

Local Water Grab

By Steve Bailey

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1.0 Introduction

Over the years farmers within the Bay of Plenty had little problems or restrictions in accessing water for running their business. Our own farm business, like many others within the region, extracted water for stock use from small springs. However times have changed and the diversification of our business into both dairy and horticulture has increased our requirements for water.

The opportunity to diversify our dairy farm to include horticulture has been mirrored across many properties within the Bay of Plenty, and in particular within the Western Bay of Plenty. Fertile volcanic soil, high rainfall and relatively flat terrain, have encouraged the increased intensification of land use for horticulture and dairy. In addition, significant urban population growth over the last 10 years has seen water demand more than double over this period.

Like so many industries throughout the country, farmers and orchardists within the Western Bay of Plenty find themselves becoming more accountable to government legislation and policies, and in particular the Resource Management Act (RMA). In 2001 Regional Councils were given power of general competence under the RMA, which gives them the authority to issue and police water consents to those who wish to access water from water sources.

As the urban sprawl and industrial development increase so does competition for the resources. The Land and Water Forum is looking to come up with solutions for the nation as a whole and collaboratively.

The Bay of Plenty has its own unique culture, geography demographics and it is to this point I look to identify how water users in particular those in the district of the Western Bay of Plenty could improve some of the issues they see as a concern going forward.

So in a region with an abundance of water there is a sense that we are on the brink of a frantic water grab and what is the conversation between users and council?

2.0 Objectives

The key objectives of this project are to :

- a) Identify the water sources and demand within the BOP region
- b) Identify key water users within the WBOP
- c) Recognise other influencing factors that may affect the administration for water users within the BOP, and in particular identify gaps between the users and other interested parties.
- d) Present conclusions and recommendations to help improve effectiveness and efficiency of the resource and how it is used.

“ Soil Water Air - none are more important than the other as we cannot survive without them. It is our responsibility to manage sustainability of these natural resources”.

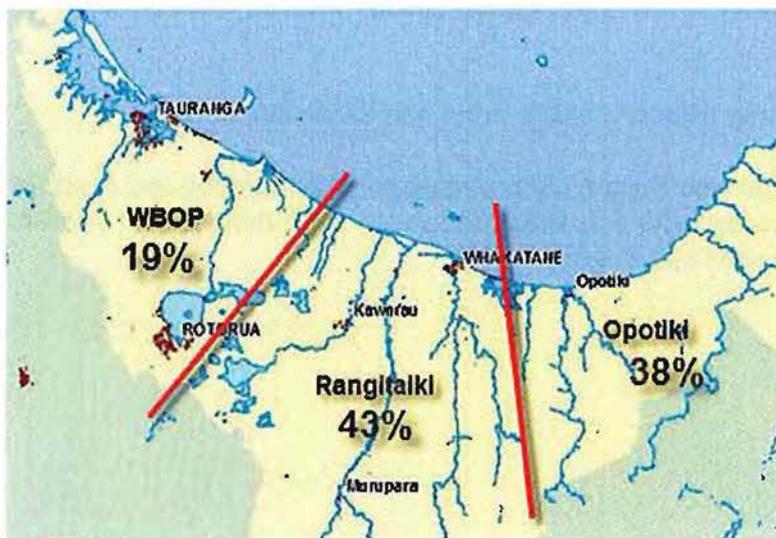
3.0 Water Sources and Demand

3.1 Water Sources: Lakes, Rivers & Aquifers

The Bay of Plenty catchment covers an area of 1.2 million hectares and has an annual average rainfall of 2000 mm, which ranges from the high hill country averages of 2500 mm and coastal flats averaging 1800mm. This precipitation is a main source for recharging the lakes, rivers and aquifers of the BOP. The following section outlines the different water sources for water users within the BOP.

a) Surface Water: Lakes & Rivers

The following illustrates the main river systems that run through the Bay of Plenty.



River outflows of the BOP district catchments

The flow and quality of the rivers vary depending on their source and flow. The rivers flowing from Rotorua lakes have a high nutrient content compared to those that are spring or mountain fed which are faster flowing and thus cleaner. The damming of these rivers act as a sediment trap and slow down water flow.

Figure 1 Map of Surface Water Distribution.

The Wairoa River:

This river sources from the Kaimai Ranges. This is a large river that has been diverted to through the Ruahihi power scheme for Hydro Power generation. The river meets the ocean in Tauranga Harbour.

