



Outdoors

NZ Outdoors Party

Newsletter January 2019



The open tops, upper South Island.....somewhere.

Happy New Year to all our members and lovers of our unique natural environment that has provided generations of Kiwis recreation, challenge, quiet contemplation and food for the table.

Help protect and preserve this fundamental part of our heritage – join the NZ Outdoors Party.

<http://www.outdoorsparty.co.nz/join-with-us/#>

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Southland's Foulwater Targets

Environment Southland released its freshwater quality targets immediately after Christmas, presumably so as few people as possible would notice them.

Latest Ministry for the Environment figures showed that 62 per cent of Southland rivers and 98 per cent of lakes are swimmable.

Environment Southland have now set swimmability targets of 65.7 per cent of rivers and 98 per cent of lakes.

That is a **3.7** per cent improvement target for the next decade. Zane Moss of Southland Fish & Game understandably commented as follows:

"The 2010 Water Plan has an objective to improve water quality by 10 per cent by 2020, but instead water quality has got significantly worse. To now look to improve water for swimming by only 3.7 per cent over the next decade is frankly woeful."

So many of us grew up swinging from a willow tree over our local river that it's no wonder we're so passionate about water quality. Southlanders expect to be able to go down for a swim over summer and Environment Southland should be fighting to preserve that kiwi birthright".



What success looks like for Environment Southland?



Federated Mountain Clubs

Peter Wilson is president of Federated Mountain Clubs (FMC), an organisation recognised as one of the strongest advocates for outdoor recreation and the New Zealand backcountry, representing the interests of over 20,000 outdoors enthusiasts throughout the country.

Peter has kindly produced the following report for the NZ Outdoors Party membership:

Outdoor Recreation in the NZ Backcountry - A Year In Review

Looking back on 2018, the first full year in office for the Labour-Greens-NZ First collation, there has been no let-up in the work required of Federated Mountain Clubs (FMC) when it comes to continuing to advocate for, and protect, our cherished and hard-won outdoor heritage.

Improved access to the outdoors and public land is a foremost focus for FMC, so it was with great interest that we received the Department of Conservation's (DOCs) recent announcement around an agreement reached with Hunter Valley Station to improve access. The station, owned by an overseas millionaire, has been a flashpoint in the growing unease around Kiwis being locked out of the Conservation Estate through sales of large tracts of land to offshore owners.

FMC sees this agreement as a significant improvement on the previous situation and worth celebrating, as it gives clarity over access to the valley and sets conditions for access that are both reasonable and fair. Without tenacious campaigning from FMC, along with the earlier work of the Walking Access Commission, the Otago Fish & Game Council and the Upper Clutha Trails Trust, this wouldn't have happened.



View into the Hunter River and Lake Hawea from Tent Peak. Credit: Danilo Hegg

Onto the North Island and our October special general meeting was followed by a conference and workshop on recreational assets in the Ruahine Forest Park. Among other activities, four excellent presentations were heard. Rob Brown explained how the Backcountry Trust can support volunteers who are willing to donate their time and effort to hut maintenance, and Geoff Spearpoint shared his in-depth knowledge on hut restoration; Gavin Walker and Allanah Irvine spoke about the resources available to DOC and the importance of people and relationships in the context of the Ruahine, and Janet Wilson opened our eyes to the work put in by conservation volunteers to protect whio.

Nationally, an emerging concern for FMC is DOC's Visitor Strategy, presented to us as a draft a few weeks ago and now being consulted on with stakeholders. Worryingly, DOC appears to still be locked in a mindset that puts business needs before conservation, with tourism trumping conservation and recreation. Some of the key points we're challenging in DOC's so-called strategy are:

- The department merging recreation and tourism, which are entirely different, including the level of impact each has on the conservation estate.
- Recognition of the impact marketing is having in creating problematic tourism hotspots and pressure.
- The fact that there must be recognition of other stakeholders such as the NZ Conservation Authority, conservation boards, communities, NGO's – not just iwi.

It is imperative that resident outdoor recreationalists are not burdened with responses to issues created by overseas visitor pressure, thereby negatively impacting and limiting the ability of Kiwis to access their conservation estate.



Hang glider – photo by Dan Clearwater

Ending on some positive notes, following a recent meeting of the FMC Mountain and Forest Trust, seven parties were awarded our annual Expedition Scholarships which will assist with an amazing variety of imaginative explorations from a 20-day traverse of the Tasman Wilderness Area to a walking and pack-rafting traverse from Doubtful Sound to Dusky Sound, to support for a tramp along the South Island section of the Te Araroa Trail to raise funds for youth at risk.

