



# **AUCKLAND FOREST INDUSTRY AND WOOD AVAILABILITY FORECASTS**

**2009**



## ACKNOWLEDGEMENTS

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# INTRODUCTION

To assist with future forest industry planning in the Auckland region, the Ministry of Agriculture and Forestry (MAF) has compiled wood availability forecasts covering the period 2008 to 2040. These forecasts have been produced in association with the region's major forest owners. The forecasts show the range of harvest volumes potentially available from the planted forest estate of large- and small-scale growers.

The forecasts indicate that the availability of radiata pine from the Auckland region forest estate is expected to decline over the next three years, and then remain constant around 800 000 cubic metres per annum until 2019. After 2019 wood availability is expected to return to current levels of around 1 million cubic metres per annum from 2022.

Descriptive information is also provided on the plantation forest estate and wood processing industries in the region. Opportunities and constraints facing the regional forest industry are discussed.

The information contained in this report is intended to assist the forestry industry, planning practitioners, and infrastructure and service providers in assessing wood processing opportunities, resource management planning,

and infrastructure issues. It will also assist the public in understanding the nature of the forest industry in the Auckland region.

The Auckland wood supply region extends from North Shore and Waitakere City Councils in the north to the Waikato and Matamata-Piako districts in the south. It includes the Coromandel Peninsula, Franklin District and the large urban area of the Auckland isthmus and its surrounding cities.

This report is one of a series of publications on regional forest industries and wood availability forecasts being produced by MAF.

Readers who intend using the wood availability forecast for planning or investment decisions are urged to thoroughly review the forecast, or to engage the services of a professional forestry consultant who is able to interpret the forecasts in the context of specific planning or investment decisions.

# OVERVIEW

# 2

The Auckland wood supply region includes the land areas of Franklin, Matamata-Piako, Waikato and Thames-Coromandel districts, as well as North Shore, Waitakere, Auckland and Manukau cities. It is covered by the Auckland Regional Council as well as Environment Waikato. The region does not have a large forest estate, but does have a relatively high concentration of wood processing facilities. Log flow is influenced to a large degree by the large-scale wood processing operations in the Central North Island, and by the export facilities at the Port of Tauranga. There is a high degree of inter-regional log flow between the Northland, Auckland and Central North Island regions.

Only a small volume of logs is exported through the Ports of Auckland, the majority of logs being exported out of Mt Maunganui. The Port of Auckland is available to service container and bulk cargo, but does not have the room for large-scale log exporting operations.

Logging and sawmilling operations have been undertaken in this area for at least 150 years, with kauri and other indigenous forests supplying saw logs up until as recently as the 1960s. After the easily accessible flat land was harvested, logging crews devised ever more ingenious methods of transporting logs from the more remote and inaccessible areas of the Waitakere ranges and the Coromandel Peninsula. Today the forest industry revolves around radiata pine, the main plantation species in the region.

The topography of the region varies from the coastal sand flats to the south west of Auckland City, to the river flats of the Waikato River and Hauraki Plains. The region also contains steep and often broken sections of the Hunua Ranges, the Coromandel Peninsula and the western part of the region between Raglan Harbour and Port Waikato.

The region's forestry sector has some distinctive local characteristics:

- › The total exotic forest area in the region is 54 387 hectares or 3 percent of the national total. The majority of this forest is located in the Thames-Coromandel and Waikato Districts.
- › Large-scale forest owners (over 1000 hectares) account for 60 percent of the forest area.
- › Half of the remaining 40 percent of forest area is held in forests smaller than 40 hectares.
- › The region's forests are dominated by radiata pine; 97 percent of the region's estate is in radiata pine compared to about 90 percent nationally.
- › Two large overseas corporate forest owners have significant holdings in the region.
- › Four forestry investment syndicates are now represented among large-scale forest owners (over 1000 hectares).

»» TABLE 2.1: KEY STATISTICS FOR THE AUCKLAND FOREST INDUSTRY<sup>1</sup>

STATISTIC	VALUE
Stocked plantation forest area as at 1 April 2007 (ha)	54 387
Harvest – estimated roundwood removals <sup>3</sup> – year ending March 2008 (m <sup>3</sup> )	580 000
Area weighted average age of plantation forest as at 1 April 2006 (years)	15.0
Sawn timber production – year ending March 2008 (m <sup>3</sup> )	299 866
Estimated log input to sawmills – year ending March 2007 (m <sup>3</sup> )	579 000
Estimated wood processing capacity <sup>4</sup> (m <sup>3</sup> roundwood)	287 660
Log exports <sup>2</sup> – year ending March 2008 (m <sup>3</sup> )	21 215
Sawn timber exports <sup>2</sup> – year ending March 2008 (m <sup>3</sup> )	237 672
Direct employment, forestry and first stage processing <sup>2, 5</sup> as at February 2007 (FTE)	1 500

**Sources**

1 All statistics are from the Ministry of Agriculture and Forestry unless indicated otherwise.

2 Overseas Trade, Statistics New Zealand.

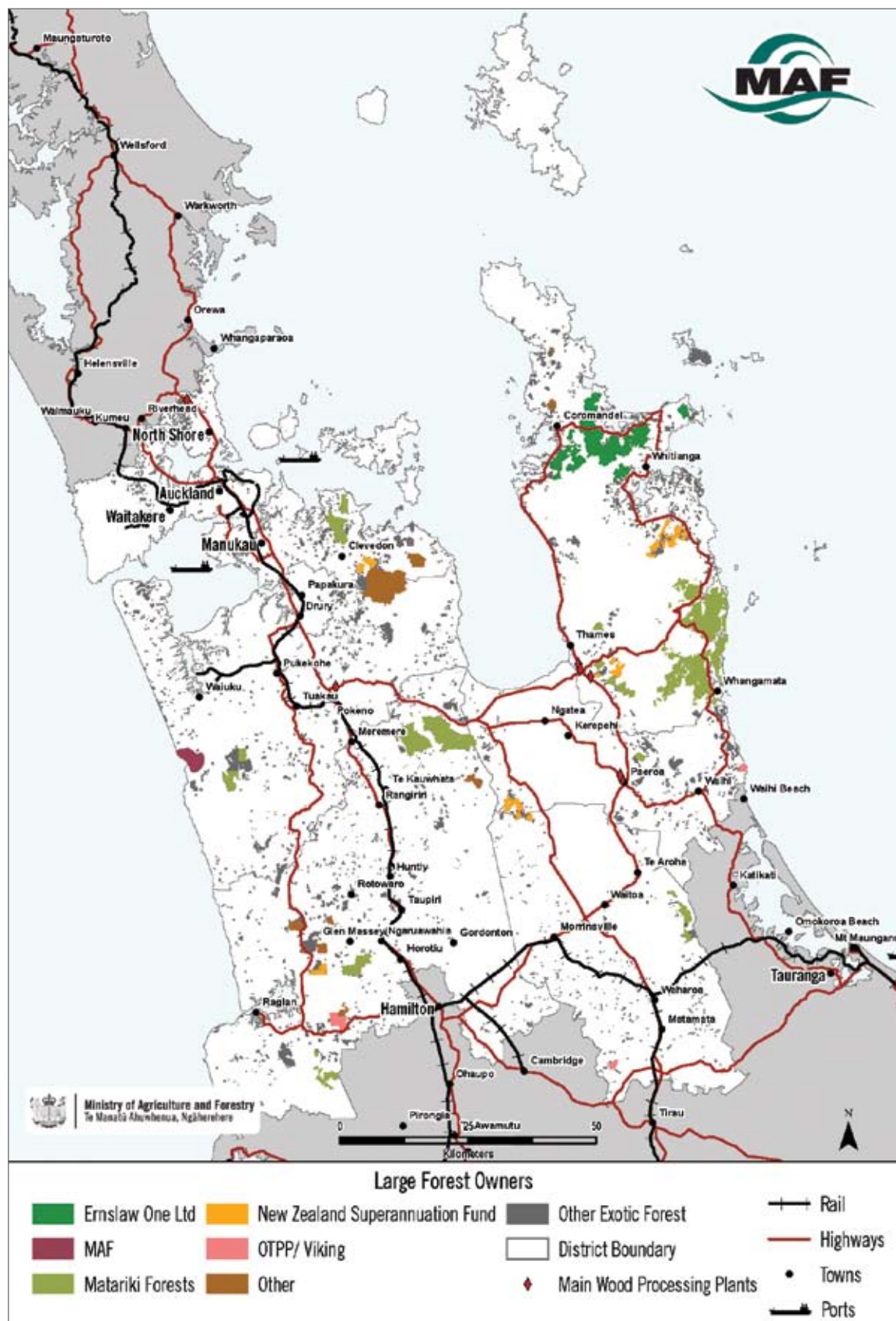
**Notes**

3 Estimated roundwood removals are derived from sawmill production and log exports. They do not account for inter-regional log flows.

4 This is an estimate of the sum of the individual processing plants roundwood input capacities.

5 Excludes employment associated with the transportation of logs and forest produce.

»» FIGURE 2.1: MAP OF THE AUCKLAND FOREST INDUSTRY





# THE PLANTATION FOREST INDUSTRY

3

## »»» FOREST DEVELOPMENT

Planted forests in the Auckland region were first established by the State in the depression years of the 1920s at Athenree, Tairua and Maramarua. The land planted was typically scrub covered or considered unsuitable for farming. Waiuku forest was planted as a sand protection forest in the 1930s, Whangapoua in the 1950s and 1960s, Waihou in the 1970s and Onewhero in the 1980s. During the 1990s, large areas of forest were established by private interests.

The sale of the State assets following the restructure of the New Zealand Forest Service in 1987 saw the cutting rights to the government-owned forests sold to several private companies. The northern Coromandel Peninsula forests were purchased by Ernslaw One, and the southern Coromandel and Waikato forests were purchased by Carter Holt Harvey. Waiuku forest was retained by the Crown, and is now managed by the Crown Forestry Unit of MAF. Fletcher Challenge Forests also had areas of forest in the southern Coromandel and Hauraki districts. In the last decade, a series of transactions and sales resulted in a considerable change in the ownership structure of the forests. Now two major forest companies own forest in

the Auckland region; the remainder are owned by a mix of fund managers, private equity funds and joint ventures managed by various forest management companies.

There were 54 387 hectares of production forest in the Auckland region as at April 2007.

## »»» NURSERIES

Two forest nurseries are found in the Auckland Region: the Nga Rakau Nursery at Massey in West Auckland, and the Cambridge Forest and Native Nursery in Hamilton. However, the Auckland wood supply region is mostly supplied by specialist forest nurseries in the Central North Island.

## »»» FOREST OWNERS

Table 3.1 shows there is one forest owner in the region with over 10 000 hectares of forest, another with holdings between 5000 and 10 000 hectares, and four owners with forest holdings between one and five thousand hectares.

### » MATARIKI FORESTS LTD

Matariki Forests are a joint venture between Rayonier Inc. (40 percent), AMP Capital Investors Ltd (35 percent) and RREEF Infrastructure Investments which is part of Deutsche Asset Management (Australia) Ltd (25 percent). Rayonier is a specialist US-based "Timberlands" company. In 1992 it bought about 100 000 hectares of Crown Forest Licences in Gisborne, Northland, Central North Island, Southern North Island, Nelson and Southland, before selling around half this area in mid 2001. In 2005 Matariki Forests purchased about 95 000 hectares of Carter Holt Harvey forests in the Northland, Auckland, Hawkes Bay and Canterbury regions. Their 16 000-hectare Auckland estate encompasses those forest rights purchased from CHH Forests – primarily the southern Coromandel forests of Tairua and Athenree, and Maramarua forest near the Hauraki Plains. The forests are managed by Rayonier NZ Ltd and are mature.

»»» TABLE 3.1: OWNERS AND MANAGERS OF PLANTATION FORESTS IN THE AUCKLAND REGION (IN HECTARES)

OWNER/MANAGER	NET STOCKED AREA (HA)
Matariki Forests Ltd	16 000
Ernslaw One Ltd	7 000
NZ Forestry Group Ltd	2 500
NZ Superannuation Fund	2 000
Viking OTTP	2 000
Crown Forests (MAF)	1 000
Small-scale forest owners	23 900
<b>Total</b>	<b>54 400</b>

#### Sources

Individual forest owners and the Ministry of Agriculture and Forestry, 2008.

