



Deforestation Intentions Survey 2015

Final Report

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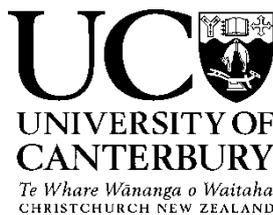
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1	Executive summary	1
1.1	Main findings of survey	1
2	Introduction	3
2.1	Background	3
2.2	Objectives	3
2.3	What is deforestation?	3
3	Approach	4
3.1	Alternative scenarios	5
3.2	Year of deforestation	5
4	Limitations	5
4.1	Incomplete information	5
4.2	Inconsistent information	6
4.3	Current intentions	6
5	Results	6
5.1	Impact of carbon price	7
5.2	Intention to use offset planting	7
5.3	Where is most deforestation occurring?	7
5.4	What land-use is area being converted into?	7
5.5	What is the effect of low dairy prices?	8
5.6	What are small-scale forest owners doing?	8
6	Comparison with 2014 survey	10
7	Uncertainty	11
8	Appendix	13

1 Executive summary

Information on future rates of deforestation of planted forest is needed to assist with projecting New Zealand's likely emissions over the second commitment period of the Kyoto Protocol, to provide information needed to support future climate change negotiations and to inform future policy development.

This study was commissioned to:

- Gather and analyse the current and future deforestation intentions of exotic forest owners/managers.
- Assess deforestation intentions from a suitable sample group to obtain reliable estimates of national deforestation of planted forest up to the year 2025.
- Gauge how forest owners are likely to alter future deforestation intentions under different carbon price and policy scenarios supplied by MPI.
- Provide commentary on:
 - information sourced and the methodology used;
 - key reasons and drivers behind deforestation;
 - uncertainty in the stated intentions.

The scope of this report is limited to New Zealand plantation forests.

The general approach followed was a structured review of the deforestation intentions of large-scale forest owners based on a telephone survey and other information gathering.

Respondents were asked for their deforestation intentions under two different scenarios:

1. Emissions Trading Scheme (ETS) – this assumes that the ETS legislation as amended under the Climate Change Response (Emissions Trading and Other Matters) Amendment Act 2012 (enacted on 13 November 2012) continues unchanged.

As part of this scenario respondents were asked how much area of offset planting they would undertake.

2. No ETS legislation – this assumes that the ETS is repealed and not replaced by any other comparable legislation.

Results from the survey of large-scale forest owners were collated and interpreted.

Allowance was made for deforestation by small-scale owners by assuming that 10% of the area harvested is deforested.

1.1 MAIN FINDINGS OF SURVEY

The large-scale forest owners surveyed reported that lower levels of deforestation are forecast under the ETS scenario compared to the No ETS scenarios for 2015-2025 – 27,000 ha versus 29,000 ha. A summary of results for the ETS scenario is presented in Table 1.

Table 1: Forecast of area (ha) of deforestation of plantation forest (ETS scenario).

	2015	2016 to 2025		2015 to 2025
Large-scale owners only	3,000	24,000		27,000
All owners	4,000	49,000		53,000

Note: These forecasts are based on current intentions. They reflect perceptions about land-use economics, land prices, government policy implementation, emission unit price and other factors as they exist at the time of the survey. As such, they are subject to change.

Total intended deforestation by all owners under the ETS scenario is estimated as 53,000 hectares between 2015 and 2025. During this period large-scale owners envisage 27,000 hectares of deforestation. A further 26,000 hectares of deforestation is assumed to be undertaken by small-scale owners.

Overall results for 2015 to 2025 are 6000 ha lower than those reported for large-scale owners in the 2014 survey. The main differences are:

- A reduction of 2000 ha explicitly because of higher carbon prices.
- A reduction of 1000 ha because of the delay in starting one project.
- A net reduction of 3000 ha reduction because of changes in the scale and timing of many of the other afforestation projects, often as a result of revisions in the harvesting and handback schedule as well as deforestation intentions.