The annual scholarships are a great way of helping youth achieve their dreams and aspirations for outdoor adventure.

And finally, FMC is thrilled that our 'Outdoor Community' has continued to grow in 2018. This year we welcomed the clubs and members of the NZ Hang Gliding and Paragliding Association (NZHGPA) to FMC which represent 13 regional clubs from Auckland to the Southern Lakes, with a combined membership of over 1500.

NZHGPA will increase the strength and breadth of FMC's membership and add more weight to our advocacy for mountain recreation. Any readers who have an interest in joining FMC to support our work can learn more about what we do and how to join through our website: www.fmc.org.nz

Canterbury Drinking Water – Another Crisis care of ECan

Nitrates: Today's Hemlock
by Rex N. Gibson



(kindly reproduced from the NZ Federation of Freshwater Anglers web site)

Are our nitrate laden water supplies killing us?

Sadly New Zealand now has one of the highest bowel cancer rates in the world; and it is growing. How is "God's Own country", of just 4.8 million people, which markets tourism, and its exports, as "100% pure" (and "clean and green") in such a medical crisis?

It's the sort of statistic - along with other unenviable ones - which belies the marketing claims. All is not well in "God's Own".

Governments may turn a blind eye to statistics like bowel cancer rates but many, including scientists, are deeply concerned.

On a recent dull spring morning a small group of like-minded folk met in my garage. No we weren't plotting "the revolution"; or were we? You decide. The bench had been cleared and Victoria University's newest scientist recruit, Dr Mike Joy, led us through the process of determining nitrate levels in bore water samples. The study was commissioned, commendably, by Fish & Game NZ.



Sample testing at the bench



Dr Mike Joy recording test results

Mike had previously alerted me, another executive member of the NZ Federation of Freshwater Anglers, Fish & Game NZ HQ, and the news media, to a Danish study published in the International Journal of Cancer, relating to nitrate concentrations and a significant health issue for New Zealanders; colorectal cancer (often referred to as bowel cancer).

New Zealand has one of the highest colorectal cancer (CRC) rates in the world.

The question is "Why?" CRC is the second highest cause of cancer death in New Zealand, over 1,200 a year.

In New Zealand, Colorectal cancers cause as many deaths each year as breast and prostate cancers combined. It also kills more than suicides and the road toll combined.

Our eclectic group around the garage bench included a Fish & Game staff member, a sculptor and environmentalist, a Fish & Game councillor (also a farmer), a retired vet with aquaculture degree qualifications, and yours truly. We all share a commitment to improving the quality of our water resource. We had collected or received 114 samples of bore (drinking) water from across Northern Canterbury (Loburn to Ashburton, Christchurch to Methven), and more were dropped off during the morning. Mike had brought and set up a portable apparatus (a Nico real-time test unit) for measuring nitrate levels.

Canterbury Drinking Water continued

So, what did the Danes find? Dr Jörg Schullehner's team from the Department of Public Health at Aarhus University said "Our study shows that people who were exposed to the highest concentration of nitrate in drinking water (above 9.3 mg per litre of water) had a 15% greater risk of getting CRC".

They assessed nitrate exposure among 2.7 million adults based on 200,000 drinking water analyses from 1978 to 2011, and included 1.7 million individuals with the highest exposure levels in their main analysis. That was a very robust study. The cancer risks remained significant even at low levels of nitrate deemed acceptable by current drinking water standards.

This standard was 50 mg nitrate per litre of water, but the increased risk of cancer started at just 3.8mg/L of water. Schullehner added

"Today, the problem is mainly concentrated in the small private wells, as well as places with high nitrate leaching and where the local soil and geological conditions mean that nitrate can more easily be leached to the groundwater".

This exactly parallels the problem in New Zealand's intensive dairying areas.

Each sample was tested and the results tabulated.

58 of the 114 registered readings were above the current threshold for potentially increased cancer risk; almost exactly half (50.8%).

Aarhus University gave 3.8mg/L as the "lethal" point. Many of our Canterbury's samples exceeded this significantly! Dr Joy said "the sad thing was that the results of the random sample came as no surprise". Fish and Game's chief executive Martin Taylor stated that the results showed "the cows are coming home to roost. Some detractors will say this is scaremongering. It is not!"



