

Chris Arbuckle

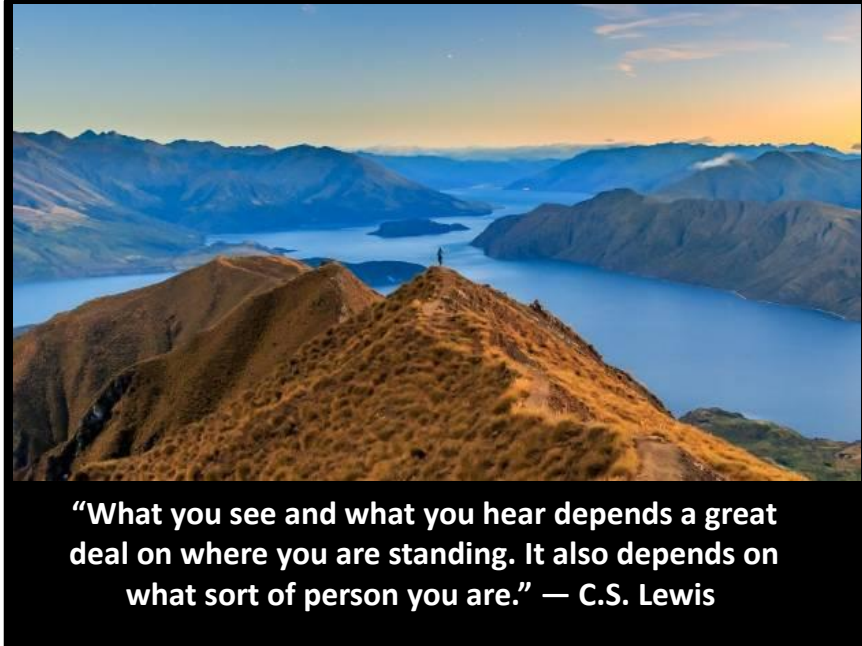
Farming in a Challenging Environment Lake Catchment Project Farm Planning, Water Quality and **Change.**

NZARM 2017

"Managing soil and water interaction through people and science".

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ENVIRONMENTAL





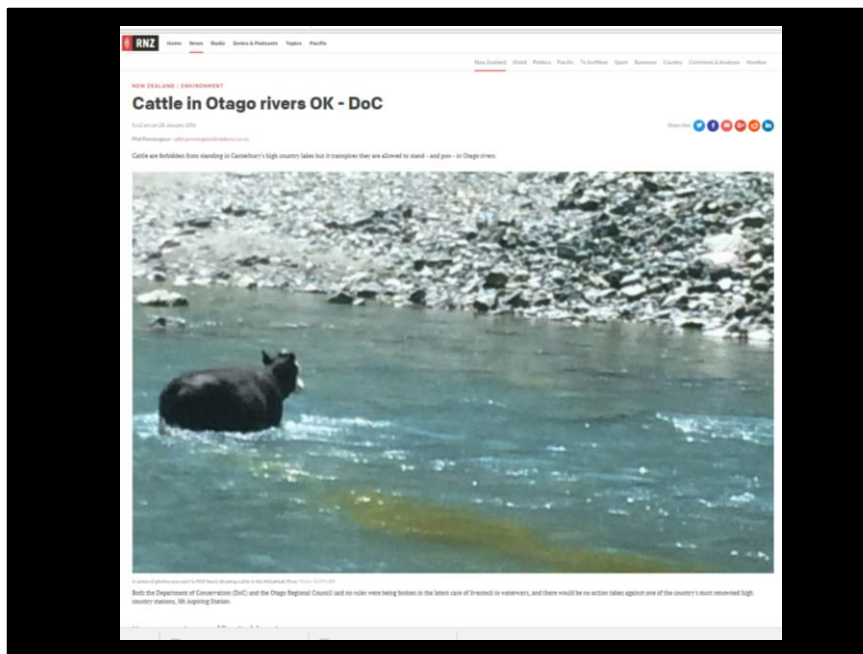
In 2013 I was asked to mediate between Lake Catchment Farmers and the ORC – The outcomes – ORC happy numbers did not change significantly,

But more importantly farmers in the catchment set a new path of environmental discussion and began a Journey – fitting environment to business and facing the fear of environmental regulation with information and understanding. We also are helping each other deal with perception, both from outside and inside of community.

