



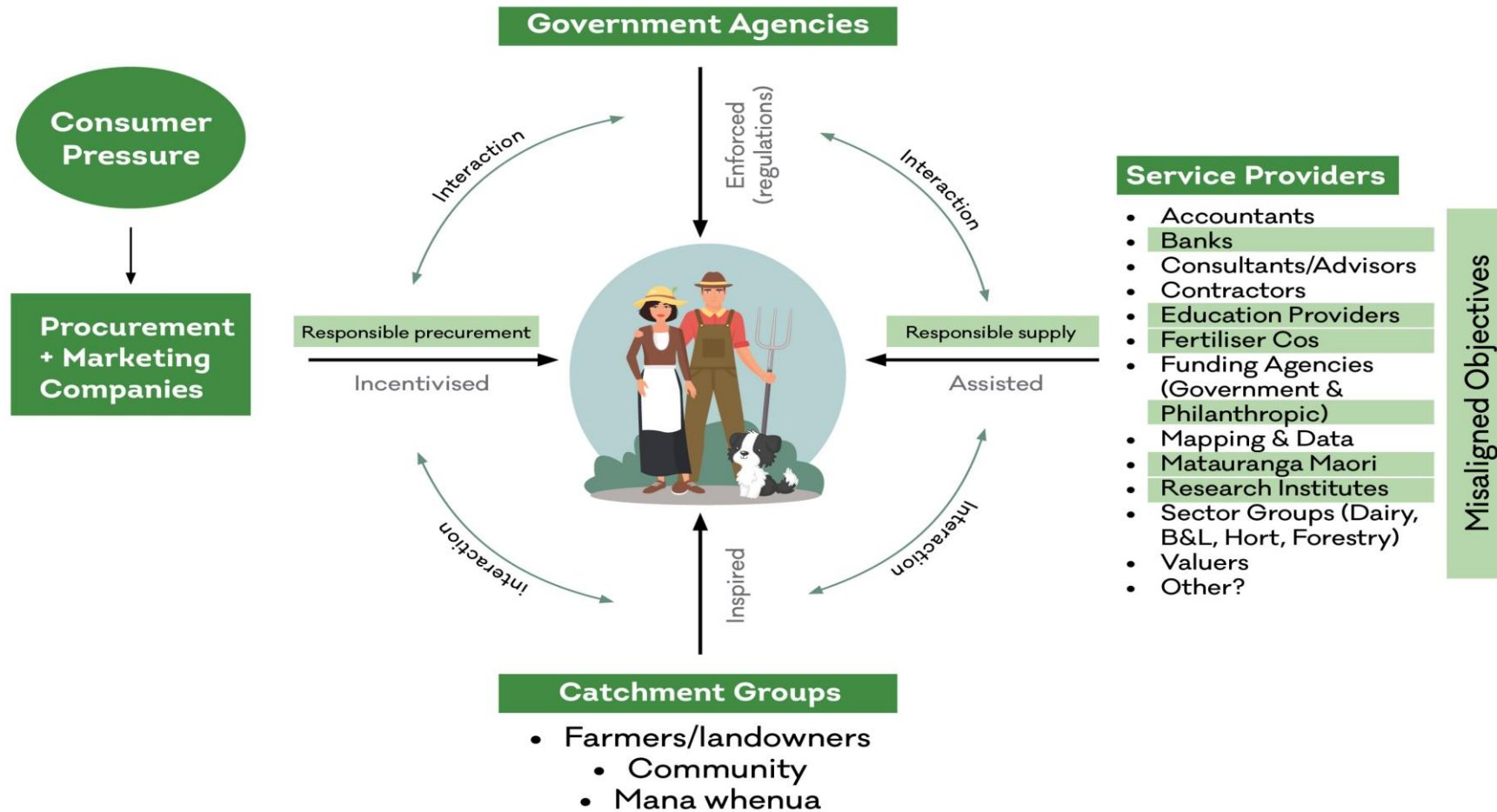
Retiring Farmland into Native – Using the Tīmata Method

[Retiring Farmland into Ngahere - Our Land & Water - Toitū te Whenua, Toiora te Wai \(ourlandandwater.nz\)](https://ourlandandwater.nz)

