

Land-use change from pastoral farming to large-scale forestry Update

July 2023

Orme & Associates Limited



Client Report

Update of land-use change from pastoral farming to large-scale forestry for 1/01/2021 – 31/12/2022

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Date	July 2023
Version	FINAL
Client Details	Beef + Lamb New Zealand Ltd

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Executive Summary

Orme & Associates has been commissioned by Beef + Lamb New Zealand to:

REVIEW AND UPDATE the Land Use change on Pastoral Farms report to 31/12/2022.

This report covers the period **1/01/2021 to 31/12/2022** and also includes an updated assessment of properties not recorded in previous reports, due to potential timing issues with settlement dates.

690 rural properties classified as Pastoral and/or Forestry were identified as transferring to a different owner/entity during the period 1/01/2021 to 31/12/2022. Of these 154 (22%) met the criteria for inclusion in the report as potentially being available to convert from pastoral to afforestation, compared to 16% recorded in the previous report.

94 (25%) properties in 2021 and a drop to 60 (19%) in 2022.

Whole farms identified as purchased for potential afforestation

The updated results for the period 1/01/2017 to 31/12/2022 are tabled below, along with the quarterly results for the two year period 1/01/2021 to 31/12/2022:

Whole of Farm Purchase	Year				Updated 2021	Updated 2022	Grand Total (Hectares)	Overall % by Conversion
	2017	2018	2019	2020				
Honey (Mānuka)	3,039	7,340	1,678	3,313	3,175	274	18,819	8.9%
Forestry	2,510	11,245	26,198	6,069	16,266	10,591	72,879	34.6%
Carbon Forestry				13,635	16,029	11,810	41,474	19.7%
Forestry OIO	1,455	8,982	10,626	15,261	28,112	12,833	77,270	36.7%
Total Whole of Farm	7,004	27,567	38,502	38,278	63,582	35,508	210,442	100.0%
Previous Report 2021	7,004	27,567	38,502	28,159	52,451	-		

Whole of Farm Purchase	2021				2021 Total	2022				2022 Total	Grand Total Hectares	% by Conversion
	Qtr1	Qtr2	Qtr3	Qtr4		Qtr1	Qtr2	Qtr3	Qtr4			
Honey (Mānuka)	3,175				3,175				274	274	3,449	3.5%
Forestry	4,399	3,012	3,201	5,654	16,266	1,374	4,502	1,517	3,198	10,591	26,857	27.1%
Carbon Forestry	1,272	732	3,214	10,812	16,029	8,305	695	2,245	566	11,811	27,840	28.1%
Forestry OIO	6,063	1,200	3,495	17,353	28,111	3,583	6,168	2,349	734	12,833	40,945	41.3%
Grand Total	14,909	4,944	9,910	33,819	63,582	13,262	11,365	6,111	4,771	35,509	99,091	100.0%

The results of our review estimate:

1. The gross land area of whole farms purchased in the two-year period 1/01/2021 to 31/12/2022 for planting is estimated at **99,091** ha.
2. Approximately **3,449** ha gross land area is identified for Honey operations, a significant drop on previous % basis.
3. Approximately **27,840** ha gross land area is identified as purchased by a likely (Long Rotation) Carbon Entity.
4. Approximately **40,945** ha gross land area is identified through the OIO process which must be planted with a limited rotation age and managed as a commercial harvestable forest.
5. The balance of **26,857** ha gross land area is assumed to be from domestic purchasers interested in both production forestry and carbon options.
6. The data was based on sales that could be verified during the stated period.

NB. May be 1 hectare variation in totals due to different data/tables/layers.

Emerging trends

LUCAS layer summary

A small increase in Post-1989 Forest present on land traded was noted, with a slight increase in Grassland High Producing land traded.

LUCAS 2016 Layer - Report version	Cropland - Annual	Grassland - High producing	Grassland - Low producing	Grassland - With woody biomass	Natural Forest	Planted Forest - Pre 1990	Post-1989 Forest	Wetland - Open water	Wetland - Vegetated non forest	Grand Total (Hectares)
% 2021-2022	0.0%	34.9%	40.4%	5.7%	9.0%	2.1%	7.8%	0.1%	0.0%	100%
% 2020-2022	0.0%	31.7%	40.9%	7.4%	11.6%	2.5%	5.8%	0.1%	0.1%	100%
% 2017-2020	0.0%	24.2%	41.2%	6.7%	16.1%	2.5%	8.9%	0.1%	0.0%	100%

LUC classification summary

A slight increase in the percentage of Class 7 land was noticed in the properties identified this period.

Class 6 land which has been discussed as having limitations in terms of total area placed on it, represents 57,274 hectares of the area traded over the two year period.

LUC Layer - Report version	Land Use Classification (LUC) Band								Grand Total (Hectares)
	2	3	4	5	6	7	8	Other	
% 2021-2022	0.2%	3.7%	6.7%	0.5%	57.8%	30.1%	1.0%	0.0%	100%
% 2020-2022	0.2%	3.8%	8.7%	2.8%	60.5%	23.3%	0.7%	0.0%	100%
% 2017-2020	0.1%	3.1%	5.4%	0.9%	52.0%	36.7%	1.7%	0.1%	100%

Erosion Susceptibility Classification summary

A slight increase in the Very High category ESC.

