Farm Forestry profitability

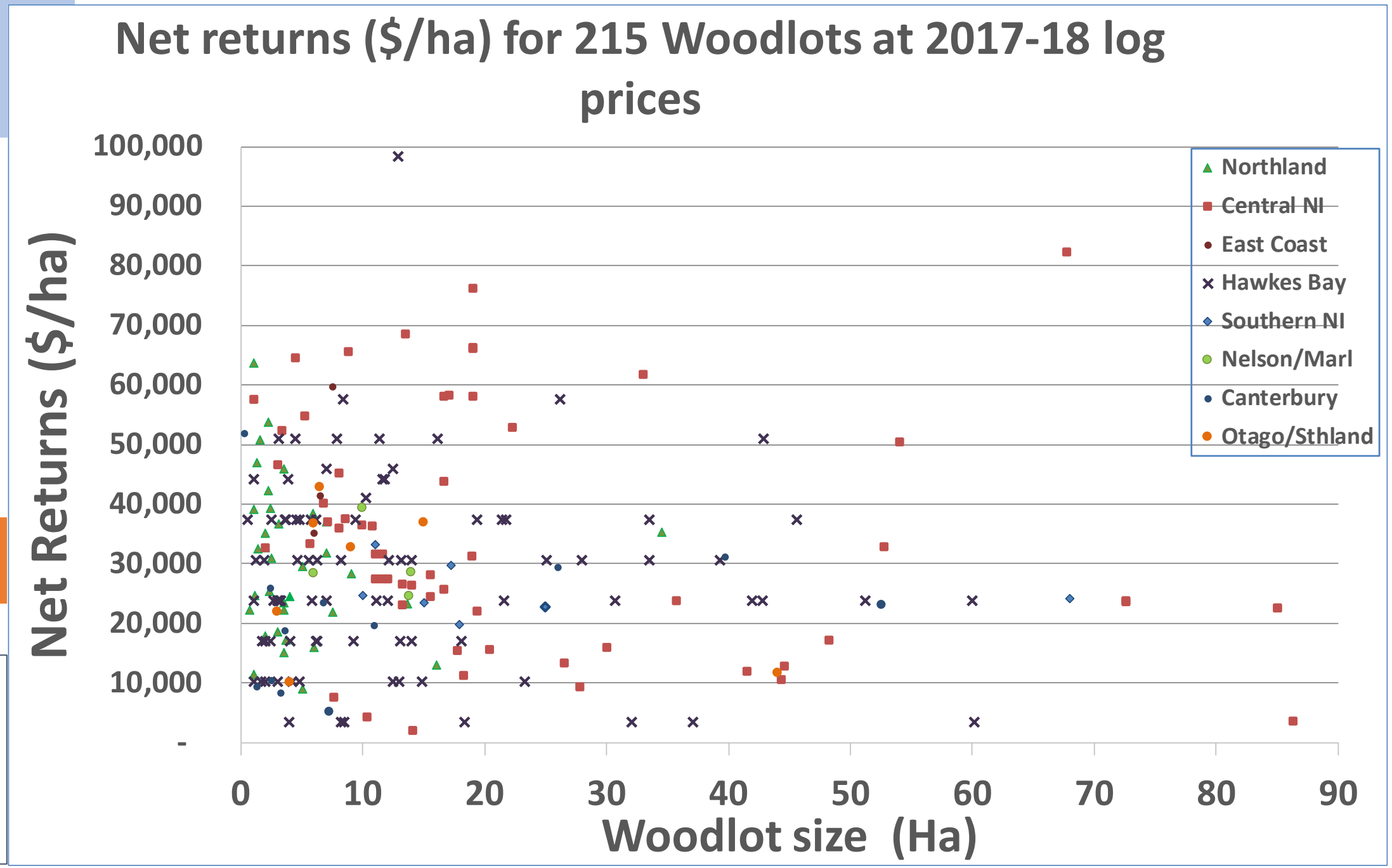
Drivers and Information outreach

Graham West

West Land Use Solutions

NZ Farm Forestry Assoc

Drivers

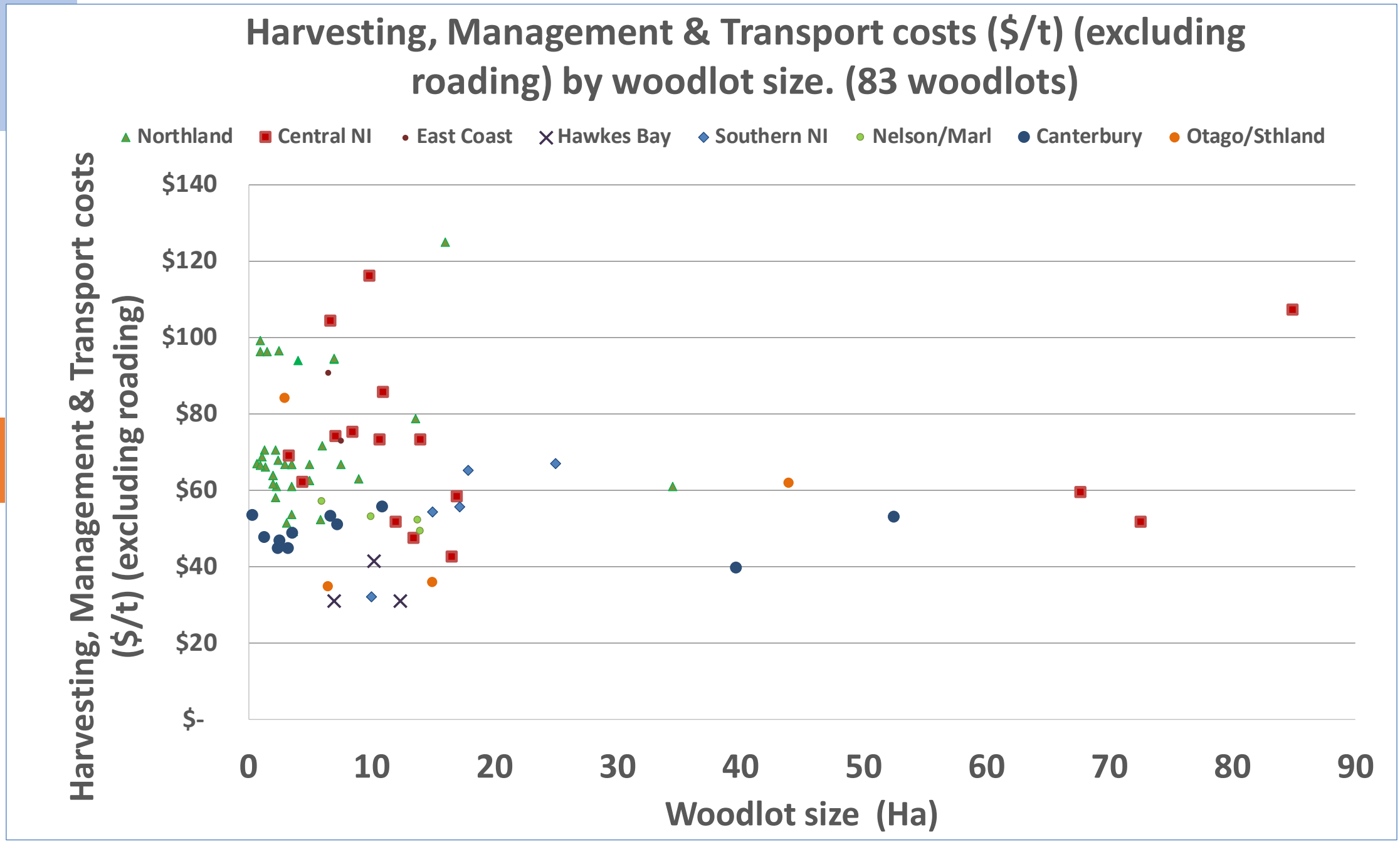


Average $30,000/ha

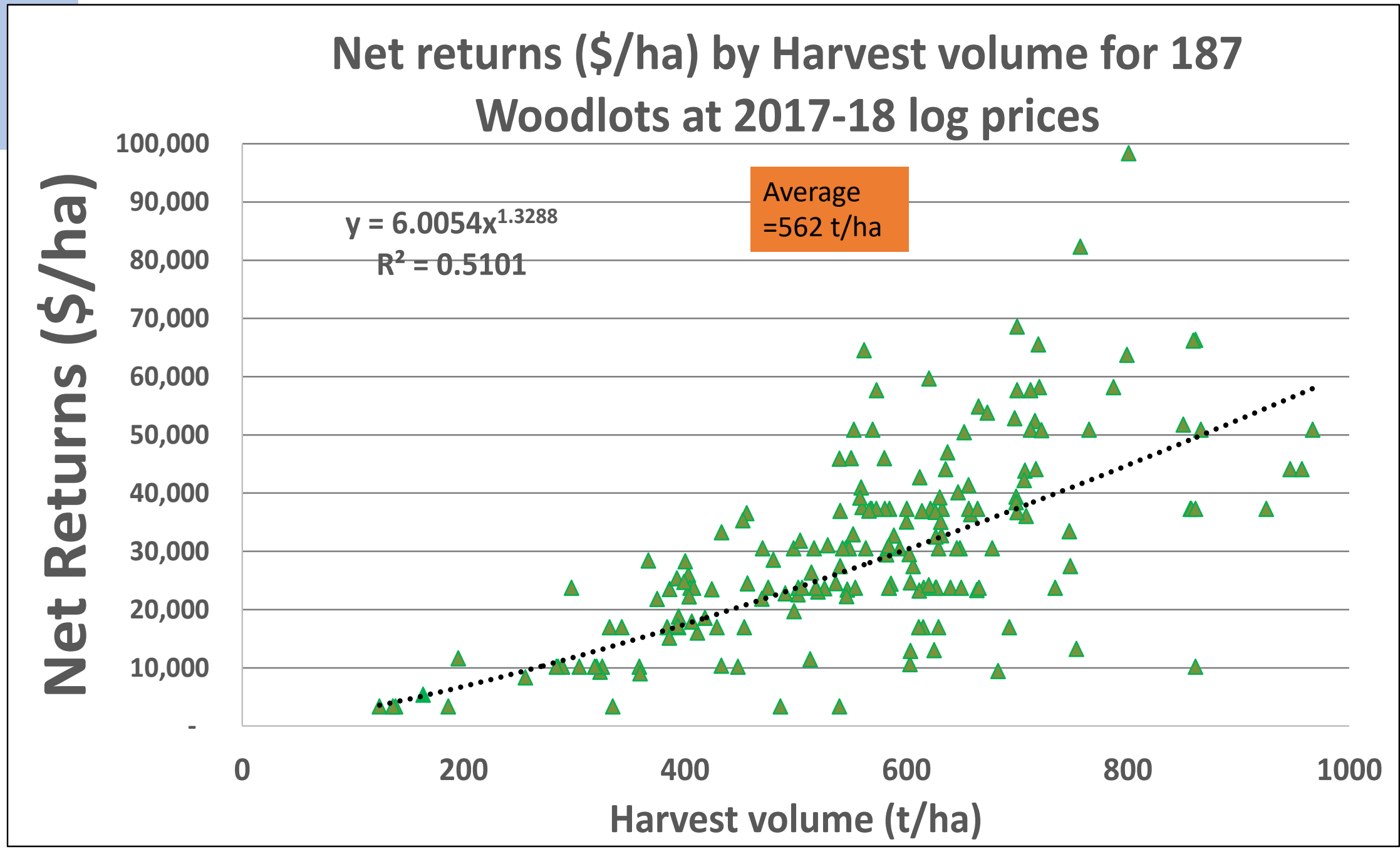
Small-scale grower harvest costs and returns. Tree Grower, June 2019. G. West

