Farmers for Positive Change

HRWO Plan Change 1, Block 2, 4th June 2019

Farmers for Positive Change

The spokespeople here today for F4PC are farmers:

- Rick Burke
- Bill Garland
- James Bailey, and
- Graeme Gleeson

Advocating for and on behalf of our fellow farmers, a broad church who are individuals and independent yet all want fair and equitable outcomes

It is not all about push-back

F4PC want to offer alternative workable solutions that are adaptive, flexible, less contentious and embrace fairness and equity for all land users.

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Linda Lambert

Empowering Farmers to Protect Water

Farming Fits the Land

Framework of Actions (desire for seamless transition into next plan change)	
Interim target State of Water Quality year – 2050 • Certainty, direction and pace of travel • Measurable and auditable • Seamless transition Plan Change 2 & 3	Farm Environment Plan • Comprehensive review natural resource • Land use opportunities regarding versatility, capability and assimilative capacity - Farming Fits the Land
Subcatchment Focus • A spatial scale to foster Community focus • Prominent contaminant loss emphasised	Certified Farm Advisor • Good Management Practice • Compliance module
Nitrogen delete one-size-fits-all • No 75th, No Grandparenting, No 5-yr averaging • No share-the-pain subsidisation • No under / overs offsetting	Critical Source Areas • Prioritised focused mitigations • Tailorised and Integrated

Nitrogen Flexibility
• Extensive / Intensive threshold
  • 18 su / ha ~ 1000 kgLW / ha
	Livestock Exclusion delete one-size-fits-all
	• Lowland ≥ 15-degree
	• Steep > 15-degree Intensity risk threshold
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Nitrogen Allocation Framework • Natural Capital + LUC proxy	Winter Forage Crop Grazing • Buffer widths
Nitrogen Horticulture	Cultivation on slope
	Point Source Discharge – Offset ?

Redesign HRWO Plan Change1 to restore the Maui of the Awa

The key points that F4PC believe will engage farmers and drive change:

Push-back against Plan Change 1

- **NO GRANDPARENTING!**
- **NO offsetting!**
- **NO one-size-fits-all Fencing Rules!**
- Too much uncertainty, no direction or target for the future.
- This has created unnecessary stress on farming families and rural communities.
- This has led to 'pushback' and ultimately will lead to non-compliance!

F4PC solutions

- **Design Policy to create a positive culture to empower farming sectors and their communities to improve water quality and ecosystem health across the Waikato.**
- Focus on high priority sub-catchments first - the staged approach.
- Understand the issues of contaminant loss and risk through environmental forensics within sub-catchments.
- Empower Farmers and their communities by providing the resources for education and awareness of the issues on farm and within sub-catchments.....Team up with Industry and Farmer Champions!
- Use LUC principles to give farmers an understanding of land use limitations but also opportunities to optimise land use.
- Prioritise actions through LEP or FEP linked to a Works Programme to achieve the most effective mitigation.
- Set targets within sub-catchments i.e. **Nitrogen leaching limits linked to land class** allow for transitional time frames that are doable.
- **There is a need for certainty!.....Provide an interim TARGET!**
- **Looking to 2050.....A vision of a mosaic of land use where Farming Fits the Land!**


Rick and Jan welcome you to...
PUKEKAURI FARMS
BFEA 2014 Supreme Awards Winners
Bay of Plenty

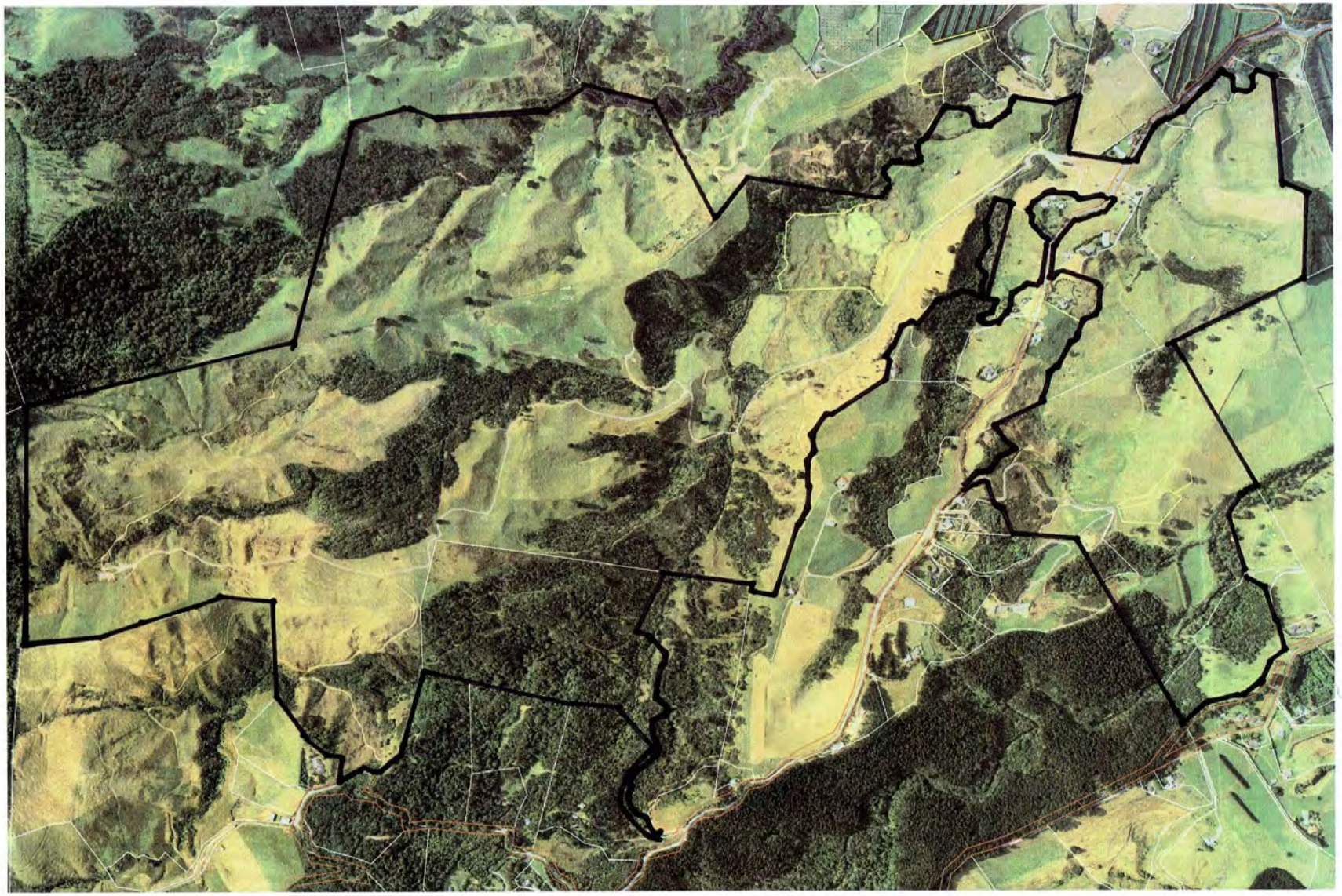
Back Ground Information

- Pukekauri Farms is in the Te Mania sub-catchment of the Tauranga harbour.
- Historically sediment has been the main contaminant for the Te Mania.
- In 1998 was one of the highest contributors of sediment by concentration in the northern harbour.

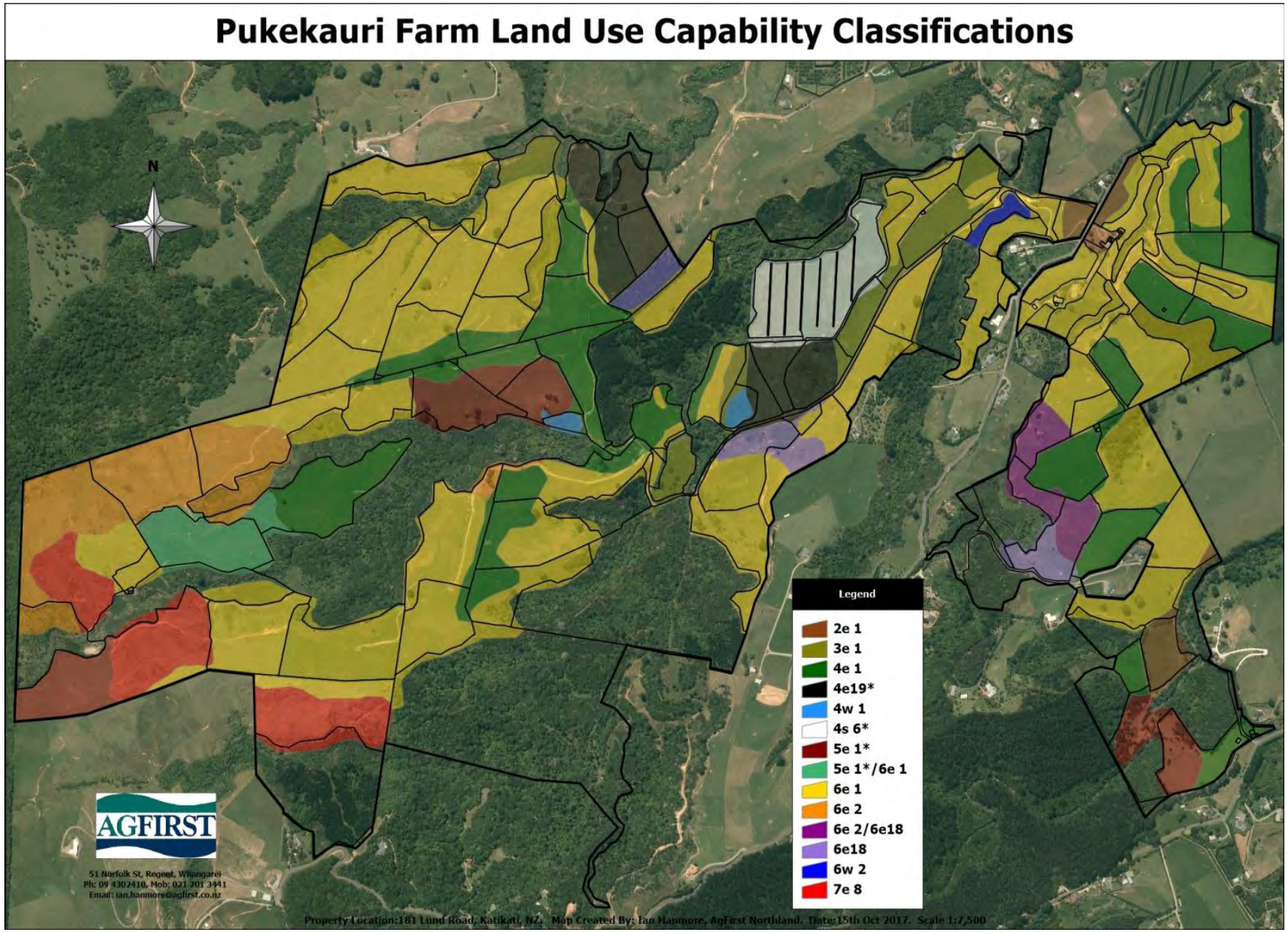
A snapshot of Pukekauri Farms after 20 years

	1998	**2018**	
•	**NRP - est 10**	**NRP- act 19.5**	***68 ha retired!***
•	Stock units 10.7/ha	Stock units 14.5/ha	*Smarter farming*
•	Average LUC class 5	Average LUC 5	*Better performance*
•	Rainfall 2000mm	Rainfall 2000mm	
•	Environmental score card 2/10	Environmental score card 9/10	
•	Profitability EFS low quintile 2	Profitability EFS high quintile 5	

