

Northland wood availability forecasts for the period 2008–2040

February 2009

To assist with regional planning, the Ministry of Agriculture and Forestry (MAF) has compiled wood availability forecasts for the Northland region, covering the period 2008 to 2040. These forecasts have been made 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 both large and small-scale growers.

The forecasts indicate that the availability of radiata pine from the Northland forest estate will increase over the next 10 to 12 years, despite a drop-off in the large-scale forest owners' harvest volumes after 2015. While the overall forecasts indicate an increasing supply during this period, it is important to recognise that short-term fluctuations are possible, due to changes in market conditions.

Contents

ISBN 978-0-478-33842-3 (Online)

© Crown copyright – Ministry of Agriculture and Forestry 2009

[Download a pdf of the forecast \[KB\]](#)

Printed copies of this report are not available. This report forms a section in the *Northland Forest Industry and Wood Availability Forecasts* (to be published in the future).

Material contained in this report may be reproduced or published without further licence provided it does not claim to be published under government authority, it is not reproduced for profit and the source is acknowledged.

Acknowledgements

The wood availability forecasts in this report were produced by Dr Bruce Manley, School of Forestry, University of Canterbury. Project management, forestry data and peer review were provided by Mike Candy, Paul Lane, Doris Chan, Fiona Thomson, Kathy Liu and Julia Stanley. Dr Jaap Jasperse and Janine Pollock provided editorial and publishing services.

The Ministry of Agriculture and Forestry thanks the forest owners, managers and consultants who provided the forest resource and harvesting intentions data that were essential for producing the wood availability forecasts, and for providing input at a workshop on an earlier version of the forecasts.

Disclaimer

Readers who plan to use these wood availability forecasts for planning or investment decisions are urged to thoroughly review the forecasts, 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.

While every effort has been made to ensure the accuracy of the information contained in this publication, the Ministry of Agriculture and Forestry (MAF) accepts no liability for any errors or omissions. The information does not necessarily represent the views of individual members

of the National Exotic Forest Description (NEFD) Steering Committee nor the Ministry of Agriculture and Forestry.

Overview

Five scenarios have been modelled to indicate the potential range of future wood availability from the planted production forests in the Northland region for the period 2008 to 2040.

The Northland wood supply region extends from Rodney District in the south to the Far North District at the northern tip of the North Island.

The wood availability forecasts are based on each region's forest resource and the forecasting assumptions described later in this report. The forecasts have been developed incorporating the harvesting intentions of the region's large-scale forest owners (those with 1000 hectares of forest or more):

- Taumata Plantations;
- Juken New Zealand;
- Mangakahia Joint Venture (Taumata & GFP);
- Matariki;
- Crown Forestry;
- Far North Afforestation;
- NZ Super Fund;
- Global Forest Partners (GFP);
- Taitokerau Forests;
- Holyoake Industries;
- Parengarenga Inc;
- White Cliffs Forestry.

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 indicate there are many different ways for the forest estate in the Northland to be harvested. Forests are managed to maximise the benefits to the enterprise that owns them. Each enterprise has its own harvest strategy based on the owners' objectives, market conditions and the forest estate that it owns or manages. Any change in harvesting strategies by forest owners affect 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' forests, 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 those forecast from the small-scale owner's estate. Not only are harvest intentions less clear for small-scale owners, the resource description is likely to be less accurate also.

Introduction

Scenarios for radiata pine

Five wood availability scenarios have been modelled for radiata pine in this analysis. The scenarios show the 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. Feedback was received from major forest owners and consultants in the Northland wood supply region to ensure the forecasts were reasonable.

Listed years are assumed to be to 31 December. For example, 2007 indicates the 12 months to 31 December 2007.

Scenario 1: Harvest all forests at age 30

All owners are assumed to harvest their forests at age 30. This scenario shows the potential future harvest in any given year based on the area of radiata forest that reaches 30 years of age in that year.

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 2015. After 2016, the large-scale owners' wood availability is modelled not to decrease. 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 (NDY) – target rotation 30 years

This is the same as Scenario 3 except that the total wood availability of radiata pine from the region is allowed to step down from 2034 (at the end of the current rotation). Thereafter, a reduction is permitted.

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 latter.

In scenarios 1 and 2 (Figure 1A and 1B, respectively), forests owned by small-scale owners are assumed to be harvested at 30 years. In the case of scenario 1 all forests (large and small-scale) are harvested at 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 Northland region. For practical reasons already described, it is unlikely that the 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 (Figure 1C and 1D, respectively) are based on yield regulation. Under these scenarios, future harvesting is generally constrained to be non-declining, that is, each year the volume must either be the same or higher than in 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 Northland (as in many other regions in New Zealand) is the large area of forests established during the 1990s. Scenarios 4 and 5 allow for the harvesting of these forests by applying a non-declining yield constraint for the period 2007 to 2034. Then once the “bulge” of forests planted during the 1990s has been harvested, the model allows the volume to decline again.

The main limitations of scenarios 3 to 5 is that log prices and other market factors are a significant determinant of harvesting in any given year. When log prices increase harvesting will generally increase. When log prices fall the level of harvesting will generally fall. It is beyond the scope of this analysis to predict future timber prices.

Figure 1 shows the sequence of models (scenarios) that are presented throughout the remainder of this report.

Figure 1: The sequence of wood availability scenarios presented in this report for radiata pine (scenario 5 is the same as scenario 4 except it shows the availability profiles of varying harvest ages).

Figure 1A – Scenario 1 example: harvest all trees at age 30

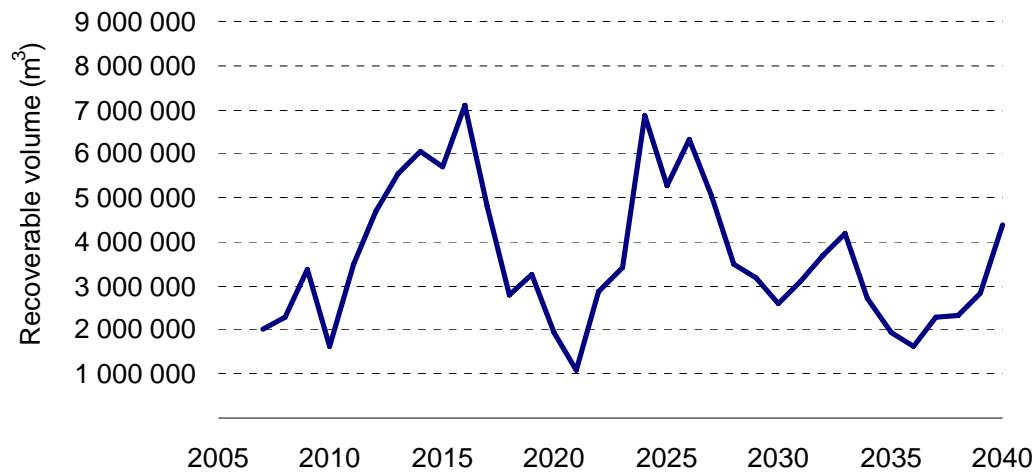


Figure 1B – Scenario 2 example: large-scale owners harvest at stated intentions, small-scale owners harvest trees at age 30