Of the 27,000 hectares that is intended to be deforested by large-scale owners, 2,500 hectares is classified as post-1989 forest and 24,500 hectares as pre-1990 forest. Of the intended deforestation between 2015 and 2025, 63 percent of conversion will be to dairy, 28 percent to sheep & beef, 3 percent to lifestyle/residential and 6 percent to other (mining and mixed cropping).

The level of deforestation varies by region with 68 percent of deforestation by large-scale owners during 2015 to 2025 forecast to take place in the Central North Island.

Two respondents at the time of completing the 2015 survey intend using offset planting. They intend to plant a carbon-equivalent area of new land to offset the conversion of about 4000 ha of existing forest land between 2015 and 2025.

The survey was carried out at a time when the carbon price was initially \$7/NZU, increasing over the survey period to \$7.50/NZU. At these prices the deforestation liability is starting to be a deterrent to land conversion.

A significant source of uncertainty for land-owner decision-making is access to water to enable dairy conversion. While a number of the major deforestation projects already have water rights, there are a number of projects that have yet to acquire access to water. Nitrate limits may also affect some projects. Another source of uncertainty relates to the return of significant areas of Crown Forestry Licence (CFL) land to Maori as part of settlement of Treaty claims. In a number of cases iwi are still formulating future land-use plans.

2 Introduction

2.1 BACKGROUND

MPI requires information on exotic forest land owner's current and future deforestation intentions. This information will be used for government projections of greenhouse gas emissions (GHG) for the second commitment period of the Kyoto Protocol and beyond. Under the Kyoto Protocol and the UNFCCC New Zealand must report CO₂ emissions resulting from deforestation. Therefore information on the projected deforestation will assist with GHG reporting and the Emissions Trading Scheme (ETS) financial forecast (as required for the Public Finance Act 1989). Information on deforestation also informs future policy scenarios and helps MPI assess the broader impacts of changing land use.

2.2 OBJECTIVES

The key objectives for this project are to:

- Gather and analyse the current and future deforestation intentions of exotic forest owners/managers.
- Assess deforestation intentions from a suitable sample group to obtain reliable estimates of national deforestation up to the year 2025.
- Gauge how forest owners are likely to alter future deforestation intentions under different carbon price and policy scenarios supplied by MPI.
- Provide commentary on:
 - information sourced and the methodology used;
 - key reasons and drivers behind deforestation;
 - uncertainty in the stated intentions.

The scope of this survey and report is limited to New Zealand plantation forests.

2.3 WHAT IS DEFORESTATION?

There are a number of different definitions for deforestation depending upon use and context. Deforestation is defined in the Marrakesh Accord as "the direct human-induced conversion of forested land to non forested land".

Deforestation includes:

- A decision not to replant following harvesting with the conversion to another land use.
- Early liquidation of a forest (i.e. removing immature trees with conversion to another land use).

Deforestation excludes:

- Forests harvested and replanted.
- Harvested forests that are not replanted but naturally regenerate back into forest.

For the purposes of the ETS, deforestation is defined in the Climate Change Response Act (2002). Section 179 is reproduced in the Appendix. It legislates that deforestation is deemed to have occurred if:

- a specified stocking has not been achieved within four years of clearing by replanting or regeneration; or
- a specified canopy cover has not been achieved within 10 years of clearing.

3 Approach

The general approach followed is a structured review of the deforestation intentions of large-scale forest owners (owners with more than 10,000 hectares of forest as at 31 March 2005¹), based on a telephone survey and other information gathering. This approach was taken because:

- The New Zealand plantation forest estate is relatively well understood in terms of ownership, land tenure and age-class.
- Over half of the area that will be harvested over the next 10 years, and hence be most susceptible for deforestation, is owned by relatively few owners.
- Owners have been willing to participate.
- Information is available from other sources in the forest industry that can be used to corroborate the stated intentions of forest land-owners.