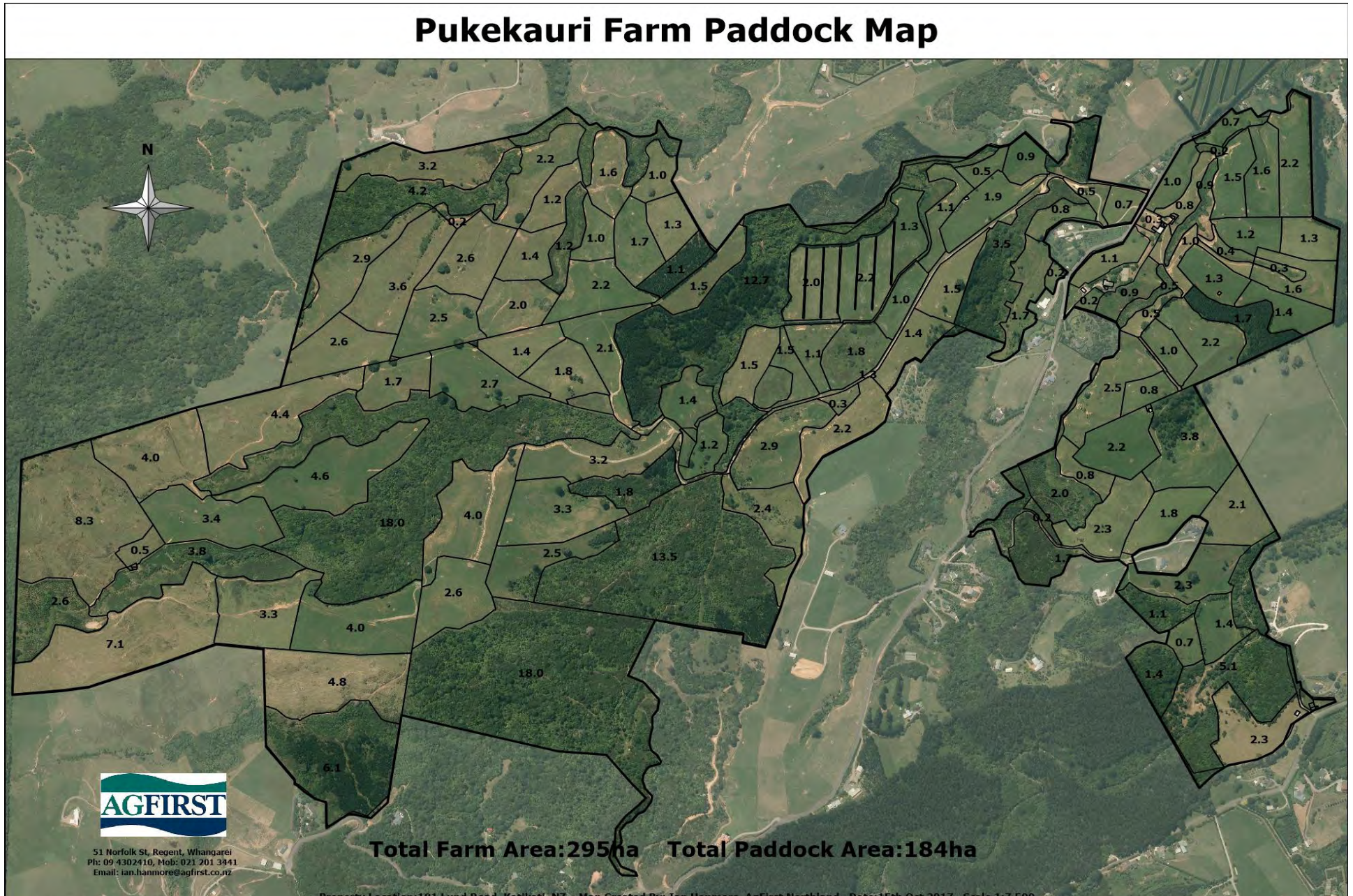
A blank canvas - Pukekauri in 1998



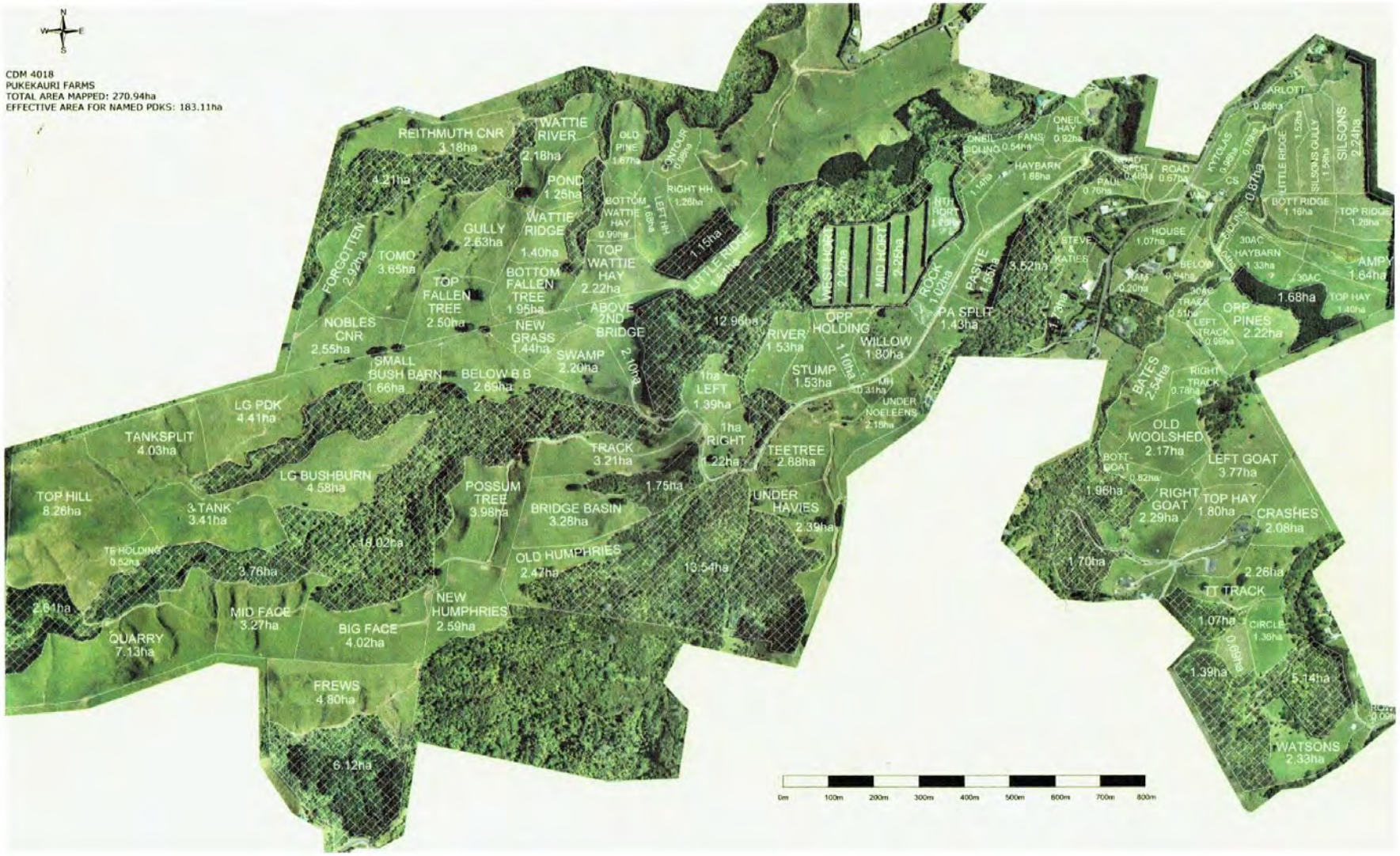
A Natural Capital approach to Optimise land use



The redesign of Pukekauri into Land Management Units



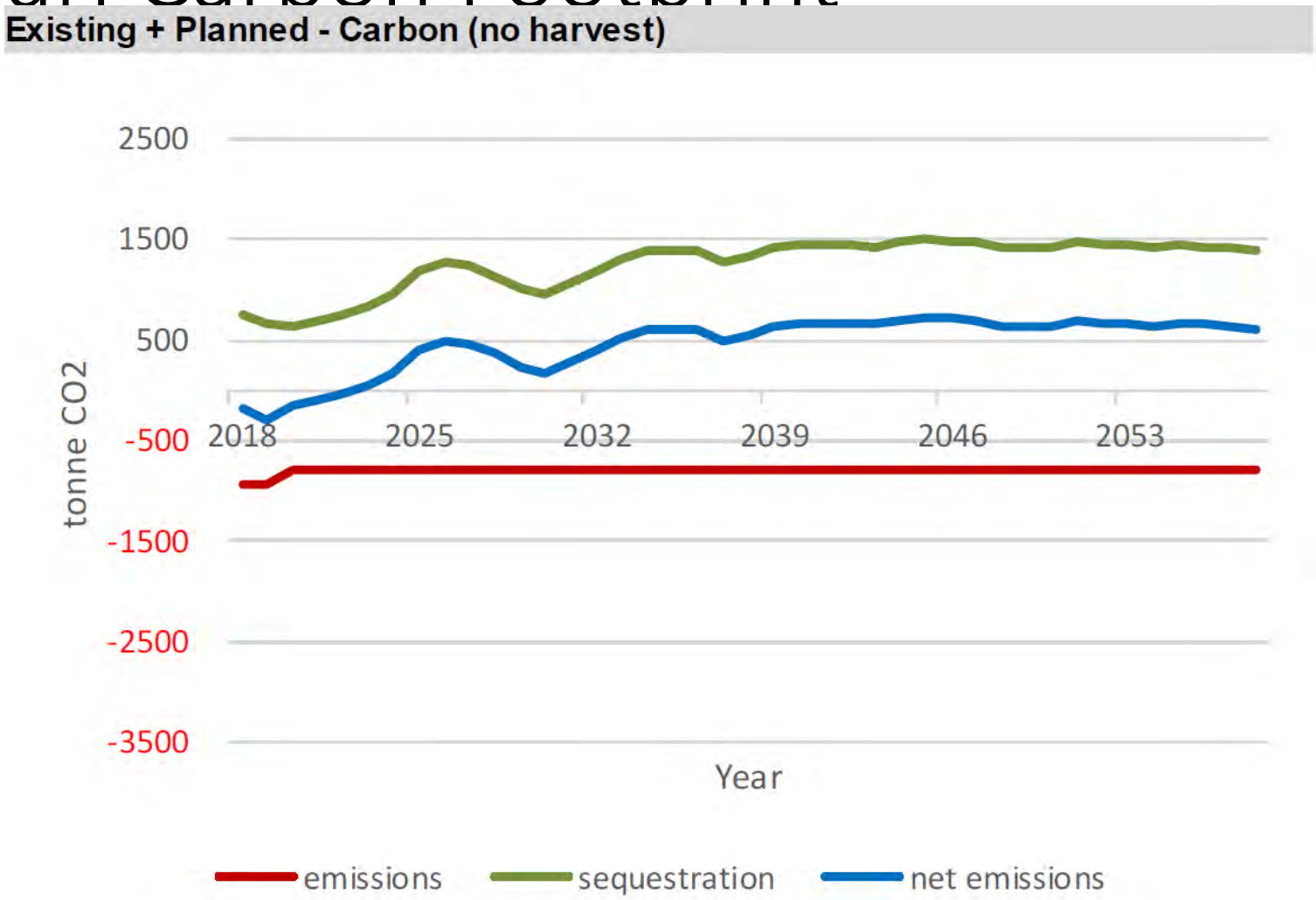
Pukekauri 2018



Twenty years on Pukekauri is now a mosaic of land use where

Farming Fits the Land

Pukekauri Carbon Footprint



Sustainable farming for maximum profit

Pukekauri Farms

Farm Physical & Economic Analysis.