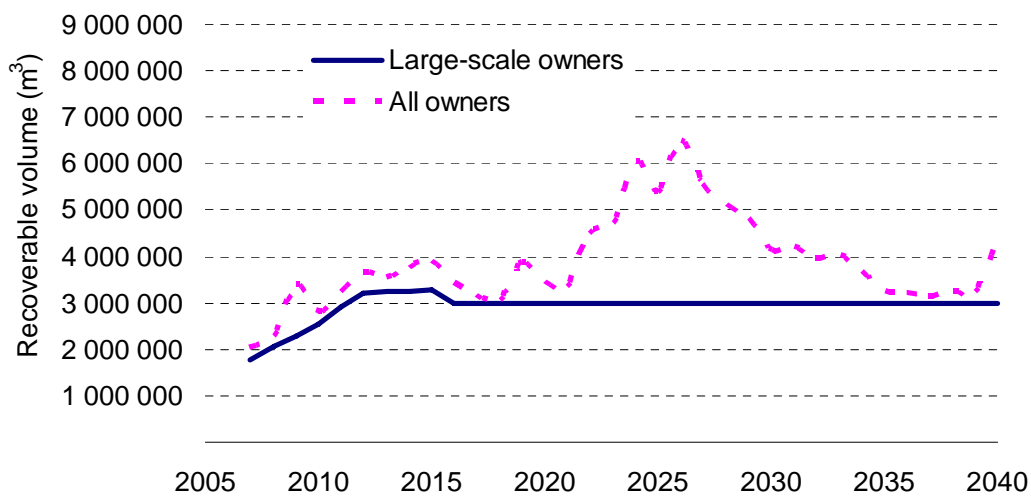


Figure 1C – Scenario 3 example: non-declining yield with target rotation 30 years

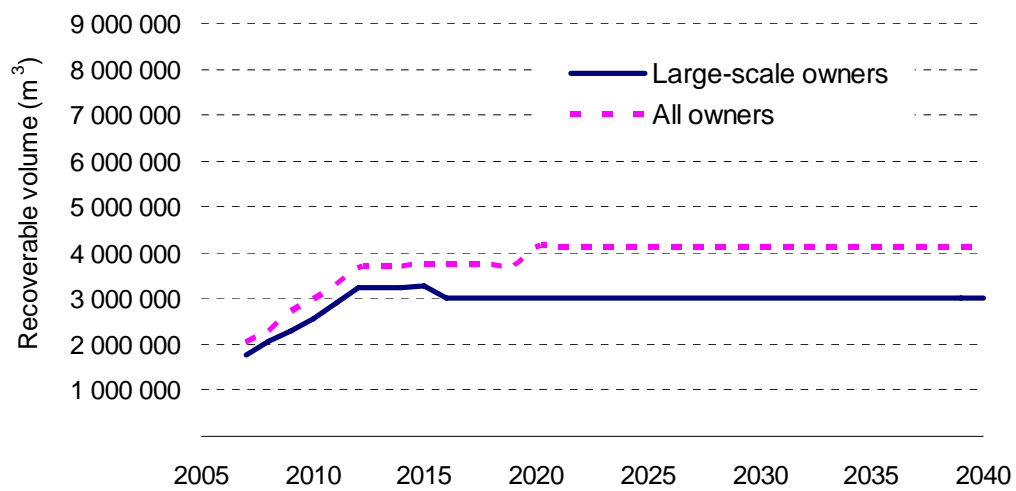
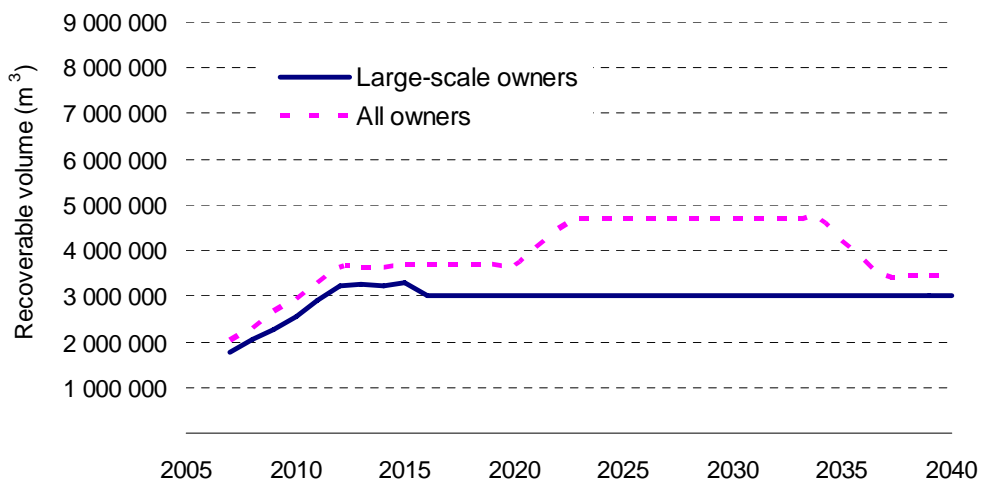


Figure 1D – Scenario 4 example: split non-declining yield with target rotation 30 years



Data

Method used to obtain forest areas

The areas were obtained from the *NEFD as at 1 April 2007* (Ministry of Agriculture and Forestry, 2008). 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.

Method to develop yield tables

In 2008 new yield tables for Northland 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: that is 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 croptypes (planted in 1990 and later) were also adjusted in consultation with large-scale owners.
- 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. These harvest intention values were then included at the beginning of the forecasts to provide the most realistic wood availability forecasts over this period.

Wood availability forecasts for the Northland region

Assumptions

The wood availability forecasts for the Northland 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 during the period 2007 to 2026:
 - Only 25 percent of area harvested in the large-scale owners' estate from pruned stands is replanted into the young pruned croptype, with the other 75 percent replanted into the young unpruned croptype.
 - Only 75 percent of area harvested in the small-scale owners' estate from pruned stands is replanted into the young pruned croptype, with the other 25 percent replanted into the young unpruned croptype.

