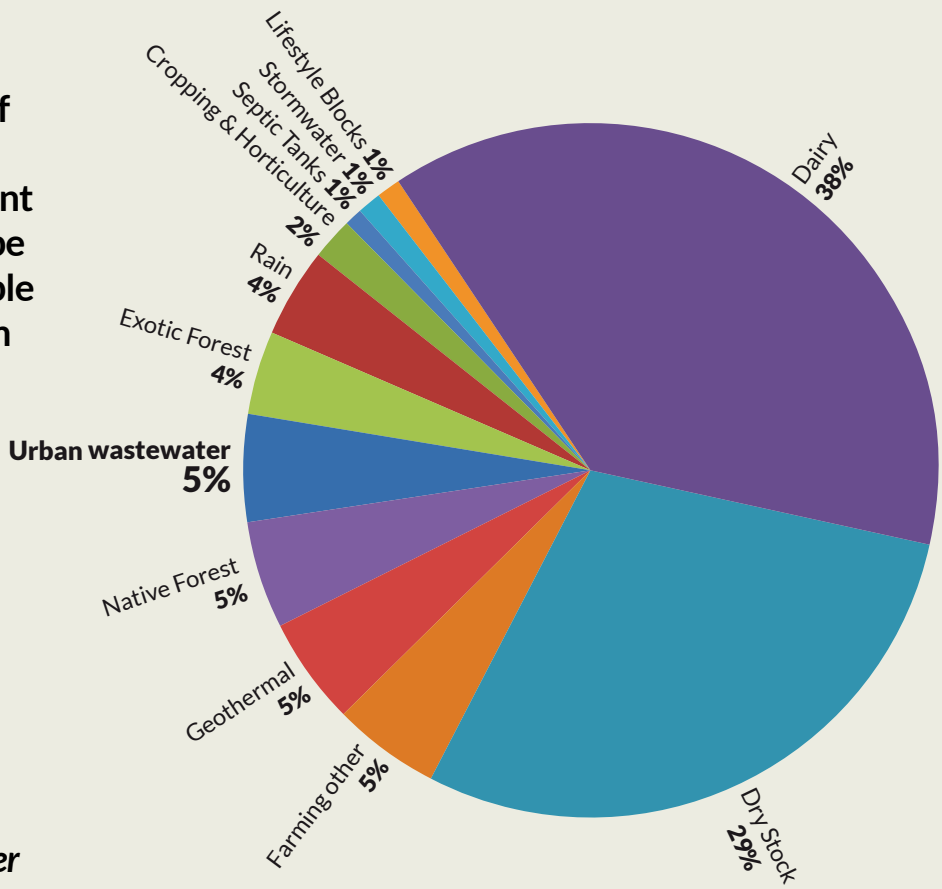
Discharge locations under consideration with various ecosystem re-entry mechanisms:
- Lower Puarenga Stream
- Lake Rotorua
- Upper Kaituna River

Ecosystem re-entry mechanisms under consideration:
- Rapid infiltration beds
- Monitoring ponds
- Gabion basket infiltration (rocks in baskets)
- Various wetland configurations
- Direct to water

History and Context

Currently approx 755tN per annum is entering Lake Rotorua. The Bay of Plenty Regional Council Regional Policy Statement (RPS) requires that this be reduced to the sustainable load of 435tN per annum by 2032 - 70% of the total reduction must be achieved by 2022.

Treated wastewater contributes less than 5% of the Nitrogen currently entering Lake Rotorua.