Farm Physical	1998	2018
•Total area ha	350	350
•Effective area	280	212
•Total SU	3000	3074
•SU / ha	10.7	14.5
NRP - Flexibility!	**10**	**19.5**

Economic Comparison	1998	2018
•GFI/ ha	571	1834
•EBITR	302	970
•B+LNZ Economic scorecard	low quintile 2	high quintile 5

•**Note : Between 1998 and 2018 there was 68Ha retired from grazing.**

Farm facts 2018

Total farm size (ha):	350ha
Effective (ha):	212ha
Production trees:	27.7ha
Bush, streams, wetlands (retired from grazing):	110.3ha

Primary use:	Sheep, bull beef and dairy grazing
Average LUC class	LUC 5
Stock units:	3074 - Stocking rate 14.5 SU per ha
Income streams:	43.6% bull beef, 36.4% dairy grazing, 20% sheep including wool, 1.5% other
Terrain type:	65% easy to rolling (truckable), 35% steep (aerial).

Pasture production (tDM/ha/yr):	12 tonne
Rainfall (mm/yr)	1900 -2200mm
Soil type:	Predominantly Waihi Ash
Mineral deficiencies:	Cobalt, copper and selenium
Critical feed time:	February/March

What did a Natural Capital approach mean for Pukekauri Farms used as the framework for our LEP?

1st WIN - INCREASED PROFITABILITY and EASIER MANAGEMENT.

2nd WIN - ENVIRONMENT - Improving Ecosystem and Human Health.

3rd WIN - MORE LEISURE, SOCIAL and COMMUNITY TIME.

1st WIN - INCREASED PROFITABILITY and
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1st WIN - INCREASED PROFITABILITY and EASIER MANAGEMENT

2nd WIN - ENVIRONMENT - Improving Ecosystem and Human Health

- Understanding the Land Use Capability (LUC) of Pukekauri Farms.
- Taking a stock take of our natural resources.
- Redesigning the farm into Land Management Units.
- Options for either farming, production trees, retirement & now carbon opportunities.
- Understanding the effects of sediment on our stream health and biodiversity within the harbour.

Prioritised works programme for Pukekauri.

- Riperian fencing in lowland tractor country.
- Identifying and fencing off Critical Source Areas.
- Water reticulation - strategic placement of troughs.
- Subdivision fencing of the most versitile land management units.
- Large and micro wetland restoration.
- Strategic placement of sediment traps.
- Creation of sediment bunds.
- **GMP of steeper hill country** - Maintaining good grass covers.
- Sheep only paddocks.
- Young cattle only less than 350kg live weight.
- **NOTE:** Riperian fencing in the steeper hillcountry was considered low priority in terms of best mitigation against all contaminants.

Identifying and fencing off Critical Source Areas.

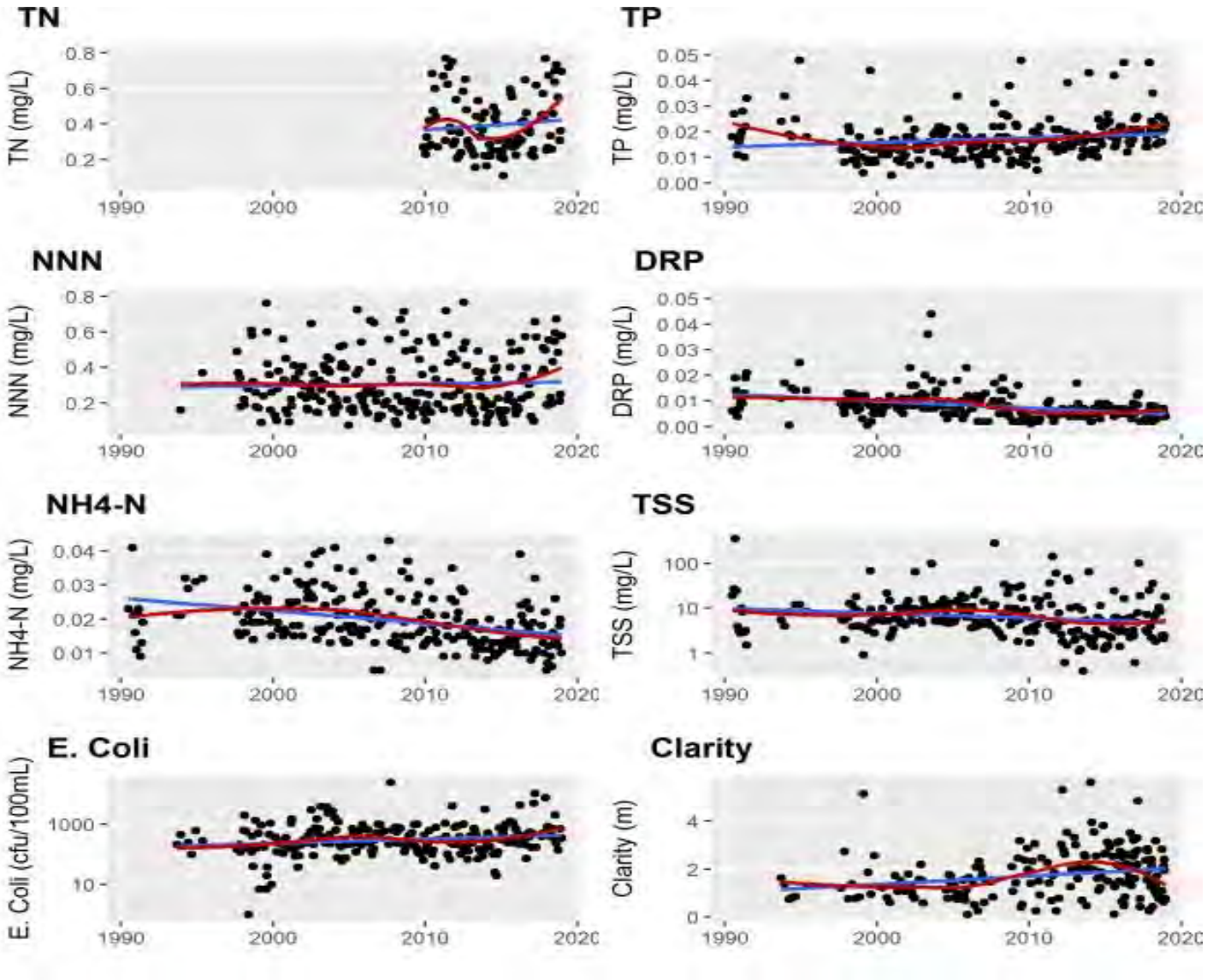
Wetland restoration at the bottom of the catchment

Creation of sediment ponds.

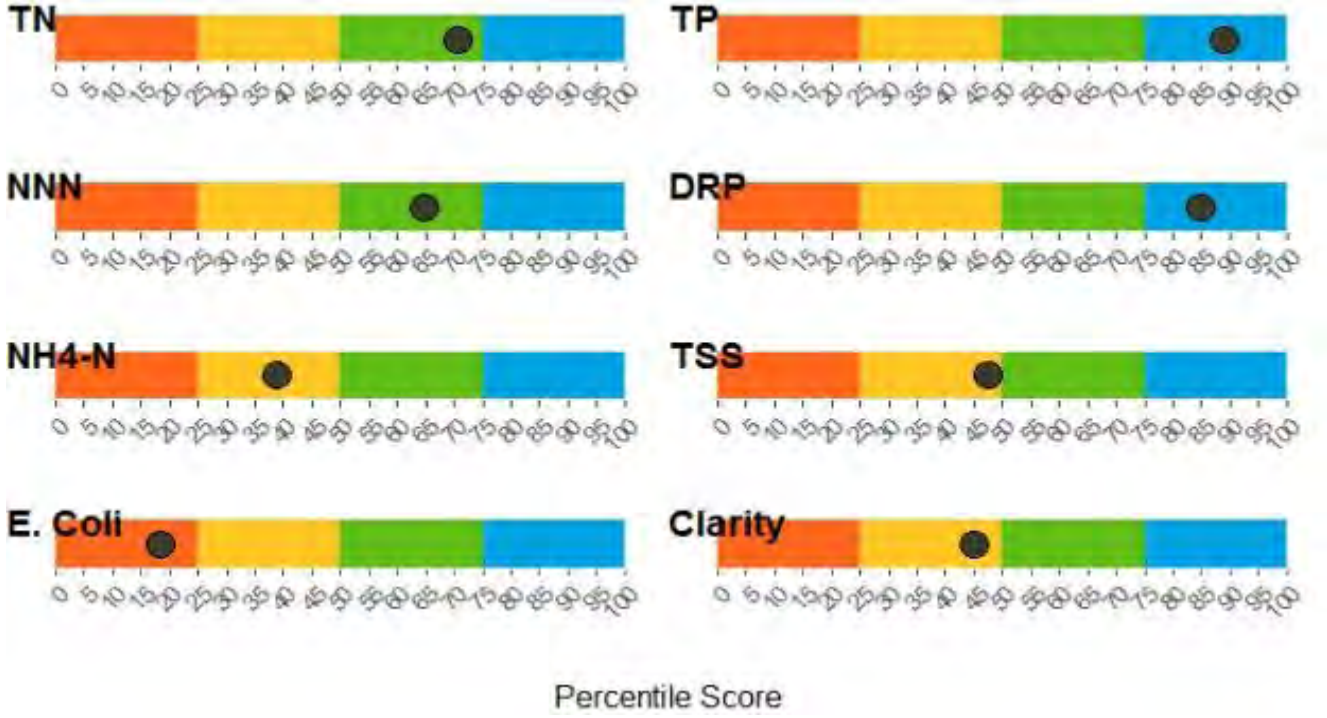
Creation of sediment bunds

What has this mean't for the improvement of water quality?

Time series plots lower catchment 5km below Pukekauri boundary.



Score card: 5km below Pukekauri boundary.



Comparison of the subject site against other monitoring sites in the Bay of Plenty. Labels are as follows: TN - Total Nitrogen; TP - Total Phosphorus; NNN - Nitrate Nitrite Nitrogen; DRP - Dissolved Reactive Phosphorus; NH4-N - Total Ammoniacal Nitrogen; TSS - Total Suspended Solids; E. Coli - Escherichia coli; Clarity - Water Clarity (Black Disc).

Improvements relating to environmental work done on Pukekauri over 20 years.

- Suspended solids and clarity (sediment) – these both show good improvement over time, the result of Wetland restoration and focus on CSA.

- Ammoniacal nitrogen – a significant reduction the result of lowland riparian fencing, troughed water, CSA protection, GMP ie change of farm systems ie matching right stock class to land class.

- E.coli – This parameter is at high levels in the lower catchment and shows a slightly negative trend. However on Pukekauri samples taken over the last two years show low levels of 150-250 (cfu/100ml) which is below BOP average 291 and Waikato 685 (LAWA data).

Pukekauri score card after 20years.

- 1998 Waterquality and ecosystem health **2/10**

- 2018 Waterquality and ecosystem health **9/10**

What have we learnt after 20 years?

A Quote from our BOPRC Land Management Officer.