These changes reflect the intention of owners, particularly large-scale, to prune less in the future.

Table 1: Volumes harvested in 2007 and 2008 for radiata pine in the Northland wood supply region

Harvest year	Large-scale owners (m ³)	Small-scale owners (m ³)	Total (m ³)
2007	1 767 000	256 000	2 023 000
2008	2 053 000	240 000	2 293 000

- Overmature stands – Forest aged 36 years or older (785 hectares in total) and half the area in the small-scale estate between ages 31 and 35 (703 hectares) was removed from the model, on the assumption that this area will not be harvested (or has already been harvested).

Scenario 1 – Harvest all forest at age 30

The scenario with all forest harvested at age 30 indicates the “pure” (unconstrained) availability of wood from Northland. It is essentially a translation of the age-class distribution into volume. Figure 2 shows the age-class distribution of radiata pine in the Northland, while Figure 3 shows the wood availability. The low point at 2021 (in Figure 3) occurs because of the small area (1711 hectares) at age 16 (planted in 1991) in Figure 2. The high point at 2016 in Figure 3 occurs because of the large area (12 075 hectares) at age 21 (planted in 1986) in Figure 2.

Figure 2: Age-class distribution of Northland radiata pine – combined estate as at 1 April 2007

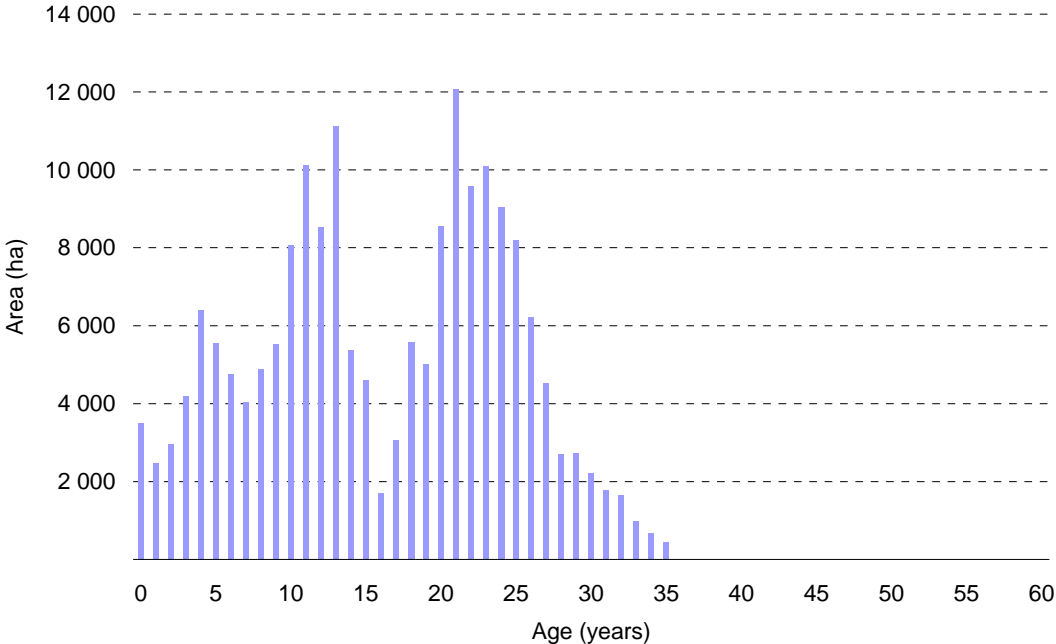
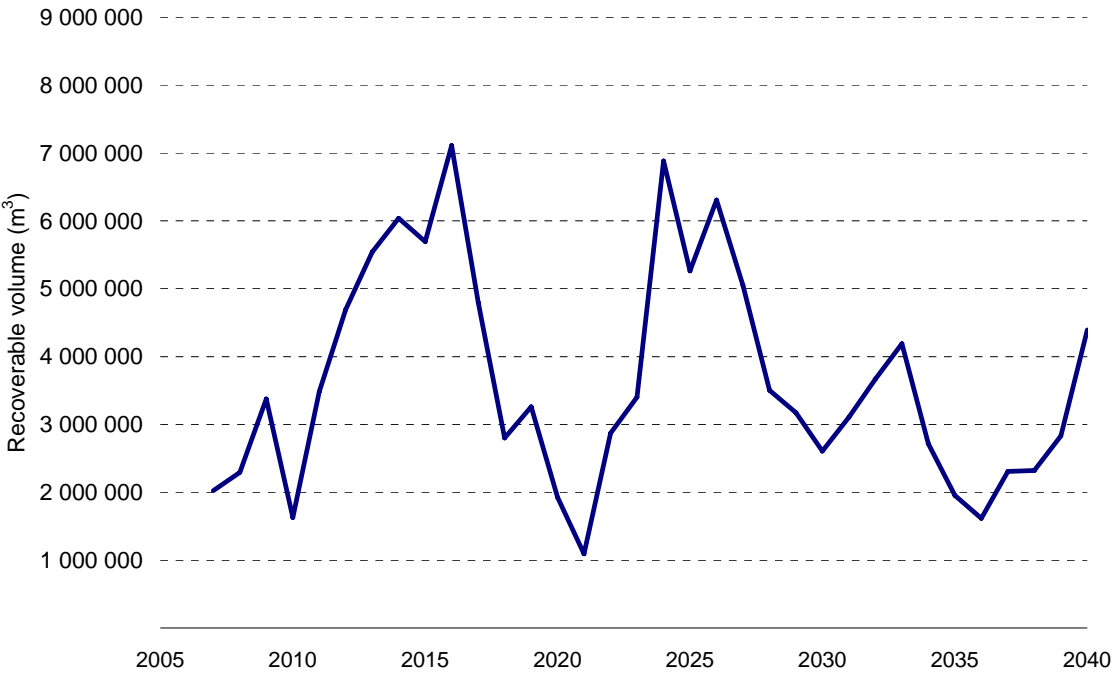