Samples labelled with their nitrate results (mg/L)

If the drinking water (nitrate) levels have the potential to kill us, or at least give us cancer, then what are the rivers doing to kayakers, rafters, picnickers and anglers who use these waterways? The health risk arises when nitrate is converted into carcinogenic substances that are known as N-nitroso compounds in the body. Colorectal cancer is one of the most common forms of cancer in Denmark and New Zealand, and the third most frequent worldwide.

The findings also back up Dr Alastair Humphrey, Canterbury's Medical Officer of Health, whose warnings over nitrate levels go back years, largely in regard to the acute effects of "blue baby syndrome". In this nitrates are converted in the gut of babies (and via pregnant women to foetuses) to nitrites which lock onto haemoglobin molecules and reduce the oxygen supply to developing organs, including the brain.

New Zealand's highest levels for CRC occur from Canterbury to Southland. The highest rates occur in "Pakeha" New Zealanders. This area is now also the heartland of "industrial dairy". Is industrial dairying "cancerous"? The Danish study gives us "direction". New Zealand just has to follow it.

Canterbury, Otago and Southland have regional councils whose have often been considered AWOL when it comes to environmental health issues for the last couple of decades. Nitrate leaching into depleted water catchments has increased exponentially. Many of these areas rely on subterranean aquifers for drinking water. Most people living on the region's farms drink bore water from them, as well as those living in urban areas such as Christchurch.

Canterbury Drinking Water continued

The nitrate leaching from cattle urine and, especially, from over-application of water, urea and phosphate fertilizers on pastures is significant nationally. Is this a medical crisis; a true “time bomb” situation? CRC can take 20 years to appear. Perhaps the shareholders of the corporate farms (which dominate the South Island’s east coast) who reside in Remuera, Karori, Fendalton, etc. are more concerned with “the bottom line”, than the colorectal cancer levels in those who actually live on the land. It has an almost Dickensian feel to it. One commentator said “When they have felled the last tree, eaten the last steak, drained the last river, and poisoned the last aquifer, perhaps then they will realise that you cannot eat money”.

Another F & G study, also led by Mike Joy, has now shown that Northern Canterbury’s rivers are infected with two strains of antibiotic resistant E. coli. Nick Smith’s “swimmable rivers” targets were a joke. Now they are becoming a very sick joke (a deliberate pun). When will it stop? In a bizarre moment I recalled the old line about “Drink and be merry, for tomorrow you die”. Just as Socrates was sentenced to death by drinking hemlock, will our nitrate laden water do exactly that to us?



More Crap from Christchurch

Christchurch's city council should join forces with local iwi to bottle and sell Canterbury's famed pure aquifer water abroad to help reduce rates and fund projects.

That is the view of councillor Aaron Keown, who believes the city is not getting the best out of an asset he says is "more valuable than oil".

Keown wants to negotiate a partnership with iwi that would see the council and Māori jointly own the water in the city's aquifers.

Keown touts Canterbury water as one of the “greatest and purest water supplies around the world”

Keown is happy to mine pure water for overseas profit whilst leaving the polluted stuff for the locals.

Last November, the New Zealand Institute of Agricultural and Horticultural Science organised a conference at Lincoln University – the subject matter a snapshot of where the Canterbury Water Management Strategy (CWMS) is at. Irrigation, land use intensification, pollution and abstraction were obviously on the agenda, as was guest speaker Sir Tipene who had this to say (amongst many things) "The West Coast just pours itself out into the Tasman Sea" as part of his suggestion that, rather than continue to use water to make milk, we should bottle and export the water.

The ownership of water, along with Maori “rights and interests” has yet to fully play out and money is clearly the prime focus.

The Outdoors Party policy on freshwater iownership is unequivocal:

Water Belongs to Everyone

No property rights, rental, payment or trading of water. Commoditisation of freshwater leads to consolidated ownership.

WARO

Sticking Plaster not Strategy

The 2018 Wild Animal Recovery Operations (commercial shooting of deer on the public conservation estate using helicopters) concessions are currently out for consultation.

DOC received feedback from commercial and recreational hunting interests, as well as other affected parties (FMC included) and are now seeking a second round of input on their proposals for three year WARO concessions.

Much as the consultation process is appreciated, it has a major pitfall insofar that feedback is only sought on where WARO concessions will be allowed.

The wider issue of how to resolve conservation, commercial and recreational hunting interests sustainably is still being sidelined.

Consultation is open until 15 February 2019, again only on where WARO will be allowed. New Zealand Deerstalkers Association have been active in submitting on WARO proposals but their requests all too often fall on deaf DOC ears. For example, Nelson Branch NZDA suggested to DOC that the NZDA branch identify areas of high recreational hunting interest and DOC correspondingly identify areas of high conservation values. The two areas could then be overlaid and some compromise reached between the parties. Simple, collaborative and positive.