Drivers

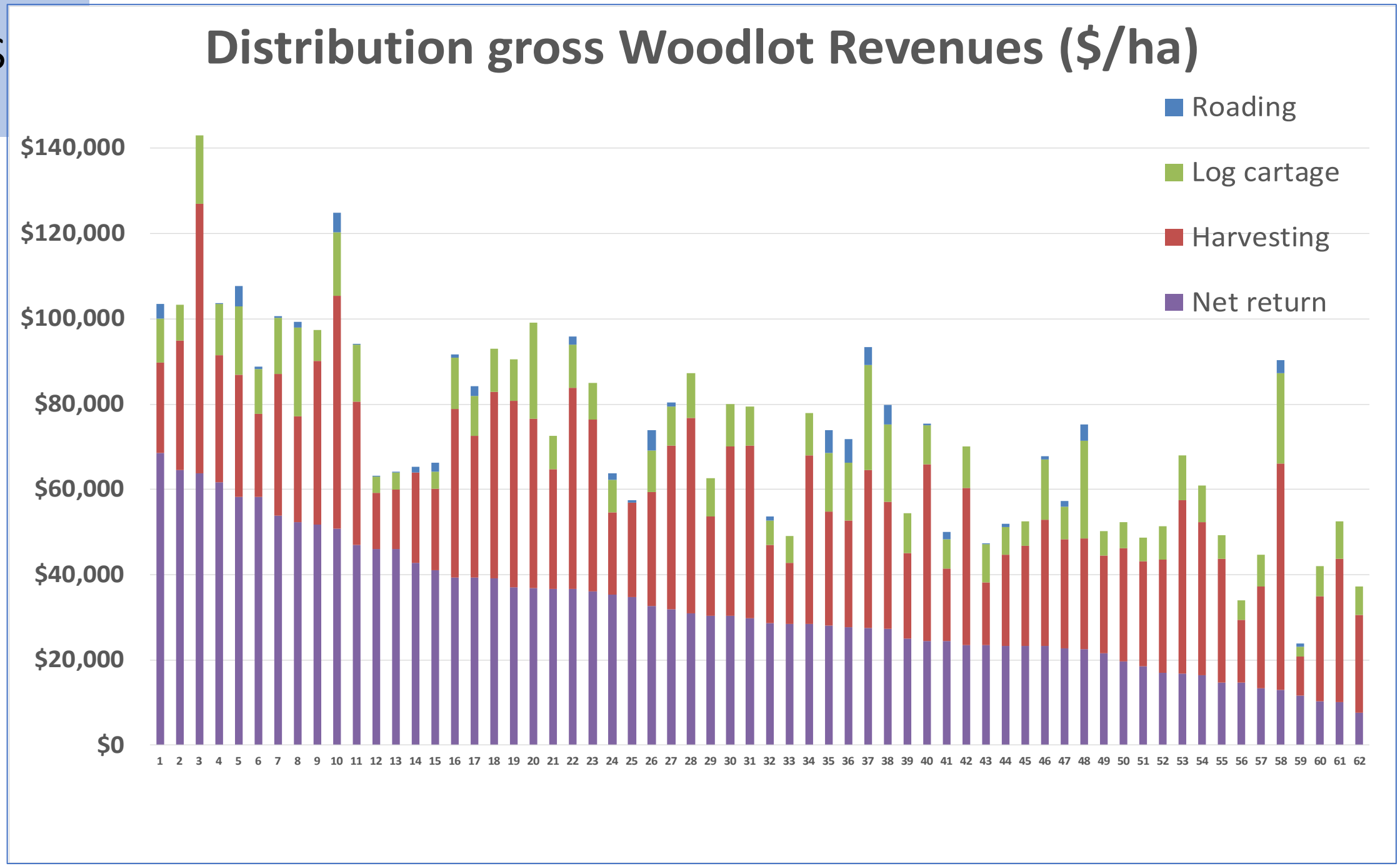
Average =$65/t



Drivers

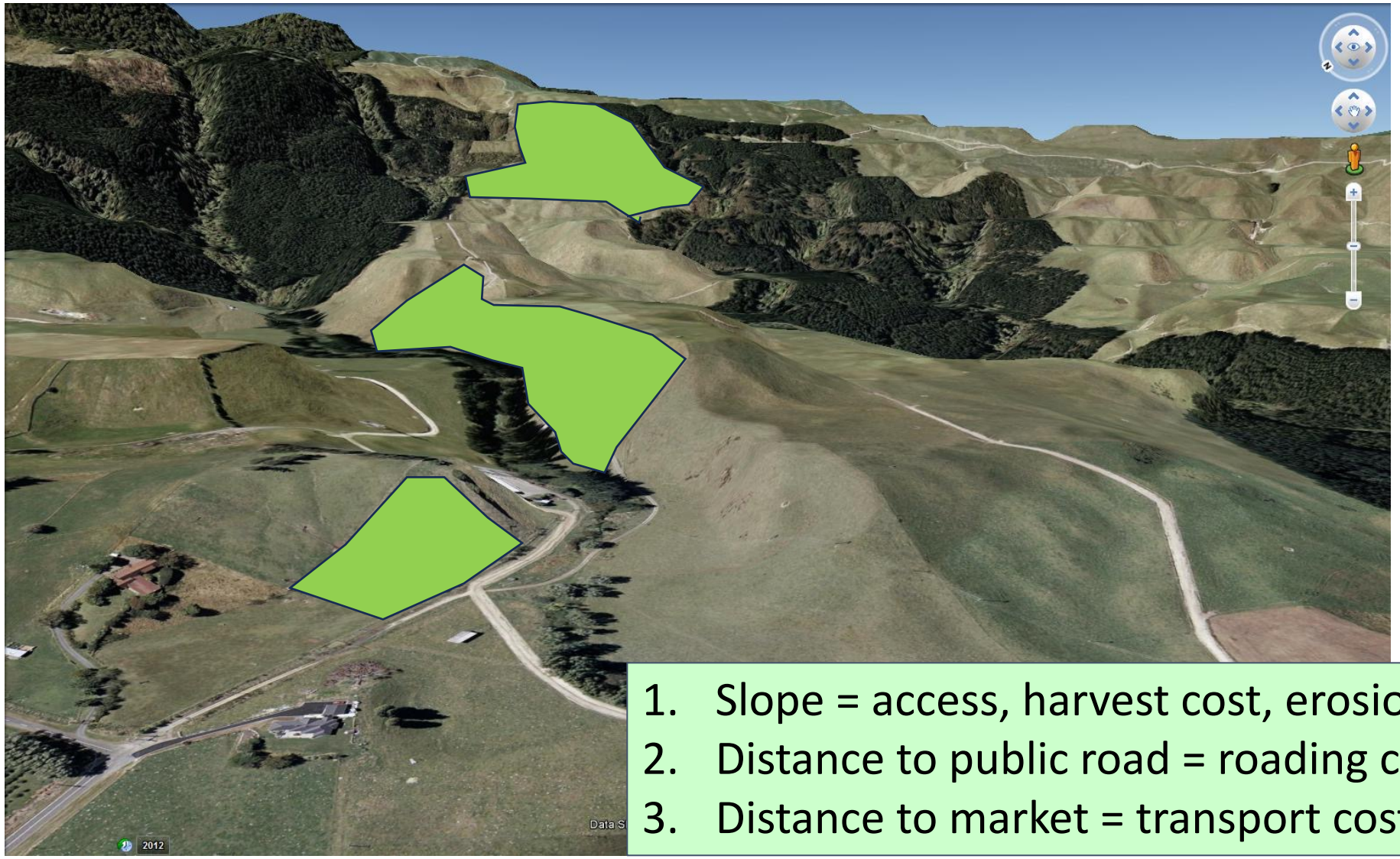

Net returns ($/ha) by Harvest volume for 187 Woodlots at 2017-18 log prices
Net Returns ($/ha)
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
y = 6.0054x^1.3288
R² = 0.5101
Average =562 t/ha
0
200
400
600
800
1000
Harvest volume (t/ha)

Drivers



Average = 43% return to grower

Major strategic drivers of Timber net profit



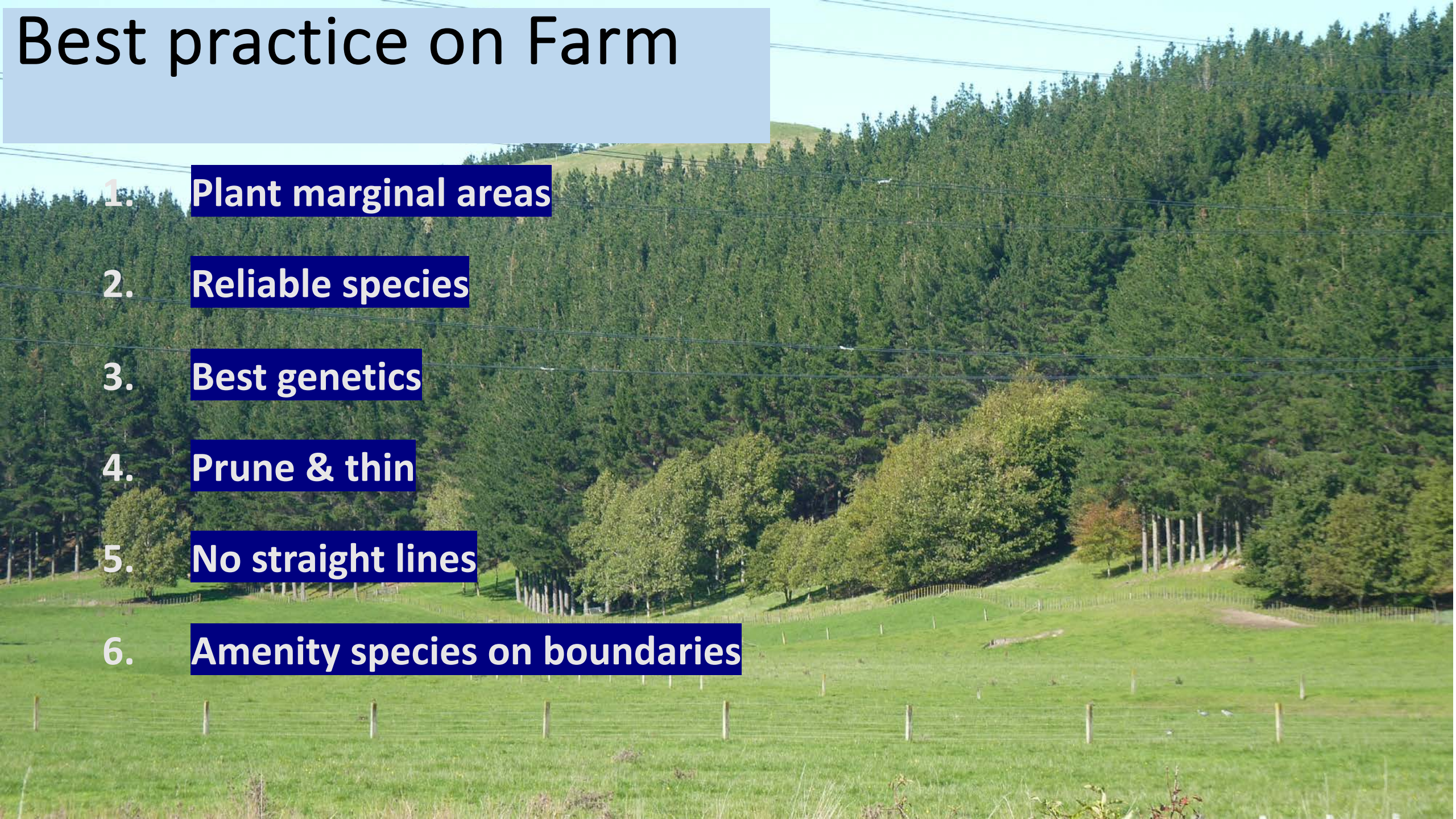
1. **Location**
2. **Location**
3. **Location**

1. Slope = access, harvest cost, erosion, productivity
2. Distance to public road = roading cost
3. Distance to market = transport cost (Export & Domestic)

Best practice for Timber profit

1. Join Farm Forestry Assoc
2. Use a consultant