#### › ERNSLAW ONE LTD

Ernslaw One Ltd (EOL) is a New Zealand registered company with a national estate approaching 100 000 hectares. The company is privately owned by Malaysian interests. EOL entered the New Zealand forest industry in 1990 when it purchased the Crown Forest Licences to state forests in Coromandel, Rangitikei and Otago/Southland, as well as the Conical Hill sawmill near Tapanui. Whangapoua forest on the Coromandel Peninsula was one of these initial purchases. Harvesting started there in 1991 and has been continuing ever since. In 2004, EOL failed to gain resource consent to build a sawmill near Whangapoua forest and has since expanded in other regions. It is vertically integrated and owns sawmills in Gisborne, Tangiwai and Tapanui, as well as a pulp mill at Tangiwai. Its Auckland forest holdings are about 7100 hectares.

#### › NEW ZEALAND FORESTRY GROUP LTD

The New Zealand Forestry Group is a private company that has established forests in Waikato, Wanganui and South Taranaki, and sells parcels of the established forests to individual investors. The New Zealand Forestry Group manages the forests on behalf of the investors.

#### › NEW ZEALAND SUPERANNUATION FUND

The New Zealand Superannuation Fund purchased some of its existing Northland and Auckland forest assets from James Fielder Funds Management Ltd, who had acquired the assets from Evergreen in 2005. The Auckland region forests are located in the Coromandel and Waikato and include Coroglen, Kopu, Patetonga, Putawa and Raglan.

#### › OTTP NEW ZEALAND FOREST INVESTMENTS LTD AND VIKING GLOBAL TIMBER FUND LLC

The Kiwi Forests Group Limited negotiated to purchase the Fletcher Challenge Forests assets in 2004. It backed the sales agreement up with a deal to on-sell the cutting rights under various agreements to OTTP New Zealand

Forest Investments Ltd and Viking Global Timber Fund LLC. Each of the two companies purchased individual cutting rights as well as a portion of each of the three crown leases. The investors appointed Prudential Timber Investments LLC as investments managers, operating in New Zealand as Viking Timber Management NZ Ltd, and PF Olsen Ltd as forest operations managers.

Prudential Timber Investments global business was purchased by Hancock Natural Resources Group in 2005. Hancock Forest Management NZ Ltd oversees the funds in New Zealand and PF Olsen Ltd remains under contract with the investors as forest operations managers. A small part of these funds holdings fall inside the Auckland region, while the remainder are located in the Central North Island region.

#### › CROWN FORESTS

Waiuku Forest at the mouth of the Waikato River is managed by Northland Forest Managers on behalf of the MAF Crown Forestry group. The area is subject to a mining licence in favour of NZ Steel and as a result, the requirements of the mining operation dictate the future harvest patterns. Significant areas of the forest are mature and harvesting is likely to proceed from 2010 or 2011, subject to resource consent. After mining operations, areas are rehabilitated and replanted. The forest is the subject of a Treaty of Waitangi claim. As with other State forests that are subject to Treaty of Waitangi claims, the ownership structure may change after settlement.

#### ››› OTHER OWNERS

According to the *National Exotic Forest Description (NEFD)* as at 1 April 2007 (MAF, 2008), there are 1395 plantation forest owners in the Auckland region. Of those, 1309 owners (94 percent) have forests smaller than 40 hectares, with an average size of 8 hectares. There are 45 owners with between 40 and 99 hectares of forest, and 29 owners with between 100 and 499 hectares. Five

»» TABLE 3.2: PLANTATION FOREST AREAS BY SPECIES AND LOCAL AUTHORITY (HECTARES AS AT 1 APRIL 2007)

TERRITORIAL AUTHORITY	RADIATA PINE (HA)	DOUGLAS-FIR (HA)	CYPRESS (HA)	OTHER SOFTWOODS (HA)	EUCALYPTUS (HA)	HARDWOODS (HA)	TOTAL (HA)
Auckland Urban Area	166	0	0	1	0	6	173
Manukau City	3 187	6	0	31	2	100	3 236
Franklin District	5 820	0	58	104	6	119	6 107
Thames-Coromandel District	22 475	10	147	186	167	64	23 049
Hauraki District	3 479	0	0	36	1	30	3 546
Waikato District	14 598	2	8	183	0	91	14 882
Matamata-Piako District	3 242	4	0	28	5	25	3 304
<b>Region Total</b>	<b>52 967</b>	<b>22</b>	<b>213</b>	<b>569</b>	<b>181</b>	<b>435</b>	<b>54 387</b>

**Source**

NEFD as at 1 April 2007 (MAF 2008).

owners have forest blocks between 500 and 999 hectares. Forty percent of the estate is in blocks of 999 hectares and smaller.

»» SPECIES COMPOSITION

Table 3.2 shows that alternative species make up only 3 percent of the regions forests, with virtually no Douglas-fir recorded. Other softwoods and cypresses make up about 800 hectares and eucalyptus and other hardwoods make up 600 hectares. Of the 52 967 hectares of radiata pine planted in the Auckland region, 53 percent has been pruned to a minimum of four metres.

»» AGE-CLASS DISTRIBUTIONS

The average age of plantings in the Auckland region is comparatively high at 15 years old against 14.8 years for the national average. The age structure is unusual in that there are small areas of very old trees in the metropolitan areas of North Shore, Waitakere and Manukau Cities and the Papakura district; there are also larger areas of trees with average ages 16.3 to 17 years in the main plantation areas of Franklin, Thames-Coromandel and Matamata-Piako districts. The average age in the Hauraki and Waikato districts is lower, between 12 and 13.5 years. This was caused by a higher volume of planting in the 1990s planting boom in these two areas compared to the rest of Auckland region. Figure 3.1 shows the age-class

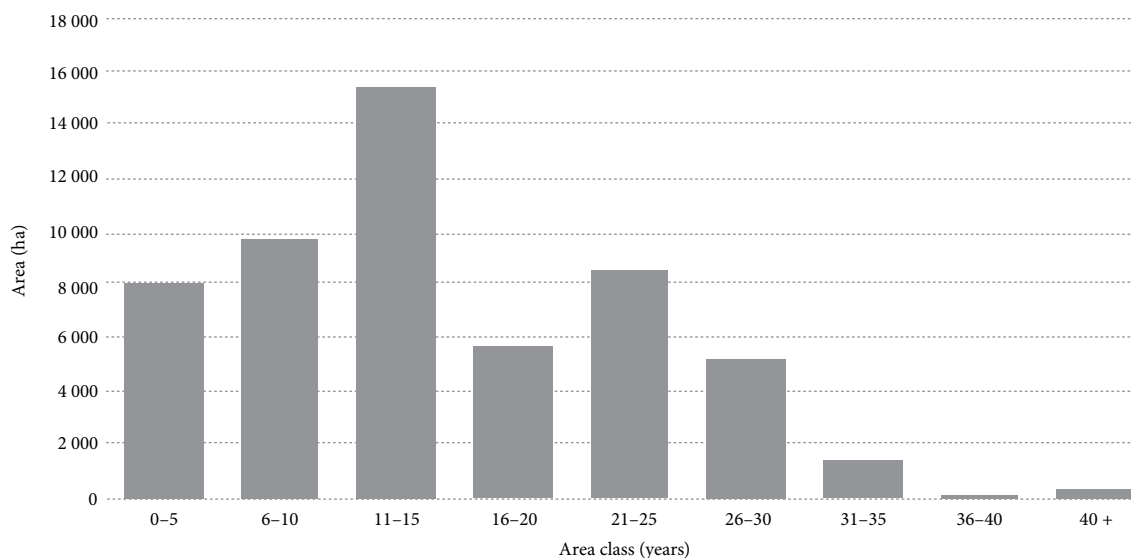
distribution for planted forests in the Auckland region.

The Forest Service planted new land until the mid 1980s, and did not resume planting again until the mid 1990s. This activity caused a small area of forest in the Auckland wood supply region to have an age-class distribution of 16 to 20 years then jump to 11 to 15 years. Thames-Coromandel has a relatively even age-class distribution. Franklin, Hauraki, and Waikato all peak in 11 to 15 age class due to the 1990s planting boom.

»» HISTORICAL ROUNDWOOD REMOVALS

Harvesting in the Auckland region has been driven by the demands of local processing facilities, timber and pulp mills outside the region, and the proximity of the export port at Mt Maunganui. The proximity of the large Auckland urban construction market has ensured a ready domestic market for sawn and treated products, while the nearby Mt Maunganui export facility makes the export of both log and lumber products a viable option. Harvesting in many of the forests established by the New Zealand Forest Service is now underway, and is likely to continue and increase in coming years. As Table 3.3 shows, harvest levels reported for the Auckland region have fluctuated between 540 000 cubic metres per year and 900 000 cubic metres per year since 1990, but levels have declined to about 600 000 cubic metres per year since 2006. It should

»» FIGURE 3.1: AGE-CLASS DISTRIBUTION FOR PLANTED FORESTS IN THE AUCKLAND REGION



**Source**

NEFD as at 1 April 2007 (MAF 2008).

be noted that the roundwood removal statistic is derived from a combination of log export and sawmill production information; the flow of logs into and out of the region will not be accounted for in this figure. The decline in roundwood removals since 2001 does not necessarily reflect declining sawmill outturn.

The Auckland region is generally well served by infrastructure and labour; it also benefits from the long history of harvesting, processing and training and education in the adjacent Central North Island wood supply region.

»» TABLE 3.3: ESTIMATED ROUNDWOOD REMOVALS FROM THE AUCKLAND WOODFLOW REGION

YEAR ENDED 31 MARCH	VOLUME (M <sup>3</sup> )
1990	600 000
1991	600 000
1992	600 000
1993	720 000
1994	780 000
1995	904 000
1996	755 000
1997	727 000
1998	638 000
1999	636 000
2000	743 000
2001	711 000
2002	710 000
2003	780 000
2004	680 000
2005	690 000
2006	610 000
2007	540 000
2008	630 000

**Source**

Ministry of Agriculture and Forestry.

### »» HARVEST INTENTIONS SURVEY

A harvesting intentions survey of six forest companies in the region was undertaken in early 2008. The six companies own or manage forest areas greater than 1000 hectares in the Auckland region.

The companies provided data in Table 3.4 on actual harvest levels for 2006 and 2007 and harvest intentions out to 2015 by expected log type, pruned, unpruned and

pulp. These forest owners also provided more generic intentions out to 2025.

The harvest intentions of the large-scale growers in the Auckland region show that harvest levels are likely to remain stable for the next five years and will then begin to climb as the trees in the estate mature. After 2015 the large-owner harvest is likely to stabilise and then dip, as available forest area declines, before recovering.

»» TABLE 3.4: HARVEST INTENTIONS SURVEY RESULTS (IN CUBIC METRES)

YEAR ENDING 31 DECEMBER	RADIATA PINE (PRUNED STANDS)	RADIATA PINE (UNPRUNED STANDS)	RADIATA PINE (PRODUCTION THINNED)	TOTAL ALL SPECIES	AREA HARVESTED PRUNED STANDS (HA)
2006	180 753	413 122	4 324	598 199	363
2007	284 794	372 247		657 041	653
2008	266 312	377 000		643 312	541
2009	214 924	386 388		601 312	429
2010	229 829	398 803		628 632	454
2011	302 208	374 950		677 158	592
2012	198 141	430 991		629 132	378
2013	299 388	435 000		734 388	527
2014	469 079	495 640		964 719	836
2015	384 235	479 972		864 207	690

**Source**

Individual forest owners covered by the harvest intentions survey.

# WOOD AVAILABILITY FORECASTS

# 4

Five scenarios have been modelled to indicate the potential wood availability from the planted production forests in the Auckland region for the period 2008 to 2040<sup>1</sup>.

The wood availability forecasts are intended to describe the possible range of harvest volumes available from the Auckland region. They are based on the region's forest resource and the forecasting assumptions described later in this report. The forecasts have been developed incorporating the harvesting intentions of the following large-scale forest owners (those with 1000 hectares of forest or more):

- › Matariki Forests Ltd;
- › Ernslaw One Ltd;
- › NZ Forestry Group Ltd;
- › NZ Superannuation Fund;
- › Viking OTTP;
- › Crown Forests (MAF).