Figure 3: Radiata pine availability in the Northland region under scenario 1



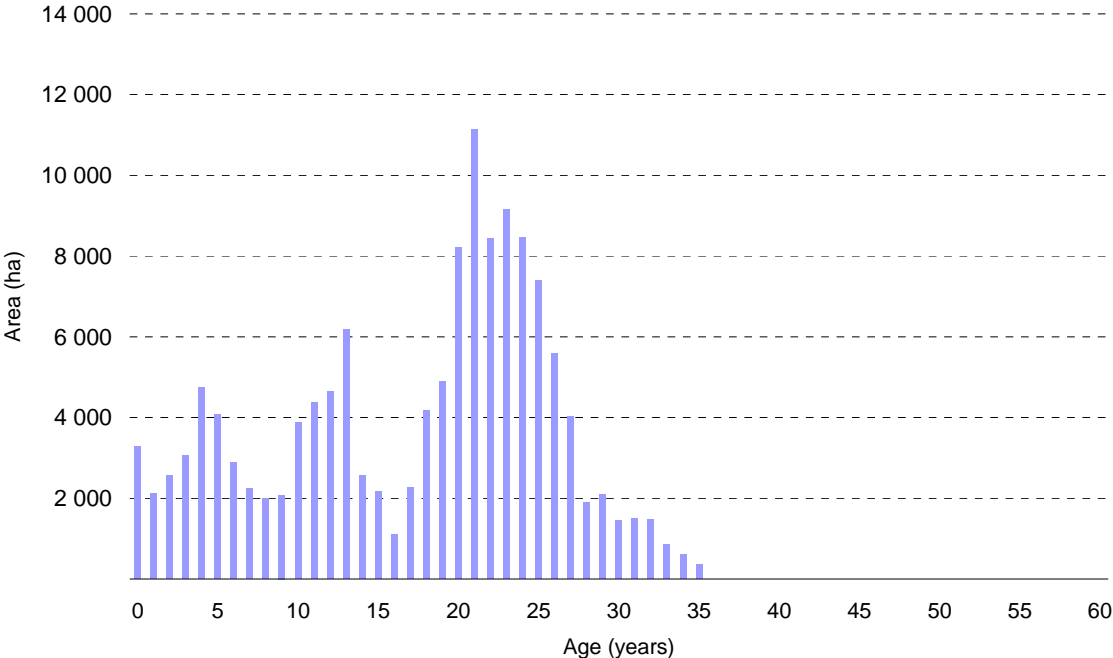
Scenario 2 – Large-scale owners harvest at intentions, small-scale owners harvest at age 30

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

Large-scale owners

The total area included in the model for large-scale owners is 138 000 hectares. The age-class distribution of the large-scale owners’ estate (Figure 4) is far from normal (uniform). There are relatively large areas between ages 20 and 25 (planted between 1982 and 1987). 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).

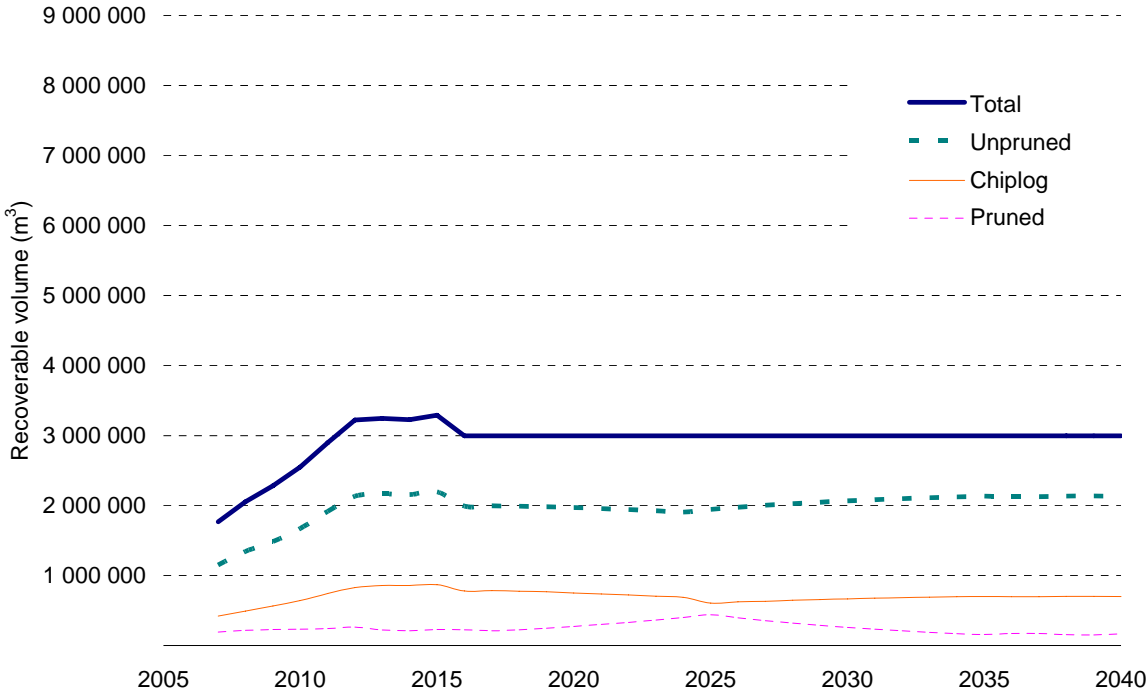
Figure 4: Age-class distribution of the radiata pine estate in the Northland region – large-scale owners as at 1 April 2007



For this scenario the availability of wood from large-scale owners is based on stated harvest intentions for 2007 to 2015. Log grade minimum small end diameters are: Pruned 35 cm; Unpruned 20 cm; Pulplog 10 cm.

A reduction is permitted between 2015 and 2016. Thereafter the availability is constrained to be non-declining with a target rotation age of 30 years. The wood availability of large-scale owners (Figure 5) is forecast to increase rapidly and exceed 3.2 million cubic metres per year from 2012 before reducing to 3.0 million cubic metres per year from 2016. The reduction between 2015 and 2016 reflects the age-class distribution; that is, the spike in 1982 to 1987 planting with less area planted in subsequent years. This reduction is consistent with supplementary information provided by large-scale owners on harvest intentions from 2016 to 2025.

