

TANK Collaborative Stakeholder Group

Meeting Forty-One Record



When: 8:30am, 27th June 2018

Location: Te Taiwhenua o Heretaunga, 821 Orchard Road, Camberley, Hastings

- Note: this meeting record is not minutes per se. It is not intended to capture everything that was said; rather it is a summary of the proceedings with key comments noted. *Text in italics indicates a response from HBRC to questions posed during the meeting.*
- *Where additional information has become available subsequent to the meeting (such as answers to questions unable to be answered in the meeting), this is included in red italics*

NAME	ORGANISATION	Present	Absent
Aki Paipper	Operation Pātiki ki Kohupātiki Ngāti Hori	present	
Bruce Mackay	Heinz-Watties	present	
Chris Dolley	Napier City Council	present	
Connie Norgate	Department of Conservation		
Craig Thew	Hastings District Council	present	
Emma Taylor	Gimblett Gravel Grape Growers' Assoc.	present	
Hugh Ritchie	Federated Farmers	present	
Ivan Knauf	Dairy Industry		apology
Jenny Mauger	Ngā Kaitiaki o te Awa a Ngaruroro	present	
Jerf van Beek	Twyford Irrigator Group		apology
Joella Brown	Ngā Marae o Heretaunga	present	
John Cheyne	Te Taiao HB Environment Forum	present	
Keith Dolman	CEO, Hawke's Bay Forestry Group	present	
Kim Anstey	Napier City Council	present	
Lesley Wilson	HB Fruitgrowers' Association	present	
Mark Clews	Hastings District Council	present	
Marei Apatu	Te Taiwhenua o Heretaunga	present	
Matt Brady	Department of Conservation	present	
Mike Glazebrook	Ngaruroro Water Users Group	present	
Nathan Burkpile	Fish and Game NZ (Hawke's Bay)	present	
Neil Eagles	Royal Forest and Bird Society (Napier)	present	
Ngaio Tiuka	Ngāti Kahungunu Iwi Inc.		apology
Nick Jones	Hawke's Bay District Health Board	present	
Peter Kay	HDC Rural Community Board/Sheep & Beef Sector	present	
Peter Paku	Ruahapia Marae	present	
Scott Lawson	HB Vegetable Growers	present	
Te Kaha Hawaikirangi	Ngā Hapū o Tūtaekurī, Maungaharuru-Tangitū	present	
Tim Herman	NZ Apples and Pears Inc.	present	
Vaughan Cooper	Royal Forest & Bird Inc.		apology

NAME	ORGANISATION	Present	Absent
Xan Harding	Hawke's Bay Winegrowers	present	
HBRC Staff & VMO research team			
Brendon Powell	HBRC – Team Leader Catchment Management	present	
Ceri Edmonds	HBRC – Senior Planner	present	
Dr Jeff Smith	HBRC – Principal Scientist Hydrology/Hydrogeology		
Dr Stephen Swabey	HBRC – Manager Science		
Dr Thomas Wilding	HBRC – Senior Scientist - Hydrology	present	
Drew Broadley	HBRC – Communications Manager	present	
Gavin Ide	HBRC – Manager Strategy and Policy		
Grant Pechey	HBRC – Principal Economic and Legal Advisor		
Iain Maxwell	HBRC – Group Manager Resource Management		apology
James Palmer	HBRC - Chief Executive	present	
Louise McPhail	HBRC – Consents Advisor	present	
Madeline Hall	HBRC – Senior Land Management Advisor	present	
Malcolm Miller	HBRC – Manager Consents		
Mary-Anne Baker	HBRC - Senior Planner	present	
Nazlee Josephs	HBRC – Project Administration Support Assistant	present	
Nicola McHaffie	HBRC – Senior Land Management Advisor	present	
Pawel Rakowski	HBRC – Senior Resource Modeller		
Robyn Wynne-Lewis	Facilitator - Core Consulting	present	
Shane Gilmer	HBRC – FEMP Project Advisor	present	
Tom Skerman	HBRC – Group Manager Strategic Development	present	
Regional Planning Committee members			
Peter Beaven	HBRC Councillor		
Rex Graham	HBRC Councillor		
Tom Belford	HBRC Councillor		
Observers			
<p>Terry Kelly (John Cheyne) Te Taiao Hawkes Bay Environment Forum</p> <p>Charlotte Drury (substitute for Jerf van Beek) on behalf of HortNZ</p> <p>Tom Kay (substitute for Vaughan Cooper) – Forest and Bird Lower North Island</p> <p>Phil MacKay – Mitchell Daysh</p> <p>Jenny Baker - Te Taiao Hawkes Bay Environment Forum</p> <p>Cameron Burton - NCC</p>			

Key to text boxes

	Actions required
	Recommendations
	Decisions, agreement/disagreement

Meeting Objectives

1. Receive information about the social and cultural impact assessment analysis
2. Receive information about the wider economic impacts
3. Review the proposal for Trigger Flows for the Ngaruroro and Tutaekuri Rivers – discuss and identify whether there is/isn't support for this proposal. Provide a rationale for the position and suggest alternatives.
4. Draft Plan Rules & Policy 44 – review and identify areas of consensus, understand the solutions and alternatives being sought.
5. Implementation Plan – Review and provide feedback.

1. Welcome and karakia

Robyn welcomed everyone and Marei opened the meeting with a karakia.

2. Apologies, Housekeeping, Agenda, Meeting Objectives

Jerf van Beek and Ivan Knauf sent their apologies.

3. Notices

The passing of Ren Apatu was acknowledged by the Group and condolences went out to his whanau.

Congratulations to Neil Eagles who has been honoured with the prestigious Old Blue Award after nearly four decades of service to Forest and Bird. Congratulations also to Aki Paipper, who was awarded the Matariki Living Tāonga Award.

Tom Kay of Forest and Bird in Wellington introduced himself. He grew up in Hawkes Bay in Taradale and is sitting in for Vaughan Cooper while he is overseas.

4. Social and Cultural Impact Assessment – Dr Cole

Dr Cole introduced himself and his research which focuses on Maori cultural wellbeing and survival. He runs a whanau business with his wife Rhonda based on digital publishing and contract research working mostly with Hapū. He expressed his gratitude to Mana Whenua for their manaakitanga and allowing him to present the work they've been doing. He thanked the staff of HBRC for their support, patience and trust in the way they provided freedom for the study undertaken.

Dr Cole introduced his analysis and noted three key findings:

- Risk has been identified for some TANK sub-catchment communities linked with the current minimum flow scenarios (developed and identified from the work of AgFirst, Nimmo-Bell and MEL);
- Recommendations provide suggestions of how the risk might be mitigated or reduced and possibly avoided; and lastly
- The TANK Plan (generally) and the question of minimum flows (specifically) touches on matters of social fairness and cultural survival that are deep concerns for Mana Whenua and local Maori communities.

Reliability of Results - Dr Cole gave an overview of the accuracy of the assessment. He noted the theory is based on well-established international publications which have been applied to New Zealand. Economic time series data has been derived from Stats New Zealand, the Reserve Bank and NZIER. The catchment area unit boundaries are based on pre-existing shape files or spatial layers that we are confident about (from Stats NZ). The application unit of the data at catchment scale is estimated by spatial apportionment this results in a slight over estimation of some of the data in this area. However that is a consistent overestimation of data sets. Dr Cole noted that the 2018 census data is not yet available therefore 2013 stats have been used.