The forecasts incorporate the views of the region's forest owners, managers and consultants to ensure they represent a realistic range of future wood availability scenarios.

A key issue is the timing of harvesting by the small-scale forest owners, which will be driven by a range of factors including individual forest owners' objectives, forest age, log prices, demand by local wood processing plants, and perceptions about future log prices and future wood supply.

The scenarios presented indicate there are many different ways for the forest estate in the Auckland region to be harvested. It should be recognised that the forests are managed to maximise the benefits to the enterprises that own them. Each enterprise has its own harvest strategy

based on the forest owners' objectives, market conditions and the forest estate that it owns or manages. Any change in harvesting strategy by forest owners affects the age-structure and maturity of the forests it owns. This in turn feeds back directly into future wood availability.

Different levels of uncertainty are associated with the wood availability from each component of the estate. The volumes forecast from the large-scale owners' estates are also subject to change because of changes in harvest intentions or in the resource description (areas and yields). Yet, they have greater certainty than the forecast of availability from the small-scale estate. Not only are harvest intentions less clear for small-scale owners, the resource description is potentially less accurate also.

## »» SCENARIOS FOR RADIATA PINE

Five wood availability scenarios have been modelled for radiata pine. These scenarios show a range of potential ways for harvesting the forests in the region in the future.

The scenarios were developed following consultation with the National Exotic Forest Description (NEFD) Steering Committee and feedback from interested parties who own the forests in the Auckland region, to ensure they were reasonable.

The scenarios include only radiata pine. Unless otherwise stated, calendar years have been used in this report.

### › SCENARIO 1: HARVEST ALL FOREST AT AGE 30

The estate of all owners is assumed to be harvested at age 30. This scenario shows the potential future harvest in any given year, based on the area of radiata pine forest that reaches 30 years of age in that year.

<sup>1</sup> Please note the Auckland wood availability forecasts have been revised since the first web release in October 2008.

#### ► SCENARIO 2: LARGE-SCALE OWNERS HARVEST AT STATED INTENTIONS, SMALL-SCALE OWNERS HARVEST AT AGE 30

Large-scale owners' wood availability is assumed to be at stated harvest intentions for 2007 to 2013, thereafter the availability is constrained as follows. From 2014 to 2017 total volume was modelled to not exceed the 2013 level. From 2018 on it was constrained to be non-declining. The estate of small-scale owners is assumed to be harvested at age 30.

#### ► SCENARIO 3: NON-DECLINING YIELD (NDY) – TARGET ROTATION 30 YEARS

Large-scale owners' wood availability is assumed to be at stated harvest intentions (as for scenario 2).

The total wood availability of radiata pine from the region is constrained to be non-declining in perpetuity.

#### ► SCENARIO 4: SPLIT NON-DECLINING YIELD – TARGET ROTATION 30 YEARS

This is the same as scenario 3 except that the total wood availability of radiata pine from the region is constrained to be non-declining for the current rotation (through to 2034). Thereafter a reduction is permitted in this model.

#### ► SCENARIO 5: TARGET ROTATION AGE VARIATIONS

This is similar to scenario 4 except that target rotation ages of 28 and 32 years are also evaluated.

### »» DISCUSSION ON SCENARIOS

With the exception of scenario 1, the small-scale forest owners have been modelled separately from the large-scale owners. Future harvesting from the small-scale owners is generally less certain than for the former.

In scenarios 1 and 2 (Figures 4.1A and 4.1B), forests owned by small-scale owners are assumed to be harvested at a fixed age of 30 years. These two scenarios show the

“potential” availability of mature forest in any given year and directly reflect the area of forest in each age-class in the Auckland region. For practical reasons already described, it is unlikely that future harvesting would occur like this. These two scenarios simply show the potential magnitude of harvesting under favourable market conditions in any given year.

Scenarios 3 to 5 (Figures 4.1C and 4.1D) are based on yield regulation. Under these scenarios, future harvesting is generally constrained to be non-declining, that is, each year the volume harvested must either be the same or higher than the previous year. Yield regulation provides a more orderly harvesting volume profile that takes into account, to some extent, logistical and market constraints. These scenarios avoid the large year-to-year fluctuations seen in scenario 1.

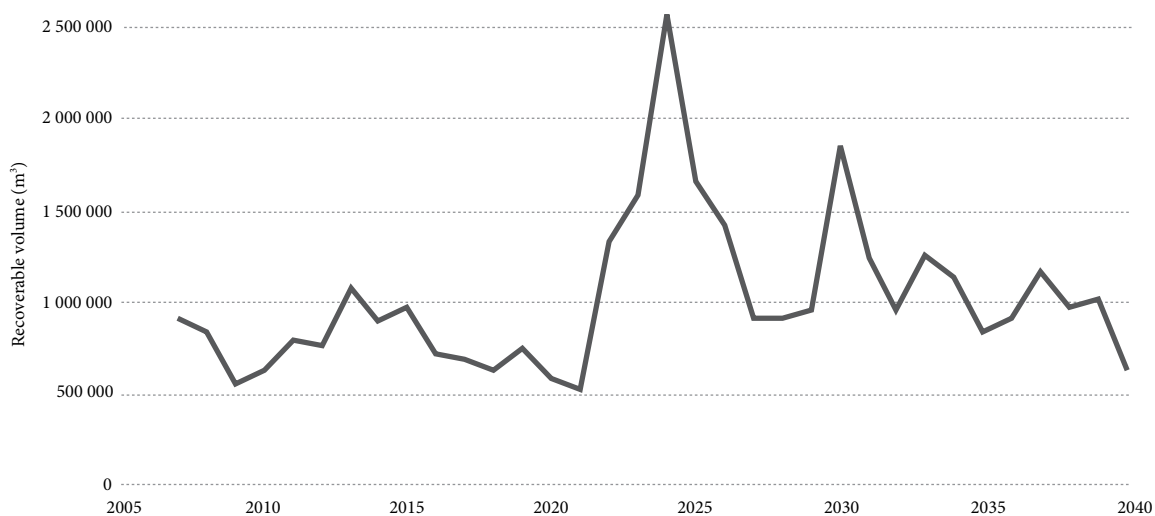
A fundamental property of the forests in the Auckland region (as in many other regions in New Zealand) is the large area of forests established by small-scale owners during the 1990s. Scenarios 4 and 5 allow for harvesting these forests by applying a non-declining yield constraint for the period 2006 to 2034. Then once the “bulge” of forests planted during the 1990s has been harvested, the model lets the volume decline again.

The main limitations of scenarios 3 to 5 is that market factors such as log prices are significant determinants of harvesting in any given year. When log prices increase, harvesting will generally increase and vice versa. It is beyond the scope of this analysis to predict future log prices.

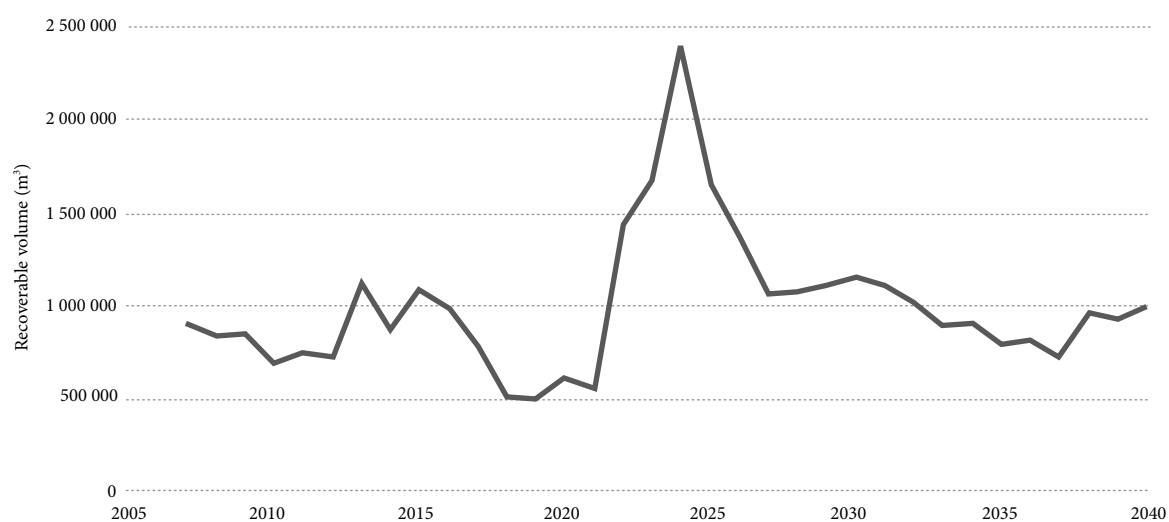
Figure 4.1 shows the sequence of models (scenarios) that are presented throughout the remainder of this report.

»» FIGURE 4.1: THE SEQUENCE OF WOOD AVAILABILITY SCENARIOS PRESENTED FOR RADIATA PINE (SCENARIO 5 IS THE SAME AS SCENARIO 4 EXCEPT IT SHOWS THE AVAILABILITY PROFILES OF VARYING HARVEST AGES)<sup>1</sup>.

» 4.1A – SCENARIO 1 EXAMPLE: HARVEST ALL TREES AT AGE 30



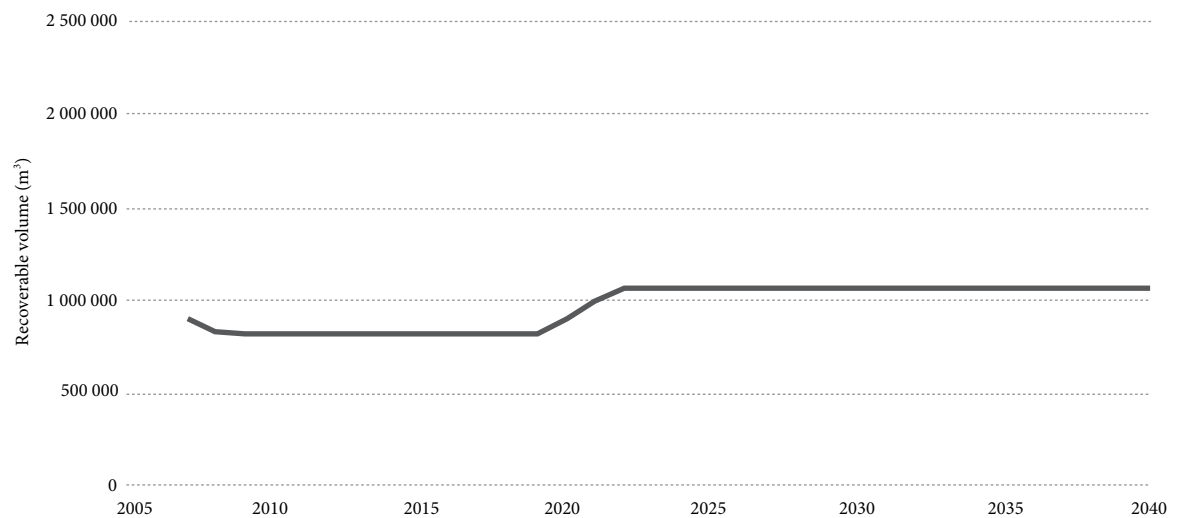
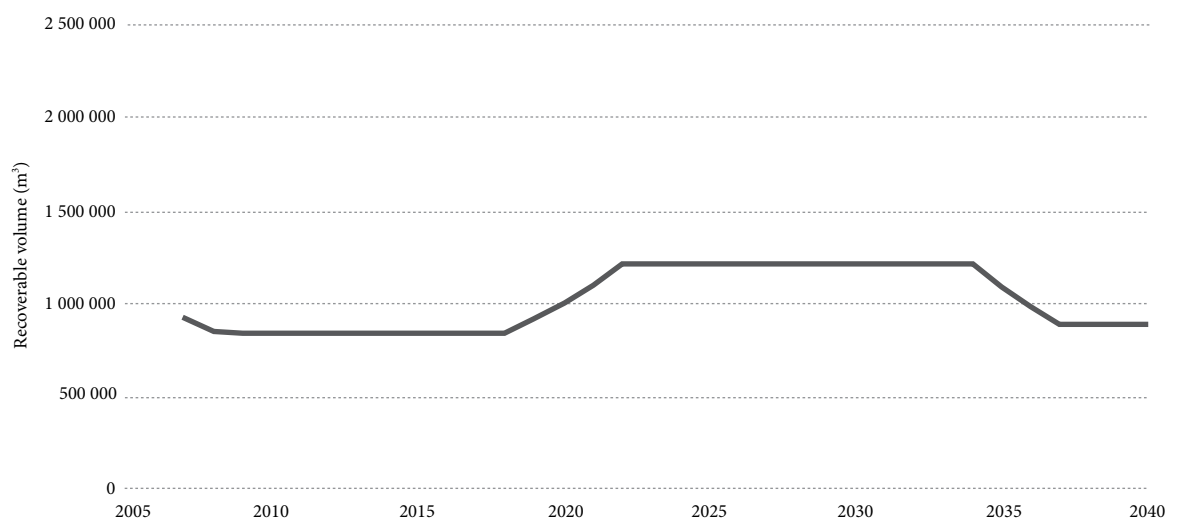
» 4.1B – SCENARIO 2 EXAMPLE: LARGE-SCALE OWNERS HARVEST AT STATED INTENTIONS, SMALL-SCALE OWNERS HARVEST TREES AT AGE 30



**Note**

1 Revised.



**► 4.1C – SCENARIO 3 EXAMPLE: NON-DECLINING YIELD WITH TARGET ROTATION 30 YEARS****► 4.1D – SCENARIO 4 EXAMPLE: SPLIT NON-DECLINING YIELD WITH TARGET ROTATION 30 YEARS**

## »» DATA

### » METHOD USED TO OBTAIN FOREST AREAS

The areas were obtained from the *NEFD as at 1 April 2007* (MAF, 2008). To reflect the regime split in the harvest intentions data provided by the large-scale owners, 1600 hectares was transferred from the old pruned croptype into the old unpruned croptype.