Figure 5: Radiata pine availability in the Northland region under scenario 2 – large-scale owners

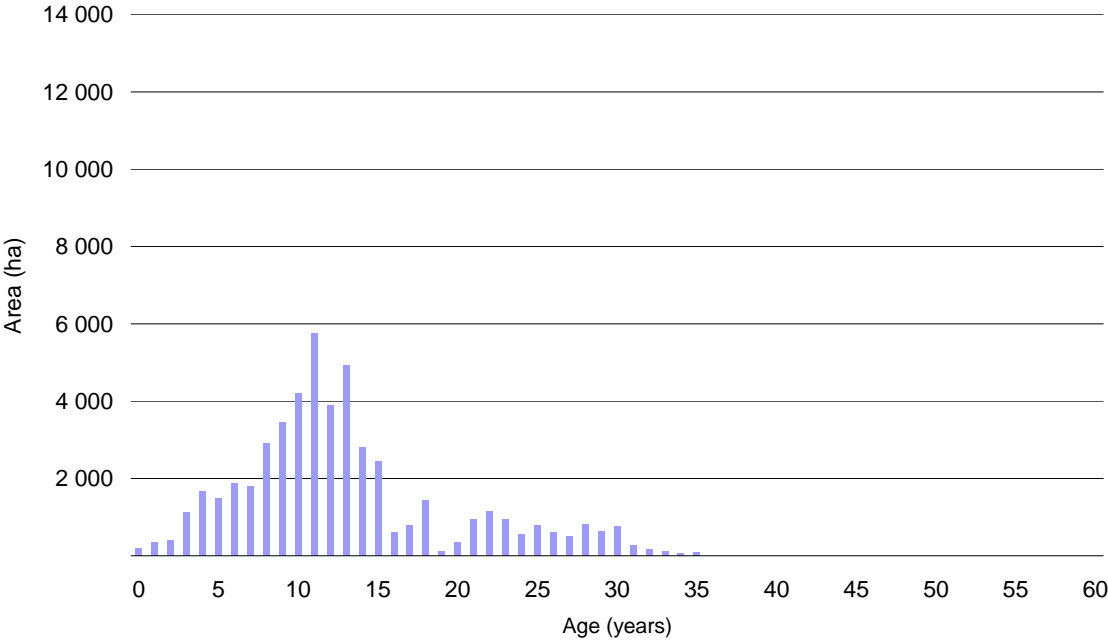


Small-scale owners' estate

The age-class distribution of the small-scale owners' estate (Figure 6) is irregular with over 2000 hectares in each of ages 8 to 15 years (planted in 1992 to 1999) and less area in all other age-classes. The key issue is how to forecast the wood availability from this estate. In particular whether the large area in ages 8 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 6: Age-class distribution of the radiata pine estate in the Northland region - small-scale owners only

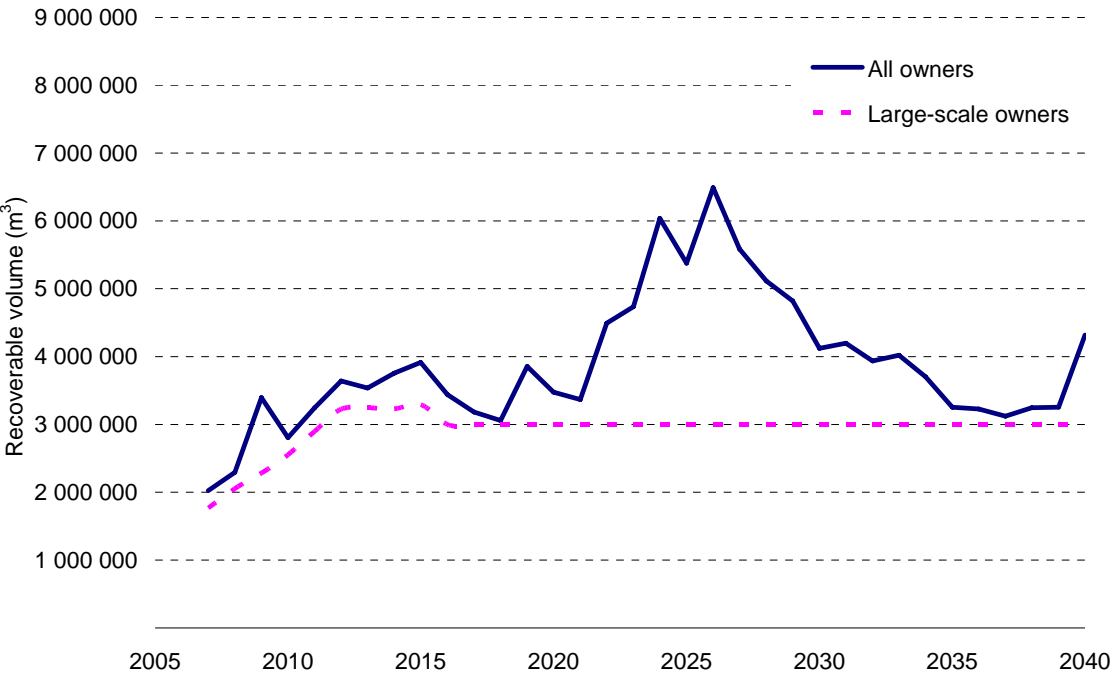


Combined estate

The wood availability from all owners is presented in Figure 7 with that of large-scale owners the same as in Figure 5. In scenario 2, forest in the 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 7) occurs when the large areas from the small-scale owners’ estate in young age-classes (planted from 1992) are harvested. For example, the increase in 2022 results from the 2436 hectares planted by small-scale owners in 1992 (age 15 in Figure 5) being harvested at age 30 years.

Figure 7: Radiata pine availability in the Northland region under scenario 2 – combined estate



Fluctuations in harvest volumes of the magnitude shown in Figure 6 would be impractical because of marketing and logistics realities (immediate availability of logging crews, transport capacity, and wood processing capacity).

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. Figure 8 indicates that when the small-scale owners’ estate is harvested to complement the large-scale owners’ estate, the total volume (radiata pine) has the potential to increase substantially. The potentially available volume increases to over 4 million cubic metres per year from 2020. An extra constraint was added so the total volume was not allowed to increase by more than 10 percent annually from 2015 on.

This scenario is similar to the base case scenario adopted in the *National Exotic Forest Description, National and Regional Wood Supply Forecasts 2000* (Ministry of Agriculture and Forestry, 2000). The increase in average rotation age for the large-scale owners’ estate to 35 years (Figure 9) is a consequence of the non-normal age-class distribution (Figure 4). However, the scenario results in the small-scale owners’ estate being harvested at rotation ages that differ markedly from 30 years (Figure 9).

