



Mangawhai Community Wastewater Scheme (MCWWS)

Community Advisory Panel

Final Report

July 2015

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Version History

v01 – May 2015	First draft for Panel Chair comment
v02 – May 2015	Draft for Panel comment
v03 – June 2015	Final draft for Panel review
V04 – July 2015	Final

Glossary

Term	Definition
Amm-N	Ammonia level (mg/L)
Annual Operating Charge	The charge to operate and maintain the Scheme on a day to day basis.
BOD5	Biochemical Oxygen Demand (mg/L)
Capital Contribution	A property's financial contribution towards the cost to build the Scheme.
CBOD	Carbonaceous Biochemical Oxygen Demand (mg/L)
Common Drain/line	A line that crosses through and services up to 5 properties.
Connectable	A property that is within 30 metres of the public wastewater line, and the dwelling is within 60m of the public wastewater line.
Connected	A property that is physically connected to the Scheme.
Connection	The physical connecting of a building to the wastewater service.
Catchment Area/Drainage District	A defined area used for rating purposes.
Decommission	The removal or filling in of a septic tank or the disestablishment of an effluent field.
Development Contribution	A revenue contribution from property developers to cover the cost of servicing growth resulting from development activity.
Dwelling	Any building, part of a building or group of buildings used or intended to be used principally for residential purposes and occupied or intended to be occupied by not more than one household and includes a minor household unit, a utility building or any unit of commercial accommodation.
E-Coli	Escherichia coli (MPN/100 mL)
Existing Network	The area where the wastewater service is currently available.
Gravity System	Made up of 100-150mm diameter sized pipes that use gravity to transport wastewater. Gravity systems have connection points or stubs at the property boundary.
Grinder Pump	A pump that macerates solids within a flow.
KDC	Kaipara District Council.
MPN	(most probable number) of the e.coli count.
Original Area of Works	Consists of approximately 1,200 properties mainly within the older Mangawhai urban area.
Pressure System	Made up of 40-50mm diameter sized pipes with pumps that push wastewater through the system. Pressure systems require boundary kits and infusion welding to cut into the line.
Private Drain/line	Where the line or drain enters private property begins at the property boundary and enters into the building.
Public Drain/line	The line within a road or reserve area.
Reticulation	The technical components that make up the wastewater scheme – lines or drains, grinder pumps, boundary kits, connection points or stubs, pump stations and treatment plant.
SBR	Sequencing Batch Reactor
Subsidised Targeted Rate	Those that received a central government subsidy and who Council connected.
Targeted Rate	A rate that is charged only to members of particular communities or groups of ratepayers that benefit from the activity being funded by the rate.
TN	Total Nitrogen (mg/L)
TP	Total Phosphorous (mg/L)
TSS	Total Suspended Solids (mg/L)
Vacant	A section with no building.

Preface

The Mangawhai Community Wastewater Scheme (MCWWS) has been one of the more contentious projects undertaken by a local authority in New Zealand. The non-consulted upon increase in scope of the original scheme and the associated escalation in costs, failings by the Kaipara District Council (KDC), and the Auditor General’s office investigation and report have resulted in a protracted series of legal challenges, validation legislation passed by Parliament, and much ill-will within the community.

There is a need, however, for the people of Mangawhai to work with KDC to determine the future of the wastewater scheme – in terms of clarifying ownership and responsibilities around the various portions of the assets, identifying which properties should be connected to the scheme, the long-term disposal of the treated effluent, and other forward looking items.

Additionally, it is recognised that the MCWWS is encased in much ‘urban mythology’ in terms of its current performance, reliability, capacity and other related matters. Given the animosities involved, such myths are often portrayed as facts – particularly when the data to confirm otherwise has not been readily available to the community.

It is with regard to the future of the wastewater scheme that the KDC appointed a group of ratepayers from within the Mangawhai community to undertake this review and to provide independent, objective input to the KDC decision-making processes. Those on the Panel have undertaken their activities on a voluntary basis for the benefit of the community, and while this report – and the recommendations within it - may not please everybody, it is the Panel’s view that it represents the best possible and fair view of the facts as we know them, and a sound and logical basis for moving forward.

I would like to thank my fellow Advisory Panel members for their efforts, commitment and due diligence applied to this task, and to those within the KDC who supported our work through the supply of information and associated activities.

Yours faithfully

D’Arcy Quinn

Chairman

MCWWS Advisory Panel

1 Executive Summary

The Mangawhai Community Wastewater Scheme (MCWWS) has been one of the more contentious projects undertaken by a local authority in New Zealand. The significant cost overrun and failings by the Kaipara District Council (KDC) and the Auditor General's office investigation and report have resulted in a protracted series of legal challenges, validation legislation passed by Parliament, and much ill-will within the community.

Regardless of this history, the MCWWS is in place, with an official opening date of 16 January 2010. In looking forward KDC determined there was a need to better engage with the local community over what the future expansion (if any) and funding arrangements should be, along with resolving a number of related issues (such as ownership and maintenance responsibilities between the rate payer and KDC). To assist the KDC, a group of ratepayers was sought from the Mangawhai ratepayers who had the appropriate skills and experience to work as volunteers through the issues, engage with the wider rate paying public, and provide KDC with an independent and objective community view on the future of the MCWWS – the 'MCWWS Advisory Panel'.

The MCWWS Advisory Panel has spent over 6 months involved in understanding the current situation regarding the MCWWS scheme, the challenges and issues going forward, and seeking to understand how the system can best meet the needs and desires of the community. This work involved a public open day, meetings with various community groups, and meetings with Iwi. Formal consultation on options as required under the Local Government Act is the responsibility of the KDC and fell outside the remit of the Advisory Panel.

The key findings of that work are that:

1. The capture of 100% of the properties within the MCWWS drainage district through mandatory connection and expansion of the reticulation network is essential for the long term health of the marine environment and provides the best financial outcome for the community;
2. The treatment plant is in general performing well, but will need more capacity added to specific components over the next 5 years;
3. Land based disposal of the treated effluent through a combination of the existing Lincoln Downs Farm, the Mangawhai Community Park and the Mangawhai Golf Course is the preferred option, but is dependent on further geotechnical investigations of the soakage capacity of the Community Park and Golf Course. Failing this, an ocean based outfall should be investigated whilst acknowledging Iwi objection to this option.

On the basis of the above, the following recommendations have been made. For each recommendation, the reference to the section in the report that provides further background on the recommendation is provided.

Table 1-1: Summary of Panel Recommendations to KDC

No.	Recommendation	Report Reference
1.	That KDC proactively seek advice from the community of potential non-connections. This is particularly relevant should KDC exercise its discretionary powers around mandatory connection.	4.1
2.	That KDC review properties where there is the potential that 'rentable units' are not paying full fees as per the current KDC policy.	4.1
3.	That all grinder pumps are vested in KDC ownership.	4.2
4.	That all maintenance and repair costs reside with KDC other than for damage caused through misuse.	4.2
5.	That KDC actively engage with NRC to ensure better alignment of processes, objectives and physical outcomes by connection to the MCWWS.	4.8

6.	That KDC make connection to the MCWWS mandatory for all within the MCWWS drainage district – irrespective of the distance from the marine environment or the size of the section.	4.9
7.	That KDC make completion of the reticulation network to enable full connection a high priority, and that properties within 300m of the marine environment are prioritised for connection.	4.9
8.	That KDC make on-site systems a Restricted Discretionary activity within the District Plan or through a by-law.	4.9
9.	That KDC pass a by-law requiring a six-monthly Independent Inspection and Maintenance Certificate for all on-site systems, at the property owner's cost.	4.9
10.	That KDC develop and implement a Connections Policy by 1 July 2016 consistent with the principles laid out in Section 4.7.	4.9
11.	That KDC confirm the industry norm and, if appropriate, complete a hydraulic model of the system to enable better prediction and management of potential bottlenecks.	5.2
12.	That full reticulation of the MCWWS catchment area is completed within 3 years to enable 100% of properties to fall within the LGA connection criteria (30/60m).	5.5
13.	That prioritisation of extensions to the reticulation lines that permit connection of properties within 300m of the marine environment should occur.	5.5
14.	That alternative uses for the solid waste materials are investigated to see if a cost effective solution with enhanced environmental outcomes could be achieved.	6.5
15.	That KDC commence the capacity upgrade for the plant in a staged manner that aligns to the expansion of the reticulation network and meets the selected disposal option for the treated effluent.	6.6
16.	That KDC undertake a detailed geological assessment of both the Mangawhai Community Park and the golf course, and then update soakage estimates to determine the viability of these long term disposal options. This work to be completed in the next 12 months.	7.5
17.	That, before progressing investigations for disposal of effluent on the golf course, KDC and the Club agree a terms of reference outlining who would be responsible for factors such as installation, maintenance and operating costs; liability for pollution of groundwater; who would operate the scheme; what would be the order of installation of the irrigation etc.	7.5
18.	That further work on both the soakage capacity and a refined costing for Mangawhai Community Park and the Golf Course is required before further consultation occurs.	7.5
19.	That primary disposal for the next 5-10 years is through the expansion of irrigation on the existing farm – with a minimum of 5-10 Ha of irrigation added to the farm within 5 years, and potentially 20 Ha (if required)	7.6
20.	That, assuming irrigation is a viable option, the order to install over the following 5-20 years is: <ol style="list-style-type: none"> 1. Mangawhai Community Park (surface trickle irrigation) 2. Trees and similar off-course areas of the Golf Course (surface trickle irrigation) 3. Driving Range of the Golf Course (sub surface irrigation) 4. Fairways of the Golf Course (sub surface irrigation) <p>If irrigation is not viable in conjunction with the farm irrigation, then progress investigations around the Ocean Outfall, acknowledging Iwi objections.</p>	7.6
21.	That the 65 Ha of irrigable land at Lincoln Downs Farm be retained in KDC ownership for the foreseeable future – even if not all of it is needed for irrigation at present.	7.7
22.	That the following guiding principles to charging for the MCWWS should apply: <ul style="list-style-type: none"> • Any further capital investment in the scheme should be funded solely by the drainage district ratepayers directly benefiting from the scheme; • Dwellings in existence before 1st July 2006 within the 2009 reticulated area should be charged a rate reflecting the inflation adjusted cost (excluding subsidies) of those who connected in 2006; 	8.2

	<ul style="list-style-type: none">• Communal schemes should be incorporated into the MCWWS as soon as practical (upon extension of the reticulation scheme) and pay the appropriate development contribution at the time.• All other properties to pay the development contribution applicable at the time once they become connectable. <p>As a general principle the Panel supports a 'user pays principle'. Therefore any discount offered to one or more properties (or groups of properties) will by default result in higher charges to all ratepayers within the MCWWS catchment.</p>	
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2 Introduction

2.1 About this Review

The Mangawhai Community Wastewater Scheme (MCWWS) has been one of the more contentious projects undertaken by a local authority in New Zealand. The significant cost overrun and failings by the Kaipara District Council (KDC) and the Auditor General's office investigation and report have resulted in a protracted series of legal challenges, validation legislation passed by Parliament, and much ill-will within the community.

Regardless of this history, the MCWWS is in place, with an official opening date of 16 January 2010. In looking forward KDC determined there was a need to better engage with the local community over what the future expansion (if any) and funding arrangements should be, along with resolving a number of related issues (such as ownership and maintenance responsibilities between the rate payer and KDC). To assist the KDC, a group of ratepayers¹ was sought from the Mangawhai ratepayers who had the appropriate skills and experience to work as volunteers through the issues, engage with the wider rate paying public, and provide KDC with an independent and objective community view on the future of the MCWWS.

The group appointed by KDC is termed the Advisory Panel, and consists of the following members (refer to Appendix A for further background on the members):

- D'Arcy Quinn – Panel Chair
- Dr Ian Greenwood
- Darryl Reardon
- Dr Gordon Hosking
- Peter Wethey
- Belinda Vernon and
- The two KDC Commissioners²

The full Terms of Reference (TOR) for the Advisory Panel is contained within Appendix B. Specific reference is drawn to the fact that the Panel holds no delegated powers – it simply makes recommendations to the Council. Further reference is drawn to the specific exclusion of the Panel to address the historical issues relating to the rating for the scheme.

This report has been prepared by the Advisory Panel on a cooperative and consensus seeking basis and the report and its recommendations are agreed and presented to the Council by the Advisory Panel as the unanimous decision of the Panel.

This report has been prepared for the Kaipara District Council with all reasonable care and diligence. However any errors or omissions are excepted and are not the responsibility of the Advisory Panel.

The timeline for the preparation of this report is contained within Table 2-1, with the overall process being reasonably condensed to meet the overall timeline of planning within KDC, along with recognising the volunteer nature of the Panel members.

¹ The Chair was paid a small fee to represent his higher level of inputs. All members were able to claim for travel costs.

² The Commissioners acted in an observer type role on the Panel.

Table 2-1: Timeline of this Advisory Panel Review

Item	Date
Community Panel appointed by KDC	October 2014
Site visit of MCWWS	17 th November 2014
Review of existing documentation and data	November 2014 – January 2015
Analysis of information provided and preparation of materials for community consultation	January – March 2015
Consultation by the Panel with community	April 2015
Consultation with Iwi	May 2015
Draft document produced for internal review	May/June 2015
Final document produced and delivered to KDC	July 2015
Close-out of Panel	July 2015

2.2 Information upon which the Panel relied

The Panel received numerous reports, data sets and other information for it to undertake this review. A copy of this information is available from the KDC website at the following address:

<http://www.kaipara.govt.nz/Have+Your+Say/MCWWS+Extension+Project+-+Home+Page.html>

Additionally the Panel received input from sources including:

- Harrison Grierson, a consulting engineering firm engaged by KDC to examine disposal options;
- ACH Consulting Ltd, an engineering firm identified to the Panel as having undertaken the analysis to support installation of on-site waste water systems in Auckland for a supplier;
- Auckland Council with regard to their use and experience with on-site waste water systems;
- Rob Bates for advice on the development and implementation of a connections policy;
- Various KDC employees with regard to background on decisions made, technical issues to be resolved and input to scenario testing;
- Te Uri O Hau, the Iwi authority of significant standing in the area, and the associated Environs Holdings Ltd; and
- The Mangawhai and Pauanui Golf Clubs

2.3 Objectives of the Scheme

In determining where to go in the future with the MCWWS it is worthwhile considering why the scheme was put in to start with. The 2003 Statement of Proposal document outlines in some detail the problems that existed with water quality in the harbour area with a note that:

“The harbour and groundwater is polluted and has been since at least 1976 when the first surveys indicated unacceptable levels of human waste and other pollution sources...Survey results have consistently demonstrated faecal coliform and enterococci levels to be significantly above accepted guidelines... Public health and safety issues from swimming/playing within the estuary environs... Doing nothing is no longer a viable option for Mangawhai”.

During consultation, the validity of this position with respect to human pollution of the harbour was challenged by some members of the community. Given the passage of time it is not possible to go back and re-test the harbour to determine if the pollution identified was from human or animal (farm) sources.

While outside the TOR of the Panel, the Panel encourages KDC/NRC and other interest groups to work together to address issues of nutrient rich farm run-off into the estuary through fencing and planting of the riparian areas. This view is strongly supported by community feedback.

Given input from the following it is the Panel's view that it is highly likely that human based pollution was entering the estuary:

- Northland Regional Council's strong push for Mangawhai to cease the use of onsite septic tank systems to assist in cleaning up the water in the estuary;
- Auckland Council's advice on their issues at similar urban areas where they experience significant problems with human effluent polluting surrounding areas;
- Consultation with various 'old time' Mangawhai locals who recalled days before the MCWWS where various locations along the harbour edge would stink of human waste to the extent they were deliberately avoided;
- Comparing the prior use of on-site septic systems with what is now regarded as good practice; and
- The aforementioned testing that led to the 1970's-2000's position of there being a definitive need for the scheme.

Our view is consistent with that of the Auditor General's report that states:

"We found that:

- *There was clear evidence that there was poor water quality in the Mangawhai area and that septic tank effluent was the likely cause.*
- *Septic tanks were not an appropriate way to manage sewage disposal in the Mangawhai area.*
- *The work KDC carried out in 1998 and 1999 to address the water quality problem was appropriate and included good public consultation.*
- *KDC's conclusion that Mangawhai needed a centralised reticulated wastewater scheme was soundly based and reached through a good process."*

Furthermore, the 2003 Statement of Proposal states that:

"The prime objective of the project is to improve the water quality in the estuary. This will be achieved by eliminating flows from septic tanks and other systems from entering the groundwater and the estuary".

It is the Advisory Panel's view that this original objective is equally valid today as is the desired social outcome in the Statement of Proposal of being ***"focussed on improving the well-being of the estuary to allow the Mangawhai community and those other residents and tourists to the area to fully enjoy the environment that makes Mangawhai what it is"***.

In considering the future for the scheme, the Panel has adopted the view that any decisions on future expansion, disposal options or otherwise, must seek to address the above – as the original scheme was intended to do.

2.4 Overview of the physical scheme and key issues to be resolved

The extent of the MCWWS catchment area, along with the connected status of each property is illustrated in Figure 2-1³.

The system itself comprises of a series of components, with these summarised as:

- Private connections (refer Chapter 4):
 - These are the pipes and associated assets that exist within a private property and effectively connect a house/business to the public system. In approximately 20% of current installations there was a need to install a ‘grinder pump’ to pump the waste water into the reticulation system.
- Reticulation network (refer Chapter 5)
 - This comprises the pipes laid primarily within the road reserve, but also across some private properties, and into which the private connections join. Also forming part of the reticulation network are the pump stations located around the catchment area to deliver the collected waste water to the treatment plant.
- Treatment plant (refer Chapter 6)
 - This is the plant located on Thelma Road at the western edge of Mangawhai Community Park. The plant takes the incoming waste water and treats this to deliver hygienic but nutrient rich effluent, along with dry solid waste matter.
- Disposal of the effluent (refer to Chapter 7)
 - The treated water is currently pumped some 10km inland to what is known as the ‘Lincoln Downs Farm’ on Brown Road in Hakaru. Here it is stored in a large man-made dam and then irrigated onto part of the farm. The solid waste is trucked to the Whangarei District Council landfill site at Puwera.

³ KDC advise that the information used to produce the figure may be 2-3 months out of date as a result of the processing time between when properties are connected, and relevant databases being updated. Furthermore, various members of the community questioned the accuracy of the information and this is addressed further within this report and associated recommendations from the Panel.

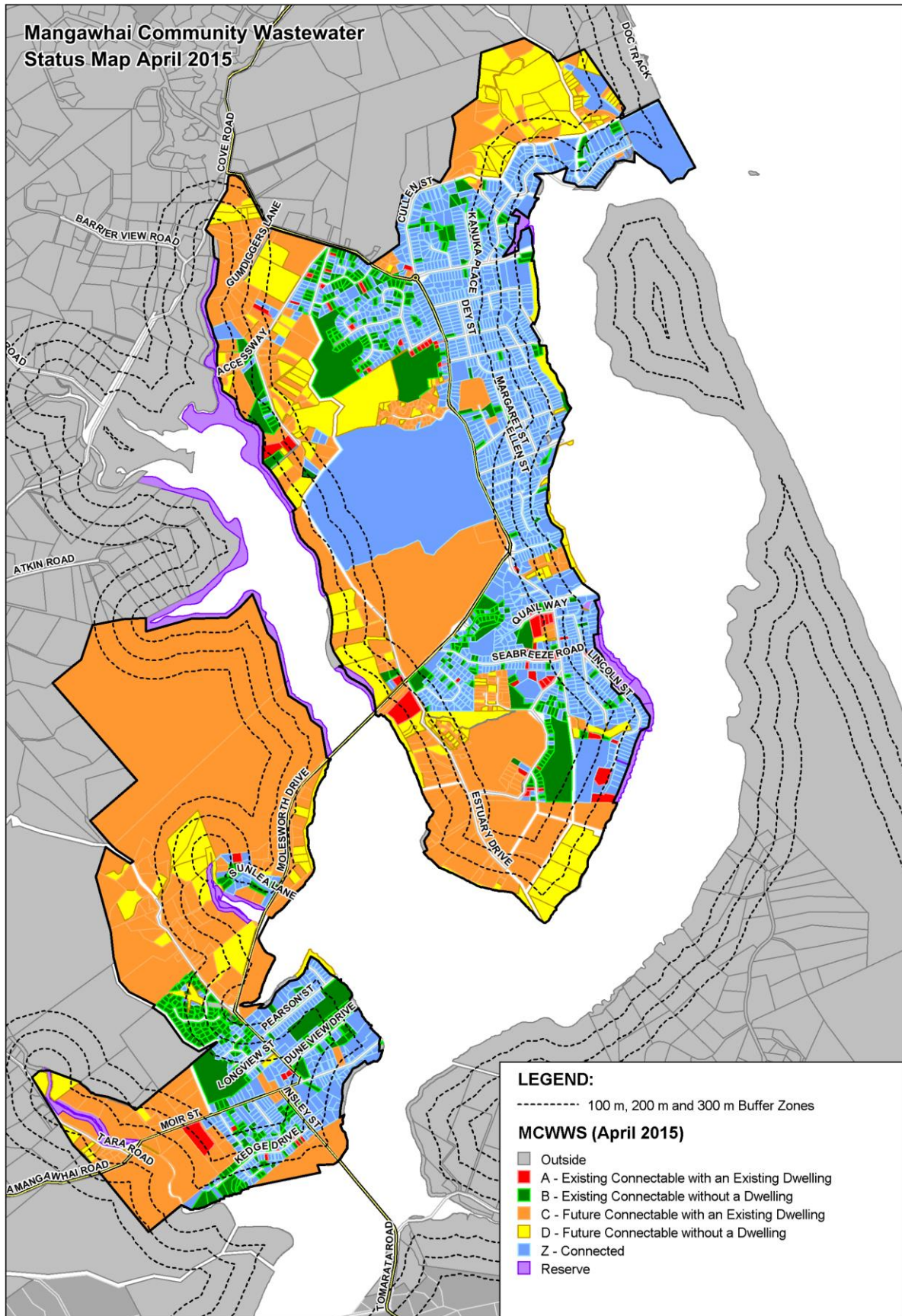


Figure 2-1: Extent of Potential Scheme

2.5 Water quality results

There are several issues associated with human waste entering the environment, with these being a combination of potentially harmful pathogens, along with an excess of nutrients (which can also cause significant issues in their own right at high concentrations). The testing that is regularly undertaken of water quality comprises of:

- Pathogens in the form of faecal coliforms, Enterococci, and e-coli. According to the US Environmental Protection Agency (EPA) *“E. coli and enterococci levels are used as indicators of the presence of faecal material in drinking and recreational waters. Both indicate the possible presence of disease-causing bacteria, viruses, and protozoans. Such pathogens may pose health risks to people fishing and swimming in a water body. Sources of bacteria include improperly functioning wastewater treatment plants, leaking septic systems, storm water runoff, animal carcasses, and runoff from animal manure and manure storage areas.”* E. coli are measured in MPN/100mL (Most Probable Number/100mL).
- Nutrients in the form of nitrogen and phosphorous. These are commonly reported in mg/L of water.

In harbour environments such as Mangawhai, where both urban and rural land border the estuary, it is desirable to separate out the pathogens and nutrients that are human originated, from those of other (e.g. dairy cow) sources. While this is possible to do for the pathogens, such testing is not possible for nutrients.

2.5.1 Northland Regional Council (NRC)

NRC undertakes testing during the 3 months of summer as part of a regular testing programme. Although they have used seven test sites within Mangawhai as per Table 2-2 since 2010/11 only the three sites in italics have been regularly tested. Ministry for the Environment guidelines (*MfE guidelines 2003: Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas. Published by Ministry for the Environment*) advise that a test result greater than 140 cfu/100mL of water is an ‘Alert’ and greater than 280 cfu/100mL is an ‘Action’ result.

Table 2-2: NRC Testing Sites

Site Description	Site Code
<i>Mangawhai Harbour at Picnic Bay</i>	110322
Mangawhai Harbour at pontoon	110320
<i>Mangawhai Heads at motor camp</i>	101210
<i>Mangawhai Heads at open coast</i>	109890
Mangawhai above motor camp	100709
Mangawhai opposite Norfolk Pine	101832
Mangawhai	101830

The results of the testing for Enterococci (faecal coliforms) are presented in Figure 2-2, with the following conclusions drawn:

- Each year there have been one or more test results above the Action level, however there have not been sustained high levels;
- The spikes follow significant rainfall events and most likely reflect farm-based contamination entering the environment. These spikes rapidly decrease once the high rainfall event ends and the harbour has 1-2 days to flush.