ESC Layer - Report version	Erosion Susceptibility Class (ESC)					Grand Total (Hectares)
	Low	Moderate	High	Very High	Other	
% 2021-2022	29.2%	41.3%	20.4%	9.1%	0.0%	100%
% 2020-2022	38.5%	40.1%	15.1%	6.2%	0.0%	100%
% 2017-2020	28.2%	35.8%	26.0%	9.9%	0.0%	100%

Background

Orme & Associates was originally commissioned by Beef + Lamb New Zealand to:

“Update and track the amount of land that has been or will be planted into exotic plantation species in the near future that is likely to take land out of pastoral production”.

A refresh has been requested for the updated 2021-2022 data.

A review back to the beginning of 2021 was conducted to ensure all sales were identified where settlement was potentially deferred for a variety of reasons.

The project initially involved a comprehensive review of available land-use-change data, to provide up-to-date statistics on the areas of land being converted from pastoral farming into forestry under different ownership models, grant programmes and owner objectives for the period 1/01/2017 to 31/12/2020. This is the latest update in the series, focusing on data from 1/01/2021 to 31/12/2022.

Tables have been shortened to identify trends in % of land classes rather than total hectares.

To provide a benchmark for ‘whole of farm’ purchase we analysed all sales of 250 ha or more to be consistent with the process of the original report.

When combined with the updated sales information from this current report, the table including original data from 2017 to 2019 and updated data from 1/01/2021 to 31/12/2022 is represented as below:

Whole of Farm Purchase	Year				Updated 2021	Updated 2022	Grand Total (Hectares)	Overall % by Conversion
	2017	2018	2019	2020				
Honey (Mānuka)	3,039	7,340	1,678	3,313	3,175	274	18,819	8.9%
Forestry	2,510	11,245	26,198	6,069	16,266	10,591	72,879	34.6%
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Total Whole of Farm	7,004	27,567	38,502	38,278	63,582	35,508	210,442	100.0%
Previous Report 2021	7,004	27,567	38,502	28,159	52,451	-		

Table 1: Updated data for whole farms and partial farm new planting areas from 2017 to 2022

Whole of Farm Purchase	2021					2022					Grand Total Hectares	% by Conversion	
	Qtr1	Qtr2	Qtr3	Qtr4	2021 Total	Qtr1	Qtr2	Qtr3	Qtr4	2022 Total			
Honey (Mānuka)	3,175				3,175					274	274	3,449	3.5%
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Forestry OIO	6,063	1,200	3,495	17,353	28,111	3,583	6,168	2,349	734	12,833	40,945	41.3%	
Grand Total	14,909	4,944	9,910	33,819	63,582	13,262	11,365	6,111	4,771	35,509	99,091	100.0%	

Table 2: Updated data for sales by quarter from 1/01/2021 to 31/12/2022

The initial results of the survey tended to support and provide a slight increase in the areas intended for conversion in the 2021 year from 52,451 to 63,582 ha, particularly in the last quarter of the year, as was a trend identified as starting to develop in the last report. Most of this increase appeared to relate to the delays involved in OIO decisions being approved.

Data for the first two quarters of 2022 continued to show strong sales (consistent with the level of activity for the first two quarters of 2021), but we then see a significant reduction in sales for the last two quarters of 2022.

Many potential farms sales are currently struggling to obtain live acceptable bids from prospective purchasers in the marketplace and the consensus is, that the perceived interference, consultation and commentary around the ETS, is playing a major role in this downturn with investors stepping back due to uncertainty in the viability of their investment given some of the ‘blue sky’ suggestions within current consultation.

The number of OIO purchased properties appears to have increased in this period from 34.3% in the past report to 41.3% of total sales for this period.

This could be for a variety of reasons:

- low farming profitability making it uneconomic for NZ farmers to purchase at prices being backed by forestry returns.
- NZ forestry purchasers more carefully considering their options and investment strategies.
- The signalling of a move to remove the Forestry test pathway, potentially creating a sense of urgency.

It is understood that although there are potentially a number of OIO decisions currently awaiting an outcome, there has been a marked drop off in OIO interest after November last year.

Honey purchasers have dropped significantly to 3.5%, as returns in this industry cannot keep pace with farming or forestry.

Traditional forestry has increased to keep pace with perceived carbon entities as concerns about availability in the future where the effect of trees being locked up needs to be addressed.

Carbon forestry and the ability to be registered in the ETS before the end of 2022, for backdating of units and use of the stock change carbon accounting method under standard forestry (rather than the permanent forest category), may have been a driver in the sales in the early part of the year if they could be planted and ETS registered by end of 2022.

Area of farms converted for harvest forest by region

The table below records the updated sales for the 2021-2022 sales period and compares against the percentage of sales by district recorded for the 2017-2020 and 2020-2021 periods in the previous report.