However, DOC did not do this, rather they persisted identifying open WARO areas for places such as the Branch/Leatham Conservation Area – one of high recreational hunting interest and low conservation value (it was previously planted in pine species, by the NZ Forest Service, as an experiment in erosion control. Wilding pines are now endemic in the area).

The majority of recreational hunters are not anti-commercial deer recovery, indeed both sets of hunters share common interests – a sustainably managed herd of animals and no bykill from aerial toxin operations.



The NZ Outdoors Party is the only political party seeking a strategic approach to game animal management and sees a revitalised and strengthened Game Animal Council leading this approach. Here's how we see it working:

1. Game animals are integral to the New Zealand environment, they are here to stay and attempts at extermination are futile.
2. Game animals are a valuable proposition economically, culturally and socially. They make money for the outdoor retail sector and commercial meat hunters, they deliver physical and mental well being for recreational hunters and they provide free range, high value, high quality meat.
3. Game animal herds should be managed in balance with environmental and conservation values. Some areas should have no deer, whilst others can sustain populations.
4. All hunting sectors must be responsible for sustaining herds to produce both optimum trophies and good meat animals. For recreational hunters this will mean accepting and participating in managed hunts, including reporting what and where animals were killed.
5. WARO concessions should be one operator per area.
6. Where trophy herds range, WARO should shoot hinds only.
7. WARO restrictions should apply for summer holidays and the roar periods.
8. Aerial toxin operations should not be undertaken where there is any risk of bykill of game animals.

Aerial Toxin Update

SPCA

We have signalled our support for the SPCA's decision to declare their opposition to the use of 1080 for mammal control.

The backlash was swift and predictable - if so many people think it is good, how can they be wrong? for starters. Many media pundits then conflated cruelty with predation i.e. any animal that eats another animal is cruel, rather than behaving according to its genetic programming.

The Oxford English Dictionary defines "cruel" as meaning "Wilfully causing pain or suffering to others, or feeling no concern about it." Given that predators, including wekas, kingfishers, kiwi, falcons, etc probably have no concerns when they feed, perhaps they are cruel.

Forest & Bird adopted Joseph Goebbel's tactic of "If you tell a lie big enough and keep repeating it, people will eventually come to believe it." They use the figure of 25 million birds a year dying because of predation by rats, stoats and possums, despite no data, research of statistics whatsoever to support this figure.

OSPRI

We have now published the data analysis of aerial 1080 operations undertaken by OSPRI 2008-2016. The full report can be found here:

<http://www.outdoorsparty.co.nz/ospri-1080-the-facts/#>

In summary the analysis showed that for 93% of aerial 1080 operations (by hectares sowed) NO pre- or post- monitoring of possum numbers was undertaken. i.e. OSPRI have no idea of the effectiveness of 93% of their aerial operations.

DOC

The annual budget for predator control (except native predators) has been increased by \$81.3 million over four years. This money will enable DOC to increase toxin application from 200,000 hectares to 800,000 hectares every year for the next four years.

Large parts of Kahurangi will be sown with 1080 in 2019. The 2016 Battle for the Birds produced some interesting monitoring data as follows (collated from the Environmental Protection Agency reports):

KAHURANGI NATIONAL PARK Battle of our Birds Monitoring Data						
area	possum tracking		rat tracking		stoat tracking	
	before	after	before	after	before	after
Cobb	not done	not done	53.8	1	0	0
Gouland	not done	not done	53.3	3.9	14.3	0
Kakapo	not done	not done	27.7	3.6	11.4	0
Oparara	not done	not done	50.1	23	0	0
Parapara	not done	not done	43.2	2.4	35.1	0
Wangapeka	not done	not done	44.7	0.4	27.6	12

Most noticeably, no possum monitoring was undertaken despite DOC repeatedly identifying these as bird predators. The monitoring results on rat and stoat data shows a temporary reduction of numbers in most cases, but also highlights inconsistencies such as Oparara and Wangapeka. Aerial 1080 operations are thus not always successful in reducing rats and stoats and there is no data available on the impact on possum numbers.

Do Possums Eat Birds?

As we have only scientific papers to provide any credible evidence, we have scoured peer reviewed journals to find the answer.



Here's what we found overleaf...

Do Possums Eat Birds?

