

MINUTES OF ROTORUA PROJECT STEERING COMMITTEE MEETING
HELD THURSDAY, 25 JUNE 2015 AT 12.30pm
THE ROTORUA LAKES COUNCIL COMMITTEE ROOM 1

<u>PRESENT:</u>	Warren Webber (Chair)	–	Lakes Water Quality Society Inc
	Geoff Rice	–	Tapuika Iwi Authority
	Peter Staite	–	Ngati Te Kahu/Ngati Hurunga Te Rangi
	Andrew Te Amo	–	Ngati Whakaue/CNI
	Geoff Palmer	–	Rotorua Lakes Community Board
	Fred Whata	–	Ngati Pikiao
	Jimi McLean	–	Ngati Makino
	Louise Kirk	–	Ngati Hurunga Te Rangi
	Tamara Mutu	–	Ngati Hurunga Te Rangi
	Gareth Bowen	–	Timberlands
	Manu Pene	–	Tuhourangi Tribal Authority
	Leilani Ngawhika	–	Te Arawa Lakes Trust
	Alamoti Te Po	–	CNI Iwi Land Management Ltd
	Gina Mohi	–	Ngati Rangiwewehi
	Wally Lee	–	Tuhourangi/Ngati Wahio
	Dave Donaldson	–	RLC, Deputy Mayor
	Jim Bradley	–	TAG Chairperson
	Annaka Davis	–	Toi Te Ora Public Health
<u>IN ATTENDANCE:</u>	Kevan Brian	–	Mott MacDonald
	Ann Nicholas	–	Sigma Consultants
<u>STAFF PRESENT:</u>	Greg Manzano	–	Manager Water Planning, Water Solutions
	Alison Lowe	–	Environmental Scientist, Solid Waste & Sustainability
	Riaan Rossouw	–	Lead Engineer, Water Planning, Water Solutions
<u>APOLOGIES:</u>	Marama Meikle	–	Ngati Hurunga Te Rangi
	Roku Mihinui	–	Te Arawa Lakes Trust
	Rangitihia Pene	–	Tuhourangi Tribal Authority
	Jimi McLean	–	Ngati Makino(for lateness)
	Andy Bell	–	Director, Water Solutions
	Andrew Te Amo	–	Ngati Whakaue/CNI (for early departure)
	Antoine Coffin	–	Te Onewa Consultants Ltd
	Alamoti Te Pou	–	CNI Iwi Land Management Ltd (for early departure)

12.30pm – 3pm COMMITTEE MEETING

- WELCOME AND APOLOGIES**
Apologies noted above

Resolved

That the apologies be received

Geoff Rice/Warren Webber
CARRIED

2. REVIEW AND APPROVAL OF PREVIOUS MINUTES FROM 20 MAY 2015**Resolved*****That the review and approval of the previous minutes be received***Tamara Mutu/Warren Webber
CARRIED3. ACTIONS FROM PREVIOUS MINUTES/MATTERS ARISING

Agenda Item No	Action	Assignee
6b	Is Nano filtration applied to waste water treatment plants internationally (Warren Webber)	Jim Bradley to discuss in the meeting
7	Establish a page on the Te Arawa Lakes website for the Committee as a repository for information.	Hilda King – under action – will inform the Committee when this is completed and provide the link.
7	Ask Antoine for more information on gasification(Peter Staite)	Warren Webber - to be discussed in the meeting

Leilani Ngawhika commented that the Te Arawa Lakes is located at www.rotorualakes.co.nz website – BOPRC with reference to Action 7.

- 3.1 Warren Webber recommended that the notes from the morning's workshop be incorporated into the minutes of this meeting so that there was a formal record of those proceedings.

Resolved***That the recommendation that the notes from the workshop be incorporated into the minutes of this meeting.***Alamoti Te Pou/Manu Pene
CARRIED4. NOTIFICATION OF GENERAL BUSINESS ITEMS – REFER LATER AGENDA ITEM 8

None

5. UPDATES

A. CULTURAL ASSESSMENT SUBCOMMITTEE UPDATE

Gina Mohi - the subcommittee have been waiting on information. Today's workshop has yielded a substantial amount of information the CAS to consider at their meeting.

B. OTHER UPDATES – INCLUDING REMAINING TECHNICAL QUESTIONS RAISED BY RSPC. (ATTACHMENT 1)

Jim Bradley spoke to a power point presentation.

Refer Slides 14 &15 "TAG's SUGGESTION TO RSPCC & RLC ON HOW TO HANDLE "ADD-ON'S" IN THE FUTURE PROJECT.

Resolved

That the Committee accept in principle the TAG's suggested approach to add-ons.

Warren Webber/Peter Staite
CARRIED

Annaka Davis spoke to a power point on Virus Treatment questions.
Refer Slides 20, 21, 22, 23 VIRUS TREATMENTS

Kevan Brian – a 0.01 membrane is not practical for an MBR. Membranes are cleaned every 30 minutes and backwashed with sodium hypochlorite – a disinfectant.

Jim Bradley – the starting point is the discharge point and what is the contact/exposure to cause illness. Public health is paramount.

Tamara Mutu – if discharging to land and the norovirus is present in the treated waste water – what is their life span and is there an accumulation issue.

Kevan Brian – the soil will have an effective pore size less than the membrane. The soil is a very fine filter.

Annaka Davis – the viruses have a limited life span in the environment – maximum 12 months.

Kevan Brian – the issue is runoff into waterways – need buffer zones to alleviate this.

Warren Webber – could we get capex/opex costs regarding the installations of UV plants. UV treatment should be allowed for as an add-on.

Jim Bradley – options 3A and 6 could be both plumbed for second stage of disinfection at a later date if required..

Annaka Davis – virus testing is expensive. If there are E-coli present, viruses will be as well. However e-coli are not a reliable indicator of faecal contamination.

Jim Bradley – under the microbiological water quality guidelines from the Ministries of Health and Environment, for human wastewater discharge, reliance cannot be just on the indicator bacteria. A microbiological risk assessment must be undertaken (part of the consent process) – that looks at the receptors – eg – freshwater crayfish. You look at the dilution and the dispersion in the receiving environment – that will be in Professor Hamilton's work.