A brief history of wastewater treatment in Rotorua

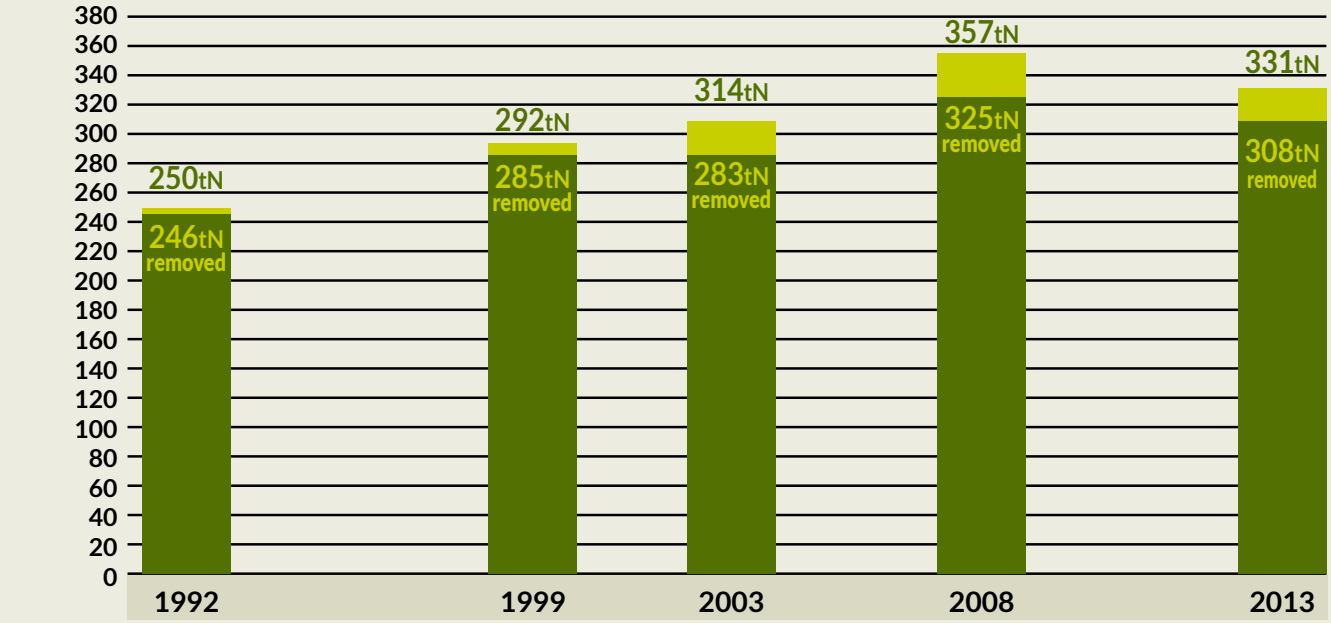
1891	The first sewers were laid in the CBD
	Treated effluent discharged to Lake Rotorua
1935–69	Septic tanks removed and replaced with reticulation in main suburbs
1973–78	$2 million upgrade to serve 60,000. New Wastewater Treatment Plant – screens, shredder, grit separation, primary sedimentation, activated sludge, clarifier, sludge digestion
1978	Ngongotaha and Eastern suburbs were reticulated
	Stormwater is reticulated separately from wastewater
1979	Chemical stripping to remove 70% of P
1990	Secondary treatment changed to Bardenpho, state of the art to remove both N and P
1991	Treated effluent discharged to LTS in Whakarewarewa Forest
1993	Biosolids composted
2006	Bardenpho extended and commenced Carbon-dosing
2006	Reticulation of lakeside settlements began
2011	Biosolids vermi-composted with waste pulp mill fibre in Kawerau
2012	Membrane Bioreactor (MBR) installed
current	Investigations into new sludge processing technology, Terax™
	Investigations into an alternative to the LTS

Wastewater Treatment Plant (WWTP) Performance

When we move away from the Land Treatment System (LTS) water from the WWTP will require further treatment to remove pathogens and phosphorus.
Increased N flows from 1992 to 2013 have resulted in part from landfill leachate inputs, extended sewerage reticulation and population growth.