In addition, the small-scale owners' estate was reduced by 15 percent. This was done because the area in this ownership category is often reported on the basis of gross area rather than net stocked area (which excludes unplanted areas, areas not successfully established, streams, wetlands, and so on).

### » METHOD TO DEVELOP YIELD TABLES

In 2007 new yield tables for the Auckland region were developed in the following manner:

- › large-scale owners provided yield tables for their estate;
- › these were averaged on an area-weighted basis to get regional yield tables for each croptype;
- › yield tables for old (age 18+ years, planted in 1989 and earlier) radiata pine were then calibrated to match the harvest intentions data provided by large-scale owners. The assumption is that the harvest intentions data is the most accurate information available as it is based predominantly on detailed inventory;
- › yield tables for young radiata pine crotypes (planted in 1990 and later) were also adjusted in consultation with large-scale owners; and
- › the yield tables developed for the large-scale owners' estate were also applied to the small-scale owners' estate.

### » LARGE-SCALE OWNERS' HARVEST INTENTIONS

Large-scale owners were asked to provide details of planned harvest volume by log grade and area from 2007 to 2015. The harvest intention values for 2007 to 2013 were then included at the beginning of the forecasts to

provide the most realistic wood availability forecasts over this period. The original intentions provided for 2014 and 2015 had a significant spike in volumes. Following review of these with the companies concerned, it was decided to cap the volumes for 2014 to 2018 at the 2013 level.

## »» ASSUMPTIONS

The wood availability forecasts for the Auckland region are based on the following assumptions:

### › REPLANTING

- All area is replanted (with a regeneration lag of 1 year).
- The area awaiting replanting as at 31 March 2007 is included as area at age 0, that is, area to be replanted in the 2007 planting season.

### › SPECIES/REGIME

- Area is replanted into the same regime except that only 20 percent of old (planted in 1989 and earlier) pruned area is replanted into the pruned croptype following harvest.

»» TABLE 4.1: VOLUMES OF RADIATA PINE HARVESTED IN 2007 AND 2008

HARVEST YEAR	LARGE-SCALE OWNERS (M³)	SMALL-SCALE OWNERS (M³)	TOTAL (M³)
2007	657 000	252 000	909 000
2008	643 000	197 000	840 000

These harvest figures differ from roundwood removal estimates by region as reported in MAF's statistics ([www.maf.govt.nz](http://www.maf.govt.nz)). The difference is attributed to the fact that the roundwood removal estimates are derived from regional mill outputs and log export volumes; the difference indicates a net flow of logs out of the region for processing or export.

### › OVERMATURE STANDS

- Area that was age 61 years or older (26 hectares total) was removed on the assumption that these trees will not be harvested.

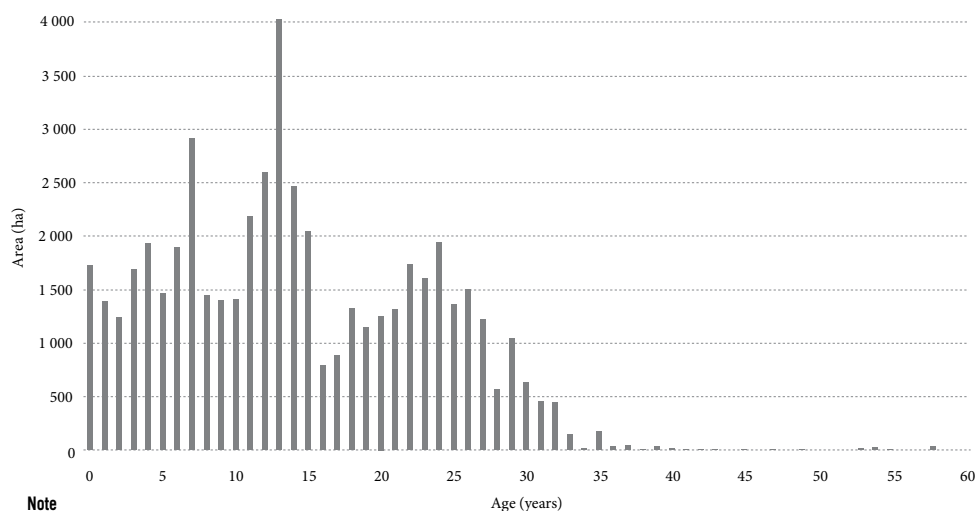
## »» WOOD AVAILABILITY FORECASTS FOR THE AUCKLAND REGION

### › SCENARIO 1: HARVEST ALL FOREST AT AGE 30

This scenario with all forest harvested at age 30 indicates the “pure” (that is, unconstrained) availability of wood

from the Auckland region. It is essentially a translation of the age-class distribution into volume. Figure 4.2 shows the age-class distribution of radiata pine in the Auckland region and Figure 4.3 shows the wood availability. The low point at 2021 in Figure 4.3 occurs because of the small area (785 hectares) at age 16 (planted in 1991) in Figure 4.2. Conversely, the high point at 2024 in Figure 4.3 occurs because of the large area (4009 hectares) at age 13 (planted in 1994) in Figure 4.2.

»» FIGURE 4.2: AGE-CLASS DISTRIBUTION OF RADIATA PINE IN THE AUCKLAND REGION – COMBINED ESTATE AS AT 1 APRIL 2007<sup>1</sup>



Note  
1 Revised.

»» FIGURE 4.3: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION UNDER SCENARIO 1<sup>1</sup>



Note  
1 Revised.

► **SCENARIO 2: LARGE-SCALE OWNERS HARVEST AT INTENTIONS, SMALL-SCALE OWNERS HARVEST AT AGE 30**

In this scenario, large-scale owners harvest in line with their stated intentions until 2013 and small-scale owners harvest trees at age 30.

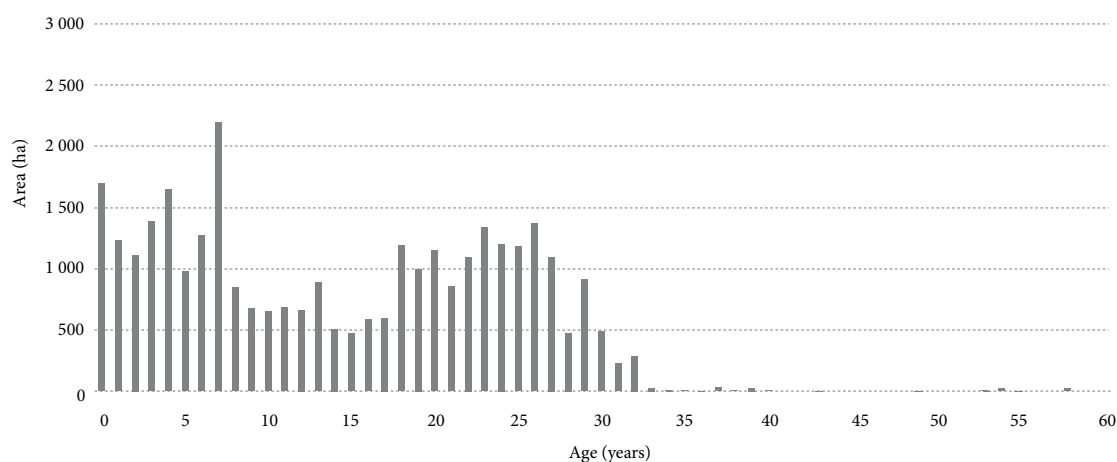
**LARGE-SCALE OWNERS**

The age-class distribution of the large-scale owners' estate (Figure 4.4) indicates that there is a large variation in the

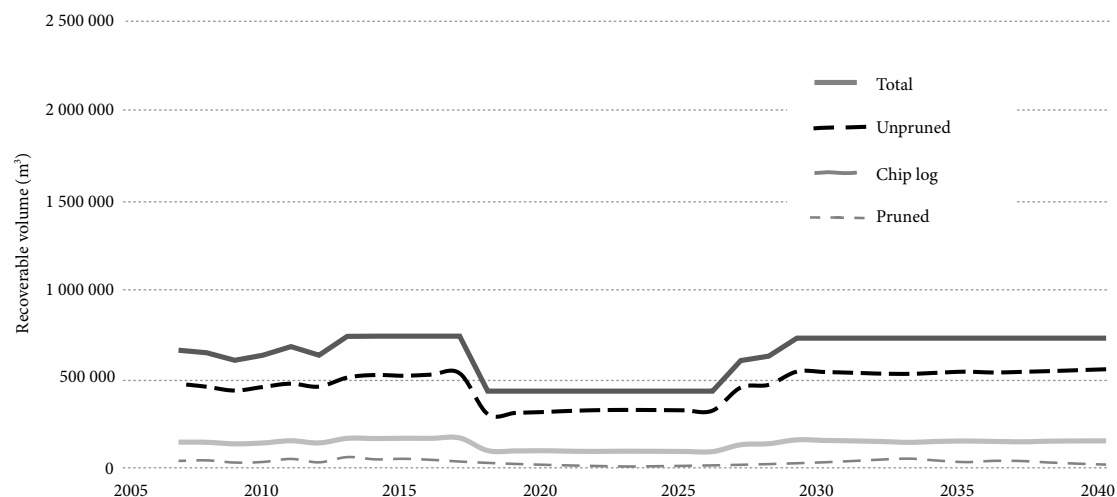
area in age-classes. There is relatively little area in age-classes 14 to 17 years because of limited planting in 1990 to 1993.

The area at age 0 is the area awaiting replanting as at 31 March 2007; that is, area to be replanted in the 2007 planting season.

►► **FIGURE 4.4: AGE-CLASS DISTRIBUTION OF THE RADIATA PINE ESTATE IN THE AUCKLAND REGION – LARGE-SCALE OWNERS AS AT 1 APRIL 2007**



►► **FIGURE 4.5: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION UNDER SCENARIO 2 – LARGE-SCALE OWNERS**



For this scenario the availability of wood from large-scale owners is based on stated harvest intentions for 2005 to 2013, with the volumes for 2014 to 2018 capped at the 2013 level. From 2018 on, the availability is constrained to be non-declining with a target rotation age of 30 years. The wood availability of large-scale owners (Figure 4.5) is forecast to be at a lower level from 2018 to 2026. This is partially a consequence of the relatively small areas planted from 1990 to 1993. However, a more important factor is that a number of large-scale owners will be harvesting less volume from their Auckland region forests during this period and more volume from their forests in the Central North Island region. The reality is that companies manage their total estate without consideration of whether they are in the Auckland or Central North Island regions.