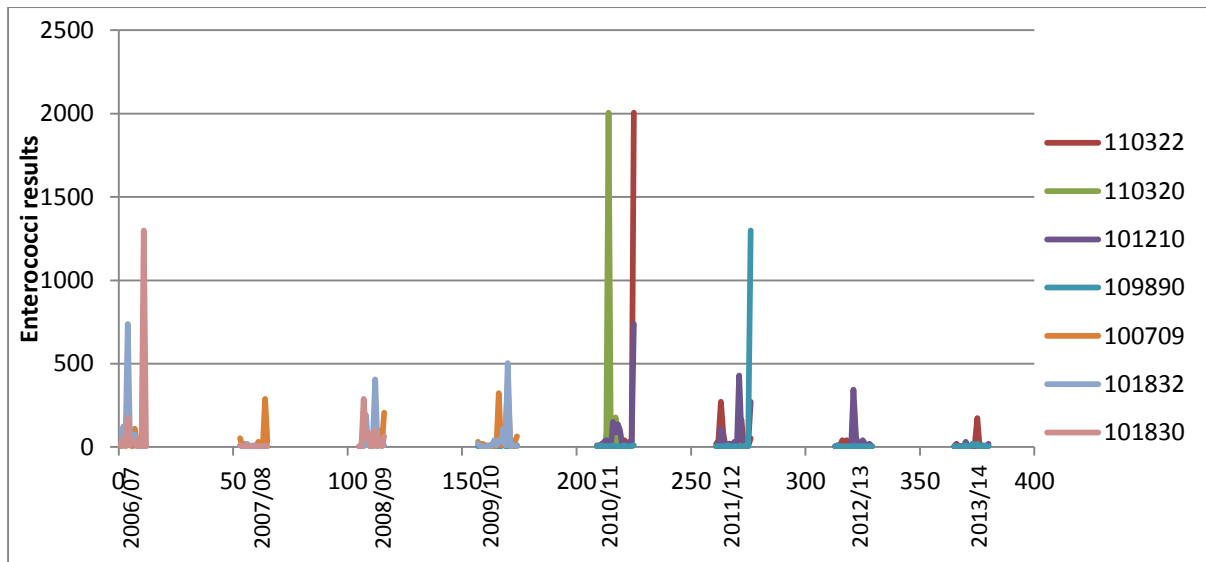


Figure 2-2: Northland Regional Council (NRC) Water Quality Test Results

Further examination of the NRC data identifies the number of tests that returned E-coli readings below 10 MPN/100mL (for results below 10, they are presented as <10, such that it is not possible to further segment the data) which is as close as the testing shows to ‘clean water’. Similarly it is possible to look at the number of test results where the reading is >280 MPN/100mL, which reflects water that is defined by NRC as “considered unsuitable for swimming”. Figure 2-3 presents this analysis and shows that the percentage of clean water tests has improved over time, while at the same time the percentage of tests showing the water is unsuitable for swimming has decreased – both positive signs for the health of the estuary.

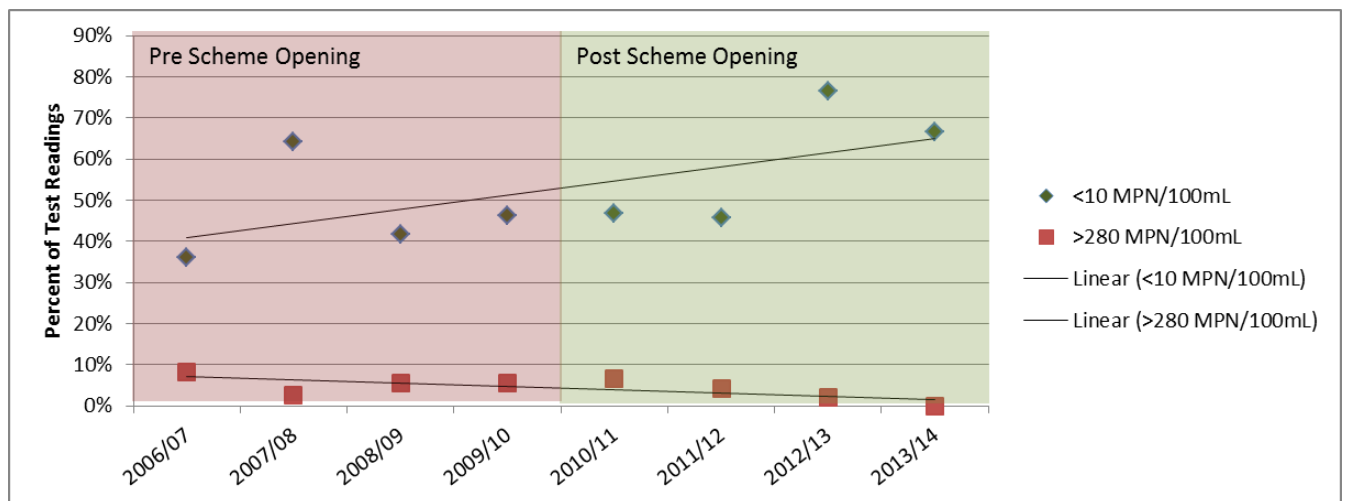


Figure 2-3: Summary of NRC Testing

2.6 Demand, capacity and growth

The performance of the MCWWS is reported on as part of the monthly KDC Chief Executive report to Council (available publicly on the KDC website). This performance data is illustrated in Figure 2-4 and indicates that:

- Peak daily flow into the plant is during the Christmas-New Year holiday period, with secondary peaks during other long weekends where the population influx to Mangawhai is significant;
- Average daily flow rates also peak during the months with the highest daily peak flows;

- Observed daily peak flow is more than triple the average daily flow rates;
- The failure (including blockage through flushing inappropriate materials) of grinder pumps follows a trend similar to that of the flow rates; and
- The pump stations indicate very few issues, with only a single reported fault over the 2 year period from January 2013 to December 2014.

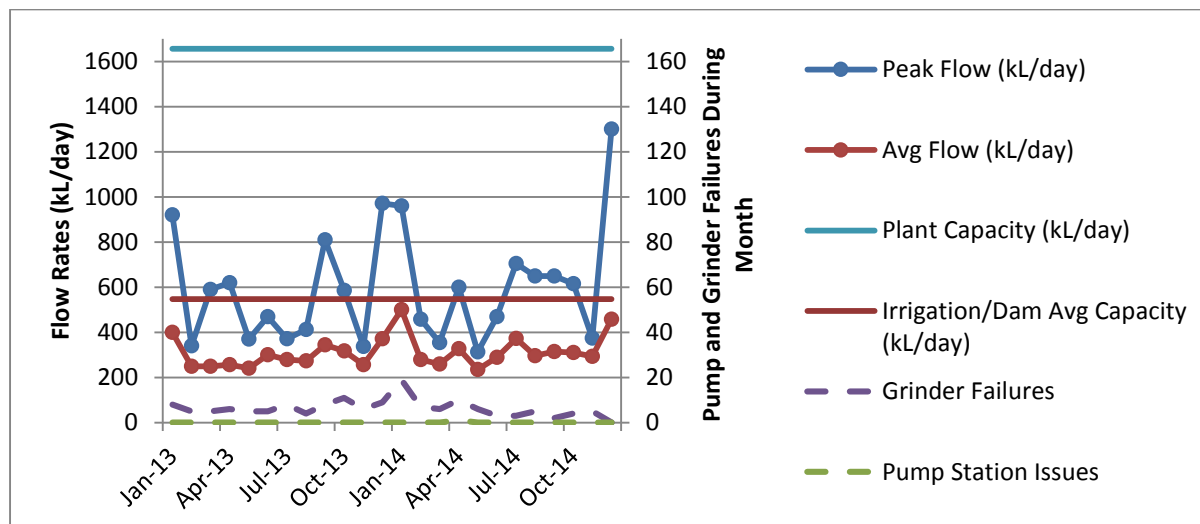


Figure 2-4: Demand versus Capacity of Existing

With the peak flows occurring over the Christmas-New Year period, when the occupancy of houses is at its maximum (including the Mangawhai Heads Holiday Park camping ground), the ability for the peak flow to increase would reasonably be associated with an overall increase in the housing stock within the catchment area. Based on the above, an increase in the number of connected properties of around 22% (or approximately 400-500 connections) could occur without any modification to the operating practices of the treatment plant even catering for a very high daily peak as per the recent summer reading.

The average flows will also be impacted upon by growth in the number of connections, but would equally be impacted by the rate of permanently occupied properties. As is evident from Figure 2-4 during the high occupancy period of Christmas-New Year, the ability to dispose of the treated effluent would be severely tested if all existing connected properties were permanently occupied throughout the year.

Population growth figures have been taken from the Census data sets, and then shown alongside the assumed population forecasts in the Statement of Proposal document prepared in 2003. Population growth observations (refer to Figure 2-5):

- Actual (Usually resident figures from Census) and Projected (2003 Statement of Proposal) figures for the Resident Population of Mangawhai are in close correlation with each other; and
- Peak population was projected to be 3.8 times the usually resident population in 2011; which compares to the observed flows through the system of a factor of 3.0 (indicating that the peak population may well be less than that projected); and
- After a very low period of observed (Census) growth during the period 1996-2006, the growth has picked up substantially in the past 7 year period;
- The operator is responsible for additional operating costs at the plant (excluding power costs) associated with growth up to the year 2024.

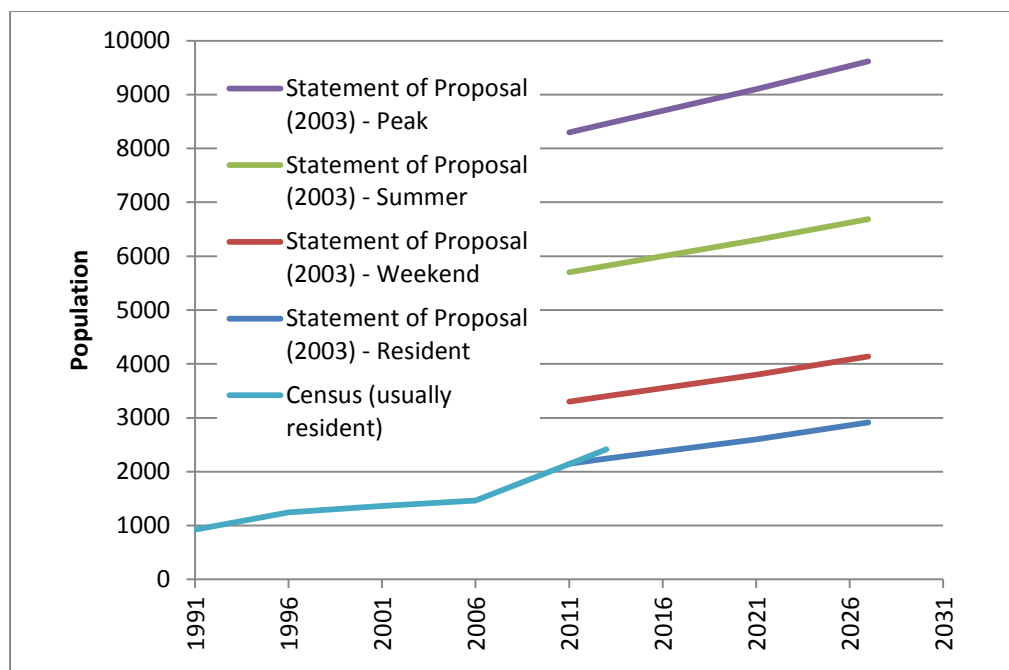


Figure 2-5: Observed and Predicted Population Statistics

At present new connections are added to the MCWWS at a rate of around 75 per year – or approximately 1.5 per week.

2.6.1 Key risks for demand

The key risks for the demand (in-flow) of waste water to the system are:

- Development occurring at a higher/lower rate than projected. A higher rate could result in the plant and disposal options reaching capacity sooner than expected, while a lower rate would result in a slower repayment of debt;
- Increased percentage of permanent homes. An increase in the proportion of homes that are inhabited on a full time basis would not result in capacity constraints at the treatment plant, but would potentially cause additional issues around the disposal of the treated effluent as this is driven more by the average flows than the peak daily flows; and
- An increase in industrial activities that significantly alter the quality and quantity of influent entering the treatment plant.

An additional risk – albeit with a very low chance of occurrence given the current KDC policy of no further water supply networks – is the impact that a reticulated water supply scheme would have on flows into the system. A cursory analysis of this risk suggests that:

- A reticulated water system would typically increase per household waste water discharge, thereby placing additional pressure on the system; and
- It would possibly require the MCWWS pumping stations and treatment plant to have standby power generators to be installed. At present this risk is largely mitigated by the simple fact that when the power is out, while the pump stations shut down – so too does the ability of most home owners to flush their toilets.

3 Consultation

3.1 Context of consultation

Formal consultation on options, including any Statement of Proposal, is the responsibility of KDC and will occur subsequent to the completion of the Panel's work should the Council determine that works to be undertaken warrant such. Any decision on consultation by KDC is outside of the control or direction of the Advisory Panel.

Consultation itself implies many things, with the typical range covering from providing information through newsletters, websites and the like; through to more involvement based processes such as open days; and ultimately to providing empowerment through voting for options. As the Panel is not a decision making authority, the use of an empowerment (voting) process was not deemed appropriate. However the Panel has otherwise consulted via the webpage (hosted on the KDC website); regular newspaper articles; community open days; meetings with community groups; meetings with Iwi representatives; and the seeking of written feedback on the project as it progressed.

Consultation by the Advisory Panel has been undertaken to help guide the positioning of our recommendations to KDC. Consultation itself can typically be separated into two main approaches:

1. Develop the full range of options to the maximum extent possible, and then consult with the community to select a preferred option; or
2. Undertake ongoing consultation during the development of a select few options, before consulting on the final result.

The Advisory Panel opted to follow the second approach. While this meant at times the community asked questions that had not at that time been resolved, it also meant there was a greater chance that the final options to be evaluated (and ultimately consulted upon by KDC) best reflected community sentiment.

3.2 Community consultation

Over Easter weekend 2015 the Advisory Panel undertook preliminary consultation with various community groups and individuals to gain feedback on the Panel's findings at that date, so that further refinement and positioning of options could occur. The community groups⁴ consulted with on a one-on-one basis on Thursday 2nd April 2015 by the Advisory Panel were:

- Mangawhai Domain Society;
- NZ Fairy Tern Charitable Trust;
- Mangawhai Riparian Planting Group;
- Friends of Mangawhai Community Park;
- Mangawhai Museum Historical Society;
- Mangawhai Resident and Ratepayers Association;
- Mangawhai Tracks Charitable Trust; and
- Mangawhai Golf Club.

In addition, the following community groups were invited but did not attend the 2nd April 2015 session:

- Mangawhai Community Trust;
- Mangawhai Business Development Association;

⁴ Although not a community group, Mr John Dickie – a civil engineer with 40+ years international experience in many aspects of environmental management including wastewater treatment - was also consulted with during the 2nd April session owing to his technical expertise in wastewater and his associated knowledge of the MCWWS.

- Mangawhai Heads Volunteer Lifeguard Service;
- Mangawhai Boating and Fishing Club;
- Mangawhai Beach School; and
- Mangawhai Harbour Restoration Society.

On Saturday 4th April 2015, a public Open Day was held where any members of the public could meet with the Panel, view the information available (a copy of the material presented to the public is contained in Appendix C), and provide feedback to the Panel.

3.2.1 Pro forma response

During the community consultation period, a questionnaire was prepared by the Panel to seek input on issues. Christian Simon (a member of the public and advocate of on-site systems) completed the form and emailed the completed form to people for them to add their name and submit. This submission (included in Appendix D) was on the basis of having the right to use on-site systems and accordingly the associated responses surrounding issues such as the need for mandatory connections and who should pay are all on this basis.

To assist understanding of the results of the feedback when presenting this in the remainder of the report, two sets of data are included – the first for all respondents, and the second excluding the pro-forma response. The Panel considers that the pro forma response is entirely valid, but found it necessary to separate out the impact of those who had responded to the questions asked, and those who used the pro forma response.

As noted earlier, the consultation process that the Advisory Panel has used was not one of voting for a preferred option, but was rather about understanding what the community was saying. This approach of separating out responses is considered to be entirely consistent with this approach.

3.3 Iwi consultation

Members of the Advisory Panel met with the Chief Executive of Environs Holdings Ltd, Deb Harding and Environmental Officer, Tina Latimer on 04 May 2015 seeking cultural advice. Environs Holdings Ltd advocates on behalf of local iwi, Te Uri o Hau, particularly in terms of its guardianship and protection of the environment roles.

The primary outcomes of these discussions were:

- Protection and enhancing the quality of the harbour waters is critical
- Land based disposal of the treated effluent is strongly preferred over any ocean based disposal
- Reusing the effluent for productive means is desirable over treating the effluent as a waste product.

The Advisory Panel and Environs Holdings Ltd agreed to work together and explore mutually beneficial opportunities in terms of how the treated wastewater could best be put to good use.

On the 11th May the Advisory Panel met with Peter Wilson of Te Uri o Hau to discuss potential uses of water for the Te Arai North Reserve area associated with the new golf course at Te Arai (refer to Figure 3-1). The reserve land was still to be vested in Auckland Council at that time, but involved 200 hectares of land being re-vegetated outside of the golf course fairways. Some of this would be a thin strip of reserve area by the ocean, but there was also a proposal for a 120 hectare mass re-vegetation area for native plants once existing pine trees had been harvested.

The Panel requested further information on the need for water for this area, with the resulting advice being that at present the Auckland Council intends to use native species that do not require ongoing watering. The Panel was informed that this approach is consistent with the approach across all Auckland Council reserves and precludes this area being a long term viable disposal area for the treated effluent.

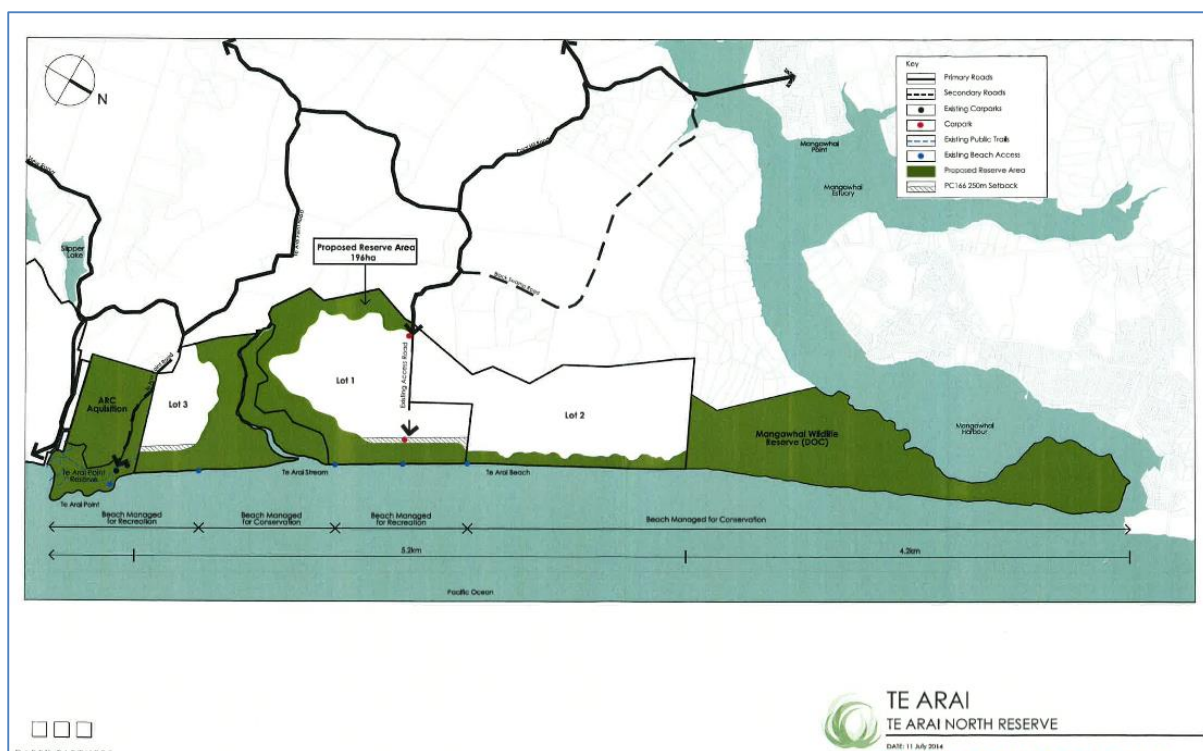


Figure 3-1: Te Arai North Reserve

3.4 MRRA petition

During the period from April-May 2015, the MRRA organised a petition defined as the “Kaipara District Council MCWWS Panel: Disband the Panel without reporting back”. While this petition was delivered to the KDC, the Panel nevertheless thought it worth considering what perspectives could be gleaned from the 200+ signatories. The Panel has not endeavoured to check the validity of the petition or those that have signed it, but has endeavoured to understand what messages could reasonably be inferred from it.

MRRA Petition Information

Kaipara District Council MCWWS Panel : Disband the Panel without reporting back

Why this is important

The council is attempting to engineer community support for huge additional expenditure on a system that has already cost four times its budget, was built illegally, cannot accommodate the stated number of connections, cannot dispose of the effluent safely, and will need massive repairs on-going to remain functional.

There are many possible solutions other than extending/expanding Ecocare. That is probably the worst of all options- The COMMUNITY must make the decisions- not the council or some corporation.

To understand the thinking of those who supported the petition, it is necessary to consider what other information was put out by MRRA at the same time. For instance on 7th April an article in the Northern Advocate quotes the MRRA Chair Bruce Rogan as “describing the expansion plan as a “complete farce. Modern standalone schemes can be extended but here they [KDC] have to spend \$30 million again in order to cater for

additional extension, and we'll have to pay a colossal amount again.” It could reasonably be inferred that the those signing the petition understood the definition of *“huge additional expenditure”* equated to a sum in the vicinity of \$30m.

The MRRRA Deputy Chair was contacted with regard to the statement that *“There are many possible solutions other than extending/expanding Ecocare. That is probably the worst of all options”*. The response from the Deputy Chair was *“you [the Panel] seem to be under the impression that the MRRRA has a detailed analysis of the options. We don’t”*. Those that have signed the petition appear to have been misled in this regard, as the petition indicated that other options were better – rather than the simple need to investigate all options.

Putting the above information together, the best summary that can be drawn by the Panel is that those who signed the petition:

- Don’t want to see a \$30m investment as the preferred option at this time;
- Do want all options to be considered; and
- Do want an opportunity for formal community consultation over any decisions by KDC.

The Advisory Panel considers these to be valid statements, and has endeavoured to include these into its work. As noted in Section 3.1, KDC will undertake the formal (legal) consultation activities once they have determined the way forward.

4 Connections – ownership and mandatory connection

4.1 Introduction

This chapter deals with two aspects of connections to the reticulation system. The first is around ownership of the pipes and pumps that are located on private property; while the second aspect relates to whether KDC should enforce their discretionary powers contained within the Local Government Act to require connection to the MCWWS.

As of February 2015 the number of connections and potential connections to the system are as summarised in Table 4-1. A ‘connectable’ property is one that meets the Local Government Act (LGA) test of the property being within 30m of a public drain, and the dwelling being within 60m of the public drain. ‘Not connectable’ properties are those where the reticulation system does not currently extend to be close enough to meet the LGA test. Figure 2-1 illustrates this data in map form.

Table 4-1: Summary of Connection Status (as at February 2015)

Connection Status	Number of Properties
Connected	1800
Connectable with a dwelling	50 ¹
Connectable without a dwelling	450
Not connectable with a dwelling	300
Not connectable without a dwelling	200

Note: 1 This figure is understood to have dropped to 29 by July 2015

At present approximately 75 dwellings per year are connected to the MCWWS as a result of new house construction and extension of the reticulation network. During consultation, the validity of the above connection statistics was challenged by members of the public. There were various anecdotal examples provided of situations where the main house was connected but an auxiliary building on the site might not have been (and still used a septic tank), and similar such advice.

John Dickie in his submission (refer to Appendix D) specifically notes:

“I have some reservations about the numbers of connections and connectable properties; especially as I understand Council still has not caught up accurately with how many places have rentable units that should, under present policy, be charged more than a ‘single connection’ fee / annual charge. I also understand that in spite of policy, there are continuing exemptions given to the need to connect in accordance with policy if that policy is challenged hard enough on an individual basis.”

The Panel raised the issue with KDC around the status of connection statistics, with the following being KDC’s response on the issue.

THE QUESTION OF CONNECTION STATUS ANOMALIES

At the 2 April community groups’ session with the Advisory Panel, John Henderson/MRRA claimed there are numerous connection status anomalies, i.e. connected properties remain connected to their septic systems.

Subsequently, the MRRA was invited in writing to provide examples of ‘connection status anomalies’ to be audited, together with a designated sample area nominated by Council.

The MRRA response was, ‘We can’t provide a list of properties, but we did provide John Burt with a very simple way to establish the connection status – dye testing.’

The Council response to dye testing for connection status is that whilst it may work for gravity fed situations, visibility wouldn’t survive passing through a grinder pump; this is not a feasible method.

The Council response to investigating potential connection anomalies is as follows. The existing Council practice is to respond to a notification, typically a smell complaint, that a septic system, attached to a ‘connected’ house, is causing an issue.

An analysis of our service requests reveal there have been 2 instances of this occurring in the last 12 months.

Over the past year in conjunction with the rates team there has been a review of Mangawhai properties within the existing network to identify anomalies in relation to connected or capable to connect properties. Closer reviewing of individual properties over the year has identified 4 properties being rated as connected when they are not and 8 properties being rated either nothing or as capable to connect when they are in fact connected. These properties will be charged correctly from 1 July 2015.

This review is complete and we don’t anticipate there will be any further properties that have connection status anomalies.

The Council response is reactive, an appropriate operational practice given the low volume of notifications.

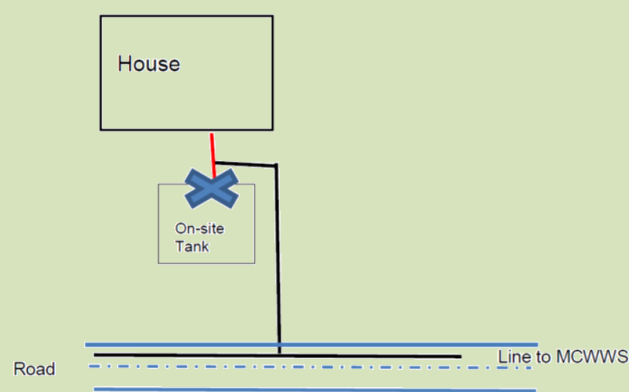
It needs to be noted that a subdivision’s communal system within the existing wastewater network is physically connected via one pipe to the MCWWS. This means all the effluent (mostly grey water) that was previously being discharged to an effluent field is going to the MCWWS. It is the solids that will be going into a septic tank and it is the owners responsibly to decommission the septic tank. This requires a building consent, the cost of laying new pipes and removing the on-site tank. As the effluent is going to the MCWWS these properties are considered and charged the connected rate even if the onsite system has not been bypassed and decommissioned.