High Country Farm systems are a small % of farm type, but cover large areas of iconic landscapes. Most have a Deer, Sheep, beef and some have a Tourism operation in place !! Complex is a stupid word to use when referring to them. It needs to be preceded with a bad word.



Perception, drives much of our opinion. This picture is something I grew up with, exactly in this place –The Matukitiuki . I suppose then there were less people about, maybe a 1/20th of the 80000 reported visitors.



But in this enlightened period of environmental management, this can be what a High Country farmer, for that matter any farmer will awake too.

What comes with this sort of portrayal is fear, hurt and a broad lack of understanding on all parts (the photographer, community farmer, government etc) and always a lake of information about the true effect of such stuff on Rivers in this area.

Being vilified in the media is not a good feeling.


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Saturday, 13 February 2016

'Lake snow' threatens Wanaka

Regions • Regions



Some Wanaka fishermen say the lake snow is clogging their gear and preventing them from fishing in certain parts of the lake. Photo: Margot Taylor



A possible new plan for attacking cyanobacteria in Lake Wanaka was announced this week, but Wanaka reporter Margot Taylor finds the lake weed is not the only boggie lurking beneath the lake's surface.

Beneath the crystal clear water of Lake Wanaka, algae are flourishing, algae which a group of local fishermen and members of the Guardians of Lake Wanaka say have the potential to devastate the iconic lake.

The issue is "lake snow", a build-up of microscopic bacteria, algae (*Cyclotella bodanica*) and muscia that have clumped together and become visible to the human eye.

Wanaka fishermen and the Guardians of Lake Wanaka say the gelatinous algae, which changes in appearance from mud-like when it is new to snow-like when it is old, is

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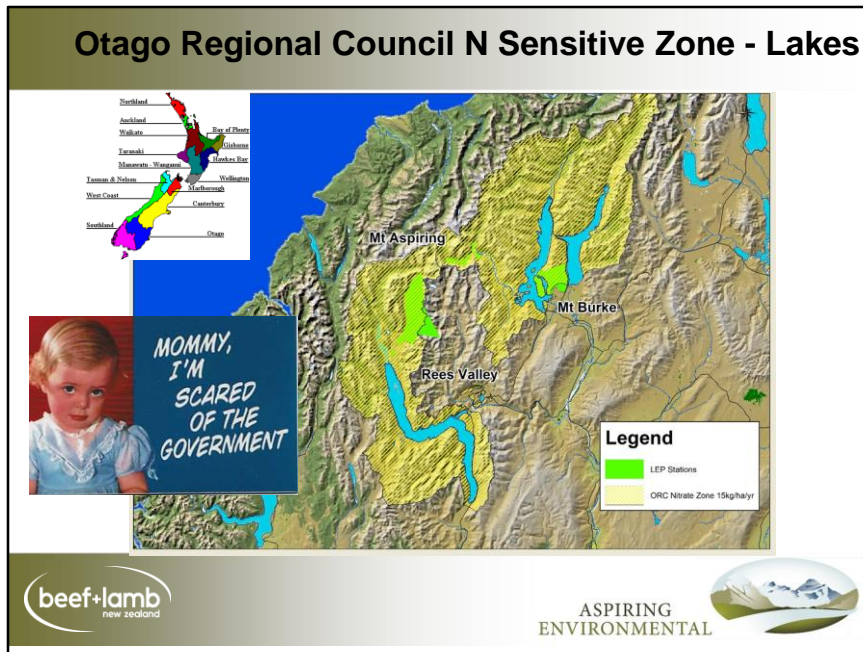
GET TO THE GAME THIS SATURDAY!
 CUVEN BASKETBALL
 OTAGO SPIRITS VS BOP
 7.00PM TICKETS \$12.50pm

MOST POPULAR
 Police hunt vicious Octagon attackers
 Fire car pile-up on Southern Motorway
 Sordid letter sent to paedophile from prison
 Driver seriously injured in motorway

Further more science and scientists fire up suspicion of blame in media bursts on this they don't even understand – Yet. Being pointed to in media articles playing games with funders, as the potential environmental cause of lake water quality decline – with a focus on the rural the land users also feeds a less than positive response for a farming community. I myself in “closed” meetings said several teems, assumptions make an arse out of someone. The diatom “lake snow” has been found to be yet another failure for our biosecurity barriers. Just like didymo.