Essentially the survey is a census of all large-scale forest owners. The dominant role that they will play in the New Zealand plantation harvest until 2020 is illustrated in Table 2. Forest owners with over 10,000 hectares account for 58 percent of the total plantation estate but they own 67 per cent of the plantations of age 26 and older (as at 31 April 2015). There are relatively few owners in this category and therefore it makes sense to focus on their deforestation intentions.

Table 2: Plantation area (ha) by age-class and size of ownership [Source: NEFD as at 1 April 2015]

	Age-class							Total
	1-5	6-10	11-15	16-20	21-25	26-30	> 30	
Owners with > 10 000 hectares	168 729	137 428	169 901	219 838	131 870	108 621	65 342	1 001 729
Other	57 063	40 104	123 578	210 748	198 704	42 864	42 925	715 986
Total	225 792	177 532	293 479	430 586	330 574	151 485	108 267	1 717 715

In some cases forest owners only have the right to harvest the existing crop and do not have the right to replant. Consequently the survey also included large-scale forest land-owners. Large-scale forest owners and forest land-owners (or managers) were contacted in November 2015 and asked about their deforestation intentions. In addition, individuals in other organisations were contacted to obtain their views. The information received was collated and interpreted. It was then converted into a “best estimate” of future deforestation based on current intentions. Results were aggregated to a national level.

¹ Forest ownership as at 31 March 2005 is used as the basis for this study. This defines a forest estate prior to recent deforestation and aligns with the date the first deforestation intentions survey was conducted. For consistency the same forest owners have been included in the survey each year.

Table 2 indicates that, over the next 10 years, small-scale forest owners will contribute an increasing proportion of the area that is harvested, and liable to be deforested. The large plantings by small-scale owners in the 1990s mean that they own 48 per cent of the plantations of age 21 and older (as at 31 April 2015). Consequently additional information was sought to assess the current level of deforestation for the small-scale estate. Forestry consultants and managers were asked about the proportion of the area harvested over the last one to two years that has been or will be deforested.

3.1 ALTERNATIVE SCENARIOS

Respondents (to the survey of large-scale owners) were asked for their deforestation intentions under two different scenarios:

1. Emissions Trading Scheme (ETS) – this assumes that the current ETS legislation as amended under the Climate Change Response (Emissions Trading and Other Matters) Amendment Act 2012 (enacted on 13 November 2012) continues unchanged.

As part of this scenario respondents were asked how much area of offset planting they would undertake – the 2012 amendments to the ETS enable offsetting; i.e., landowners are permitted (without incurring any liability) to deforest area provided that they afforest /reforest an equal area elsewhere in New Zealand.

2. No ETS legislation – this assumes that the ETS is repealed and not replaced by any other comparable legislation.

3.2 YEAR OF DEFORESTATION

In this report the conversion of forest to a non-forest land use (deforestation) is reported as occurring in the year in which the harvesting activity occurred on that area of land, which is consistent with international LULUCF and Kyoto Protocol reporting and accounting. However this does differ from the definition used in the NZ ETS where the year of deforestation is determined at the point of land use change, rather than the point of harvest, but with deforestation liabilities (if any) calculated at the time the forest was cleared.

4 Limitations

4.1 INCOMPLETE INFORMATION

The general response to the telephone survey of the large companies was very good. All individuals contacted were willing to provide information. However sometimes the information provided was incomplete because the company was not willing or able to provide details. For example:

- Some forests are grown on land under a single rotation lease. As such the replanting decision will be made by the land-owner rather than the current crop-owner.
- Some negotiations between land-owner and crop-owner about future land use are ongoing.
- Some land-owners are still evaluating their options.

The response by consultants and managers of small-scale forests was also very good. However much of the information provided was qualitative or anecdotal.