The following 2 diagrams are to provide some insight as to how a Council nominated audit might be usefully framed based on the possibility that the allegation has some merit.

Diagram 1: single dwelling (mostly those connected by Council in the initial area of work) – not considered meritorious because the connection upstream of the septic tank would mean no further wastewater is entering the septic tank.

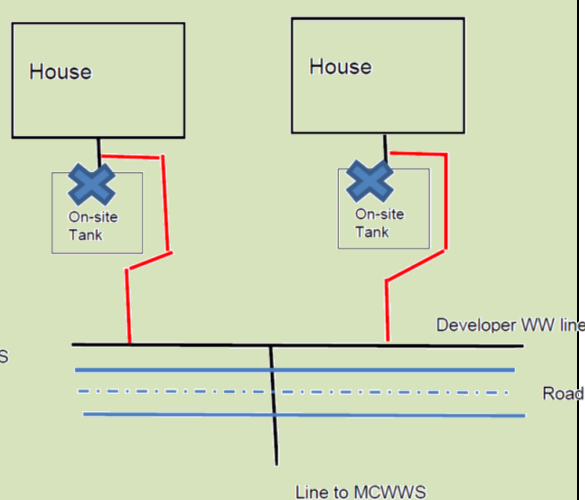
Diagram 2: communal scheme connected to MCWWS – has merit because ‘1’ communal connection to the MCWWS still leaves the individual dwelling owners to bypass and decommission their septic system, e.g. only grey water overflow would go to the MCWWS.

Diagram 1



Black – Council bypasses the tank

Diagram 2



Red – Council doesn’t bypass tank, it is the property owners responsibility

Recommendation: That KDC proactively seek advice from the community of potential non-connections. This is particularly relevant should KDC exercise its discretionary powers around mandatory connection.

Recommendation: That KDC review properties where there is the potential that 'rentable units' are not paying full fees as per the current KDC policy.

4.2 Public versus private assets

The overall MCWWS consists of a number of discrete components, with each of these ideally allocated to either public (KDC) or private (rate payer) responsibility. Within the 2007 Project Information Booklet produced by EcoCare, the split in responsibilities is as per Figure 4-1, however this has not been formalised to date with ratepayers. With the intention being that the ratepayer becomes fully responsible for the private portion of the assets from the end of the contract period of the operator, it is necessary to ensure there is clarity over the ownership.



Figure 4-1: Intended Public-Private Responsibility Split for Assets

On the basis of the work of the Panel Table 4-2 contains the Panel's understanding of the current ownership and maintenance arrangements. There is an apparent anomaly around the grinder pumps. When installed there was a clear intention that these would become the responsibility of the property owner beyond the 15 year contract period. In the 2007 Project Information Booklet it explicitly states that "Grinder pumps will be installed on a single pump per property basis..." and that "EcoCare will provide one grinder pump per section...". This was further clarified with the following statement in the EcoCare booklet:

The landowner will:

- Arrange and pay for upgrading of any sub-standard household switchboard if required.
- Pay power costs for operation of the grinder pump unit (expected to be in the vicinity of \$25 per annum).
- Be responsible for additional maintenance costs where misuse of the system occurs
- Be responsible for replacing the grinder pump unit when required in the future (after 15 years).

Table 4-2: Current Asset Responsibilities

Component	Current Ownership Responsibilities	Current Maintenance Responsibilities	Current Operational Costs
All components on public land	KDC	KDC	KDC
Lines on private land shared by more than one property	KDC	KDC	KDC
Grinder pumps on private property for a single dwelling	Property owner	KDC ¹	Property owner
Grinder pumps on private property shared by more than one property	KDC	KDC ¹	KDC
Grinder pumps on public property serving either a single or multiple properties	KDC	KDC ¹	KDC
Treatment plant	KDC	KDC	KDC
Disposal system	KDC	KDC	KDC

Note: 1. While the documentation provides a means for the property owner to be charged for maintenance costs during the initial 10-15 year period arising from misuse of the system, to date the operator of the treatment plant has maintained all grinder pumps as a courtesy to the public.

It is assumed that the move away from a single pump per section, to a common shared use of grinder pumps was to reduce the costs to construct the project. It has however created issues for the responsibilities of these assets in the longer term, as there is no basis for the sharing of costs between land owners for these assets.

From the above table and the timing of the grinder pump failures (refer to Figure 2-4) it is apparent that these items are inconsistently handled within the MCWWS. Furthermore, when they do fail the consequence is a significant potential health hazard. The need for a grinder pump is also partly driven by the design of the KDC owned reticulation system, with a lower cost (shallower) reticulated pipe system resulting in a higher likelihood for the use of a grinder pump.

Given the inherent inequities around grinder pumps and the issues with maintaining them (they are specialised items of equipment being used in an area with potentially limited plumber capacity over periods of high usage) it is the Panel's view that all grinder pumps should be vested into KDC ownership. For this to be viable only a limited number of types of pumps would be permissible such that the operator of the MCWWS could retain a stock of spare parts.

Recommendation: That all grinder pumps are vested in KDC ownership.

Recommendation: That all maintenance and repair costs reside with KDC other than for damage caused through misuse.

4.3 Private communal schemes

There are a number of private communal waste water schemes within the MCWWS catchment area. These communal schemes consist of:

- Subdivisions:
 - Back Bay – Molesworth Drive
 - Butler Subdivisions – Molesworth Drive/Sailrock Drive
 - The Heads Subdivision – Wintle Street
 - Moir Point Park – Estuary Drive
 - Moir Point Park – Estuary Drive/Devon Street

- Ocean Links – Greenview Drive
- Ewing and Yuretich – Moir Street
- Woodglen Subdivision – Ti Tree Place
- Point Utility – Grove Road
- Campgrounds/Parks:
 - Mangawhai Park – Moir Street
 - Mangawhai Beach Hideaway Park – Estuary Drive
 - Moirs Point Christian Centre – Estuary Drive/Devon Street
- School:
 - Mangawhai Beach School – Insley Street

Ten of the thirteen schemes were installed in recent years (either during the planning for the MCWWS or subsequent to its installation, but where the reticulation network did not extend) and have consent conditions stating that:

“Use of the communal effluent disposal system within the subdivision is permitted only until such time as connection to the Mangawhai Community Wastewater Scheme (MCWWS) project is available. At that time all properties will be required to connect to the MCWWS project and must comply with all of the Council’s requirements relating to such connection, including the payment of any Development Contribution, connection fee or any other charge.”

To date these communal schemes have not been connected to the MCWWS either as a result of the non-enforcement of the consent conditions, or as a result of the reticulation network not extending to make connection possible. The Panel has made recommendations to rectify this situation and to minimise the chance of further occurrence of such a situation arising.

For clarification, the Panel understands that while these communal schemes may well have many years remaining on their NRC-issued Resource Consent as soon as the public reticulation network is installed to meet the connectable requirements under the LGA (30m of property and 60m of dwelling) then KDC may require immediate connection to the MCWWS with full payment of the appropriate Development Contribution. The Panel supports this approach.

4.4 Riverside Holiday Park

Although outside of the MCWWS catchment area, the Panel was made aware of the desire by Riverside Holiday Park to connect into the scheme – a move the Panel strongly endorses given the proximity of the holiday park to the marine environment. During the consultation process there was significant disquiet from both community groups and individuals over a perception that instead of routing a reticulation line along Black Swamp Road, that KDC had directed the line to go directly across the estuary. The Panel sought clarification of this matter from KDC with the following response received.

The facts with regard to the connection from Riverside Holiday Park to the MCWWS are as follows:

1. As a result of an approach from the Riverside Holiday Park management and extensive negotiations, Council entered into an agreement in 2012 so that Riverside Holiday Park could connect to the system. The costs involved and consents required will be borne by Riverside Holiday Park.
2. Once connected Riverside Holiday Park will pay the equivalent of the annual operating rate in connection charges each year for each separately occupied holiday unit and pan charges for the communal amenities.
3. An agreement was drafted, which allows Riverside Holiday Park to use either a route across the Estuary or a route along the roadside / causeway. The selection is Riverside Holiday Park’s option. Either option will require a resource consent from the NRC.

4. Council and Riverside Holiday Park engineers have been corresponding occasionally since then. Following consideration of engineering complexities, including:
 - a. Crossing the estuary is the shortest route;
 - b. There is hardly any space around the causeway for a pipe to be laid;
 - c. With limited space on Black Swamp Road and with existing underground telecom cables, it would be very disruptive;

Council engineers advised Riverside Holiday Park’s engineering consultants that from an engineering perspective they prefer an estuary crossing. Riverside Holiday Park will no doubt take this into account as they decide which option to seek approval on, but it is not a directive.

5. Riverside Holiday Park will need to obtain a Resource Consent from the NRC for the option it decides to pursue. They must also get approval from Council for their engineering plans.

In summary, Council has not “directed” Riverside Holiday Park to go through the Estuary, nor approved any plans. The NRC is the approving body.

Warren Stott who manages Riverside Holiday Park is fully aware of these matters.

Environs Holdings Limited has advised that they are currently undertaking a Cultural Impact Assessment in respect of this matter. The Panel further understands that this issue is within the formal consenting processes of NRC/KDC as appropriate.

As the Riverside Holiday Park is outside the scope of the TOR of the Panel, the Panel has not made any recommendations on this matter, but notes the community interest in this issue.

4.5 What about on-site wastewater systems?

There has been significant comment from both the MRRA and from various individuals during the consultation process over the ability to continue to use on-site waste water systems. Throughout New Zealand (and internationally) there are ample examples of where the use of on-site systems have led to the serious degradation of river, lake and estuarine environments. The following is from the Bay of Plenty referencing the severity of the problem.

“The contribution of nutrients from on-site effluent treatment (OSET) systems has been implicated as a contributing factor to the eutrophication of New Zealand lakes (NIWA, 2000). Due to the location and density of some lake-side communities served by on-site effluent treatment systems contributions of up to 25% of the total nitrogen (TN) input to the lake may be coming from OSET systems (NIWA, 2000).”

Nitrogen reduction trials of advanced on-site effluent treatment systems
Prepared by Paul Scholes, Environmental Scientist, Environment Bay of Plenty

During consultation a member of the MRRA delegation and a vendor of an on-site wastewater system met with the Panel and provided an independent engineering report that illustrated that Auckland Council accepted such systems under specific conditions. The Panel contacted the engineering firm and the Auckland Council person identified to us as supporting on-site systems to gain an independent view of the suitability of such systems to the MCWWS catchment area. The following is the submission from the engineering firm on the suitability of modern on-site systems for use in Mangawhai, and a summary of the discussions with Auckland Council.

Linda Norman of 'ACH Consulting Engineers Ltd' was contacted to provide informal (unpaid) advice on the issue of on-site septic systems versus community schemes. This advice was received on the basis of only general knowledge of the MCWWS and associated knowledge of the Mangawhai geography and maritime environment. A more detailed consideration of the geography, section sizes, population density, peak holiday loadings and soil types at Mangawhai could lead to a refinement of the advice summarised below. Linda was brought to the attention of the Panel by the proponents of on-site waste water disposal systems – in particular for her work with Simple Wastewater Solutions Ltd (one of the providers that attended the community open day held by the Advisory Panel).

Noting the above caveats, the following reflects the advice received by the Panel from Linda:

1. A major issue for any human activity near water bodies is that of excess nitrogen entering the water body, leading to algal blooms and a Red Tide. Red tide algal blooms cause eutrophication and pose a threat to human health as well as that of the local fisheries. Avoiding any excess nitrogen is therefore a key element of a wastewater scheme – in addition to avoiding the pollution of groundwater sources pathogens derived from human faecal matter.
2. Professional view is that if a property is within 300 m of a marine environment then connection to a community scheme (if present) should be compulsory.
3. On-site systems are unsuitable if the section is under 1000 m² if an alternative exists.
4. The target for nitrogen levels exiting an on-site (including small communal systems as are present in some sub-divisions at Mangawhai) is 10mg/L of water (USA EPA recommendation see attached table).

Table EX-1: Summary of Recommended Onsite System Nitrogen Treatment Approach

Horizontal Distance for the Bay or Tributary	Recommended Nitrogen Treatment
0-100 feet [0-30m]	No discharge of onsite system effluent
100-1000 feet [30-300m]	<10 mg/L for total nitrogen
>1000 feet [>300m]	<20 mg/L for total nitrogen

5. 10 mg/l of total nitrogen is very difficult to meet with on-site systems, even the top of the line on-site systems struggle to meet this level. Above this level there is likely to be leaching of the nitrogen into water ways.
6. A report to the BOINZ (Building Officials Institute of NZ) conference 2008 on on-site sewage systems treatment quality and appropriate methods of disposal found that 77% of on-site systems are failing to deliver acceptable outputs that would equate to secondary treatment as a result of either a lack of maintenance or simply not having the technology to achieve the target.
7. It is observed that few people maintain on-site systems unless they can smell them or have effluent running across the lawn. This is particularly a problem for irregularly used systems, such as those at holiday destinations (where significant peak loading of systems can occur as occupancy rates of these homes often exceed the design occupancy rate of the on-site system).
8. Where the MCWWS is installed, then in her professional opinion KDC should be enforcing LGA ability to make connection mandatory. To do otherwise is in contradiction of seeking to protect the harbour and the fisheries.
9. Some communal (sub-division) schemes may be okay, but most are just large versions of on-site schemes. KDC should enforce the clause in their consents and force connection to the MCWWS. Urgent attention be focussed on those that are not delivering USA EPA recommendations for total nitrogen. The testing for this would need to be undertaken during both winter and summer months.
10. Auckland Council does not accept on-site systems once a community scheme is in place. They didn't retrospectively enforce conversion in Riverhead and the environmental situation from excess human effluent is quite grim in places as a result.

Tony Bullard of Auckland City (now Auckland Council) issued a 'permitted activity' letter for the Simple Wastewater Solutions Ltd on-site system in 2012. Tony recalled the letter and system and advised the following:

1. Permitted activity status for Simple Wastewater Solutions Ltd remains in place but strongly referenced the numerous criteria and attachments to the letter.
2. He described this system as suitable for lifestyle blocks of 3-4,000 square metres upwards.
3. He would only consent an on-site system to an 800-1,000 square metre block if there were unusual circumstances like a very old sub-division with no proximity to a centralized reticulated system.
4. Auckland City (now Auckland Council) has problems in all areas that permit on-site systems, e.g. Waiheke, Muriwai, Riverhead.

Together, these two independent views of professionals identified to the Panel by proponents of on-site systems paint a very negative picture of the suitability of such systems for Mangawhai. The Panel has however investigated this further in terms of the quality of treatment possible from these modern systems – noting that a traditional septic tank that many older properties in Mangawhai have is not capable of meeting the standards.

The Panel received advice from some property owners currently using composting toilets that composting toilets require intensive maintenance. Furthermore advice was received that when used infrequently (such as at holiday homes) composting toilets were unlikely to perform to the design specification.

Figure 4-2 presents the independent testing completed under the On-site Effluent Treatment National Testing Programme (OSET NTP) that undertakes performance testing of ex-factory on-site wastewater treatment units at its testing facility (OSET TestFac) located within the Rotorua City Wastewater Treatment Plant. What is notable is that only one of the thirty four systems reported on the OSET NTP website currently are found to meet the <10 mg/L requirement for discharge within 300m, all but making the 300m an effective 'exclusion zone' for on-site systems. To understand the magnitude of the 300m 'exclusion zone' refer to the series of dashed contour lines on Figure 2-1⁵. What is obvious from the figure is that the 300m is a substantial part of the overall MCWWS catchment area where properties are not currently connected.

Further verbal advice received from experts in the field of wastewater treatment was that while the initial performance of the on-site systems may be quite good, the aforementioned significant level of non-maintenance means that the actual performance being delivered in the medium to long term is often well below that which the product could in theory deliver. Any use of on-site systems would therefore require an extensive monitoring and regulatory framework to be put around, with questions remaining over how to handle a non-performing system (i.e. from fines to rendering a house unusable).

Proponents of on-site systems have advised that many of the systems can be modified to reduce nitrogen levels to get systems below the 10 mg/L level. While this would likely be possible (the Panel has not independently verified the claim), it is necessary to understand the financial consequence of such a scenario. The cost of installing a modern high quality on-site system (i.e. one that delivers below the 20 mg/L level such that it could be used in the >300m zone) is understood to be in the same ball park as connecting to the MCWWS. Therefore it is the annual costs that would drive any financial differentiation.

⁵ In reality the 300m exclusion zone should be drawn relative to the nearest permanent water way leading to the marine environment, as well as to the marine environment itself. This would result in the 300m zone covering further areas within the MCWWS.

At present the financial equation is one where a connectable property that is not connected, receives a discount on their rates of \$264/year. Conversely the average cost of power for the standard systems (not with additional nutrient stripping) is \$381/year. Add in the cost of inspections (suggested at 8 monthly intervals by one proponent), along with the cost of maintenance of the system and any additional operating costs for the nutrient stripping and it quickly becomes a situation where connecting to the MCWWS is the least cost option.

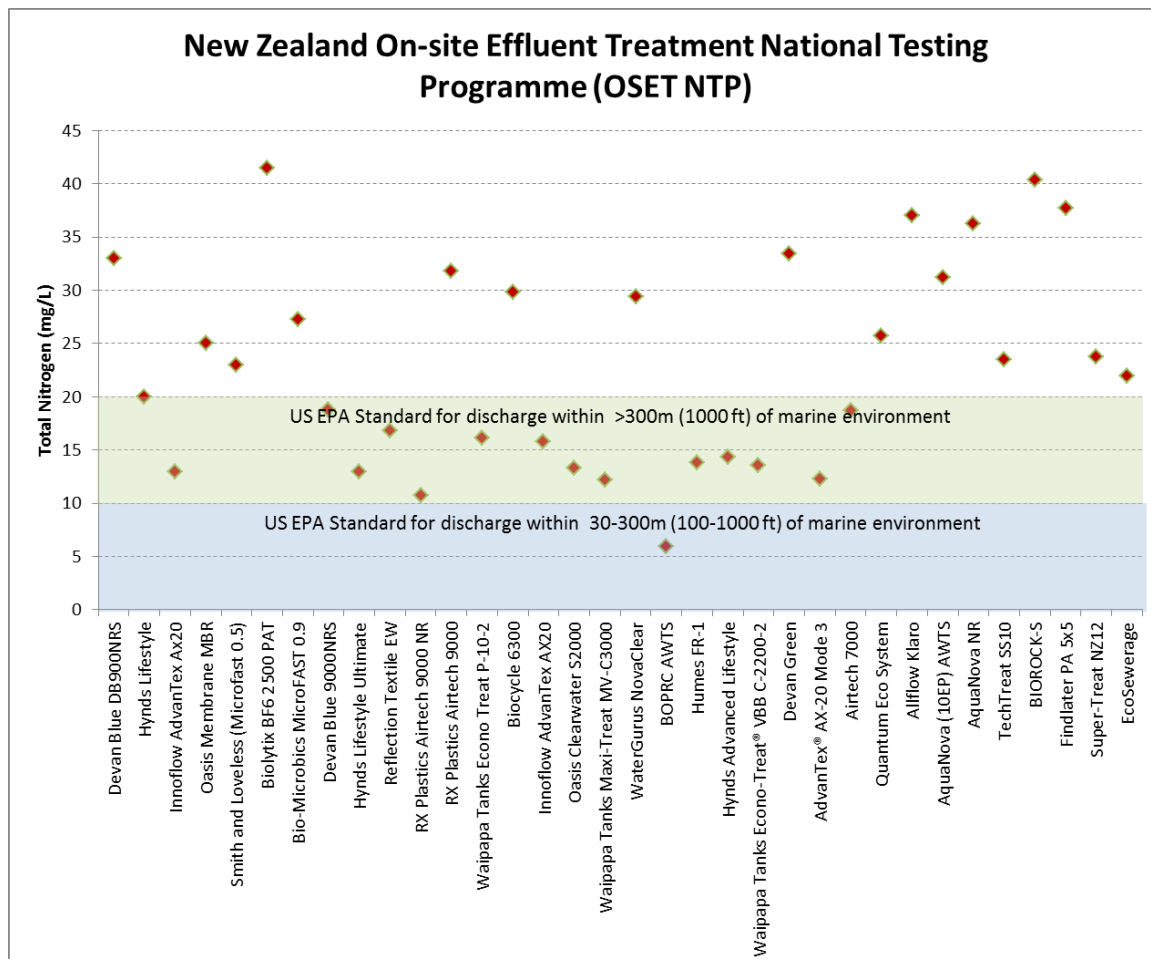


Figure 4-2: Test Results of On-Site Wastewater Systems

Even where a system can be modified to yield an acceptable nutrient output level, there is still the additional requirement to have a section of sufficient area to permit the soakage to occur. When developing a subdivision, KDC District Plan rules require a section size of 1500m² (excluding buildings and manoeuvring areas) for the use of on-site systems, which is significantly larger than the typical section on the market in Mangawhai (observed to be in the range of 600-850m² before buildings and manoeuvring areas are deducted).

Overall, it is the Panel’s conclusion that on-site systems appear to have some merit where the following three requirements are met:

1. Property is more than 300m from the marine environment (including permanent water ways leading to the marine environment);
2. Property is more than 1500m² in area excluding buildings and manoeuvring areas; and
3. The on-site system is demonstrated to deliver less than 20mg/L of Total Nitrogen output.

The Panel does however need to be mindful of the independent advice of the engineering firm and Auckland Council employee, who were both strongly of the opinion that using on-site septic systems (even those that are very modern) are not a suitable solution for Mangawhai.

4.6 Consultation feedback

Figure 4-3 reflects the feedback from members of the public on the issue of mandatory connections. Overall the figure indicates that there is strong support for connection from those who are already connected – with 60% of all respondents and 90% of the non-pro forma responses supporting mandatory connection if the respondent was already connected. For those that are not already connected, the support for connection rises from 30% to 50%.

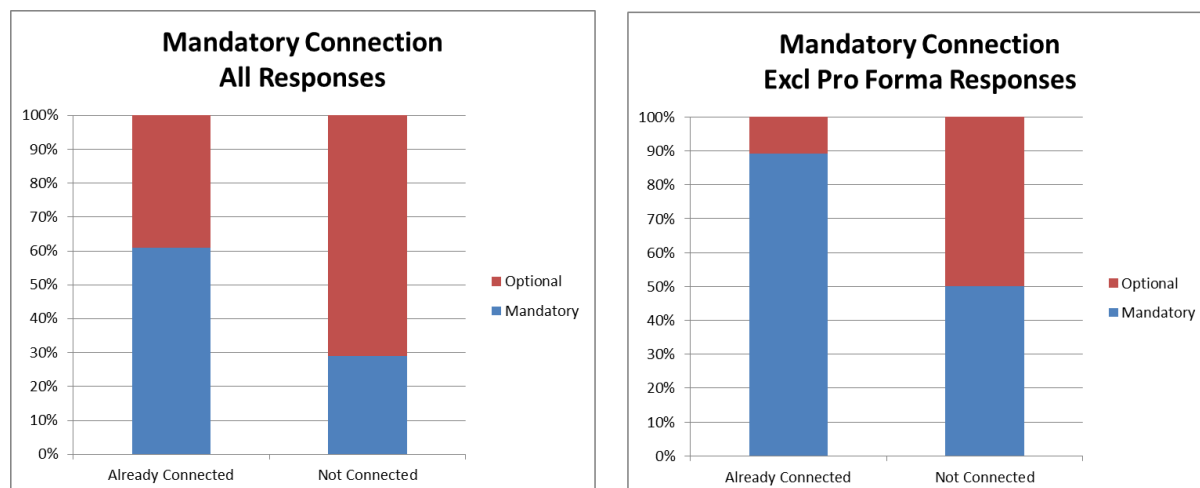


Figure 4-3: Consultation Feedback on Connection Requirement

It is noted that over 80% of properties within the catchment area are either already connected or connectable (most without a dwelling). If the above proportions were to hold out in a full voting process, then the result would be that there is overall support for mandatory connection.

A selection of comments from those who responded to the open days is provided in Appendix D and includes:

- *“Every dwelling, business premises, school or whatever should be immediately connected. This was one of the most basic, fundamental premises of the original scheme.”*
- *“Everyone within the current ‘connection’ area should be connected now, that is what was “signed up”. If through circumstance they cannot pay the full amount, then extended payment is ok.”*
- *“What is the point of having a public scheme if you don’t have to connect – weird?”*
- *“Optional schemes don’t work and would put more burden on those connected up already. Optional schemes cannot be regulated or quantified performing to specification.”*
- *“If the KDC is serious about harbour water quality then all properties that are in the proximity to the harbour edge – say 0.5km should be connected regardless of the supposed effectiveness of the current systems. There has been/is no monitoring of private systems and most of them should never have been allowed in the context of the plans for a treatment plant.”*

4.7 Principles for a connections policy

4.7.1 Background

In addition to the fundamental issue of whether connection should be mandatory, the Panel has also considered issues around how costs should be allocated between the KDC and ratepayers for the installation, operation and maintenance of the connections between the public system and individual properties.

During the community engagement process, feedback was sought on the suggested allocation of responsibilities between KDC and ratepayers. The feedback form resulted in some confusion over the intent of responses, and it is also necessary to consider that those who used the ‘Simon Pro Forma’ were not necessarily answering the question of how connection costs should be shared, but rather they were understood to be saying ‘this should be a private responsibility with private costs associated’. Figure 4-4 presents the feedback – and other than indicating that some form of cost sharing and responsibility between Council and ratepayers (Private) is favoured, the Panel does not believe that there is any real clarity from the feedback on this issue.