But regardless, of such distraction we need to focus on the core water quality issues. Hence we support regional policy steps and initiatives around water quality policy. But only if they make sense.

Otago Regional Council N Sensitive Zone - Lakes



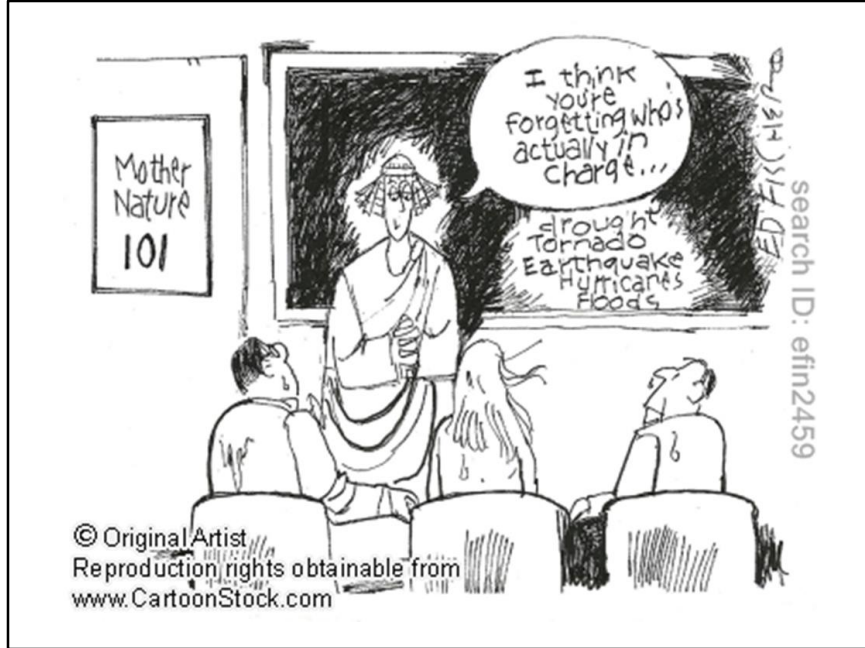
Here's the N cap map for the Otago lakes. 15kgN/ Ha ?Yr (it was 10 before mediation) 15 is half of 30 – the amount for largest zone for the ORC load limit – inc. Dairy farms.

Until We were able to work with beef & Lamb NZ, establish some projects and started telling a more informed story, Fear was still a primary driver of response in meetings I had with key farmers.

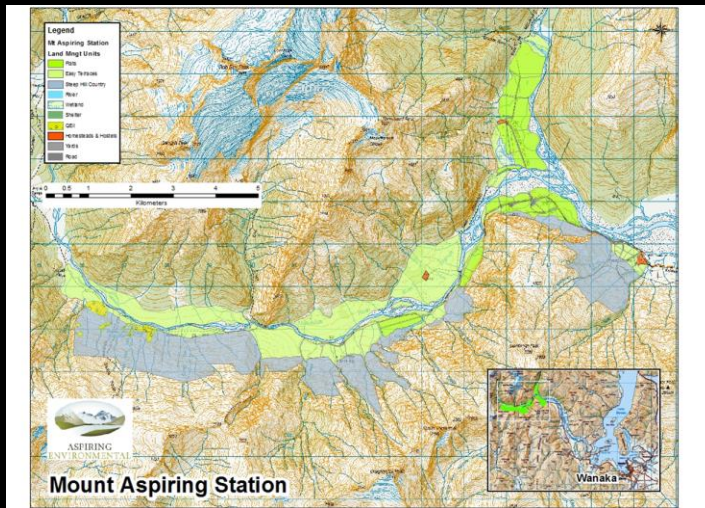


Water - Always Respect It

The fact is, living in this area provides a huge respect of water. And all this hounding from science government, community etc – Is a world I have played key roles within.



These people face Mother N every day.



**“If you fail to plan, you are planning to fail
(Sic)” - Benjamin Franklin**

So Via a Beef & Lamb focussed project we started a conversation about planning. Planning not to fail, not to be blamed and not to be seen as ambivalent polluters.