Dr Cole explained that this presentation had been socialised over the last five or six days with staff at the Regional Council and Mana Whenua. Feedback was taken from that to refine it so the presentation today is more of a developed version.

SCIA method - There is legislative responsibility when undertaking a Social and Cultural Assessment under Part 2, section 5 of the RMA. Dr Cole contextualised that definition to apply to the TANK Project.

The sustainable management of *community ecosystems in the TANK catchments* while —

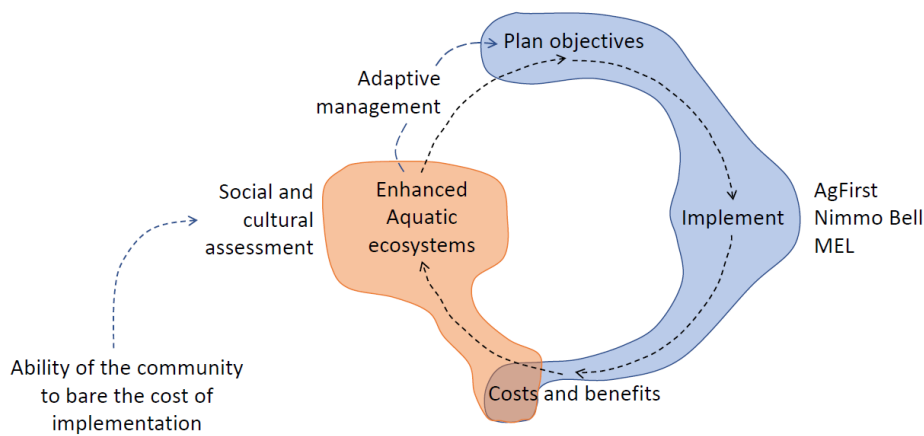
- (a) sustaining the potential of *these* natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of *TANK* water, soil, and ecosystems; and
- (c) avoiding, remedying, or mitigating any adverse effects of *TANK community production and/or consumption* activities on the *catchment* environment.

He noted there are three core goals that are identified in the RMA

- Social Fairness
- Ecological Sustainability
- Do no more harm

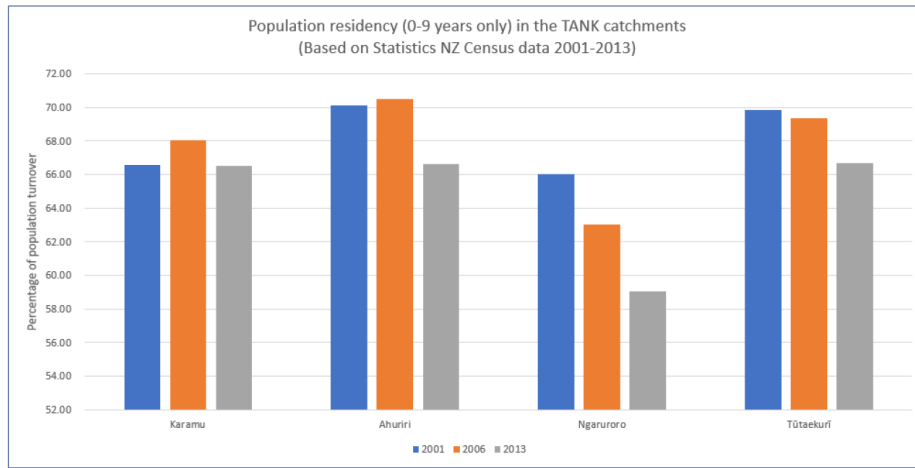
Dr Cole noted he has been drawing attention to the importance of Maori Cultural survival which the RMA currently does not provide clear explicit legislative provision for and yet he feels that this is very important. What the RMA does do is draw attention to the importance of Maori Cultural well-being but stops short of providing support for Cultural survival. Those are mutually exclusive categories - just because you've achieved well-being does not necessarily mean that you've achieved the goal of Maori Cultural Survival which is very important to Maori communities.

The precautionary principle implies that there is a social responsibility to protect the public from exposure to harm, when scientific investigation has found a plausible risk. These protections can be relaxed only if further scientific findings emerge that provide sound evidence that no harm will result. Below slide depicts the TANK Plan Implementation Pathway - the blue represents the economic evaluation and the orange the social and cultural assessment.



AgFirst, MEL and Nimmo-Bell have been looking at the cost (and benefits) to the community long term. iPansophy has looked at this cost in relation to the local community's ability to bear that cost (Social and Cultural implications).

Total Catchment Population - Population stagnation is a problem as it results in loss of economic, social and cultural capital. All the TANK sub-catchments are in decline.



Those who are staying in the catchment for 30 years or more provide a really important cultural and social contribution to the catchment. They are the ‘cultural memory’ of the catchment. They are the members of the community that have been there for a long time, they remember all the past events and the contexts and that is a very important part of the local community. This is now a much smaller part of the population. Approximately 60-70% of the population is turning over in those catchments within 1-9 years. The key issue is the creation and maintenance of Maori ‘cultural memory’ is now at risk. The implementation of the TANK Plan means there is going to be a need for ongoing education on local environmental context, policies and rules. Its places upward pressure on the housing market and it implies that there are 10 yearly shifts in sub-catchment population age structure. There is an ageing population that spans the next 50 years, which has implications on infrastructure and services for ageing population. There will also be a need for the labour market to compensate for the shifts in age structure over the next 80 years and because of high population turnover 50-60% in 0-9 years, age structure is migration dependent which is difficult to predict or plan as it will be constantly adjusting.

Whanau Kahungunu - Two aspects of the Kahungunu population was looked at, those living in New Zealand and resident in Hawkes Bay. When talking about goals from a Maori cultural perspective, Whanau Maori is the first priority. To have Maori culture you have to have your whanau there and this is already a challenge and difficulty for Kahungunu in terms of achieving these goals. For whanau to come home they need jobs, homes and social ecosystem services and that’s for an estimated 27.342 whanau members who are not residing within the region at the moment. This situation diminishes cultural survival prospects and we need to think of Whanau Maori here in the broadest possible sense – more than just a nuclear family. When you are talking to Mana Whenua about ‘ecosystems’ you are really making reference to their family members.

“The life of the Maori, cannot be explained on the assumption that economic interests and needs have created their social structure... Though modified by them, that structure had biological and social foundations of its own... The economic activities of the Maori were developed, in short, within a framework set by family...” Raymond Firth (The Primitive Economics of the New Zealand Maori, 1929).