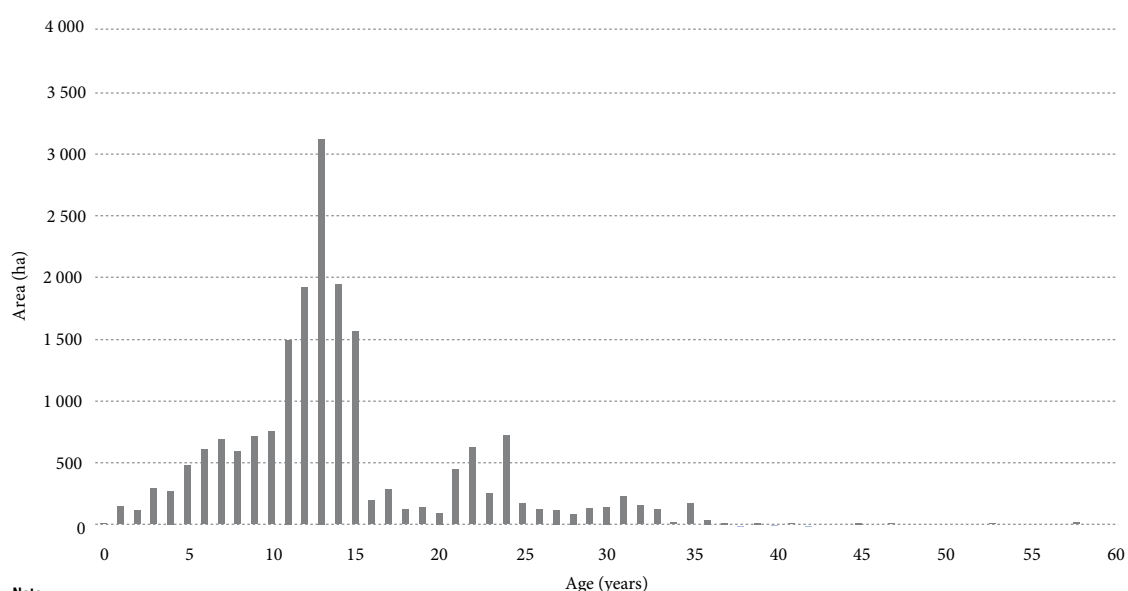
The potentially available volume from the large-scale owners' estate increases to over 700 000 cubic metres per year from 2029.

#### SMALL-SCALE OWNERS' ESTATE

The age-class distribution of the small-scale owners' estate (Figure 4.6) is very irregular with over 1400 hectares in each of the ages 11 to 15 years (planted in 1992 to 1996) and much less area in all other age-classes. Forecasting the wood availability from this estate depends on how the large area in ages 11 to 15 will be harvested:

- › at a fixed rotation age (scenario 2);
- › spread over many years (scenario 3);
- › spread over an intermediate number of years (scenario 4).

»» FIGURE 4.6: AGE-CLASS DISTRIBUTION OF THE RADIATA PINE ESTATE IN THE AUCKLAND REGION – SMALL-SCALE OWNERS ONLY<sup>1</sup>



Note  
1 Revised.

**COMBINED ESTATE**

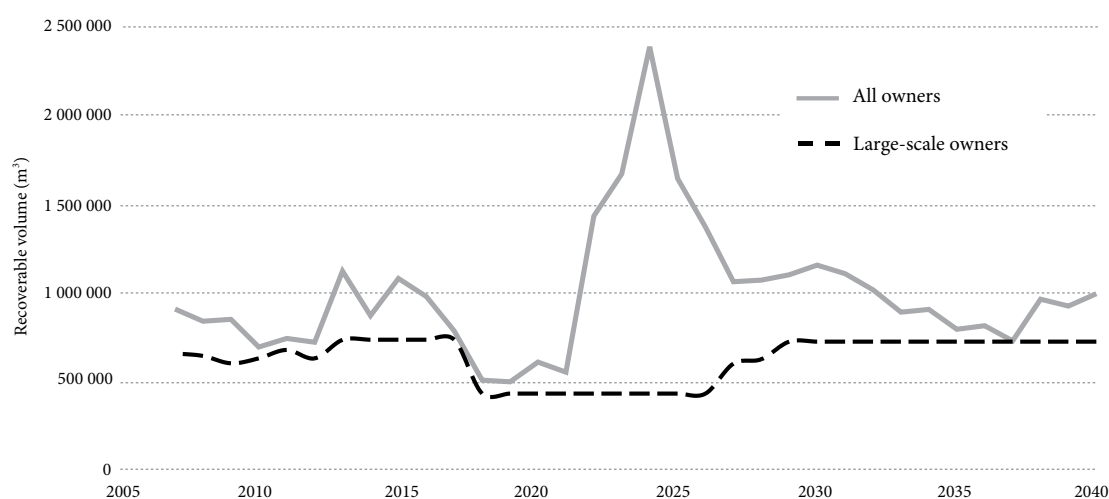
The wood availability from all owners is presented in Figure 4.7. For the large-scale owners it is the same as in Figure 4.5, (scenario 2), while the entire small-scale owners' estate is assumed to be harvested at age 30. The fluctuations in the total volume harvested reflect the variation in the age-class distribution of the small-scale owners' estate.

The large increase in volume from 2022 (Figure 4.7) occurs when the large areas from the small-scale owners' estate in young age-classes (11–15) is harvested. For example, the increase in 2022 results from the 1559 hectares planted by small-scale owners in 1992 (age 15 in Figure 4.6) being harvested at age 30.

Following the 2007 and 2008 harvests, there is limited area of age 30 or older in the small-scale owners' estate available for harvest in 2009 to 2012.

Fluctuations in harvest volumes of the magnitude shown in Figure 4.7 would be impractical because of marketing and logistics realities (immediate availability of logging crews, transport capacity, and wood processing capacity).

►► FIGURE 4.7: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION UNDER SCENARIO 2 – COMBINED ESTATE<sup>1</sup>



**Note**  
1 Revised.

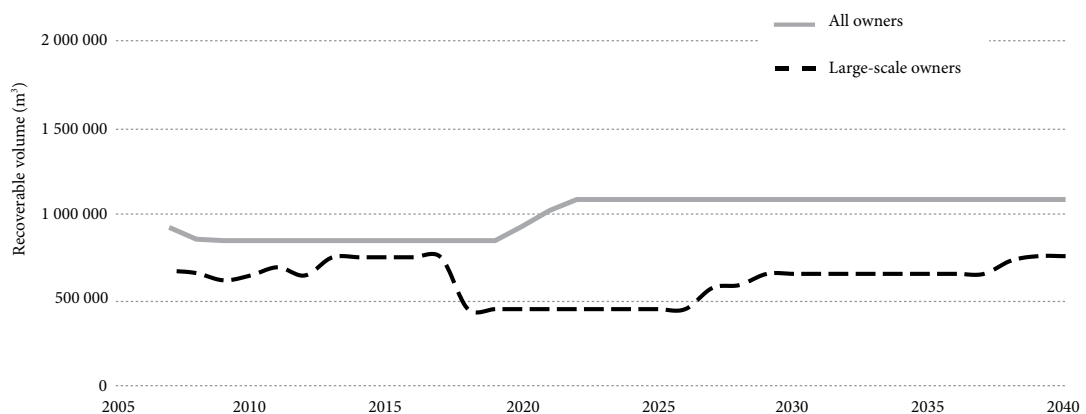
### ► SCENARIO 3: NON-DECLINING YIELD – TARGET ROTATION 30 YEARS

The third scenario assumes a non-declining yield, with a target rotation age of 30 years. An extra constraint was modelled so the total volume was not allowed to increase by more than 10 percent annually. Figure 4.8 indicates that, when the small-scale owners' estate is harvested to complement the large-scale owners' estate, the potential total volume is over 800 000 cubic metres per year from 2009 and increases to over 1 million cubic metres per year from 2022.

This scenario is similar to the base case scenario adopted in the 2000 wood supply forecasts (MAF, 2000).

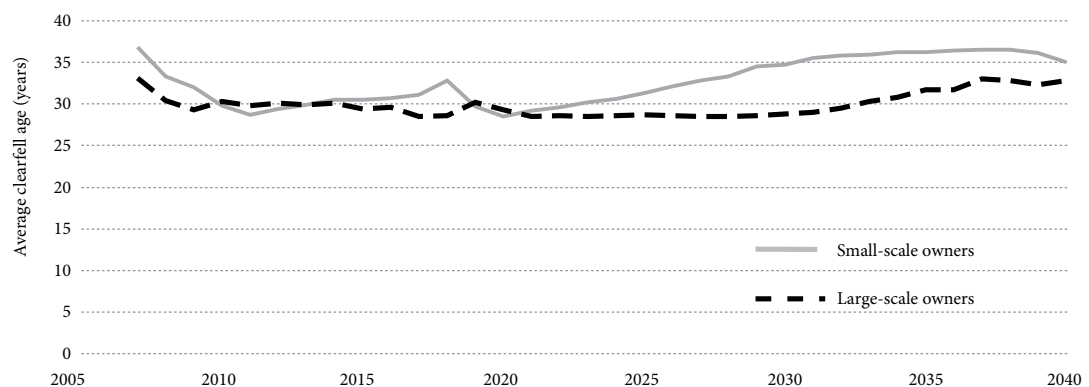
However, it results in the small-scale owners' estate being harvested at rotation ages that differ markedly from 30 years (Figure 4.9).

►► FIGURE 4.8: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION UNDER SCENARIO 3<sup>1</sup>



**Note**  
1 Revised.

►► FIGURE 4.9: AVERAGE RADIATA PINE CLEARFELL AGE BY OWNERSHIP CATEGORY UNDER SCENARIO 3<sup>1</sup>



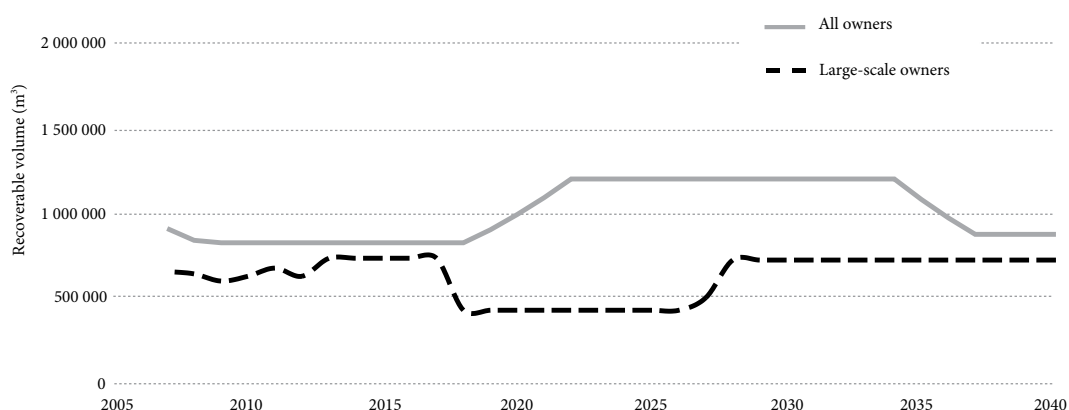
**Note**  
1 Revised.

#### ► SCENARIO 4: SPLIT NON-DECLINING YIELD – TARGET ROTATION 30 YEARS

The fourth scenario (Figure 4.10) is based on a split non-declining yield with a rotation age of 30 years. This scenario gives a forecast wood availability that is similar to scenario 3 through to 2021. Wood availability increases to 1.2 million cubic metres per year from 2022 before reducing to under 0.9 million cubic metres per year from 2037.

The main difference from scenario 3 is that the large area of young stands in the small-scale owners' estate is assumed to be harvested over a shorter period of time. The total volume was modelled to be non-declining from 2009 to 2034, that is, for the current rotation. Thereafter an annual reduction of up to 10 percent was allowed before the yield was required to be non-declining for the next rotation (from 2037 on). As a consequence, the average clearfell age for small-scale owners stays closer to the target of 30 years (Figure 4.11) than was the case in scenario 3.