Farming in a Challenging Environment - The Places



Mt Burke



Mt Aspiring



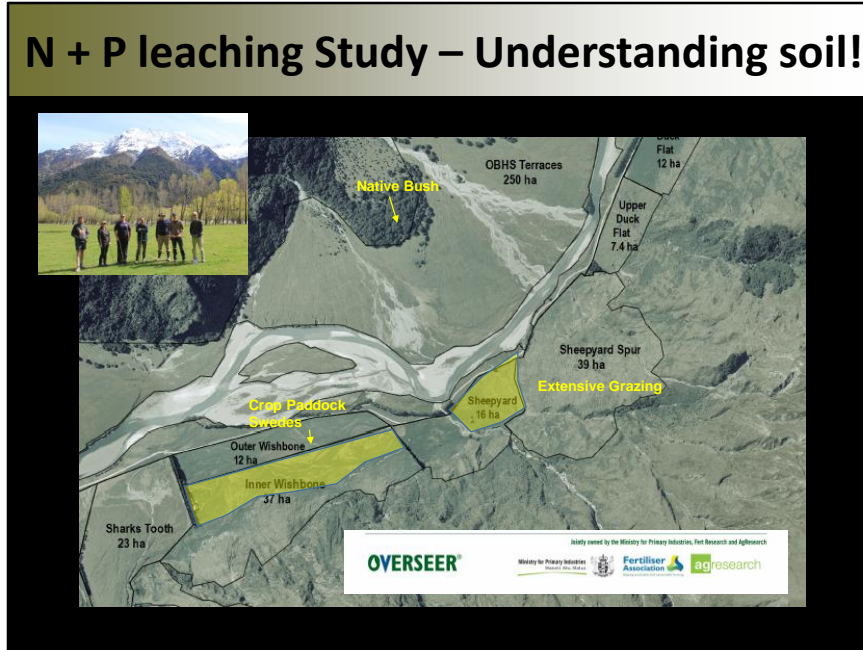
Rees Valley



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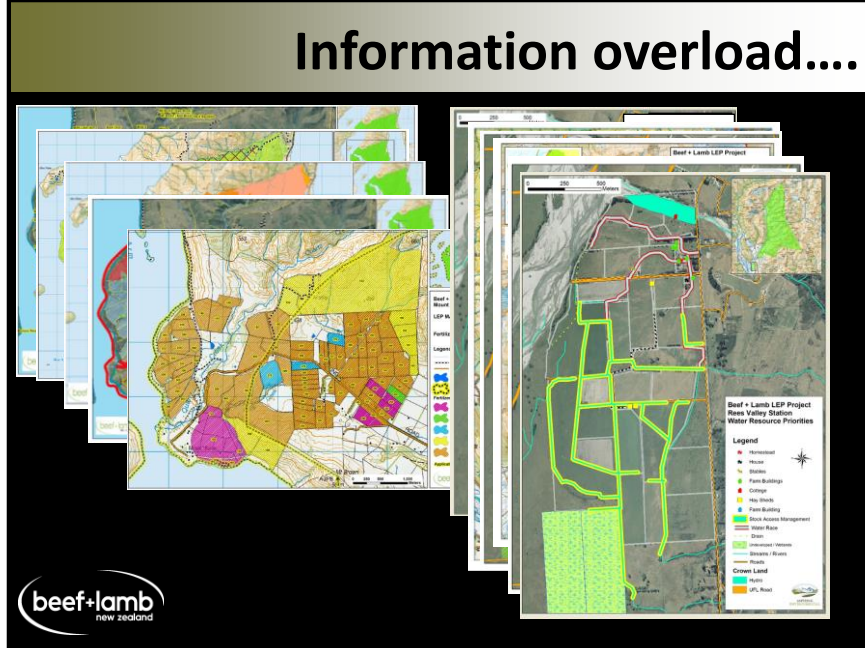
N + P leaching Study – Understanding soil!