Journal articles indicating possums as herbivores only:

Fruits, seeds, and flowers in the diet of brushtail possums, *Trichosurus vulpecula*, in lowland podocarp/mixed hardwood forest, Orongorongo Valley, New Zealand PE Cowan - New Zealand journal of zoology, 1990 - Taylor & Francis.

Diet of brushtail possums over a pasture-alpine gradient in Westland, New Zealand JD Coleman, WQ Green, JG Polson - New Zealand journal of ecology, 1985.

The diet of introduced brushtail possums *Trichosurus vulpecula* in a low-diversity New Zealand *Nothofagus* forest and possible implications for conservation ... HJ Owen, DA Norton - Biological conservation, 1995 - Elsevier

Conflicting demands on detoxification pathways influence how common brushtail possums choose their diets KJ Marsh, IR Wallis, S McLean, JS Sorensen... - Ecology, 2006 - Wiley Online Library

Effect of Terpenes of Eucalyptus Leaves on Feeding by Common Ringtail and Brushtail Possums IR Lawler, J Stapley, WJ Foley, BM Eschler - Journal of Chemical Ecology, 1999 - Springer

Digesta retention and fibre digestion in brushtail possums, ringtail possums and rabbits E Sakaguchi, ID Hume - Comparative Biochemistry and Physiology ..., 1990 - academia.edu

Suppression of fruit production of the endemic forest tree, *Elaeocarpus dentatus*, by introduced marsupial brushtail possums, *Trichosurus vulpecula* PE Cowan, DC Waddington - New Zealand journal of botany, 1990 - Taylor & Francis

Problems and solutions in scaling laboratory findings to diet selection in the field NJ Scrivener, CN Johnson, IR Wallis... - Evolutionary ..., 2004 - evolutionary-ecology.com

Response of selected tree species to culling of introduced Australian brushtail possums *Trichosurus vulpecula* at Waipoua Forest, Northland, New Zealand IJ Payton, L Forester, CM Frampton, MD Thomas - Biological conservation, 1997 - Elsevier

Digestion and Digesta Passage in the Brushtail Possum, *Trichosurus Vulpecula* (Kerr). GA Wellard, ID Hume - Australian Journal of Zoology, 1981 - CSIRO

Effects of two plant secondary metabolites, cineole and gallic acid, on nightly feeding patterns of the common brushtail possum NL Wiggins, C McArthur, S McLean, R Boyle - Journal of chemical ecology, 2003 - Springer

Journal articles indicating possums as omnivores excluding birds:

Invertebrates in the diet of brushtail possums, *Trichosurus vulpecula*, in lowland podocarp/broadleaf forest, Orongorongo Valley, Wellington, New Zealand PE Cowan, A Moeed - New Zealand journal of zoology, 1987 - Taylor & Francis

A vesicular-arbuscular fungus in the diet of brushtail possums, *Trichosurus vulpecula* PE Cowan - New Zealand Journal of Botany, 1989 - Taylor & Francis.

Ecology of brushtail possums in a New Zealand dryland ecosystem AS Glen, AE Byrom, RP Pech, J Cruz, A Schwab... - New Zealand Journal of Ecology 2012

Journal articles indicating possums as bird eaters:

Evidence that possums prey on and scavenge birds' eggs, birds and mammals K Brown, J Innes, R Shorten - Notornis, 1993*

Sign left by brushtail possums after feeding on bird eggs and chicks KP Brown, H Moller, J Innes - New Zealand Journal of Ecology, 1996*

Successful recovery of North Island kokako *Callaeas cinerea wilsoni* populations, by adaptive management J Innes, R Hay, I Flux, P Bradfield, H Speed... - Biological ..., 1999

Responses of kukupa (*Hemiphaga novaeseelandiae*) and other birds to mammal pest control at Motatau, Northland J Innes, G Nugent, K Prime, EB Spurr - New Zealand Journal of Ecology, 2004

Control of introduced mammalian predators improves kaka *Nestor meridionalis* breeding success: reversing the decline of a threatened New Zealand parrot R Moorhouse, T Greene, P Dilks, R Powlesland... - Biological ..., 2003

The Final Score

Possum as Herbivore	11
Possum as Omnivore (exc birds)	3
Possum as bird eater	3*

* Note that the first two articles indicating that possums do prey on birds entailed locking possums in cages, starving them and then offering them dead birds to eat. On that basis most creatures might do the same.