Region	2017-2020	2020-2021		2021-2022	
	% of area	Hectares	% of area	Hectares	% of area
North Auckland	4%	5,884	6%	5,696	6%
South Auckland	4%	10,318	10%	12,098	12%
Hawkes Bay	10%	13,113	13%	7,178	7%
Gisborne	4%	5,955	6%	19,692	20%
Taranaki	4%	6,434	6%	9,409	9%
Wellington	46%	27,259	27%	24,488	25%
Marlborough	6%	2,546	2%	3,694	4%
Nelson	2%	1,146	1%	0	0%
Canterbury	4%	4,360	4%	2,642	3%
Otago	16%	19,960	20%	7,766	8%
Southland	1%	5,261	5%	6,423	6%
Grand Total	100%	102,234	100%	90,090	100%

Table 3: Land sale by district data from 2017 to 2022

As can be seen there appears to be a reduction in the Hawke's Bay numbers and a dramatic increase in the Gisborne district. However, it should be noted that the data shows no sales in quarters 3 and 4 of 2022 and some land may well have been 'purchased' in 2021, but not settled till 2022.

DISTRICT	2021				2022		Grand Total Hectares
	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1	Qtr2	
Gisborne District	3,462		1,466	9,063	2,374	955	17,320
Wairoa District	662		376	1,335			2,373
Hastings District	393	603		397	509	332	2,235
Central Hawkes Bay District		475	629	2,516		1,323	4,943
Grand Total	4,517	1,078	2,471	13,311	2,883	2,610	26,871

Otago has had a decrease which appears to reflect the large OIO decisions taking effect earlier in 2020 in that region.

South Auckland has increased slightly (read extended Waikato/King Country) again anecdotally there are several properties that have conditional contracts that are yet to have conditions met or are awaiting decisions through the OIO process.

Land Type Affected

The LUC and ESC systems are both now well established as descriptors of topography and erosion susceptibility and are used extensively to regulate and guide land use. They also inevitably influence the perceived and actual value of land on the open market.

Hill country farms in New Zealand are traditionally made up of a large percentage of LUC Classes 6 and 7 land and some of these are very profitable.

Generally, the steeper the land (i.e. higher LUC and ESC classes), the higher the production costs to generate the same farming output per hectare compared with land in lower LUC/ESC classes.

Some of the country's best forest growth rates are seen on steep to very steep land in areas of moderate to high erodibility in the eastern North Island, they also attract some of the higher harvesting and associated roading costs.

Recent intense climatic events are generating questions on suitable land use for large areas of the east coast north of Gisborne and current harvesting methods.

Some form of vegetation is required, however, there is discussion on if production forestry with large harvesting coups is the right species and management practice or is there a need for a species/system change.

Areas of land being converted to forestry by LUC Class

The LUC system is an assessment of the land's capability for use, which '*takes into account its physical limitations and its versatility for sustained production*'.

Increasing limitations to use	LUC Class	Arable cropping suitability	Pastoral grazing suitability	Production forestry suitability	General suitability	Decreasing versatility of use
	1	High ↓ Low	High ↓ Low	High ↓ Low	Multiple use land	
	2					
	3					
	4					
	5	Unsuitable	Low	Low	Pastoral or forestry land	
	6					
	7					
	8		Unsuitable	Unsuitable	Conservation land	

Figure 1: Increasing limitations to use and decreasing versatility of use from LUC Class 1 to 8

Land Use Capability (LUC) Classification summary

A slight increase in the percentage of Class 7 land was noticed in the properties identified this period.

Class 6 land which has been discussed as having limitations placed on it, represents 57,274 hectares of the area over the two year period.

LUC Layer - Report version	Land Use Classification (LUC) Band								Grand Total (Hectares)
	2	3	4	5	6	7	8	Other	
% 2021-2022	0.2%	3.7%	6.7%	0.5%	57.8%	30.1%	1.0%	0.0%	100%
% 2020-2022	0.2%	3.8%	8.7%	2.8%	60.5%	23.3%	0.7%	0.0%	100%
% 2017-2020	0.1%	3.1%	5.4%	0.9%	52.0%	36.7%	1.7%	0.1%	100%

Table 4: Percentage of land being converted to forestry by LUC

Erosion Susceptibility Classification (ESC) summary

A slight increase in the Very High category ESC.

ESC Layer - Report version	Erosion Susceptibility Class (ESC)					Grand Total (Hectares)
	Low	Moderate	High	Very High	Other	
% 2021-2022	29.2%	41.3%	20.4%	9.1%	0.0%	100%
% 2020-2022	38.5%	40.1%	15.1%	6.2%	0.0%	100%
% 2017-2020	28.2%	35.8%	26.0%	9.9%	0.0%	100%

Table 5: Percentage of land being converted to forestry by ESC

LUCAS layer summary

Small increase in Post-1989 Forest present on land traded, with slight increase in Grassland High Producing.