Annaka Davis – as part of the consent process the Ministry of Health would need to be satisfied the areas of disposal are inaccessible to the public. Viruses on the surface will be killed by UV – the sun. We will also obtain more information on micro pollutants.

8. GENERAL BUSINESS (This Item was discussed next)

A. DISCHARGE LOCATION FIELD TRIP

Warren Webber - the proposal is this that the Committee have a field trip to the potential sites.

Jim Bradley – the most/least preferred option, for CAS, is the site close to the treatment plant.

Warren Webber - this site embraces the gabion basket diffuse discharge site. The other is near the bridge.

Tamara Mutu – would it be useful if the CAS had all the information before visiting all the sites?

Warren Webber – I will be guided by what the CAS decides. After the presentation of the site visits, there was a suggestion that it would be useful to have a look.

Dave Donaldson – Peter has often expressed the request that however the treated wastewater is discharged there is a visual aspect. If there was a gabion water fall effect, with discharge trickling down over rocks and through a pumice filter. Could we have some concepts drafted?

Warren Webber – this will probably be just a preliminary visit – as we progress there will a need to have more.

B. INFORMATION REPOSITORY

Hilda King has started this process of posting information to the Rotorua Lakes website. Committee members will be provided with the link and a password to the secure site.

C. STORMWATER CONSIDERATIONS (ATTACHMENT 2)

Greg Manzano - this project is now ready for public consultation. RLC would like the RSPC Committees advice and guidance on how to proceed with consultation.

Riaan Rossouw and Ann Nicholas spoke to a power point presentation.

Greg Manzano – at the next meeting it is proposed to present a consultation plan, issues and options document for the Committees consideration.

D. OTHER

Geoff Palmer –what is the Regional Council's view on alum dosing?

Warren Webber – the BOPRC have mostly been involved with alum dosing issues into the lake – in stream injections. In terms of its use at the plant, BOPRC would not be involved – it is a very common technology.

Alison Lowe – the alum is going to end up in the sludge.

Jim Bradley – Professor Hamilton's effects study has modelled the alum dosing to the stream staying and being removed.

Peter Staite – what is the role of the Regional Council in this process?

Warren Webber – they are invited as observers – Andy Bruere is on the TAG, so he very much involved. The consenting process is separate from the work that Andy Bruere is doing.

Jim Bradley –the formal RMA process is not compromised by representatives from the Regional Council and the Ministry of Health being able to participate in committees e.g. RSPC. There is a clear separation.

Warren Webber – in the beginning it was decided that the BOPRC representatives be included in the committee membership. If there is to be a change, this can be followed up in the next meeting.

Geoff Rice – it allows them to be accurately informed

6. STOCKTAKE OF TOTAL PACKAGE

Greg Manzano spoke to slide 24.

Effects Study by Professor Hamilton to be submitted to TAG on the 15 July 2015.

Site Location Discharge – has been discussed but with no resolution yet made.

Cultural Assessment is progressing.

Further investigations requested will be presented at the RSPC meeting on the 28 July 2015.

Professor Hamilton will present the Effects Study at the RSPC workshop on the 28 July 2015.

7. NEXT MEETING: TUESDAY 28 JULY 2015 COMMENCING AT 8.15AM AT THE WWTP FOLLOWED BY WORKSHOP/MEETING 10AM TO 3PM.
9. KARAKIA WHAKAMUTUNGA
Meeting closed at 3pm with a Karakia by Manu Pene.

ACTIONS

Agenda Item No	Action	Assignee
8d	To consider the membership BOPRC/MOH representatives on the RSPC	Warren Webber

RPSC Technical Workshop - 9am Thursday 25th June 2015

TOPICS

The following three Final Draft Mott MacDonald Reports will be presented by Kevan Brian.

1. **Alternative Land Treatment Investigations – Revision four: June 2015**
2. **Supplementary Report – Alternative Land Treatment Sites – Report Version 2: June 2015**
3. **Wastewater Strategy - Version Three: June 2015.** This develops an new Option 6 being a full MBR Treatment Plant
 - These Reports in earlier draft form have been presented to and discussed by TAG and TAG comments incorporated into these final Drafts
 - These Reports in terms of their scope and output meet RLC's consulting engagement with Mott MacDonald
4. **Technical and cost comparison of the six Options as they currently stand**
led by Greg Manzano