Whanau Maori is also the Maori economy and the inter-relationships of the family members describe the economy of our tupuna which still exists today. Dr Cole explained in NZ as a consequence there are two different economic models:

NZ mixed market economy

- Pakeha world view
- English language
- Incentives and rewards
- Theoretically (value-free)
- Property rights
- Profit-making
- Free markets
- Pakeha cultural survival
- Whanau Maori decline
- Rules, laws, customs

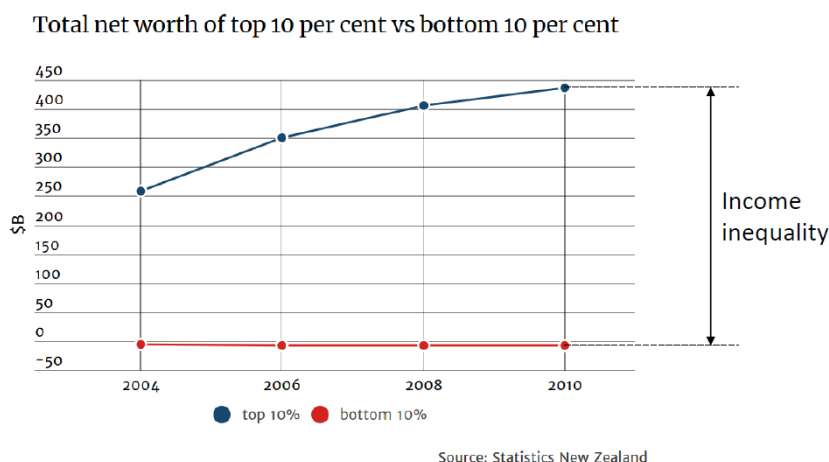
Whanau Maori = Ohanga (economy) Māori

- Te Ao Maori
- Te Reo Maori
- Incentives and rewards
- Kaupapa-based
- Whanaungatanga
- Manaakitanga
- Kotahitanga
- Whanau Maori survival
- Maintains whanau Maori wellbeing
- Kawa, kaupapa, tikanga

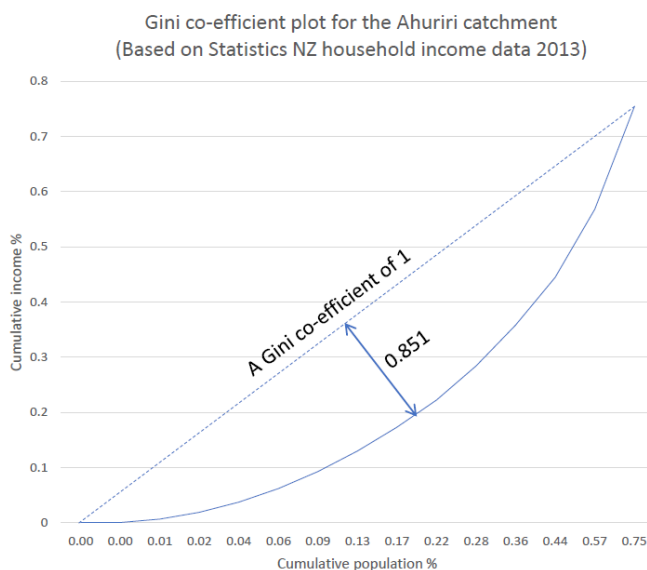
Dr Cole explained Māori tupuna lived on these islands for 800-1,000 years while maintaining the survival and well-being of themselves and the natural world. A change and challenge occurred as a result of the introduction of capitalism and the market economy. Within 170 years, the introduction of a new model of economy has driven hapu and the natural world into decline, in some cases to the point of extinction.

Dr Cole has considered each of the sub-catchments, Karamu, Tutaekuri, Ahuriri and Ngaruroro independently. The environmental decline was depicted through images of forest vegetation cover and wetland loss. Noting that this modification of the environment results in a decline in the well-being of the gods (the members of the Maori family) and a decline in the Maori economy. Key issues are that Whanau Maori is more than a nuclear family and the Maori economy is whanau Maori (ecosystem). We have in this country not one but two models of economy and the mana/mauri of whanau Maori in Hawke’s Bay is seriously diminished, in some cases to the brink of extinction and this is a very sensitive matter for local Mana Whenua.

Personal income – Dr Cole considered the incomes of the catchments. Across the sub-catchments on average 40% of people have more than one job and are likely to also fall within the earning less than \$50,000/year category. A substantial proportion of the population are in a welfare dependant situation, partly because of the ageing population e.g. health payments. It is difficult to grow regional GDP with a welfare dependency component of this scale. Findings show that there is a huge gap in income inequality with the top and bottom 10% (NZ).



Dr Cole explained his use of the Gini co-efficient (image below). The dotted line = income inequality. The theoretical ideal is that all members of the population get an equal apportionment of income in a year. The sloping curve = moving away from equality, this is the reality. The Gini co-efficient shows how far in reality we are moving away from equality.



The Gini co-efficient for New Zealand hovers around 0.4 – 0.5 (NZIER). The overall trend in the TANK catchments moves between a 0.4-0.6 (2001) to a Gini co-efficient that is pushing around 0.8. What this tells us is that for the TANK populations

we have growing income inequality and the Gini co-efficient depicted in these graphs is well above the national average which is already a concern in terms of our position internationally. This inequality becomes a problem when the income that has been generated by the smaller top percentage of income earners is not effectively trickling down resulting in a large base who are struggling. Income inequality also becomes a problem when wealth accumulation harms the environment and leads to unchecked cultural wellbeing decline and extinction.

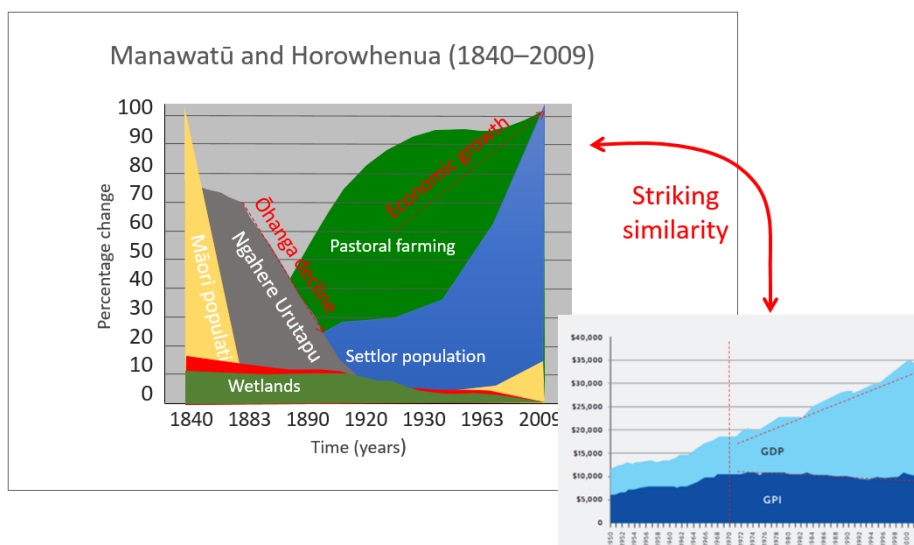
Cultural Extinction Rate - Internationally there are a documented 6,900 languages in the world, 6,900 distinct cultural entities (research done by Rosetta Foundation). The rate of language and cultural extinction on average is 1 every 3 months which means that in the next 100 years we are currently projected to lose 50-90% of the world’s linguistic/cultural diversity. A culture survives by having the freedom to give expression to its language, values, behaviours and institutions (i.e. whanau Maori) on a daily basis. A culture must also adapt to change with creativity/innovation and respond to disturbance events in a way that reclaims, reframes and reinstates its essential identity.