4.2 INCONSISTENT INFORMATION

The information obtained from different sources was not always consistent. In particular, some information was for a calendar year, some was for a March year, while some was for a June year.

4.3 CURRENT INTENTIONS

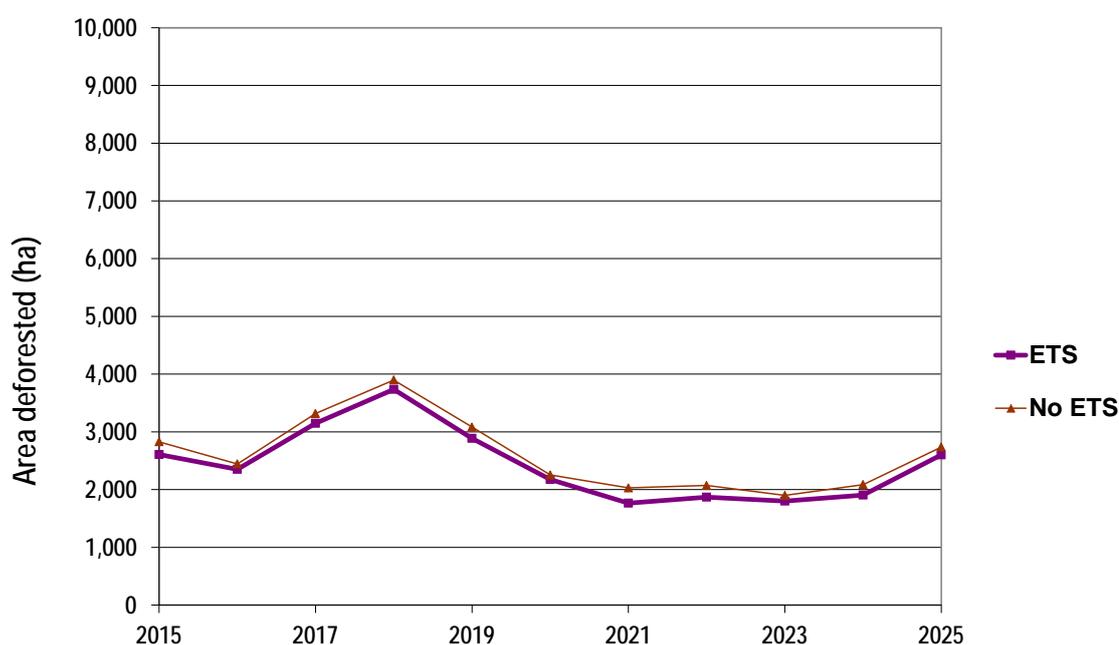
Forecasts are based on current intentions. These reflect perceptions about land-use economics, Government policy implementation, emission unit price and other factors as they exist at the time of the survey. Clearly they are subject to change.

Of some significance, the survey was carried out at a time when the carbon price was initially \$7/NZU, increasing over the survey period to \$7.50/NZU.

5 Results

Aggregated deforestation intentions of large-scale owners are shown in Figure 1. Results for the two scenarios follow a similar pattern. From 2015 to 2025, 27,000 hectares of deforestation is forecast under the ETS scenario while 29,000 ha is forecast under the No ETS scenario. Of the 27,000 hectares of deforestation by large-scale owners between 2015 and 2025 under the ETS scenario, some 2,500 hectares is estimated to be deforestation of post-1989 plantations.

Figure 1: Deforestation forecast for New Zealand (large-scale owners only).



The estimated 24,500 hectares of pre-1990 forest forecast to be deforested between 2015 and 2025 (under the ETS scenario) includes conversion to:

- Dairy (or dairy support).
- Sheep and beef agriculture.
- Residential and lifestyle land.
- Mixed cropping.

5.1 IMPACT OF CARBON PRICE

The survey was carried out at a time when the carbon price was in the range \$7/NZU to \$7.50/NZU². The difference between the responses to the two scenarios indicates that, even at these carbon prices, the ETS is starting to have an impact on deforestation.