3. Get 3 quotes for harvest management & marketing costs
4. Get roads and skids harvest ready for when the log prices lift
5. Allow funds for site prep and replant
6. Manage tax liability

Best practice on Farm



1. Plant marginal areas
2. Reliable species
3. Best genetics
4. Prune & thin
5. No straight lines
6. Amenity species on boundaries

Treefarmer

supported by forestgrowers commodity levy

NZ Farm Forestry Association

ORBICA

Unlock the power of geospatial & AI

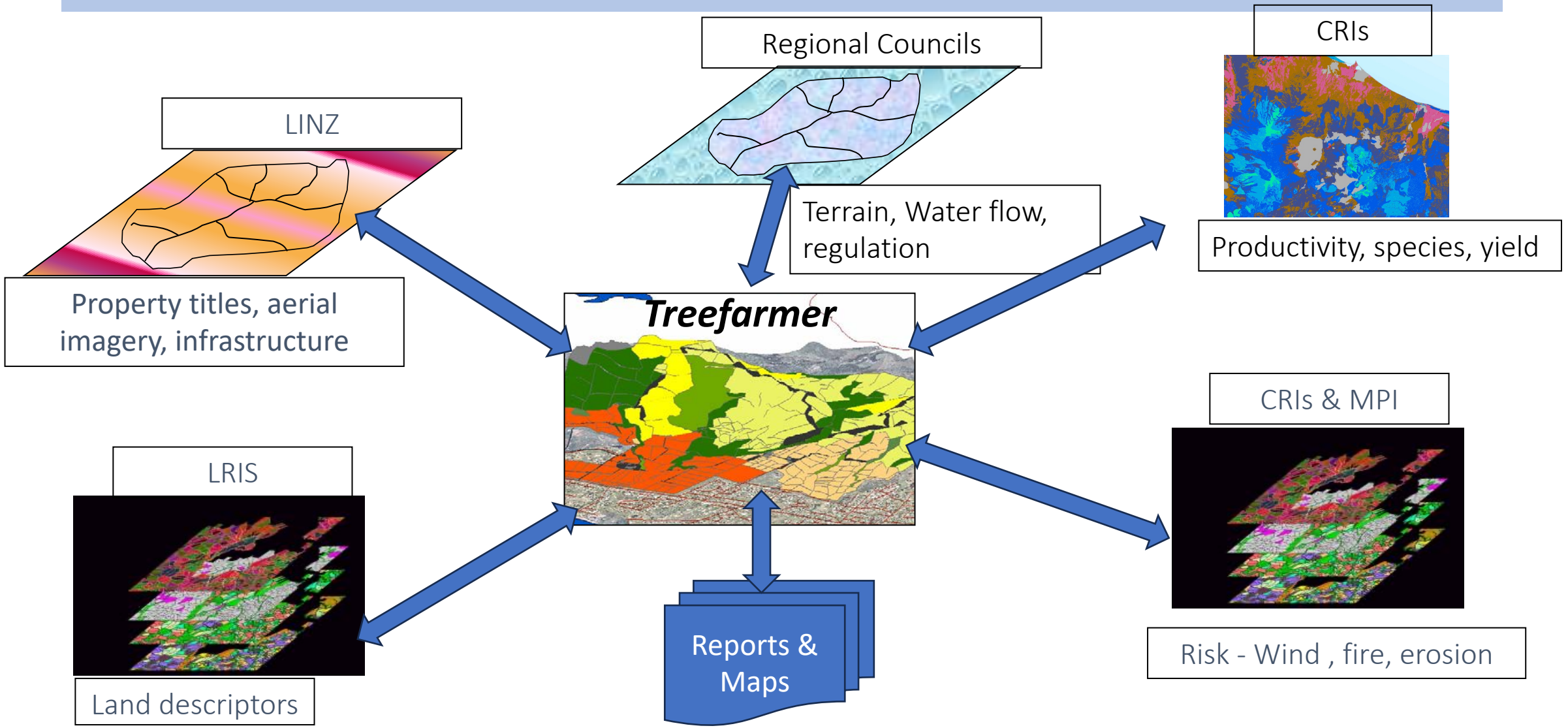
Treefarmer has been developed with Forest Grower Levy funds for use by all New Zealand Small Scale Forest Growers. This web tool is intended to provide knowledge and awareness of forest operations, research results, and improve forest investmen outcomes.