Waiorohi and Tautau Streams:

These Streams are used by Tauranga City Council as its main water supply. The combined flows of these streams supply 70 million litres of water for treating through the Oropi and Joyce Road treatment plants. This water is used to service Tauranga, Mount Maunganui and Papamoa, however with the growth of Papamoa the scheme will exceed its capacity.

Wairai River:

This river is one km south of Te Puke and is the location for Tauranga City's proposed water source that will provide the extra capacity to supply the growth of Papamoa

Western Bay District council supply water for Te Puke township and source their water from the *Raymond Dam* located in the hills behind the town. They also take from the bore site at the *Mutton's farm site* and *Maniatutu Rd bore*.

Kaituna Catchment:

The Kaituna catchment includes the Lakes Rotorua and Rotoiti, catchment area covers 125,000 hectares. The Kaituna River starts at the outlet of Lake Rotoiti at Okere Arm and enters the sea at Te Tumu near Maketu. It passes through a steep, narrow gorge, well known for its white water rafting, before meandering through the alluvial terraces of the mid Kaituna River and the peat and sand deposits of the lower Kaituna basin. The Rotorua Lakes have been identified as having water quality issues due to excessive levels of phosphates and nitrates this also effects the quality of the river water.

The Mangorewa River is a majority tributary, which flows into the Kaituna River.

Other significant tributaries include the Waiari, Ohineangaanga, Raparapahoe and Kopuaroa Streams, which drain the hill country behind Te Puke. Sources of the Rotorua Lakes is catchment which drains into Lake Rotorua and Lake Rotoiti,

Ground Water: Aquifers

Bay of Plenty's Aquifers were formed millions of years ago. Volcanic sediment spewing out and layering the Bay of Plenty these slow moving pyroclastic flows of magma cooling to become pumice. A very porous morphology that has high transmissivity. Meaning the water Aquifers have high recharge abilities.