Re Future Focus:

- *Change from the traditional Land management approach, away from riparian and steep land retirement alone.*
- *More emphasis on Good Management Practice* ***underpinned by an LUC approach (this applies regardless of contaminant)***
- *Strong focus on Critical Source Area identification and intervention, in particular retirement of micro wetlands as a mosaic throughout the landscape.*
- *Applying more of a biodiversity habitat restoration approach for the co-benefits associated to drive change.*

So what's next for Pukekauri and the the Te Mania Sub-catchment?

- A sub-catchment initiative called the Project Parore has started.
- Supported by MfE and the BOPRC.
- First step Environmental Forensics.
- Second step Industry agreement.
- Third step community engagement
- **More to come in Block 3!!**

Let's not forget the **3rd WIN -** MORE LEISURE, SOCIAL and COMMUNITY TIME.

Thank you from...

F4PC Key take home messages in the rewrite of PC1

- **NO Grandparenting, NO Offsetting -** which only creates winners & losers!
- **NO Draconian 'one size fits all' fencing Rules!**
- Focus on the issues within Sub-catchments.
- First step Environmental Forensics.
- Empower Farmers & Communities through awareness & education about the issues. Everyone must take responsibility for their own issues.
- **Carrot First** - Incentivise and stimulate change.
- Team with Industry and Environmental Champions.
- Drive change using LUC Principles ie 'Natural Capital'.
- Policy must support Industry led high standard LEPs.
- Link NITROGEN allocation to Land Class within FMU.
- Create certainty with workable time frames.
- **The Stick** - Regulation as a backstop!

Bill and Sue Garland
Rahiri Farm

WRC PC1 Hearing 4 June 2019

Three different stages of work in immediate area

Stage 1 and 2

Stage 2

Stage 2 and 3

Stage 1 and 2 and unfenced wetland

Fence separating 2 land classes

Similar land class on dairy-support farm next door

Stage 3

Stage 3 - outside 12.4ha

Stage 3 - outside 12.4ha

Stage 4 with stage 2 in background

Latest redesign with multiple critical source areas

Stream bank erosion

Steep tracks feeding into waterways

Steep track feeding into waterways

Sediment trap at the bottom of unfenced wetland

Saturated peat soils

Saturated peat soils

Woodlot used to stabilise unstable soils which stock used as campsite immediately above stream

Pruned woodlot to reduce exposed soils

Site two weeks later

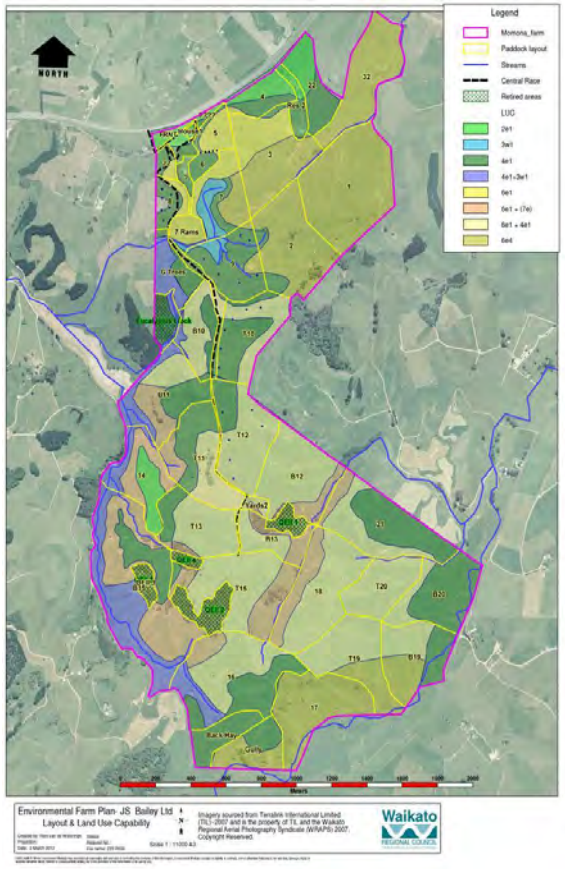
Farmers for Positive Change

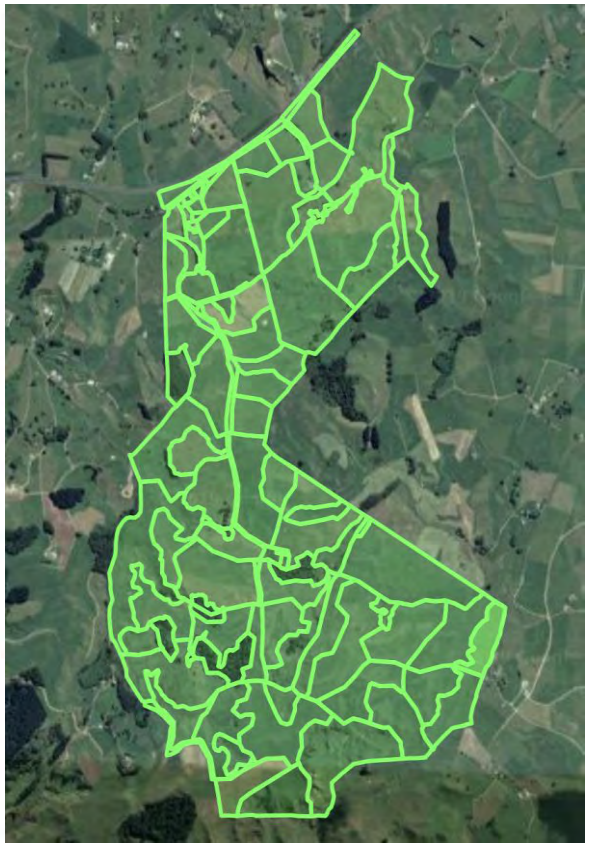
Block two

James Bailey

Natural Capital, Land Use Capability (LUC), and Nitrogen Management

- Natural Capital is an internationally recognized approach to resource management
- Natural Capital approach considers the Ecosystem Services produced by the management of our resources
- Acknowledged by the CSG
- L.U.C. is an important tool for resource management
- Sets the frame work on which we build upon to achieve Te Ture Whaimana, the Vision and Strategy for all contaminants not just N
- Is becoming increasingly validated outside of regulation as a tool to guide commercial and investment decisions





Matching land use to Land Use Capability

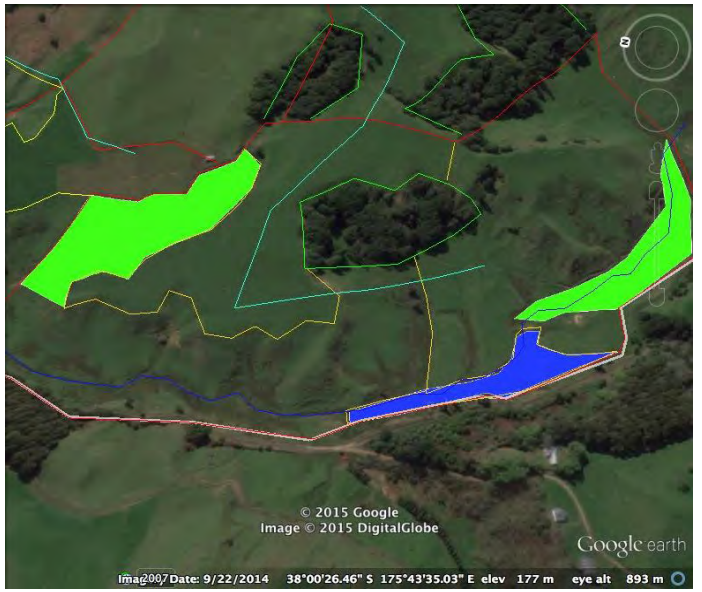
- Development of Land Management Units
- An environmental mitigation in itself
- Considers risks for contaminant loss
- Considers ecosystem services
- L.U.C giving direction for investment that will transcend the flawed staged approach of PC1
- Allows for adaptive management
- Acknowledges productive high value land/soils regardless of historic use

Mismatched land use to Land Use Capability

- N management through LUC would mean this farming system could not exist on this land
- Under grand parenting PC1 could potentially see this milking farm system continue
- Removing this system from this land use would also considerable reduce sediment, e-coli, and phosphorus loss.

Addressing Critical Source Areas – Investment in Ecosystem Services

- LUC builds the framework that provides a considered approach to Critical Source Areas (CSA's)
- These are where risk of contaminant loss is greatest
- We are reducing our effective hectares in a traditional sense but increasing our natural capital to provide ecosystem services
- But these mitigations must be paid for
- **The key for us has been to increase the profitability of the farm while concurrently enhancing our natural capital.**



Adaption and Innovation – Currently Inhibited by PC1

- Local Indigenous Biodiversity Strategy Pilot Project (WRC, SWDC, WRA, WCEET, AG Research)
- Consultation and input from mana whenua
- AGINFORM farm system optimisation modelling through AG Research.
- Identified areas for restoration while retaining profitability
- 15% reduction in P loss
- 20% reduction in erosion and run off
- Restoration of 42 ha (10% of the farm)
- Significant increase in Biodiversity – Manuka, Totara, Wetland Species
- In reality overall reductions in N loss but not identified by Overseer
- Overseer models an increase from 17 kgN/ha/yr to 18.
- Priority 3 sub catchment
- PC1 unable to grant a consent due to the NRP

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Farming in a changing environment: Increasing biodiversity on farm for the supply of multiple ecosystem services

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HIGHLIGHTS

- Use of an ecosystem approach to extend land evaluation to include biodiversity
- Ecosystem services supply from all parts of the farm
- Farm system optimisation within eco-logical boundaries
- Co-benefits of increased profit as well as decreased environmental impacts
- Discussion of strategy to incorporate biodiversity enhancement into farm management

GRAPHICAL ABSTRACT

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ABSTRACT

Among natural resources, soils continue to be poorly represented in ecosystem services frameworks and decision-making processes. Similarly, the supply of multiple ecosystem services from agro-ecosystems and trade-offs between services remains under-researched. As a consequence, it is unclear how and to what extent agriculture can deliver on environmental sustainability, whilst maintaining current levels of profitability. One of the main barriers to implementation of environmental management practices is the perception by the farming industry that environmental gains come at a cost and impact negatively on profitability. Therefore, we need to demonstrate that inclusion of all the natural resources on farm in farm system design and management offers flexibility for the farm system and insures improved sustainability and greater resilience.