An attempt was made to find out the breakeven carbon price; i.e., the carbon price at which intended deforestation would not occur. Responses received were:

- ‘At \$6-7/NZU we start to question dairy support units but not dairy units.’
- ‘\$7/NZU is enough to slow down conversion. \$10 would kill most deforestation apart from better land.’
- ‘\$15/NZU’
- ‘Not sure what carbon price would stop it - \$20 probably would’
- ‘Nothing will stop the conversion we plan. We have the units we need and will look at offsetting.’
- ‘Higher carbon price won’t stop our deforestation. The owners are looking at strategies of accumulating NZUs now and using offsets.’

5.2 INTENTION TO USE OFFSET PLANTING

Two respondents intend using offset planting. They intend using the flexible land use provision and plant a carbon-equivalent area of new land to offset the conversion of about 4000 ha of existing forest land between 2015 and 2025. One respondent noted that they were looking for suitable land and will buy once land prices decline or carbon prices increase to make land purchase affordable.

5.3 WHERE IS MOST DEFORESTATION OCCURRING?

Some 68 percent of deforestation by large-scale owners during 2015 to 2025 is forecast to take place in the Central North Island.

5.4 WHAT LAND-USE IS AREA BEING CONVERTED INTO?

Based on the information provided, it is possible to make a broad estimate of the land-use into which deforested land is being converted. Conversion by large-scale owners is mainly to dairy followed by sheep & beef agriculture (Table 3). The ‘Other’ category includes land clearance for mining and mixed cropping.

Table 3: Land-use into which deforested area is being converted in 2015-2025 by large-scale owners for ETS scenario (figures are approximate)

Forest converted to	Percent
Dairy	63
Sheep & beef	28
Lifestyle	3
Other	6

² www.comtrade.co.nz

5.5 WHAT IS THE EFFECT OF LOW DAIRY PRICES?

There was a range of views about the effect of dairy prices on deforestation. One respondent suggested that ‘low dairy prices are enough for the owner to have cold feet about deforestation’. However, other organisations stated that low dairy prices did not have any impact on their decisions about deforestation. Some responses:

- ‘Lower prices haven’t been an issue. We are taking a long-term view and want some diversity in land use.’
- ‘We believe that the lower prices are a blip.’
- ‘Most people are looking through this.’

5.6 WHAT ARE SMALL-SCALE FOREST OWNERS DOING?

Forestry consultants and managers throughout New Zealand provided information about deforestation by small-scale forest owners. Despite regional differences some general patterns emerged:

- Forestry is the highest and best use for the majority of land being harvested. Most of this land is being replanted following harvest or, in extreme cases, being left to naturally regenerate or revert to native forest.
- Of the remaining land, some land with dairy potential is being converted following harvest.
- Some land with sheep and beef potential is being converted to grassland following harvest, particularly when the net return from harvesting has been below expectation.