This version (4.0) gives decision support for commercial tree planting operations and limite harvest planning functionality with indicative re only. It does not provide an operational plan n replace the need to involve professional forestry consultants or harvest planners.

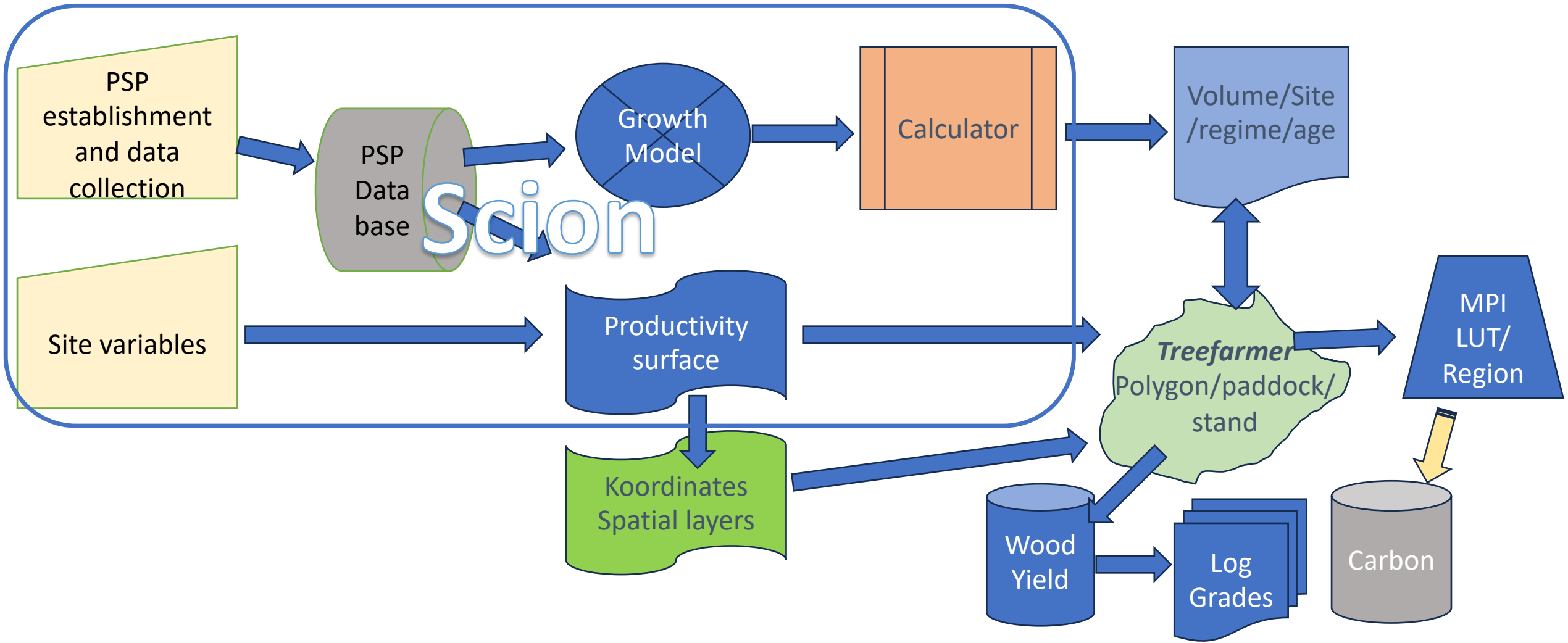
Further information is available from the Forest Growers Research website: https://fgr.nz/