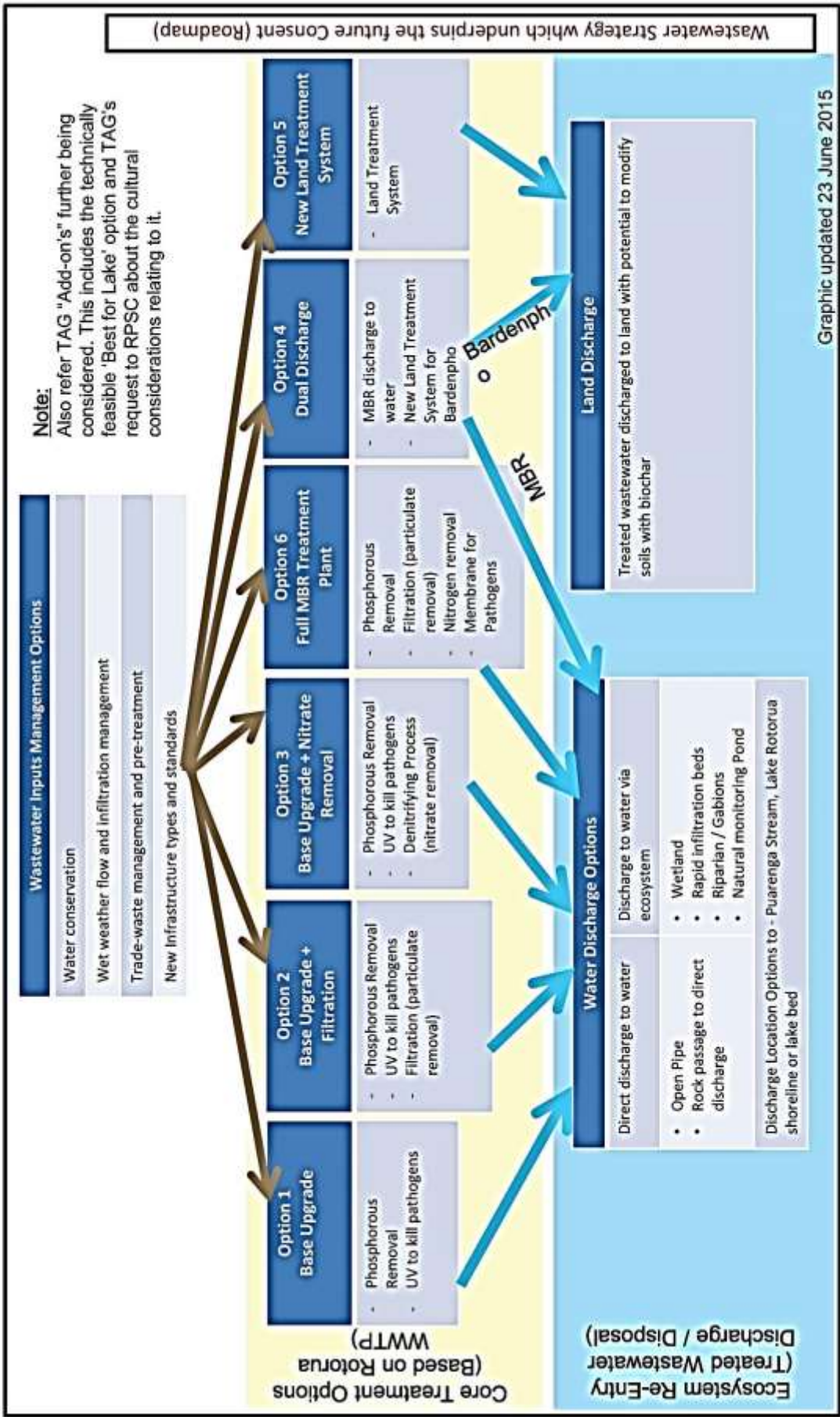


RPSC Technical Workshop - 9am Thursday 25th June 2015

Go to Kevan Brian/Mott MacDonald's slides on the three reports which Kevan will present.
Separate file does not necessarily need to be inserted in this one.



TAG Core Short List Options - 1-5 Previously Adopted by RPSC

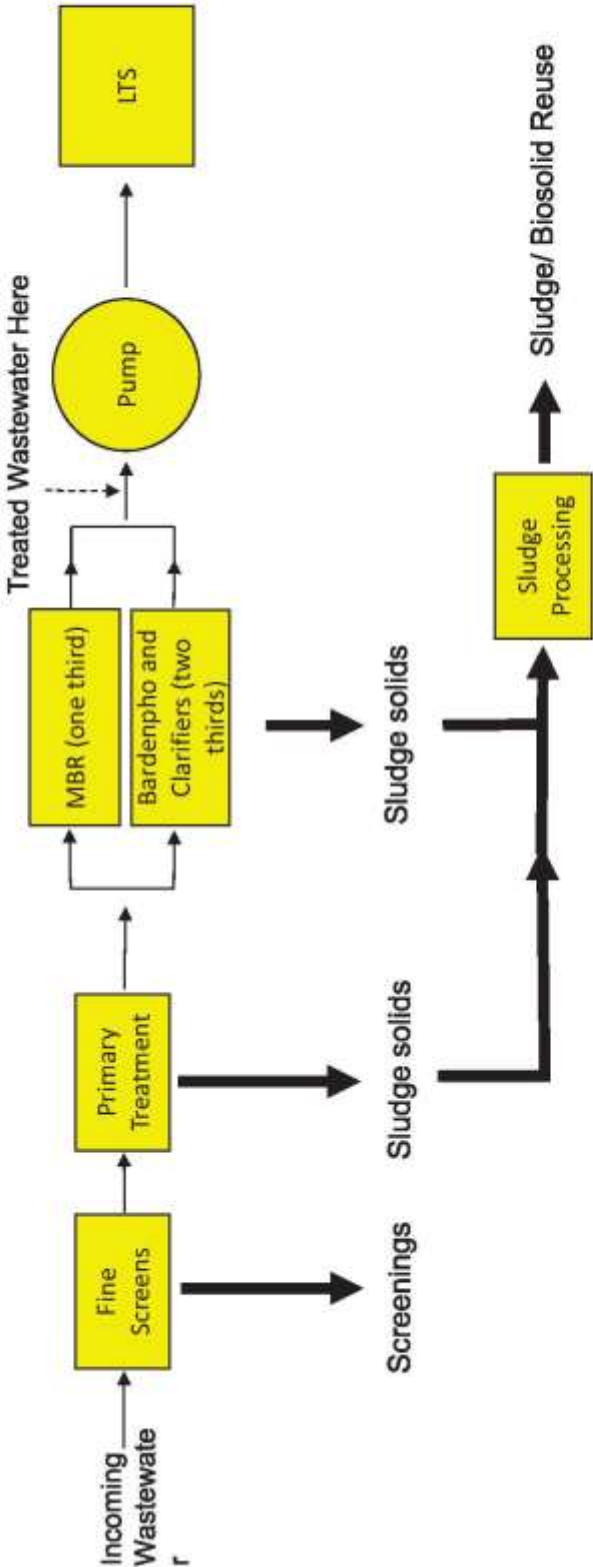


How do the shortlisted options fit together?

Starting Point

The Existing Wastewater Treatment Plant (WWTP) and Land Treatment System (LTS)