TANK sub-catchments – key issues

- Ageing, mobile population
- Loss of whanau Kahungunu to other regions and overseas
- 30-40% population earning <\$50,000
- 40% population has multiple income sources
- 40% population is welfare dependent
- Increasing income inequality (above the national average)
- Whanau Maori wellbeing at threshold levels (near extinction)

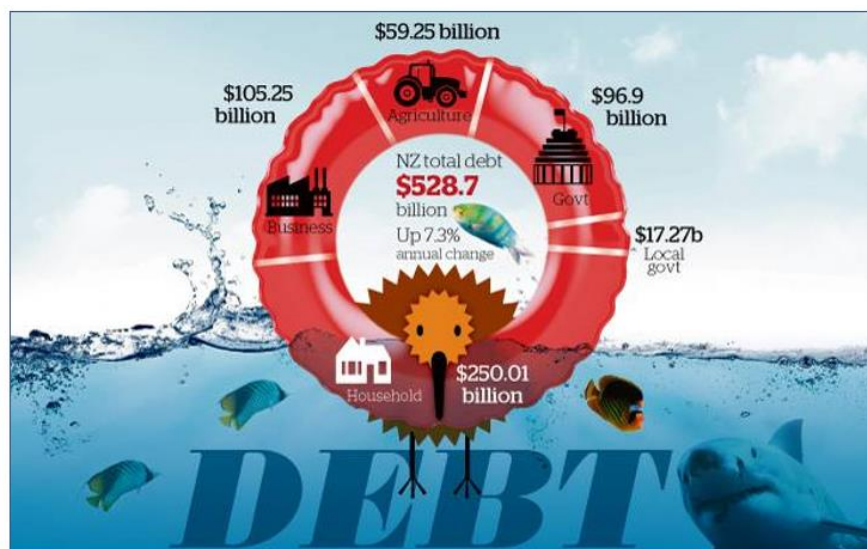
Dr Cole explained ‘WHY?’

1. There is a problem with GDP accounting - The measurement of GDP involves a national accounting blind spot and counts all final goods and services e.g. natural disasters, disease, ecosystem decline, gambling, deforestation etc. are all good for GDP. Those things that do harm in cultural survival are actually celebrated in terms of GDP. Genuine progress indicator accounting framework (GPI) is an accounting framework that corrects the inadequacies of GDP. GDP is based on how fast and big can we grow GDP. GPI considers what is the best way to grow and are there methods of growth that avoid unwanted ecological, social, financial and cultural effects? If GDP were equal to the GPI, the growth and economic activity in a country would be good for the environment, social wellbeing and enhances prospects for cultural survival. Unfortunately that is not the case. There is a cost for economic growth, the NZ mixed market economy achieves GDP growth as a result of Whanau Maori wellbeing decline.



2. Low wage growth for 3 decades – Due to historical (and large) national debt Government began the process of the liberalisation of the New Zealand Economy, from 1940 to present NZ had repressed wage growth. The government responded with six key macro-economic coping strategies.

- Currency trading - At the end of the 1990's there was a dip in stock market and currency trading. NZ Treasury responded by taking an undisclosed amount of NZ currency and selling it on the international markets for \$9 billion to try and cool down our currency.
- Free wage bargaining - Getting wages down to make NZ more competitive on the international market.
- Control inflation – the Reserve Bank Act was used to keep both wage growth and inflation under control by selling state assets and shifting government expenses back onto communities (user pays), leading to around a half trillion dollar national debt (composed largely of the housing market debt). In 2011 the business growth strategy under National called for a compound average growth rate of 7% over the next 13 years in order to deal with this debt problem.
- State Asset Sales
- User Pays
- Aggressive Debt Reduction

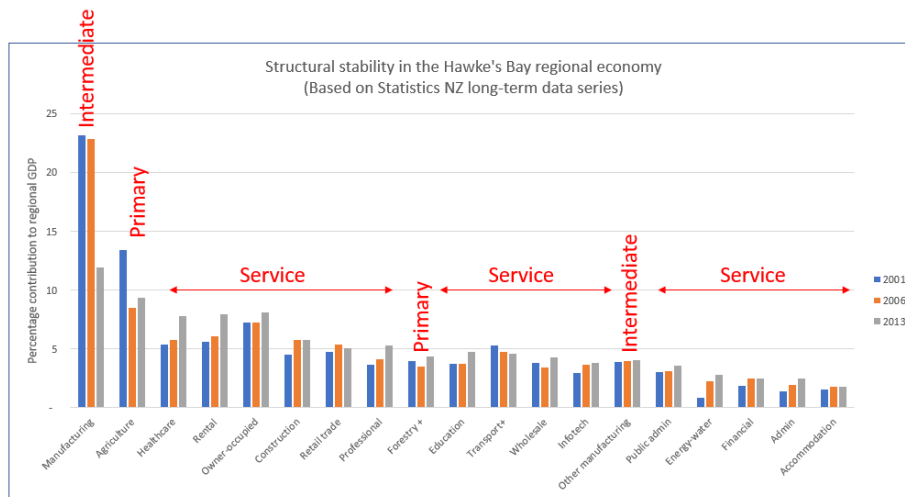


Source: NZ Herald https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=11873204

3. 5 Household Coping Strategies

- More women enter the labour market - over a million women are in the labour market in NZ.
- Work longer 'paid' hours - Women in the labour force are still not breaking even resulting in working longer paid hours. In HB most of the population is working above the traditional 40 hour working week.
- Credit card use - smoothing out the highs and lows of the family income with credit cards, leading to unpaid credit card debt
- The housing market - there is huge pressure on the housing market (as an option for growing wealth) with the debt levelling at an excessive \$250 billion (NZ GDP is only around \$250 million).
- Crime, addictive behaviour, domestic violence and suicide – when all else fails. The Maori culture contribution to the crime statistics is saddening. Between 0-9 years and 30 years 45% of apprehended crime in the Hawke's Bay region is committed by Maori population. For the regional total 60% of all the crime committed is committed by Māori.

The Hawke's Bay economy – TANK catchments (2006-2013) – There are four 'pillar' industries that contribute 30% to regional GDP in HB, manufacturing, agriculture, forestry, mining and other manufacturing. Manufacturing and agriculture play a crucial role in generating value that is used by the intermediate and service sectors of the economy. The other sectors, and the economy are reliant on these two central pillars.



The Hawke’s Bay economy worked in the past but now faces some real challenges, these are:

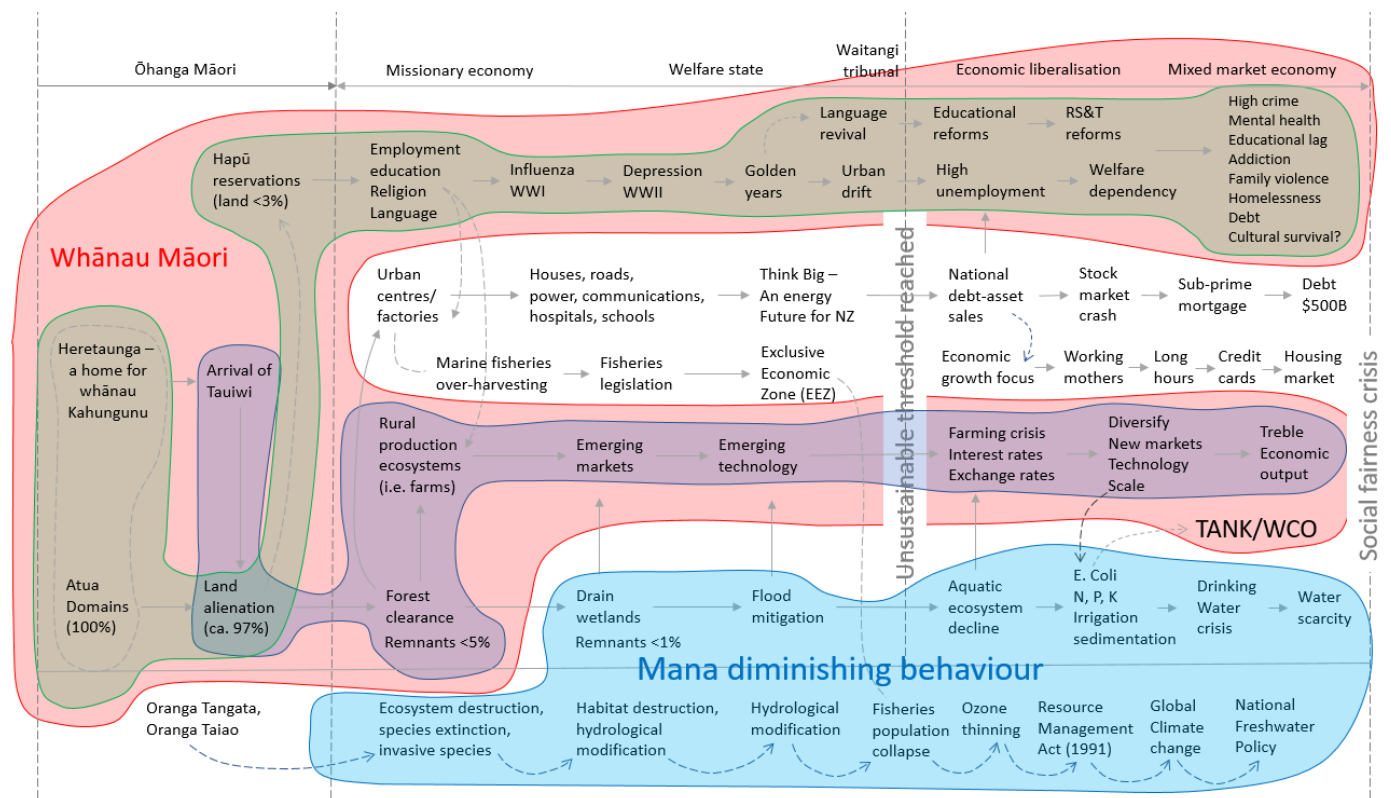
- High levels of income inequality,
- High levels of ecosystem harm - the economy at the moment is ecologically unsustainable.
- Ongoing Maori cultural survival and decline
- A high level of welfare dependency.
- Debt reduction – how will this be achieved? Current context in which growing economic growth is now water limited.
- Fragile economy - primary industry generates value but now pushing the limits of its water use, and there is dependency on 2-4 sectors.
- An ageing sub/replacement population, and
- A mobile population with high turn-over.

Income inequality and social fairness – Dr Cole’s explained in his professional opinion the provisions within the RMA need to take regard to the issue of social fairness. In spending time with mana whenua he concluded that there is a fundamental issue within the region of social unfairness.

Pre 1840 Whanau Kahungunu had 100% Atua domain where they expressed kaitiakitanga. The arrival of settlers and the process of land alienation resulted in the displacement of Whanau Kahungunu and 97% of their land. They were inducted into a new model of economics, employment, education, religion and language. There are the effects of urban drift, high welfare dependency, mental illness, high crime, family violence, homelessness, cultural survival etc.

Land alienation resulted in forest clearance, the setting up of rural production ecosystems, emerging markets and technology. Government is now talking about a treble economic output up to 2025. The two entities that we are referring to (pre 1840) were Whanau Maori and the result of the production of the transformation process which in Maori cultural terms is known as Mana diminishing behaviour.

The growth of the New Zealand economy results in the decline in the Maori economy. There is within the region a question of social intra and intergenerational fairness. The fair distribution of wealth across generations from 1840 until now and fair distribution of wealth within this generation in terms of the unresponsiveness of the market economy in responding to the needs of Whanau Maori. As a result of the situation Tangata Whenua are faced with a choice in the TANK process between Maori community wellbeing and ecological Atua wellbeing. An indigenous cultural entity should never be in a situation where they have to make this choice because it concerns all of their cultural survival and that is a non-negotiable aspiration.



Findings of the SCIA

- The implementation of the current draft TANK plan will result in flows of ecological, social and cultural benefits to TANK communities
- However, there is a high likelihood that TANK plan adoption of minimum flow regimes evaluated by AgFirst, Nimmo-Bell and Market Economics Limited will cause social/cultural and financial harm to some (area unit) communities in the TANK catchments. In particular,
 - TANK catchment communities characterised by high levels of welfare dependency will be at risk
 - TANK catchment communities characterised by high levels of Maori ethnicity will be at risk.

Recommendations

- That the TANK plan proceed to schedule 1 notification while taking specific regard to the following:
 - a) That the setting of a minimum flow regime and the creation of a long-term implementation plan for the achievement of this regime be undertaken in a way that appropriately responds to the economic, social and cultural vulnerability of all TANK catchment communities
 - b) The implementation of the TANK plan avoids, remedies or mitigates any decline in regional GDP exceeding 3 years
 - c) An implementation of the TANK plan be supported by a regional-scale economic development plan at aggressively growing regional GDP with a focus on low-wage earners/employment/social business growth
 - d) There is an urgent need for a conversation on the subject of social fairness relating to RMA 1991, part 2, section 5(a)
 - Inter-generational sharing of wealth (past and future)
 - Intra-generational sharing of wealth (now)
 - e) There is an urgent need for a conversation on the matter of Maori cultural survival

The Group broke for morning tea.

Questions and Comments

Is age population and superannuation excluded from this?

Dr Cole – It's included in this

What's the rationale for revisiting GDP in the conclusions?

Dr Cole – NZ has substantial national debt. We need effort to grow GDP, for the regional economy to achieve that kind of growth we have to question what is the capacity within the region to achieve that. It's not as straight forward as we would like to think that it is. GDP at the moment is a double edged sword, it's both causing the problem and it is a response to the problem.

That was a fantastic summation of political and economic history and it gave us a solid description of what we understand of economics in HB. It is important to understand the extent to which we can attempt a plan to engineer social and cultural change. What can we deliver through the Plan change, taking into account social fairness under the RMA?

Dr Cole – Case law on social fairness has been very poorly addressed. This is a requirement of the RMA. A conversation needs to start addressing social fairness.

How do changes to flow levels relate to GPI? How do you measure it?

Dr Cole - There needs to be a shift in mind-set from GDP to GPI. We need a level of growth but we need wisdom in how we grow and I think that's the issue that you are grappling with in TANK Project.

Your recommendations don't deal with the issue of the ownership and benefit of water use and water allocation. One of the issues is the Treaty groups coming into the market place with some capital. What is the potential for mechanisms to enable some of that wealth to be grown in Maori whanau? Increased pressure on healthcare, one is ageing population, the other is lower socio-economic Maori with specific healthcare issues - we have the lowest level of vegetable consumption in the country.

Dr Cole – Social fairness concerns how we share water across the community today. At the last TANK meeting Joella raised this question and there has been ongoing discussion with staff. Raised a further question: how do you share resources across generations? The market pricing system is used as an allocation mechanism (there are problems with the pricing system but it works to a degree). It causes inequality and exacerbates it as well. The second mechanism we use to allocate within a distribution is what you are doing here within TANK by bringing the community together by starting conversation. The journey has started here within TANK.

Do you have examples that could be used to deal with social inequality?