Use web tools

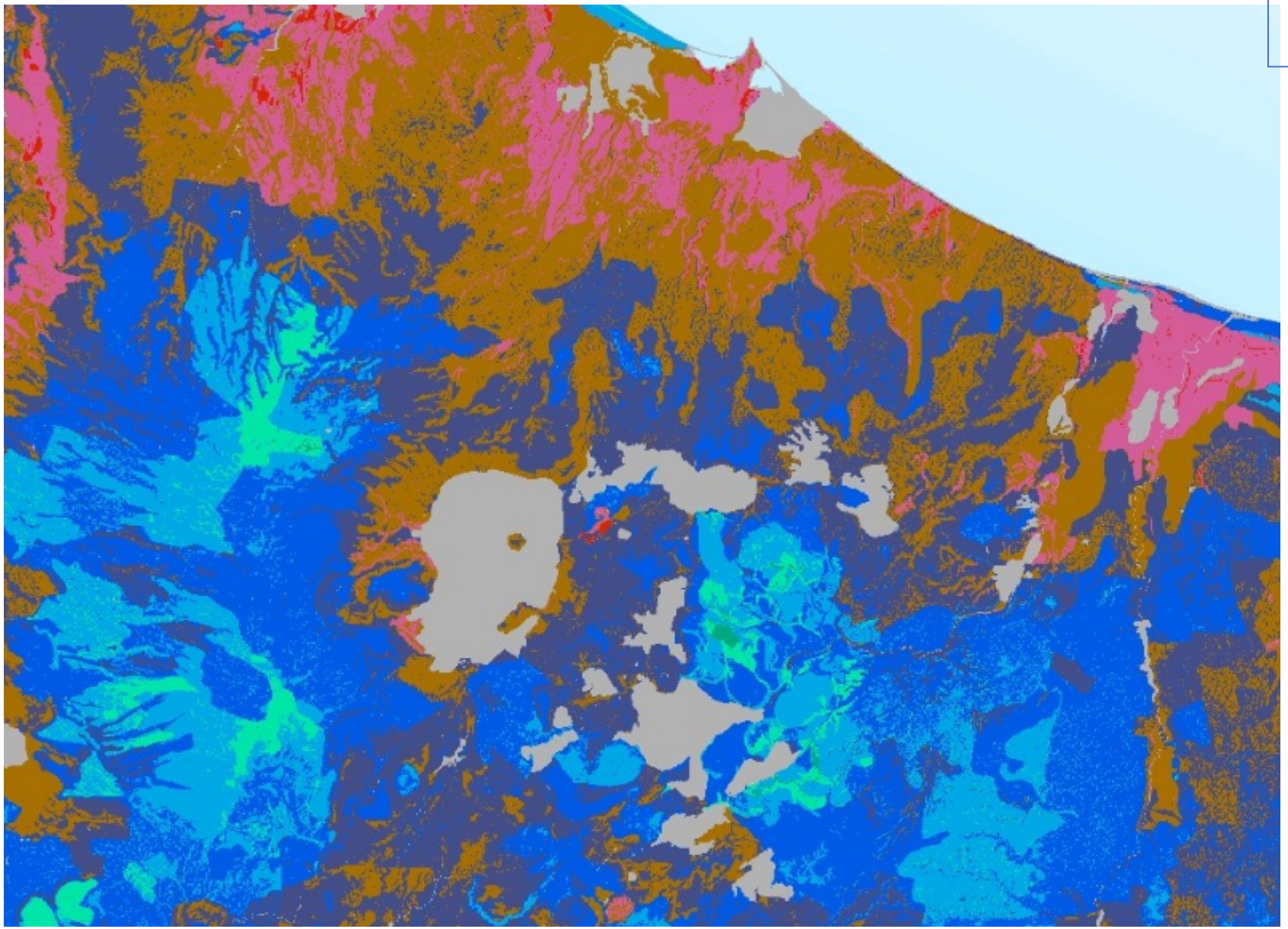
Web Services - Access and integration



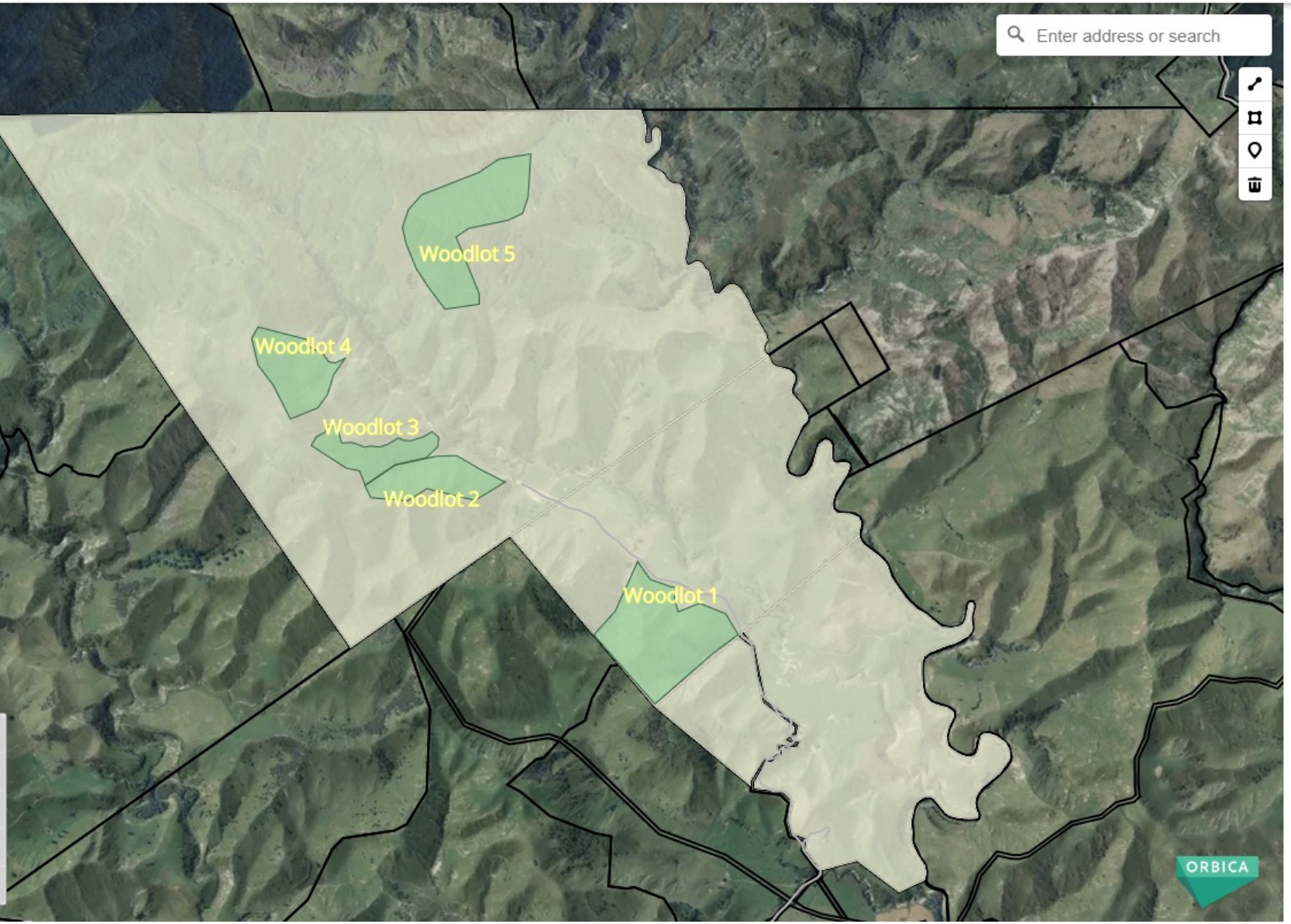
Delivery of latest research results – Tech Transfer



E.g. - Productivity layer – Radiata pine volume production 100m pixel



Wood Volume growth m^3/ha/yr	Kg/ha/yr DM
35-37	15, 000
32-35	14, 000
30-32	13, 000
28-30	12, 000



Pasture +

26.12ha Pasture 90 %

Woodlot 5 Blackberry 10 %

Blackberry +

Species options

Species	Link	Tending option	Harvest age	Index
☑ Radiata Pine	FFA Guide	Prune & Thin	28	
☐ Eucalyptus nitens	FFA Guide	No thin or prune	30	
☑ Poplar Species	FFA Guide	No thin or prune	38	
☑ Redwood	FFA Guide	Prune & Thin	42	
☐ Douglas fir	FFA Guide	No thin or prune	30	
☑ Cupressus lusitanica	FFA Guide	Prune & Thin	40	
☐ Cupressus macrocarpa	FFA Guide	No thin or prune	30	
☑ Native Plantations	FFA Guide	Prune & Thin	50	Average
☐ Native regeneration	FFA Guide	Prune & Thin	30	Average

Wind risk

Wind risk classification is based on the estimated probability of an average tree inside a 28-year-old radiata pine forest stand being blown over inside a 12-month period for:

- a stand thinned to 350 stems per hectare, or
- a stand planted and left at 1,000 stems per hectare.

Operational Costs

Lot	Area	Species	Establishment ($/ha)	Tending ($/ha)	Total Woodlot Operational Costs	Total Standing Volume (TSV)	Carbon (Stock change) [Age 50]	Carbon (Stock averaging)
Woodlot 1 **Avg. Slope:** 20.91°	25.92ha	Radiata Pine	$2,132	Prune & Thin $3,083	$135,166	905 m3/ha (Index300: 32)	34,862 (1345 t/ha)	10,316 (398 t/ha)
		Poplar Species	$1,600	No thin or prune $0	$41,464			8,294 (320 t/ha)
		Redwood	$2,665	Prune & Thin $3,391	$156,966	2127 m3/ha (Index300: 35)	16,615 (641 t/ha)	7,335 (283 t/ha)
		Cupressus lusitanica	$2,451	Prune & Thin $3,699	$159,417	840 m3/ha (Index300: 20.0)	16,615 (641 t/ha)	7,335 (283 t/ha)
		Native Plantations	$7,870	Prune & Thin $8,849	$433,359	832 m3/ha (SiteIndex: Average)	21,565 (832 t/ha)	3,033 (117 t/ha)


Zoom Level: 15
Enter address
Woodlot 1
Roading #1
Productivity layers
Risk
Infrastructure
Layer appears between zoom level 8 & 16
Slope layer
Erosion layer
Basemaps
Road line slope
<= 1°
> 1°
> 2°
> 3°
> 4°
> 5°
> 7°

Access Road Costs

Total $287,044

Selected Roading Type - Trucking

Per km $199,433

Roading costs calculated for the drawn road are based on likely erosion susceptibility, rainfall, terrain slope, and any waterway crossings.

Transport Costs

Port $26/t

Nearest Processing Facilities by Road Network

Port $10,281/ha

Port - Napier - 72 km

Mill $23/t

Mill - Whirinaki, Napier - 55 km

Mill $4,956/ha

Skid Costs

Total $68,520

Suggested Number of Skids - 2

Skids drawn: 8

Average Slope for Skid - 20°

Drawn Map Measurements

1 drawn Woodlot(s) Boundary - 25.92 ha

Drawn Access Road Length - 1.44 km

Other Information

Alternate Ports - Gisborne (170 km), Tauranga, Mount Maunganui (327 km)

Alternate Mills - Whirinaki, Napier (59 km), Wairoa (72 km)

Total Estimated Costs for Radiata pine

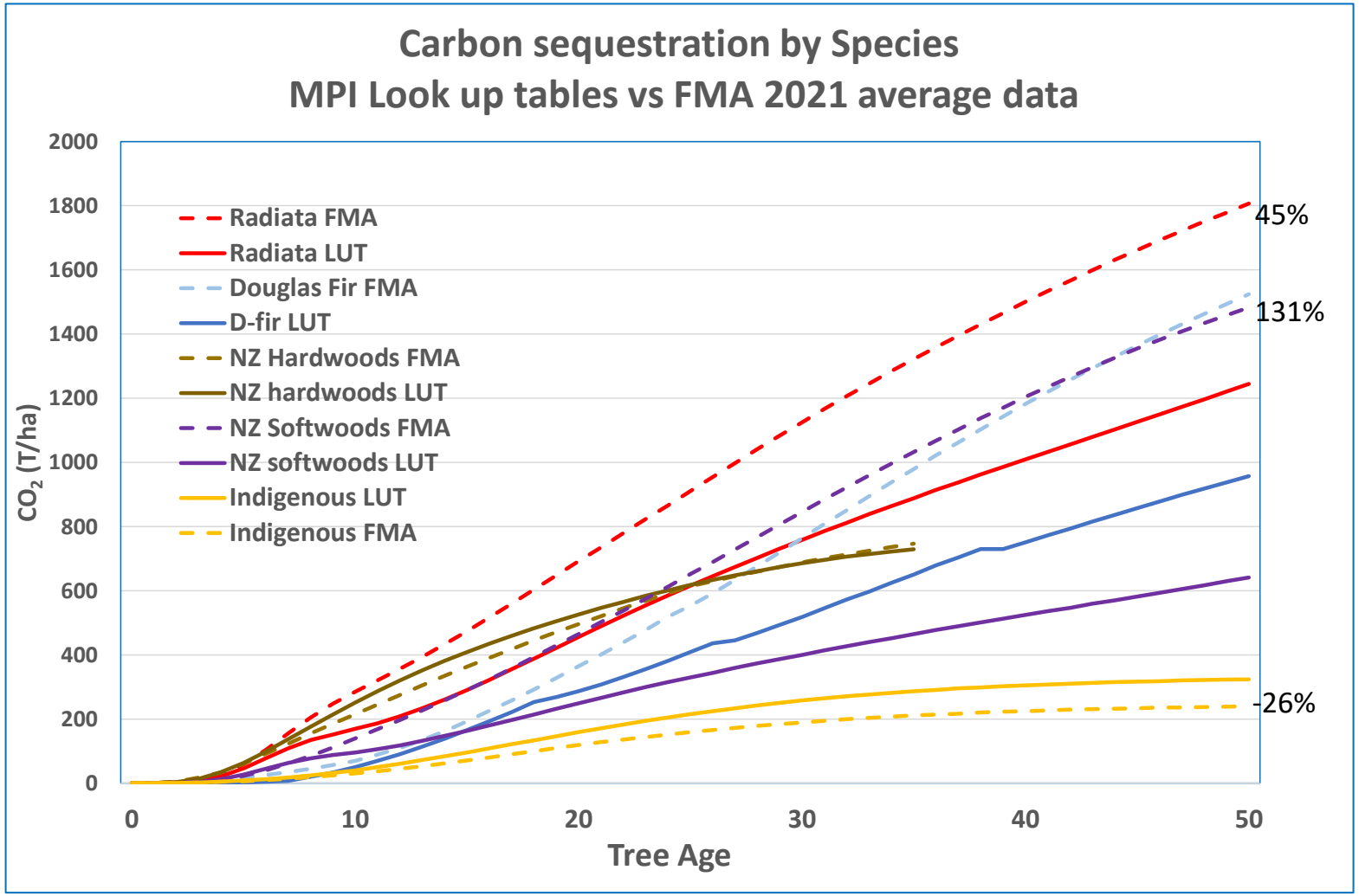
Cost Description	Cost per tonne	Cost per hectare
Log & Load Costs	$38	$23,303
Access Road Costs	$18	$11,074
Transport Costs	$25	$15,236
Skid Costs	$4	$2,644
Management & Other Note: Other includes Shifting, Weighbridge, Compliance & Levy Costs	$9	$5,490
Total	$95	$57,748