In this study, an ecosystem approach was paired with a new generation farm system optimisation model and the inclusion of natural resources beyond land, especially biodiversity, to explore farm system design, and report on ecosystem services beyond food and fibre from different parts of the farm. The approach was tested on a sheep and beef farm in Waikato, New Zealand to explore the added benefits of replanting fragile parts of the farm landscape for soil and biodiversity enhancement on reduced emissions to air and water, and trade-offs between different services and farm profitability. The approach showed that it is possible to define and include ecological boundaries within which resources can be managed to deliver multiple benefits ranging from increased per hectare profitability to decreased environmental footprints. This is a feature analytical farm system frameworks will require in the future. The research also highlighted the importance of developing our understanding of the relationship between the condition and function of indigenous biodiversity fragments and adjacent pastoral

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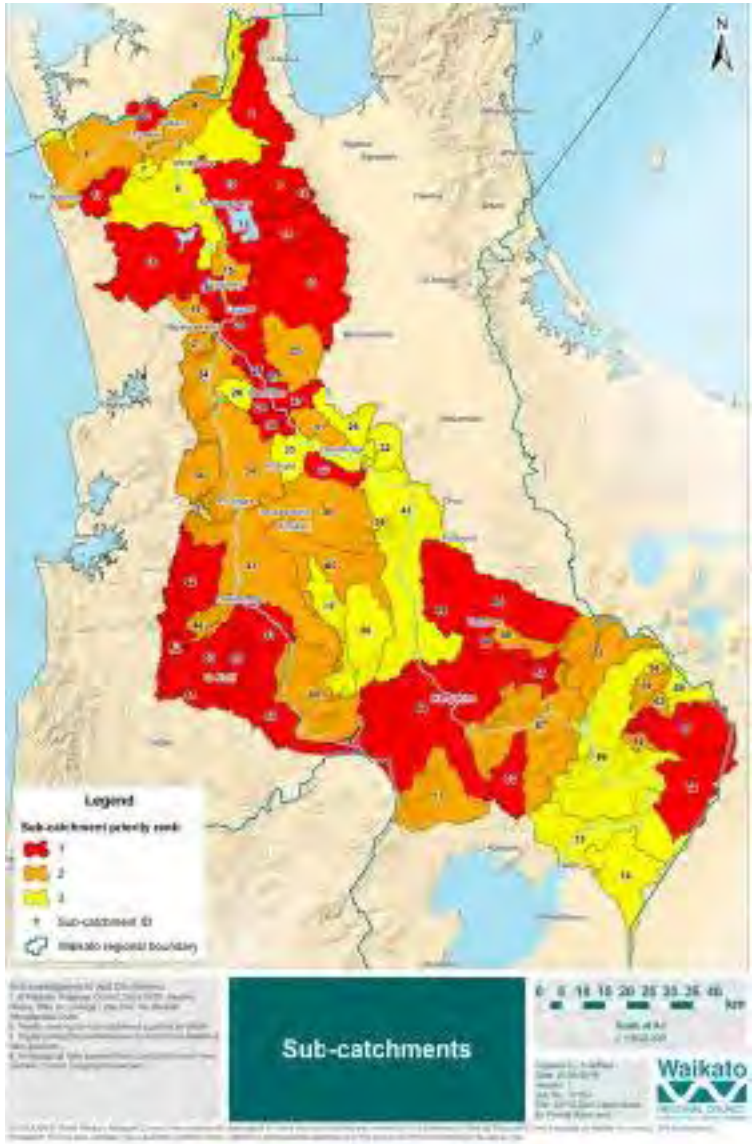
Taking Responsibility For Contaminant Loss Through Transition

- **I acknowledge the contaminant loss I am responsible for and the effect that has on the ecosystem services that are produced from the natural capital I look after.**
- I am successfully innovating and adapting to reduce this contaminant loss and enhance these ecosystem services.
- A Natural Capital approach though LUC is not a threat to intensive farming businesses or the Dairy Industry
- We have always advocated for a transitional approach
- Businesses will need time to innovate and adapt
- But we need a signal that the management of our Natural Capital will be focused on the capabilities of the land beneath our feet, not on what we have done in the past



Stock Exclusion – Do it once and Do it Right!

- Rushing to meet broad stroke rules can lead to misplaced investment
- Unsuitable mitigations can exacerbate the problem
- Fencing and Water reticulation is a large capital investment
- All mitigations need to be considered through the farm plan
- Sometimes it just takes time to develop the right solution
- It is better to do it once and do it right
- Focus on critical source areas first – best bang for buck

Farmers for Positive Change

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Linda Lambert

Empowering Farmers to Protect Water

Farming Fits the Land

F4PC want to be engaged and empowered
F4PC are ready for a conversation with dialogue
F4PC know the discussion will have boundaries with end points

Discussion topics having boundaries with end points	
Vision and Strategy	Farm Environment Plans
Te Mana o te Wai	Critical Source Areas
Restore the mauri of the awa	Over-allocation
State of Water Quality	Restoration to improve
Ecosystem and Human Health	Interim target Year - 2050
Nitrogen, Phosphorus, Sediment and	Allocation framework
Microbial pathogens	Accountability
	Biodiversity and GHGs

F4PC Vision of Success - A sustainable environment that supports ecosystem and human health with profitable and purposeful agricultural land usage in a common landscape contributing to everyone's wellness.

The common landscape being a mosaic of diverse and different use optimised according to the versatility, capability and assimilative capacity of the natural resource i.e. the land with an environmental footprint having minimal degraded impact - **Farming Fits the Land**

Framework of Actions (desire for seamless transition into next plan change)	
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Nitrogen Allocation Framework • Natural Capital + LUC proxy	Winter Forage Crop Grazing • Buffer widths
Nitrogen Horticulture	Cultivation on slope
	Point Source Discharge – Offset ?


A need to create better certainty,
direction and pace of travel
Embed an interim target
State of Water Quality Year – 2050
Transformative change
Transitional and staged
Fairness, Equitable, Proportional

Interim Target State of Water Quality Year - 2050

Table 2: Alternative Instream Nitrogen Targets

Narrative State	Max TN Concentration (mg/L)[3]	Waikato FMU
Minimal N enrichment	0.25	Upper Waikato
Moderate N enrichment	0.51	Middle Waikato
Substantial N enrichment	0.81	Lower Waikato

[3] = annual median based on monthly monitoring

Source – B+LNZ Dr. Tim Cox Block 2 evidence

Plan Change 1 does not provide opportunity to achieve better water quality outcomes by optimisation of land use because this may cause a slight ↑↓shift change in individual contaminant loss particularly nitrogen.

- Farm system redesign
- Farming Fits the Land
- No under / overs offsetting
- Opportunity established by the versatility, capability and assimilative capacity of the natural resource i.e. the land
- Better triple bottom line outcome


Transformative Change
Short term Flexibility for low N loss within No Land Use Change rule (sunset clause); and GMP reduction for medium – high N loss farm systems
Long term Nitrogen allocation adopting the Natural Capital LUC framework constrained by subcatchment current load and target
No under / overs offset (No Grandparenting)
Over-allocation targeted reduction (Polluter Pays)
Transitional with staged ↑↓adjustment


A Subcatchment Focus

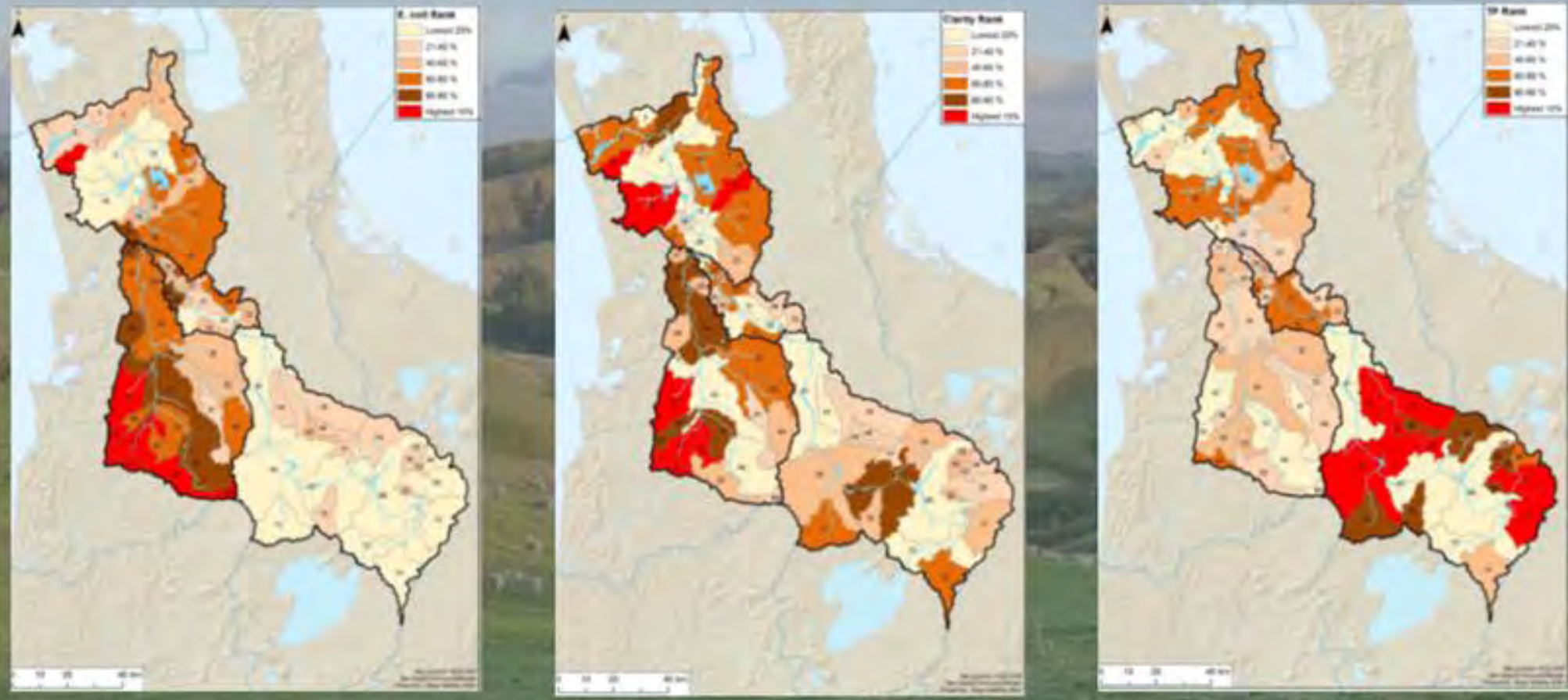
Sub Catchment water quality

Water quality can only be achieved by having target outcomes established at the subcatchment scale. The solutions will then be more focused and specific.

The focus on water quality at a subcatchment scale is observable and actionable by the farmers where they live, work and have vested interests, and encouraged by active support from communities and stakeholders

The water quality from each and every tributary subcatchment will be the outcome upon which success will be measured

Farm Environment Plans prioritising mitigation to reduce contaminant load as profiled and ranked in each subcatchment



E.Coli, Clarity and TP Sub-Catchment Ranking

Low N Loss Farm System Flexibility

PC1 grandparents low N loss farm systems

Low N loss farms ≤ 20 kgN / ha

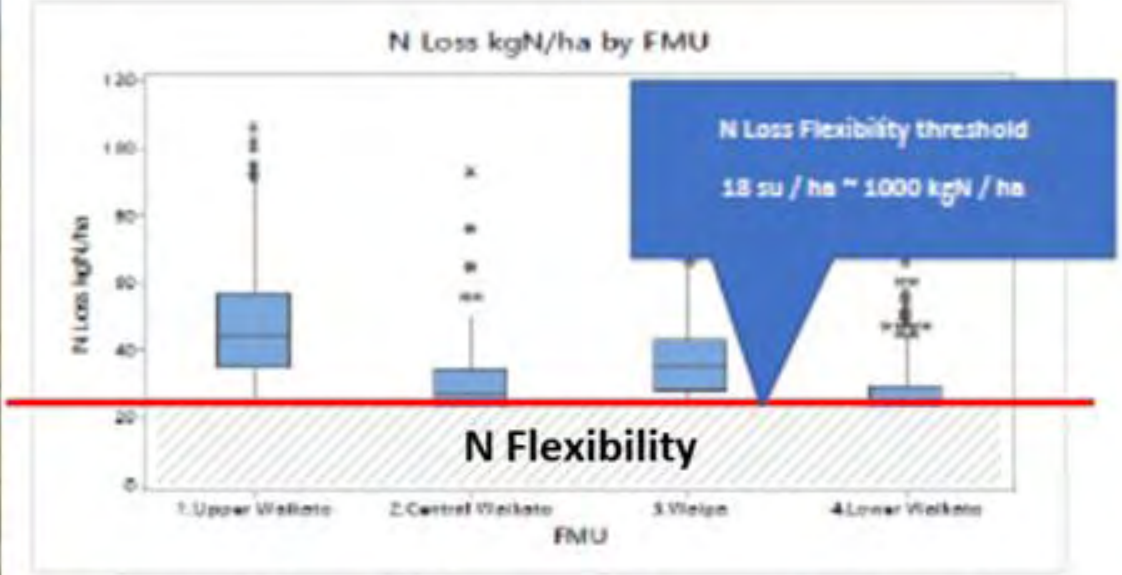
We are informed or can deduce that total N load:

- ~15 % total N load from Dairy farms (System 1 + Organic)
- ~25 % total N load from S&B + Deer farm systems

Nitrogen management

- Interim provide for flexibility (with sunset clause)
  Stock rate intensity threshold as a proxy
  ≤ 18 su / ha ~ 1000 kgLW / ha
- Establish N loss allocation framework
  Natural Capital with LUC proxy
  Gives a seamless transition in Plan Change 2

25th percentile (approximation) per Freshwater Management Unit				75th percentile per
I. Upper Waikato	FMU	35 kgN / ha	||	57 kgN / ha
II. Central		20 kgN / ha	||	33 kgN / ha
III. Waipa		30 kgN / ha	||	43 kgN / ha
IV. Lower Waikato		20 kgN / ha	||	29 kgN / ha



Fonterra data set (15/16 season (Fonterra supply farms only)

N Flexibility with Sunset Clause

Natural Capital Allocation Framework

Natural capital (biophysical stocktake of the land resource)
geology, soil, climate, aspect, slope, topography, erosion, wetness, flood risk
→Land Management Unit (LMU) Landform / Topography
→Land Use Capability (LUC) 1:10,000 mapping
→Pasture Production
→Livestock policy / stocking rate
→Nitrogen loss at rootzone
→Assimilation / Attenuation
→Effect upon receiving environment.
→Interim target state of water quality
→Allocation

LUC Classes identifies land use opportunity
Versatility, capability and assimilative capacity

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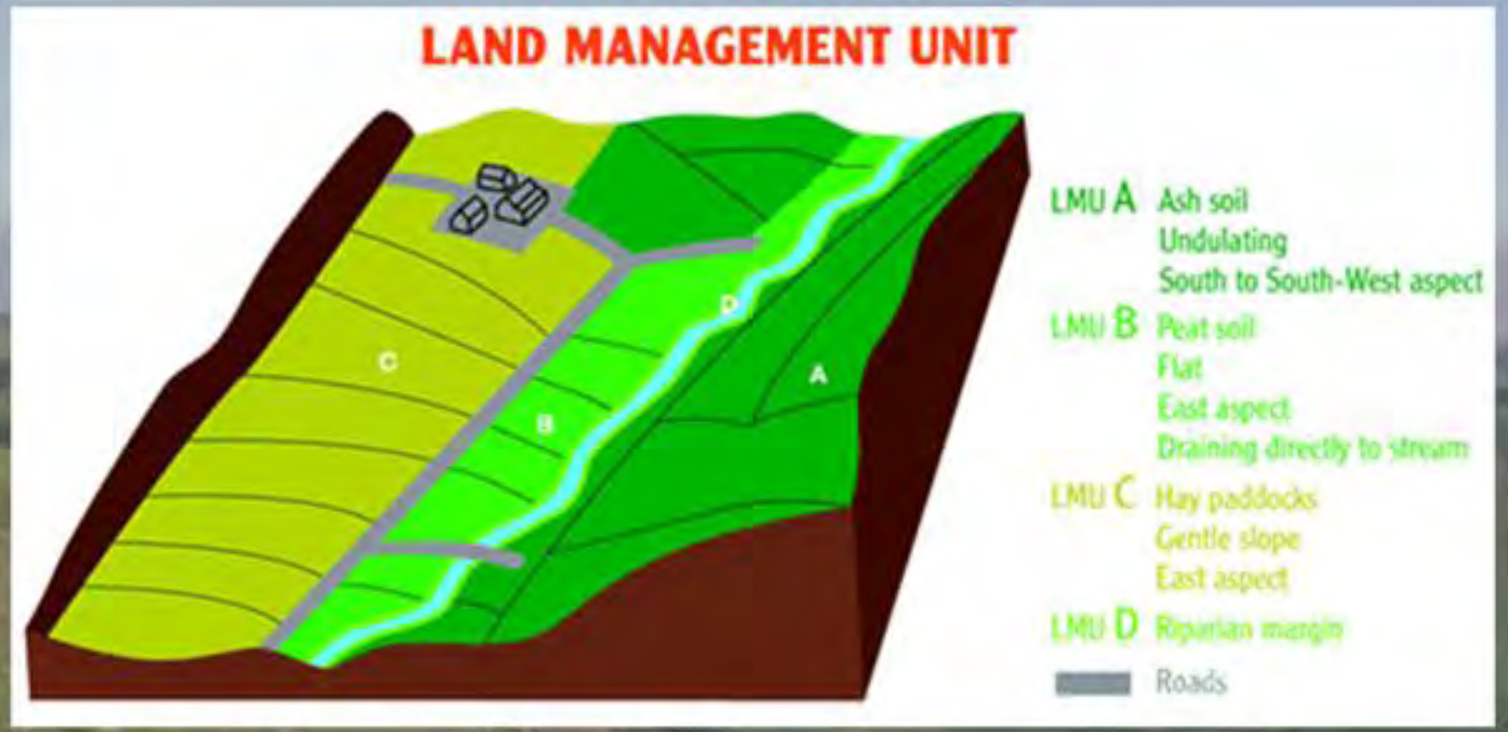
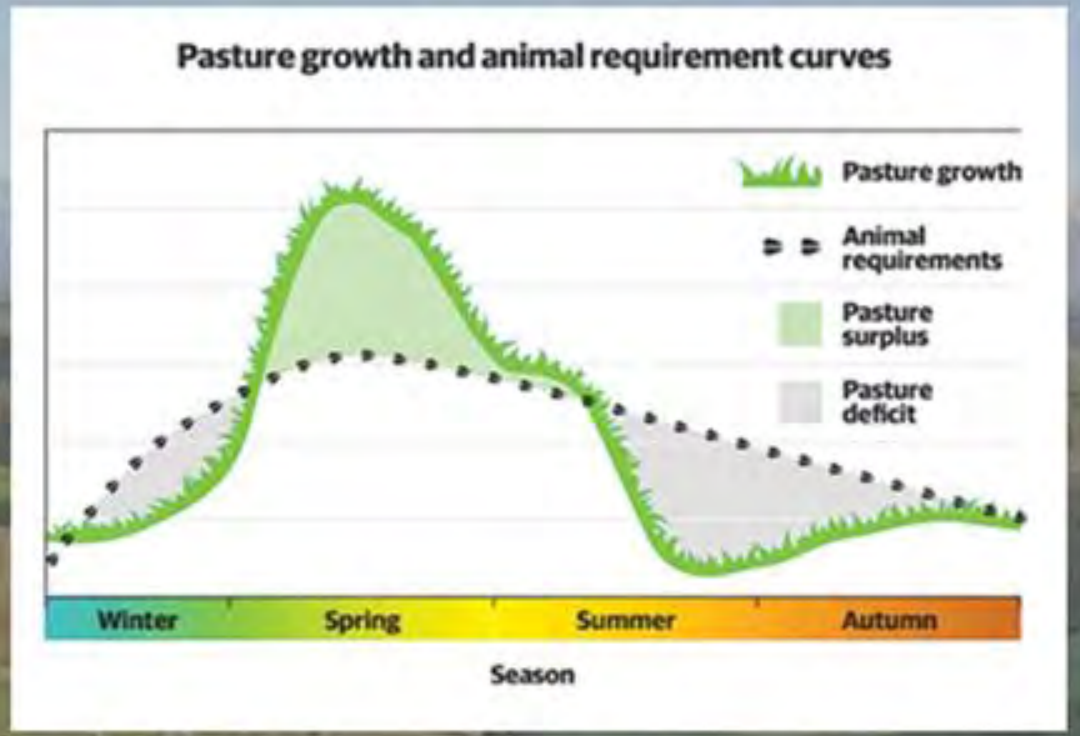
N loss needs to be apportioned accordingly to reflect opportunity



Understand the farm's natural resource i.e. the Land
Identify the Land Management Units (LMUs)

Reference - Fertiliser code-of-practice/nutrient-management-planning/preparing-a-nutrient-management-plan/step_2
B+LNZ LEP 2 & 3

Land Use Capability (LUC) – Land Classes



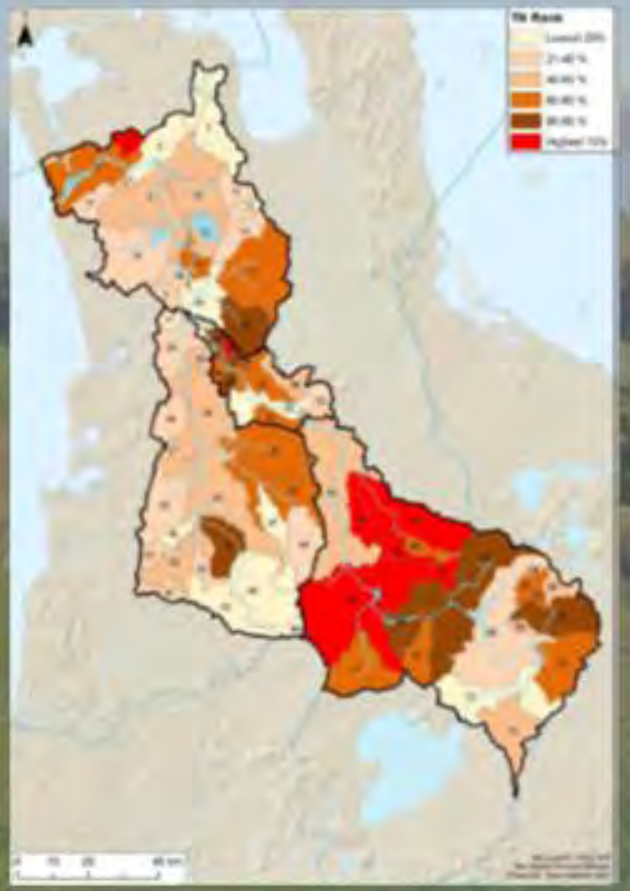
Pasture Production
Farming to the natural grass growth curve
Seasonal production maximises the efficient usage of pasture and assists reduce cost of production

Nitrogen loss allocation – Natural Capital

Table X: Land Use Capability Natural Capital Based: Nitrogen Leaching Limits /Targets

LUC Class	Upper Waikato (kg-N/ha/yr)	Middle Waikato (kg-N/ha/yr)	Lower Waikato (kg-N/ha/yr)	Waipā (kg-N/ha/yr)
1	30	30	27	30
2	26	25	22	26
3	18	19	20	20
4	18	19	18	20
5	16	16	16	16
6	14	16	14	16
7	9	10	9	11
8	4	4	4	4

Source B+LNZ evidence Block 2



TN Sub-Catchment Ranking

There are many subcatchments with predominant S&B land use where nitrogen is not a problem

We should be targeting reduction of high contaminant loss where it occurs?

Managing Nitrogen – a need to allocate?