Food, Farming & Freshwater Roadshow - Our Land & Water

Don't blame the farmer

ECOSYSTEM OF LAND USE CHANGE

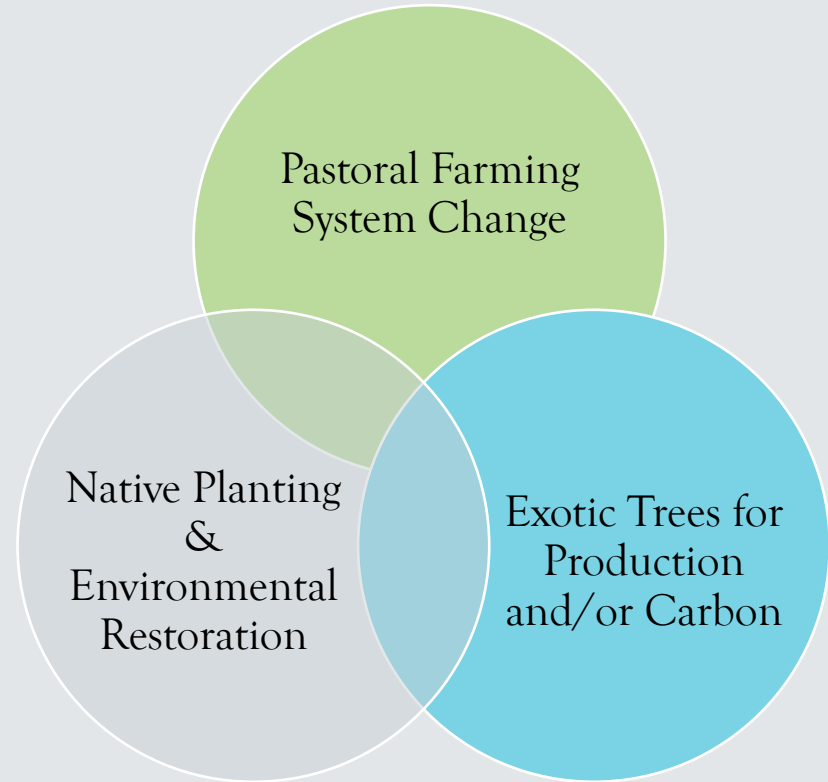


Relandscaping the Aotearoa farm



Pastoral Farming (EGA)

Redesign >>



>>>>>>>>

Integrated Land Use (FWFP&GHG)