Net Return #1

Roading #	Woodlot #	Species & Harvest	Total standing Volume	Merchantable volume	Carbon		Log Grade Volume (t/ha)		Gross Timber revenue	Total Harvest Cost/ha*	Net Revenue/ha	Net revenue/ha/yr #
					Averaging	Stock change (Age 50)						
Roading 1	Woodlot 1 **Area:** 25.92ha	Radiata Pine Prune & Thin **Harvest age:** 28	905m3/ha (Index300: 31.16)	679 t/ha	398 t/ha	1345 t/ha	- Pruned > 40 - Unpruned > 40 - Unpruned 30-40 - Unpruned 20-30 - Unpruned 10-20	192.09 141.18 152.72 104.53 88.92	$86,515	$62,710	$23,805	$850
Roading 1	Woodlot 1 **Area:** 25.92ha	Poplar species One Thin structural **Harvest age:** 35	138m3/ha (SiteIndex: 16.00)	83 t/ha	320 t/ha		- Unpruned > 40 - Unpruned 30-40 - Unpruned 20-30 - Unpruned 10-20	28.73 41.40 4.72 7.95	$8,909	$19,694	$-10,785	$-308
Roading 1	Woodlot 1 **Area:** 25.92ha	Redwood Prune & Thin **Harvest age:** 45	2347m3/ha (Index300: 35.75)	1,760 t/ha	283 t/ha	641 t/ha	- Pruned > 40 - Unpruned > 40 - Unpruned 30-40 - Unpruned 20-30 - Unpruned 10-20	478.79 1084.31 151.38 44.01 3.52	$369,688	$161,889	$207,799	$4,618
Roading 1	Woodlot 1 **Area:** 25.92ha	Cupressus lusitanica Prune & Thin **Harvest age:** 43	878m3/ha (Index300: 19.15)	659 t/ha	283 t/ha	641 t/ha	- Pruned > 40 - Unpruned > 40 - Unpruned 30-40 - Unpruned 20-30 - Unpruned 10-20	150.80 134.99 228.50 127.09 17.78	$113,706	$70,436	$43,271	$1,006

* Current harvest costs are all based on Radiata pine

Drivers for **Carbon** forestry investment

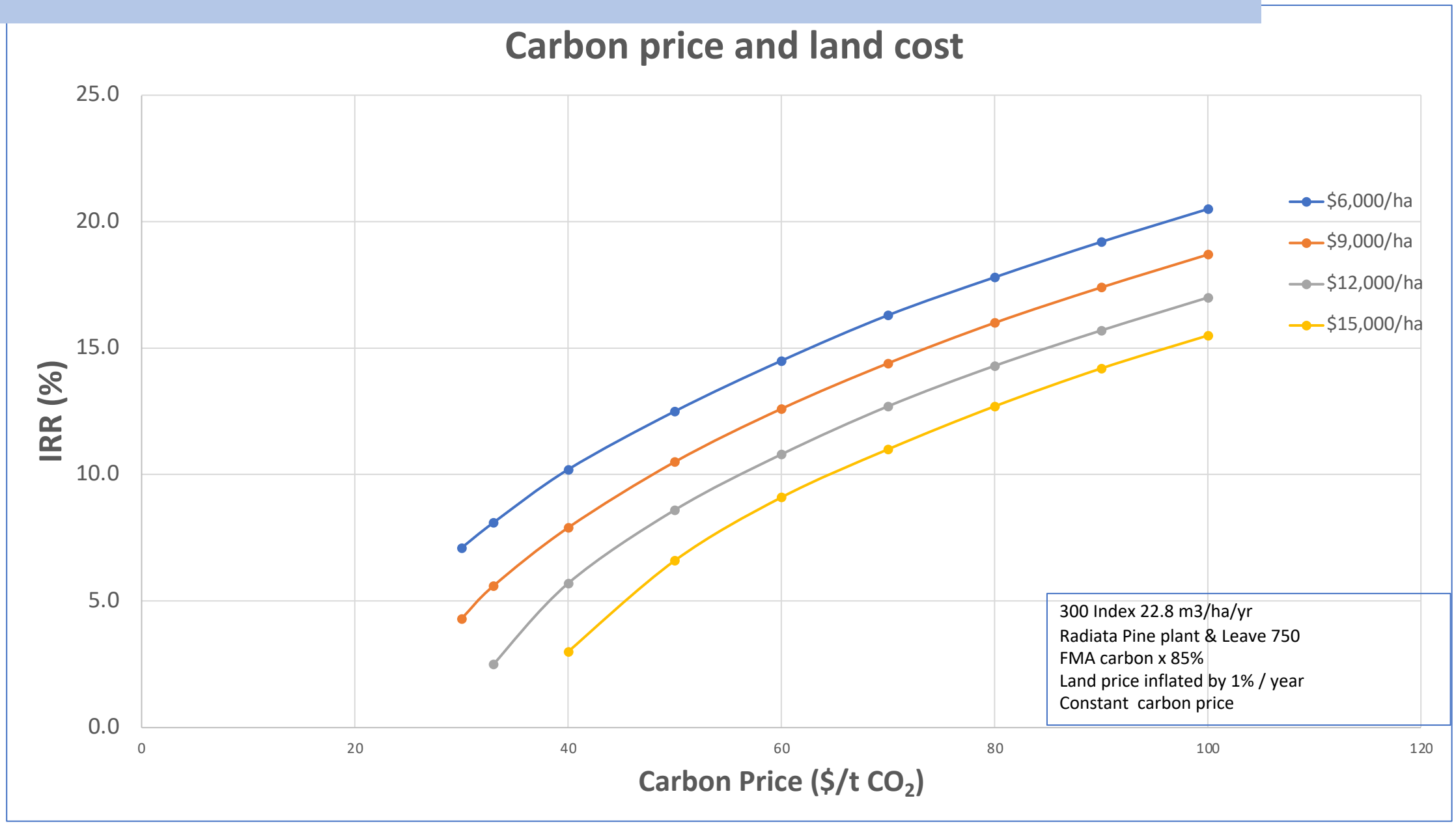


Hardwoods:
Eucalypts
Poplar
Oak
Acacia
Walnut
Chestnut

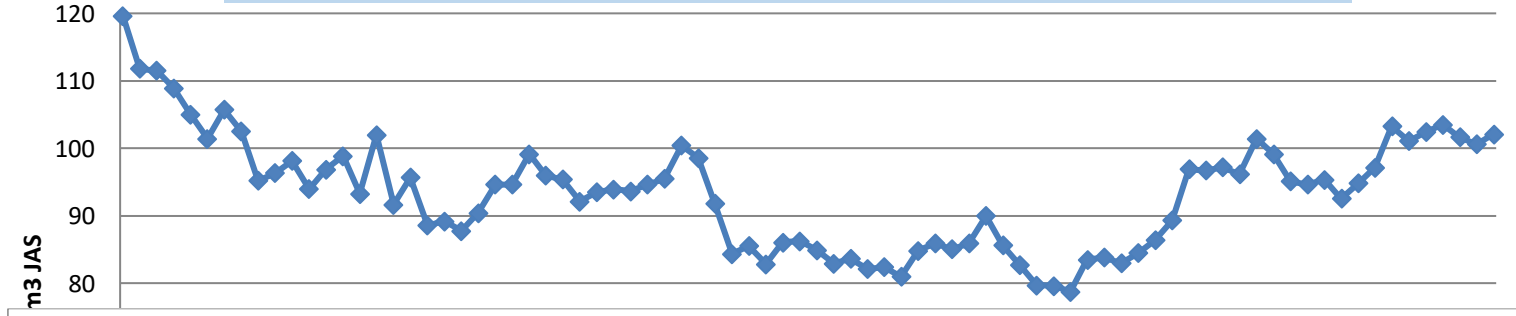
Softwoods:
Redwood
Cypresses
Abies
Spruce
Larch