It is all about load to water
and concentration

Swimmability, Mahinga Kai,
Ecosystem and Human Health

There needs to be a fair and equitable allocation methodology to work through leading towards PC2

A new allocation framework has to be established underpinned by science

LUC + attenuation
+ other reduction

It is more than a proxy

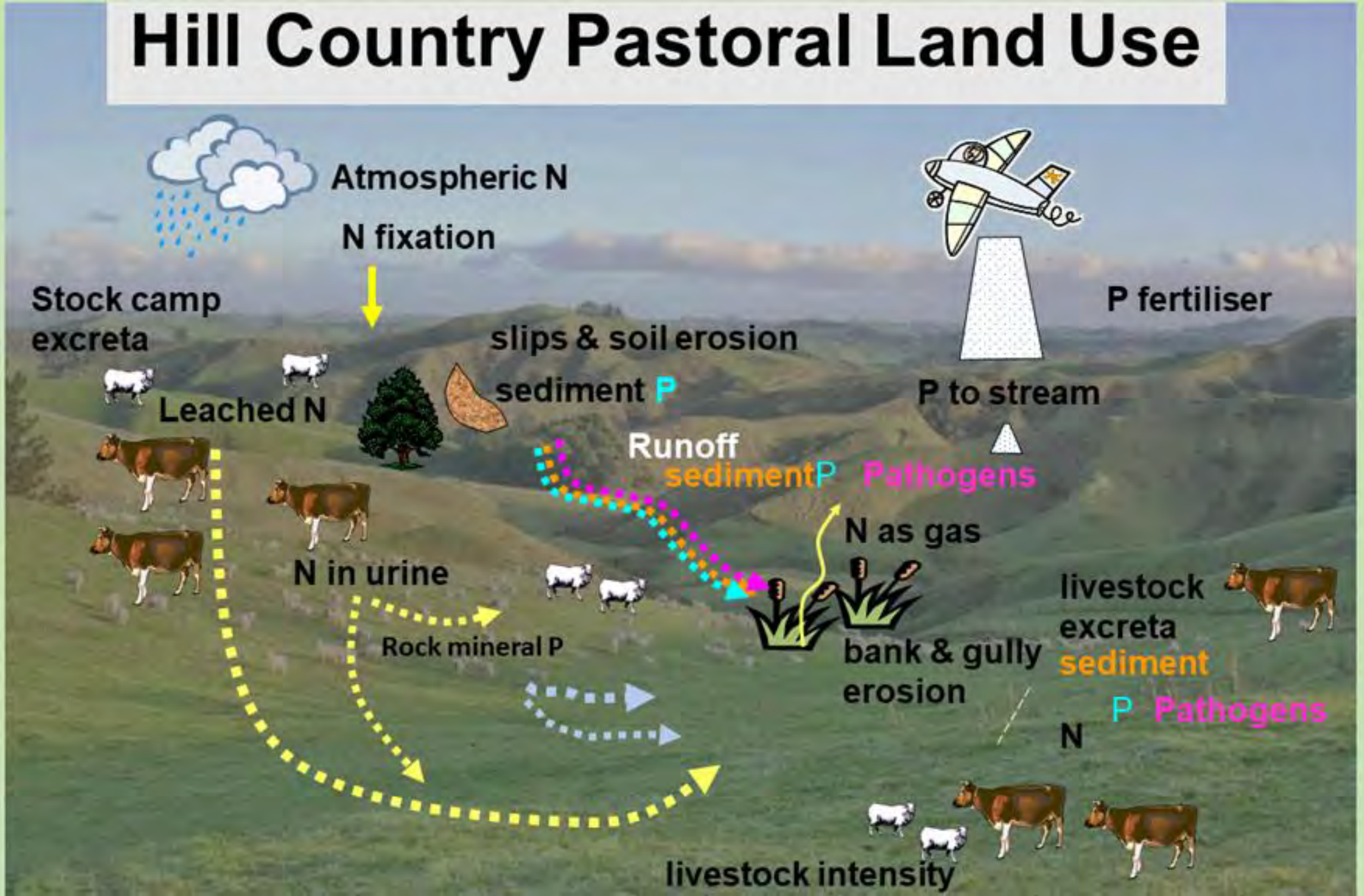
Horticulture – Nitrogen use derogation

Crop rotations – weed and pest
Lease blocks of variable tenure
Differing crop N loss

The big contaminant loss issues confronting Hill Country land use

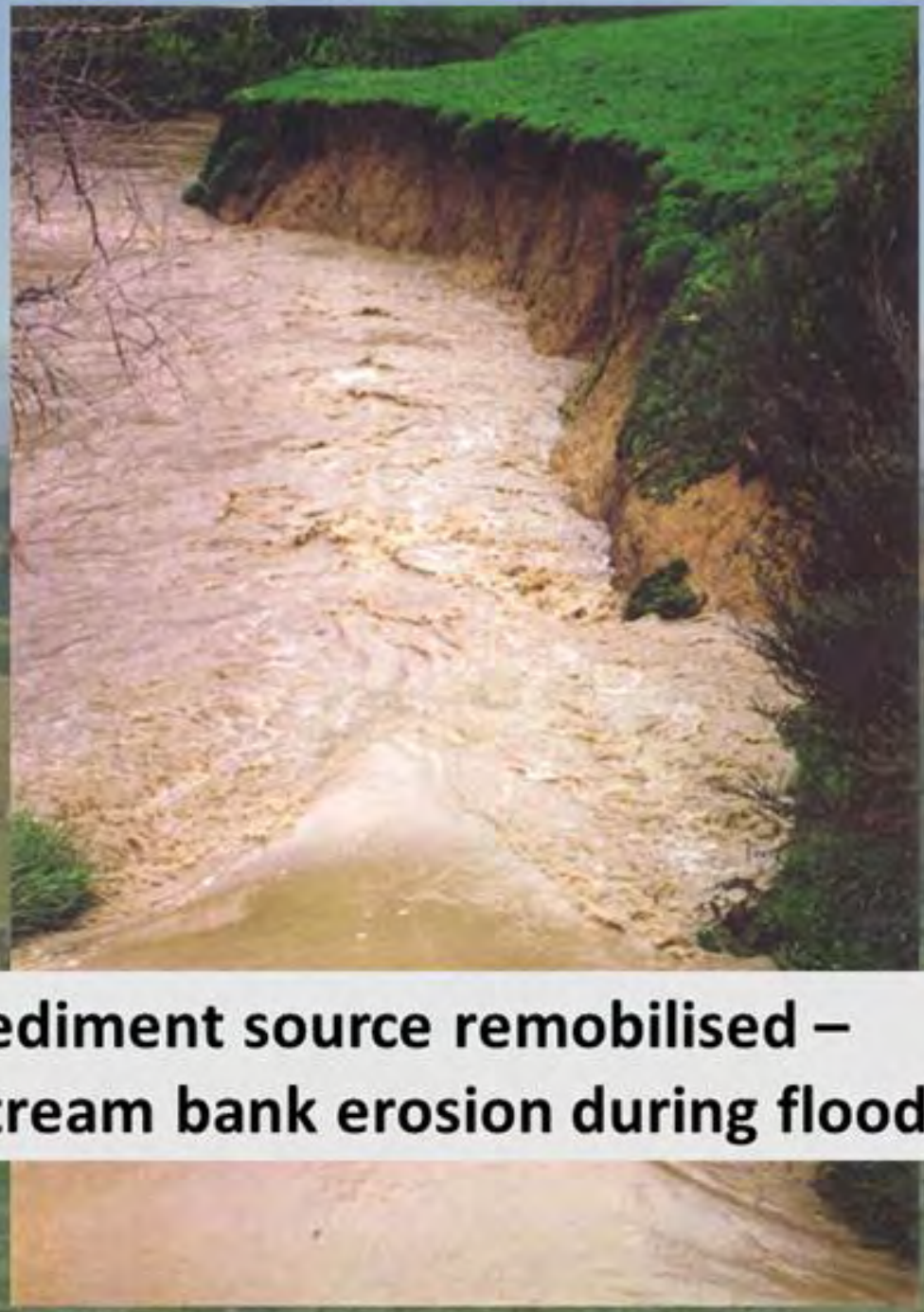
- **Phosphorus**
- **Sediment**
- **Microbial pathogens**

Hill Country Pastoral Land Use



Waikato – Waipa River confluence at Ngaruawahia

Waipa River sediment source - Tunawaea Slip



Sediment source remobilised –
Stream bank erosion during floods

Hill Country - Critical Source Areas

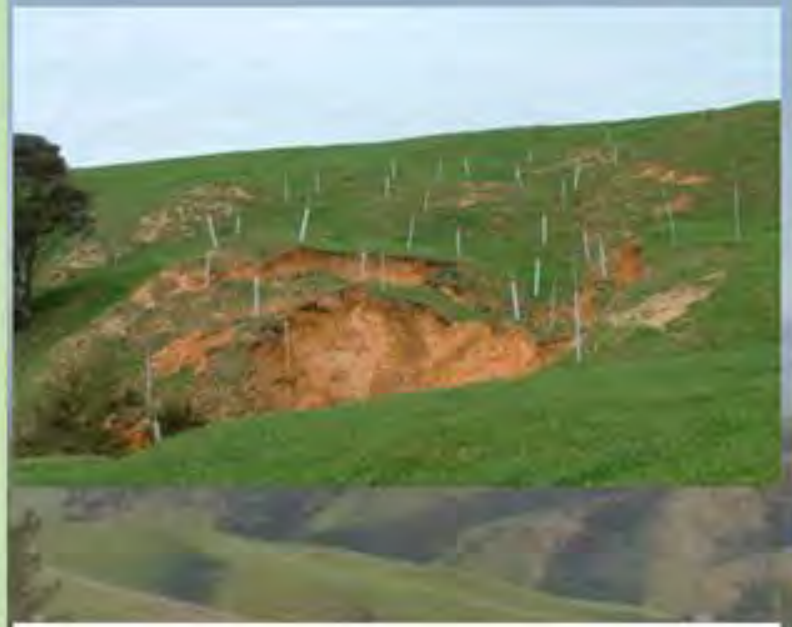
Definition from LAWF (4th Report)

"An area that accounts for the majority of contaminant (e.g. N, P, sediment, E. coli) loss from a field, farm or catchment despite occupying a minority of the field, farm or catchment's area."