LUCAS 2016 Layer - Report version	Cropland - Annual	Grassland - High producing	Grassland - Low producing	Grassland - With woody biomass	Natural Forest	Planted Forest - Pre 1990	Post-1989 Forest	Wetland - Open water	Wetland - Vegetated non forest	Grand Total (Hectares)
% 2021-2022	0.0%	34.9%	40.4%	5.7%	9.0%	2.1%	7.8%	0.1%	0.0%	100%
% 2020-2022	0.0%	31.7%	40.9%	7.4%	11.6%	2.5%	5.8%	0.1%	0.1%	100%
% 2017-2020	0.0%	24.2%	41.2%	6.7%	16.1%	2.5%	8.9%	0.1%	0.0%	100%

Table 6: Percentage of land being converted to forestry by LUCAS layer

Carbon Market

It would be fair to suggest that the increase in the price of carbon traded on the secondary market and prices achieved in the NZ ETS auctions last year were changing the economics of traditional farming methods in favour of full or partial farm conversion to forestry, with the added benefit of the increased carbon available under the new averaging and permanent categories making the economics in most districts more favourable.

Prices rose throughout 2022 up until mid-December when the Government released their decision on NZ ETS unit limit and prices control settings for 2023-2027. The Government didn't adopt the Climate Change Commission's (CCC) recommendations at a cabinet meeting in November but did not advise this till after the final NZ ETS Auction for 2022 on 7 December, at which point the price began to fall and demand for units dramatically reduced as confidence in the system and apparent political interference and indifference to the CCC advice created uncertainty in the secondary market, and indeed the Governments level of commitment to climate change and meeting of New Zealand's international obligations.

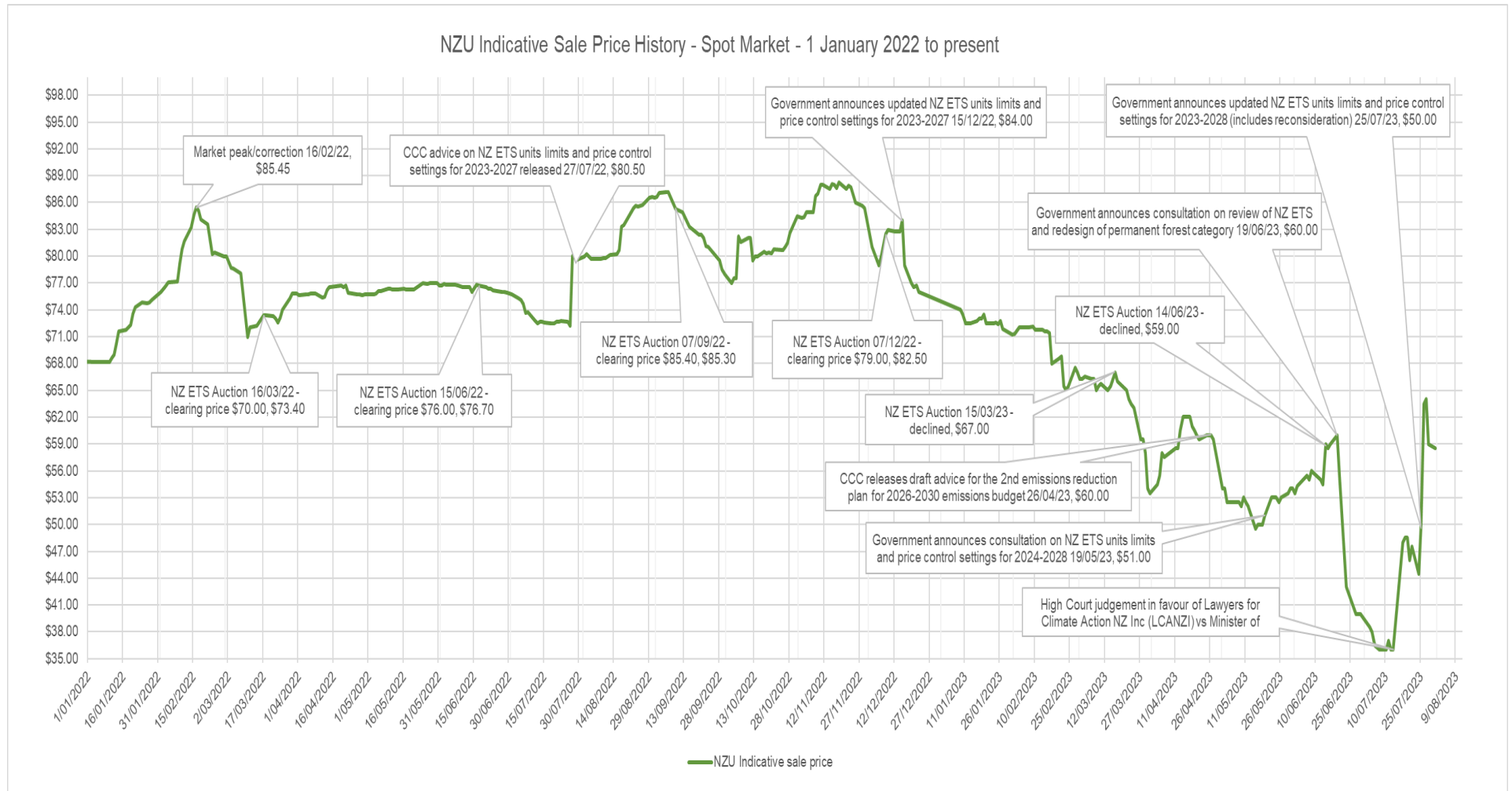


Figure 2: NZU indicative sale price history from 1/01/2022 to present

The increase in on-farm costs and in particular the increase in the cost of fertilizers in the last 12 months, identified in last year's update continues. Rhetoric around the eligibility of exotics in the permanent forest category has created concern amongst individual farmers and landowners trying to navigate the ETS and bringing Agriculture into the ETS.