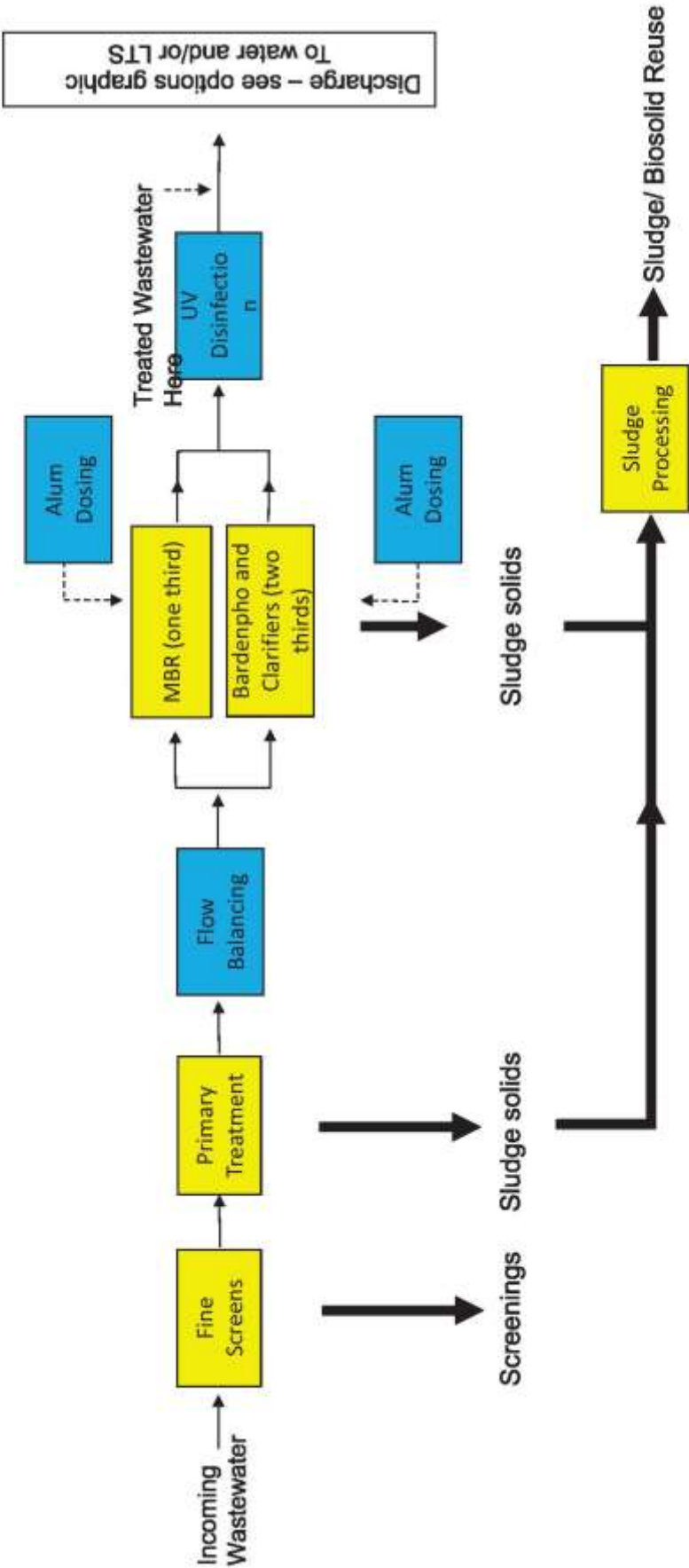
Simplified



Option 1 - The Base Case

Add in

- Flow Balancing
- Alum dosing for phosphorus removal
- UV disinfection to kill pathogens (germs)
- New discharge to water and/or LTS (refer separate graphic)



Key:

Existing Process

Option 3 Addition to Base Case

Base Case New Processes

Option 6 New Processes

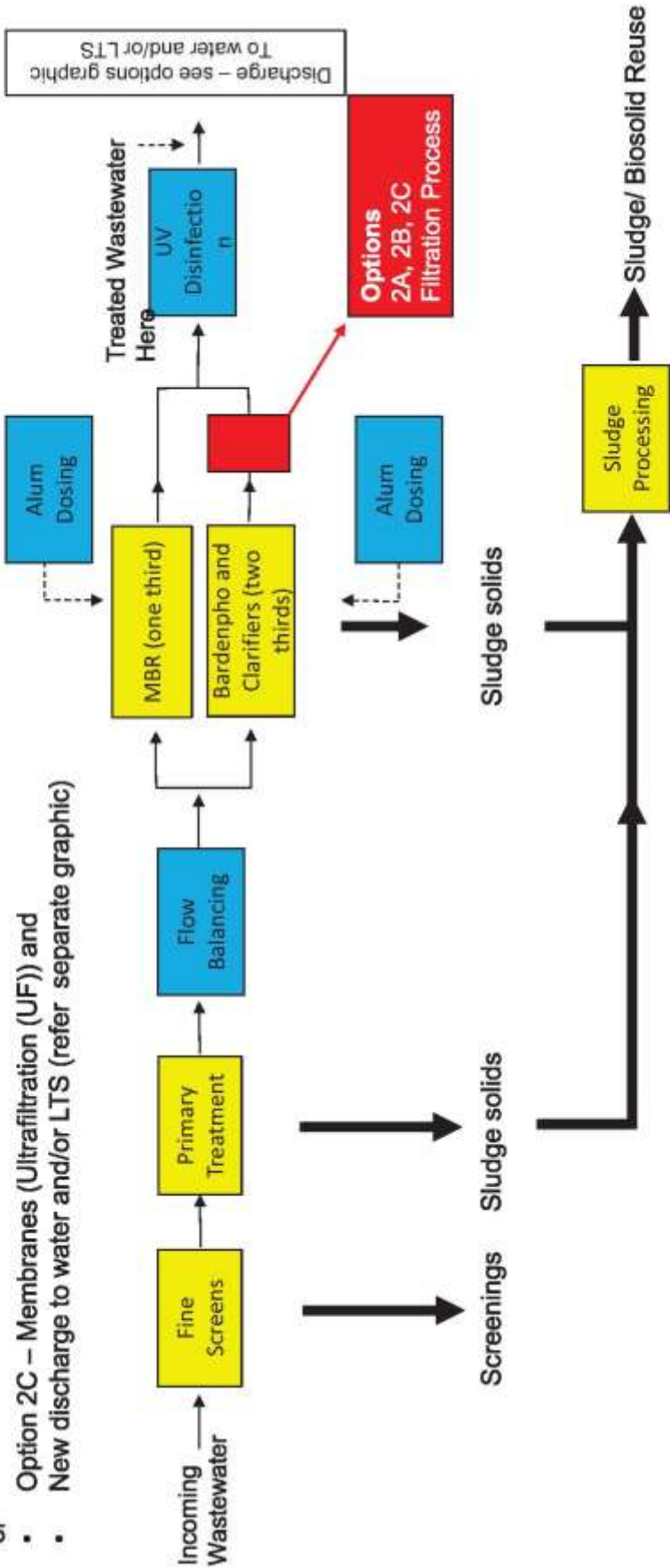
Option 2 Addition to Base Case

5

Options 2A, 2B & 2C - The Base Case and Filtration

Add in to the Base Case – Filtration – three alternatives

- Option 2A – Disc Filters
- or
- Option 2B – Sand Filters
- or
- Option 2C – Membranes (Ultrafiltration (UF)) and
- New discharge to water and/or LTS (refer separate graphic)