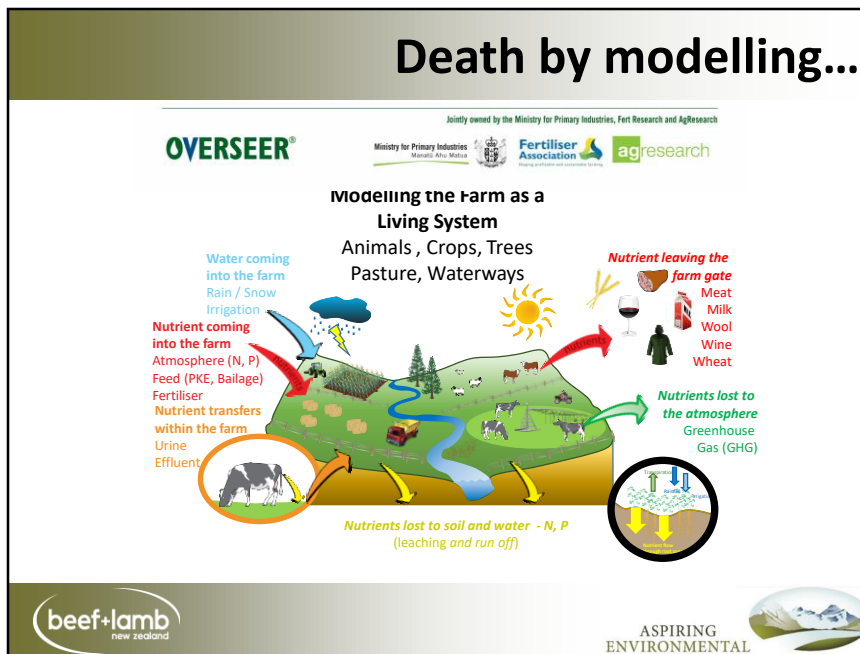
Talk to Ross !! But in all we showed N & P loss was lower when measured, versus modelled... go figure!.

Also a very comprehensive Soils mapping done by Landcare Research on Mt Burke.

Information overload...



Mapped the hell out of places to show and detail the farm environment.



Death by Overseer

A farm is a living system, comprised of soil, animals, plants and water. Many of these things contain nutrients and nutrients sustain all living organisms. Any living system is a hugely complex thing to understand. This is why *Overseer*® has been developed as a farm management tool, it helps farmer understand the way nutrients flow through the farm system.

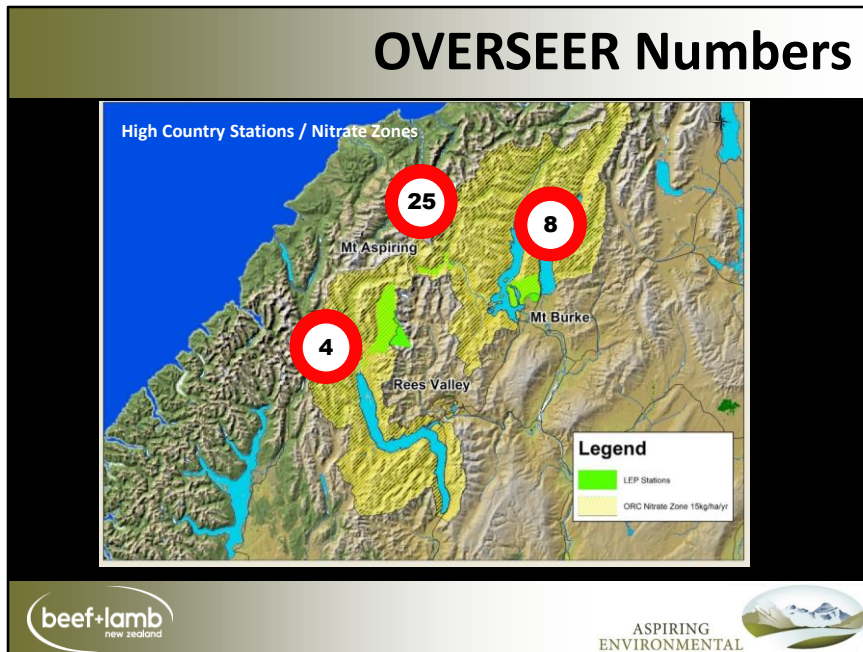
Overseer estimates how nutrients coming into the farm, such as fertiliser and feed, are naturally processed by organisms (cows, sheep, and plants) and/or transformed by physical processes (nutrient cycles) and then how they pass through the farm. Water coming into the farm also plays an important role in the transport of nutrients throughout the living system. Nutrients end up in plants (e.g. pasture) or as products leaving the farm gate (e.g. meat, milk, crops, wool and wine). When the pasture or feed that is bought in to the farm is eaten by farm animals, the nutrients they absorb are converted to energy or waste. Energy is made into the products and waste passes through the animals. This excess nutrient transfers to the soil as urine or dung (effluent). Depending on the local climate, how absorbent the soil is or how much water is draining through the soil; nutrients will pass to the air, be lost through the

soil or be held in the soil to be re-used by plants. Any losses are represented by greenhouse gases (GHG's) or leached nutrients (such as nitrogen or phosphorus).