Combine this with the continual changing regulatory agricultural environment and many landowners are beginning to question the business case behind staying a traditional farming operation and looking to diversify poorer performing areas of their properties.

The real and evident rush to secure land, plant and register before end of 2022 and being registered under the Kyoto rules (stock change) to avoid permanent penalties and possible exclusions that was envisaged, manifested itself in the data collected.

Many farms that twelve months ago would have generated interest from 'Forest buyers' have received no interest this calendar year. Further to this, even with the Government now looking to adopt the CCC recommendations on NZ ETS Auction unit reductions and the Cost Containment Reserve (CCR) prices, we do not envisage an uptake in farm sales due to multiple ETS related consultations currently in process.

Delays have been caused by the Ministry for Primary Industries' (MPI) backlogs; and the introduction of a new computer system (Tupu-ake) in January 2023 which did not have functionality to add new registrations, add new carbon accounting areas (CAA) or remove parts of a CAA, with this functionality only becoming available in August 2023.

In addition, there have been a number of consultations around the ETS, often with short timeframes for feedback and/or outcomes before earlier consultations have closed and been decided on.

New and proposed increases in ETS charges without a sound business case, justification and/or a properly functioning system have also compounded issues.

Due to the current regulatory uncertainty, we are also seeing the sudden availability of seedlings, as orders destined for this year's programmes and demand for pre-orders for next year are being reconsidered.

It is still envisaged however, that all available seedlings this year will be planted, but perhaps not in the originally intended locations.

Land-use Change

Land prices in most regions climbed throughout the 2022 year, however, prices and demand for land had started to fall prior to when uncertainty and political interference was perceived from the marketplace as various buyers filled their land requirement. This virtually stopped late last year once the CCC recommendations were ignored and the various consultations, seemingly being pushed through by Government departments, were released.

Different afforestation models are also being put in place with an apparent increase in lease arrangements and Forestry Rights as farmers look to take advantage of on-farm planting with outside investment, as opposed to simple sales captured by this report, growing in popularity.

The traditional "carbon" hotspots have also seen a shift in areas traded.

This appears to be a combination of reduced availability and more cost-effective options in other regions that can provide similar carbon returns especially on a long-term basis.

The table (Table 3) below shows a shift in regions across NZ on a percentage of total sales basis, when comparing our previous reports.

Region	2017-2020	2020-2021		2021-2022	
	% of area	Hectares	% of area	Hectares	% of area
North Auckland	4%	5,884	6%	5,696	6%
South Auckland	4%	10,318	10%	12,098	12%
Hawkes Bay	10%	13,113	13%	7,178	7%
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Southland	1%	5,261	5%	6,423	6%
Grand Total	100%	102,234	100%	90,090	100%

Barriers currently seen to further conversion

Last year we identified that if forward planning and order placement confirmation with nurseries was done in a timely manner, seedlings would be made available and grown on contract.

Additional capacity for both exotic and indigenous seedling production is also starting to appear in the industry.

The labour market has also been a cause for concern. Planting costs per tree have risen from around \$0.40/tree to \$0.80-\$0.90/tree as the availability of “trained” planters constrained by the effects of historic border closures.

On top of this, successful establishment also involves on-going pest control and release spraying operations.

The real barriers currently appear to be uncertainty around political interference and potential changes to the rules going forward. Perhaps this will change when we get through this election cycle and there is a semblance of certainty after the election, whichever way that falls.

Discussion

The land sales environment quickly changes. Properties are struggling to find prospective buyers at recently achieved prices and those that do, now attract contracts that appear to have longer due diligence clauses, and options for exiting should political interference become untenable for some prospective purchasers.

The dramatic drop in confirmed sales in the last two quarters of 2022 is particularly interesting, highlighting the effect of multiple MPI consultations, potential changes to the Permanent Forest Category, and general perceived interference in the ETS and likely political posturing, leading up to the October General Election.

However, given the patterns seen in previous years and from talking to various real estate agents, it is expected that the sales for the last two quarters of 2022 will increase once finalised and show up after OIO applications currently in the system, if successful, are processed.

As an example, initially the 2021 OIO figure in the last report was set at 19,136 ha, while updated results indicate 28,112 ha.

If there are no real changes to the ETS and its settings as a result of the MPI consultations, then it is expected that the area of land intended for conversion will continue at or near these levels.

Whole of Farm Purchase	2021					2021 Total	2022					2022 Total	Grand Total Hectares	% by Conversion
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Previous Report 2021	7,004	27,567	38,502	28,159	52,451	-		

The areas identified include additional sales dated in the 2021 year, that emerged confirmed, as a result of timing issues around the OIO approvals process.