BAU is not an option

Proven Benefits of Strategic Land Retirement

Kaikokopu 15/5/2021



Te Mania 15/5/2021



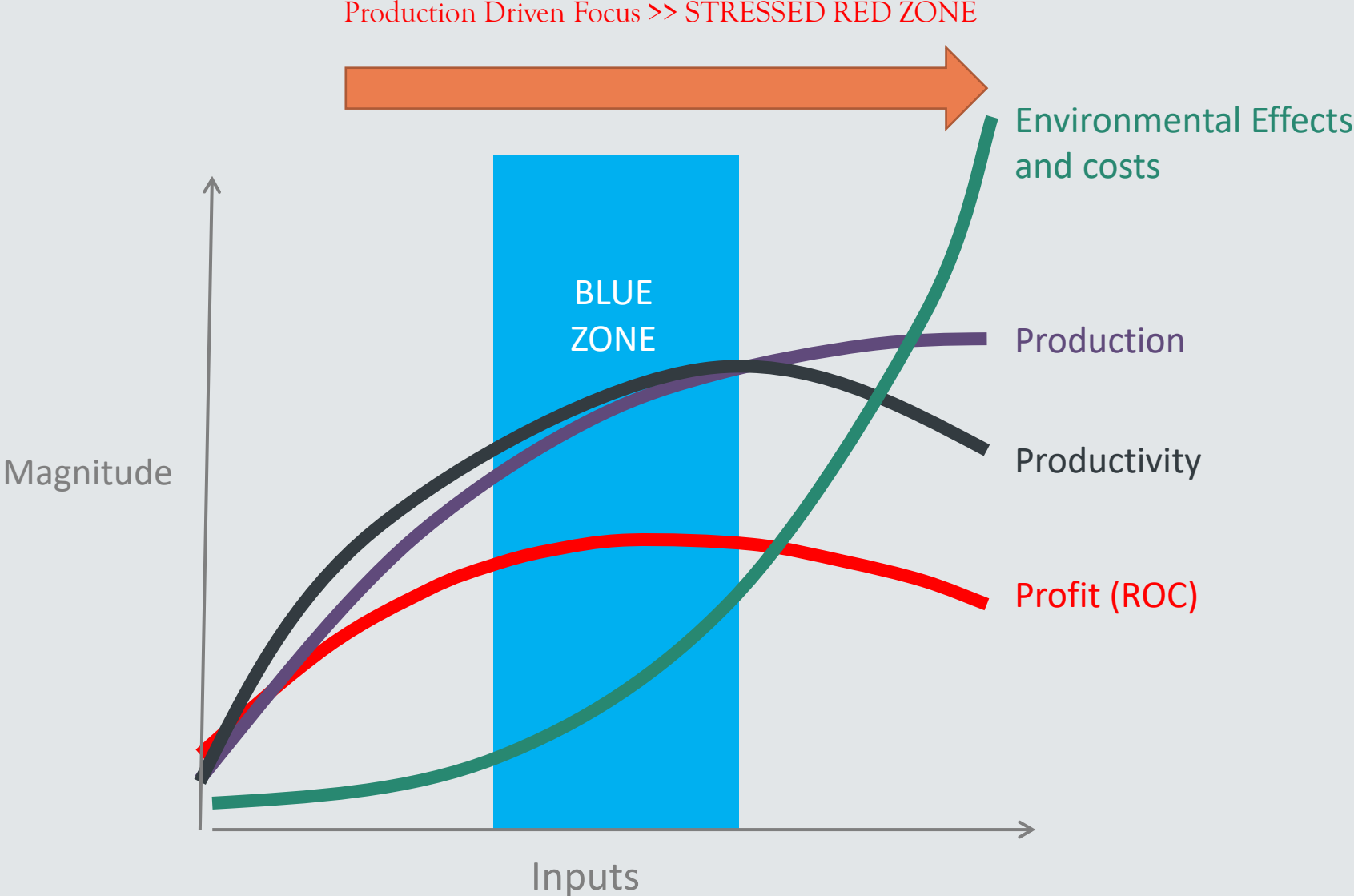
Marginal Steep land profitability

B&L Economic Survey - Apportionment to LUC

	TOTAL HA	Balance	LUC 6-7
Area Hectares	1,000	670	330
% Apportionment	100%	67%	33%
Drymatter Production per Ha	6,010	7,000	4,000
Drymatter Requirement per SU	788	773	845
SU/Ha	7.63	9.06	4.73
Stock Units	7,629	6,067	1,562
<u>FINANCIAL PERFORMANCE</u>			
Revenue per Stock Unit**	\$ 116	\$ 116	\$ 116
<u>Expenditure</u>			
Fixed Per Stock Unit**	\$ 36	\$ 36	\$ 36
Fixed Per Hectare**	\$ 299	\$ 299	\$ 299
REVENUE	\$ 885,010	\$ 703,803	\$ 181,207
<u>EXPENSES</u>			
Fixed Per Stock Unit**	\$ 274,658	\$ 218,422	\$ 56,237
Fixed Per Hectare**	\$ 299,000	\$ 200,330	\$ 98,670
Total Expenses	\$ 573,658	\$ 418,752	\$ 154,907
DRYSTOCK GROSS MARGIN	\$ 311,352	\$ 285,052	\$ 26,300
PER HA	\$ 311	\$ 425	\$ 80

** B&LNZ 22/23 Economic Survey Class 3 - NI Hard Hill

Opportunity for Farm System & Land Use Change to Move into the Blue Zone



Early High Density PB3 Planting for “Weed Control”

- Canopy closure 2-3 years faster than *Tīmata*
- Spray & walk away approach

BUT

- Too Expensive = \$30k+ per hectare compared to \$5k
- Weed control is STILL required
- Now stressed trees with dieback due to overstocking
- Poor bird life – affecting natural regeneration
- Planting stagnation may last 20+ years

“Plant trees with space to grow to their genetic potential don’t starve them!”



Tīmata Beginning - Manuka Research Partnership Ltd

- PGP Research Project with MPI to prove the business case for broadscale land retirement into Manuka Plantations for high UMF Mānuka honey production
- Partners included **HBRC, Landcorp, Te Tumu Paeroa, Comvita NZ Ltd, Tweeddale Apiaries**
- 1,155ha planted from 2009 to 2015 including 25 commercial sized trials (approx. 20ha or greater)
- Massey University – Research Provider
- 8 Year Timeline - 2011 to 2018
- Largest 130ha trial site located at Lake Tutira in HB