Using farm management information *Overseer* estimates how much nutrient is needed to optimise plant growth on the farm and in the process calculates in kilograms per hectare per year how much nutrient is not being utilized (this is potentially lost to the environment). The summary of calculations for the farm are represented by a nutrient budget.

It is good practice for the productivity of a farm system to balance the nutrients bought into the farm with the nutrients removed from the farm. A land manager can use the nutrient budget to optimise their use of nutrients (fertilizer, feed, etc) and improve their usage throughout the farm system. Farmers can also use this information to reduce farm environmental effects by ensuring less nutrient is lost to the environment.

OVERSEER Numbers



Land tenure is the cause for the number, not much else. All farms are losing N+P from critical areas. Hence why a Response Plan is critical regardless of modelling.

The key message –don't freak out about OVERSEER, use it for what its good for – checking trajectory and identifying stuff that does not make sense.

Scenarios

Mt Burke	Mt Aspiring
Improve status quo	Reduce cattle 20%
Bull Beef	Sell all steers as calves
Dairy heifer grazing	Fence Matukituki
Winter dairy cows	Drop to 15kg/N/ha
Dryland Lucerne	

FARMAX
YOUR ADVANTAGE

AGFIRST

beef+lamb
new zealand


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We locked OVERSEER to FARMAX and tested scenarios for two farms, to see where profit and loss laid when changing farm system to meet reg's. Especially pertinent to Mt Aspiring.

Scenarios

Aspiring

	Base	Reduce cattle – 20%	Sell all steers as calves	Fence Matukituki 	Drop to 15kgN/ha
N loss (kgN/ha/yr)	25	24	24	26	15
P loss (kgN/ha/yr)	2.9	2.9	2.8	2.8	2
EFS (\$/ha)	98	92	105	122	-19

Burke





	Base	Improve status quo	Bull Beef	Dairy heifer grazing	Winter dairy cows	Dryland Lucerne
N loss (kgN/ha/yr)	8	8	8	10	11	~8
P loss (kgN/ha/yr)	1.1	1.1	1.4	1.4	1.6	~1.1
EFS (\$/ha)	32	37	39	40	44	36

Financial results are presented as Economic Farm Surplus (EFS) - the return available to the owner-operator of a freehold, unencumbered farm after allowance has been made for labour and management input. It is calculated as follows: EFS = Farm Profit Before Tax + Managerial salaries + Interest paid + Rent paid - Assessed managerial reward (equivalent to the ruling wage for an experienced farm worker + 1% of farm capital for management)

Fencing EFS does not take into account paying the capital cost of over 480K in fencing and the fact landscape will be stuffed.

Response Plans

Environmental-Priority-Areas, Activities and Sites.

Challenge	Primary-Issue	Description-/Activity	Photo-Exemplar	Priority	RMA-Rule	How-to-manage
Stock-Access-Management	Water-Quality—Ditches, and several streams flowing through paddocks have direct stock access, especially cattle.	Bank-erosion/-access-for-faecal-contamination, dead-stock.		1a	ORC-6A-Schedule-15+16-WQ-Standards	Consider-retirement-/temporary/permanent/-fencing-of-ditches-/provide-strategic-stock-access-and-manage/-minimise-stock-crossings-and-bed-disturbance-as-per-ORC-Rules. Fence-where-practical-and/or-provide-stock-water-troughs. Retire-riparian-sections.-Key-Site-Wish-Bone-falls.
Nutrient-Management	N/P-Loss	Overseer-/Nutrient-budget		2a	ORC-6A-15kg/ha/yr	Refine-use-of-the-model,-understand-the-drivers-of-n-loss.-Work-with-ORC-/Research-to-understand-how-the-model-is-representing-Mt-Aspiring-farm-system.
Stock-Access-Management -Wetlands/-ponds.	Water-Quality,wetland-degradations	Bank-erosion/-access-for-faecal-contamination, dead-stock.		3a	ORC-6A-Schedule-15+16-WQ-Standards	Retire-wetland-areas, Fence-off non-productive.
Native-scrub-and-bush.	Protect-agreed-covenants	Fence-off-areas-of-native-vegetation		4a	N/A—Tenure-review-and-QEII	Fence-off