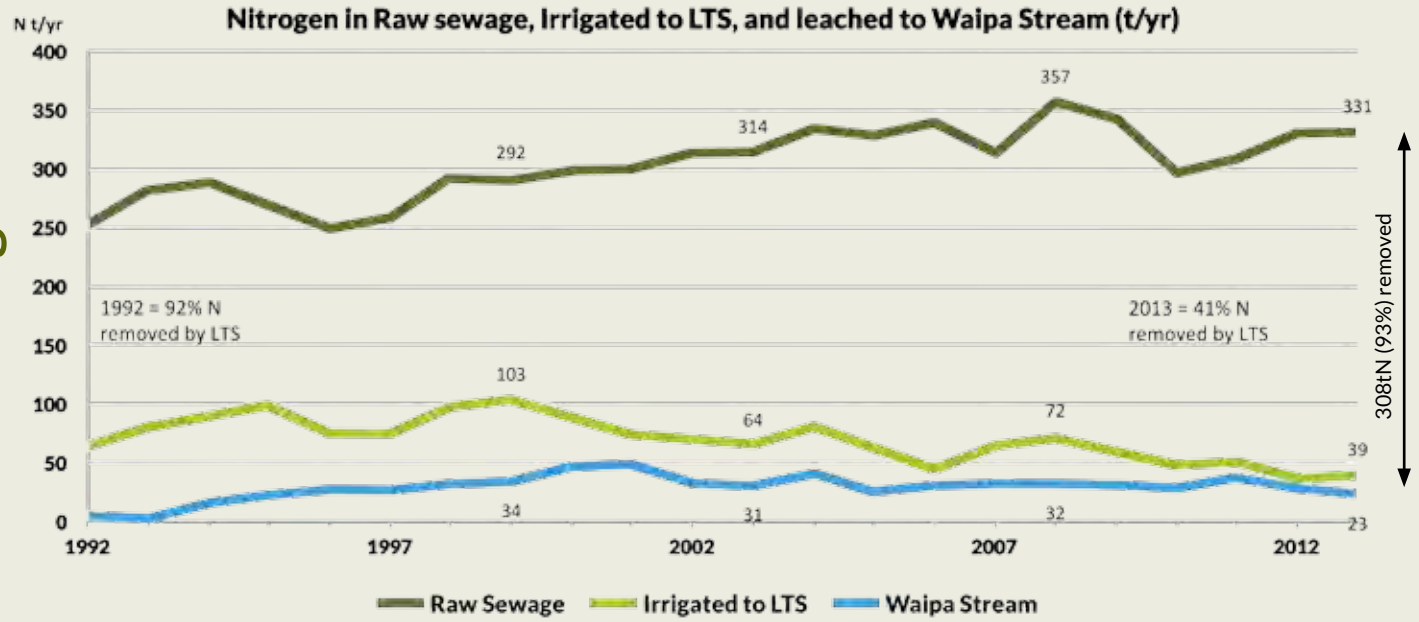
Nitrogen Inflows and Outflows

N levels

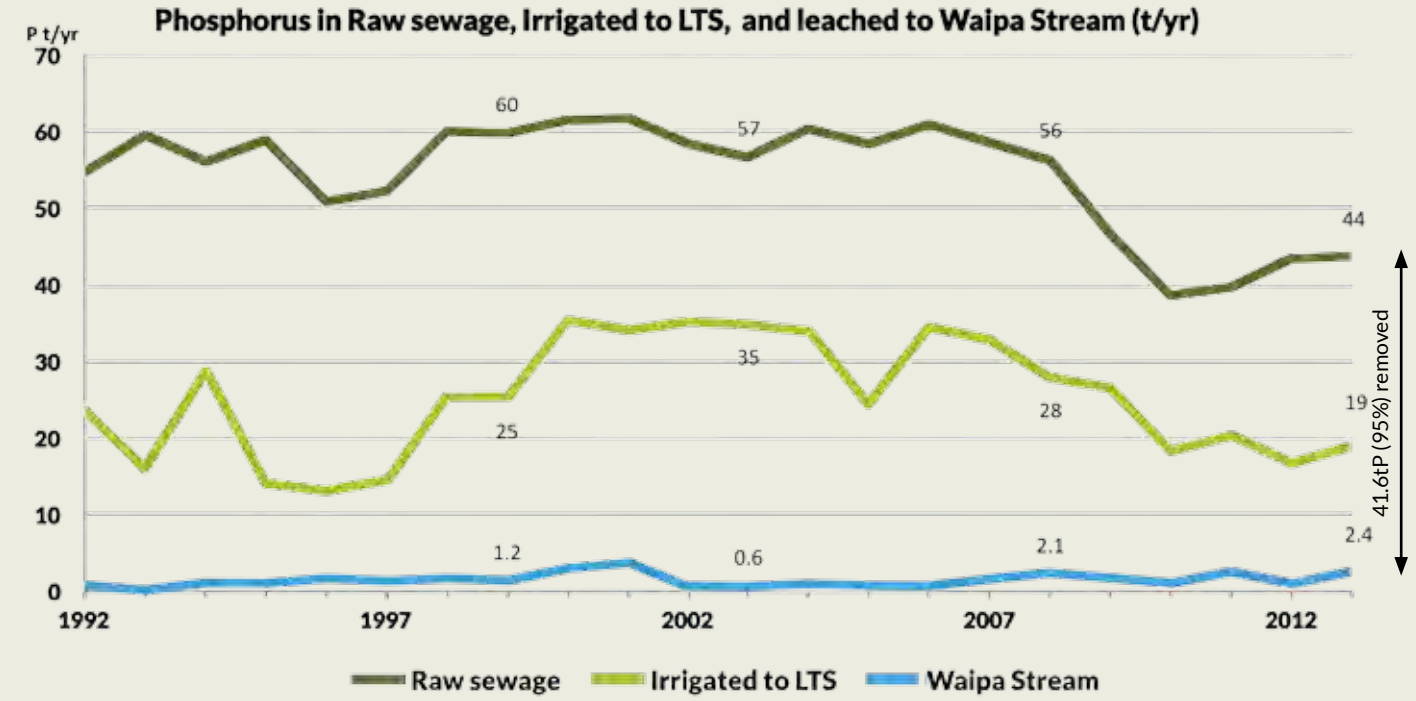


Estimated WWTP Inflows & Outflows

Nitrogen



Phosphorus



Existing Land Treatment System (LTS) Performance

After commissioning in 1991, the removal of nitrogen by the LTS was very efficient. By the late 1990s this efficiency had dropped, with occasional breaches of the 30tN per annum consent in the early 2000s.