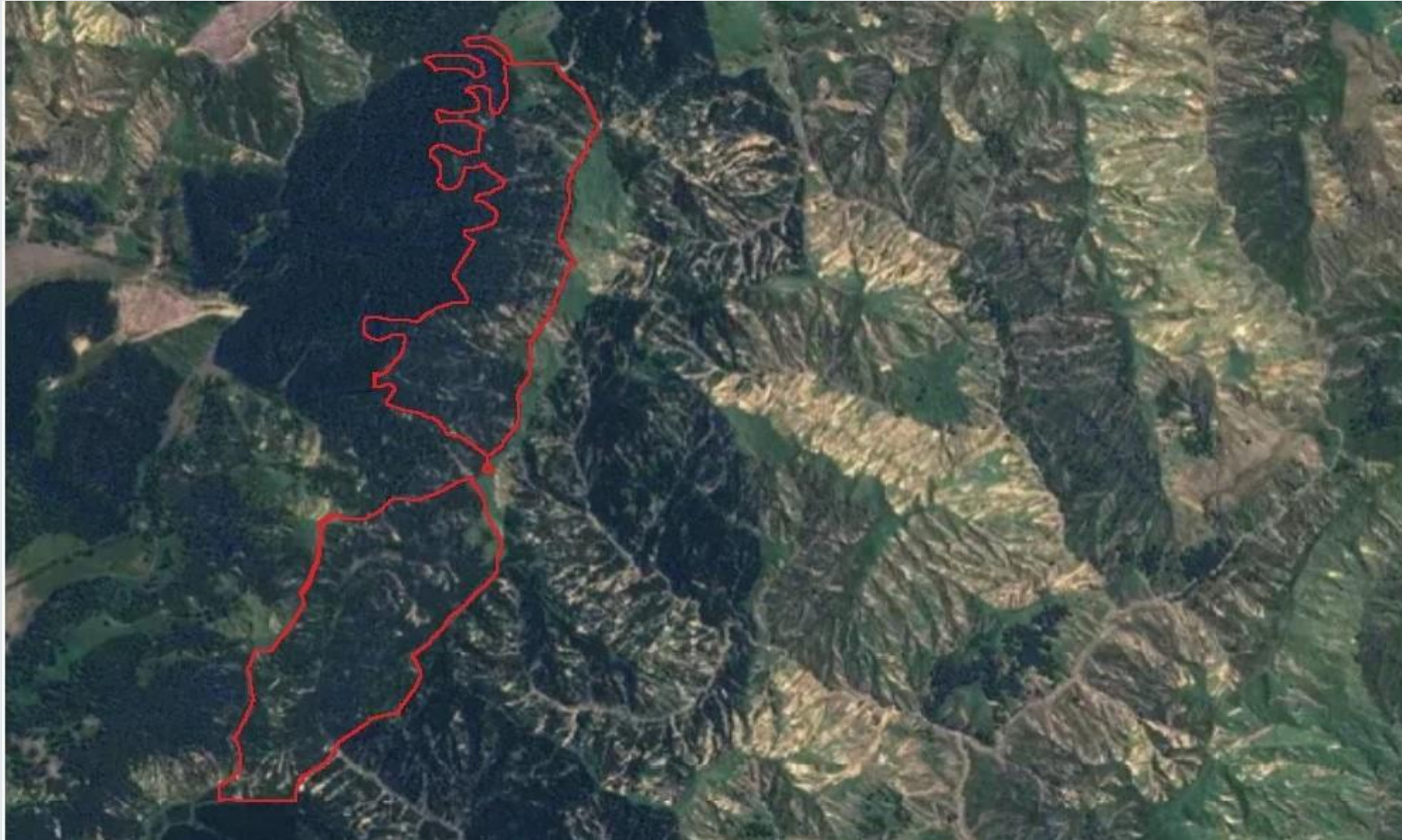


Key requirement to prove business case was reducing cost of establishment so why not apply the same principles for general land retirement into Native?

LAKE TUTIRA – LARGEST TRIAL SITE



TUTIRA SITE AFTER GABRIELLE



Comvita Manuka Plantation Retirement for High UMF Honey



- 7,500 Hectares planted to date
- 17 Properties located in Mid & Lower North Island
- Site selection important
- Plantations range from 70 to 1,300 ha
- These sites will eventually transition to mature ngahere

The Tīmata Method – Key Points

1. Tīmata – in Māori translates to begin, start, kick-off or commence
2. The method is intended to initiate and replicate the natural reversion process which in time (50-100+ years) is known to evolve into fully restored Ngahere (native forest)



Good things take time - 10 times that of human lifetime

Natural 80 Year Old Reversion Okura Bush



800 Year Old Pureora Forest



Tīmata = Significantly Reduced Cost of Establishment

Cost of plants and planting is reduced by at least **60%** through:

- Use of **forestry grade coloniser plants** – mainly Mānuka and Kānuka
- Reduced planting density (1,000 to 2,500 stems per ha)
- **POTENTIAL COST SAVING TO NZ OF \$10 Billion** (1 million ha x \$20k/ha x 50%)



The Tīmata Method – Increased Labour Efficiency

- Planters (usually forestry workers) can plant 800+ stems per day

[Forestry-grade native planting August-September 2022_1.mp4 on Vimeo](#)



The Tīmata Method – Planting Mix

- Predominantly mānuka and/or kānuka depending upon what is naturally occurring in the locality
- Dry site might be 50% kānuka, 20% mānuka and 30% bird loving coloniser species such as karamu, mahoe, makomako, whauwhaupaku, tarata, kohuhu, ti kouka, & harakeke
- Cooler and/or wetter sites would change to around 50% mānuka and 20% kānuka
- ***The Tīmata method is particularly suitable for broadscale retirement of steep pastoral land but also riparian and wetland margins using professional forestry preparation and planting methods***



Variations to the Theme

The following variations and others are being practiced and evaluated in different parts of NZ with the approach customised according to the specific challenges and attributes of the site:

- 100% mānuka and/or kānuka should be considered on sites where there is a high risk of browsing damage to the more palatable bird loving species which could be introduced in small groves later
- Planting 100% mānuka and/or kānuka and allowing time for natural introduction of other native species - worthwhile considering if the site is adjoining existing ngahere
- Many sites already have a residual seed source and will easily revert to mānuka and/or kānuka if livestock are excluded. In this situation, only strategic planting of coloniser species may be required to assist this process
- Planting mānuka & kānuka amongst existing gorse
- Higher Grade (T28) plants at 2 or 3m spacings on more challenging sites
- Oversowing mānuka and kānuka seed



Comparative Native Planting Costs (2023 pricing)

		Timata Forestry Grade 3m	Timata Forestry Grade 2m	High Density PB3 & T28**
Plant Spacing:				
- Metres Between Plants		3.0	2.0	1.5
- Metres Between Rows		3.0	2.0	1.5
Plants per ha		1,111	2,500	4,444
Blanking %		15%	10%	0%
Blanking Plants		167	250	-
Total Plants		1,278	2,750	4,444
<u>Planting Cost Metrics</u>				
Preplant Spot Spray*	\$ Per plant	\$ 0.50	\$ 0.50	\$ 0.50
Plant	\$ Per plant	\$ 1.40	\$ 1.40	\$ 4.00
Planting	\$ Per plant	\$ 1.30	\$ 1.30	\$ 2.50
Total	\$ Per plant	\$ 3.20	\$ 3.20	\$ 7.00
Total Planting Cost per Hectare		\$ 4,089	\$ 8,800	\$ 31,111
Release	\$ Per plant	\$ 0.50	\$ 0.50	\$ 0.50
	Cost per ha	\$ 639	\$ 1,375	\$ 2,222
Succession Trees	Trees per ha	150	150	150
** Including Planting Labour	\$ Per Tree**	\$ 10.00	\$ 10.00	\$ 10.00
	Cost per ha	\$ 1,500	\$ 1,500	\$ 1,500
Estimated:				
Weed Control	Cost per ha	\$ 1,500	\$ 1,000	\$ 500
Animal Pest Control	Cost per ha	\$ 1,000	\$ 1,000	\$ 1,000
Fencing	Cost per ha	\$ 2,000	\$ 2,000	\$ 2,000
Earthworks		\$ 500	\$ 500	\$ 500
TOTAL COST PER HECTARE		\$ 11,228	\$ 16,175	\$ 38,833