Major driver for carbon is **Productivity via species choice and site**

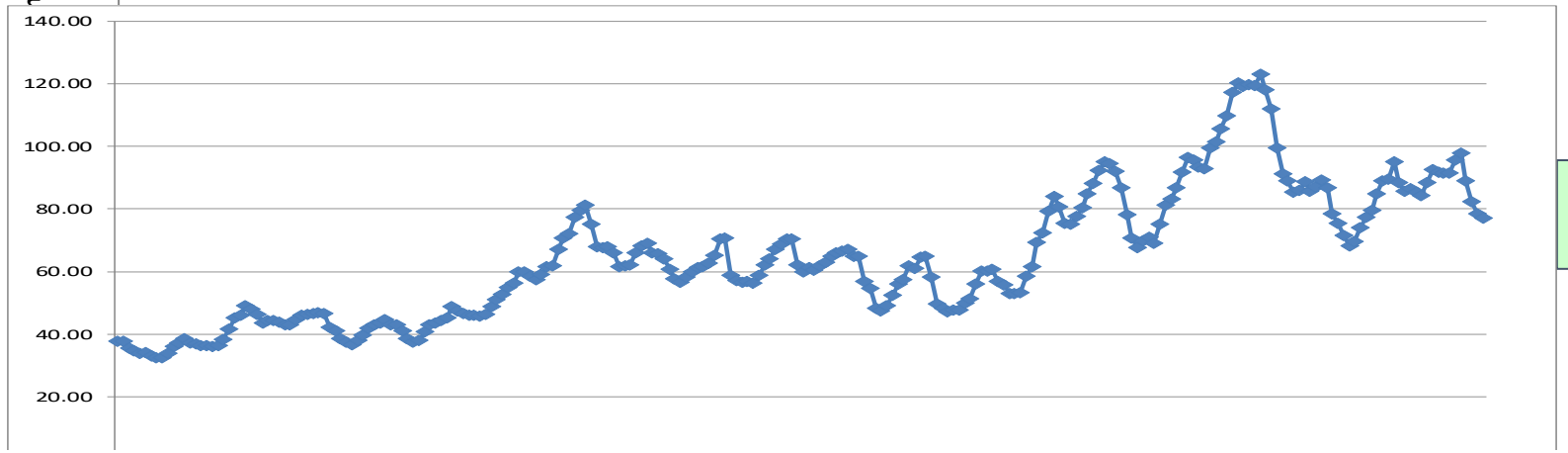
Drivers for **Carbon** forestry



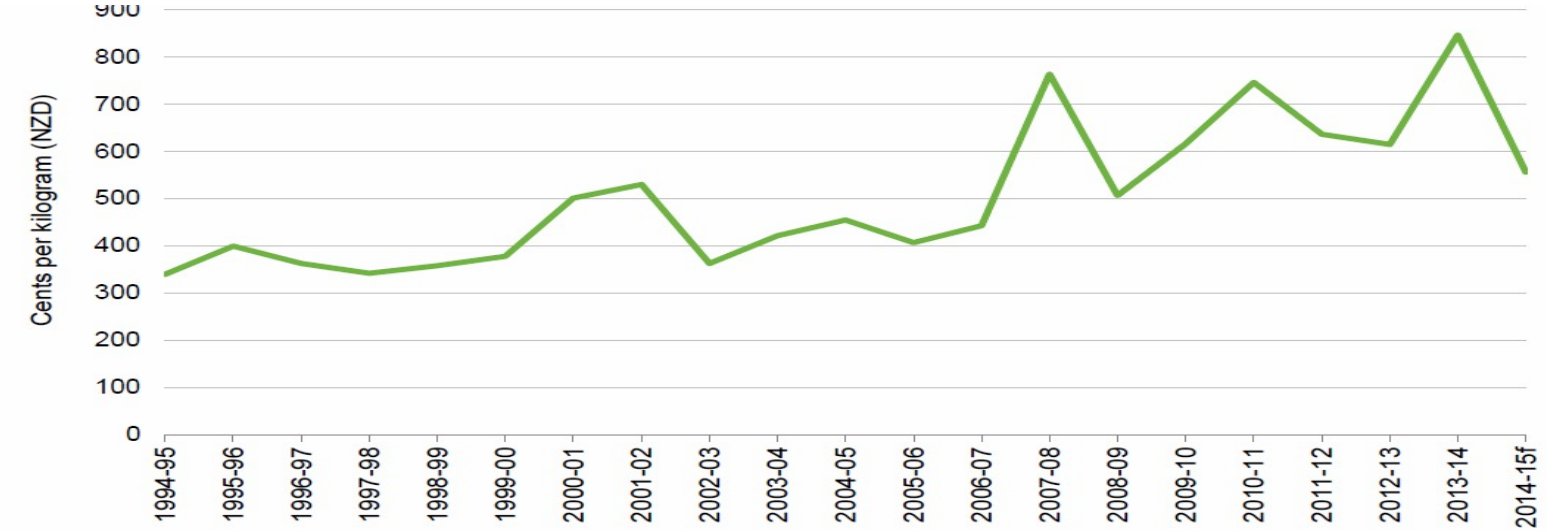
Strategy for market uncertainty



Domestic log prices

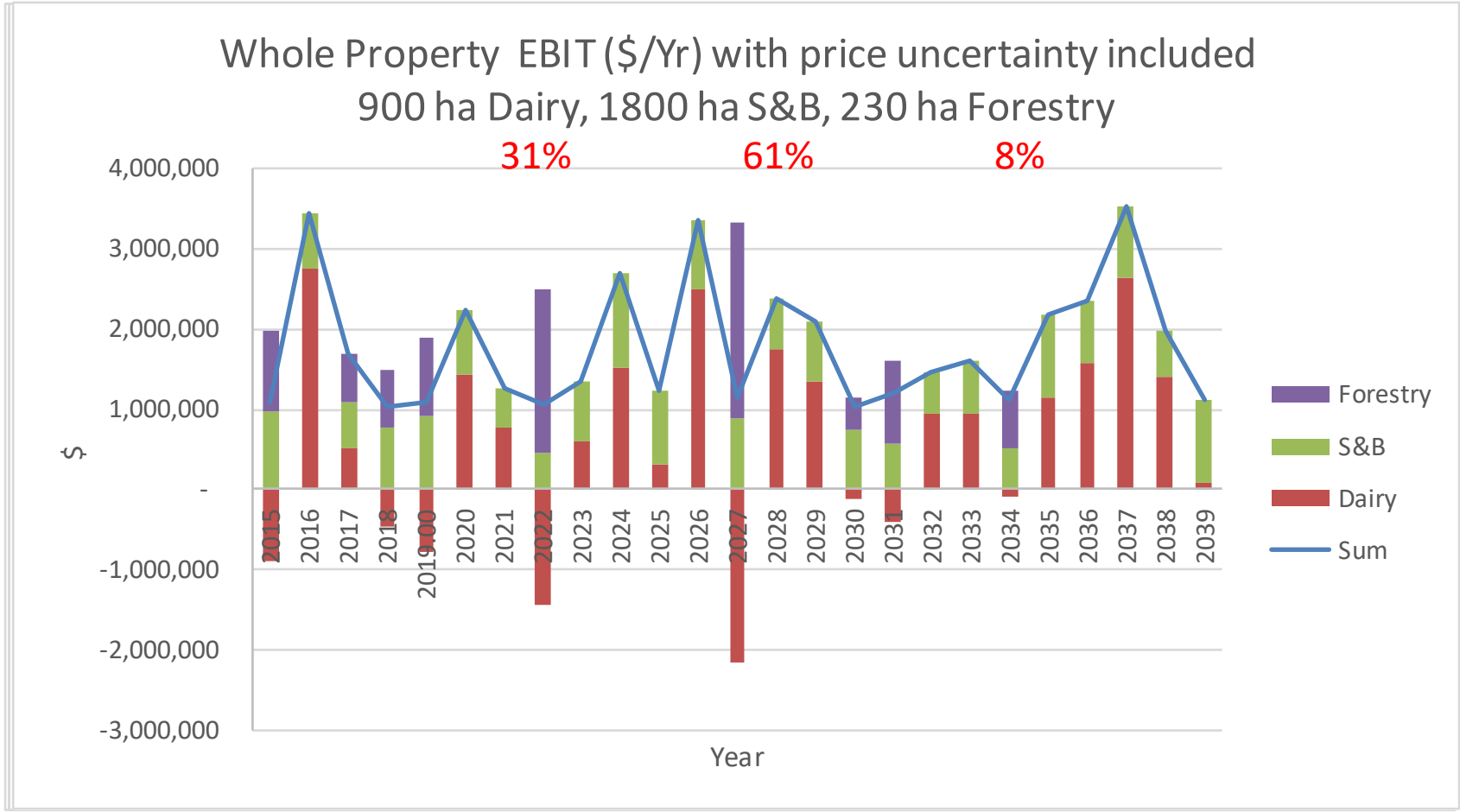


Lamb prices



Milk solids prices

Hedging pastoral income with multi-age forestry



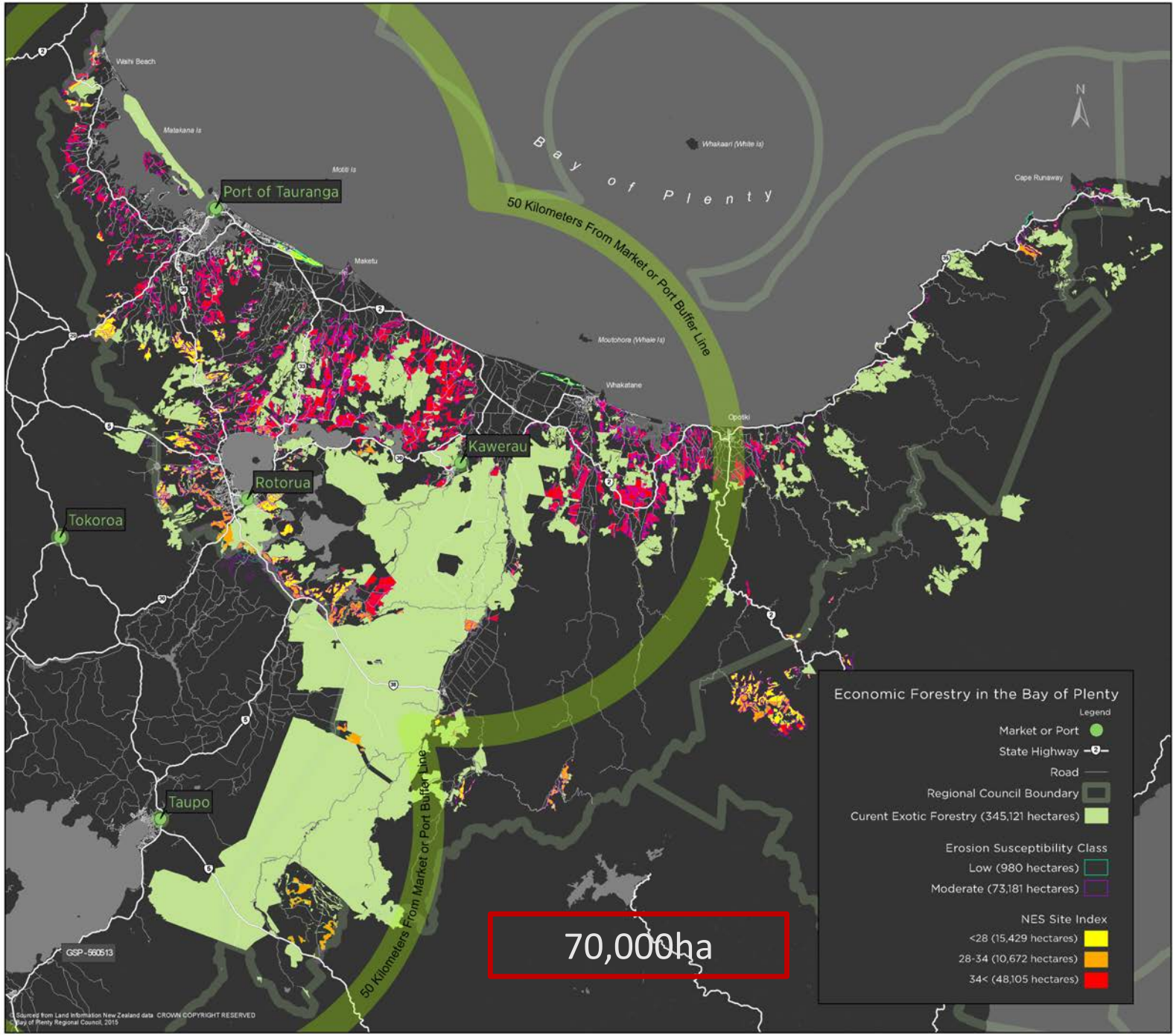
Minimum net income maintained at $1m/year

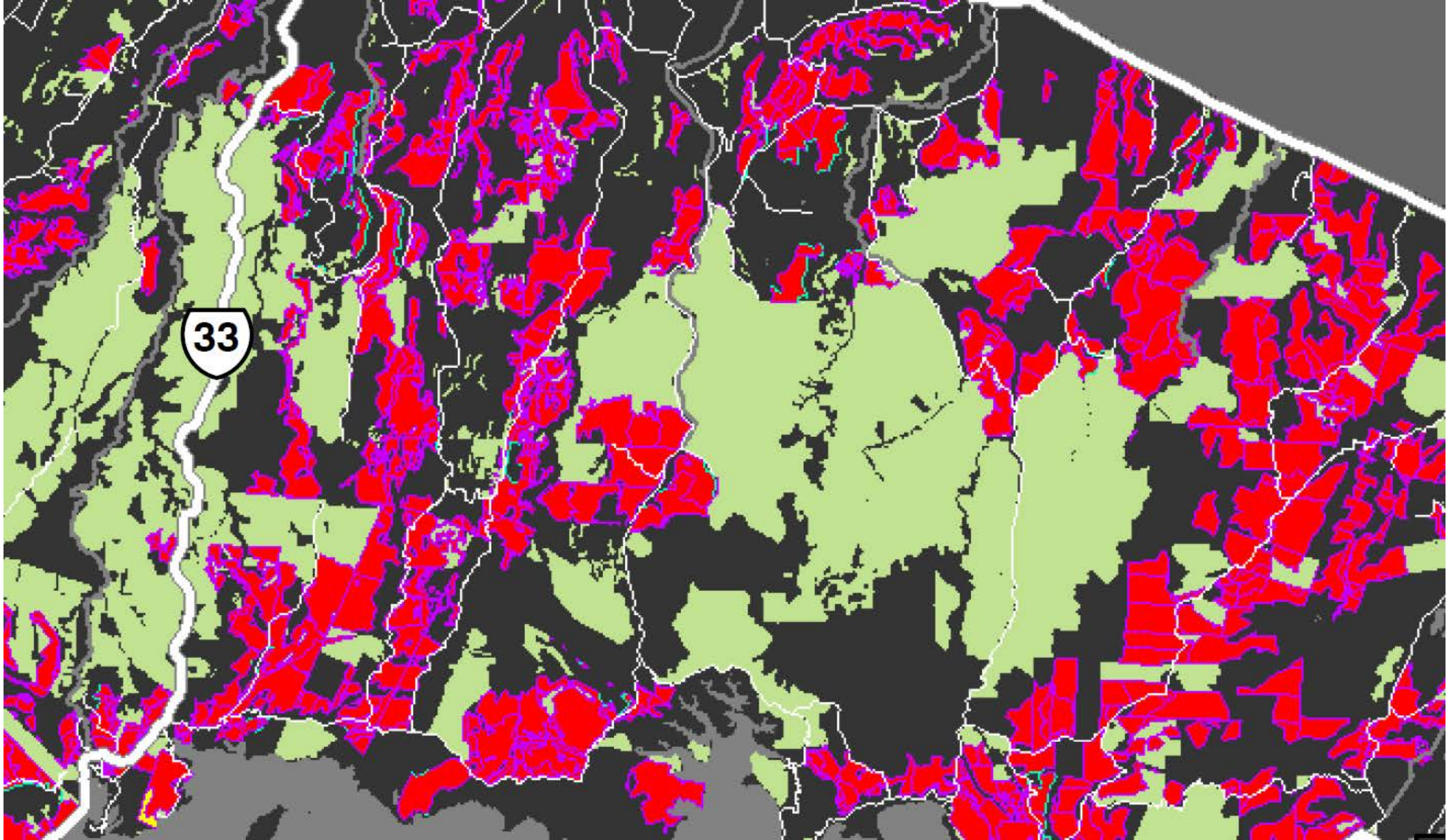
Vision for BOP – better tools and services

- Application of knowledge, spatial data for economic and environment
- E.g., What land could be profitably in forest?
- Issues driving costs
- Alternative land uses
- Erosion risk
- Productivity

Step	**Criteria**	**ha**	**difference**
1	LUC 6e & 6s	313,565	
2	<=1 km to public road	224,974	88,591
3	Pastoral land use	74,242	150,732
4	Transport distance 100km	73,259	983
5	Transport distance 50km	65,201	8,058
6	within BOP Region boundary & <100km	68,525	4,734
7	Site index <28m		15,429
7	Site index 28-34m		10,672
7	Site index >34m		48,105

Where is the land for profitable forestry in BOP ?




33

Summary

- Location and best practice drives profitability in timber forestry
- Productivity, species, and carbon price drive profitability of carbon forestry – not location
- Multi age forestry hedges pastoral income variability
- Use web tools (Treefarmer) and data to inform planning
- Vision BOP - Geospatial analysis can help landowners see the opportunities

Thank You

Questions please

- https://treefarmer.fgr.nz/ Check it out, its free!