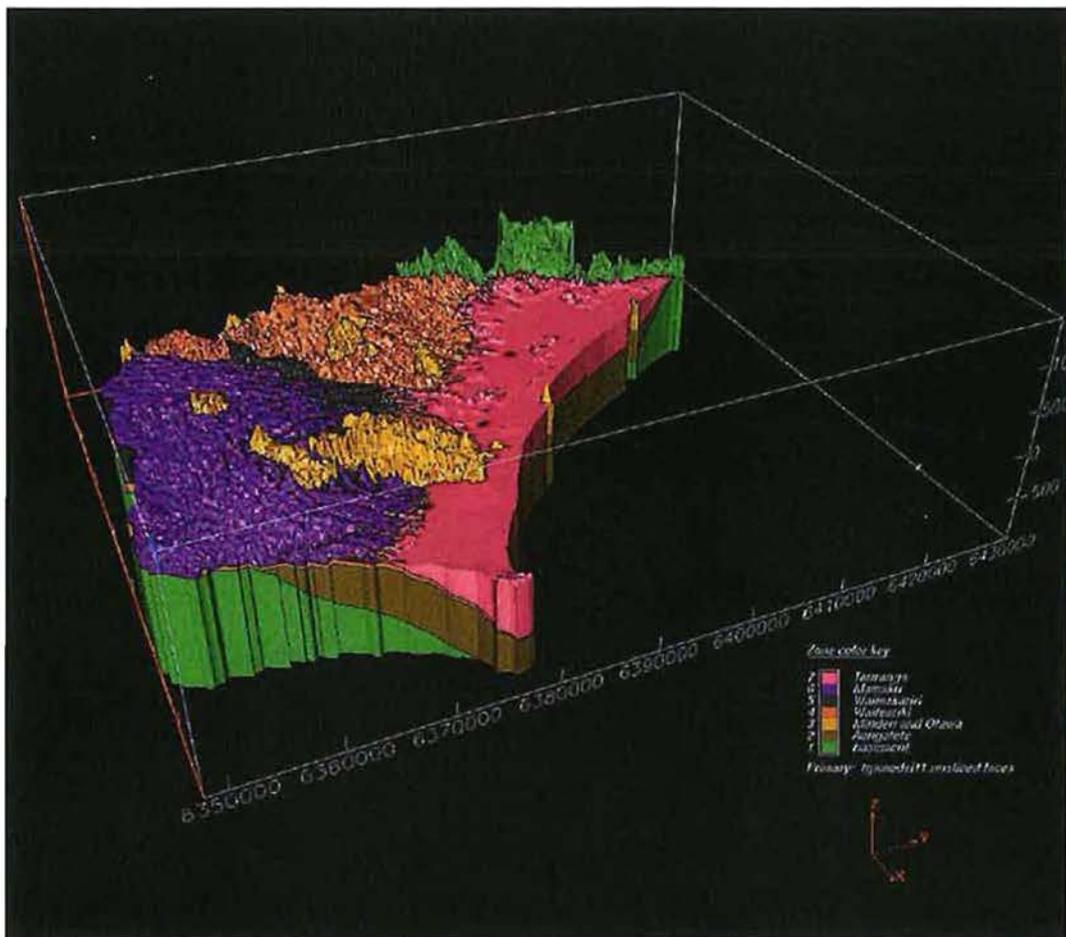


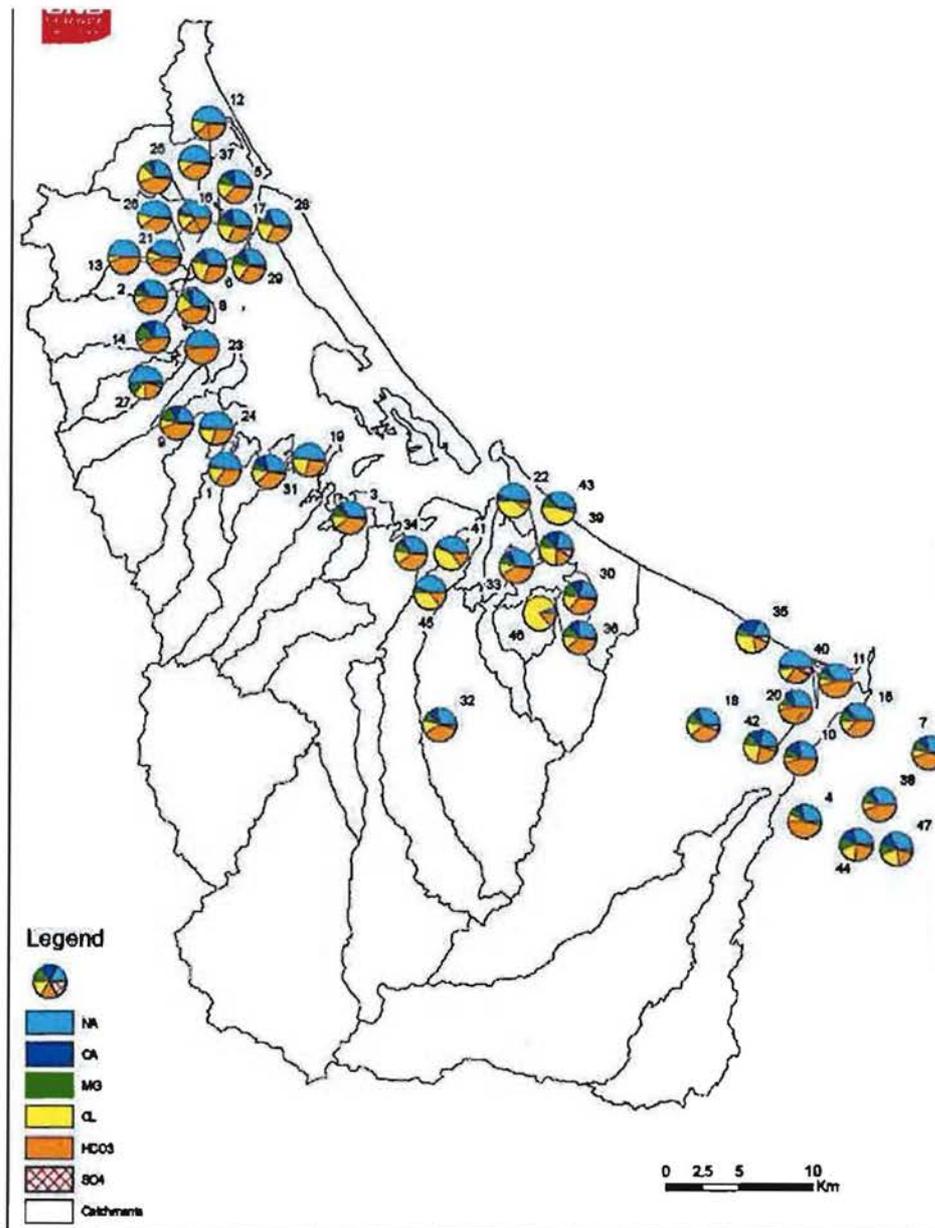
Figure 2 GNS Report. 3D Model Western Bay of Plenty. Aquifers.