* Ground based (Helicopter desiccation another option)

** Waikato Standard Costing

The Tīmata Process

<https://ourlandandwater.nz/outputs/the-timata-method-a-low-cost-way-to-retire-farmland-into-native-forest/>

Key Messages:

1. Get weeds and animal pests under control **before** you plant (use professional contractors)
2. Consider peripheral weed incursion risk >>>> joint strategy with neighbours or Catchment
3. Basic tracking will assist planting and future maintenance
4. Use forestry planting contractors on larger areas >>> scale up by using catchment groups to co-ordinate supply of plants & planting across farms in your area
5. Plant provenance important >>> eco-sourcing of seed is encouraged
6. Pre-plant spot spray 4 to 6 weeks before planting – beware of using residual acting chemical
7. July to September planting window (consider frost risk, soil temperature, drought risk)
8. Chemical release spray in the spring – **if required**
9. Some blanking may be required the following year
10. Maintain ongoing weed and animal pest control

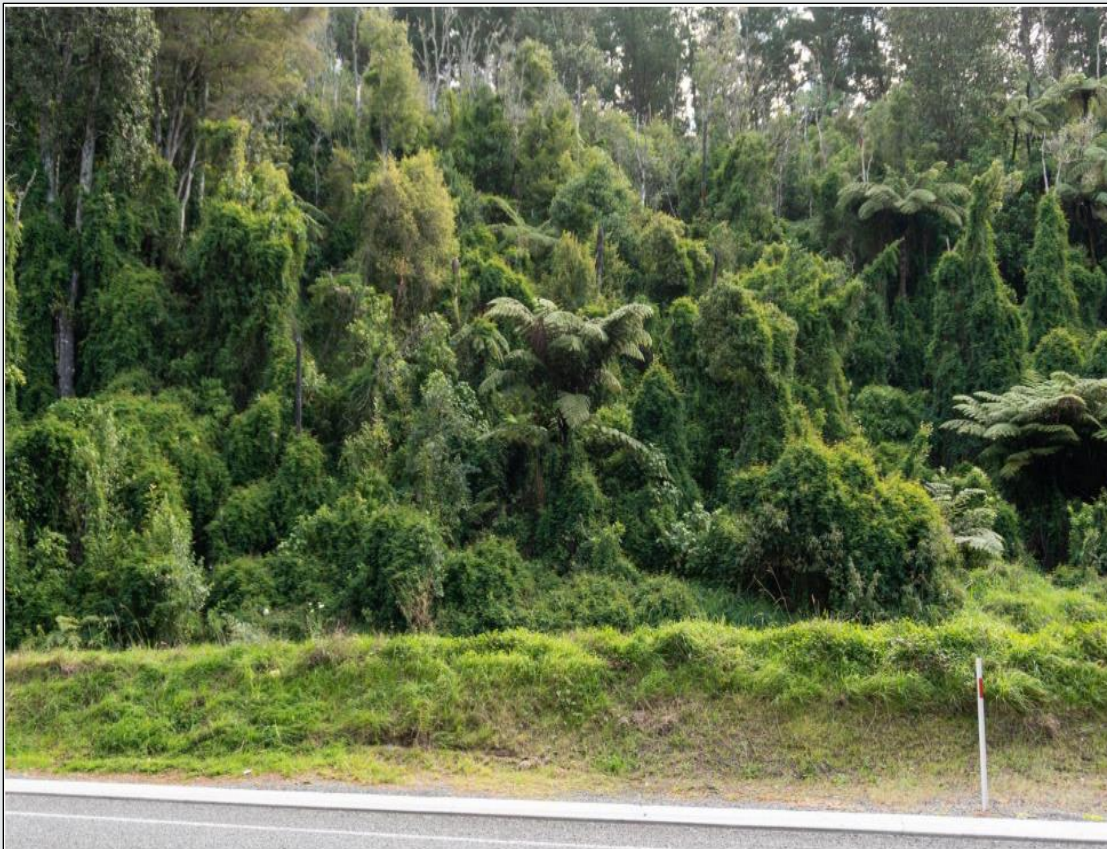
Over 10,000ha already been planted across NZ using Tīmata

Get weeds under control **BEFORE** Planting!!