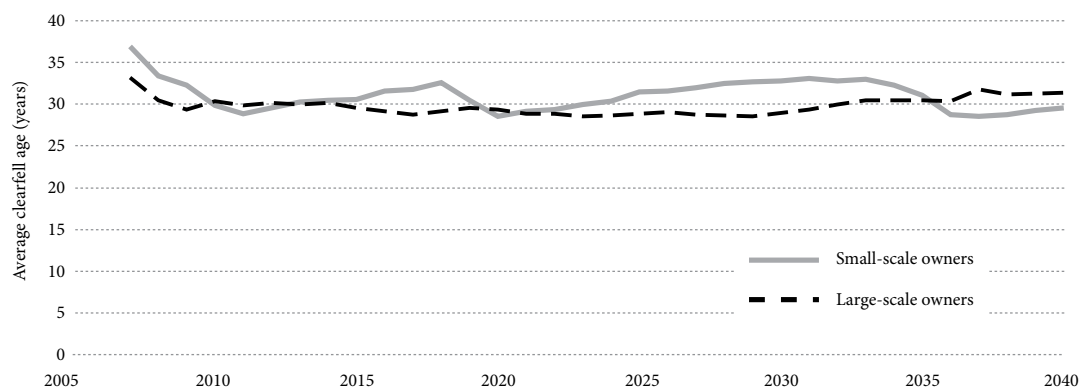
►► FIGURE 4.10: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION UNDER SCENARIO 4<sup>1</sup>



Note

1 Revised.

►► FIGURE 4.11: AVERAGE RADIATA PINE CLEARFELL AGE BY OWNERSHIP CATEGORY UNDER SCENARIO 4<sup>1</sup>



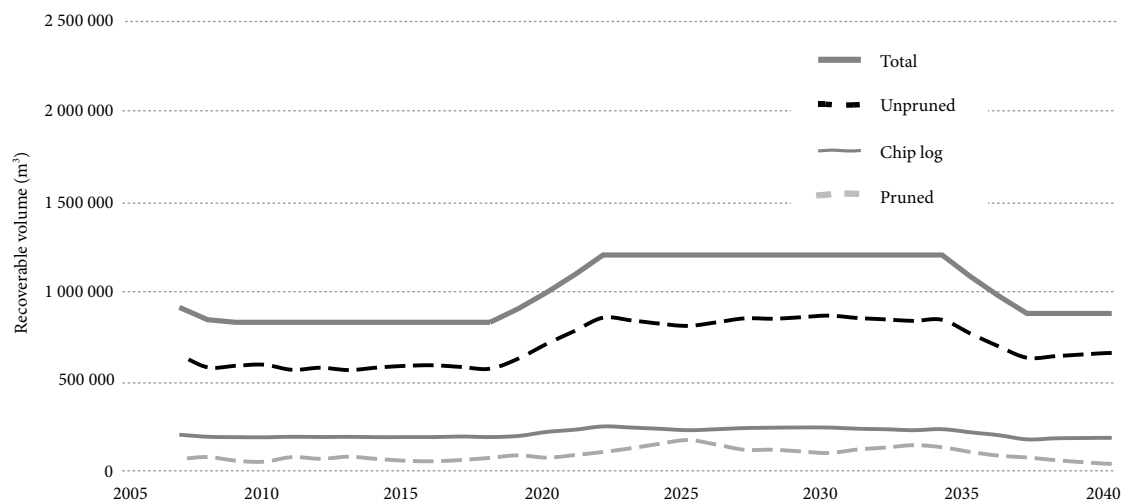
Note

1 Revised.



The total volume forecast for scenario 4 is broken down by log grade in Figure 4.12.

»» FIGURE 4.12: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION BY LOG PRODUCT UNDER SCENARIO 4<sup>1</sup>



**Note**

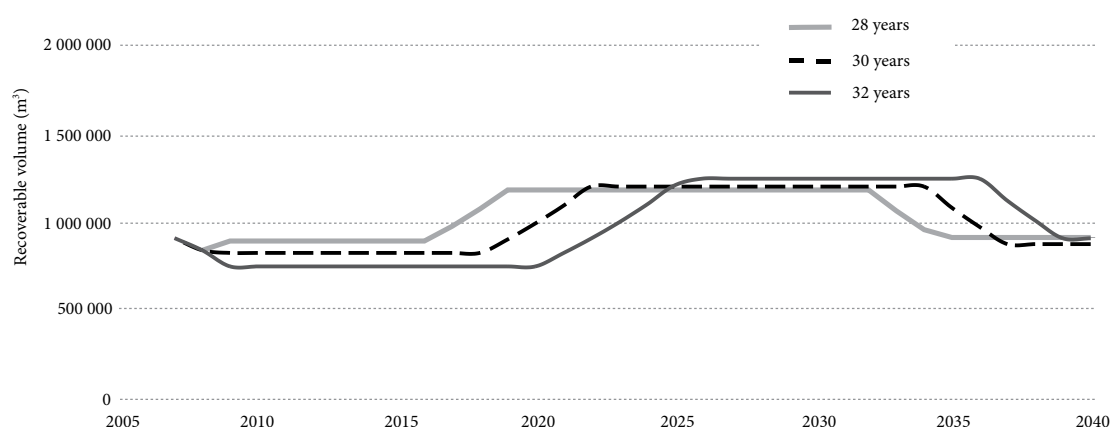
1 Revised.

### ► SCENARIO 5: TARGET ROTATION AGE VARIATIONS

Different wood availability profiles are generated if target rotation age is changed from 30 years to either 28 or 32 years (Figure 4.13). Because of the limitations imposed by the current age-class distribution and large-scale owners' stated harvest intentions, it takes some time to achieve separation of average clearfell age (Figure 4.14).

Figure 4.13 shows wood availability to be broadly in the range 750 000 to 900 000 cubic metres per year until 2016, with the potential for a subsequent increase to around 1.2 million cubic metres per year. There is a range of possibilities for timing the increase.

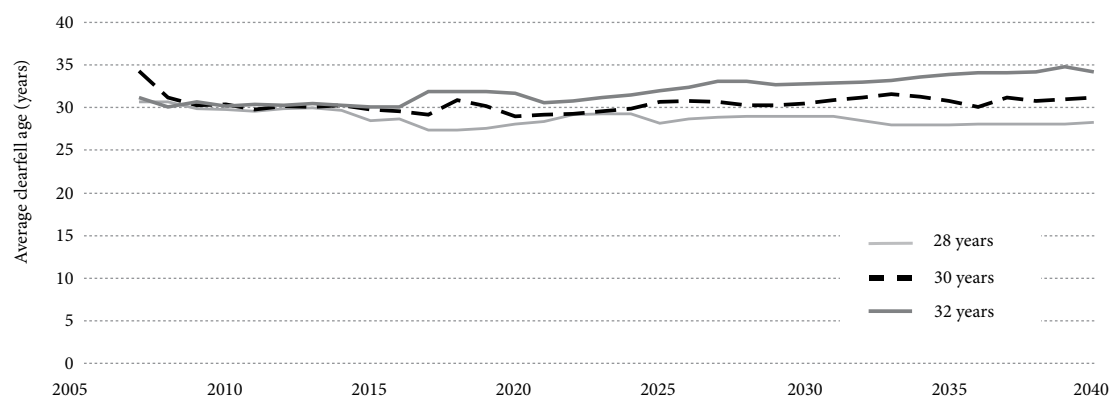
►► FIGURE 4.13: RADIATA PINE AVAILABILITY IN THE AUCKLAND REGION UNDER SCENARIO 5<sup>1</sup>



**Note**

1 Revised.

►► FIGURE 4.14: AVERAGE RADIATA PINE CLEARFELL AGE FOR EACH TARGET ROTATION AGE UNDER SCENARIO 5<sup>1</sup>



**Note**

1 Revised.

# THE WOOD PROCESSING INDUSTRY

5

## OVERVIEW

A number of sawmills and wood processing facilities operate in the Auckland region, some of which date back many years and can be traced to the indigenous milling industry that was prevalent in the region from European settlement to the 1960s.

Panel plants exist in the Auckland region at Kumeu and Kopu; these process sawmill residues. The remaining sawmill residues generated in the region are primarily drawn towards the large pulp and paper plants at Kawerau and Kinleith, or used as an energy source for sawmill kilns. Depending on the prevailing demand and supply, log pulp flows to either the pulp mills in the Central North Island or to the Port of Tauranga for export.

The Auckland region has recently experienced a number of sawmill closures and consolidations into larger processing plants. Despite this the Auckland region has a high proportion of independent sawmills milling a significant volume of sawlogs. Many of these plants service the domestic housing industry, whilst some of the larger mills have specialised in exporting cuttings and finished lumber products to the United States.

## SAWMILLING

The sawmilling industry in the Auckland region has been dominated by the Carter Holt Harvey (CHH) Kopu sawmill near Thames. This accounted for nearly half the region's sawn timber output in the year to 31 March 2007. Nearly 30 sawmills are listed as operating in the Auckland region. Those with annual production over 5000 cubic metres are listed in Table 5.1. The total sawn timber outturn reported from the region for the year ended March 2008 was about 300 000 cubic metres, representing a decrease of around 68 000 cubic metres outturn since

2003. Two sawmill closures and two mills scaling back production have contributed in the reduction in sawn outturn over the past three years, and the closure of the Kopu mill in April 2008 will considerably reduce regional sawn outturn in the future.

TABLE 5.1: SAWMILLS OPERATING IN AUCKLAND AS AT YEAR ENDED DECEMBER 2007

SAWMILL	LOCATION
<b>PRODUCTION LEVEL: ABOVE 25 000 M<sup>3</sup> SAWN TIMBER PER ANNUM</b>	
CHH Kopu (now closed)	Thames
Southern Cross Forest Products	Thames
Ahead Lumber	Pokeno
Andersen and O'Leary Ltd	Whenuapai
<b>PRODUCTION LEVEL: BELOW 25 000 M<sup>3</sup> SAWN TIMBER PER ANNUM</b>	
Mac Direct	Pukekohe
Colville Sawmilling	Colville
Beams and Timber Direct	Tuakau
Fortune Timber (now closed)	Auckland
KA Mohring	Te Aroha
<b>Source</b>	
Individual sawmillers.	

Additional processing facilities in Auckland are the CHH paperboard plant at Penrose, the Laminex panel plants at Kumeu, and the CHH Panels Kopu particleboard plant.

## CHH WOODPRODUCTS – KOPU

CHH Woodproducts operated the Kopu sawmill at the base of the Coromandel Peninsula. The mill has previously relied on CHH forests for the majority of its log input, but in recent years the sale of CHH forest assets to Matariki Forests and a Hancock Natural Resources Group Fund has reduced internal supply to nothing. The mill targeted the domestic construction markets and the Australian F7 framing markets in past years, and the plant was well situated to access both the export facilities of Auckland and Mt Maunganui ports and the Auckland retail market. In May 2008, CHH closed the Kopu mill with the loss of around 140 jobs.

### ► SOUTHERN CROSS FOREST PRODUCTS

Southern Cross Forest Products (SCFP) is the second-largest processor and remanufacturer of clear wood pine products in New Zealand. Previously trading as Thames Timber, the mill at Kopu has been operating since 1948 and is the largest mill in the SCFP group with a capacity of 80 000 cubic metres sawn outturn. The SCFP mill has Forest Stewardship Council (FSC) chain of custody certification. On site are the sawmill and a board remanufacturing plant.

Kauri Timber Products is the SCFP sales and marketing vehicle for all products going into Asia. It is a fully owned subsidiary of Southern Cross Forest Products. SCFP also operate two sawmills and a dry mill in the Otago/Southland region.

### ► AHEAD LUMBER

The Ahead Lumber Sawmill immediately to the south of the Bombay Hills at Pokeno is a privately owned operation primarily targeting the domestic and Pacific Island market. The mill has kiln drying and treatment facilities, and undertakes value-added processing on a high proportion of its output.

### ► ANDERSON AND O'LEARY LTD

The Anderson and O'Leary mill at Whenuapai is part of the Pinepac Group, a privately owned, vertically integrated forestry processing company. Pinepac has about 800 hectares of forests as well as a post, pole and house pile operation in Kumeu and retail outlets at Whenuapai, Kumeu and Swanson.

### »»» SAWN TIMBER PRODUCTION

Table 5.2 shows the decline in sawn timber outturn from the Auckland region. Mill closures over the past three years have been the Tanners Mill in 2005, Whitianga Sawmill in 2006, Cashmores Sawmill in 2006 and the CHH Kopu Sawmill in 2008. In addition to these closures, other sawmills have reduced output as a result of more difficult economic times.