The amount of land that has been and continues to be purchased for mānuka operations has dropped significantly as returns for the honey industry mean that they cannot compete at the same levels for new land, or that even new land for the industry can be justified at this stage.

Given the increase in the carbon price, and the state of the mānuka honey industry, it may become increasingly difficult for honey producers to compete in the current market to purchase land with only one confirmed sale in 2022 identified in the data.

Within Farm Plantings

There is also increasingly strong interest/commitment from farmers and landowners considering within-farm plantings, to diversify their income options and Greenhouse Gas (GHG) obligations.

Properties throughout the country are establishing exotics to help support their business, however, these are generally restricted to the less productive areas of their properties, that will not suit Production Forestry due to probable environmental and cost concerns around road construction and land stabilisation when/if harvested.

As such access to the use of exotics within farming systems within the ETS is critical to promote the Right Species, Right Place mantra.

More importantly they would like to establish natives where possible. They are looking for financial help in establishing these native areas due to the costs involved, however, there is still no assistance from the Government for New Zealand farmers, even though they have the land available and the desire to plant and maintain indigenous species.

The strong uptake of the One Billion Trees Programme (1BT) planting grant by landowners, under the previous Government term, provided evidence that many farmers were assessing the long-term benefits associated with putting part of their farm in trees, planting 'the right tree in the right place' – where the right place is one which increases overall farm profitability, reduces total farm emissions, and may also confer other sustainable environmental and social benefits.

Since the fund was stopped, so has landowner ability to plant non-radiata species, but their commitment is still there.

The current ETS fees review and settings proposed, may ironically mean that the only species that can likely support the proposed fee structure will be Long Term Permanent radiata or other exotic forests, which is against the rhetoric and desired outcomes put forward by the CCC and Government to date.

Once again, a possible unintended consequence of poor policy decisions/settings.

The danger mentioned in our last report was that "if some form of funding does not eventuate soon, exotics, and radiata in particular, will become the 'go to' species due to the economics involved." This has eventuated but without the other exotic species that found popularity within the 1BT programme.

There is a real benefit for existing B+LNZ levy payers to benefit from within-farm plantings, as the lack of labour in some areas, cost of fertilizer, fuel and additional feed in response to more dramatic climate events, cause many landowners to question how and why they are in the business of farming.

Many properties have land that is now, due to current economics, incapable of contributing positively to the farm's performance, can now provide a return in line with best land use.

The challenge and opportunity for the traditional farming operation to embrace the opportunities for forestry and carbon within their current farming models is real, however, policy settings and funding models will ultimately determine the effectiveness of any outcome.

The ability to register up to 100ha of permanent exotic species in the ETS, on land that is best suited to long term afforestation within farming systems, has the potential to make a real, positive change, for many existing farming systems and as such, may reduce the amount of land made available in the marketplace for potential full-scale farm conversion/afforestation.

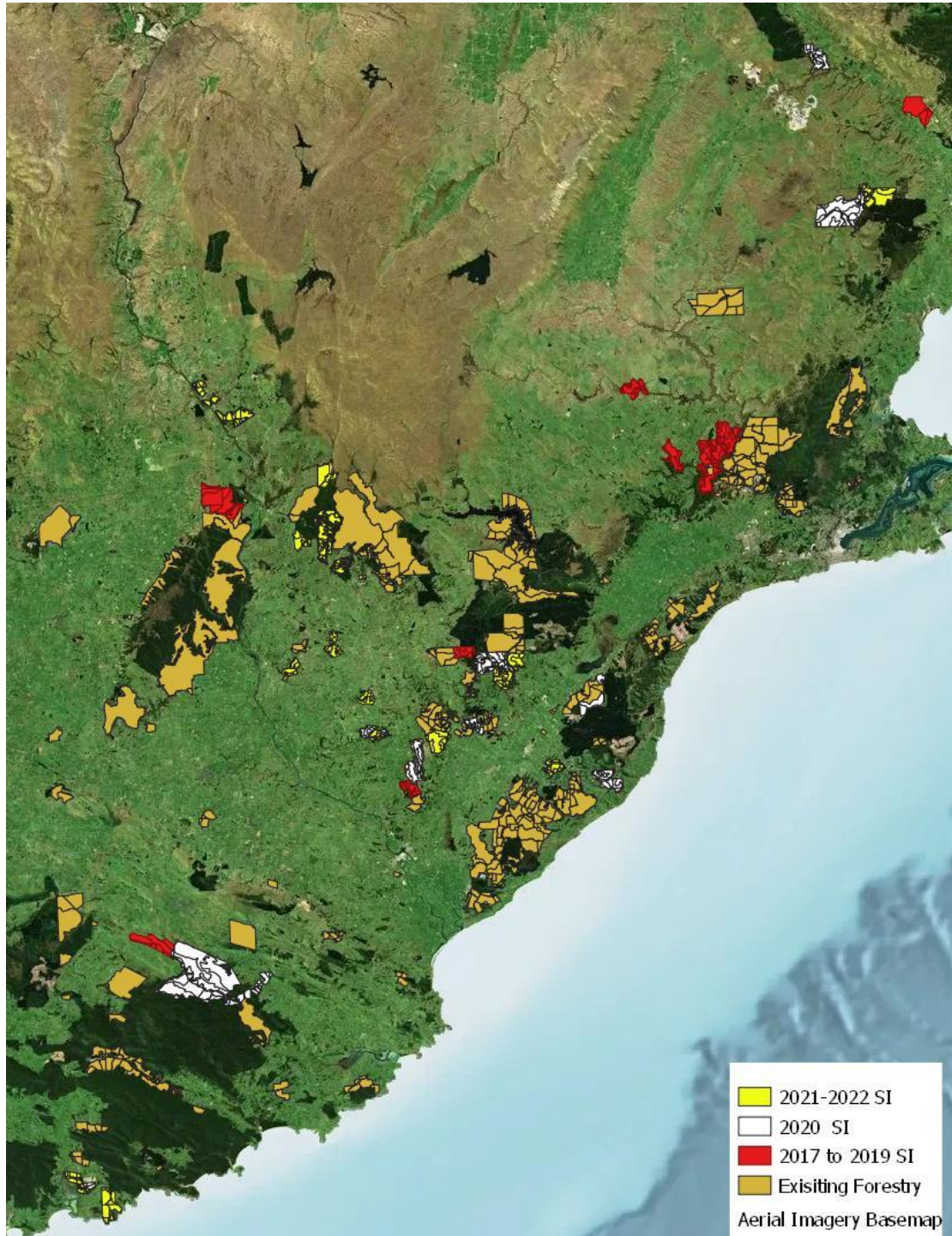
Right Reason, Right Place, Right Species