Figure 8: Radiata pine availability in the Northland region under scenario 3

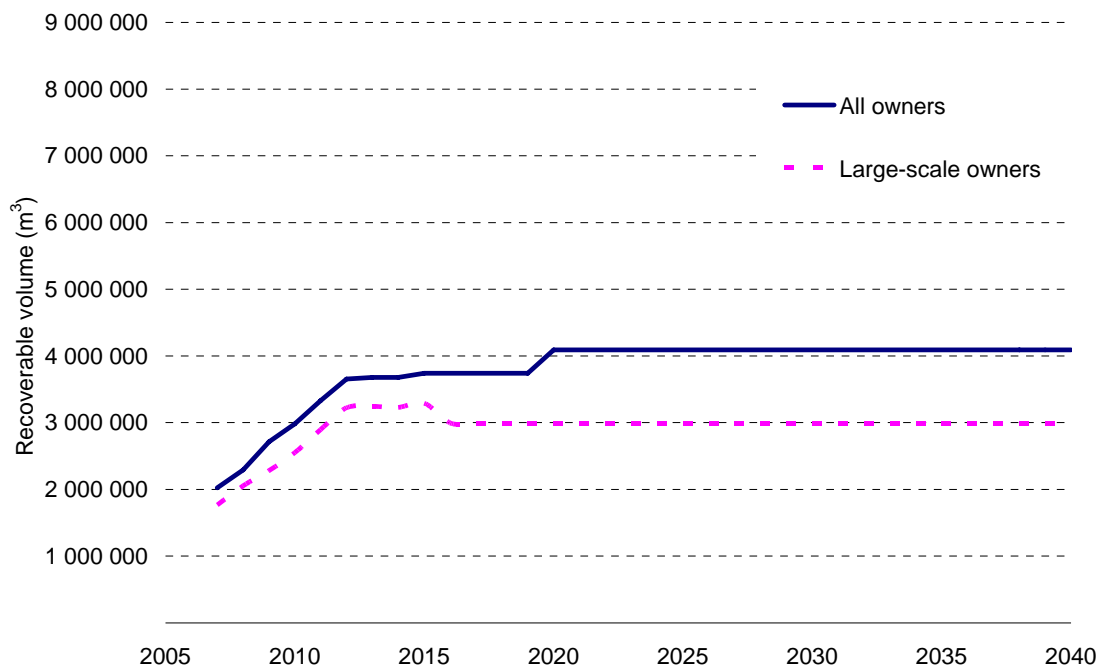
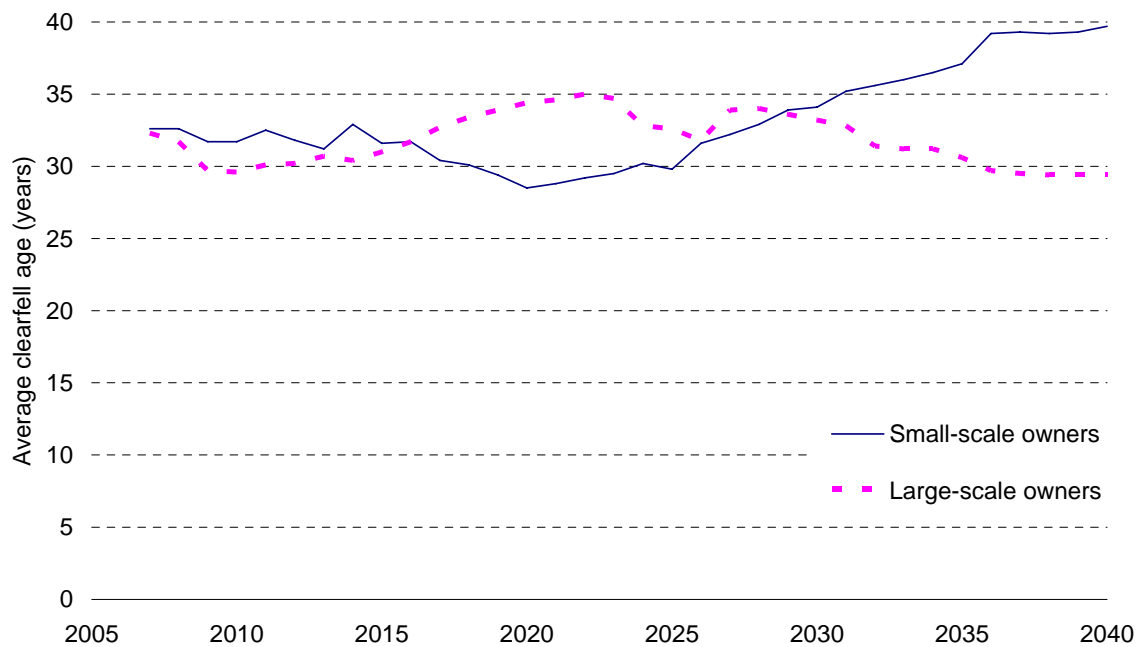


Figure 9: Average radiata pine clearfell age by ownership category under scenario 3



Scenario 4 – Split Non-declining yield (target rotation 30 years)

The fourth scenario 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 2019 (Figure 10). Wood availability increases to 4.7 million cubic metres per year from 2023 before reducing to 3.4 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 constrained to be non-declining from 2007 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). As a consequence the average clearfell age for small-scale owners stays closer to the target of 30 years (Figure 11) than was the case in scenario 3.