In 2004, a resource consent for Blue Mountain Lumber (the sawmilling subsidiary of Ernslaw One Ltd) to build a sawmill at Whangapoua in Northern Coromandel Peninsula was overturned.

»»» TABLE 5.2: SAWN TIMBER PRODUCTION IN THE AUCKLAND REGION

YEAR ENDED 31 MARCH	INDIGENOUS FORESTS (M³)	PLANTATION FORESTS (M³)	TOTAL (M³)
1996	640	270 062	270 402
1997	335	277 906	278 241
1998	111	300 079	300 190
1999	155	301 361	301 516
2000	197	360 703	360 900
2001	186	332 296	332 482
2002	224	335 626	335 850
2003	247	367 899	368 146
2004	777	347 533	348 310
2005	352	351 730	352 082
2006	536	293 749	294 285
2007 <sup>R</sup>	60	252 294	252 354
2008	61	299 806	299 866

**Source**

Ministry of Agriculture and Forestry.

**Symbol**

R revised.

## »»» PANEL AND PAPER PLANTS

### » CHH PANELS – KOPU

The plant at Kopu has been operating since 1990 and manufactures medium and high-density particleboard products primarily directed at the domestic market. The fibre for this plant was primarily sourced from the residues of CHH and local sawmills. The closure of the CHH Kopu sawmill had no impact on production at CHH Panels – Kopu.

### » LAMINEX KUMEU AND PLYCOSELECT PENROSE

Both plants are part of the Fletcher Building group. The Laminex plant at Kumeu produces particleboard for flooring and a selection of other finished products. Raw materials are sourced from sawmill residues. The Plycoselect plant at Penrose ceased panel production in October 2007 and now specialises in the manufacture of a range of doors targeted at the housing market.

## »»» SAWN TIMBER EXPORT

Table 5.3 shows increasing volumes of sawn timber exports from the Ports of Auckland in recent years. The effect of market conditions and mill closures has reduced the exports from Auckland in 2007. It is interesting to note that the sawn timber exports from the Ports of Auckland have exceeded the sawn timber production from the region since 2005. This suggests a large volume of timber that is exported from the Ports of Auckland originates outside the region.

## »»» LOG EXPORTS

Log exports from the Ports of Auckland declined to very low numbers as a result of wharf constraints (mainly storage) and the development of the container terminals. In the first quarter of 2008, the export of logs in containers has seen this trend reverse as exporters take advantage of cheaper freight rates and a greater range of ports available to container vessels. Table 5.4 shows the decline in log exports from the Ports of Auckland.

»»» TABLE 5.3: SAWN TIMBER EXPORTS FROM THE PORTS OF AUCKLAND

YEAR ENDED 31 MARCH	TOTAL (M <sup>3</sup> )
1996	118 606
1997	110 945
1998	183 268
1999	192 803
2000	212 453
2001	198 237
2002	225 783
2003	220 012
2004	184 246
2005	322 044
2006	357 315
2007	319 996
2008	237 672

Source  
Statistics New Zealand.

»»» TABLE 5.4: LOG EXPORTS FROM THE PORTS OF AUCKLAND

YEAR ENDED 31 MARCH	TOTAL (M <sup>3</sup> )
1996	156 778
1997	121 283
1998	15 150
1999	5 603
2000	2 222
2001	9 456
2002	1 461
2003	1 770
2004	1 088
2005	1 477
2006	2 100
2007	1 763
2008	21 215

Source  
Statistics New Zealand.

# INFRASTRUCTURE

# 6

## »»» PORTS

The Auckland wood supply region is served by the shipping facilities at the Ports of Auckland. However, these facilities are targeted primarily at container and breakbulk cargo and do not have sufficient space for significant log exports. General wharfage is provided from the Onehunga Wharf for breakbulk, timber and cargo loading, while the Bledisloe and Fergusson terminals are dedicated container facilities. A dry store marshalling and packing facility for containerised timber, panel and paper products is linked to the container facility. Two inland ports, at Tamaki and Wiri were established in 2002 with rail links to both seaport operations. These inland ports act as marshalling areas for cargo, and allow rail transport of containers to the ports, thus alleviating road congestion.

In the year ended March 2008, log export from the Ports of Auckland was recorded as 21 000 cubic metres (compared to 2.5 million cubic metres from the Port of Tauranga). The majority of this volume, 13 000 cubic metres, was exported in the last quarter of 2007, mainly in containers. In 2007, the volume was 1800 cubic metres. In comparison, sawn timber export from the Ports of Auckland was 240 000 cubic metres to the year ended March 2008, while at the Port of Tauranga it was 694 000 cubic metres.

Almost all of the log exports generated in the Auckland wood supply region will be exported through the Port of Tauranga, mainly due to the proximity of the port and space constraints for log storage and marshalling at the Ports of Auckland.

## »»» ROAD TRANSPORT

The Auckland wood supply region has a large proportion of the road network in seal and capable of handling high volumes of heavy traffic. Despite this, and because many of the forests are located in the most remote parts

of the region, some difficulties have been experienced and are likely to continue with sustained heavy loading of some roads. Log truck drivers on the Coromandel Peninsula face difficult narrow, winding roads in addition to heavy seasonal vehicle flows, as holidaymakers flock to popular locations. Similarly, forests requiring access to the northern portion of State Highway 2 between the Bombay Hills and Maramarua face difficult driving and high volumes of light vehicle traffic. Regular seasonal hold-ups at the one-lane bridge at Kopu, and frequent closures of the gorge at Karangahake are related to high volumes of light traffic. Generally cartage companies are able to work with the known ebbs and flows in traffic volumes.

The Environment Waikato *Regional Land Transport Strategy* (Environment Waikato Regional Council, 2006) is addressing issues and actively pursuing a strategy that includes the creation of an inland port facility near Hamilton to link the ports of Auckland and Tauranga, a vehicle ferry service from Auckland to the Coromandel, and proposing alternative routes for heavy traffic on State Highway 2.

## »»» RAIL TRANSPORT

Log freight, primarily pulp logs for the pulp mills, has regularly traversed the region via the main trunk line from Northland to the Central North Island. The rail network also connects the Auckland port facilities at Onehunga and on the Waitemata harbour, and the two inland ports at Tamaki and Wiri. A branch at Hamilton links to the Port of Tauranga; it receives a branch line from Kinleith and Kawerau before the Kaimai tunnel. The line past Tauranga continues on to Murupara.

Given that the great majority of forests in the region are established in the Thames-Coromandel district and western Waikato, rail freight opportunities are limited. The area of forest is unlikely to support a dedicated

facility and the cost of double handling for relatively short distances often offsets gains available to rail transport.

### »» COASTAL BARGING

Coastal barging is occasionally raised as an option for log transport from the Coromandel Peninsula to the Port of Tauranga or Auckland, but this is yet to have been put into practice. As for rail, there is the additional costs of double handling, plus the establishment of infrastructure, such as wharf and barges so high capital investment for relatively small volumes from the northern Coromandel. Given the environmentally sensitive nature of harbours on Coromandel, consents to build new wharves may also be difficult.

### »» ENERGY

The Auckland wood supply region to the south of the Auckland City isthmus is well supplied for both the generation and transmission of power. However, the north of the region, from the isthmus to the Rodney district boundary, is subject to the same transmission restrictions as the rest of Northland. Electricity generation in this area is limited to 5 percent of the usage, and the transmission has been identified as requiring a significant upgrade to support existing loads. The main point identified for capacity upgrade is the Otahuhu to Henderson 220 kV line. Upgraded supply to Otahuhu is via the controversial Whakamaru to Otahuhu line upgrade. The success of the planned gas-fired plant at Rodney will ease the energy supply issues.

Across the remainder of the Auckland wood supply region, generation and transmission capacity is capable of sustaining the needs of industry. Generation capacity exists as base load from hydro and geothermal plants in or near the region, and peak demand plants at Huntly (1050 MW) and Otahuhu (380 MW) are geared to supply energy requirements for large primary-product processing facilities and large population centres.

A large-scale processing plant on the northern Coromandel Peninsula, such as the one proposed by Blue Mountain Lumber in 2004, would probably require some line upgrades and these would be customer-dependent. The regional lines company Powerco have an ongoing maintenance and development plan for the Coromandel district.

# OPPORTUNITIES

## AND CONSTRAINTS

7

### »»» OPPORTUNITIES

#### » INCREASING WOOD AVAILABILITY

The Auckland region is well placed for utilising the increased wood availability forecast to start in the next five years. As noted, the Auckland region wood flows interact considerably with those from the Central North Island, and for some purposes (pulp logs, for example) the market can be considered the same.

#### » WOOD PRODUCTS PROCESSING

Increasing wood availability from the Auckland region suggests there is potential to better utilise existing processing capacity and potential for more processing capacity in some areas. The commercial case for increasing capacity in any region in New Zealand will be strongly dependent on the strength of the domestic and international markets.

#### » WOOD DENSITY

While the Auckland region wood resource is not universally high density, it is denser than the Central North Island resource because of its latitude. This suggests that as long as the logs are not harvested at a very young age, these areas will supply higher yields of structural grades. A number of mills already have machine stress graders installed.

#### » MARKET AND PORT PROXIMITY

Wood products from the Auckland region are close to the largest domestic market in New Zealand and the largest export port for containerised products. The largest export port in New Zealand for logs is situated at the southern edge of the region. The Auckland market suggests additional opportunities for energy products or other residue outlets.

#### » CENTRAL NORTH ISLAND PROCESSING

Large processing facilities are located in the nearby Central North Island region, and these provide a ready market for pulp wood from this region.

#### » SUPPORT INFRASTRUCTURE

The Auckland region generally is well serviced, within the limits described previously, by services and infrastructure for electricity, transport, and export options for log or timber.

The forest industry in the nearby Central North Island is also well placed to service forest owners' needs. Because of this, considerable flexibility exists for small owners to pick markets and timing, within the constraints of harvest capacity and transport availability.

### »»» CONSTRAINTS

#### » MARKETS, MILLS AND THE NEED TO GENERATE MONEY

As with all commodity-based industries, markets have a significant effect on the behaviour of producers. While small-scale owners have a measure of flexibility in their harvest plans, large-scale owners generally are required to meet revenue commitments, requiring them to carry on producing in difficult times. The recent disconnection of the processing capacity from forest ownership has compounded the difficulty for forest owners when processing plants close, due to market overcapacity (as with the recent Kopu sawmill closure).

Impediments to new processing or expanded processing include exchange rates, overseas and domestic markets, labour, energy and freight costs. Likewise, profitable exporting of logs or forest produce is reliant on prices, making it worthwhile for owners to harvest. These constraints are not unique to the Auckland region and are largely outside the control of all players in the forest business.



### › TRANSPORT

Increasing seasonal light traffic demands on the transport network may require diversions or delays to log or finished product delivery, where increased commercial transport clashes with light-vehicle movements.

### › RESOURCE MANAGEMENT REQUIREMENTS

The regulatory environment for processing facilities can be problematic in a region so close to the major urban areas of New Zealand, and also close to popular recreation locations. The lack of suitably zoned land in suitable locations could be considered a constraint to further Greenfields processing capacity installation.

The regulatory constraints imposed on harvesting in the Hunua Ranges and the Coromandel Peninsula have increased harvesting costs.

### ››› CONCLUDING COMMENTS

The forest industry in this wood supply region has been influenced over the past decade by land-use change as well as economic, environmental and social factors. These changes have been greatest in the Coromandel Peninsula, where there is the greatest concentration of plantation forest. These pressures indicate that the forest estate is unlikely to expand in this region, and that most wood processing will continue to occur outside the region.

The period of tight but stable wood availability for the next decade will allow the industry to plan its future and gain the most from the inherent advantages of the location of the existing industry.

As with other regions, the availability of skilled labour and suitable equipment for harvesting may well be the key limiting factor in future.