Right Policy, Right Settings, Right Result

Appendices

Indicative Regional maps of all properties identified in this review are included below.

The maps show that in the South Island, initial land acquisitions identified for forestry were generally widely scattered, however, as additional properties change hands there appear to be clusters and natural groupings starting to emerge in the Otago region.

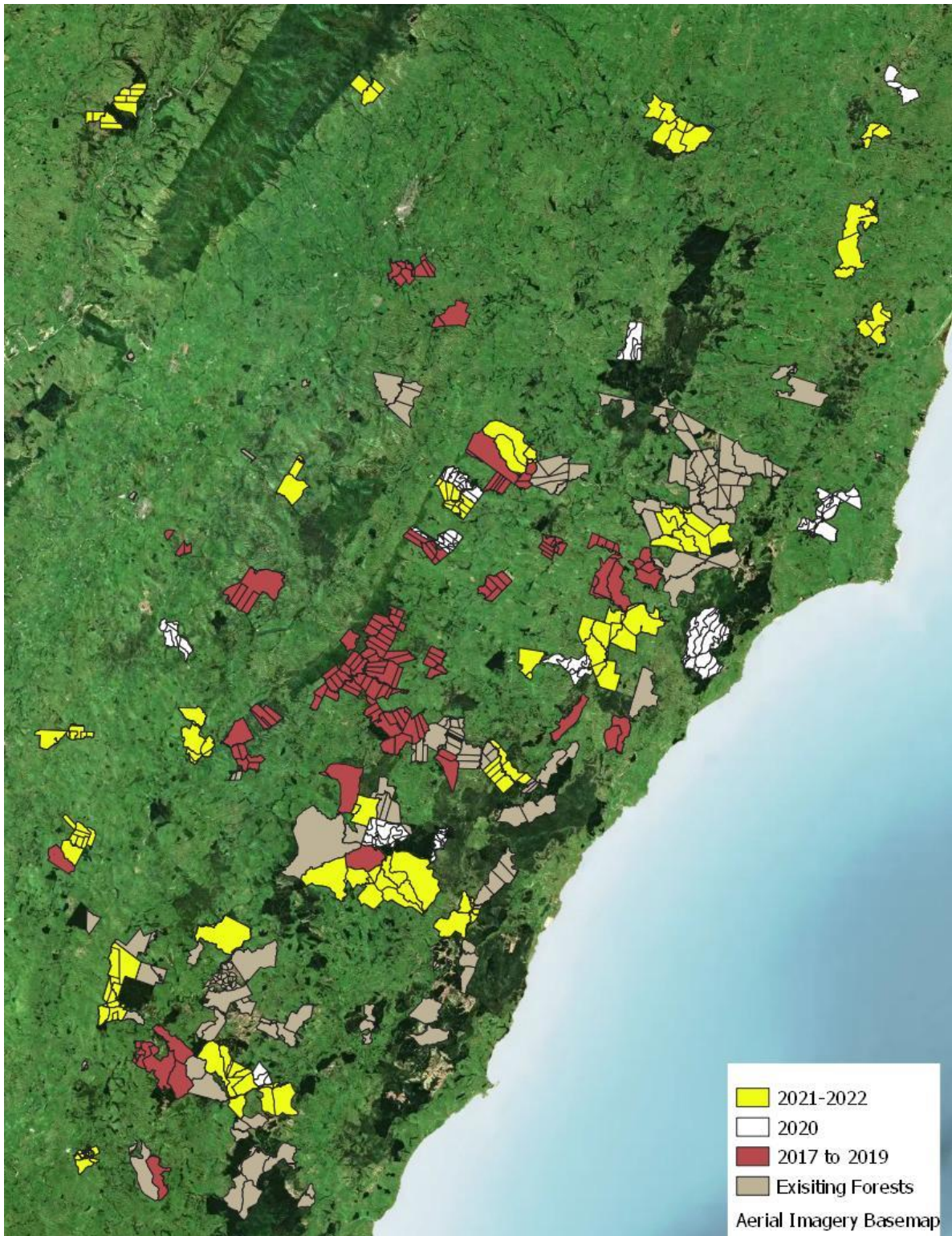


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Map 1: Otago zoned land acquisitions for forestry