Importance of Catchment-Wide Weed & Pest control (including Exotic Forestry & Dispersal Corridors)

[SPACE-INVADERS-REPORT-PDF-68MB.PDF \(PCE.PARLIAMENT.NZ\)](#)



When To Plant Succession Trees

- It is possible that introduction of some succession trees (puriri, kohekohe, totara, rimu and kahikatea) may occur naturally through wind & bird dispersal depending on proximity to a seed source
- Other species such as kauri, beech and kowhai require a close seed source
- **Wait 4-7 years until nursery crop is close to canopy closure**
- Plant PB3+ grade trees in strategic groves at 100+ stems per hectare
- Delay of planting will encourage good tree form and provide shelter and friendly fungi for the taller trees to thrive
- Don't underestimate the Important Role of Mycorrhizae



Plant Supply Chain

- Propagation Nurseries are the main suppliers of Forestry Grade plants
- Large scale orders of 100,000+ plants generally required November the year before planting
- Best to work through an intermediary (or Regional Council/Catchment Group(s)) who can bulk up orders arrange contracts and logistics
- Wholesale nurseries can also supply but these may be at a higher grade and cost - important role to grow-on colonisers, wetland plants and supply succession trees



Timata Method – Comparative Growth Stages – just planted, 1 year, 4 year & 6 year (3m spacing with canopy closure)