Dr Cole – A weakness highlighted has been focus on the benefits of the policies, rules and regulations that will emerge in the TANK plan. To understand these benefits you have to step out of the market economic perspective and the domain of ecosystem services in western science and into the domain of understanding Atua Maori wellbeing in a Maori cultural world view perspective. This has been missing from the TANK discussion. These areas help understand the relationship between human behavioural activity and the interaction with this particular Atua domain (Awa, wetlands, lakes etc.) Once we begin to elucidate the relationship of the flows, we can then start a conversation on how those things should be fairly allocated and distributed.

5. TANK Wider Impacts – Dr Garry McDonald, Market Economics Limited (MEL)

Dr Garry McDonald thanked Dr Cole for his presentation. He noted that he and Dr Cole completed their PhD's together.

He referred to an earlier question as to why we don't measure these impacts using GPI rather than GDP, one of the problems we face is that we don't have an accounting system set up to do that and a lot of work needs to be done to construct those components. It's an extremely difficult thing to do and we don't have a national agency that does that yet. When that happens it will be better to show alternative measures so that we are not only measuring GDP but also GPI.

Dr McDonald introduced himself and Dr Nicky Smith. He explained that they provide a much narrower focus than Dr Cole, with a focus on the wider economic impacts associated with earlier work done by AgFirst and Nimmo-Bell. This work focused on what was happening at a farm system level. MEL focus on what will happen with regional economies, looking at what are the flow on implications associated with the impacts and the scenarios in the TANK process. Objectives of the project are to estimate what the regional consequences are of water allocation and to measure the differences in nett terms (compare against the base case).

The scenarios which were considered are as follows:

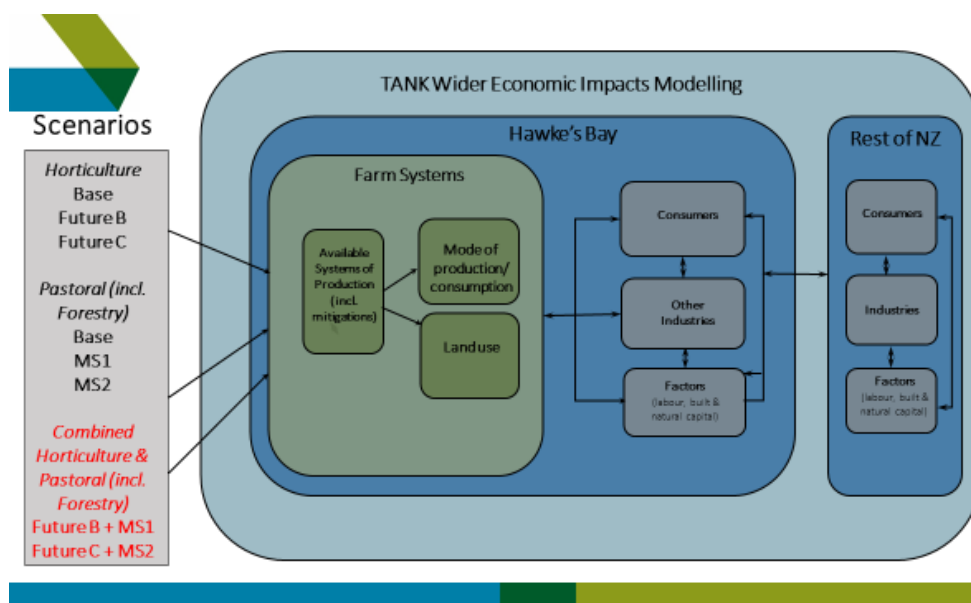
Horticulture Scenarios

- Scenario 1 Base
 - 79% No ban, 21% Nga2400
- Scenario 2 **Future B**
 - 74% GW2013, 20% Nga3600, 6% Tut2500
 - Mitigation expenditures
- Scenario 3 **Future C**
 - 74% GW 9/10, 20% Nga3600, 6% Tut2500
 - Mitigation expenditures

Pastoral Scenarios

- Scenario 1 Base
 - Current practice
- Scenario 2 **MS1**
 - Sediment mitigation (30% reduction, over 10 yrs)
 - Land to forestry (retired and production)
- Scenario 3 **MS2**
 - Sediment plus nutrient reduction (10%, 10 yrs)
 - Land to forestry (retired and production)

These two scenarios have mitigation measures built into them for water allocation and also for sediment and nutrient reduction. There are two policy options and three scenarios in each of them. In the Pastoral Scenarios in MS1 and MS2 there are some conversions (of land use). In some cases the only option left to meet the requirements of the TANK Plan is to convert to forestry and retire some land in the process. There is no retirement process built into the Horticultural scenario. The land remains horticultural use but what does occur is quite significant reductions and the amount of value added generated from those.



Dr McDonald reminded the Group that AgFirst modelled the farm systems, looking at 10 Horticultural and 5 Pastoral farms and across those have worked out what the costs, expenditure and revenue streams are and what the actual profits generated, and how they would be affected in terms of meeting the goals set out by TANK Plan. Nimmo Bell then scaled it up to a region and provided this to MEL where the impacts and flow implications have been estimated for the rest of the economy.

This work looks at what happens with consumers and what the changes in their expenditure patterns will look like, what will happen with the other industries in the economy not just those at the farm level but also the processes, utilities and service sectors. It considers what happens with the labour and natural capital in the environment, not just in HB but the impact of the NZ economy. We want to understand what those implications are noting that some of the decision processes may not just be for the regional council and may sit at a national level.

Dr McDonald noted that Nimmo-Bell estimated discounted cash flow analysis, working out the major expenditure items for farm systems for the next 30 years. This included:

- Revenue by item - Aggregated by key commodity e.g. fresh produce, produce for processing, livestock, wool, wood

- Expenditure by item - Aggregated by key purchase item e.g. wages and salaries, fertiliser, electricity, transport, services
- Operating Surplus (aka EBIT, Earnings Before Interest and Tax)

The cash flows process is used by businesses to look at what their future revenue and expenditure streams might be. If you look across 30 years you will want to balance out the positives and the negatives through that period. In doing that you need to represent future time and current time NimmoBell call this “Net present values”. NimmoBell discount the future in a process that is laid out by central government to analyse the discounted cash flows. The standard treasury rate of 8% was used. That does not necessarily mean that would occur in reality.

For Horticulture there would be a loss of about 17.5% of the actual EBIT over the 30 year period associated with the Future C scenario.

 **Present Value (\$m) Horticulture (Fast Start - Yr 3; 8% Discount Rate)**

	Scenario 1	Scenario 2	Scenario 3
	Base	Future B	Future C
Revenue	7,586	7,431	7,243
% change to base		-2.0%	-4.5%
Expenditure	5,478	5,505	5,505
% change to base		0.5%	0.5%
TANK Net Revenue	2,108	1,927	1,738
% change to base		-8.6%	-17.5%

It is in the revenue streams where change take place, mostly in losses directly to the farmers. This is an important aspect if you look at what happens with the actual expenditures, they remain the similar (5,478 million). The reason being under Future B & C, there is cost associated with undertaking mitigation. With water, nutrient and sediment allocation mitigations, they are built into those cost streams.

 **Present Value (\$m) Pastoral (Start Yr 1, 10 Yr Spread; 8% Discount Rate)**

	Scenario 1	Scenario 2	Scenario 3
	Base	MS1	MS2
Pastoral			
Revenue	1,840	1,809	1,776
Expenditure	1,367	1,357	1,339
Net Revenue	474	453	437
Net Revenue % change to base		-4.4%	-7.6%
Forestry			
Revenue		25	25
Expenditure		18	18
Net Revenue		7	7
TANK Net Cashflow	474	459	444
% change to base		-3.0%	-6.2%

For the Pastoral Farming scenarios the key difference is the inclusion of forestry (and retirement of land) which impacts on the set of results.