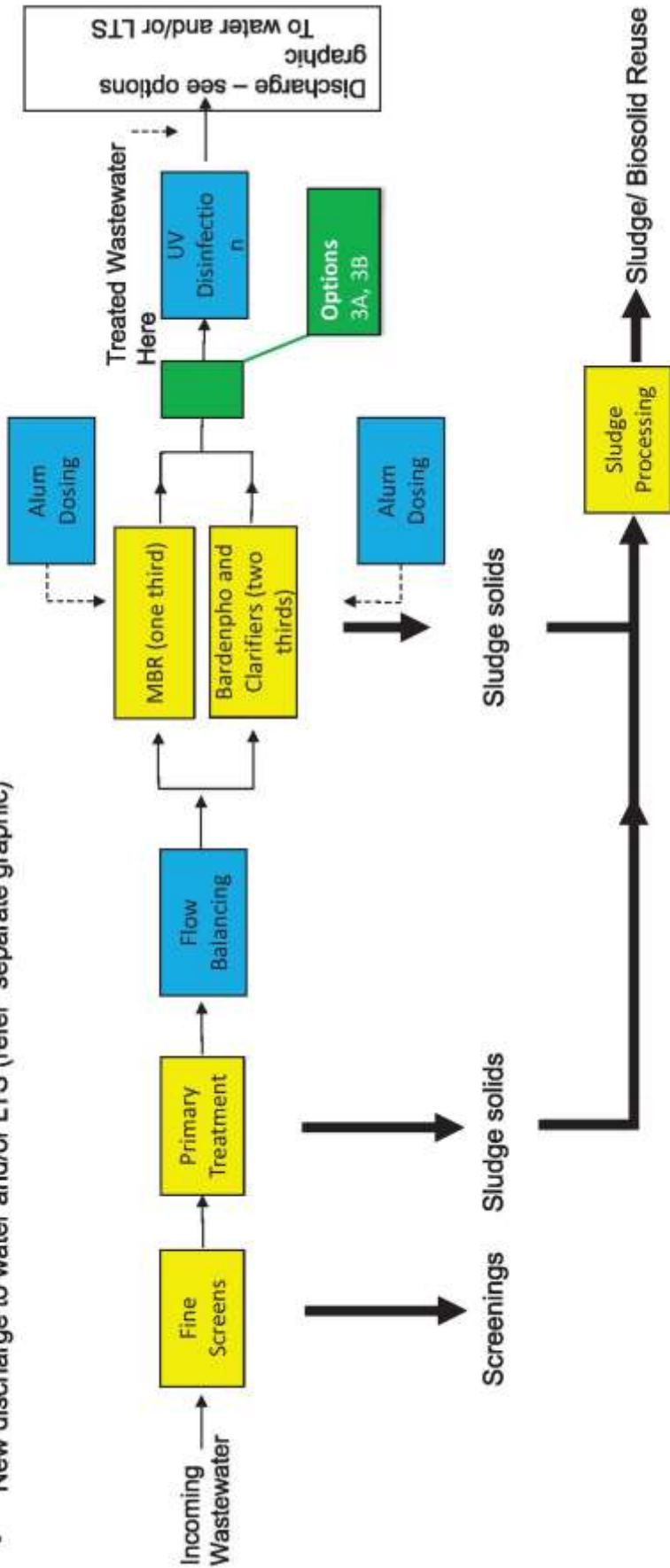


Key: Existing Process Base Case New Processes Option 2 Addition to Base Case Option 3 Addition to Base Case

Options 3A & 3B - The Base Case and Denitrifying Filtration / Carbon Beds

Add to the Base Case

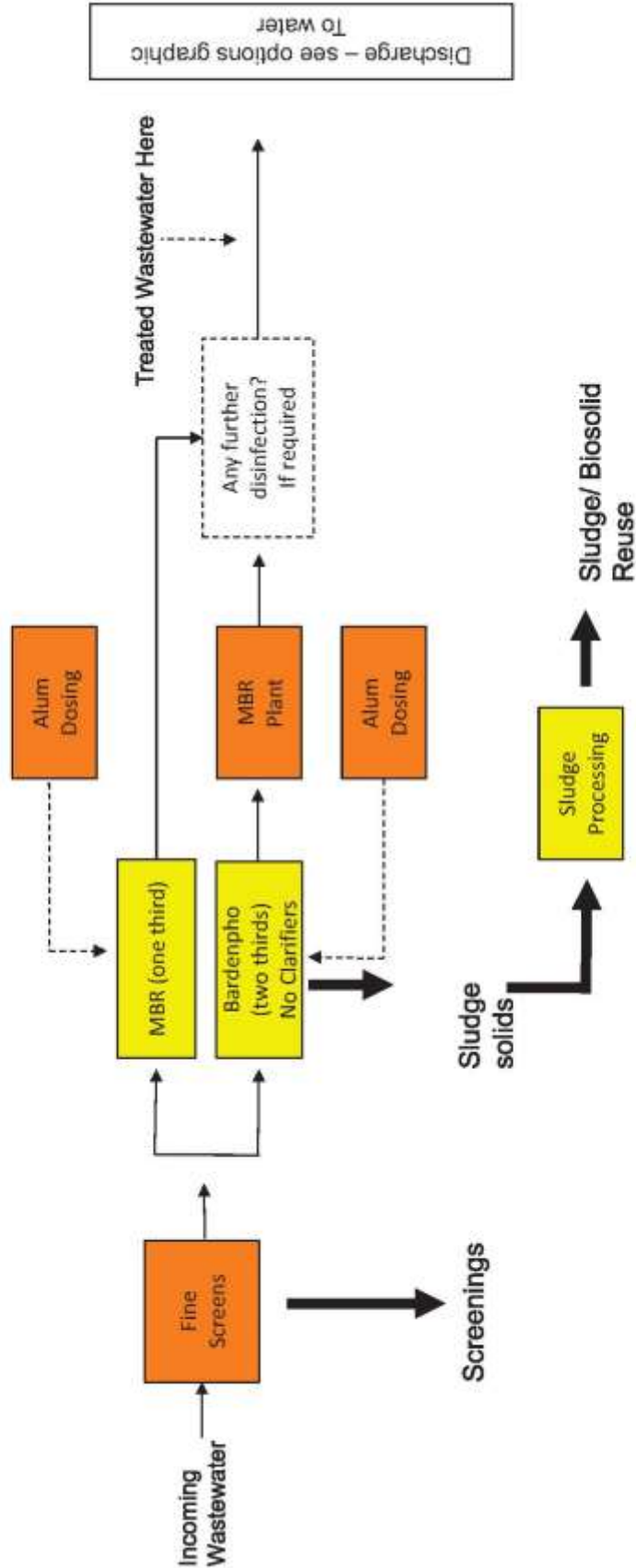
- Option 3A – Denitrifying Filters
- or
- Option 3B - Carbon Beds and
- New discharge to water and/or LTS (refer separate graphic)