The Bay of Plenty ignimbrite aquifers provide a vast amount of water. The illustration is of a model the aquifers that layer beneath the WBOP.

Quality

Though water extracted from aquifers is generally good mineral content varies different locations. This impacts on cost to the user as they may need to treat the water before it can be useable.

It is not uncommon to have to drill to beyond the first aquifer to source suitable water from at a deeper level. For example there is a risk of excessive iron content in groundwater along the coastal plains.



This map illustrates the various mineral content to be found across various bore sites in the WBOP.

Figure 3 GNS - Aquifer water mineral test results

3.2 Demand on Water Sources

Current water sources do meet demand...

There is in fact an abundance of water within the BOP region – its just a case of managing it to ensure everyone’s needs are met. The graph below represents the 3 main water regions within the BOP. You can see the data clearly shows that there is greater water demand for in the WBOP in comparison to the neighbouring Rangitaiki and Opotiki District. As such these regions play a critical role the maintaining the balance of water usage with the entire WBOP region.

Water use across the Bay Of Plenty

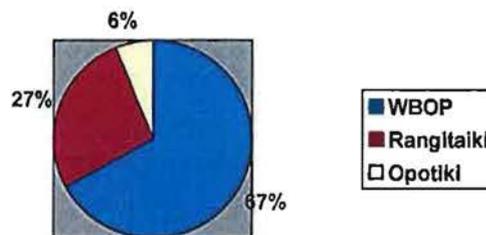


Figure 4 - Water use across region

However... demand is rapidly increasing...

You can see from the graph below that water requirements set to double over the next 45 years. The most significant increase is due to the large population growth within the area. This is caused by the urban sprawl which will eventually link Tauranga, Mt Maunganui and Papamoa, potentially becoming one coastal city. Other significant increases can be expected in the pasture irrigation and horticulture.

Current and future use of Western Bay Of Plenty water resources

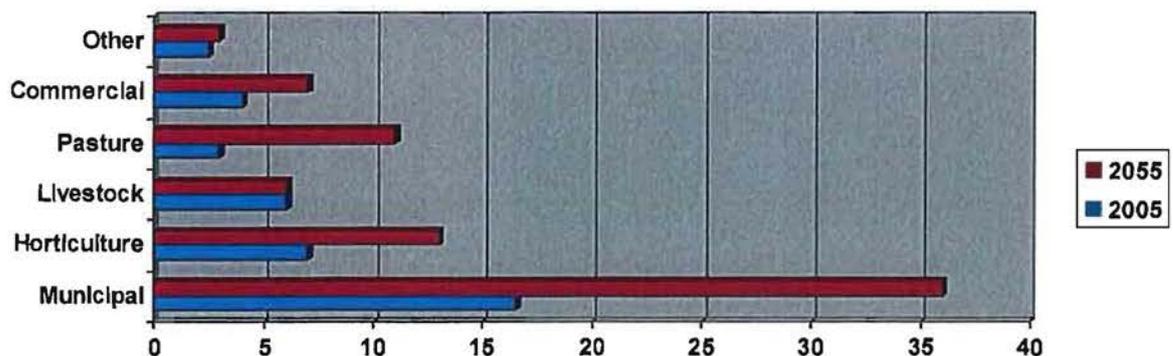
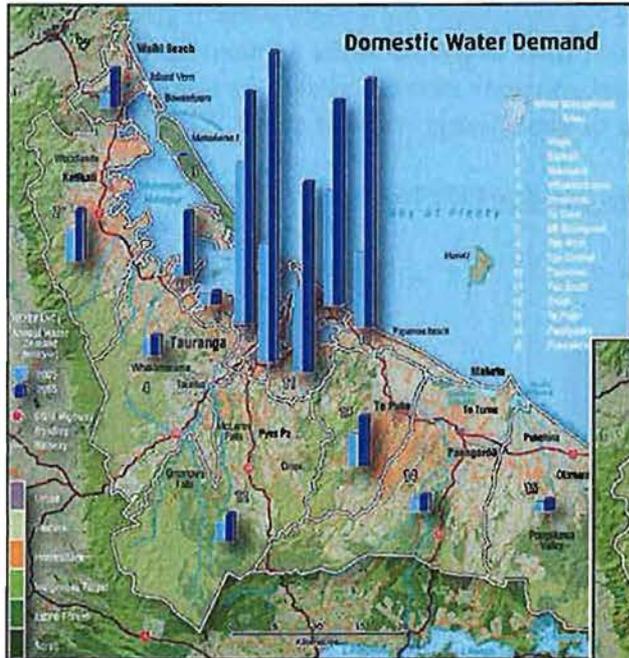