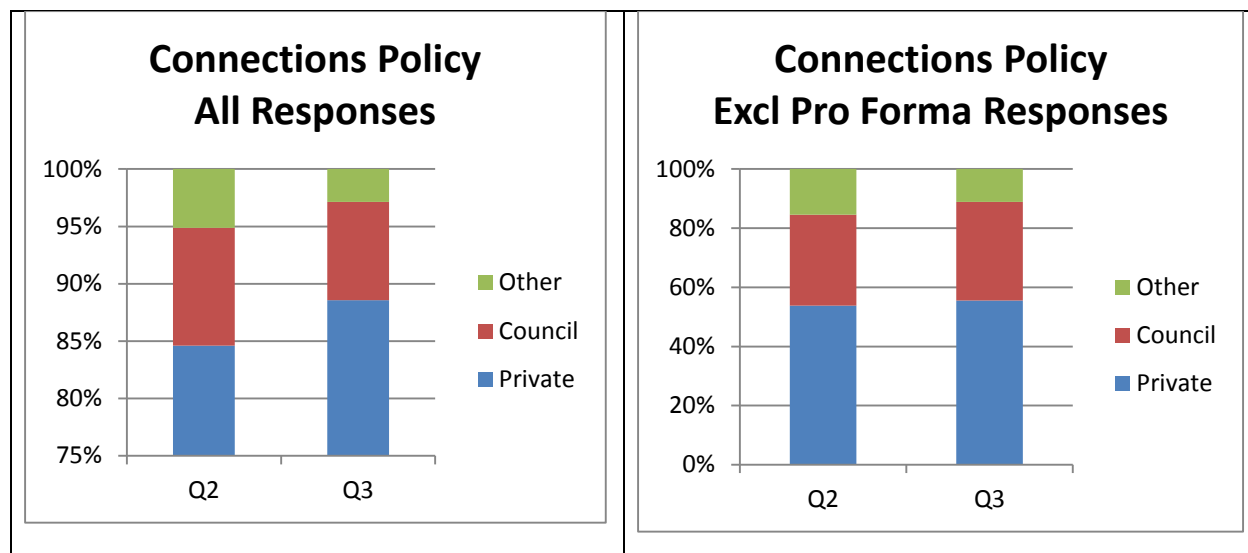


Figure 4-4: Community Feedback on Connection Policy Options

The issues around connections fall into two categories:

- Who should pay for the connection of the private properties to the public drain?; and
- Who should pay for the operations and maintenance of the private connection?

In developing the principles below, the Panel worked with KDC’s policy advisor to understand the issues and options available. For the purposes of the connections policy discussions, the following five property groups have been identified (numbers in brackets indicate the number of properties involved):

- Existing connectable⁶ with an existing dwelling (29)
- Existing connectable without a dwelling (443)
- Future connectable with an existing dwelling (325)
- Future connectable without a dwelling (182)
- New properties able to be created by subdivision or development, from the date of adoption of the private connections policy, capable of connection and required to connect to the MCWWS (1548)

The Panel is aware that there are likely to be a number of properties within Group C who may well have joined the scheme when it was installed and subsidies were available, but who were denied this opportunity owing to the reticulation scheme not being installed past their property. While the Panel has not been able to reconcile the non-availability of subsidies for future connection by this group of rate payers, they have been considered in the recommended policy principles below.

⁶ Connectable – means a property that has the sewer available and is in close enough proximity for section 459(7) of LGA1974 to apply to an owner and enable the Council to require connection under the powers in section 459

4.7.2 Payment for installation of private connections

The primary issues in coming to a view on who should bear the costs for connection are around the need for a grinder pump, and whether the dwelling was in place in 2009 (when the scheme was installed). On the basis of fairness and the situation regarding shared grinder pumps, the following approach is recommended for the development of a policy:

- Where a grinder pump is required, this should be selected from a KDC approved list, paid for by the owner and once installed (to an approved standard) it should be vested into Council ownership. Council should take ownership for the system from the grinder pump onwards, while the ratepayer retains ownership between the dwelling and the pump;
- Where a grinder pump is required and the property is in Group C and the dwelling existed pre-2009, then the Council should pay for the grinder pump installation (and take ownership from the pump onwards). Otherwise the costs should be on the rate payer; and
- Basic gravity connections should be the installation responsibility (and cost) of the ratepayer.

4.7.3 Payment for operations and maintenance of private connections

In addition to the situation above for the installation of new private connections, the Panel also considered the various combinations of dwelling-connection arrangements, with these grouped below:

- Situation A - Single dwelling private drain⁷ directly between the dwelling and the public drain; or
- Situation B - Multiple dwelling common private drain serving a number of dwellings/ premises and connecting the public drain; or
- Situation C - Cross-property private or common private drain, with the drain crossing other properties to reach the public drain.

In addition, the above were also further grouped by whether the connection would be a gravity connection, or a pressurised (grinder pump) connection. The Panel's advice is that the following principles be developed into the connections policy for the ongoing operation and maintenance costs of private connections:

- Where the connection is a gravity connection, then all operations and maintenance costs until the point of connection with the public drain (notionally the property boundary) should remain with the rate payer irrespective of the situation of single or multiple dwellings or the timing of the installation (Groups A-E);
- Where a grinder pump is serving a single dwelling, then the property owner should be responsible for power costs (estimate in 2007 to be \$25/annum), otherwise power costs should be a Council cost; and
- Where a private drain crosses another property to connect to the public drain, KDC should declare these as public drains and become responsible for the operation and maintenance of the drain on the crossed property (irrespective of whether it is gravity or pressurised).

In summary, the Panel's recommendation is that gravity systems (other than those crossing other properties) will be entirely the operational and maintenance responsibility of property owners in all property groups. The Council would be responsible for the operation⁸, maintenance and replacement of on-site components in all pressure wastewater systems to deal with the risks of system failures in multiple owner situations, absentee owner situations and where pressure systems cross third party properties.

⁷ Including on-site piping and fittings, grinder pumps in the case of pressure wastewater systems and boundary connection kits at the point of discharge where the private drain meets the public sewer

⁸ This excludes electricity costs for grinder pumps on single dwelling situations for all Property Groups A, B, C, D and E.

4.8 NRC-KDC alignment

During the course of the Panel's work it became apparent that at times there is a misalignment between the solutions approved by NRC, and the desired outcome of KDC and the Mangawhai community. In particular the Panel notes that NRC was a strong advocate of the MCWWS, yet at times NRC still consents on-site systems where connection to the reticulated system could be readily achieved.

Recommendation: That KDC actively engage with NRC to ensure better alignment of processes, objectives and physical outcomes by connection to the MCWWS.

4.9 Recommended Connections Policy

Based on the information reviewed and advice read and received, the Panel makes the following recommendations with regard to private property connections:

Recommendation: That KDC make connection to the MCWWS mandatory for all within the MCWWS drainage district – irrespective of the distance from the marine environment or the size of the section.

In support of the above recommendation, the Panel also recommends that:

Recommendation: That KDC make completion of the reticulation network to enable full connection a high priority, and that properties within 300m of the marine environment are prioritised for connection.

To get ahead of the issue of residents and developers installing on-site systems, only for them to be redundant a short time later, it is essential that the completion of the reticulation network occurs as fast as possible.

Recommendation: That KDC make on-site systems a Restricted Discretionary activity within the District Plan or through a by-law.

This recommendation would enable KDC to put in place discharge conditions on any new on-site systems that are installed before the full reticulation system is installed. At present only the Northland Regional Council imposes conditions.

Recommendation: That KDC pass a by-law requiring a six-monthly Independent Inspection and Maintenance Certificate for all on-site systems, at the property owner's cost.

The Panel was advised that the Bay of Plenty has implemented a similar by-law to improve the functioning of on-site systems, with all the costs on the rate payer and not the council. This six-monthly provision aligns with the maintenance schedule required under KDC building consents.

Recommendation: That KDC develop and implement a Connections Policy by 1 July 2016 consistent with the principles laid out in Section 4.7.

5 Reticulation Network

5.1 Current extent

The extent of coverage of the existing network is identifiable from Figure 2-1 via those properties that are either Connected or Connectable, with Figure 5-1 illustrating where the actual pipes are installed. An issue of note between the two figures is that there is a significant portion of the catchment area that is not reticulated at present – especially along Moir Point.

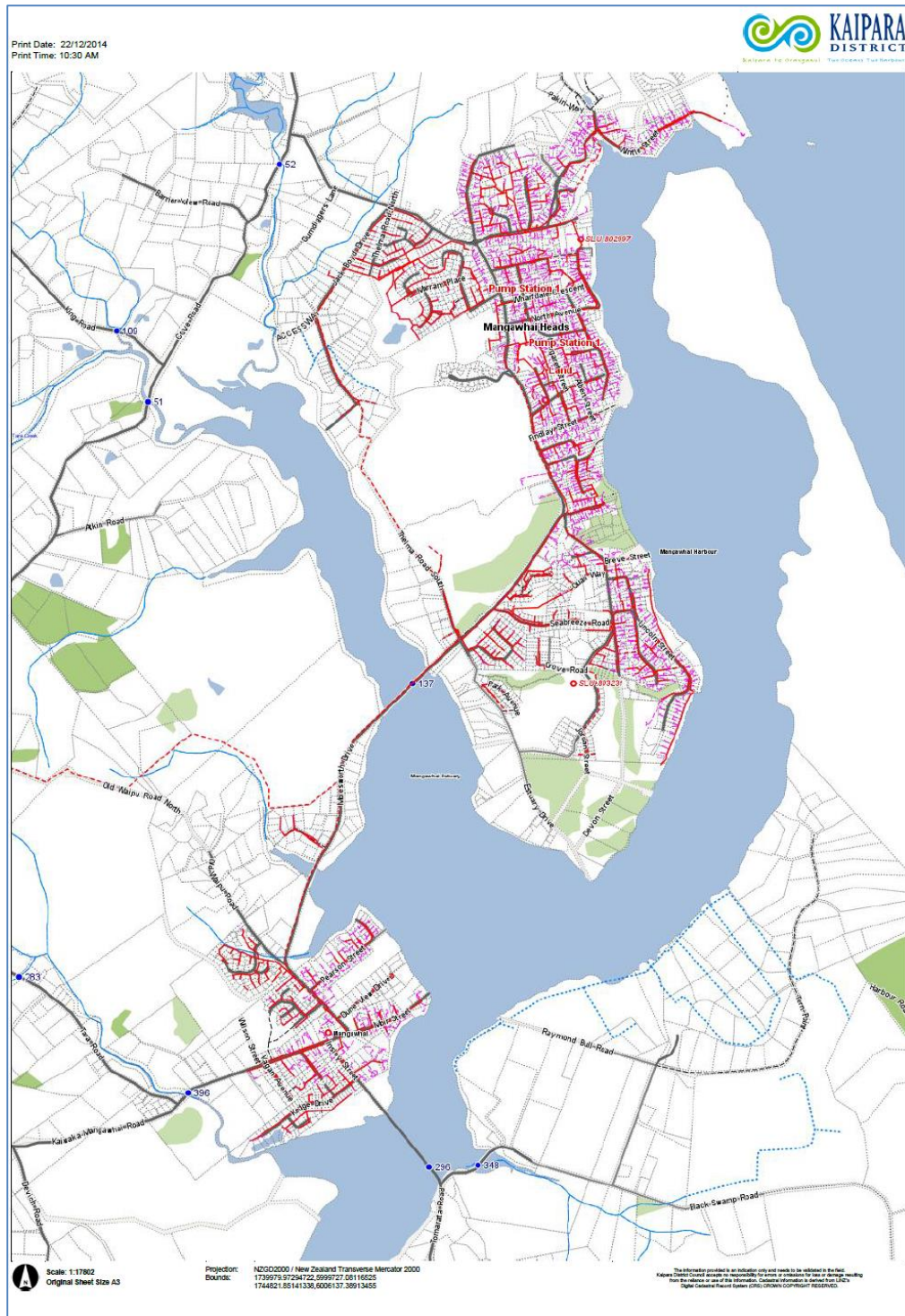


Figure 5-1: Current (December 2014) Reticulated Area

5.2 Bottlenecks in the reticulation network

It is understood that there are some isolated locations on Moir Point where the existing configuration of the reticulation network results in near capacity operation at times (e.g. in the vicinity of Seabreeze). KDC advised that the means of addressing this is through their proposed expansion of the reticulation network down Moir Point, such that wastewater could be re-routed to alleviate such issues.

The Panel was advised that the KDC do not currently have a full hydraulic model of the reticulation network (including pump stations). The Panel received advice that it is unusual for a modern system not to be modelled fully to ensure capacity is not exceeded within the system.

Recommendation: That KDC confirm the industry norm and, if appropriate, complete a hydraulic model of the system to enable better prediction and management of potential bottlenecks.

5.3 Pump stations – Performance

Pump stations take the wastewater that is collected from the gravity mains, and pump the wastewater under pressure to the treatment plant. The pump stations within the system have performed well, with only a single pump failure recorded since January 2013. As the pump stations are designed with an automatic back up pump (which worked as designed) there were no environmental impacts from this.

The Panel did note the issue of interrupted power supply in the Mangawhai area and how this was dealt with. Advice received was that the pump stations have a 12 hour storage capacity to handle such outages. Moreover, with the absence of a reticulated water supply network, when the power is off at the pump stations it is also most likely off at people's houses – such that they are unable to pump water.

5.4 Potential expansion options

KDC have identified 23 projects to expand the coverage of the reticulation network across the catchment area. The location and scale of these projects is provided in Figure 5-2 and Table 5-1. Of note in Table 5-1 is that the return period on the investment is immediate based on the assumptions that:

- All connectable/targeted properties are expected to connect to the KDC wastewater network once the network is within the 30/60 metre criteria;
- With the exception of dwellings in existence prior to 1st July 2006, all properties are expected to contribute Development Contribution of \$ 21,237 (+GST) (as per the Development Contribution Policy 2015). It has been assumed the Development Contribution will remain the same for the period of these projects;
- All connected/targeted properties are expected to pay annual wastewater charges of \$1,069.40/property (as per the Annual Plan 2015/2016);
- For calculation of the Return Period only existing properties have been considered;
- Future development potential is not part of the Return Period; and
- Project/s where there is no cost to the Council, beneficiary contribution has not been included.

Table 5-1: Reticulation Network Expansion Schemes (as at July 2015)

Project No.	Project Name	Properties Targeted (Number)	Potential Targeted Properties (Number)	Return Period (Time)	KDC Priority
1	69 Moir Street	3	-	Immediate after completion	7
1a	73 Moir Street	1	-	Immediate after completion	1
2	104 Moir Street	4	-	Immediate after completion	4
3	Mangawhai Beach School	1	-	Immediate after completion	3
4	Molesworth Drive	2	80	Immediate after completion	5
5	62-86 Molesworth Drive	12	12	Immediate after completion	2
6	Old Waipu Road	33	232	Immediate after completion	5
6a	Old Waipu Road (McCarthy and Others)	-	75	N/A	6
7	Estuary Drive (Parklands)	4	21	Immediate after completion	5
8	Estuary Drive (Ogilvy)	11	95	Immediate after completion	2
9	Estuary Drive	-	-	N/A	4
9a	Moir Point Road (102-120 Moir Point Road)	11	-	14 years	7
9b	Moir Point Road (Hermes-III)	-	63	N/A	6
10	Estuary Drive (Estuary Drive/Moir Point Road Intersection) ¹	22	61	Immediate after completion	1
11	Devon Street (Paper Road)	5	37	N/A	7
12	Ti Tree Place	30	-	Immediate after completion	6
13	Quail Way	4	-	Immediate after completion	7
14	Greenview Drive	47	-	Immediate after completion	5
15	Wintle Street, Heads Limited	32	-	Immediate after completion	4
16	Cullen Street	2	45	2 years	5
17	Mangawhai Heads Road/Cullen Street Intersection	10	-	Immediate after completion	3
18	Mangawhai Heads Road	8	-	Immediate after completion	3
19	Molesworth Drive, Estuary Estates	-	-	N/A	6
20	Jack Boyd Drive	5	-	N/A	7
21	Taranga View Rd, Matata Way	8	10	Immediate after completion	7
22	North Side Cullen St Nos 49 onwards	5	5	Immediate after completion	7
23	Moir St West-Kaiwaka Mangawhai Rd	18	7	Immediate after completion	7
		278	743		

1. The project has been initiated by the Council already in the financial year 2014-15.

The above schemes permit the connection of a further 278 existing properties and 743 potential properties. The Panel notes that if the full connection fees are charged they would yield revenue sufficient to fund the extensions plus approximately \$3m towards the associated capacity upgrade of the plant (refer Chapter 6).

5.5 Recommendations on extension

In order to support the prior recommendation on making connection mandatory, the completion of the reticulation network is an essential precursor action by KDC. To this end the Panel recommends the following with an aim to have full reticulation completed within 2-3 years:

Recommendation: That full reticulation of the MCWWS catchment area is completed within 3 years to enable 100% of properties to fall within the LGA connection criteria (30/60m).

Recommendation: That prioritisation of extensions to the reticulation lines that permit connection of properties within 300m of the marine environment should occur.

6 Treatment Plant

6.1 Introduction

The treatment plant (refer to Figure 6-1) is located on Thelma Road and consists of a pair of sequencing batch reactor (SBR) tanks (#1), a solids drying (via pressing) shed (#2), a sand filter and chlorination system to clean and disinfect the effluent (#3), a 400m³ holding tank and pump system (#4) to deliver the treated water to the 170 ML farm pond (refer to Chapter 7), along with supporting office and shed space (#5).

In the words of John Dickie⁹ “The main treatment plant is well designed and operated, and has capacity for additional load”.



Figure 6-1: Aerial View of MCWWS Treatment Plant

The operators of the plant have another 4 years of the existing contract to run (June 2019), with KDC then able to request a 5 year extension if they so desire. KDC will need to determine how best to align contract terms and system upgrades. However from the Panel’s view point, these are operational matters that do not impact on who is connected or to what level effluent needs to be treated.

6.2 Capacity of the existing plant

While the bulk flow into and out of the plant is a simple way to consider the plant capacity, in reality the treatment plant has many criteria that defines its capacity. Harrison Grierson Limited provided the following assessment of the plant capacity and current demand.

⁹ John Dickie is a member of the community with a relevant qualification and experience who has visited the plant. He has been vocal in his (often critical) views about the MCWWS – both before construction and in the years since.

Table 6-1: Treatment Plant Capacity

Unit	Criteria	Rated Capacity (2014)	Current Utilisation	Comment
Inlet works	>5x peak season flow	70 L/sec	53%	Ample capacity available
Sequencing Batch Reactor (SBR)	Reactor HRT including sludge layer – off peak average	27.9 hrs	56.2 hrs	Ample hydraulic capacity
	Reactor HRT including sludge layer – peak average	20.7 hrs	52.1 hrs	Ample hydraulic capacity
	BOD5 – off peak average	180 kg/day	47%	Ample capacity
	BOD5 – peak average	486 kg/day	59%	Ample capacity
	TKN – off peak average	30 kg/day	77%	Will require capacity addition
	TKN – peak average	81 kg/day	72%	Will require capacity addition
Pressure sand filter and UV	>3x peak season flow average	2x 13 L/sec	86%	Will require capacity addition. UV system is not in use.
Sludge processing	Manufacturers rating	Pumps 13 m ³ /hr	1-4 hrs operation	Ample capacity
		Sludge thickening 13 m ³ /hr	1-4 hrs operation	Ample capacity
		Belt filter press 2.5m ³ /hr	6-20 hrs operation	Will require additional capacity

As is evident from the table above, there are specific components of the plant that will require capacity upgrades to meet the additional loading that would come from mandatory connection and associated extension of the reticulation network. The form of these will depend on the ultimate decision around what disposal option(s) for the treated effluent is decided upon. For instance if disposal consisted of a combination of the farm and golf course irrigation, then in conjunction with the capacity upgrade it would also be necessary to remove a greater level of the dissolved solid materials to avoid clogging of the irrigation nozzles.

6.3 Nutrient output

6.3.1 Current situation

Table 6-2 presents the Northland Regional Council testing of the wastewater as it arrives at the treatment plant (Influent), as it exits the plant (WWTP Effluent), and as it sits in the pond at the farm (Lagoon Effluent). The various indicators tested are:

- TSS: Total Suspended Solids (mg/L)
- BOD5: Biochemical Oxygen Demand (mg/L)
- TN: Total Nitrogen (mg/L)
- CBOD: Carbonaceous Biochemical Oxygen Demand (mg/L)
- E-Coli: Escherichia coli (MPN/100 mL).

It is of note that the testing results indicate that the treatment plant is producing a relatively high quality of effluent – better than most of the on-site systems that have been tested in NZ (refer to Figure 4-2) with regard to Total Nitrogen and with an average value of 13.6 mg/L it is well below the consented requirement of 30

mg/L. It is also of note that the quality of the water in terms of E-Coli deteriorates significantly while sitting in the pond at the farm. This is as a result of the significant wildlife (bird) population that inhabits the pond.

Table 6-2: Nutrient Loading of MCWWS (Period from 26/08/10 to 07/12/13)

	Influent			WWTP Effluent				Lagoon Effluent
	TSS mg/L	BOD5 mg/L	TN mg/L	TSS mg/L	CBOD mg/L	TN mg/L	E-Coli mpn/100	E-Coli mpn/100
Minimum	175	72	34	1.0	0.6	1.0	1	1
Average	377	296	81	3.4	3.1	13.6	12 ¹	619
90 % ile	567	455	102	7.0	6.0	21.6	4	2000
Max	793	720	135	16.0	11.0	42.0	1733	3654

Note: 1. Average is greater than 90 Percentile due to few very high data values

Source: Northland Regional Council (NRC) sampling data as quoted by Harrison Grierson

The above results also indicate that the effluent is not currently suitable for discharge within 300m of a marine environment. This precludes the use of the current effluent to irrigate parts of the golf course or for discharge on portions of the Mangawhai Community Park.

6.4 Capacity upgrade options

Depending upon which option is selected for the disposal of the treated effluent (refer to Chapter 7) the nature of any upgrade at the treatment plant will vary. Harrison Grierson advised the following treatment standards would likely be required.

Table 6-3: Capacity Upgrade Options

Parameter	Unit	Estuary Discharge	Golf Course Options			Ocean Outfall Options
			Golf Course Irrigation	Wetland	Irrigation Golf Course and Lincoln Downs Farm	
Effluent description		Enhanced nutrient removal	Nutrient removal	Enhanced nutrient removal	Nutrient removal	Secondary disinfected
BOD5	mg/L	10	15	10	15	15
Amm-N	mg/L	1	<5	1	<5	<5
TN	mg/L	7	20	7	20	30
TP	mg/L	2	10	2	10	12
E-coli	mpm/100	10	10	10	10	14

Note: The Mangawhai Community Park as a primary disposal site was not considered by Harrison Grierson but would likely mirror the Ocean Outfall option with the exception of the E.coli level.

For subsoil irrigation a total suspended solids level of less than 1mg/L is recommended to avoid blockage of the system. This is a higher quality than the average of the current system in Table 6-2.

6.4.1 Quantity Upgrade

If only a quantity upgrade is required (i.e. no change to the quality of the treated effluent) then the upgrade would consist of a relatively straightforward addition of a 3rd SBR bay, a second filter press to dry the sludge and a further sand filter (items #1, 2 and 3 within Figure 6-1).

The following is an extract from Harrison Grierson advice on the capacity upgrade to the plant.

This could be achieved by addressing the process pinch points identified in Table x (replicated as Table 6-1 above). The construction of third SBR tank would be required to accommodate the increased flows and loads. The proposed upgrade includes the following components:

1. Retain existing SBR plant
2. Replace screens with a 3mm screen and grit removal system
3. Construct third SBR tank
4. Upgrade blowers to cater for the additional flows and loads
5. Replace pressure filters with a disc filter and replace broken UV system. New equipment size to cater for future flows.
6. Sludge dewatering facility is already constrained in its capacity. Hence, another dewatering unit is proposed.
7. Upgrade electrical, instrumentation, controls and other ancillary services.

The estimated cost for the above upgrade is estimated to be between \$6-9m (10-30% contingency levels)

6.4.2 Enhanced quality upgrade

For those disposal options (refer to Section 7.5) where an enhanced level of nutrient removal is required, the above capacity upgrade would need to be completed in conjunction with a quality upgrade. The cost of such quality upgrades is included in the estimate of each option within Section 7.5 and is estimated at \$1.7m.

6.5 Use of solid waste materials

It was mentioned during consultation that the solid waste materials could well have some potential use, other than being dumped in the land fill. The Advisory Panel has not examined this further, however if there is an option to use the solid waste materials in a way that is cost effective then the Panel supports that.

Recommendation: That alternative uses for the solid waste materials are investigated to see if a cost effective solution with enhanced environmental outcomes could be achieved.

6.6 Recommendation on treatment plant

In a timeline closely aligned to the completion of the reticulation network, capacity will need to be added to specific components of the treatment plant. The exact nature of the form of upgrade will not be known until resolution of the disposal options is completed.

Recommendation: That KDC commence the capacity upgrade for the plant in a staged manner that aligns to the expansion of the reticulation network and meets the selected disposal option for the treated effluent.

7 Disposal of effluent

7.1 Current situation

At present the treated effluent is pumped from the treatment plant to a farm located some 10 km inland. The farm is 247 Ha, of which approximately half is in pasture and half in native bush (with some hilly pasture). Of the pasture approximately half (65 Ha) is suitable for irrigation, of which 25 Ha has had irrigation installed. Funding to add a further 5 Ha of irrigation was approved in 2012 but was not actioned.