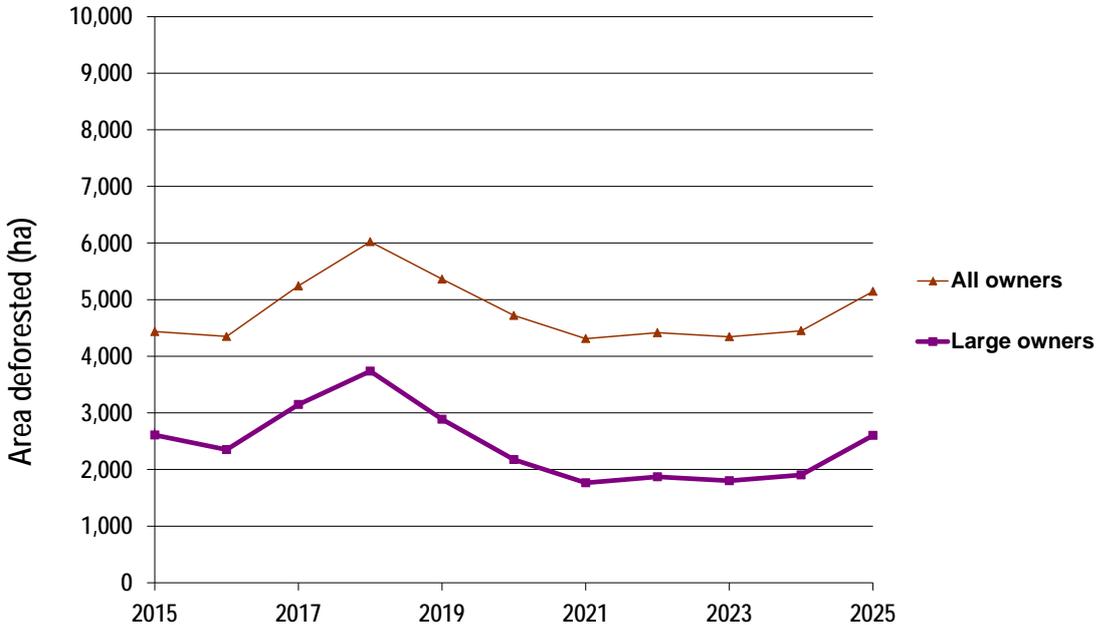
Data provided by the Ministry for Primary Industries (MPI) was also evaluated. Based on the available information, a 10% rate of deforestation has been assumed for the small-scale forest estate.

A forecast of the area to be harvested by small-scale owners in 2015 to 2025 was generated based on the current age-class distribution and a harvest profile starting with the MPI roundwood removal estimate for 2014 of 30 million m³ increasing to the levels of the New Zealand Wood Availability Forecasts (MAF, 2010³).

Figure 2 shows the deforestation forecast for all owners. From 2015 to 2025 a total of 53,000 hectares of deforestation by all owners is forecast.

³ New Zealand Wood Availability Forecasts 2010-2040, Ministry of Agriculture and Forestry, 2010.

Figure 2: Deforestation forecast for New Zealand (all owners) under the ETS scenario. (Large-scale owner intentions and small-scale owners assuming 10 percent deforestation)