80 / 20 Rule

Need to prioritise Critical Source Areas according to scale and risk of loss

Hill Country – Erosion and Sediment Source(s)
Critical Source Areas



Critical Source Areas – specific to each farm and subcatchment

Hill Country – Erosion and Sediment Critical Source Areas

Hill Country – Erosion and Sediment Source(s)
Mitigation – Poplar / Willow Trees

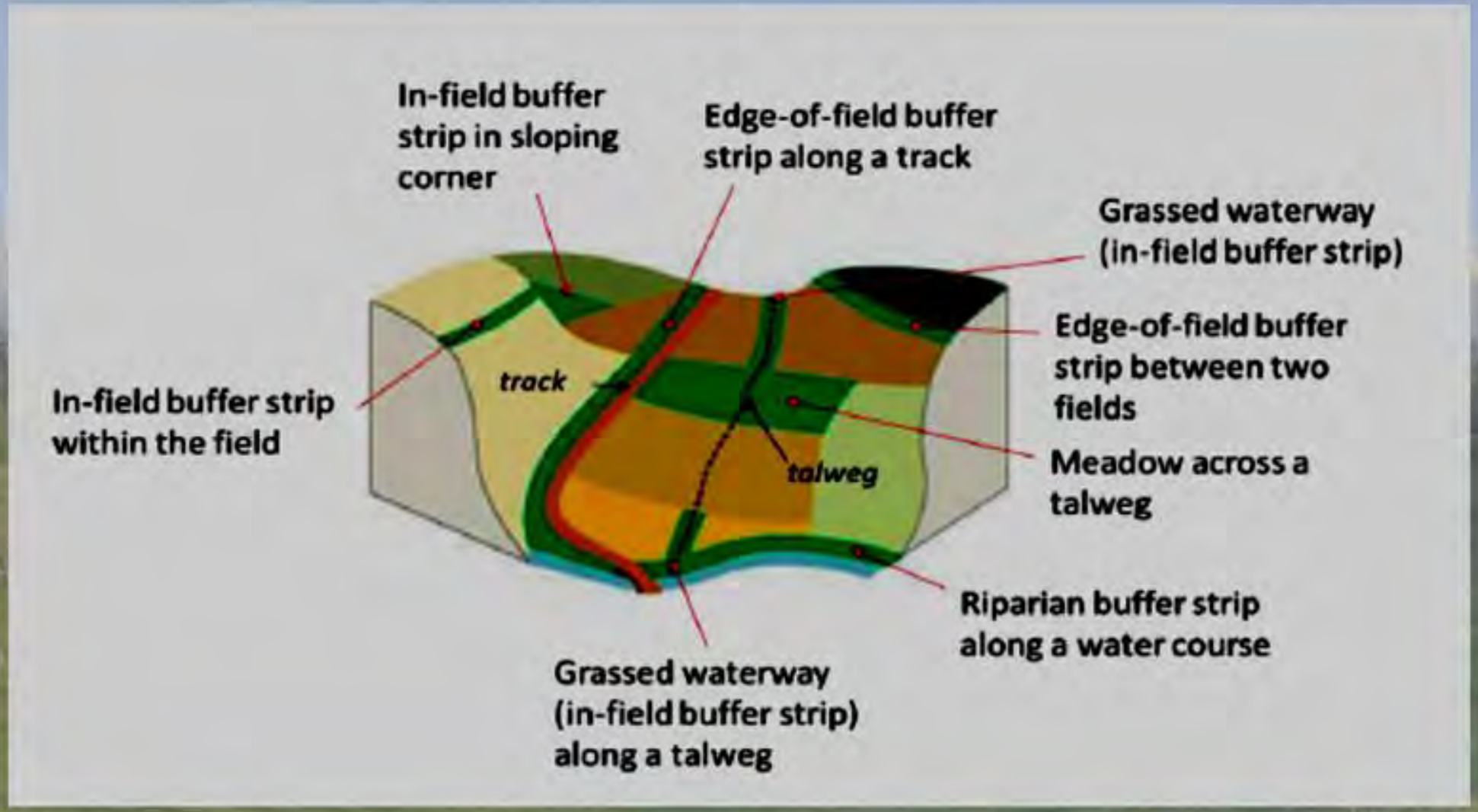
Hill Country – Erosion and Sediment
Mitigation option – Debris dams + Poplar / Willow trees


Hill Country – Erosion and Sediment
Cultivation of Steep slopes

Critical Source Area – Management + GMP

For example: Winter Forage Crops GMP

- o Cultivation - Ploughing across the slope ≤ 20 degrees
  Note: Health & Safety tractor stability on steep slopes
- o Managing tramlines
- o Establishing vegetated buffers of flexible width noting spatial connectivity of ephemeral drainage flowpaths and permanent waterways considering slope, concentration of flowpaths, flood routing and other factors
- o Creating in-field and / or edge-of-field bunds and / or vegetated ditches and / or tiled drainage outlet design
- o Constructing fascines or other temporary dam structure
- o Artificial wetland / Retention pond / Silt traps
- o Use of catch crops – limit exposure of bare ground
- o Grazing management 'last bite' strip alongside any waterbodies, limiting mob size, portable troughs, back fencing and management of supplementary feed, such as baleage.



Buffer Widths – Livestock Exclusion and Forage Cropping

Buffer width and placement according to flowpath and concentration

Aerial steep land Summer / Winter forage cropping
A valuable tool if well managed

How to ensure it is successfully managed?
An audited / registered module within the Farm Environment Plan with a Code of Practice

Hill Country – Erosion and Sediment Exacerbated by Misplaced land use?

Blanket afforestation is not the answer!

Fencing Waterways
Is it doable – practicable and financially?

Different locations – terrain and type of waterway

Livestock Exclusion must focus upon risk

Hill Country – Erosion and Sediment
Livestock Exclusion – In some places we have to fix it!

Livestock Exclusion – Some places it gets harder to fence

And the cost increases substantially!

Livestock Exclusion – Practicality and Reasonableness

How to measure slope?

What is deemed the dominant slope?

80+ percent?

The contaminant loss risk from Hill Country farms (with low intensive ≤ 18 su / ha livestock policies) is often far higher from prioritised Critical Source Areas than from waterways.

Livestock exclusion – unintended consequences

Benching for a Fenceline

Unintended consequences
Noting the need for fence line benching, culverts and / or bridges, and a water reticulation system.

Livestock exclusion requires a reticulated water supply

Cost $$
Difficulty extensive terrain
Maintenance R&M

Livestock Exclusion above 15-degree slope

A pragmatic risk based solution

Intensity threshold

Stocking rate ≥ 18 su/ha or ~ 1000 kgLW /ha

winter period 1st May – 30th September

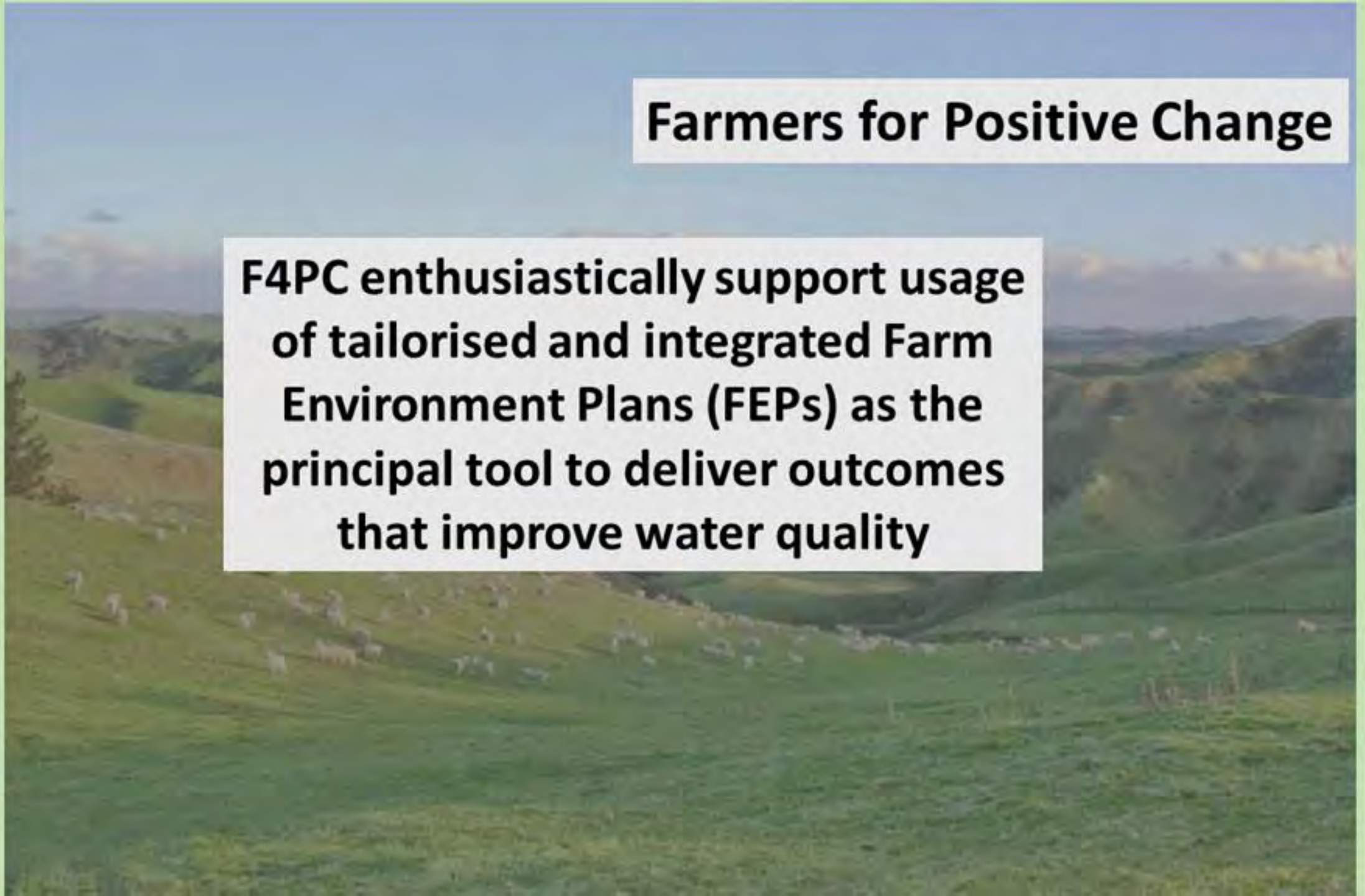
Note - Livestock Exclusion will only be applied on the farm or part of above stocking rate intensity threshold

Solutions to mitigate contaminant loss from hill country

Developing a tailorised and integrated Farm Environment Plan after comprehensive understanding of the natural resource and opportunities for productive usage

A tailorised and integrated Farm Environment Plan ascertains and prioritises mitigation actions according to contaminant loss risk in the knowledge that risk will differ for each farm type and locale

Farm Environment Plans


Farmers for Positive Change
F4PC enthusiastically support usage of tailorised and integrated Farm Environment Plans (FEPs) as the principal tool to deliver outcomes that improve water quality

Farm Environment Plan

+ Farm map(s)
+ Identify land use risk
+ Critical source areas
+ Good Management Practice
+ Nutrient budget
+ Mitigation options
+ Work program timeline

Livestock enterprises having a good fit with the land

Diversified land use

Farming Fits the Land

Farm Environment Plan

- Understanding the natural resource(s) of the farm and includes knowledge about the local catchment
- Knowledge about land use capability and versatility vs. misplaced land use – *'Farming Fits the Land'*
- Key farm activities of concern (modules)

  Intensive grazing - high contaminant losses i.e. Winter forage cropping, Aerial cropping steep slopes; Livestock exclusion from waterway;, Sediment erosion; Semi-point source discharge
- Identifying land use risk to water quality
  - Managing Critical Source Areas (CSA)
  - Good Management Practice (GMP)
    - Best practicable options
  - Adaptation and innovative solutions
  - A prioritised work program + timelines

Farm Environment Plans are hugely advantageous to advance mitigations that instigate water quality improvement because they will be unique and tailored for issues specific for the farm and sub-catchment.

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The Farm Environment Plan at its core contains informative farm maps – soil type, geology, Land Management Units, Land Use Capability LUC classes, waterways and riparian zones, paddocks, water reticulation, cultivation and more…

Farmers for Positive Change

The Farm Environment Plan incorporates collective knowledge to identify high contaminant loss risk to which cost effective mitigative solutions can be assessed and applied to reduce as appropriate.

livestock policy, stocking rate, grazing management, land type, leaky soils + high rainfall, critical source areas, fertiliser placement etcetera

The Farm Environment Plan should advance the prioritisation of mitigation to reduce contaminant load as profiled and ranked in each subcatchment.

Sediment loss has been identified in some subcatchments as high yet despite this knowledge the ability to apply effective mitigation may be limited and constrained because nitrogen (grandparented) will not allow optimised redesign of farm systems.

Source HortNZ – JACOBS
Sediment loss Lower Waikato

Certified Farm Advisor Planner

- Empowering farmers, creating awareness
- Consistent, credible, transparent, repeatable, locally adaptable - equal playing field
- Development of common GMPs across all farms
- Adaptation and encouragement of innovation
- Third – party auditable

Point Source Discharge – Opportunity to offset ?
Equitable, Fairness, Proportionality ?

Thank you

Questions