Xan indicated that he thought there were some errors in Nimmo Bells work. Garry apologised for any errors but reassured the Group that he is comfortable that the line items were correct.

MEL tables are comprehensively documented and peer-reviewed:

- Based on the (latest available) 2012 National Inter-industry Study from SNZ
- Updated to 2016, regionalised, using methods developed under the Resilience National Science Challenge (see Smith *et al.* 2015)

The analysis covers:-

- 3 Regions – Hawke’s Bay, Rest of North Island, Rest of NZ
- 106 Industries – aggregated to 17 for reporting
- 7 Primary inputs e.g. wages/salaries, taxes, imports
- 7 final demands e.g. household/government consumption, GFCF, exports

MEL have looked at GDP which is made up of key components that we want to measure - wages, salaries, imports, operating surplus, taxes etc. and how that flows through in terms of consumption effects. MEL look at induced effects and expenditure and aggregate for the whole of the region, household expenditure and government consumption in those processes. Exports are particularly important because this is an export driven economy.

Wider Economic Impacts – What’s In

- Market-based economy-wide impacts focusing on structural interdependencies
 - *Indirect* effects - through supply chains backward and forward of an industry),
 - *Induced* effects - resulting from changes in income
- Both positive and negative impacts
 - Multiple regions, through time, for different stakeholder industries – comprehensive coverage
- *Net* impacts against a counterfactual or baseline scenario
- These impacts are assessed using Input-Output Analysis

There are both positive and negative impacts e.g. for TANK, mitigation measures will result in economic expenditure such as plants, labour and materials but there is a cost involved (to the farmer) that is money spent and also diverted from other things. The mitigations could be implemented either fast (3 years) or slow (10 years) resulting in different economic impacts.

MEL measure changes to output and value added employment (Hawke’s Bay and the rest of NZ). Value Added is very similar to Regional GDP. Most regional economist measure value added which is approximately 85-90% GDP. The work applies sensitivity work around in terms of different start options as well as application different discount rates (8%, 6% and 2%). The different start up implementations give people time to respond, change and adapt. This is essential for achieving policy. Farmers will not be happy to learn that they are looking at a 30% increase in their EBIT but will be in a better position knowing they have ten years within which to make changes. They can adapt through it, they have time to think about it and they are generally quite creative and will find some way through things. For Hort farmers, the surplus is very sensitive to change.

Average Gross Output, Value Added and Employment Impacts by Scenario, 2021-2051

	Average Net			Change from 2016		
	Gross Output \$ ₂₀₁₆ m	Value Added \$ ₂₀₁₆ m	Employment MECs	Gross Output	Value Added	Employment
Hawke's Bay Region						
<i>Horticulture (Fast Start - Year 3)</i>						
Future B	-106	-61	-363	-0.8%	-1.0%	-0.4%
Future C	-232	-132	-811	-1.7%	-2.1%	-1.0%
<i>Pastoral (Start Year 1, 10 Year Spread)</i>						
MS1	-2	1	0	0.0%	0.0%	0.0%
MS2	-22	-6	-60	-0.2%	-0.1%	-0.1%
<i>Horticulture and Pastoral Combined</i>						
Scenario 2 (Future B + MS1)	-108	-60	-363	-0.8%	-1.0%	-0.4%
Scenario 3 (Future C + MS2)	-254	-137	-871	-1.9%	-2.2%	-1.0%
New Zealand						
<i>Horticulture (Fast Start - Year 3)</i>						
Future B	-180	-97	-675	0.0%	0.0%	0.0%
Future C	-392	-208	-1,487	-0.1%	-0.1%	-0.1%
<i>Pastoral (Start Year 1, 10 Year Spread)</i>						
MS1	-9	-2	-29	0.0%	0.0%	0.0%
MS2	-50	-17	-175	0.0%	0.0%	0.0%
<i>Horticulture and Pastoral Combined</i>						
Scenario 2 (Future B + MS1)	-189	-98	-705	0.0%	0.0%	0.0%
Scenario 3 (Future C + MS2)	-443	-225	-1,662	-0.1%	-0.1%	-0.1%

MEL measured what the nett impacts are on an average year to year over the entire thirty years of the analysis with a fast start (3 years to start). A different start will lower the impact because there is more time to make the adjustment which

means a lower impact. Under the Future C scenario (\$232 m) in gross input-output terms, that equates to in regional economic terms, value added loss of about \$132m that represents 2.1% over the actual change from the base.

The changes are considered and result in impact to employment. There are job losses associated with Future B & C. Under these scenarios, there is no change in the labour cost between future B & C.

Questions and Comments

Jonathan (AgFirst) noted that they had 2 years where they identified significant problems, one was losing \$350m and the other was \$200m. With horticulture, the cost of labour does not change at all, you still have fruit on trees, it still needs to be harvested and you don't know about money lost until just before it happens. What we have not put in here is once you lose \$300m out of the economy there is a good chance that people are going to go bust, there will be a massive impact on labour if that happens. How many business go bust can't be modelled. When I heard that labour does not change, from these numbers it's absolutely correct but the reality is that there will be an ongoing outcome to this, businesses will not survive, businesses will be lost.

Does it lead to consolidation of ownership e.g. wine industry in 2000's?

Jonathan – Yes but the problem is you change land use so effectively my biggest work is on top crops etc. and they use a huge amount of labour which incurs a huge amount of cost. It comes down to business security, the whole industry becomes compromised. We are modelling a scenario where 2 years out of the 20 there is not enough security of supply, but there are also unplanned effects e.g. climate events.

Garry – There is uncertainty with a ban process e.g. if you had 2 years ban in a row that may take the business out whereas for 1 year generally farmers might get through it but we don't know the experiences they've had. Labour costs remain the same in the model, the direct impacts for horticulture is zero but in reality these could be large (for Horticulture). This is only for parts of the catchment, not all the farms are horticultural.

Sought clarity on whether the downstream effects are modelled?

Garry – Yes, it's important to say that business rely on horticulture.

It looks like a very small percentage in gross output change (- \$443 m) yet that is only a 0.1% change. Are you saying that the industry is \$443 billion?

Garry – 0.1% is 6.8 billion effectively, for GDP in gross output terms, it's bigger than that. GDP is about 25% the size of gross output produced. We don't have that gross output measure, it's not a number we normally report, and people are not familiar with the size difference. It is substantially bigger than value added that's why there is that kind of impact. Overall you have impacts around the 2% and value added, 1% for employment. Most of the impacts here are felt because farmers bear the brunt of the impact, their EBIT has reduced and the flow on implications associated with their purchases in the economy is taken into account. The farmer responded saying that they will choose their labour force, their expenditure patterns will be affected and would have a wider impact. In the scenarios we don't have change associated with those expenditure items.

2.2% doesn't seem big

Garry – It's huge, looking at a loss in value added of \$2.8 m (an average) not a nett present value across the 30 years which will be significantly bigger. This is equivalent to the Kaikoura quake which is estimated to be about \$400m occurring every year. When looking at economic impacts we are not measuring capital and there are capital impacts associated with the farm system loss for e.g. if your business went under then effectively the value of the land will reduce in cost. We measure what happens in the economy not the capital asset and the land value base. The average nett impacts across the entire 30 years, is similar to the NimmoBell figure of \$300m in NPV. The multiplier effect, moving direct to indirect is an increase of 3 over a 30 year period, there is \$1.1 billion being lost from the economy which is considerable. These impacts are governed heavily by when you implement things and the discount rate. When you have discounted rates you have bigger impacts.