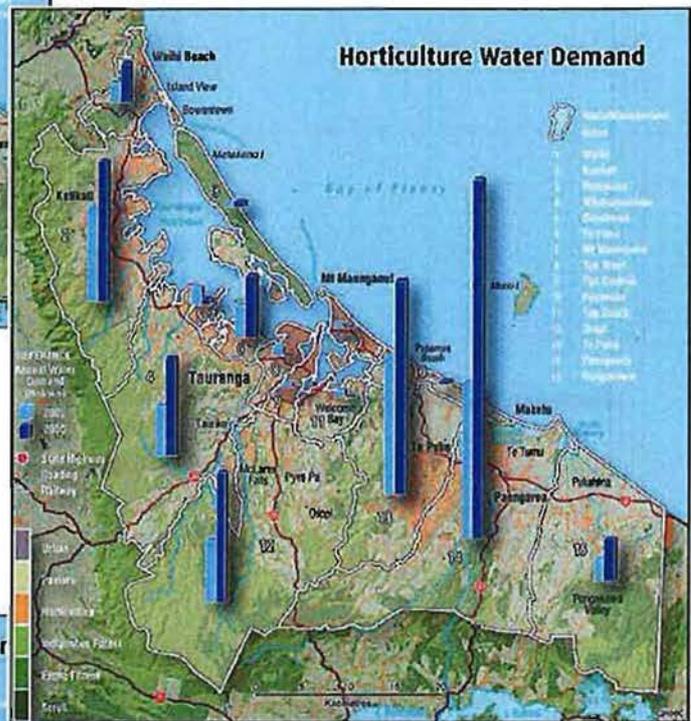
Figure 5 Current & future water demand - EBOP Water and Land Plan

Where is water being used.....

Western Bay of Plenty Water Demand



These maps illustrate the demand across the district. Map 1 is the City and urban demand of the Western Bay of Plenty and Tauranga City.



The Kiwifruit industry - 83 % of the national Kiwifruit orchards are found in the WBOP – and this has a significant impact on water demand.



Pasture irrigation in is also increasing with the Pongakawa district having the majority of dairyfarms in the WBOP

Figure 6 EBOP - Report

Section 4: Water Use & Water Users

The following section outlines the major water uses, identifies the different Water Users

a). Water Uses: how is the water used

Water within the WBOP has a diverse and wide range of uses including Frost Protection, Crop Irrigation, Pasture Irrigation, Drinking water for stock, Hydro Power generation, Municipal Supply, manufacturing, Recreation (eg white water rafting), Cultural and Environmental. As such there are a wide range of water users and these are illustrated below:

b) Water Users: who is using the water

Key user groups of water within the WBOP are City Water Utilities, Manufacturers, Farmers and Orchardists. The chart below compares the volume of water usage from each group.

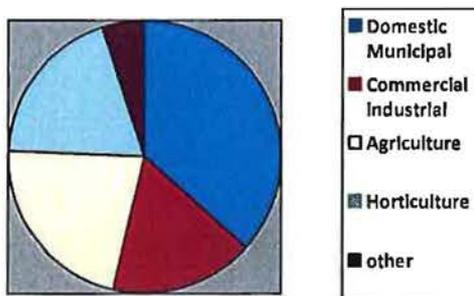


Figure 7 EBOP: Water sustainability strategy -WBOP

Horticulture

The main horticultural users are kiwifruit growers. Kiwifruit production is a business of intensification that requires optimum levels of soil, air and water. The success of this industry is reliant on the efficient use of all three. Given that 87% of Zespri crop is grown in BOP, this industry's need for access to water is vital and can have significant economic impacts both locally and nationally

Key water uses within horticulture include irrigation and frost protection.

- Irrigation in kiwifruit is vital in establishing new plantings and as technology develops the irrigation mitigates fluctuations in weather patterns. The operating for irrigation involves a steady draw down over a longer period usually the evening to improve efficiency of water reducing evapotranspiration.
- Frost damage that can occur anytime from budding to prior harvesting. Whilst new varieties are developed some extending the harvest season so too is the risk to frost damage. A key water issue with Frost protection is that it requires a large volume in a very short time-frame and as such there is a risk with neighbouring orchards drawing water from the same aquifer or surface source occurring all at the same time, that river levels and aquifer levels could be affected.

Agriculture

Dairy, beef sheep and deer make up the agriculture industry within the region. Water is absolutely vital everyday for stock.