# WEBSITE ADDRESSES

## FOR MORE INFORMATION

### FOREST OWNERS/MANAGERS

Matariki Forests

[www.rayonier.com](http://www.rayonier.com)

New Zealand Forestry Group Ltd

[www.newzealand4u.com/](http://www.newzealand4u.com/)

Hancock Forest Resources NZ Ltd

[www.hancocktimber.com](http://www.hancocktimber.com)

GMO Renewable Resources Ltd

[www.gmo.com](http://www.gmo.com)

Crown Forestry

[www.maf.govt.nz/forestry/crown-forestry](http://www.maf.govt.nz/forestry/crown-forestry)

### WOOD PROCESSORS

Carter Holt Harvey Ltd

[www.chh.com](http://www.chh.com)

[www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz)

Anderson and O'leary

[www.pinepac.co.nz](http://www.pinepac.co.nz)

### PORT COMPANIES

Ports of Auckland

[www.poal.co.nz](http://www.poal.co.nz)

Port of Tauranga

[www.port-tauranga.co.nz](http://www.port-tauranga.co.nz)

### GOVERNMENT DEPARTMENTS

Environment Waikato

[www.ew.govt.nz](http://www.ew.govt.nz)

Auckland Regional Council

[www.arc.govt.nz](http://www.arc.govt.nz)

Transit New Zealand

[www.transit.govt.nz](http://www.transit.govt.nz)

Ministry of Agriculture and Forestry – Home Page

[www.maf.govt.nz](http://www.maf.govt.nz)

Ministry of Agriculture and Forestry – Forestry Statistics

[www.maf.govt.nz/statistics/forestry/index.htm](http://www.maf.govt.nz/statistics/forestry/index.htm)

Statistics New Zealand

[www.stats.govt.nz](http://www.stats.govt.nz)

### ENERGY COMPANY

Transpower

[www.transpower.co.nz](http://www.transpower.co.nz)

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Environment Waikato Regional Council (2006) *Operative Regional Land Transport Strategy 2006-2016*; <http://www.ew.govt.nz/Policy-and-plans/Regional-Land-Transport-Strategy/>. Accessed 4 March 2009.

Ministry of Agriculture and Forestry (2000) *National Exotic Forest Description, National and Regional Wood Supply Forecasts 2000*, Ministry of Agriculture and Forestry, August.

Ministry of Agriculture and Forestry (2007) *A National Exotic Forest Description as at 1 April 2006*, Ministry of Agriculture and Forestry, May.

Ministry of Agriculture and Forestry (2008) *A National Exotic Forest Description as at 1 April 2007*, Ministry of Agriculture and Forestry, June.

Statistics New Zealand (2008) *Overseas Trade*, Statistics New Zealand, May.

Transpower New Zealand Limited (2008) *Annual Planning Report 2008 (Incorporating the Grid Reliability Report and the Grid Economic Investment Report)*, Transpower New Zealand Limited, March 2008.

# APPENDIX

# 10

»» TABLE 1: AUCKLAND REGION HARVEST INTENTIONS SURVEY RESULTS, LARGE-SCALE OWNERS

	ACTUAL HARVEST 2006	HARVEST INTENTIONS FOR SUBSEQUENT 10 YEARS								
		2007	2008	2009	2010	2011	2012	2013	2014	2015
RADIATA PINE (PRUNED STANDS)										
Pruned (m³)	26 762	40 747	44 439	32 289	35 404	51 870	33 298	61 787	90 190	62 836
Unpruned (m³)	116 282	129 417	166 618	134 361	141 696	181 866	121 992	180 041	282 701	240 581
Pulp (m³)	37 709	114 630	55 255	48 275	52 729	68 472	42 851	57 560	96 188	80 818
Total (m³)	180 753	284 794	266 312	214 924	229 829	302 208	198 141	299 388	469 079	384 235
Area harvested, pruned stands	363	653	541	429	454	592	378	527	836	690
RADIATA PINE (UNPRUNED STANDS)										
Unpruned (m³)	326 031	293 721	295 800	305 752	311 134	293 450	336 906	332 050	379 082	367 949
Pulp (m³)	87 091	78 527	81 200	80 636	87 669	81 500	94 085	102 950	116 558	112 023
Total (m³)	413 122	372 247	377 000	386 388	398 803	374 950	430 991	435 000	495 640	479 972
RADIATA PINE (PRODUCTION THINNED)										
Thin from Pruned Stands (m³)	4 324	0	0	0	0	0	0	0	0	0
Thin from Unpruned Stands (m³)	0	0	0	0	0	0	0	0	0	0
Total (m³)	4 324	0	0	0	0	0	0	0	0	0
Total all species (m³)	598 199	657 041	643 312	601 312	628 632	677 158	629 132	734 388	964 719	864 207

»» TABLE 2: AUCKLAND REGION RADIATA PINE AVAILABILITY UNDER SCENARIO 1 (UNCONSTRAINED CUT), FOR ALL OWNERS<sup>1</sup>

YEAR ENDING DECEMBER	RECOVERABLE VOLUME (000 M <sup>3</sup> IB <sup>2</sup> )
2007	909
2008	840
2009	561
2010	625
2011	792
2012	766
2013	1 072
2014	899
2015	971
2016	726
2017	696
2018	634
2019	743
2020	587
2021	520
2022	1 335
2023	1 592
2024	2 576
2025	1 667
2026	1 417
2027	914
2028	910
2029	963
2030	1 857
2031	1 241
2032	964
2033	1 263
2034	1 136
2035	835
2036	915
2037	1 163
2038	977
2039	1 012
2040	622

**Notes**

1 Revised.

2 IB denotes inside bark: the recoverable volume of wood excluding bark.

»» TABLE 3: AUCKLAND REGION RADIATA PINE AVAILABILITY UNDER SCENARIO 2<sup>1</sup>

Assumes that large-scale owners cut at stated intentions, and small-scale owners cut at 30 years.

YEAR ENDING DECEMBER	RECOVERABLE VOLUME		
	LARGE-SCALE OWNERS (000 M <sup>3</sup> IB <sup>2</sup> )	SMALL-SCALE OWNERS (000 M <sup>3</sup> IB)	ALL OWNERS (000 M <sup>3</sup> IB)
2007	657	252	909
2008	643	197	840
2009	601	249	850
2010	629	65	694
2011	677	65	742
2012	629	92	721
2013	734	390	1 124
2014	735	137	872
2015	735	348	1 083
2016	735	245	980
2017	735	50	785
2018	429	76	506
2019	429	67	496
2020	429	179	608
2021	429	121	551
2022	429	1 008	1 437
2023	429	1 246	1 675
2024	429	1 968	2 397
2025	429	1 220	1 649
2026	429	945	1 374
2027	599	465	1 064
2028	624	449	1 073
2029	724	379	1 103
2030	724	434	1 158
2031	724	385	1 109
2032	724	294	1 018
2033	724	167	891
2034	724	183	907
2035	724	70	794
2036	724	90	814
2037	724	4	728
2038	724	241	965
2039	724	202	926
2040	724	272	996

**Notes**

1 Revised.

2 IB denotes inside bark: the recoverable volume of wood excluding bark.

»» TABLE 4: AUCKLAND REGION RADIATA PINE AVAILABILITY UNDER SCENARIO 3<sup>1</sup>

Assumes a non-declining yield with target rotation of 30 years.

YEAR ENDING DECEMBER	RECOVERABLE VOLUME		
	LARGE-SCALE OWNERS (000 M <sup>3</sup> IB <sup>2</sup> )	SMALL-SCALE OWNERS (000 M <sup>3</sup> IB)	ALL OWNERS (000 M <sup>3</sup> IB)
2007	657	252	909
2008	643	197	840
2009	601	231	832
2010	629	203	832
2011	677	155	832
2012	629	203	832
2013	734	98	832
2014	735	97	832
2015	735	97	832
2016	735	97	832
2017	735	97	832
2018	433	398	832
2019	433	398	832
2020	433	481	915
2021	433	573	1 006
2022	433	637	1 071
2023	433	637	1 071
2024	433	637	1 071
2025	433	637	1 071
2026	433	637	1 071
2027	557	514	1 071
2028	573	497	1 071
2029	639	432	1 071
2030	639	432	1 071
2031	639	432	1 071
2032	639	432	1 071
2033	639	432	1 071
2034	639	432	1 071
2035	639	432	1 071
2036	639	432	1 071
2037	639	432	1 071
2038	716	355	1 071
2039	742	329	1 071
2040	742	329	1 071

**Notes**

1 Revised.

2 IB denotes inside bark: the recoverable volume of wood excluding bark

»» TABLE 5: AUCKLAND REGION RADIATA PINE AVAILABILITY UNDER SCENARIO 4, BY LOG GRADE, FOR ALL OWNERS<sup>1</sup>

Scenario 4 assumes a split non-declining yield with target rotation of 30 years.

YEAR ENDING DECEMBER	TOTAL (000 M <sup>3</sup> IB <sup>2</sup> )	RECOVERABLE VOLUME BY LOG GRADE		
		PRUNED LOGS (000 M <sup>3</sup> IB)	UNPRUNED LOGS (000 M <sup>3</sup> IB)	CHIP LOGS (000 M <sup>3</sup> IB)
2007	909	63	645	200
2008	840	75	575	188
2009	825	55	584	186
2010	825	49	590	185
2011	825	75	561	188
2012	825	65	572	187
2013	825	77	560	188
2014	825	65	574	186
2015	825	55	583	187
2016	825	52	586	187
2017	825	59	577	189
2018	825	71	567	187
2019	902	85	624	193
2020	992	72	705	215
2021	1 091	86	778	228
2022	1 200	104	852	246
2023	1 200	124	836	240
2024	1 200	149	818	233
2025	1 200	170	806	225
2026	1 200	145	825	230
2027	1 200	116	848	237
2028	1 200	116	846	239
2029	1 200	107	854	240
2030	1 200	98	863	240
2031	1 200	118	850	233
2032	1 200	128	842	230
2033	1 200	141	834	225
2034	1 200	130	840	230
2035	1 080	104	763	213
2036	972	83	692	197
2037	875	73	628	174
2038	875	58	637	179
2039	875	47	647	181
2040	875	37	655	182

**Notes**

<sup>1</sup> Revised.

<sup>2</sup> IB denotes inside bark: the recoverable volume of wood excluding bark



»» TABLE 6: AUCKLAND REGION RADIATA PINE RECOVERABLE VOLUME AND AVERAGE CLEARFELL AGE FOR EACH TARGET ROTATION AGE UNDER SCENARIO 5, FOR ALL OWNERS<sup>1</sup>

Scenario 5 assumes a split non-declining yield with target rotations of 28, 30 and 32 years.

YEAR ENDING DECEMBER	28-YEAR ROTATION		30-YEAR ROTATION		32-YEAR ROTATION	
	RECOVERABLE VOLUME (000 M <sup>3</sup> IB <sup>2</sup> )	AVERAGE AGE (YEARS)	RECOVERABLE VOLUME (000 M <sup>3</sup> IB)	AVERAGE AGE (YEARS)	RECOVERABLE VOLUME (000 M <sup>3</sup> IB)	AVERAGE AGE (YEARS)
2007	909	34	909	34	909	34
2008	840	31	840	31	840	31
2009	892	31	825	30	749	30
2010	892	30	825	30	749	31
2011	892	30	825	30	749	30
2012	892	29	825	30	749	30
2013	892	30	825	30	749	30
2014	892	30	825	30	749	30
2015	892	30	825	30	749	30
2016	892	28	825	29	749	30
2017	976	29	825	29	749	30
2018	1 074	27	825	31	749	32
2019	1 181	27	902	30	749	32
2020	1 181	27	992	29	749	32
2021	1 181	28	1 091	29	824	32
2022	1 181	28	1 200	29	906	30
2023	1 181	29	1 200	29	997	31
2024	1 181	29	1 200	30	1 097	31
2025	1 181	29	1 200	31	1 206	31
2026	1 181	28	1 200	31	1 245	32
2027	1 181	29	1 200	31	1 245	32
2028	1 181	29	1 200	30	1 245	33
2029	1 181	29	1 200	30	1 245	33
2030	1 181	29	1 200	30	1 245	33
2031	1 181	29	1 200	31	1 245	33
2032	1 181	29	1 200	31	1 245	33
2033	1 063	28	1 200	31	1 245	33
2034	957	28	1 200	31	1 245	33
2035	912	28	1 080	31	1 245	33
2036	912	28	972	30	1 245	34
2037	912	28	875	31	1 120	34
2038	912	28	875	31	1 008	34
2039	912	28	875	31	908	34
2040	912	28	875	31	908	35

**Notes**

1 Revised.

2 IB denotes inside bark: the recoverable volume of wood excluding bark.