In discussions with the KDC and Harrison Grierson, it is the Panel's view that the current level of irrigation on the 25 Ha is not sustainable in the short-medium term (within 5 years) – irrespective of which ultimate disposal recommendation is implemented. Additional irrigation would provide for both additional connections to be added, and also to provide better land management at the farm. A minimum of 5-10 Ha is thought to be necessary in the short to medium term, with further areas dependent upon the ultimate disposal option selected.

The Advisory Panel is also aware of the statement within the MRRRA Petition (refer to Section 3.4) stating that the current MCWWS “cannot dispose of the effluent safely”. Repeated clarification was sought from the MRRRA Deputy Chair on this statement, but no further detail was provided to enable any form of investigation to be undertaken by the Panel.

7.2 Option development

The development and selection of a preferred disposal option for the treated effluent has been a multi-staged process as indicated in Figure 7-1. While there are many views on the suitability of the existing farm as a disposal option and the associated costs to build the dam and pipeline, the reality is that these are in place.

KDC engaged engineering firm Harrison Grierson to develop a suite of effluent disposal options for consideration. They were not restricted by the likely cost or social acceptability of options, with the resulting list consisting of:

- Option 1 – Lincoln Downs Farm, Deficit Irrigation
- Option 2 – Lincoln Downs Farm, Maximised Deficit Irrigation
- Option 3 – Lincoln Downs Farm, Combination
- Option 4 – Ocean Outfall (no irrigation)
- Option 5 – Harbour Mouth Outfall (no irrigation)
- Option 6 – Mid-Estuary Outfall and Irrigation
- Option 7 – Upper Estuary Outfall and Irrigation
- Option 8 – Hakaru River Discharge and Irrigation
- Option 9 – Golf Course and Irrigation
- Option 10 – Golf Course, Hakaru River and Irrigation
- Option 11 – Golf Course and Hakaru River (no irrigation)
- Option 12 – Golf Course (no irrigation)



Figure 7-1: Disposal Option Development Process

Having reviewed the 12 options presented to the Panel, the Panel then undertook a series of analyses to refine the 12 down to what was considered a suitable range of options to take to consultation, with these being:

- Option 1: Farm based irrigation – noting a Harrison Grierson advised capacity constraint in 10-20 years;
- Option 2: Ocean outfall – no capacity constraint but expensive and Iwi objection;
- Option 3: Estuary outfall in vicinity of boat ramp – less costly than Ocean Outfall, but with social issues and Iwi objection; and
- Option 4: Golf course irrigation – does it have the capacity and who pays/operates the system.

The Advisory Panel’s logic for this shortlisting was that it provided a range of options that had strengths across one or more of the desired outcomes of:

- Affordability – both short and long term;
- Long term capacity to meet demand; and
- Socially and environmentally acceptable.

The Panel eliminated options that would discharge the treated effluent into the Hakaru River on the basis that if the effluent is not good enough for discharge into the Mangawhai Estuary, then it is unreasonable to put it into the Hakaru/Kaipara catchment.

7.3 Consultation feedback on options

During the consultation process, respondents were asked to rate their level of support for each of the options between 1 = Strongly Support to 5=Strongly Against. Note that they were not asked to rank the options – such that all four options could be rated 1 or 5. Figure 7-2 presents the feedback on the disposal options, with the first notable comment being that there are not substantially different views between the All Respondents and those promoting on-site schemes (the Pro Forma).

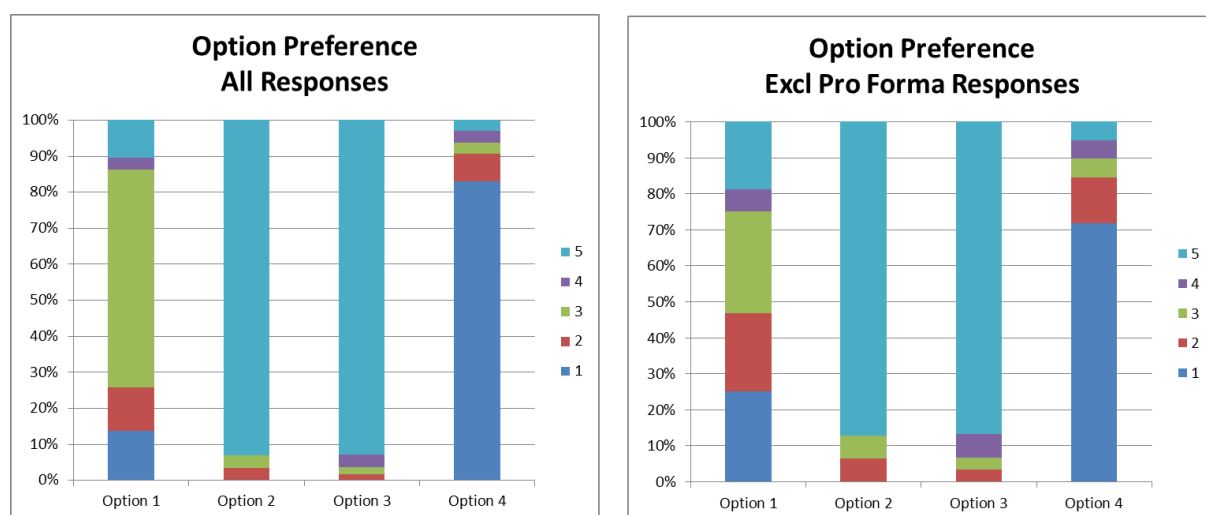


Figure 7-2: Community Feedback on Disposal Options

Overall the community gave very clear feedback that they didn’t like the Ocean or Estuary based options, strongly supported the golf course, and a moderate level of support for the continued use of the farm. Whilst it is not difficult to appreciate a resistance to an estuary based option from a social perspective, it is unclear if the resistance to the ocean based option was on the basis of perceived cost or for social/environmental reasons.

7.4 Iwi consultation on options

Consultation with Iwi on the four options aligned well with the wider community feedback, with strong support for land based disposal.

7.5 Refinement of options

Upon gaining community and Iwi feedback on the proposed options, the Panel (in conjunction with the KDC appointed consultants – Harrison Grierson) undertook additional work to refine the analysis of the four options. In each option a number of stages of implementation are noted in the costs. These stages relate to the following levels of development (source: Harrison Grierson)

TABLE 1: MANGAWHAI PROPERTY AND WASTEWATER FLOW GROWTH SCENARIOS

GROWTH PERIOD	STAGE	NUMBER OF CONNECTED PROPERTIES	AVERAGE FLOW	PEAK FLOW	ANNUAL FLOW	YEAR (LOW GROWTH)	YEAR (HIGH GROWTH)
			m ³ /d	(m ³ /d)	(ML/yr)		
Current		1622	300	1200	110	2013	2013
Interim Growth 1	Stage 1	2036	375	1500	137	2024	2023
Interim Growth 2	Stage 2	2425	450	1800	164	2035	2030
Interim Growth 3		4180	600	2400	219	2053	2041
Report Horizon	Stage 3	3460	640	2560	234	2057	2044

7.5.1 Continued used of farm

There is no scenario under which the current 65Ha of irrigable land at the Lincoln Downs Farm can accommodate the expected growth of demand from the MCWWS. The Panel therefore came to consider the continued use of the farm as an option to provide either supporting capacity to a golf course based option, or to provide an interim solution while other disposal options (likely ocean based) would be developed.

Harrison Grierson Description of the Option

KDC own the infrastructure, including the Lincoln Downs Farm at Brown Road, This property has 200 Ha of which 60-65 Ha is suitable for irrigation, currently about 25 Ha is irrigated.

The existing disposal area of Lincoln Downs Farm is limited and will not be sufficient for the ultimate development of Mangawhai. In the short term, the only consented land based option available to Council is disposal at Lincoln Downs Farm, Any other option would be unlikely to be available until AEE and consent requirements are carried out, which could take several years.

Three potential options are considered for discharge to the farm:

- Option 1 Expansion of the existing irrigation approach, ultimately requiring 85Ha of irrigable land [compare to the farm having 65Ha of irrigable land]
- Option 2: Expansion of the Lincoln Downs Farm while optimising all irrigation to maximise uptake of the water by pasture.
- Option 3: Combination of Option 1 with installation of subsurface drip irrigation.

Option 1 Costs

Stage 1: \$2.800m (covers up to 2023-24)

Stage 2: \$1.000m (covers up to 2030-35)

Stage 3: \$4.590m (covers up to 2041-53)

Total: \$8.400m

Based on the estimates provided by Harrison Grierson, the approximate cost per additional hectare of irrigation at the farm is \$0.140m/Ha.

7.5.2 Ocean outfall

Harrison Grierson has provided the following description of the option and an associated cost estimate. The cost estimate includes the upgrade of the treatment plant for the higher quality treatment assumed to be required, but not for capacity upgrade costs which is covered in Chapter 6.

Harrison Grierson Description of the Option

The ocean outfall option involves discharging of treated effluent from the WWTP to the ocean approximately 1.6km beyond the shoreline to water 15 to 20m depth. Tidal effects may not need to be considered for this option. Conceptually, this option could consist of a low, continuous discharge year round.

To improve the accuracy of the estimate, discussions were held with McConnell Dowell, a major contracting firm with extensive experience in construction of ocean outfalls in New Zealand and abroad. After consideration of several possible outfall launching sites, the preferred option selected by the contractor was to lay the outfall in the central channel of the estuary, out through the entrance, and to approximately 1.6km offshore.

The reasons for this selection are:

- a) The need to develop a feasible construction methodology, having consideration to tide, ocean, storm and environmental factors. The pipe in the channel will be weighted to sink into the sand and therefore be protected from the effects of storms. Drilling through the ocean sand bar is risky, and the area is a sensitive environmental area. The area is also subject to storm disturbance, as occurred at Mangawhai from 1986 to 1990.
- b) A significant part of ocean outfall costing involves an appropriate allowance for the many risks associated with ocean outfall construction. These include, unforeseen ground (sub-sea) conditions, inclement weather events, effects of ocean and tidal currents, equipment and material failure and unforeseen problems with the construction methodology.

It is considered that the above methodology provides a robust estimate for an ocean outfall cost without needing to advance the design to the tendering stage.

Cost Estimate

Stage 1: \$7.265m

Stage 2: \$0.067m

Stage 3: \$1.088m

Total: \$8.420m

7.5.3 Estuary outfall

Harrison Grierson has provided the following description of the option and an associated cost estimate. The cost estimate includes the upgrade of the treatment plant for the higher quality treatment assumed to be required, but not for capacity upgrade costs which is covered in Chapter 6.

Harrison Grierson Description of the Option

A new effluent pipeline would be constructed from the Mangawhai Wastewater Treatment Plant (WWTP) to the foreshore near the boat ramp either at the end of Alamar Crescent or North Avenue. There are two boat ramps located at the end of these roads. The deepest part of the channel is approximately 150 m from shore at both these locations. The proposal would be to install a short, buried polyethylene pipe outfall with a short in-channel diffuser located in the deep central part of the channel.

As this is a highly valued recreational area, the wastewater treatment plant would be upgraded to produce a very high quality effluent, with very low BOD, solids, nutrients and bacteria as detailed in Addendum 2.

This is achieved by dosing chemical (sugar to provide carbon for denitrification and alum to precipitate dissolved phosphorus). A high level of bacterial disinfection will also be required, as well as filtration. An upgrade to a membrane bioreactor is more cost effective in the long run, as it will produce a very high quality effluent and the works will mainly fit within the existing two SBR tanks at the WWTP.

The assessed effluent quality would need to be verified by a consent application and AEE process.

Tidal Discharge

To minimise effects, the proposal would involve discharging effluent for a limited period just after the turn of the high tide, so that the outgoing tidal current (which is relatively fast) will carry as much of the effluent out to sea as practical. The discharge would stop well prior to low tide, to reduce the amount of effluent remaining in the harbour.

Thus, the proposed discharge would occur 30 to 60 minutes after high tide, and continue for a maximum of 4 hours. To achieve discharge of peak future flows without excessive storage, a flow of approximately 135L/s would be required. Storage of effluent for up to 8.5 hours would be required between discharge events, which will require approximately 2ML additional at the design horizon. Storage would most economically be provided at the initial construction, as it is more expensive to build several smaller storage tanks. For treated effluent storage, an above ground tank similar to the existing tank would be built.

Costs Estimate

Stage 1: \$7.230m

Stage 2: \$0.067m

Total: \$7.297m

7.5.4 Mangawhai Community Park and golf course irrigation

As was noted from Figure 7-2, the use of the golf course for irrigation of the treated effluent was the most favoured option by the community. Following a presentation on the options to members of the golf club, an informal ‘show of hands’ endorsed the club to continue consultation with KDC over the potential to irrigate the fairways and off-course areas.

Harrison Grierson undertook an analysis of the disposal capacity of the course through modelling of the variations in flows, seasonal temperatures and assumed ground conditions. The basis of the modelling is stated as the “*effluent irrigation area should not cause permanent or sustained degradation of land with respect to;*

- *waterlogging and extensive periods of soil saturation;*
- *creation of conditions that are toxic to plant / biological activity;*
- *sodicity and soil structural decline;*
- *erosion;*
- *soil salinization; and*
- *the long term accumulation and contamination of land with pollutants (nutrients, metals).”*

On the basis of the above, Figure 7-3 reflects the resultant capacity of the golf course to dispose of the effluent (the ‘irrigation’ bar plots) and the associated overflow that would need to be disposed of either through the wetland or via an alternative means (such as farm irrigation). It is noted that a key factor in the modelling is that of the soil conditions and the extent of what is understood to be a largely impervious hard pan layer beneath the golf course. For instance, Pauanui dispose of all

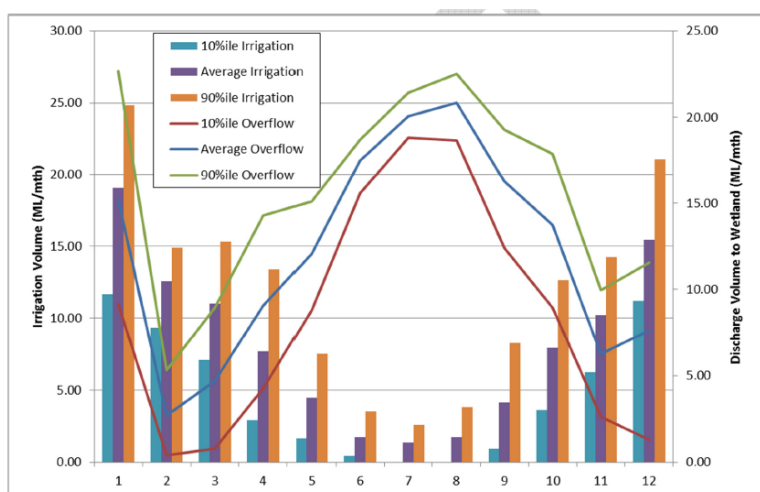


Figure 7-3: Model Output for Golf Course Irrigation (2044)

their effluent in an area much smaller than the golf course via irrigation as a result of there being no such geological barrier present.

The Panel notes that conceptually there is also the potential to apply the same approach to the bush areas within the Mangawhai Community Park, and therefore consider this option to be an inclusive option of irrigation of any combination of the Mangawhai Community Park and the golf course. To further understand the potential for the golf course and the neighbouring Mangawhai Community Park for irrigation, a detailed geological assessment is required.

Should the combined area be considered viable for a long term disposal option, then the Panel believes that the most cost effective order of installation would be as follows:

1. Mangawhai Community Park (surface trickle irrigation)
2. Trees and similar off-course areas of the Golf Course (surface trickle irrigation)
3. Driving Range of the Golf Course (sub surface irrigation)
4. Fairways of the Golf Course (sub surface irrigation)

This order is on the basis of ease of installation (and therefore cost) of the different stages. Any irrigation of the fairways, unless there was significant funding supplied by the Club or other sources, would therefore be some time into the future.

In the modelling output completed it appears that the volume of water is the critical factor for golf course irrigation, and not the quantity of nutrients – with the level of nitrogen being equivalent to 23 kg/Ha/year. By comparison the Waikato Regional Council provides the following as farm levels.

In 2009-10, average dairy farm nitrogen fertiliser use was 94 kg N/ha/yr. Previously, dairy farm nitrogen fertiliser use was 68 kg N/ha/yr in 1997-98 and 125 kg N/ha/yr in 2002-03. Yearly nitrogen fertiliser use on sheep/beef farms was 6 kg N/ha/yr in 1997-98 and 9 kg N/ha/yr in 2002-03, the only periods for which we have data.

In 2008, nitrogen leaching for dairy was 38 kg N/ha/yr and may have been affected by the drought. Previously, dairy farm nitrogen leaching appeared to be increasing from 32 kg N/ha/yr in 1998, to a maximum of 45 kg N/ha/yr in 2007. Nitrogen leaching for sheep, beef and deer farms remains stable, about 13 to 14 kg N/ha/yr

Recommendation: That KDC undertake a detailed geological assessment of both the Mangawhai Community Park and the golf course, and then update soakage estimates to determine the viability of these long term disposal options. This work to be completed in the next 12 months.

Based on the current assumptions, by 2044 the modelling indicates that around 145 ML/year of excess effluent would be generated that could not be disposed of on the golf course. To put that figure in context, it is similar to the level of effluent currently being disposed of to the farm each year. Therefore the potential may be that the golf course could accommodate all growth for the next 30 years, but not ultimately reduce the need for an alternative/complementary disposal option.

Recommendation: That, before progressing investigations for disposal of effluent on the golf course, KDC and the Club agree a terms of reference outlining who would be responsible for factors such as installation, maintenance and operating costs; liability for pollution of groundwater; who would operate the scheme; what would be the order of installation of the irrigation etc.

Harrison Grierson have provided an updated costing for the golf course irrigation (the estimate excludes the Mangawhai Community Park), with this being as follows.

Harrison Grierson Cost Estimate for Golf Course Irrigation Option

This estimate covers for the enhanced nutrient removal at the treatment plant, but not capacity upgrades (covered under Chapter 6). It also excludes any irrigation within the Mangawhai Community Park.

Stage 1: \$8.347m

Stage 2: \$1.924m

Stage 3: \$1.337m

Total: \$11.608m

The above estimates have significant contingencies and caveats attached reflecting the level of investigation completed by Harrison Grierson.

Recommendation: That further work on both the soakage capacity and a refined costing for Mangawhai Community Park and the Golf Course is required before further consultation occurs.

7.6 Preferred option for disposal of the effluent

With the strong community support and associated interest from the golf club, the Panel acknowledges the potential for the irrigation of the golf course (the fairways in particular) to be a win-win scenario for the community and the golf club in terms of the disposal of the effluent. However, without the completion of the necessary geotechnical investigation of the golf course (and the Mangawhai Community Park) the technical viability of this solution cannot be confirmed. Acknowledging the now increased updated cost estimate for irrigation of the golf course (referred to in 7.5) and recognising the immediate need to complete the reticulation network, the Panel considers that deferral of costly new irrigation (inherent in the golf course option) is the most prudent approach. Furthermore, should irrigation occur then a staged implementation prioritising the lower cost surface trickle irrigation first would make financial sense.

Based on the feedback received and analysis undertaken, the Panel is of the view that the best option in the short–medium term (up to 10 years) is to continue with irrigation of the farm (including an expanded irrigation area). The use of the golf course and/or the Mangawhai Community Park for irrigation warrants further investigation given the strong community support for this – although with the costs now looking significantly higher than first indicated, this support may well be reduced.

The Panel believes that there is no benefit in pursuing an Estuary Outfall option, as the Ocean Outfall is broadly the same cost, offers virtually unlimited capacity, and would likely be more socially acceptable. Furthermore, it is noted that the Ocean Outfall is less costly than the irrigation option.

Should the modelling of the Mangawhai Community Park and golf course indicate that the disposal capacity of these areas, in conjunction with irrigation of the full 65 Ha of the farm, is not sufficient to provide disposal capacity well beyond 2044 – then the Panel’s view is that investigating an Ocean Outfall would be the best fall-back position, acknowledging Iwi objection to this option.

In any case with the demand on cash for the completion of the reticulation network and the capacity upgrade of the treatment plant, it is the Panel’s view that significant investment in the disposal options over the next 10 years is both undesirable and possibly unaffordable without seriously impacting on other KDC demands. For this reason, the Panel believes that the appropriate solution for the next 10 years is to continue irrigation

to the farm – but with an expanded irrigation area of between 10-20 Ha so that there is sufficient capacity to better manage the farm and deal with wet seasons.

Recommendation: That primary disposal for next 5-10 years is through the expansion of irrigation on the existing farm – with a minimum of 5-10 Ha of irrigation added to the farm within 5 years, and potentially 20 Ha (if required)

Recommendation: That, assuming irrigation is a viable option, the order to install over the following 5-20 years is:

1. Mangawhai Community Park (surface trickle irrigation)
2. Trees and similar off-course areas of the Golf Course (surface trickle irrigation)
3. Driving Range of the Golf Course (sub surface irrigation)
4. Fairways of the Golf Course (sub surface irrigation)

If irrigation is not viable in conjunction with the farm irrigation, then progress investigations around the Ocean Outfall, acknowledging Iwi objections.

7.7 Disposal of farm

The Panel has not looked in detail at the options to dispose of the farm – either in full, or in part. However the following are guiding principles that we recommend the KDC employ in determining the future of the farm.

Recommendation: That the 65 Ha of irrigable land at Lincoln Downs Farm be retained in KDC ownership for the foreseeable future – even if not all of it is needed for irrigation at present.

While outside the scope of the TOR, the Panel suggests the following with regard to the residual farm area:

- Designate the area of bush at the existing Lincoln Downs Farm into reserve and retain in KDC ownership in perpetuity for recreational purposes; and
- Investigate options for the remaining non-irrigable portion of the farm including selling and long term lease options either as a single block or in separable portions.

8 Funding scenario & investment strategy

8.1 Affordability of current debt

There was a substantial level of concern raised during consultation over the financial sustainability of the current scheme, and if that is not sustainable then any discussions around expansion should be placed on hold. The Advisory Panel requested a response from KDC in regard to this aspect of the scheme, with the following response in green.

The schedule shows that whilst the debt level is currently high overall the figures indicate that the scheme is financially viable, with current debt planned to be paid off by 2055.

Debt Repayment of Existing Scheme

With the Long Term Plan amendment adopted with the Annual Plan for 2013/2014, the attribution of Mangawhai Community Wastewater Scheme (MCWWS) debt was further refined to reflect a move to match the costs of the component parts of the Scheme, between existing and future users and also to reflect the wider community interests.

It was attributed to three groups: the current Mangawhai connected and capable to be connected ratepayers, all ratepayers in the Kaipara district and new Mangawhai ratepayers that connect in the future or as the result of further expansion.

The funding of the repayment of the debt is from targeted rates (capital contribution), general rates and development contributions.

The table below summarises the repayment of the debt for each group and how it is funded. The position at 30 June 2014 is set out as follows:

Attribution of \$58.5 million Mangawhai Community Wastewater Scheme debt to communities

	\$million	\$million	Funding Sources for repayment of debt ^[1]
Existing community (connected and connectable)		12.7^[2]	Targeted rates for the balance of the initial contribution ^[3] together with the capital component of the network charge ^[4] . Refer to the Funding Impact Statement, a source document that forms part of the Long Term Plan for further information.
District-wide ^[5]			
Tranche 1 (balance capital cost)	11.2		
Tranche 2 (prior operating deficits)	7.1		

^[1] And associated interest

^[2] The \$12.7 million has been calculated by taking 70% of the scheme cost as indicated during the consultation period in 2006 less what has been invoiced as capital contributions (or "one-off" targeted rates) which amount to \$13.4 million less subsequent loan repayments.

^[3] To fund the original tranche of \$4.2 million over 30 years

^[4] To fund the original tranche \$9.2 million over 30 years

^[5] The District-wide debt will be progressively reduced over the 10 years of the Long Term Plan 2015/2025.