GOOD THINGS TAKE TIME

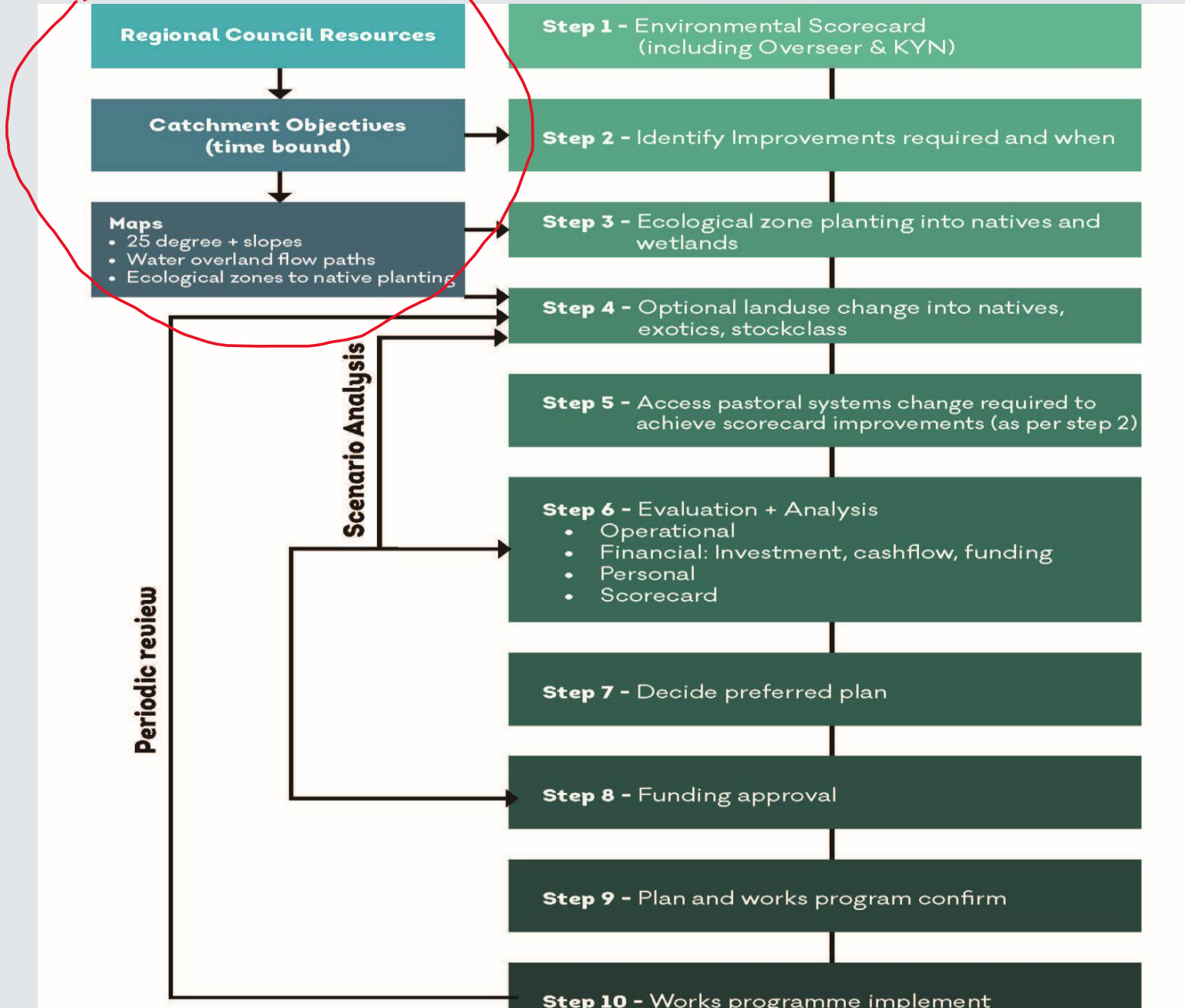
1998



2018

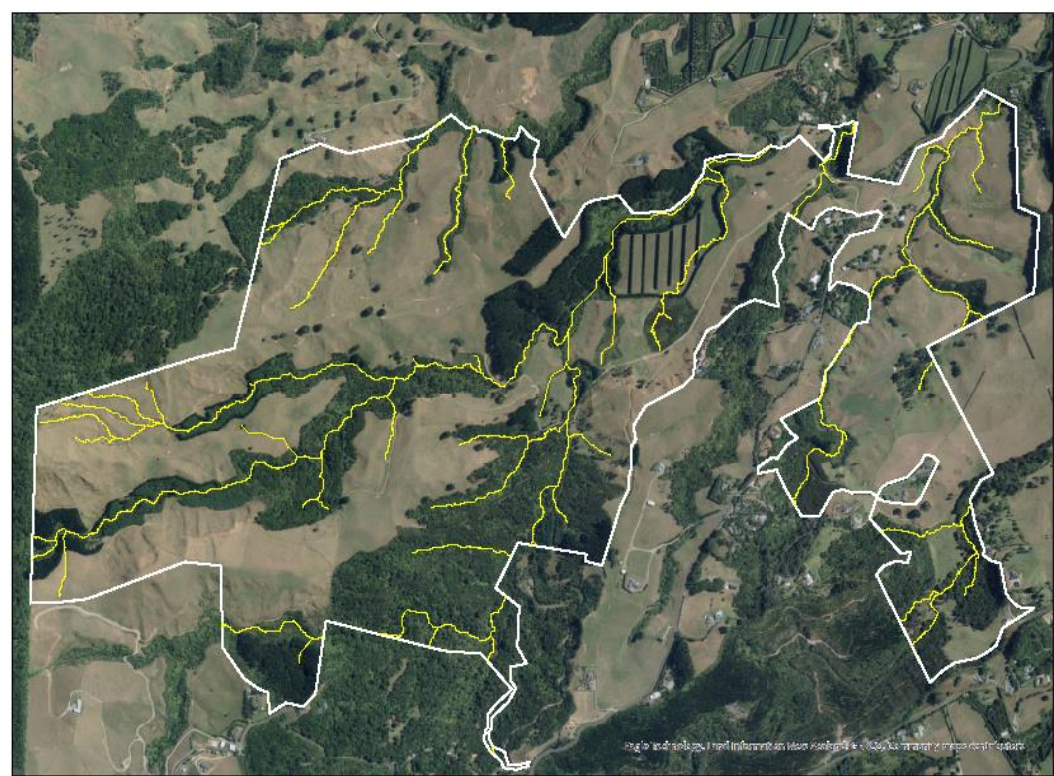


Pastoral Farmer 10-Step FWFP Process

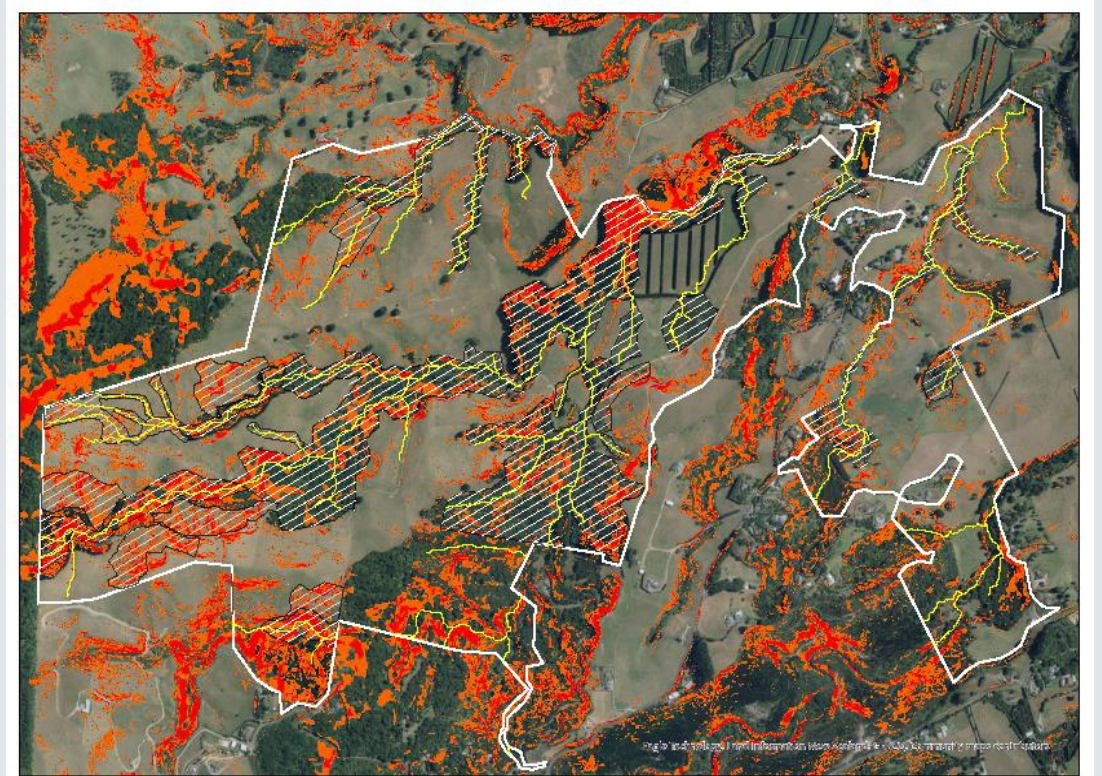


THE PLANNING PROCESS

Map Water Overland Flowpaths & CSA



Map Steep Erosion Prone Slopes



MICRO-WETLAND (CSA) RESTORATION

July 2017



May 2022



WETLAND (CSA) RESTORATION

July 2017



October 2023



EROSION PRONE GULLY AREAS

July 2018



November 2022



3yr Ephemeral Stream Planting



Erosion Prone LUC6e Retirement

Pre-planting 2020



September 2023



IS IT REALISTIC TO MOVE YOUR FARM BUSINESS INTO THE **BLUE ZONE**?

For Pukekauri Farm (AND OTHERS) the Answer is YES:

- 23-year journey First LEP in 2000 – since then 20%+ of farm retired into native, exotics & wetland > more retirement planned
- Total pastoral farm profit has increased despite < EGA
- Additional earnings from timber and carbon
- Reduced GHG emissions - close to carbon neutrality
- Property aesthetic and commercial value enhanced
- **Farming to the grass production curve – no imported feed**
- Reduced synthetic fertiliser (N) >> improved soil & stock health
- Native Flora & Fauna Restoration & Enhancement
- Stream health has improved from 2/10 to 9/10

Check out [Rick Burke and Jan Loney, Bay of Plenty | Ag Matters](#)

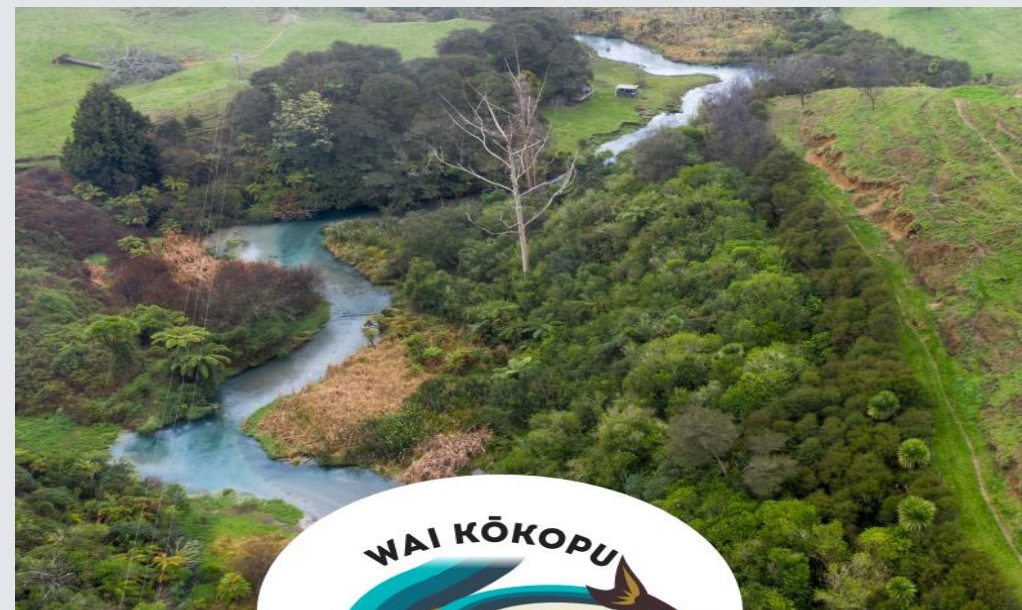
SCALING UP TO CATCHMENT SCALE >>> THE WAIKOKOPU 34,256 HA FARM