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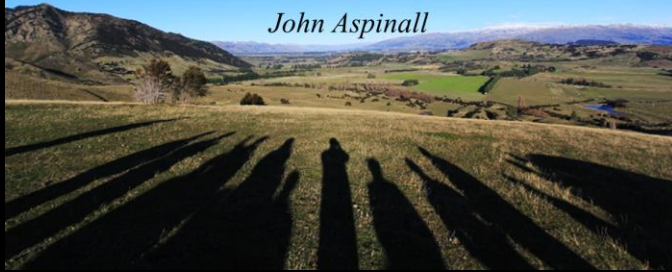


The real deal..

*“Sustainable management will not be achieved by rules, regulations, legislation or plans. It is **achieved** by those working the land with sweaty brows and dirty hands”*

~

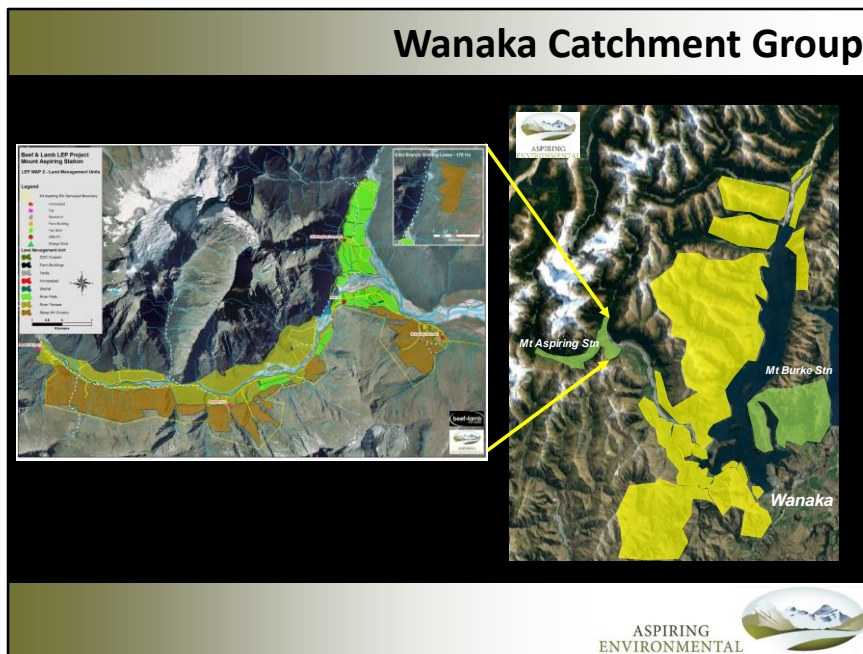
John Aspinall



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Wanaka Catchment Group



Wanaka Catchment Group

- Catchment Wide Farm Environment Plan Project
- Two Stations Complete – **Beef & Lamb NZ Farming in a Challenging Environment project – LEP3 /Overseer/Farmax**
- 14 of the other 19 farms and properties around Lake Wanaka have signed up to a farmer funded collective. **LEP3 / Overseer and “the Journey”**.

The "Journey"



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Changing Management

- **Fertiliser Timing & Location**
- **Thinking about Break Fencing**
- **Reduced Mob Sizes**
- **Sheep Only Paddocks**
- **Where to Feed Silage**
- **Changing Farm System**

Without reflection, we go blindly on our way, creating more unintended consequences, and failing to achieve anything useful.

- Meg Wheatley



Determination, energy, and courage appear spontaneously when we care deeply about something. We take risks that are unimaginable in any other context. - Meg Wheatley

Living and understanding the place matters to community.



**Make The Environment Part of Every
Decision! – Randall Aspinall**

Full Farm Environment Plans, Nutrient Management and Journey spoken about with passion by Randall Aspinall

Cheers

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Q?

**THE
TOUCHSTONE
PROJECT**



3f

FOOD.
FARMS.
FRESHWATER.