District-wide Sub-total		18.3	General Rates (part of the UAGC) ^[6] . Refer to the Funding Impact Statement, a source document that forms part of the Long Term Plan for further information.
Current communities Sub-total		31.0	
Development			
Years 1-10	6.1		Development Contributions (\$18,244 for 2014/2015) ^[7] . Refer to the Development Contributions Policy, a source document that forms part of the Long Term Plan for further information.
Years 11 and over	21.4		Development Contributions
Future communities Sub-total		27.5	
Total		58.5	

Summary of MCWWS Debt repayment

	Projected Balance as at (\$ million)				
	2015	2025	2035	2045	2055
Debt attributable (payable) by:					
Current Mangawhai Ratepayers within Scheme Area	12.7	10.2	5.3	0.0	0.0
All Kaipara District Ratepayers	18.0	3.7	2.1	0.0	0.0
New Mangawhai Ratepayers from Future Development	28.1	33.3	36.0	22.9	0.0
Total Debt	58.8	47.2	43.4	22.9	0.0

Amount paid by development contribution and rates by:	Repayments Funded by	Repayment / Movement (\$ million)			
		2016-2025	2026-2035	2036-2045	2046-2055
Current Mangawhai Ratepayers within Scheme Area	Targeted Rates and Development	2.5	4.9	5.3	0.0

	Contributions				
All Kaipara District Ratepayers	General Rates	14.3	1.6	2.1	0.0
New Mangawhai Ratepayers from Future Development	Development Contributions	-5.2	-2.7	13.1	22.9
Total Repayment / Movement		11.6	3.8	20.5	22.9

8.2 Payment principles

The Panel has not sought to define the exact levels of charging that different groups of society should pay as this is a process that fits within KDC's remit and requires consultation. However the Panel is of the view that the following guiding principles should apply to any charging arrangement:

Recommendation: That the following guiding principles to charging for the MCWWS should apply:

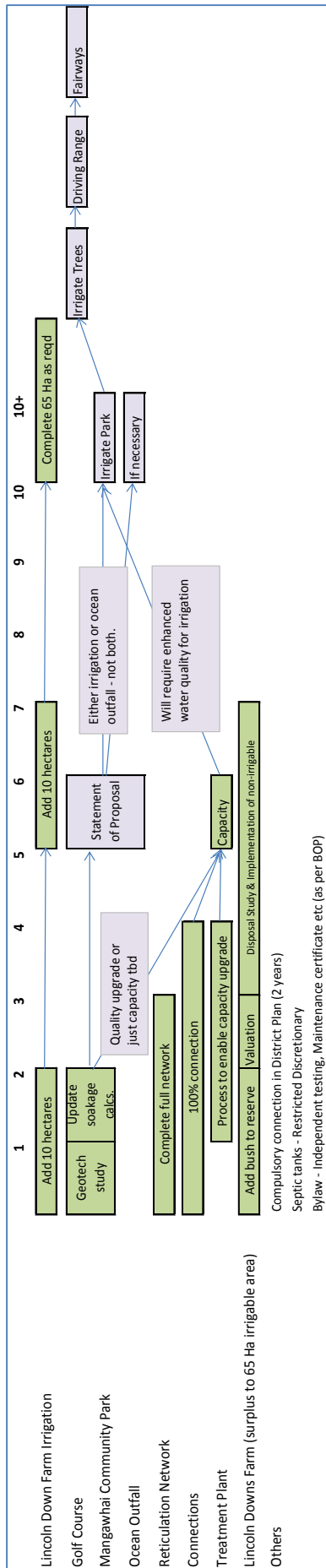
- Any further capital investment in the scheme should be funded solely by the drainage district ratepayers directly benefiting from the scheme;
- Dwellings in existence before 1st July 2006 within the 2009 reticulated area should be charged a rate reflecting the inflation adjusted cost (excluding subsidies) of those who connected in 2006;
- Communal schemes should be incorporated into the MCWWS as soon as practical (upon extension of the reticulation scheme) and pay the appropriate development contribution at the time.
- All other properties to pay the development contribution applicable at the time once they become connectable.

As a general principle the Panel supports a 'user pays principle'. Therefore any discount offered to one or more properties (or groups of properties) will by default result in higher charges to all ratepayers within the MCWWS catchment.

^[6] To fund original tranche \$18.4 million over 30 years

^[7] Development contributions fund \$6.1 million in year 1 to year 10 and a further \$21.4 million after year 11 and capitalised interest

8.3 Investment Strategy



Based on the work of the Advisory Panel, and taking into account the recommendations made throughout this report, the overall strategy to move forward with the MCWWS is as follows.

Short Term: 1-3 years (Cost in the vicinity of \$4m)

- Complete full reticulation network at a cost of approximately \$1.8m
- Put in place all necessary policies, regulations and bylaws to ensure mandatory connection
- Add 10 Ha of irrigation to the Lincoln Downs Farm at a cost of approximately \$1.5m
- Complete the geotechnical study of the Mangawhai Community Park and Mangawhai Golf Club, and update soakage calculations.
- Confirm form of upgrade for the treatment plant on the basis of the viable disposal options (once the above geotechnical study has been completed)
- Move to protect the native bush area on the Lincoln Downs Farm by making it a reserve.

Medium Term: 3-10 years (Cost in the vicinity of \$9-12m)

- Complete capacity upgrade of the treatment plant
- Complete disposal options report for residual area of farm (excluding the 65 Ha of irrigable land) and implement
- Add 10 Ha of irrigation to the Lincoln Downs Farm at a cost of approximately \$1.5m
- Progress Statement of Proposal/consenting etc. for whatever is determined to be the ultimate effluent disposal option.

Long Term: Post 10 Years

- Implement ultimate disposal option
- Expand irrigation to remaining irrigable area of the Lincoln Downs Farm as/when needed.

9 Recommendations and conclusions

The MCWWS Advisory Panel has spent over 6 months understanding the current situation regarding the MCWWS scheme, the challenges and issues going forward, and seeking to understand how the system can best meet the needs and desires of the community. On that basis the following recommendations have been made. For each recommendation, the reference to the section in the report that provides further background on the recommendation is provided.

Table 9-1: Summary of Panel Recommendations to KDC

No.	Recommendation	Report Reference
1.	That KDC proactively seek advice from the community of potential non-connections. This is particularly relevant should KDC exercise its discretionary powers around mandatory connection.	4.1
2.	That KDC review properties where there is the potential that ‘rentable units’ are not paying full fees as per the current KDC policy.	4.1
3.	That all grinder pumps are vested in KDC ownership.	4.2
4.	That all maintenance and repair costs reside with KDC other than for damage caused through misuse.	4.2
5.	That KDC actively engage with NRC to ensure better alignment of processes, objectives and physical outcomes by connection to the MCWWS.	4.8
6.	That KDC make connection to the MCWWS mandatory for all within the MCWWS drainage district – irrespective of the distance from the marine environment or the size of the section.	4.9
7.	That KDC make completion of the reticulation network to enable full connection a high priority, and that properties within 300m of the marine environment are prioritised for connection.	4.9
8.	That KDC make on-site systems a Restricted Discretionary activity within the District Plan or through a by-law.	4.9
9.	That KDC pass a by-law requiring a six-monthly Independent Inspection and Maintenance Certificate for all on-site systems, at the property owner’s cost.	4.9
10.	That KDC develop and implement a Connections Policy by 1 July 2016 consistent with the principles laid out in Section 4.7.	4.9
11.	That KDC confirm the industry norm and, if appropriate, complete a hydraulic model of the system to enable better prediction and management of potential bottlenecks.	5.2
12.	That full reticulation of the MCWWS catchment area is completed within 3 years to enable 100% of properties to fall within the LGA connection criteria (30/60m).	5.5
13.	That prioritisation of extensions to the reticulation lines that permit connection of properties within 300m of the marine environment should occur.	5.5
14.	That alternative uses for the solid waste materials are investigated to see if a cost effective solution with enhanced environmental outcomes could be achieved.	6.5
15.	That KDC commence the capacity upgrade for the plant in a staged manner that aligns to the expansion of the reticulation network and meets the selected disposal option for the treated effluent.	6.6
16.	That KDC undertake a detailed geological assessment of both the Mangawhai Community Park and the golf course, and then update soakage estimates to determine the viability of these long term disposal options. This work to be completed in the next 12 months.	7.5
17.	That, before progressing investigations for disposal of effluent on the golf course, KDC and the Club agree a terms of reference outlining who would be responsible for factors such as installation, maintenance and operating costs; liability for pollution of groundwater; who would operate the scheme; what would be the order of installation of the irrigation etc.	7.5

18.	That further work on both the soakage capacity and a refined costing for Mangawhai Community Park and the Golf Course is required before further consultation occurs.	7.5
19.	That primary disposal for next 5-10 years is through the expansion of irrigation on the existing farm – with a minimum of 5-10 Ha of irrigation added to the farm within 5 years, and potentially 20 Ha (if required)	7.6
20.	That, assuming irrigation is a viable option, the order to install over the following 5-20 years is: <ol style="list-style-type: none"> 1. Mangawhai Community Park (surface trickle irrigation) 2. Trees and similar off-course areas of the Golf Course (surface trickle irrigation) 3. Driving Range of the Golf Course (sub surface irrigation) 4. Fairways of the Golf Course (sub surface irrigation) If irrigation is not viable in conjunction with the farm irrigation, then progress investigations around the Ocean Outfall, acknowledging Iwi objections.	7.6
21.	That the 65 Ha of irrigable land at Lincoln Downs Farm be retained in KDC ownership for the foreseeable future – even if not all of it is needed for irrigation at present.	7.7
22.	That the following guiding principles to the charging for the MCWWS should apply: <ul style="list-style-type: none"> • Any further capital investment in the scheme should be funded solely by the drainage district ratepayers directly benefiting from the scheme; • Dwellings in existence before 1st July 2006 within the 2009 reticulated area should be charged a rate reflecting the inflation adjusted cost (excluding subsidies) of those that who connected in 2006; • Communal schemes should be incorporated into the MCWWS as soon as practical (upon extension of the reticulation scheme) and pay the appropriate development contribution at the time. • All other properties to pay the development contribution applicable at the time once they become connectable. As a general principle the Panel supports a ‘user pays principle’. Therefore any discount offered to one or more properties (or groups of properties) will by default result in higher charges to all ratepayers within the MCWWS catchment.	8.2

To facilitate the implementation and communication of the recommendations within this report, the Panel recommends that KDC appoint an individual to be the primary point of contact for all MCWWS enquiries stemming from this report, and KDC associated activities.

Overall, the MCWWS Advisory Panel has concluded that the process has been a much larger task than originally envisaged. With the level of community input and engagement the Panel considers it a privilege to have spent the time and effort to understand what is a complicated issue. The Panel has endeavoured to deliver an end result that is in the best interests of the community and the harbour environment.

10 Appendices

10.1 Appendix A: Panel members



D'Arcy Quinn (Chair) DBA, Chartered Member IOD

D'Arcy Quinn and wife Heather are now into their sixth year as Mangawhai residents having moved from Eastbourne, Wellington. D'Arcy has held several Chief Executive and senior management positions both in New Zealand and internationally. He is currently a Chartered Member of the Institute of Directors, holding several directorships on private companies.

Belinda Vernon BCom, Chartered Member IOD

Belinda Vernon has been a ratepayer in Mangawhai since 1990. the MRRA she served on its committee in the 1990s and in 2010 consultant in accounting and shipping, director of GNS Science, Maritime New Zealand, Chair of the Auckland Philharmonia former Member of Parliament.



A past member of and 2011. She is a member of Foundation and a



Gordon Hosking PhD

Gordon Hosking is a Forest Health Ecologist and is currently the Operations Manager for the Tindall Foundation's Living Legends Project. He is the Chair of the Mangawhai Tracks Charitable Trust and a Trustee of Project Crimson. Gordon is passionate about the conservation and sustainable use of our native forests and is a dedicated mountain biker.

Darryl Reardon

Darryl Reardon has been a Mangawhai resident and ratepayer current owner of Mangawhai Fishing and Tackle. Darryl is an ex-Auckland/Waikato Fish and Game Council and been a serving years. He has worked in management roles for 35 years of spent within his own businesses.



for six years. He is the Chairman of the Councillor for over 30 which 20 years was



Ian Greenwood PhD (Eng), FIPENZ (Civil), CPEng (NZ)

Dr Ian Greenwood is an international specialist in the field of infrastructure asset management (AM) and performance-based contracting. Ian is a former Chairman of the Business New Zealand Transport Infrastructure Group and was an industry appointment to the Government Task Force on road maintenance. He was the recipient of the Award for Excellence in Asset Management at the 2009 International Public Works Conference.

Peter Wethey BSc Hons (Chemistry), DipMgt

Peter Wethey has extensive experience in both the pulp and paper and meat processing industries and more recently has owned his own business. He has a background of industrial chemistry and has managed resource consent applications for industrial wastewater discharges. He has owned a property at Mangawhai Heads since 2001 and moved there permanently in 2013.



10.2 Appendix B: Terms of Reference of the Panel

Future of MCWWS Advisory Panel: Terms of Reference

Authorising Body	10.2.1.1.1 Council
Status	Advisory Panel
Title	Future of Mangawhai Community Wastewater Scheme (MCWWS) Advisory Panel
Approval Date	
Support	Corporate Planning Manager

Purpose

The prime purpose of the Future of Mangawhai Community Wastewater Scheme (MCWWS) Advisory Panel is to provide a vehicle through which Council can receive a considered preferred option from community input and advice on a range of technical, policy and funding issues related to the future development of the Mangawhai Community Wastewater Scheme especially in regard to reticulation network and disposal capacity.

Background

Council has developed the Mangawhai Community Wastewater Scheme (MCWWS) to service a defined drainage district in the Mangawhai area.

A number of concerns have been raised about the Scheme, its capacity and the process followed to approve construction of the Scheme. A number of the issues relating to the processes followed during the design and construction of the Scheme and its capacity have been considered by the Office of the Auditor-General (OAG) as part of their Inquiry into the Scheme. The High Court has considered the legality of using rates to fund the Scheme.

The Scheme has been built assuming that there will be a sizeable level of growth (approximately a further 2,000 lots) within the drainage district that the Scheme services. The funding model for the Scheme has been developed assuming that this level of growth occurs and will be able to fund its share of the capacity provided in the Scheme.

There is a need for Council to develop a more comprehensive understanding of the Scheme capacity, the level of growth that might currently be expected to occur within the drainage district, the capital works that might be needed over time to ensure that the Scheme is able to meet projected growth and other engineering and funding aspects of the Scheme.

To assist it with this process and also ensure that there is a good level of community understanding and input to the decision-making processes relating to the future development of the MCWWS, Council has chosen to establish a Future of MCWWS Advisory Panel to Council. The Panel will have mixed community/Commissioner membership and will work with Council staff and provide advice to be considered by staff and by Council where appropriate on the future development of the Scheme.

The Panel will report to the Council as they consider all aspects of the Scheme development.

The recommendations of the Advisory Panel will be used by Council to inform its decision-making processes around how to proceed with further development and funding of the Scheme.

Responsibilities

The Future of MCWWS Advisory Panel shall have responsibility for providing consensus recommendations to Council in relation to:

Function	Responsibility
Scheme Capacity and Performance	<ol style="list-style-type: none"> <li data-bbox="475 443 1382 763">1 The overall MCWWS and each of its main components including: <ol style="list-style-type: none"> <li data-bbox="552 510 1331 539">a. the capacity and performance capability of the major components; <li data-bbox="552 568 1358 651">b. the regulatory framework (including resource consents) within which the Scheme is required to operate; <li data-bbox="552 680 1374 763">c. the actual performance of the Scheme and its different components to date. <li data-bbox="475 792 1337 875">2 Strategic issues relating to the future development and operation of the MCWWS. <li data-bbox="475 904 1382 1088">3 The growth projections for the MCWWS drainage district and the implications of such growth for the future development of the Scheme including the capital costs associated with ensuring that the Scheme has the capacity to meet forecast growth. <li data-bbox="475 1117 1382 1800">4 Any proposed expansion of the reticulation network for the Scheme including: <ol style="list-style-type: none"> <li data-bbox="552 1234 1369 1317">a. the potential to increase the number of properties within the drainage district that are connected to the Scheme; <li data-bbox="552 1346 1374 1576">b. the areas within which extension of the Scheme should be progressed, the timeframes within which they should be progressed and how these might relate to possible new development and/or connection of existing properties within the drainage district which are not currently able to connect; <li data-bbox="552 1606 1294 1688">c. the steps, if any, that Council might follow to require additional properties to connect to the Scheme. <li data-bbox="552 1718 1353 1800">d. The ownership/funding of different components of the Scheme from private properties to the main reticulation network
Voice of the Community	<ol style="list-style-type: none"> <li data-bbox="475 1839 1374 1921">5 Provide local knowledge and advice on any community concerns relating to the future development of the MCWWS. <li data-bbox="475 1951 1299 2033">6 Participate in and support community engagement and consultation processes related to the future development of MCWWS.

Function	Responsibility
Scheme Funding Arrangements	7 The Scheme funding model.
	8 Any alternative options for funding the scheme including capital works and Scheme operating costs.

Delegations

The Panel shall not have any specific delegated powers from Council. It is to operate as an Advisory Panel only that through reaching a consensus makes recommendations to the Council.

Membership

The membership of the Future of MCWWS Advisory Panel will comprise:

- Community Member D’Arcy Quinn (Chair)
- Up to six Community Members (yet to be appointed)
- Two Commissioners.

The Community Members will be appointed by the Commissioners and the Chair.

Chair

The Chair is responsible for:

- 1 The efficient functioning of the Panel, including ensuring members have the opportunity to contribute to group discussions;
- 2 Approving the Agenda for meetings in consultation with the responsible General Manager from Council;
- 3 Ensuring that all members of the Panel receive sufficient timely information to enable them to be effective members.
- 4 Presenting the Panel’s recommendations to Council and staff.

The Chair will be the link between the Advisory Panel, Commissioners and Council staff.

Quorum

The quorum at any meeting of the Panel shall be not less than four members including one Commissioner.

Frequency of Meetings

The Panel shall meet as required at times to be agreed with the members.

Relationships with Other Parties

The Chief Executive is responsible for servicing and providing support to the Panel. The Chief Executive appoints the General Manager Operations to provide these functions on his/her behalf.

The Committee has no responsibility or authority to address historical issues such as the issues relating to the historical rating for the scheme.

10.3 Appendix C: Community Consultation Materials

The following are the materials used during the open day and meetings with the various community groups.

Introduction

- Welcome to the Mangawhai Community Wastewater Scheme (MCWWS) Extension Project Open Day.
- A Community Advisory Panel has been engaged by Kaipara District Council to make recommendations on the extension of the MCWWS.

Community Advisory Panel members are as follows:

D'Arcy Quinn (Chair of Panel)

Belinda Vernon

Dr Gordon Hosking

Darryl Reardon

Dr Ian Greenwood

Peter Wethey

- The storyboards displayed today are intended to be informative and to present options for your consideration. You are invited to indicate your opinion or preferred option to the Advisory Panel today or by email via advisorypanel@kaipara.govt.nz

Information can also be found on the Kaipara District Council website:

www.kaipara.govt.nz



Purpose of the Advisory Panel

To provide a vehicle through which Council can receive a considered preferred option from community input and advice on a range of technical, policy and funding issues related to the future development of the MCWWS, especially in regard to the reticulation network and disposal capacity. (Terms of Reference)

About the Advisory Panel

D'Arcy Quinn (Chair)



D'Arcy Quinn and wife Heather are now into their sixth year as Mangawhai residents having moved from Eastbourne, Wellington. D'Arcy has held several Chief Executive and senior management positions both in New Zealand and internationally. He is currently a Chartered Member of the Institute of Directors, holding several directorships on private companies.

Belinda Vernon



Belinda Vernon has been a ratepayer in Mangawhai since 1990. A past member of the MRRA she served on the Committee in the 1990s and in 2010 and 2011. She is a consultant in accounting and shipping, director of GNS Science, member of Maritime New Zealand, Chair of the Auckland Philharmonia Foundation and a former Member of Parliament.

Dr Gordon Hosking



Gordon Hosking is a Forest Health Ecologist and is currently the Operations Manager for the Tindall Foundation's Living Legends Project. He is the Chair of the Mangawhai Tracks Charitable Trust and a Trustee of Project Crimson. Gordon is passionate about the conservation and sustainable use of our native forests and is a dedicated mountain biker.

Darryl Reardon



Darryl Reardon has been a Mangawhai resident and ratepayer for six years. He is the current owner of Mangawhai Fishing and Tackle. Darryl is an ex-Chairman of the Auckland/Waikato Fish and Game Council and been a serving Councillor for over 30 years. He has worked in management roles for 35 years of which 20 years was spent within his own businesses.

Dr Ian Greenwood



Dr Ian Greenwood PhD (Eng), FIPENZ (Civil), CPEng (NZ) is an international specialist in the field of infrastructure asset management (AM) and performance-based contracting. Ian is a former Director of AM for the University of Otago, former Chairman of the Business New Zealand Transport Infrastructure Group and was an industry appointment to the Government Task Force on road maintenance. He was the recipient of the Award for Excellence in Asset Management at the 2009 International Public Works Conference and is both a Fellow of the Institute of Professional Engineers of New Zealand and a Chartered Professional Engineer.

Peter Wethey



Peter Wethey has extensive experience in both the pulp and paper and meat processing industries and more recently has owned his own business. He has a background of industrial chemistry and has managed resource consent applications for industrial wastewater discharges. He has owned a property at Mangawhai Heads since 2001 and moved there permanently in 2013.

Revisiting the Original Objectives of the Scheme

The 2003 Statement of Proposal document outlines the problems that existed with water quality in the Harbour area with a note that:

'The harbour and groundwater is polluted and has been since at least 1976 when the first surveys indicated unacceptable levels of human waste and other pollution sources...Survey results have consistently demonstrated faecal coliform and enterococci levels to be significantly above accepted guidelines...Public health and safety issues from swimming/playing within the estuary environs.'

Concluding with a statement that:

'Doing nothing is no longer a viable option for Mangawhai.'

The 2003 Statement of Proposal further noted that:

'The prime objective of the project is to improve the water quality in the estuary. This will be achieved by eliminating flows from septic tanks and other systems from entering the groundwater and the estuary.'

The original objective along with the desired social outcome of 'improving the well-being of the estuary to allow the Mangawhai community and those other residents and tourists to the area to fully enjoy the environment that makes Mangawhai what it is' are equally valid today in guiding future decisions.



Some Key Facts and Figures about the Scheme

- The Scheme currently has nearly 1,800 connections (February 2015), of which around 20% require the use of a grinder pump to connect into the system.
- A further 500 properties (around 50 have dwellings on them, the remainder are vacant) are adjacent to the existing lines and could be readily connected (termed 'connectable' properties).
- A further 500 properties (just over 300 with dwellings, remainder vacant) will be made 'connectable' as the reticulation network is extended as proposed (refer storyboard #7). This number of properties would increase as large land plots are subdivided during development.
- The average volume of water treated is about 300m³ per day, with a peak daily volume of approximately 1,000m³ per day over the Christmas/New Year period (by comparison an Olympic-sized swimming pool holds 2,500m³).
- Each week a truckload (up to 6 tonnes) of 'dry solids' is extracted at the treatment plant and disposed of safely, leaving a nutrient-rich but otherwise clean water supply to be disposed of.
- The amount paid by the first 1,216 connections to the Scheme was less than half of the actual cost to connect. Even with a central government subsidy at the time, Council undercharged.
- The treatment plant is operating at about 50% capacity however the disposal system (irrigation area) for the treated waste is currently nearing its capacity.
- To maximise use of the treatment plant, disposal capacity must be increased. Doing nothing means the treatment plant will continue to be underused; this is an issue to be addressed.



4505.21/Open Day

The Infrastructure Components of the Scheme

Collection

Raw (untreated) waste is collected from properties within the catchment area. Componentry includes property connections, grinder pumps, pump stations and pipes. Connection to the Scheme can be via a gravity-fed 'private drain' or a pressurised grinder pump connection.

Treatment Plant (at Thelma Road South)



Mangawhai Wastewater Treatment Plant

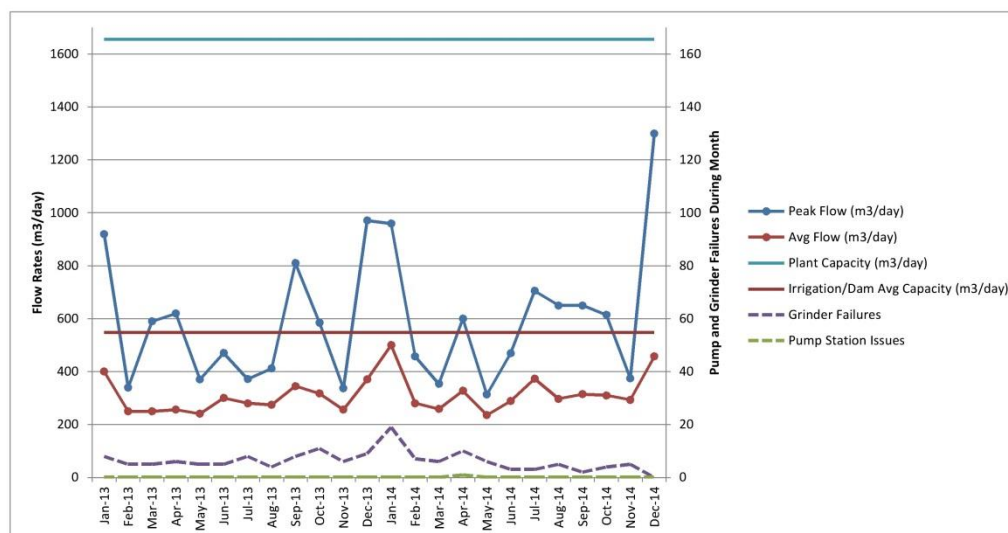
The plant produces a relatively high quality tertiary treated effluent albeit nutrient-rich with nitrogen and phosphorus. The effluent e-coli are typically less than 1 MPN/100mg.

Treatment Disposal

The treatment plant separates the untreated waste into dry solids (which are disposed of in the Purewa Landfill just south of Whangarei) and clean (but nutrient-rich) water. The water is pumped inland to the Council-owned leased, dry stock grazed, Lincoln Downs Farm at Hakaru and used as irrigation.