The New Zealand Institute, Randall Bess and Shoe-Horning Rec Fishers into the QMS

Randall Bess, on behalf of the NZ Initiative has been targetting the recreational saltwater fishers for a couple of years now. His message is subtle and beguiling – rec fishers have been under-represented in fisheries policy and are not represented in Fisheries NZ decisions, thus a national “peak body” should be formed which will give rec fishers a voice at the table alongside the commercial sector.

Bess produced three reports to present a vision of how our fisheries should be better managed:

- What’s the Catch? The state of recreational fisheries management in New Zealand.
- The Overseas Catch – The state of recreational fisheries management abroad.
- The Future Catch – Preserving recreational fisheries for the next generation.

Here’s his world view:

1. Recreational fishers have a major impact on fish stocks.
2. Rec fishers are increasing in number, due to immigration – more people = less fish.
3. Most fish returned to the water by rec fishers die.
4. Rec fishers need management representation
5. Rec fishers should pay for this representation.
6. Rec fishing allowances should be purchased via the QMS.
7. Commercial fishers should be compensated for those fish allocated to rec fishers,
8. Rec fishers should keep all fish regardless of size
9. Rec fishers should be enforced to report their catch as surveys don’t work.
10. Rec fishers will eventually be obliged to buy a licence to fish.
11. Fisheries Ministers should no longer have discretion on allocating commercial customary and recreational allowances.
12. Fixed allocations for rec and commercial fishing (proportionality) should apply in the future.

Of course, most of this is anathema to both the 700,000 Kiwis who go fishing and to Government Ministers, who understand the implications of losing 700,000 votes.

Current QMS allocations to September 2019 are as follows (in tonnes):

Commercial	604,433 or 97.4%
Customary	4,575 or 0.7%
Recreational	11,759 or 1.9%

With the exception of Kingfish and Pipi, commercial fishers are given the lion’s share of the Total Allowable Catch for all species under the QMS.

The fundamental misapprehension for Randall Bess and the NZI is that rec fishers have an increasingly adverse impact on fish stocks and thus should be under the same free market capitalist philosophy as the commercial sector. Bess believes the QMS has halted overfishing and enabled stocks to rebuild and so shoe-horning rec fishers into it will further enable fish abundance, despite all evidence to the contrary.



The NZ Outdoors Party endorses the position of the NZ Sports Fishing Council and Legasea - focus on rebuilding an abundant fishery by:

- Amending the QMS.
- Stop non-selective bulk harvesting methods inshore.
- Increase the minimum biomass figures for fish stocks to at least 50% of the estimated unfished stock size.



Waimea Dam – Financial Tomfoolery



The northern end of the Lee Valley

It's gone on nearly as long as The Mousetrap but it now seems the Waimea Dam (actually it is the Lee River dam), near Nelson, will finally proceed.

The local MP, Nick Smith, is disingenuously touting the dam as an environmental benefit primarily, despite the fact that there is no ecological evidence in NZ of the positive effects of impounding any river with a giant concrete wall.

Smith's private member's bill which enabled public conservation land to be gifted to a private interest (the special purpose vehicle company set up by Tasman District Council to fund and operate the dam) was the final nail in the coffin of a free flowing Lee River.

Businesses reliant on water, pip fruit, vineyards, market gardens and a bit of dairy on the Waimea Plains will all benefit, but solely because they will not be paying for most of it – you and I will, care of the taxpayer funded Freshwater Improvement Fund and Crown Irrigation Investments Ltd. Tasman and Nelson ratepayers will be also providing a large slice of the estimated \$100M plus bill.

Fish & Game remained neutral on the dam, the river had no fishery value, other than concomitant with the dam was a slightly higher minimum flow level for the Waimea River (1100 litres/sec versus 800 without the dam). Something of a Hobson's Choice for F&G.

What is interesting is the economic analysis performed by Peter Fraser in the recently released book "Mountains to Sea" edited by Mike Joy.



In the chapter entitled "The Economics of Water Storage – Is It Really A No Brainer?" Fraser compares the cost of Waimea Dam to previous projects, mooted and built, the comparisons show that, even with massive public subsidies, the Waimea Dam is extraordinarily uneconomic.

Dam	Volume (millions m ³)	cost per m ³ (cents)
Waimea	13	54.0
Rutataniwha	104	12.0
Opuha	72	8.6

The beneficiaries, the irrigators, will pay just \$32M of the whole project cost, with the balance funded as follows:

Tasman District Rate Payers \$23M
Nelson City Rate Payers \$5M
Tax Payers \$39M

TDC aka the rate payer, will underwrite all loans for the project. It is unclear what happens when the next estimated project cost blow out inevitably appears.