Key: Existing Process Base Case New Processes Option 2 Addition to Base Case Option 3 Addition to Base Case

Option 6 – Full MBR Treatment Plant with Phosphorus Removal

- Add in
- Alum dosing for phosphorus removal
 - Membrane filtration to remove most of pathogens (germs)
 - New discharge to water



Key: Existing Process Option 6 New Processes

FOR RPSC MEETING 25TH JUNE SUMMARY TAG MEETINGS- #7 28TH MAY & #8 16TH JUNE

- Both busy meetings
- Antoine Coffin (who TAG invited) updated on the CIA activities and technical requirements. Including a wide range of potential mitigation measures that could be considered.
- Key Agenda items TAG #7. Alternative Land Treatment Sites and Wastewater Strategy (Option 6 Development) Mott MacDonald Draft Reports. Presented by Kevan Brian
- Key Agenda items TAG #8
 - Further updates on Mott MacDonald Draft Reports
 - Lake Rotorua Treated Wastewater Discharge: Environmental Effects Study Draft Report presented by Professor David Hamilton and Chris McBride
- Other Topics included
 - Discussions/Update on TERAX by Greg Manzano
 - Advanced treatment options
 - Discharge locations to water
 - “Add-on’s” and developing TAG approach for the future
- Remaining questions from RPSC – refer later in the meeting
- Programming matters and methodology for shortlisting – preferred options assessment

TAG's SUGGESTION TO RPSC & RLC ON HOW TO HANDLE "ADD-ON'S" IN THE FUTURE PROJECT

- Time is now running out for looking at third party "Add-on" proposals/ideas for yet unproven on a commercial/full use scale, new and innovative treatment processes.
- To seriously consider an "Add-on" that maybe proposed by a third party, the "Add-on" must be well proven at a sufficiently large size and scale consistent with Rotorua's WWTP flows, loadings and infrastructural components
- TAG propose that in seeking new Resource Consents for the future selected treatment and discharge arrangement, then RLC suggest a resource consent condition that requires RLC to undertake periodic reviews of technology changes and if appropriate, then incorporate new processes and/or discharge procedures into their wastewater management approach.

cont...

TAG's SUGGESTION TO RPSC & RLC ON HOW TO HANDLE "ADD-ON'S" IN THE FUTURE PROJECT cont...

- The above TAG proposal is consistent with
 - The concept of a "Wastewater Strategy" underpinning the scheme chosen and Resource Consents
 - Keeping future flexibility and being able to adopt changes/new technologies throughout the duration of new resource consents and beyond
- RPSC and RLC accept in principle the TAG's suggest approach as above
- Third parties who have offered "Add-on" technologies or who may in the future offer "Add-on" technologies be informed of the above approach (providing it is accepted by RPSC and RLC).



RPSC REMAINING QUESTIONS AND ANSWERS CONTINUED

Further information to that presented to previous meetings

Question 1 Effects of Wastewater Treatment of Health compounds in sewage

- Question related to US Department of Health Household Products List
- Professor David Hamilton has information from the Brisbane Reclaimed Water project he was involved in and will present this in the July Workshop

Question 4 Water quality of unpolluted springs and lake water for comparison with treated wastewater and treated wastewater once discharged

- Regional Council has good information on key parameters that are being used in the Effects Assessment
- This information will be included as part of the Effects Assessment so that comparisons with previous and current water quality and ecology can be made to the discharge assessment. This will be covered at the July Workshop with Professor David Hamilton and the associated RPSC meeting.

RPSC REMAINING QUESTIONS AND ANSWERS CONTINUED

Question 5 Further information on Black Mica as an “Add-On”

- Refer RPSC 19th March 2015 information Slide 2 and “Add-On’s” update RPSC 22nd April 2015
- No new full scale “case history” had been obtained to date – still awaited

Question 6 Status of Various “Add-On’s”

- No new information. Refer TAG’s suggested position on “Add-on’s” in terms of the future.
- Correspondence being sent from RLC to Everse in response to their Report presented to RPSC on 20th May 2015
- Refer to TAG’s suggested approach in respect to “Add-on’s” for the future of the Project

GROUP B: QUESTIONS & ANSWERS cont... NEW QUESTIONS

New Questions

Question: Are there UV disinfection systems where the lamps rotate rather than the water flowing past the lamps?

Answer: No proprietary devices that we are aware of, but could be. Information available and sent to Peter Staite on various UV arrangements and the wastewater flow vortexing (swirling around the lamps

Question: What is Gasification? Where does it fit in Wastewater Treatment?

Answer: Gasification is a process that converts organic or fossil fuel based carbonaceous materials into carbon monoxide, hydrogen, methane and carbon dioxide. This is achieved by reacting the material at high temperatures ($>700^{\circ}\text{C}$), without combustion, with a controlled amount of oxygen and/or steam.

In Wastewater Treatment the process can gasify the waste solids to almost completely eliminate them. Almost completely eliminates wastewater solids - gasifies $>99\%$ of organics, leaving only inorganics (typically around 13% of wastewater solids)
Can handle sludge with solids content from 4% to 25%

<http://en.wikipedia.org/wiki/Gasification>

<http://www.genifuel.com/text/Gasification%20of%20Wastewater%20Solids.pdf>

https://www.osakagas.co.jp/en/rd/technical/1198912_6995.html

GROUP B: QUESTIONS & ANSWERS cont... NEW QUESTIONS

Question: Virus Treatment Questions paraphrased by Jim Bradley

"What are the harmful/worse viruses from a public health point of view?"