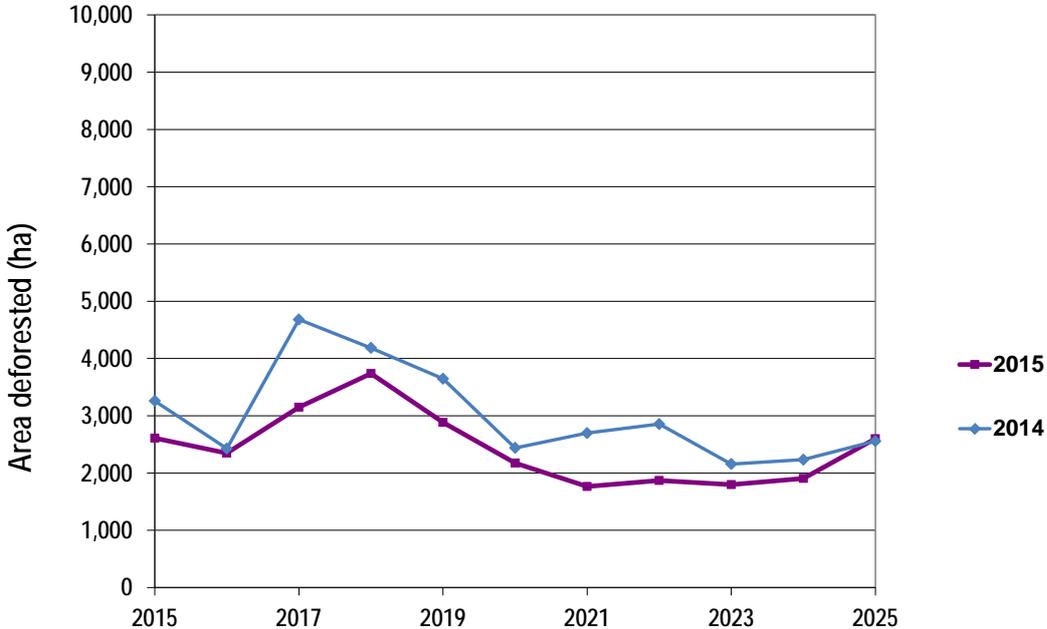


6 Comparison with 2014 survey

Results from the 2015 survey are compared with those of the 2014 survey for the ETS scenario in Figure 3. Total forecast deforestation for 2015 to 2025 by large-scale owners (Figure 3) for the current (2015) survey is estimated as 27,000 hectares. This is less than the total of 33,000 reported in the 2013 survey for this period.

About 2000 ha of the reduction can be explicitly attributed to an increase in carbon price. A further 1000 ha reduction is caused by the delay in the expected start for one large deforestation project. The other 3000 ha reduction is the net effect of changes in the scale and timing of many of the afforestation projects, often as a result of revisions in the harvesting and handback schedule as well as deforestation intentions.

Figure 3: Comparison of the 2015 survey results with those from the 2014 survey – large-scale owners only (ETS scenario)



Another difference is that two respondents intend using flexible land use provisions and plant new land to offset intended deforestation. In contrast, no respondents intended using offsets in the 2014 survey.

7 Uncertainty

Given the recent increase in carbon price there is uncertainty about the level of deforestation. Even with carbon prices at \$7 to \$7.50/NZU deforestation intentions are starting to reduce. A source of uncertainty for deforestation is access to water to enable dairy conversion. While a number of the major deforestation projects already have water rights, there are a number of projects that have yet to acquire access to water. Nitrates are also an issue for some projects and expected to become one for other projects.

Another source of uncertainty relates to the return of significant areas of CFL land to Maori as part of settlement of Treaty claims. A number of these claims have been settled while others are still in the process of being settled. Some of the settled claims are undergoing a mana whenua process to determine which hapu or iwi has ownership of each area of land.

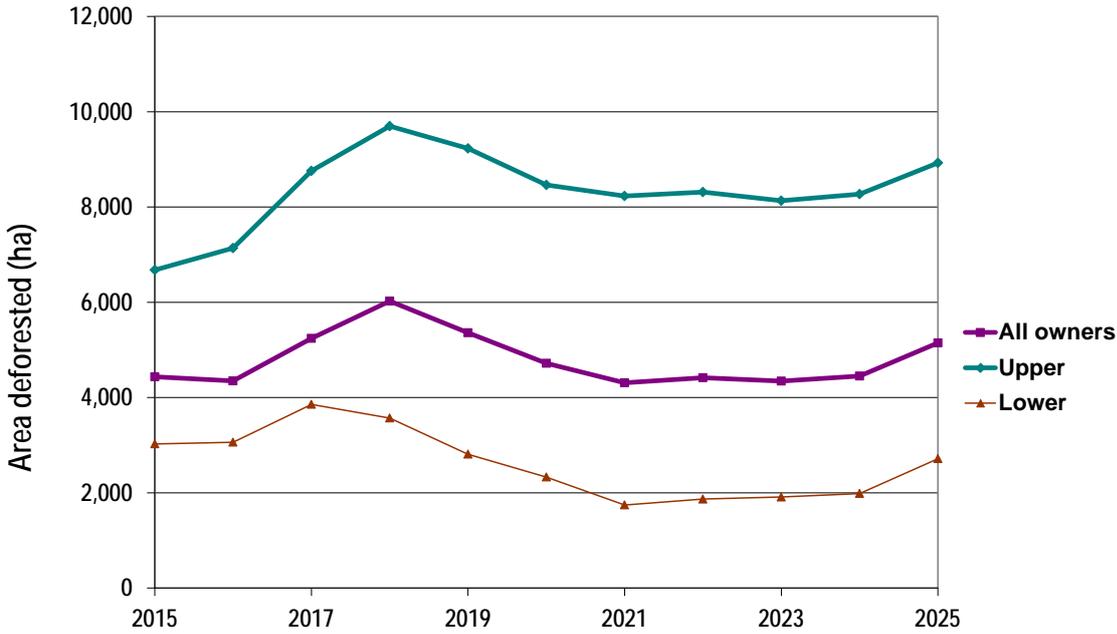
Consequently there is a large area of land, currently under trees, over which iwi have not yet developed land-use plans or are not yet in a position to implement any plans. A proportion of this land is adjacent to dairy or sheep and beef farms and has the potential to be converted.