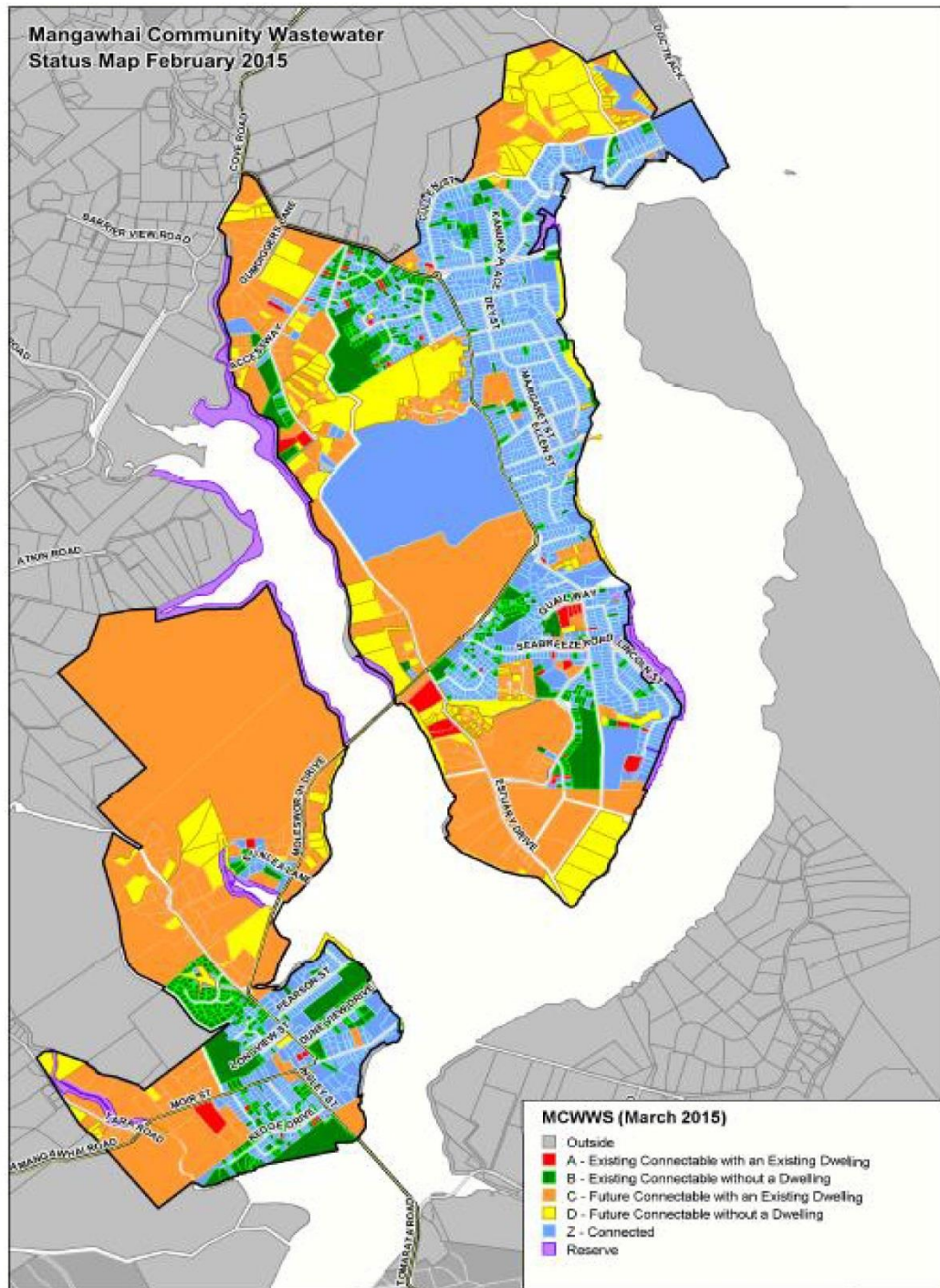
Capacity and Reliability of the Scheme

The 2013 Office of the Auditor-General Inquiry into the Mangawhai Community Wastewater Scheme concluded, 'The sewerage system that has been built is functioning well and has appropriate capacity for growth'. (Summary 6.2)



- Peak flows into the treatment plant are around the 1,000m³ per day range, while the peak capacity of the plant is estimated to be in the order of 1,750m³ per day under the current operating model. Normal plant operating capacity is 1,680m³.
- 25 hectares of the 200 hectare Lincoln Downs farm is currently used for irrigation; there is potential to use 60-65 hectares only for irrigation. At projected growth rates more land (than the Lincoln Downs farm) will be required by 2024 – 2035.

Mangawhai Community Wastewater Scheme Status Map



Note: 18 projects are proposed to include the future 'connectables' over the next 5 years.

Maintenance, what was intended?

The 2007 EcoCare Project Information Booklet outlined:

- That Council would provide one grinder pump per property
- That property owners would pay for maintenance where misuse occurs
- That property owners were responsible for future grinder pump replacement (15 years)
- That property owners would pay for the power consumed by their grinder pump
- That property owners were responsible for decommissioning their septic tanks
- That property owners would pay for grinder pumps for properties within recent subdivisions (2009/2010).

What actually happened?

- Council provided both individual and shared grinder pumps
- Council pays the power for shared grinder pumps
- Property owners pay the power for individual grinder pumps
- Council fixes faults for all grinder pumps
- Council replaces grinder pumps when required
- Council paid for some grinder pumps for properties within recent subdivisions (2009/2010)
- Approximately 20% of connections required a grinder pump (versus 80% gravity)
- Property owners are responsible for decommissioning their septic tanks.

Options going forward

- Council pays the power for shared grinder pumps; or
- Property owners pay the power for individual grinder pumps;
- Council fixes faults for shared grinders; or
- Property owners fix faults for individual grinders.

Property owners are responsible for decommissioning their septic tanks.

Communal Schemes

There are ten subdivisions, three camp ground/parks and one school within the Mangawhai Drainage District that have private/communal schemes. These schemes use a network of pipes and an effluent field. They are not connected to the public scheme.

They have a condition registered on the Title of each property that requires connection once the public wastewater service is available. The condition reads:

Use of the communal effluent disposal system within the subdivision is permitted only until such time as connection to the Mangawhai Community Wastewater Scheme (MCWWS) project is available. At that time all properties will be required to connect to the MCWWS project and must comply with all of the Council's requirements relating to such connection, including the payment of any Development Contribution, connection fee or any other charge.

The subdivisions locations are:

- Back Bay – Molesworth Drive
- Butler Subdivisions – Molesworth Drive/Sailrock Drive
- The Heads Subdivision – Wintle Street
- Moir Point Park – Estuary Drive
- Moir Point Park – Estuary Drive/Devon Street
- Ocean Links – Greenview Drive
- Ewing and Yuretich – Moir Street
- Woodglen Subdivision – Ti Tree Place
- Point Utility – Grove Road

The camp ground/parks are:

- Mangawhai Park – Moir Street
- Mangawhai Beach Hideaway Park – Estuary Drive
- Moirs Point Christian Centre – Estuary Drive/Devon Street

The School is:

- Mangawhai Beach School – Insley Street

Connections Policy

Requirement to Connect

Reasons to favour increasing the number of connections include:

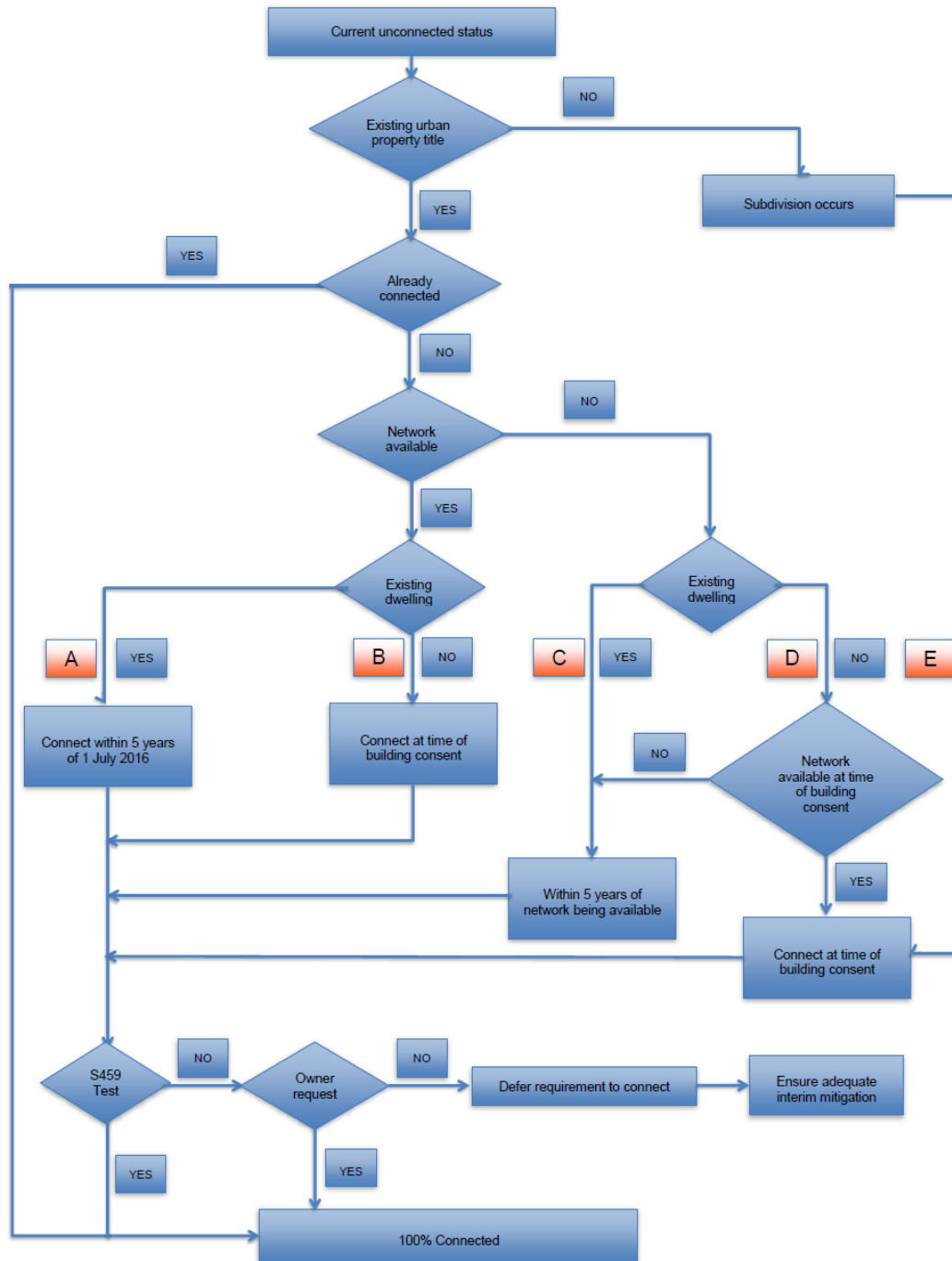
- The original objectives of the Scheme (storyboard #3)
- To meet the demand for growth in Mangawhai

Property Groups with connection potential	
A	Existing connectable properties with an existing dwelling (49 ^[1])
B	Existing connectable properties without a dwelling (443)
C	Future connectable properties with an existing dwelling (325)
D	Future connectable properties without a dwelling (182)
E	New properties created by subdivision or development (Estimate 1,548)
^[1] All rating unit data is at 18 February 2015	

Property Group	Option 1 – Connection optional	Option 2 – Connection mandatory
A		By 2019 or on development or building consent if prior
B		At time of development or building consent
C		Within 5 years of reticulation network extension or on development or building consent if prior
D		At time of development or building consent
E		At time of development or building consent

Connections Policy

Connection Process



Connections Policy

Private Connection Costs and Funding – who should pay for private connections?

- **Option 1 - Full cost** – Requires property owners to carry out and bear all of the on-site costs of private connection.

Potential exceptions to Option 1 could be:

- Group B properties, those that are already connectable but without a dwelling, have the grinder pump (where applicable) funded by the Council^[1];
 - Group C properties, with a dwelling but not yet connectable, where the building was constructed before calendar year 2009, have the grinder pump (where applicable) funded by the Council^[2].
- **Option 2 - Partial assistance** – Require property owners to fund limited private connection costs for gravity system private drains (including decommissioning where required) with Council bearing the additional costs of grinder pumps in pressure wastewater systems with recovery through a uniform targeted rate, operating rate or through the Development Contribution.
 - **Option 3 - Full up-front Council funding** - Council to carry out and bear all private connection costs with recovery through a uniform targeted rate, operating rate or through the Development Contribution.

^[1] Intended to encourage connection as development/building takes place.

^[2] There was an expectation prior to 2009 that the network would be extended to existing properties with dwellings and that the costs of private connection would be met by Council as part of the costs of the MCWWS.

Group	A	B	C	D	E
Option 1 – Full private cost	All full private cost minus grinder pump if required		After calendar 2009 - Full cost including grinder pump. Grinder pump to vest in Council	Full cost including grinder pump. Grinder pump to vest in Council	Full cost including grinder pump. Grinder pump to vest in Council
Option 2 – Partial assistance		Grinder pump funded by Council	Before calendar 2009 - Grinder pump funded by Council		
Option 3 – Full Council funding					

See 'Glossary' storyboard #20

See 'Indicative Costs to Individuals' storyboard #18

Connections Policy

Operation and Maintenance of Private Connections – who should be responsible?

Situation Types	
Situation X	Single dwelling private drain directly between the dwelling and the public drain; or
Situation Y	Multiple dwelling common private drain serving a number of dwellings/premises and connecting the public drain; or
Situation Z	Cross property private or common private drain, with the drain crossing other properties to reach the public drain.

- **Option 1 – Full private responsibility** - Property owner/s to provide, own, operate and maintain private drains

Potential refinement to Option 1 could be:

- in simple single dwelling gravity Situation X and in multiple dwelling gravity Situation Y;
- for electricity costs only in Situation X single dwellings on pressure systems with their own grinder pumps. This will apply to all property groups A, B, C, D and E (Other options will apply to the maintenance and replacement costs in this Situation X – See below);
- **Option 2 – Council provision and private responsibility** – Council provides private drains – property owner/s operate and maintain private drains.
- **Option 3 – Private provision and Council responsibility** - Property owner/s provide private drains – Council takes over and declares these as public drains under Section 462 of the Act, and operates and maintains them.

Potential refinement to Option 3 could be:

- for property groups D and E in Situation X single dwellings on pressure systems. The preferred option in Part 2 is for these property groups to fund their own private connection costs in full (including grinder pumps). However, the pumps would be taken over by the Council and become its responsibility to maintain.
- for all property groups A to E in Situation Z where gravity system private or common drains cross other properties. The intention in Part 2 is that all private connection gravity systems will be privately provided. However, where these cross other properties, the intention in Option 3 is that Council takes responsibility for these systems, declares them as public drains and maintains them on an ongoing basis.

Operation and Maintenance of Private Connections (continued)

- **Option 4 – Full Council responsibility** - Council to provide, own, operate and maintain private drains and declares these as public drains under Section 462 of the Act.

Potential refinement to Option 4 could be:

- is favoured in any situation involving a pressure system, with the exception the owners of property groups D and E in Situation X single dwelling pressure systems, will provide the private connection. The Council will then take full responsibility for the maintenance of all pressure systems in Mangawhai including replacement of property group D and E grinder pumps when this becomes necessary.

Options	Option 1 – Full private responsibility	Option 2 – Council provision/ private responsibility	Option 3 – Private provision/ Council responsibility	Option 4 – Full Council responsibility
Situation X – Single dwelling (Gravity)	All full private costs to be met by owner			
Situation X – Single dwelling (Pressure)	Electricity costs only A, B, C, D, E		Groups D, E	Groups A, B, C and replacement D, E
Situation Y – Multiple dwelling – common private drain (Gravity)	A, B, C, D, E			
Situation Y – Multiple dwelling – common private drain (Pressure)				A, B, C, D, E
Situation Z – Cross property common or private drain (Gravity)			A, B, C, D, E	
Situation Z – Cross property common or private drain (Pressure)				A, B, C, D, E

Note: Electricity costs:

- Full private responsibility for costs in Situation X
- Council responsibility in Situations Y and Z

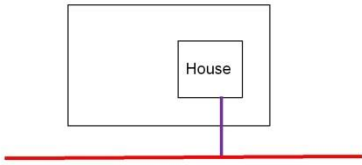
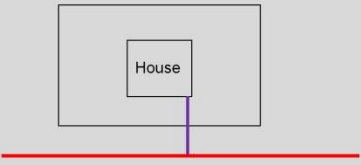
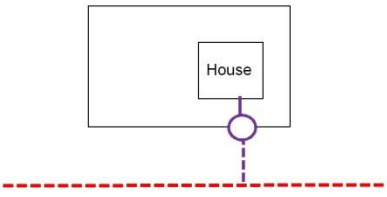
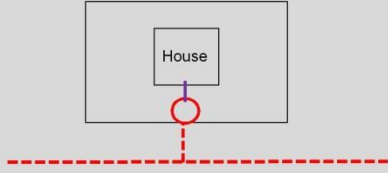
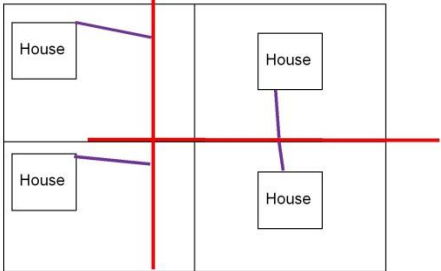
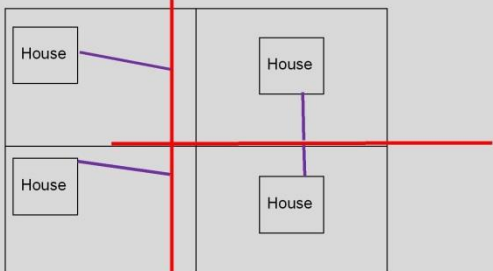
Connection and Maintenance Examples

(Illustrative examples only – subject to confirmation and not exhaustive)

Listed are scenarios relating to possible private and public cost arrangements

Legend

Public gravity line	Council cost		Private pressure line	Private cost	
Private gravity line	Private cost		Public pump	Council cost	
Public pressure line	Council cost		Private pump	Private cost	

Connection	Maintenance
<ul style="list-style-type: none"> Situation X – Single dwelling (Gravity) <ul style="list-style-type: none"> Property owner pays for the connection 	<ul style="list-style-type: none"> Situation X – Single dwelling (Gravity) <ul style="list-style-type: none"> Property owner pays for the maintenance 
<ul style="list-style-type: none"> Situation X – Single dwelling (Pressure) <ul style="list-style-type: none"> Property owner pays for the connection including grinder pump and the line 	<ul style="list-style-type: none"> Situation X – Single dwelling (Pressure) <ul style="list-style-type: none"> Council maintains the line to the grinder pump and the grinder pump itself Property owner pays for electricity and maintains from grinder pump to house 
<ul style="list-style-type: none"> Situation Z – Cross Property (Gravity) <ul style="list-style-type: none"> Council pays for the lines that crosses through properties Owners pays from Council line to house 	<ul style="list-style-type: none"> Situation Z – Cross Property (Gravity) <ul style="list-style-type: none"> Council maintains the lines that crosses through properties Property owners maintain from Council line to house 

Future Disposal Options Considered

The Advisory Panel looked at a range of disposal options including discharge to the Estuary and Hakaru River. These options were discarded based on low social acceptability, negative impact on these water systems plus, albeit low, a risk of pollution. The following options were selected for further consideration and evaluation:

Option 1 (Default)

- Continued irrigation to Lincoln Downs, increasing to match growth in connections
- More intensive land use to increase demand for water

Option 2

- Ocean outfall using current discharge standards
- Decommission and sell Lincoln Downs Farm
- Resource Consent will need to be obtained
- Assumed farm resale value \$2.5 million
- Approximate cost relative to Option 1 (Default)
 - Capital expenditure – higher
 - Annual operating cost – lower

Option 3

- Outfall to Estuary on outgoing tide with higher quality discharge standards
- Decommission and sell Lincoln Downs Farm
- Will need higher than current discharge standards
- Resource Consent will need to be obtained
- Assumed farm resale value \$2.5 million
- Approximate costs relative to Option 1 (Default)
 - Capital expenditure – lower
 - Annual operating cost – lower

Option 4

- Irrigation to the Mangawhai Golf Course
- Modification of the wetlands on the golf course and potential irrigation of fairways
- Decommission and sell Lincoln Downs Farm
- Approximate costs relative to Option 1 (Default)
 - Capital expenditure – lower
 - Annual operating cost – lower

Key Financial and Funding Assumptions

Growth

- All existing houses will be connected within 5 years of reticulation network extension.
- New dwellings to increase by 68 per annum.

Disposal Options

- Two of the four options were chosen to give a “least” cost (\$1.5 - \$2 million net) and a “most” cost (\$5 - \$6 million) option for illustrative purposes.
- Work completed over two years with sale of farm in the following year.
- The cost of the options are ‘high level’ preliminary estimates and will be refined via feasibility studies.

Reticulation Network Extension

- The network will be extended.
- 18 projects to be undertaken over 2015 to 2018 to extend the existing reticulation network.
- Estimated cost to be \$3.0 - \$3.5 million.

Distribution of Debt – which group of ratepayers bears the cost?

- Original \$58 million debt attributed to existing communities (connected and connectable - \$13.4 million and district-wide \$18.4 million) and future communities (development \$26.2 million) in accordance with the current KDC Long Term Plan.

Other

- Other assumptions as per KDC’s Consultation Document 2015/2025.

Indicative Costs to Individuals

Based on preliminary financial estimates, indicative costs could be an initial Development Contribution or Targeted Rate PLUS privately funded connection costs as set out in the table below and annual operating costs as they come on-stream.

(NB: only one payment option would apply for the Development Contribution or Targeted Rate)

Property Group	Description	Development Contribution (DC) or Targeted Rate (TR)	Private Connection Costs
	Already connected	Nothing further - this group has paid either a DC or a TR in full or are currently paying a TR Annual costs apply <ul style="list-style-type: none"> • Network charges • TR for balance of debt¹ 	N/A
A	Already connectable - existing dwelling	Nothing further - this group has paid either a DC or a TR in full or are currently paying a TR Annual costs apply <ul style="list-style-type: none"> • Network charges • TR for balance of debt¹ 	Decommission costs \$500 - \$1,000 Connection costs \$3,100- \$3,600
B	Already connectable - no dwelling	Nothing further - this group has paid either a DC or a TR in full or are currently paying a TR Annual costs apply <ul style="list-style-type: none"> • Network charges • TR for balance of debt¹ 	Connection costs \$3,100- \$3,600
C	Future connectable - existing dwelling	Options range from \$10,760 to \$25,718 including GST Payable over 5 years - \$3,228 to \$6,709 per annum (pa), or Payable over 10 years - \$1,638 to \$3,916 pa, or Payable over 15 years - \$1,263 to \$3,019 pa Annual costs will apply once the service is available <ul style="list-style-type: none"> • Network charges • TR for balance of debt¹ 	Decommission costs \$500 - \$1,000 Connection costs \$3,100- \$3,600 Grinder pump ² \$7,600 maximum if before December 2009
D	Future connectable – no dwelling	Options range from \$23,567 to \$25,718 including GST Payable over 5 years - \$6,377 to \$6,709 pa, or Payable over 10 years - \$3,236 to \$3,916 pa, or Payable over 15 years - \$2,495 to \$3,019 pa Annual operating costs will apply once the service is available	Connection costs \$3,100- \$3,600 Grinder pump ² \$7,600 maximum
E	New - created by subdivision or development	Options range from \$23,567 to \$25,718 including GST Payable at the time of subdivision Annual operating costs will apply once the service is available	Connection costs \$3,100- \$3,600 Grinder pump ² \$7,600 maximum

¹ Unless full Development Contribution paid.

² Not all properties will require a grinder pump and sharing facilities will reduce the 'per unit' cost.

Have Your Say

- Question 1** **Requirement to connect –**
‘Should connection be optional or mandatory?’
- Question 2** **Private connection costs and funding –**
‘Do you favour Option 1, 2 or 3?’
- Question 3** **Operation and maintenance of private connections –**
‘Do you favour Option 1, 2, 3 or 4?’
- Question 4** **Future Disposal options –**
‘Do you favour Option 1, 2, 3 or 4?’

GLOSSARY

Below are some commonly used Council terms:

Annual Operating Charge - the charge to operate and maintain the Scheme on a day to day basis.

Capital Contribution - a property's financial contribution towards the cost to build the Scheme.

Common Drain/line - a line that crosses through and services up to 5 properties.

Connectable - a property that is within 30 metres of the public wastewater line.

Connected - a property that is physically connected to the Scheme.

Connection - the physical connecting of a building to the wastewater service.

Catchment Area/Drainage District - a defined area used for rating purposes.

Decommission - the removal or filling in of a septic tank or the disestablishment of an effluent field.

Development Contribution - A revenue contribution from property developers to cover the cost of servicing growth resulting from development activity.

Dwelling - Any building, part of a building or group of buildings used or intended to be used principally for residential purposes and occupied or intended to be occupied by not more than one household and includes a minor household unit, a utility building or any unit of commercial accommodation.

Existing Network - the area where the wastewater service is currently available.

Gravity System - Made up of 100-150mm diameter sized pipes that use gravity to transport wastewater. Gravity systems have connection points or stubs at the property boundary.

Grinder Pump - a pump that macerates solids within a flow.

KDC - Kaipara District Council.

MPN – (most probable number) of the e-coli count.

Original Area of Works - consists of approximately 1,200 properties mainly within the older Mangawhai urban area.

Pressure System - Made up of 40-50mm diameter sized pipes with pumps that push wastewater through the system. Pressure systems require boundary kits and infusion welding to cut into the line.

Private Drain/line - where the line or drain enters private property begins at the property boundary and enters into the building.

Public Drain/line - the line within a road or reserve area.

Reticulation - the technical components that make up the wastewater scheme – (lines or drains, grinder pumps, boundary kits, connection points or stubs, pump stations and treatment plant.

Subsidised Targeted Rate - those that received a central government subsidy and who Council connected.

Targeted Rate - A rate that is charged only to members of particular communities or groups of ratepayers that benefit from the activity being funded by the rate.

Vacant - a section with no building.

10.4 Appendix D: Summary of Community Consultation

10.4.1 Comments from Submitters

The following are a selection of comments from submitters that reflect the range of feedback received. As there were a number of submitters that used the template response prepared by Christian Simon, this has been included in full.