"What do they result in?" e.g. Norovirus effects vomiting and diarrhoea, Adenoviruses effects, urinary tract, eyes, respiratory etc.

"How effective will an MBR Membrane Plant of the type that Rotorua WWTP has at 0.04 microns"

Refer to following three slides and handout of these questions and answers – prepared by Annaka Davis Toi Te Ora Public Health, RPSC Member . Apologies from Annaka for her absence today.



Toi Te Ora
Public Health Service
BAY OF PLENTY DISTRICT HEALTH BOARD
Serving Bay of Plenty and Lakes Districts

Questions & answers about viruses

What types of viruses are in wastewater?

- There are over 150 different types of enteric viruses found in raw sewage.
- Types of viruses found in wastewater depend on those circulating in the community

“What are the harmful/worse viruses from a public health point of view?”

- A virus known to cause illness is a public health risk.
- The level of harm is based on the:
 - extent of disease
 - number of people who may be exposed
 - likelihood of exposure to enough viral particles to cause an illness and;
- level of defence a person or population has against infection/illness.

What health effects do viruses cause?	
Disease	Symptoms
Acute viral gastroenteritis	causes vomiting and/or diarrhoea, fever, abdominal pain, headache, and body aches.
Respiratory illnesses	cause cold-like symptoms, sore throat, bronchitis, pneumonia and pink eye (conjunctivitis).
Viral hepatitis A-E	Hepatitis A causes fever, tiredness, anorexia, nausea and abdominal pain followed by jaundice (yellowing of skin and eyes).

- “How effective will the RLC WWTP MBR Membrane Plant of 0.04 microns be against viruses”**
- A 0.04 micron filter equals 40 nanometres (nm).
 - Viruses range in sizes (rotavirus - 60nm, norovirus 20nm, adenovirus 70-90nm.

Therefore, the current 0.04 filter at the Rotorua WWTP will be effective against rotavirus and adenovirus but not norovirus. Note: clumping of viruses commonly occurs which means that some viruses may be retained by a filter with pore size larger than a single virus.

A 0.01 micron would be needed for treatment to be effective against all viruses. However the degree of treatment needed to protect public health is dependent on where the treated wastewater will be discharged.

Ultrafiltration (UF) equipment and Pore Sizes and Correction of earlier incorrect figure showing existing MRB at 4 Micron Pore Size **TO BE FURTHER MARKED UP BY JIM SHOWIN NOROVIRUS RELATIVE TO MBR PORE SIZE**