Although large-scale owners have 67% of the plantation area older than age 20 they only own 52% of the area older than age 20. As the large plantings of the 1990s mature the deforestation intentions of small-scale owners will have an increasing impact on the national level of deforestation. Given the diverse ownership of the small-scale estate there is greater uncertainty about their deforestation intentions.

An estimate was made of the likely upper and lower limits of deforestation for each of the projects of large-scale owners. For small-scale owners limits were estimated using a deforestation rate of 20% for the upper limit and 5% for the lower limit – these limits are indicative of the range of the small-scale owners' deforestation rate since 2008. The resulting bounds on total deforestation by all owners are wide (Figure 4).

Results should be viewed in the context of a total plantation area (as at 1 April 2015) of 1,718,000 ha - 1,002,000 ha in the large-scale estate and 716,000 ha in the small-scale estate. The total area harvested annually is currently about 50,000 ha.

Figure 4: Deforestation forecast for New Zealand (all owners) with estimated upper and lower bounds. ETS scenario.



8 Appendix

Climate Change Response Act (2002) - Section 179

179 Forest land to be treated as deforested in certain cases

- (1) Without limiting paragraph (a) of the definition of deforest in [section 4\(1\)](#), a hectare of forest land must be treated as deforested for the purposes of this Act if the forest species on that hectare have been cleared and,—
 - (a) 4 years after clearing, the hectare has not—
 - (i) been replanted with at least 500 stems of forest species; or
 - (ii) regenerated a cover of at least 500 stems of exotic forest species; or
 - (iii) been replanted with at least 100 stems of willows or poplars in a manner consistent with managing soil erosion; or
 - (iv) regenerated predominantly indigenous forest species growing in a manner in which the hectare is likely to be forest land 10 years after the hectare was cleared; or
 - (b) 10 years after clearing,—
 - (i) predominantly exotic forest species are growing, but that hectare does not have tree crown cover of at least 30% from trees that have reached 5 metres in height; or
 - (ii) predominantly indigenous forest species are growing, but that hectare is not forest land; or
 - (c) 20 years after clearing, predominantly indigenous forest species are growing, but that hectare does not have tree crown cover of at least 30% from trees that have reached 5 metres in height.
- (1A) Subsection (1)(a)(iii) applies only if the EPA is satisfied that the relevant local authority has determined that the soil erosion risk of the land is at least moderate.
- (2) If forest land is to be treated as deforested under subsection (1),—
 - (a) the deforestation is to be treated as having been carried out 4 years, 10 years, or 20 years, after the clearing of the forest species, as the case may be; but
 - (b) the liability in respect of the deforestation must be calculated by reference to the age and forest species of the trees cleared 4 years, 10 years, or 20 years earlier, as the case may be.
- (3) Nothing in this section limits the EPA's ability to exercise powers under [section 121](#) in respect of the deforestation of a hectare of forest land whenever the EPA considers that—
 - (a) the hectare has been converted to land that is not forest land; and
 - (b) any obligations imposed under this Act in respect of the deforestation have not been complied with. +