Figure 10: Radiata pine availability in the Northland region under scenario 4

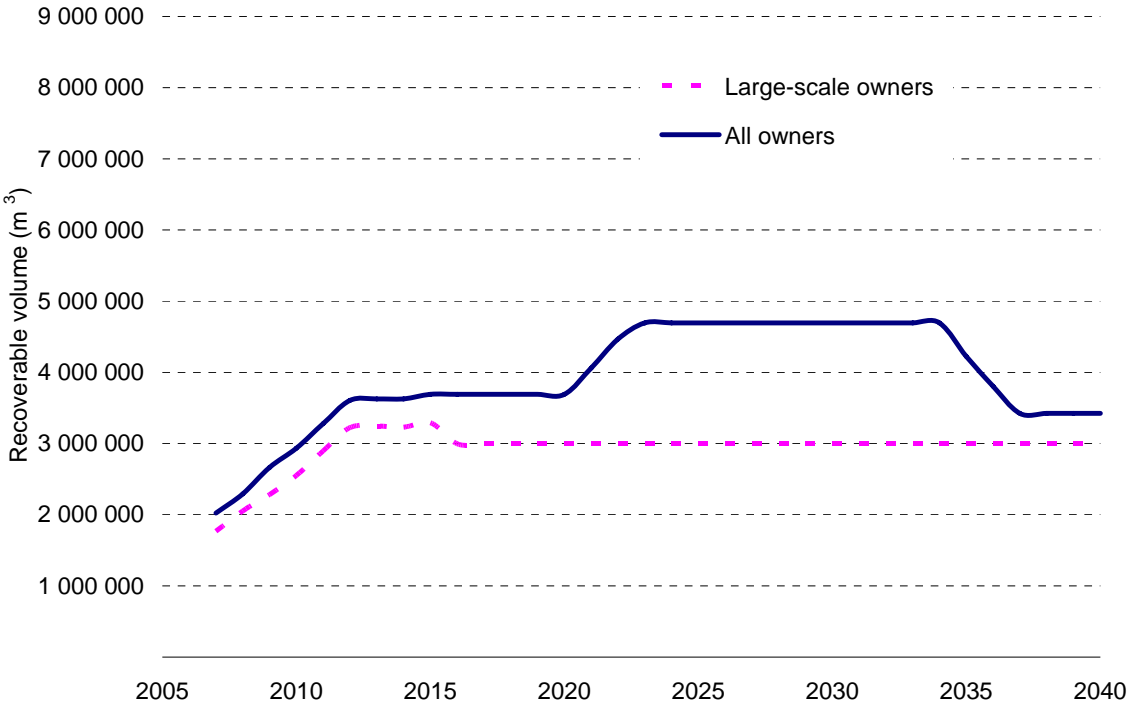
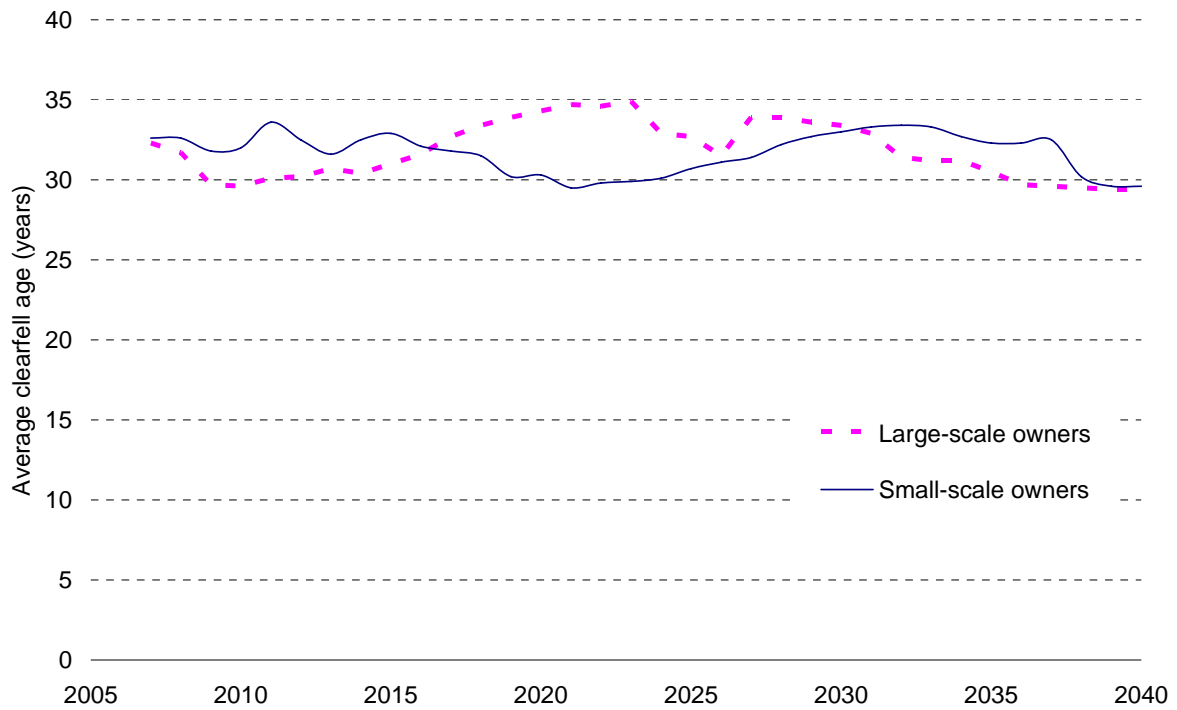
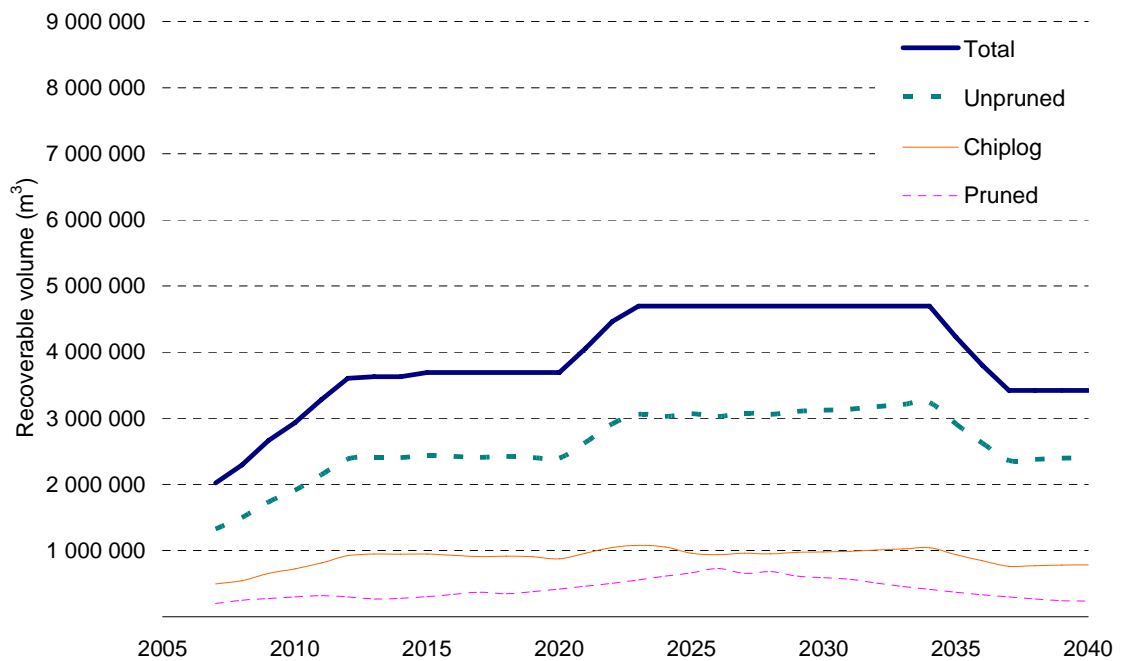


Figure 11: Average radiata pine clearfell age by ownership category under scenario 4



The total volume forecast for scenario 4 is broken down by log grade in Figure 12.

Figure 12: Radiata pine availability in the Northland region under scenario 4, by log product



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 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 14). For the 32-year variation, the harvest from the large-scale owners' estate in 2009 to 2015 was reduced to 90 percent of harvest intentions.