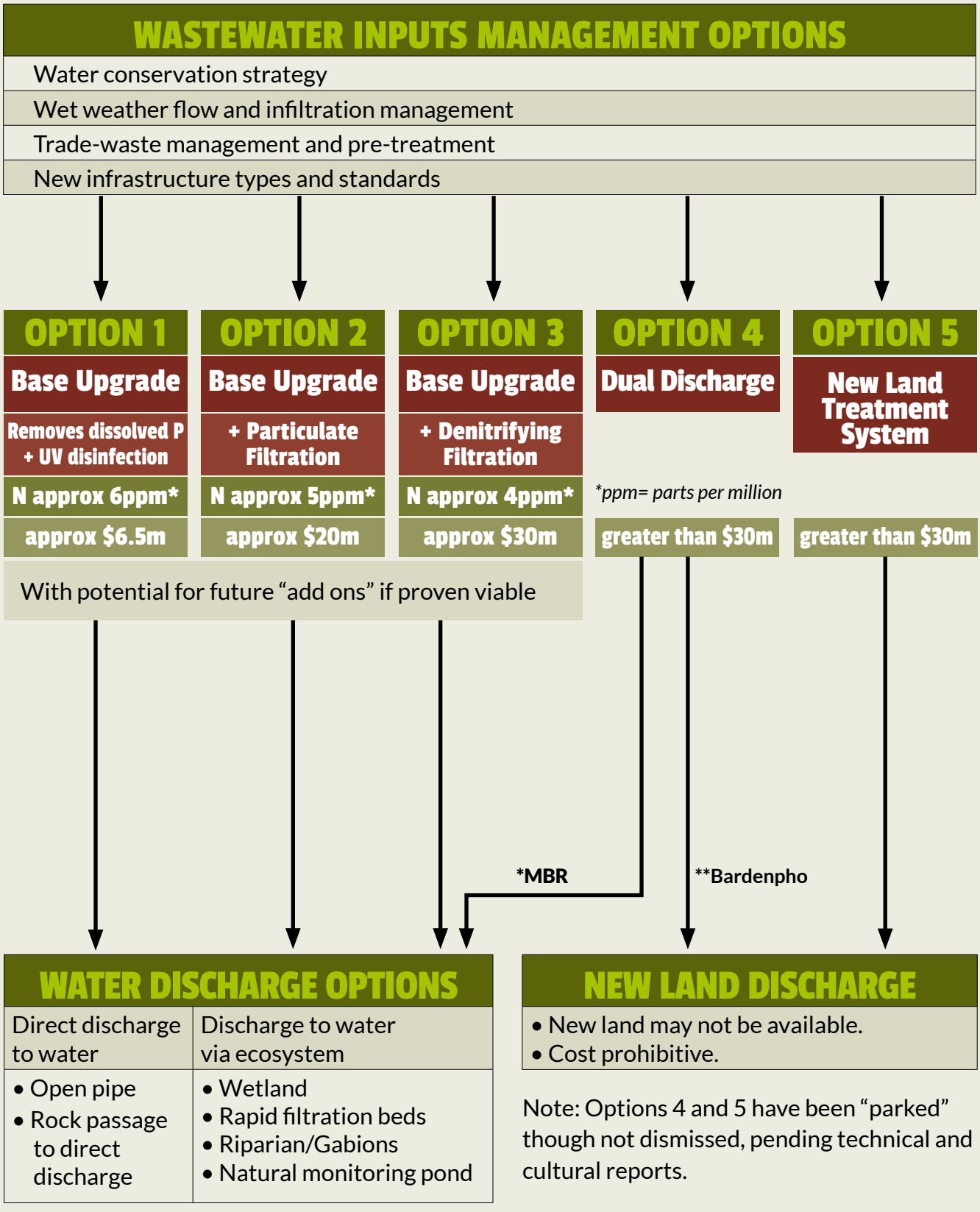
Since then improvements in WWTP treatment and LTS management have kept discharge to Waipa Stream close to the 30tN per annum consent limit. Water saturation of soil has also been an issue in some areas.

It is important to realise however, that the WWTP and LTS have removed on average 275tN from raw sewage every year since 1991.

- The Whaka Forest land on which the LTS operates was returned to CNI Iwi Holdings through settlement.
- The LTS has been occasionally non-compliant with its consent in terms of Nitrogen discharge.
- After consultation with Te Pumautanga o Te Arawa and Te Komiti Nui o Ngati Whakaue, CNI Iwi Holdings Ltd made a submission on the request to vary the consent conditions of the LTS.
- Through subsequent negotiations the Deed of Understanding was reached for the LTS to be removed from iwi land by December 2019.

There is now a Deed of Understanding with CNI Iwi Holdings for RDC to exit the Forest by December 2019