35

Vision > Objectives > Planning

Catchment Scale Landscape Plan - guides farm-scale land use change for project planning & budgeting

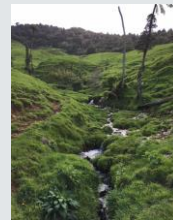
- >60% N, P, sediment and E.coli load reductions through farm system & land use change
- Retirement of approx. 3,000ha of erosion prone land
- Reinstatement of 900ha+ wetlands and estuarine areas
- Detainment bunds to manage overland water flow
- 70km of riparian retirement
- Integrated Animal & Weed Pest Control
- Native Bird corridors, Fish passageways etc.
- *The estimated cost for this work is \$85m+ (\$3k+/ha)*



FINAL OBSERVATIONS



- FWFP and land use change may appear to be challengingBUT
- The reality is more straight-forward and a lot of the decisions are simply common sense
- Full implementation is potentially a long-term 20+ year project – ***start small and build momentum***
- ***Regional Councils need to provide catchment scale Vision & Plans for Farmers to inform land use change to meet required environmental outcomes***
- Work as a Catchment Team - extract economies of scale synergies for planting and weed & pest control
- We should treat the challenges we face as an opportunity to redesign pastoral farming to an integrated land use which ticks the boxes for:
 - ***Environmental sustainability***
 - ***Business viability***
 - ***Farmer and community well being***



The results will be highly rewarding!!