The number of pasture irrigated farms is increasing however the number of irrigated farms low. Of the 285,000 hectares across the whole of the Bay of the Plenty in pasture less than 9,000 hectares is irrigated.

In winter farmers are more concerned flood mitigation getting rid of water is the focus. However stock still require water year round. The annual water demand for livestock is more than irrigation.

Municipal and domestic

Urban demand below is the Smart growth projected population growth of the Western Bay of Plenty and Tauranga City. Current 153,000 by 2021 increase 30% to 200,000 and 2051 increase 45% to 286,000

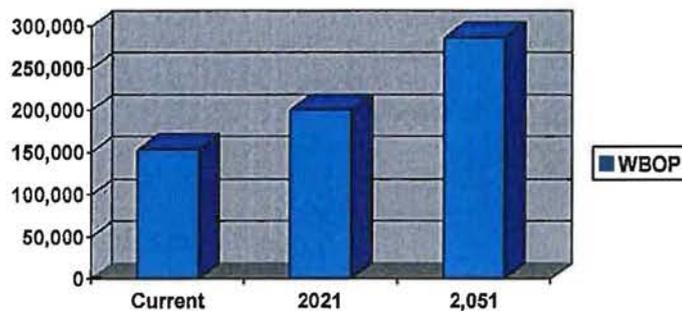


Figure 8 Smart Growth Population figures for WBOP

Commercial

The commercial users are manufacturing and processing businesses in the WBOP. They are major employers to the local region and produce products for export and local trade.

Section 5: Factors that Influence Water Allocation and Consent Processes

There are a number of factors can influence the water allocation and consent process and in turn affect future Water Users. This section sets out these influencing factors and also summarises the views and concerns of a water users that were interviewed for this project.

a) Factors Influencing the water allocation and consent process

The Water Allocation policy – what’s happening now

Currently there is a ‘First in First Serve’ allocation for water. This process has evolved while there was an abundance of resource and appears to be appropriate for the needs of the users. However as Councils undertake forward planning and develop their Long Term Plans and Budget Strategies for water, more questions are being asked as to the continued appropriateness of the current First in First Serve system.

Ground water consent application

The process for water consent is costly and involves lengthy consultation. These costs are to be paid by the applicant and as such this is not an activity undertaken without considerable analysis. In turn this process does provide a level of security to existing water users.

Social responsibility is not always the most profitable

The nature of managing the public resource is the compromise required to enable sustainable economic benefits yet meeting cultural and environmental needs.

Water is a resource and no one individual has right over another.

The District and City councils are water consent holders who own water utilities and provide drinking water for their customers. Individuals and business that abstract water are also of importance.

The economic benefits that water used in business’ and generates back to the community are often not understood by those whose daily lives do not require conscious thought of directly working with a water resource and the investment made in it.

Water is an emotional resource.

It has culture and spiritual significance in particular to the Maoris.

Protection

It is a public resource that has no ownership yet to intervene in the flow of or storage of does require, statutory conditions and an administration cost.

Environment

The environment is the life force of native plant flora and fauna from fin to four legs. They are important and can also be deemed as a measure of practise and an indicator of environmental health. By 2005 river flows had been surveyed and the whole region had minimum low flow baselines established and set in policy.

Seasons and the weather

Source supply is effected seasonal variation.

Funding

The cost to research and administrate has to be funded. The research to understand groundwater is largely being undertaken by contracted scientist and engineers, and is funded by Regional Councils.

Knowledge barriers

Some users may have differing views based on experience and may have resistance to scientific measures and visa versa – thus an emotional barrier formed. There are a number of reasons miscommunication may occur. Mistrust, resistance to change, privacy, and some do not consider science important.

Empathy of the different users is lacking. An example of this is the frustrated views expressed those seeking application on potentially over allocated aquifer catchment

Hydro Generation

Power companies argue the debate that the water they use simply passes through and as it remains in its channel. However they do influence the river flows and water quality. The slowing of water flow increases the build up of bacteria in water, thus affecting water quality.

They also seek to manipulate water flows to maximise returns from electricity. They have contracts to provide contracted kilowatts of electricity at an agreed price per unit. There is a spot market price for the uncontracted electricity. The spot pricing is a volatile pricing index ranging from 1 cent to 30 dollars per kilowatt. Power Companies aim to manipulate river flows to capitalise these daily pricing highs and lows. This can affect of other user's water use.