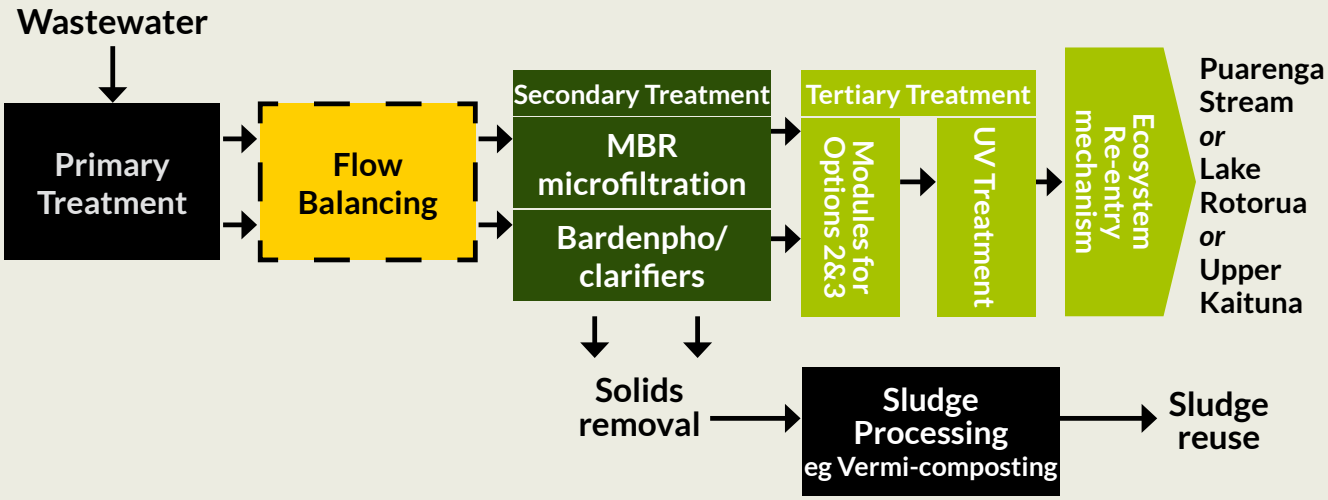
Short-list treatment and discharge options



Note: Options 4 and 5 have been "parked" though not dismissed, pending technical and cultural reports.

*MBR = Membrane Bioreactor. High technology filtration introduced in 2012.
**Bardenpho = Secondary treatment technology introduced in 1990.

Wastewater Treatment Schematic



Possible discharge locations

- **Lower Puarenga Stream**
- ***or* Lake Rotorua**
- ***or* Upper Kaituna**

Please note: The assessment of impact on the Kaituna river, as the ultimate receiving environment for Lake Rotorua and Lake Rotoiti outflows, is very important for all three possible discharge locations. The direct diversion to the Upper Kaituna of 30 or more tonnes of nitrogen derived from the WWTP would significantly assist the overall lakes nitrogen reduction programme.

However, discharge to the main body of Lake Rotorua brings the advantage of extra retention time in the lake during which further nitrogen reductions may occur by biological nitrogen attenuation. These impacts will be carefully assessed by the *Discharge Location & Effects Study* currently underway at Waikato University. The results of this study will be reported in December 2014, and be available for Stage 3 Public Consultation in early 2015.

Ecosystem re-entry

Ecosystem re-entry mechanisms under consideration

- Rapid infiltration beds
- Monitoring ponds
- Gabion basket infiltration (rocks in baskets)
- Various wetland configurations
- Direct to water

Contracted work underway

Options Design and Performance Review
Mott MacDonald Consulting Engineers

Discharge Location and Effects Study
Prof. David Hamilton, Waikato University

Cultural Impact Assessment
Sub-committee of RPSC Te Arawa representatives

Ecosystem re-entry options

Diffuse discharge through gabion baskets - Tokoroa, river discharge

Engineered Wetlands

Undertakes some treatment function for solids (algae, fine solids), organic strength, nutrients and micro-organisms, but with seasonal variation. Generally associated with low-tech treatment plants.

Engineered Wetland – close planted - Far North, Ruakaka, St Arnaud, Taumaranui and others. Also sub-surface wetland designs.