Haven't modelled what would actually happen? E.g. Watties, Turners and Growers would leave

Garry – I've modelled what would happen associated with the reduction within that surplus and the revenue produced. That does flow on to Watties and to the people further down the chain. There is no change to farms in terms of cost structure

(normal expenditure streams within a farm, mitigation costs are an addition). Jonathan pointed out quite clearly that when faced with 1 or more year of that and they might go under, these impacts would grow.

The underpinning assumption is that there is no change in farming methods or cost structure

Garry – If planned it might change farming practices e.g. change fertiliser, land use etc. may not have such an impact on the wider economy in the first year but if there are severe influencing factors it could impact all round.

Jonathan – There is no factor in here for change in land use. The horticultural crops that we are farming at the moment, the gross employment that they are doing is one of the reasons they are so fickle to this risk. If the land use changes there is a really good chance that the option for the grower would be to find a model that does not have a lot of employment i.e. not a lot of risk (Downstream effect)

The reality is, land use change is rapid e.g. Tukituki (following PC6) orchard leases have been cancelled and reduced by 35% and another orchard was completely removed, all since May this year (2018). That is only the first transition in PC6

Jonathan – The big problem is that land price is way too high.

Can you explain the difference between the liability restrictions and restrictions related to minimum flows? How much of what we decide impacts on the minimum flows and reliability of supply.

Garry – It is a relevant question for the TANK table but unfortunately not what MEL modelled. We that information provided to us through the discounted cash flows, which is for the system as a whole. That is ideally what you would like to do is to model those differences between the nutrient and sediment process versus the water allocation and look at the 20% or the particular components of the catchment.

Is the availability restriction based on total allocation, and is it your sense that most of the cost is coming from the restriction on low flow?

Jonathan – Yes, and a big chunk of the impact is coming from low flow.

Dr McDonald continued to discuss the wider economic impacts in terms of the loss of employment using the 'Modified Employment Count' measure. Key findings were:

- There is not a lot of direct losses in jobs associated with the Hort industry because the labour cost have been assumed to remain the same
- It shows how connected the agricultural sectors are to the process sectors
- There are large impacts within the service sectors
- There will be a lot of flow on implications for service sectors as well not just the people employed directly by manufacturing or much closer to the base industries.
- Behavioural change is quite a big factor, farmers will be looking for opportunities and ways to adapt.

Dr McDonald concluded with the following modelling caveats:

- Models are simplifications of reality
 - Farm system models are representative, but each farm is unique – both in terms of land characteristics and management
 - It is the same for all other businesses in an economy
- All models are wrong, they are useful in that they reflect our best understand of how a system works
- No evaluation could ever fully predict all of the impacts and trade-offs

Questions and Comments:

The model doesn't look at the cost to the rate payer for sediment removal out of our rivers and doesn't look at the costing of mitigations, subsidy costs within the modelling.

Another member noted that Jonathan (AgFirst) included them in their models. EAWG have been privy to the background information

There is no behaviour adaptation shown and is there something obvious we could do e.g. water storage. The assumption of no change is troubling.

Jonathan – We have quantified how much this is going to cost, now need to look at the solutions such as storage or augmentation.

Garry – looking at impacts regionally and nationally also need to look at how the costs are borne, whether there is central government assistance/intervention.

Dr Cole presented the Gini co-efficient and the impact on the Maori economy, there will be a big impact on processing workers (Māori and lower income parts of the population), what proportion will be borne by overseas owners?

Jonathan – There are a large proportion of people in the lower earning bracket, therefore the impact would be significant. Internationally the value of labour is much higher than profits. Horticulture has not been a sunshine industry compared to Dairy in the past but its got risk because there is so much labour involved.

Asked whether there was a common language amongst the experts.

Jonathan - we need to think about our solutions and make sure that it aims at what everyone is trying to achieve and not just think about 'right now' but further out, find solutions for both environment and the economy.

Garry – Looking at developing the GPI measure, we are partly there. In NZ we don't have standardisation, this is a National level problem not just local.

The impact on employment was discussed further and Dr McDonald confirmed that the seasonal workers were included in the modelling.

Concerned about the uptake of technology, a report indicated that robotics will move into the Hort. industry within 10-20 years but in some cases 1-2 years. Has robotics been considered in the economic assessment?

Jonathan – Most of the trees set up in HB at the moment are not set up for robotics and would need to be replaced. New plants will be ready in five years and from an investment point of view there is a huge amount of money to change these systems over, \$70-80 k per ha.

Tom Skerman addressed the TANK Group

A singular focus on a trigger flow in isolation is incredibly challenging, it's a risky thing to do and it would potentially demonstrate a river to either unite or divide us. Tom acknowledged Dr Cole and Dr McDonald. He appreciated that there are some concerns about the assumptions (from MEL), the gaps and different scenarios that could be modelled. We have a base and we are on relatively safe ground with what we know and clearly an alternative bunch of futures can be designed around that.

He noted that when he listens to Dr Cole's presentation he is simultaneously unsatisfied and uncomfortable, the analysis is very challenging and I'm not sure I entirely agree with all the dots he joins and I'm not sure I even understand. I have got to know Dr Cole and I understand his integrity as a researcher, how hard he has worked on this and how open he has been in his discussions with everyone.

Staff had a meeting with NKII and Marei spoke very well and we stopped talking about the minimum flow, we started talking about the trigger flow. There is a risk that we can equate the trigger flow with MALF, I want to be sure that we understand the distinction. Perhaps what Marei would have liked to say was, based on the analysis and based on the position that the Treaty Partner Working Group find themselves in, it probably feels like the trigger flow is representative of someone holding a gun to his head and it's the wrong type of trigger. I want to acknowledge the great conversation we had last night.

If we are going to have to take into account the social, cultural, economic and environmental impacts through this plan change and try and solve them solely through the trigger flow then I can guarantee that we are going to fail to reach consensus. We are asking you to endorse 2400 or 2000 as a number and I know that is going to be very difficult. We are not asking you to endorse it, we are asking you has the case been made to change it taking into account all factors.

This is a decision for you around the table - has the case been made to discuss what's inside the plan, the scope of the plan and also what is outside of the plan. In the discussion we had last night, (Dr Cole's recommendations) there is a lot to be done and we all acknowledge the issues of inequality, social injustice and fairness that need to be addressed and the work that needs to be done for environmental improvements. We have measures within the plan that deal with allocation, trigger flows is not the

only matter. We have opportunities that need to be looked into in terms of flow enhancement and storage that can be a part of the solution and an enormous amount of work that is going to be proposed around water quality and if we deal with this issue in isolation it's going to be very tough.

When we do have the discussion I urge you to think of the broader issues and of the other factors that will happen outside the plan. We had a discussion around Matariki REDS, Provincial Growth Fund and other initiatives that will be enablers of achieving some of the outcomes Dr Cole has spoken to. It is a very big job to turn this ship around and sometimes the first job is just to turn it around so we can sail into the direction we want. I am really encouraging you to be open and honest in your discussions, thank you for listening to the presentations.

The meeting closed at 4.30 with a karakia.