- Every dwelling, business premises, school or whatever should be immediately connected. This was one of the most basic, fundamental premises of the original scheme.
- Everyone within the current ‘connection’ area should be connected now, that is what was “signed up”. If through circumstance they cannot pay the full amount, then extended payment is ok.
- Every new property should be connected on ‘consent’. New subdivisions should have complying system to each and every site.
- What is the point of having a public scheme if you don’t have to connect – weird?
- Optional schemes don’t work and would put more burden on those connected up already. Optional schemes cannot be regulated or quantified performing to specification
- If the KDC is serious about harbour water quality then all properties that are in the proximity to the harbour edge – say 0.5km should be connected regardless of the supposed effectiveness of the current systems. There has been/is no monitoring of private systems and most of them should never have been allowed in the context of the plans for a treatment plant.
- If the council sewer pipe runs past a property then it should be mandatory that people connect to it. If the council sewer pipe runs near a number of properties within a reasonable distance then council should install a main pipe at council expense to connect these properties.
- The Open Day was very informative. Thank you for your contribution to the community.
- Until all legal actions for and against the council and any other parties must be resolved before any attempts are made to change or modify the present scheme.
- All properties, whether built on or vacant, should pay development costs for the scheme. Requirement to connect also mandatory, but obviously vacant sections at the time of building consent.
- Consider treatment options so water can be used for public toilet tanks, industry users, boat wash down etc.
- An unenviable task, but thank you for taking on the job. Keep everyone informed in as many ways as possible, but go ahead and make considered recommendations anyway. You have the information and knowledge to make decisions for the community – most people just decide what is best for themselves.

10.4.2 Submission from John Dickie

The following is an abridged form of a submission from John Dickie.

Submission to Mangawhai Community Wastewater Scheme (MCWWS - “Ecocare”) Community Advisory Panel (“Advisory Panel”) by John Dickie – Abridged Version.

Submission to Mangawhai Community Wastewater Scheme (MCWWS - “Ecocare”) Community Advisory Panel (“Advisory Panel”) by John Dickie – Abridged Version.

Context

- My property was connected to the Ecocare Scheme and paid both the full initial connection charge and on-going usage fees.
- I have an initial civil engineering degree, 40+ years international experience in many aspects of environmental management and planning (developing from an initial focus on water quality and wastewater treatment) and extensive public consultation.

- I have a long history of involvement with and interest in the Ecocare scheme; admittedly mostly in opposition to many aspects, and as part of a volunteer environmental programme I undertake at the Mangawhai Beach Primary school I have used the treatment plant for a field trip.

The Ecocare scheme

As I have long argued, the scheme is a combination of technical, social, financial and administrative factors. From various sources and my own observations and investigations my understanding is that:

- the household grinder pump systems have largely been upgraded from those initially installed and are mostly working satisfactorily
- there are some serious doubts as to the suitability of the gravity pipe system, both within households as constructed under the Ecocare contract and also the public / roadside systems.
- I have no comments about intermediate pumping stations and associated rising mains.
- The main treatment plant is well designed and operated, and has capacity for additional load.
- I am unaware of the quality or capacity of the main pumping and rising main to the “disposal farm”
- The disposal farm is not fit for purpose, its then intended suitability to graze milking dairy cattle on effluent fed pastures was never achieved, though there is reasonable management of the farm at present given its inherent physical limitations.
- Hydraulic loading of the system is discussed, but left unsaid is that the system is fed by almost entirely individual household rainwater collection system. This results in low per capita volume of effluent; should there every be a substantial reticulated freshwater supply all current assumptions about hydraulic capacity would be inappropriate.
- I have some reservations about the numbers of connections and connectable properties; especially as I understand Council still has not caught up accurately with how many places have rentable units that should, under present policy, be charged more than a “single connection” fee / annual charge. I also understand that in spite of policy, there are continuing exemptions given to the need to connect in accordance with policy if that policy is challenged hard enough on an individual basis.

Options for long term disposal of effluent

Taking them one by one:

1. Continued disposal to Lincoln Downs. An interim “complete” solution only, so not really a default. However, could be portion of an integrated disposal system.
2. Ocean Outfall. No costs given in publicly available information, but stated to be well in excess of \$20 million when I asked about same. This would have to be what we used to term a “straw man”, i.e. presented to give the appearance of an option, but so unrealistic (in this case wrt cost) as to be highly improbable.
3. Disposal to lower estuary on outgoing tide (incidentally, the option I have suggested for many years). Yes, but not by itself as the only component of disposal. Unfortunately the Advisory Panel added that nutrient stripping would be necessary and hence it might be hard to backtrack from that. My initial opinion is that nutrient stripping may not necessarily have to occur, as the available dilution on an outgoing tide is likely to be in excess of 100:1 and re-entry into the estuary on the ingoing tide is likely to be minimal.
4. Discharge to golf course. This option has some merits, is an effective reuse of the effluent at certain times, but there are so many queries that it could not be given absolute support at this stage.

Given my current experience and knowledge my suggested course of action for disposal of the treated effluent would be:

- Short term, continued use of the existing farm, and gradual introduction of partial effluent disposal at the golf course and possible other users.
- Medium term, increasing use of effluent disposal at Golf Course
- Long term, probable abandonment of disposal at existing farm (or maintained for emergency back up), prime disposal to golf course (and possible other users) and back up disposal of treated (but not nutrient stripped) effluent to estuary near campground or further downstream on outgoing tide during low probability wet weather and / or wet seasons.

In summary, more pre-feasibility engineering, social and environmental required before the options can be reasonably floated to the public for sensible consideration.

Debt and Repayment

The “original debt” is stated to be \$58 million. There are circulating claims in the community that the real debt related to Ecocare (including internal loans) exceeds this. A clear statement of current debt and how this is to be paid off over time is needed before committing to further debt.

Connections – timing and charges

Requirement to connect - Optional or mandatory (Question 1)

- There should be mandatory charges to all properties within the declared sewerage district associated with the ability to connect. This should be tied rationally to the cost of servicing the capital cost of the whole system.
- I see no reason (other than political) for proposing a 5 year grace period for payment of the charges.
- Perhaps there is an argument that actual connection is optional, whereby the landholder pays the capital charge component (including district-wide charge) but does not pay the charge necessary for day to day operation of the system? However, should there an alternative system installed by the owner to service sewage (grey and blackwater) requirements it should be necessary for such a system to be as approved by Council, and if necessary regular inspections to ensure it was properly functional.

Private connection costs and funding? (Question 2)

- Gravity private connections should be arranged and costs borne entirely by the property owners by registered drain layers.
- I reserve comment on the grinder pump situation, as the situation is a lot more complicated in that a higher cost of connection, need is predicated by the actual Council-controlled system. There are also arguments for (e.g. commonality) and against (restrictive trade) having the grinder pumps installed by Council or arranged privately.

Operation and maintenance of private connections (Question 3)

- Q3 must link back to Q2 as would be inappropriate for Council to take responsibility for drains installed by a property owner, and vice versa; with different considerations for grinder pumps, and for various situations of single property owner drain, vs multiple property owner drain vs developer installed drains.

10.4.3 Submission from the MRRA

The following is the submission to the Advisory Panel by the Mangawhai Residents and Ratepayers Association.

Response to Mangawhai Community Wastewater Scheme Advisory Panel.

A number of questions were raised by MRRA members at its briefing. Members of the Panel undertook to get answers to those questions. None has been received.

A specific concern was raised in connection with the proposal to add Riverside Camp Ground to the system. The Riverside Board approved funding to run a line along Insley Street and across the causeway, along Black Swamp Road, following a path through public reserve land. This line was to be laid with no strings attached, so it could have been used to connect properties that lay along its path, and it could easily have been extended further down Black Swamp Road to facilitate connection of a large number of properties down there, including the property of the Panel Chair, Mr Quin.

But it was brought to our attention and to the attention of Gordon Hosking that for some undisclosed reason the council had changed its mind and now wants to thrust a high pressure line under the estuary. It

is difficult, not to say preposterous, to reconcile this change of stance with what the panel claims is the goal of the entire system:- purity of the estuary water!

There were other questions raised that need to be answered before anyone can make any kind of informed judgment on the hotch-potch of randomly conjured ideas that have been thrown up.

The following document has been reviewed, to the extent possible in the ridiculously short time available, by the executive committee of the Mangawhai Ratepayers and Residents Association. It may be considered as having been signed off by the Executive of the Association.

Residents outside Mangawhai also have an interest in this matter, but they have been neither consulted nor informed.

Any proposal to extend the wastewater scheme at Mangawhai will directly affect all Kaipara residents and ratepayers, because it is clear from the draft long term plan that a substantial portion of the cost (14% of the general rate BEFORE this proposal gets under way) will be landed on them.

In itself this is a major departure from the situation repeatedly argued for by the Commissioners whereby those deriving benefit from an infrastructural project are required to meet its cost. The funding system was broken on completion of the initial Mangawhai project in that a significant portion of the cost has been lumped onto the wider district, despite all kinds of assertions by both the elected council and the Commissioners that the Mangawhai debt would be “segmented” or “ring-fenced”. It seems that in the event of extension of the scheme the situation will worsen considerably.

In looking at the feedback form it is unavoidable to conclude that a decision to extend the scheme has already been made, and the questions relate only to what form it will take and how it should be funded.

Before any further action is taken there are several questions that need to be answered:

- 1 Why is extension of the existing scheme considered necessary?
- 2 What alternatives are possible?
- 3 What would be the comparative (relative) costs?
- 4 Why is the existing system so short of what was (over)paid for?
- 5 Why isn't the wider district being awakened to the prospect of yet more debt being foisted on them?
- 6 What happens to the existing \$26.2m debt now that it cannot be extinguished by future development contributions?

One would have thought that a prime objective of the panel would be to answer these questions before embarking on a PR campaign to sneak past the Kaipara community in such a rush that feedback is only allowed within a ridiculously short time frame (less than a week).

It must be recognised that the planning and installation of the whole scheme (together with Modification 1) was unlawful (as so declared by the High Court) and there is little chance that the public will be bulldozed into accepting the word of a non-statutory panel along the lines that 'all will be well'.

This whole matter is one that must be discussed openly with the whole district under the proper (s97) consultation requirements of the LGA.

You have asked 'What does the public want?' Well, the public wants to see all the basic questions answered before any decision at all is made to perpetuate the on-going mis-spending that has been a feature of Kaipara's governance for many years, and to the present day.

The MRRRA has many questions/issues that we believe need to be addressed before any sensible answers can be provided to the specific questions posed by the MCWWS Advisory Panel. We also believe that the process being undertaken by the Advisory Panel, and the timelines that have only just been disclosed to us, (ie 4 days' notice) were inadequate (The handout we received on Thursday 2nd April did NOT have any submission closing date information nor were those of our members present at the meeting informed. It was only by chance that we found at midday, Tuesday 7th April that submissions closed 5pm Friday 10th April).

This does not constitute public consultation as required by the Local Government Act 2002. Consultation is a statutory process by which a fully informed community can make a rational decision. The Association does not and will not accept that any kind of consultation process has been undertaken, and all that has occurred so far is a marketing exercise by a hand-picked team, schooled in the “Trust us, we know what we are doing” dogma, to peddle the views of some unseen agency or agencies who have an undisclosed agenda.

The issues described below all impact on the decision(s) that the Mangawhai Community would make and the Advisory Panel have not provided answers or reports addressing them.

To cite one very simple example of the impossibility/absurdity of answering the questions with the information provided from the Advisory Panel, re- your question 1 ‘Should connection be compulsory?’ The question is framed in terms of the existing reticulated scheme and the information boards provided nothing about alternative treatment schemes. How can one properly answer the binary yes/no question when there are actually other options that have not been investigated or information provided?

The process that the Advisory Panel is currently undertaking, ie the Community Open Day, IS NOT a formal consultation process, but rather just a list of poorly informed questions. We would like to know what the formal consultation process is going to be, when will a Project Proposal be issued, when will submissions be called, what discussion process is proposed?

- Terms of Reference

“The Advisory panel purpose is to provide a vehicle through which Council can receive a considered preferred option from community input and advice on a range of technical, policy and funding issues related to the future development of the MCWWS, especially in regard to the reticulation network and disposal capacity.”

We have been told that the reference to ‘Future development’, precludes any consideration of issues/matters pertaining to the history or development of the MCWWS before 2014.

This makes an absolute mockery of any scientific or systematic decision making process for what is a complex system and for which important and long-term decisions need to be made. It is not necessary to re-litigate the entire 400 page document from the OAG, but it is necessary to pay attention to a number of the matters raised in the detailed section of the report that paint quite a different picture from the bland, politically motivated statement in the Summary (6.2) ‘The sewerage system that has been built is functioning well and has appropriate capacity for growth’.

- *16.108 The Project Deed provided KDC with some tools that it could use to control what was built and how it was built. As we set out above, it is not clear that it used the tools it had. It appears that EarthTech did not build what was specified in the Project Plan in the Project Deed. The Project Deed required the scheme to be developed and operated in accordance with the Project Plan. Changes could be made to the Project Plan with the consent of the Council. However, we cannot establish the process for making those modifications and whether they were formally or informally authorised. KDC had little, if any, control over the modifications and their cost consequences.*
- *NZ Standards not complied with:*
 - *16.16 The Project Deed required the construction to be carried out in accordance with the relevant New Zealand standards, among other things. However, it appears that at least one aspect of the scheme has not been constructed in accordance with the New Zealand standards.*
 - *16.17 EPS told us that the New Zealand standards were guidelines only. They also told us that the modern “Modified Conventional Sewer Reticulation Design” used by EarthTech provided significant cost savings to KDC and is a very common practice in Australia and New Zealand.*
- *Disagreements between OAG engineers and the project engineers*
 - *19.24 EPS told us that the system incorporates a modern approach involving sustainable (long-term) land use where nutrient levels are maintained at appropriate levels. It told us*

that the views of our engineers were based on outdated systems that are not considered best practice and that pose unacceptable risks.

- *Discrepancies in facts between The Advisory Panel data given to the community and the OAG report viz the actual area already being irrigated.*
 - *The initial area irrigated was 25 hectares. In February 2012, this was increased by five hectares. KDC considers that this is likely to still not be enough, and EarthTech is to assess whether more land needs to be added.*
- *When will the existing farm capacity be reached? Variable figures and metrics are all mixed together making sensible predictions impossible. ‘Capacity will be reached at 3000 connections likely to be reached in 2018/19. Total farm capacity is 200,000 cubic metres per year, 2014 average wastewater already at 109,500 cubic metres per year.*
- *OAG comment on disposal.*
 - *19.42 As we set out in Part 10, when developing a wastewater scheme, it is usual to identify the disposal site first because this determines the design of the treatment plant and other aspects of the scheme. It also plays a significant role in determining the costs of the scheme. By leaving the identification of the disposal site to very late in the project, KDC limited its ability to find a suitable site. As a result, it ended up with a site that is not ideal and will not be adequate for significant growth of the scheme.*

These are just a quick sample of the many unanswered questions behind the OAG report and illustrate why detailed reports need to be undertaken and shared openly with the Community, so that the Community is able to understand the current situation as a pre-requisite to making its future preferences known to KDC. These OAG comments also highlight the need for accurate and detailed information on any of the alternatives/options described by the Advisory Panel.

- Disposal

Options 2 & 3 (Ocean and Estuary disposal) on future disposal proposals are likely to be turned down by the Community by instinct against potential pollution of the environment, however it would be good to provide some scientific basis for them even being included in the list of options. Option 4 (Mangawhai Golf Course and adjacent areas) is shown without any supporting information as to its capacity, the willingness of the Golf Club and surrounding residents, and the environmental impact(s) (if any).

- Requirement to connect.

The reasons advanced for the requirement to connect are 2 fold:

- Original objectives of the scheme (it is apparently OK to look back when it suits!)
 - Water quality or improving the well-being of the Estuary

The data about the water quality in the Estuary is very sparse and it is not even proven that the source of bacterial contamination is connected with human waste. It would seem, that the major source of coliform pollution in the estuary is and always has been of animal origin, mostly from dairying on the harbour margins. The spike in poor quality in December, just ahead of the holiday season has been attributed to the latter, but the data seems to have disappeared from public view.

Don't we need something better than an aspirational objective on which to decide to invest yet more money?

We also need to consider if a reticulated scheme does offer advantages over alternative waste management solutions. For example, is there a risk management plan in the event of a rupture of a pressurized small bore main, or of the big bore gravity sewer? Are there automatic isolation valves in place? What is the cost and efficiency of modern On-Site-Systems? Available evidence suggests that such systems could be deployed for a small fraction of the cost of adding new connections to the existing reticulated system, and that long term it would be vastly cheaper to migrate all connected users back to standalone or clustered on-site systems.

- Growth of Mangawhai
 - A quick study of the data provided by the Panel shows that almost all of connectable properties with dwellings are already connected; just 49 remain while 443 don't have a dwelling. What data do we have on the likely 5 year intentions of these owners?
 - On the other hand it is clear that the only human harbour polluters that exist are the 325 dwellings that could be connected, if more money was spent. What is the net cost to the community of connecting those 325 dwellings? Does that sum make sense?
 - Almost all of the future growth lies in new properties many of which are not even fine lines on a developer's sub division map. For these properties, alternative waste management options make far more economic sense, in respect to capital and on-going running costs.

- Summary

The question of whether or not connection should be compulsory needs a lot more detailed data than provided by the Advisory Panel. We note that the Panel does not define the terms Development or Building consent. Development could well be a much earlier phase and its definition might well impact on elements such as Development Contributions. Such loose use of important terms adversely impacts the quality of the responses from the Community.

None of the options presented for consideration can be said to be preferable over any of the others. Not enough work has been done to identify the relative costs, benefits, risks, or complexities.

- Connection and Maintenance
 - The decision to involve grinder pumps in the MCWWS was made by the Council and the scheme developers/proposers back in 2002. There has been a substantial inequality visited upon the properties with grinder pumps. Pumps come with a 15 year expected life-span plus running costs and maintenance) versus gravity sewers with a life expectation of a 100 years or more (and zero maintenance costs) . The travesty has been further embellished with the minority of "shared-grinder pumps" where uneven use of the facility, and/or damage, and/or relocation requirements for property development opportunities are not accounted for and thus unjust. This small but important sub-set of MCWWS users is completely overlooked by the Advisory Panel on page 15 of their consultation document. It is therefore appropriate to recommend that the entire maintenance issue be a Council cost for all grinder pumps installed up to 2009, and it may be appropriate that properties with grinder pumps installed since then are also given Council funded maintenance and possibly a refund of the capital cost, unless the Council can demonstrate that the property title was appropriately annotated prior to the purchase on the title. How else could a buyer ascertain that a specific site had a specific wastewater liability? The OAG report at sections 16.59 – 16.63 detail many of the above issues.
 - The remaining gravity serviced properties should be likewise either be Council funded where the Council failed to annotate the titles, or owner funded where the purchaser was able to see a liability prior to purchase. The OAG report at section 16.64 – 16.71 addresses the many issues with Common and Public drains. These are legal issues and NOT matters for the Community to be making recommendation about. The Community's views on the Council sorting out all the existing missing easements and Public/private drain issues might also be sought.

- Indicative Costs to Individuals

- The table on page 18 of the Advisory Panel’s consultation document is quite incomprehensible with numbers being plucked seemingly at random with no supporting information.
- The Advisory Panel were at pains on page 4 bullet point 6 to imply that the original 1216 connections got a very special deal via the Council undercharging the cost of connections. The reality is that the Council were guilty of over-paying for connections due to their total lack of project and financial management, such that the initial connections cost was \$6781 per property. The costs on the table described above are only \$3100 to 3600 per property for the same service clearly indicating the KDC paid too much the first time.
- The OAG report is quite clear about the costs paid
 - 16.51 A report to the Council in 2012 stated that the cost of connections was \$7.948 million. This did not include the cost of installing the grinder pumps. This meant that 1172 properties were connected at an average cost of \$6,781 for each property. The \$7.9 million was more than the total amount provided by the SWSS subsidy. However, the subsidy was also to be used to reduce the targeted rate for those eligible. It is not possible for the SWSS subsidy to have covered all of these costs. Some will have had to be funded by other revenue, such as rates.
 - 16.52 The connections work was carried out as a modification to the Project Deed. We understand that the work was done on a cost reimbursement basis, which included EarthTech’s fee. We were unable to determine what information was provided to the Project Director about the likely costs of the connections. There is no record of such information being provided to the Council.
- The handling of the \$26.2 M of debt that is “parked” in the current KDC LTP and the role of development contributions. If the recent changes to handling development contributions in the LGA2002 prevent or restrict such contributions from paying for already built infrastructure, what is the mechanism to balance the Council’s position? You can’t use new money coming in twice, once for past debts and secondly for new incurred debts for newly extended infrastructure. The Community’s views on the impact of this \$26.2M being recovered via Targeted Rates need to be considered in this whole process rather than being skillfully “hidden from view” for most ratepayers many of whom find the Council’s accounts impenetrable.

Answers to specific questions

Question 1 Should it be optional or mandatory

- **Optional but any system installed must be shown to comply with agreed effluent treatment standards (to which the council system must also comply).**

Question 2 Private connection costs and funding – ‘Do you favour Option 1, 2 or 3?’

- **Can’t answer in the grid provided as optional connection and different solutions will exist**
- **See issues described above.**

Question 3 Operation and maintenance of private connections – ‘Do you favour Option 1, 2, 3 or 4?’

- **Can’t answer in the grid provided. Complicated by period of installation, gravity/Grinder issues.**
- **See issues described above**

Question 4 Future Disposal options – ‘Do you favour Option 1, 2, 3 or 4?’

- **Can’t answer as incomplete information provided.**
- **See issues described above.**

10.4.4 Pro Forma Response (Christian Simon)

No extension of the Mangawhai Waste-Water-Scheme on ratepayer's money

Till Friday the MWWS Advisory Panel wants your feedback.

Have a look at my answers and
Send them your message!

Christian Simon Architect and Town Planer
26 years experience with different sewage systems

Phone number or email address (required)			
Are you a permanent resident, holiday home owner, or visitor to Mangawhai? (please circle one)	Permanent Resident <input checked="" type="checkbox"/>	Holiday Home	Visitor
If a permanent resident – do you own or rent the property you are in? (please circle)	Home owner	Renter/Tenant <input checked="" type="checkbox"/>	
Is the house you are in connected to the MCWWS? (please circle)	Yes <input checked="" type="checkbox"/>	No	Don't know
If not connected, does the MCWWS scheme go past the house you are in? (please circle)	Yes	No	Don't know
			Already connected

Specific Questions from the Advisory Panel

Question 1 Requirement to connect – ‘Should connection be optional or mandatory?’

Please circle your preferred choice and provide your reasoning

Reasoning	
Mandatory	Compulsory connection to this out-moded centralized waste water scheme would block more cost-effective modern solutions. Give everyone the freedom to choose the approved system that suits them
<input checked="" type="radio"/> Optional	

Any other comments on the Connection Options?

Competition brings the price down. Let "ECO"care compete with on site black-, yellow- and grey-water treatment solutions like "full biological oxidation", or "sequencing batch reactors", or "plant treatment", or membrane filter technology", or "worm composting" or combinations of those systems.

Most of those On-Site-Systems cost only a quarter of Ecocare with far better purification and de-nitrification.

For each option please rate by placing 1 tick in each row

Option Description (refer to boards for further details)	1 = Strongly in favour of	2	3	4	5 = Strongly against
Option 1: Full cost Requires property owners to carry out and bear all of the on-site costs of private connection	✓				
Option 2 – Partial Assistance					✓
Option 3 - Full up-front Council funding					✓

Any other comments on the Private Connection Costs and Funding?

It seems unfair that the whole district pay for wastewater in Mangawhai.
 (Last year \$ 1.9 million or 9% of all Kaipara General Rates,
 this year \$2.8 million or 14 % of all Kaipara General rates
 are spend on MWWS)

And now on top should the Extension of the Mangawhai WWS also be paid by the whole district?

This isn't a sustainable solution.

Question 3 Operation and maintenance of private connections – ‘Do you favour Option 1, 2, 3 or 4?’

For each option please rate by placing 1 tick in each row

Option Description (refer to boards for further details)	1 = Strongly in favour of	2	3	4	5 = Strongly against
Option 1 – Full private responsibility	✓				
Option 2 – Council provision and private responsibility					✓
Option 3 – Private provision and Council responsibility					✓
Option 4 – Full Council responsibility					✓

Any other comments on the Operation and Maintenance of Private Connections?

Everyone should clean up their own waste.

Everyone should have the right to choose any of the approved systems.

Everyone should pay for their own waste disposal.

For each option please rate by placing 1 tick in each row

Option Description (refer to boards for further details)	1 = Strongly in favour of	2	3	4	5 = Strongly against
Option 1 (Default): Continued irrigation to Lincoln Downs, increasing to match growth in connections			✓		
Option 2: Ocean outfall using current discharge standards. Decommission and sell Lincoln Downs Farm					✓
Option 3: Outfall to estuary on outgoing tide with higher quality discharge standards (to remove nutrients in addition to germs). Decommission and sell Lincoln Downs Farm					✓
Option 4: Irrigation to the Mangawhai Golf Course. Modification of the wetlands on the golf course and potential irrigation of fairways. Decommission and sell Lincoln Downs Farm	✓				

Any other comments on the Disposal Options?

Water which is nutrient rich with nitrogen and phosphorus (even if treated) is not clean enough to be pumped into the estuary or ocean.

Irrigation on land is the ONLY option.

There is value in the nutrients for plant growth and it is a good idea to sell it to a golf course.

Any Other Comments or Feedback

Let "ECO" care compete with domestic and communal systems.

The debt should be paid by those responsible:

- 1/3 from central government
- 1/3 from the banks that lent the money
- 1/3 from the consultants that designed the mess

The \$ 2.7 million provision for extending the MWWS would be better used to keep the waterways clean of bovine excrements.