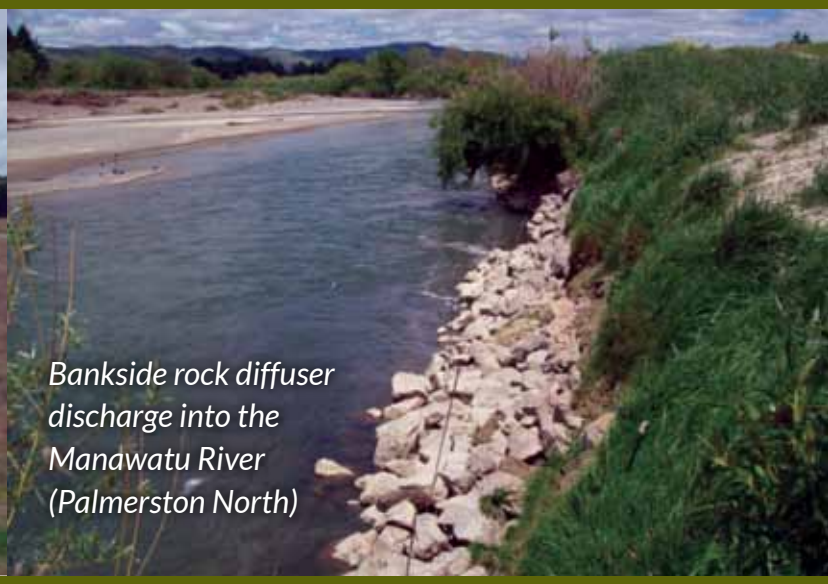
FloatingWetlands

Floating Wetland - Approximately nine in NZ at present for wastewater ponds

Wetland pond showing land (gravel/rock) passage into the pond (Palmerston North)

Ecosystem re-entry options

Rapid Infiltration Beds Cambridge



Bankside rock diffuser discharge into the Manawatu River (Palmerston North)

Wetlands

for wildlife, aesthetic and cultural purposes

Project Timeline

JUNE 2014	Options long list presented to Steering Committee
JUNE 2014	Options shortlist developed by TAG (5 options plus possible “add ons”)
JULY 2014	**Stage 1 Consultation shortlist agreed by RPSC (Options 1, 2, 3)** **- Treatment and discharge options**
AUG - NOV 2014	**Detailed feasability of shortlist options (1, 2, 3)** **- Consulting Engineers Report (Mott MacDonald)** **- Discharge Location and Effects (Waikato University)** **- Cultural Assessment Process initiated (RPSC sub-committee)**
OCT - NOV 2014	**Stage 2 Public Consultation (background)**
DEC 2014	**Engineering Technical Report received. Preliminary Cultural Assessment. Preliminary Discharge Location and Effects Report.**
FEB 2015	**Interim Discharge Location and Effects Report**
MAR - APR 2015	**Interim Cultural Assessment Report**
MAY 2015	**Stage 3 Public Consultation (detail)**
JUNE 2015	Steering Committee selects preferred option for recommendation to RDC
JULY - NOV 2015	Preliminary design, Final Cultural Impact Assessment (CIA), Consulation Draft Assessment of Environmental Effects (AEE)
DEC 2015 - DEC 2016	Resource consent application
JAN 2017 - MARCH 2018	Detailed design and tendering
APRIL 2018 - OCT 2019	Construction and commissioning
JUNE 2019 - DEC 2019	Decommission existing LTS

Public Consultation

Key Resource Management Act considerations in determining the "Best Practicable Option":

- appropriate and meaningful consultation
- the assessment of wide-ranging alternatives (i.e. Indigetech Ltd, Rotorua Activated Carbon Enterprises and Everse Global Environmental Solutions)
- thorough assessment of the effects of the solution for which new consents will be sought
- cultural impact assessment
- cost and affordability considerations
- appropriate resource consent conditions to ensure that the environment is well understood and protected

More information

We invite the community to learn more about this important project and to get involved in the decision-making process.

We are currently in the first round of public consultation. A second round will be held in early 2015.

Extra information is available on the RDC website.

There will be a **Public Open Day** at the Wastewater Treatment Plant on **10am to 2pm 22 November 2014.**

Please complete the "**Registration of Interest in Consultation**" form if you wish to be kept directly informed of Project developments or wish to meet with RDC for further discussion. This is available at consultation meetings and on the RDC website.

PUBLIC CONSULTATION

FIRST ROUND
OCTOBER TO NOVEMBER 2014

SECOND ROUND
DECEMBER 2014 TO MARCH 2015

PREFERRED OPTION
APRIL 2015

Rotorua Wastewater Treatment Review Project
ROTORUA DISTRICT COUNCIL
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