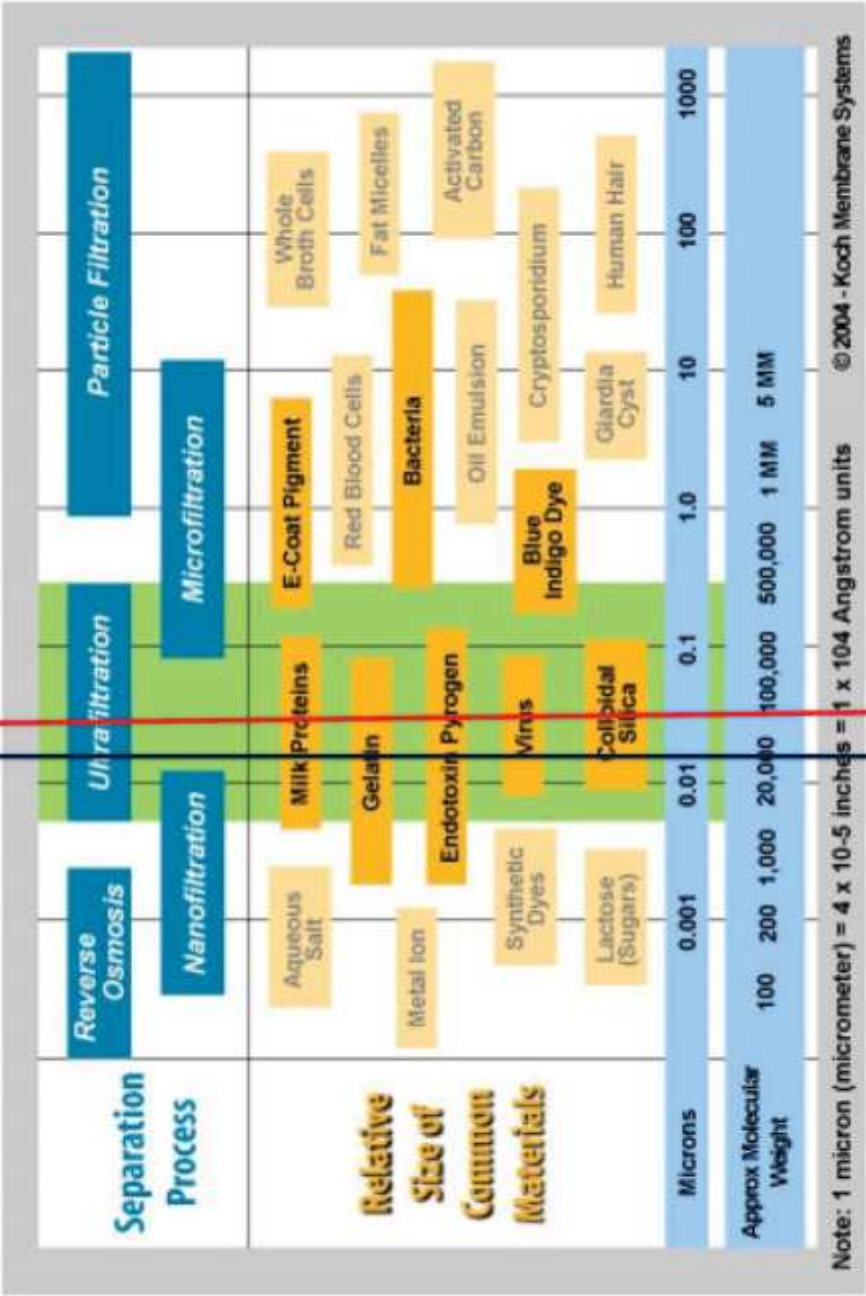


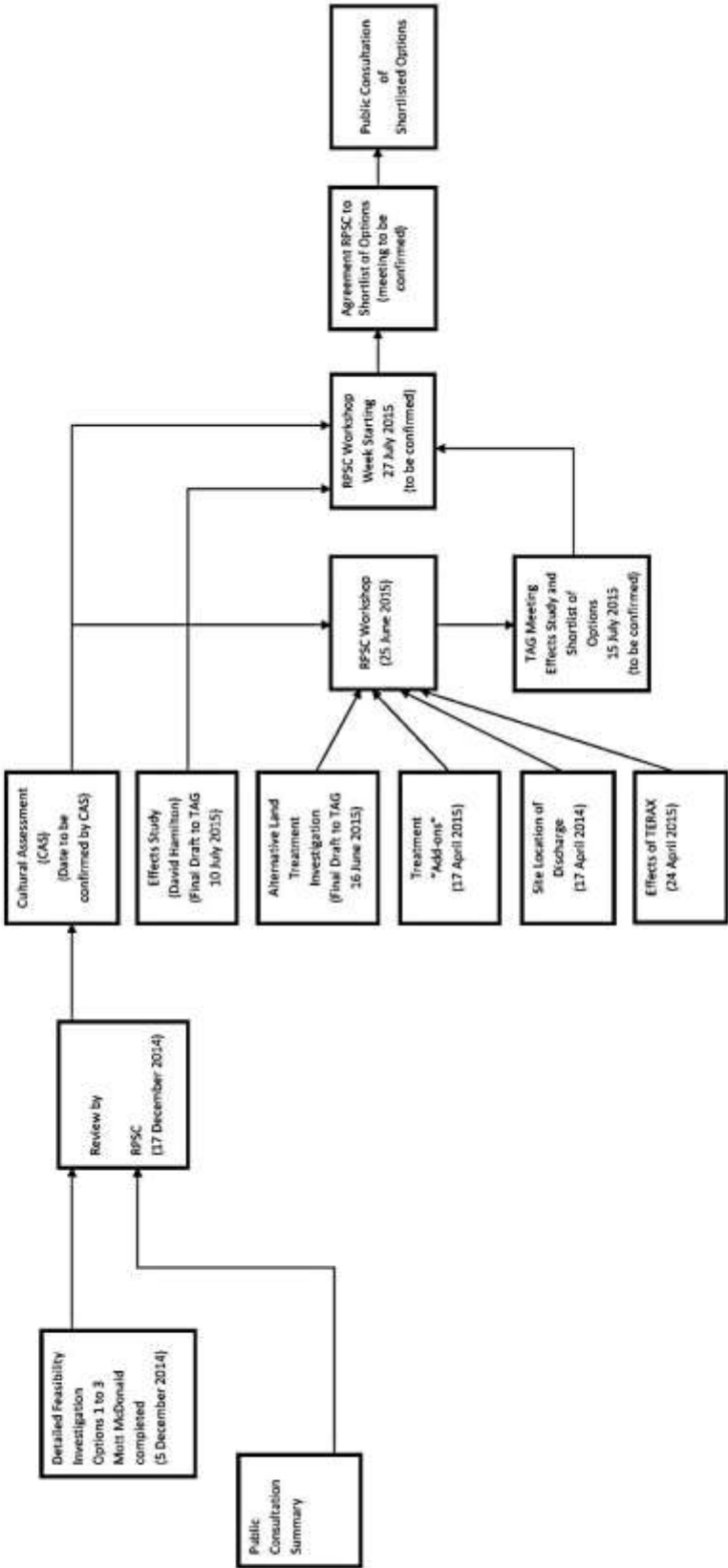
Figure 1.0 Relative Particle Sizes (Koch, 2004)

Existing MBR 0.04 Micron Pore Size (Zeeweed 500D module)

Option 2C Mott MacDonald Dec Report – Membrane Ultrafiltration (UF) Z-PAK UF System – 0.02 Micron Pore Size

RDC-515361

ALTERNATIVE TO THE ROTORUA LAND TREATMENT SYSTEM
AGREEMENT ON PREFERRED OPTION (PROPOSED PROGRAMME)





Purpose of the Presentation

- To inform the steering committee of the work being done for the Comprehensive Stormwater Consent
- Get guidance on the consultation process.

Current Situation re SW Resource Consents in Rotorua

- RLC currently holds 39 SW related Consents within the RUA
- 29 of these are SW discharge consents
- Some of the discharge consents have expired, but remain operative while the RUA Comprehensive SW Consent Application is being applied for
- Multiple consents are inefficient and costly
- A single comprehensive consent is far more practical.



- 7 Main Stream Catchments:
- Waiteti Stream Catchment
 - Ngongotaha Stream Catchment
 - Waiohoro Area Catchment – including the Waiohoro and the Waikuta streams
 - Uwhina Stream Catchment
 - Puarenga Stream Catchment
 - Waikawa Area Catchment – draining through several large drains
 - Waingaehe Stream Catchment

29 Urban Stormwater Catchments



CATCHMENT MANAGEMENT PLAN **WHAT IS IT?**

- Basic planning and management tool for stormwater at the individual catchment level.
- Provides link between the strategic level policies and the implementation of stormwater management initiatives and controls.

CATCHMENT MANAGEMENT PLAN **WHAT IS IT?**

- A risk assessment of existing and future flooding, and stormwater quality issues
- How new developments will be accommodated
- How stormwater works and maintenance programmes are managed
- The impact of stormwater on the receiving environment

**RESOURCE CONSENT
APPLICATION**

- BOP Regional Water & Land Plan - discretionary activity under Rule 37
- Assessment of effects on streams and Lake Rotorua
 - Water quality – habitats, recreation, tourism
 - Natural character of streams and lake
 - Flood risk
 - Cultural values – cultural impact assessment

ROTORUA
LAKES TRUST**CONSULTATION**

- Seeking to consult with tangata whenua and community to identify issues
- Developing a consultation plan
- Need guidance on consultation process

ROTORUA
LAKES TRUST**Where to from here!**

- Develop consultation plan
- Application lodged 30 June to comply with BOPRC requirements
- Placed on hold to allow consultation process
- Allow correct time to consult
- Complete the application to allow processing

ROTORUA
LAKES TRUST