Scientists

The scientific measuring of geology and water hydraulics is complex. It is vital to understand how much resource we have. Water is flowing - it comes in, it goes out. The monitoring of the resource is vital for managing it.

District and City Council

Are consent holders with a civil duty that the city water supply must comply with the New Zealand Drinking Water Standards.

b) Water Users: - Their Concerns, Issues and Viewpoints

The following sets out views and issues discussed during interviews with different water users from Farmers to Scientists to Councils.

Key points from farmers and orchardists interviewed

Several independent interviews of farmers and orchardists were conducted to obtain an understanding of the current perception of these rural users. The following is a summary of their comments:

- Many of them did not know much about what other option they might have been they are comfortable with the consent system.
- The users were unhappy with the cost associated with obtaining a permit, and that there were no guarantees that they would be granted a consent until they had proven it would not adversely affect other users. However most farmers felt it offered some protection for these existing water user
- There appeared to be a general feeling amongst some that 'deals are being done'.
- A number of aquifers are classified over allocated. This over allocation classification in some locations has been decided as a precaution by council ground water management until further data has been collated, and further evidence collected to support an increase in abstraction from the particular aquifer site.
- Have no influence with council decision with water allocation.
- A general concern that water access and water allocation could become more difficult to obtain into the long-term, consequently farmers are looking to secure water now.
- Water within the whole region is seen as an abundant resource for all users .Their businesses rely on it but it must be affordable.
- However the significant cost to set up a reticulation scheme is seen as outweighing the benefit.
- Many said water belongs to everyone and are opposed to water trading and that water ought remain a resource and not become a commodity.
- The ability to share water without bureaucratic intervention is a good thing.
- That farmers ought take 'ownership' of the water they use.

- A number believed that Water Trading could have a place within the region. Justification for setting up such a scheme was seen as correcting the imbalance of users & water allocation to the actual realised take of water being used, reducing the amount of potential water that could be used. The theory placing a value on an item increases ones incentive for efficiency.
- A concern that decision making is made without full knowledge of the groundwater resource availability.
- Unhappy with unjustified fees and charges.
- Lack of surety – One farmer replied ‘I am investing a significant amount of money into my business employing staff and I am at the councils whim of policy change’.
- A mixed result on storage some farmers felt storage of water a good idea this was mainly favour by those living a considerable distance from a river had very large systems..
- Farmers felt it wrong if unused water is removed from them if they prove they have intention of use for that water. An example being an orchardist who has staggered development strategy is over a 1-15 year time who has further land to develop but cashflow for next stage is reliant on initial crops coming into production)

Key Points from Scientists Interviewed

- Scientists are working with regional council they gathering information for the water sustainability strategy.
- Have not advised stopping further water takes from been but are requiring that the processes are followed
- That the pumice aquifers of the Bay of Plenty have high transmissivity and the policy general guideline of 35% of an aquifers transmissivity however may be too conservative
- That aquifer levels may fluctuate however it is the pressure within the aquifer is critical of aquifer health
- That the water consents allocated at present are appropriate
- Some users not forth right in giving information to scientist

Key Points from Council Interviewed

- Have to balance the needs of all users
- Monitoring and Research costs a lot of money, who pays how is it funded.
- Policy must comply with RMA
- Would like a clear strategy

Key Points from City Water Services

- Provide for 80% of the regions population
- Provide water consumption to meet NZ Drinking water standards
- Are consent holders ‘

Key Points from Farming policy analysts and Horticulture advocates

- 'There needs to be bureaucrats and legislation otherwise without them, it would be *like the Wild West and we'd have range wars.*'
- Bureaucrats work best against individuals.
- The use of collectives is a good approach
- Some things collectively but without losing individual rights
- That farmers and orchardists are in the business of sustainability and need to take ownership of the problem.
- Best approach is to get councillors alongside

A collective approach fits with the holistic Maori view where the whole ecological system is managed as on a catchment basis '*From the mountains to the sea*' '*Ki Uta Kai tai*'.

Section 6: Conclusion and Recommendations

Conclusions

Currently there is an abundance of water and a diverse range of users within the Bay of Plenty Region. The urban development and land use intensification is set to significantly increase the demand for water. There has been a lot of research in learning what the water resources are (how much and where), and a lot more ongoing research is required.