The North Island maps, which had showed some major clusters of properties in the initial report (especially around existing afforestation areas) that were likely to be converted from sheep and beef farming to forestry, have seen additional areas added.



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Map 2: Hawke's Bay zoned land acquisitions for forestry

Other regions notably Northland and the greater Taranaki/Waikato Region have continued to see recent conversions.



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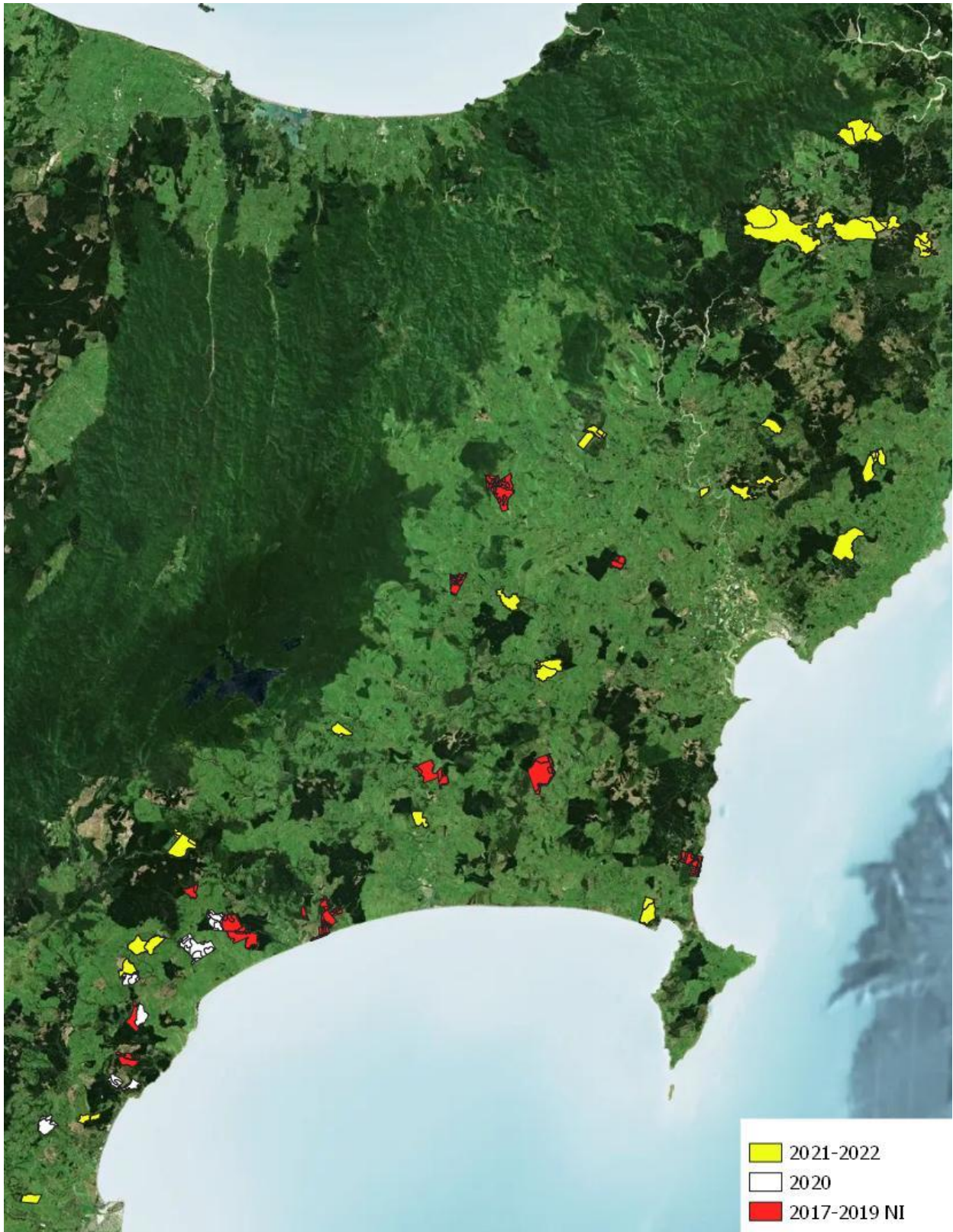
Map 3: Greater Taranaki/Waikato Region zoned land acquisitions for forestry



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Map 4: Northland zoned land acquisitions for forestry



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Map 5: Gisborne / Hawke's Bay zoned land acquisitions for forestry