Of concern, is that there is considerably uncertainty by users as to what's going on and where we are going with respect to water allocation and the consent process, and a sense of mistrust of Councils is developing. However farmers and other water users do want to improve the conversation between the administration, but as yet vehicles have not been created. We need to learn from what other areas are doing to alleviate these issues. It would be beneficial for water users to develop user groups or collectives as a way forward for greater advocacy. (see Reference1, Pg 19-20)

So what do we want to achieve

- An improved relation between the administrator of the resource and the users
- That water remain affordable
- A water policy that is best fits the differing characteristics of the users, environment and the resource
- Know where we are going
- Curb the 'Water Grab'

The following recommendations have been identified as possible solutions.

Recommendations

- Continue research about WBOP water resources
- Establish a groundwater data base
- Work to get councillors alongside
- Encourage and support the development of user groups
- Encourage users take 'ownership' of the water management
- Have a notice board or update of water issues sent to users regularly
- Initiate industry specific information meetings
- Continue to promote efficient water use
- Provide non-sensitive knowledge of the various users issues to other users to develop empathy and improve relationships (this might be done with newsletters or key note speakers at meetings)
- Have real time monitoring on the internet
- Maintain flexibility with consents that sharing of a water consent may remain without
- Re assure users that water is there for the long term
- Consider catchment specific water allocation plans

Reference 1

Points to consider for user groups

Collective User Group with individual water consents

A group of users of that share a common interest of water resource. The group come together have a charter a committee is formed. All members have there own individual consents.

Advantages

- Encourages a structured management
- Collective Action
- Individual transaction
- Retain Individual property rights
- Allows sharing of water within members of the group
- A support net work
- Improved liaison between with Council & members and as a group advise administrators of catchment situations
- Sharing of knowledge and experience
- Notice board for keeping up to date with current catchment affairs
- Shared duties within a group
- Liability of consent breaches remain the responsibility of the consent holder
- Strength in numbers
- Voluntary sharing of costs
- Advocacy
- Voluntary

Disadvantages

- The negotiation is a group consensus
- Voluntary with no binding financial commitment
- No consent fee benefits
- Have to accept group decision on

A group of users with a joint consent

A group of users of that share a common water resource. The group come together have a charter and form a committee. Enter into an agreement and apply for one consent. Each member of the group agreeing to a share of the total consented volume.

Advantages

- Only one consent application fee
- Encourages a structured management
- Allows sharing of water within members of the group
- A support network
- Improved liaison between with Council & members and as a group advise administrators of catchment situations
- Sharing of knowledge and experience
- Notice board for keeping up to date with current catchment affairs
- Shared duties within a group
- Combined property right
- Strength in numbers
- Sharing of costs
- advocacy

Disadvantages

- The negotiation is a group consensus
- Individual property right challenged
- Potential shared liability if consent conditions breached
- Potential loss of individuality of negotiation
- The consent is not owned by the individual
- Have to accept group majority decision
- Disclosure of sensitive information
- Administration if a member leaves group
- If further water required by a member and if not available within the group then an increase to application would be required this would involve all members of group.

References 2

Information and views were collected from the following sources

1. Interviews: A number of people within the following groups were interviewed
 - Kiwifruit growers
 - Dairy Farmers
 - Consultant
 - Local Maori
 - Policy Analysts
 - Councillors
 - Council Staff
 - Scientist
 - Regional councillors
 - Regional council Staff
 - Waitahanui Water users group

The following persons and groups were interviewed during

John Cameron	Braden Hungerford
James Wilkins	Derek Spratt
Ian Schultz	John Scrimmegeour
Ron Bailey	Bruce McDougall
Scott Flatt	Andre Paterson
Ian Noble	Gerard Van Beek
Jane Nees	Earl Bragg
Chris Keenan	Nigel Billings
Andre Hickson	Gwynn Morgan
Peter McBride	Geoff Neilsen
Murray McBride	Ian Milner
Brendon Fox	Janine Barber
Wendy Marshall	Kelvin Hill
Colin Mead	Scott Mahupuku

1. Attended farm discussion meetings talked with local farmers
2. The Rivers Group Symposium
3. Extensive – Internet research in particular the Ministry For The Environment Website
4. Statistics NZ - Water Monetary Stock Report.
5. NIWA
6. GNS Report
7. UNESCO-IHO - Water footprints of nations. Main report Volume 1
8. Environment Bay Of Plenty Website
9. Land and Water Forum – A fresh start for water

10. New Zealand Business Council for Economic Development - Best use for solution for New Zealand's water problems
11. Smart Growth
12. Dairy NZ
13. MAF

ACKNOWLEDGEMENTS

I would like to acknowledge and thank all the people who so willingly gave their time and support to this study. I hope these views and opinions help instigate ideas to assist with some of the water issues in the WBOP