Figure 13 shows the potential for a significant increase in the Northland harvest volumes. There is a range of possibilities for timing the increase and for the level of the potential harvest volume.

Figure 13: Radiata pine availability in the Northland region under scenario 5

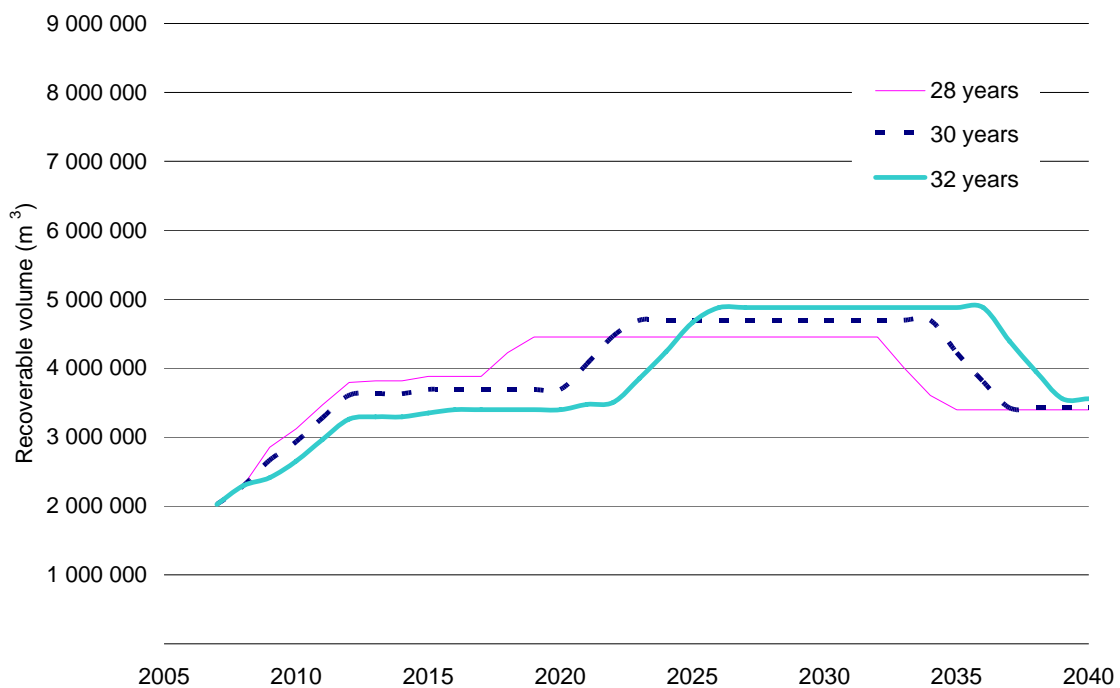
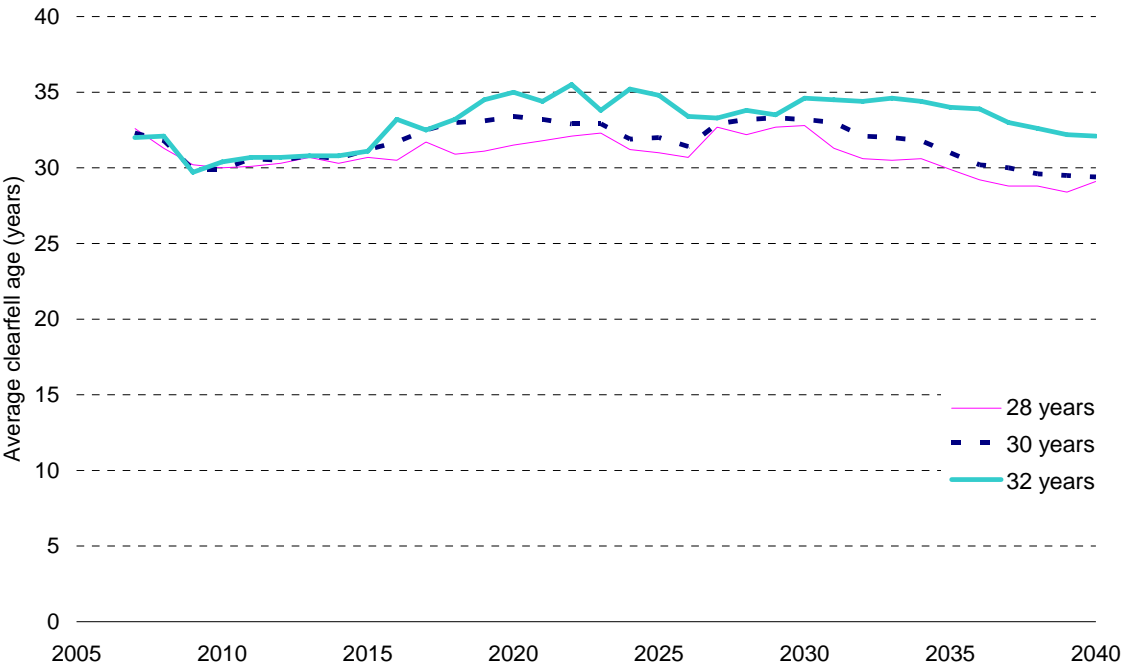


Figure 14: Average radiata pine clearfell age for each target rotation age under scenario 5



Concluding comments

The forecasts indicate that the availability of radiata pine from the Northland forest estate will increase over the first 10 to 12 years, despite a drop-off in the large-scale forest owners harvest intentions between 2015 and 2016. Between 2008 and 2012 there is a steady increase in the Northland regional harvest from 2.3 million cubic metres to around 3.6 million cubic metres per year. After 2012, wood availability remains fairly constant until about 2020. After 2020 increases in wood availability are expected to result in increased log supply, with the potential for significant volume increases to around 4.7 million cubic metres per year after 2023.

Most of the potential increase in wood availability from 2008 to 2012 will come from the region's large-scale forest growers who established forests during the 1980s. From 2020 most of the increase will come from the region's small-scale forest growers who established forests during the 1990s. The actual timing of the harvest from these forests will depend on market conditions and the decisions of a large number of small-scale owners.

Market conditions and logistical constraints (availability of logging crews, transport capacity, and wood processing capacity) will limit how quickly the additional wood availability from the region's forests can be harvested.

Some owners will be motivated to harvest early while others may decide to grow their forests on longer. It is therefore likely that the harvesting of the post-1989 forest plantings will be spread out over a longer period than might otherwise be the case. Greater harvesting during this period could have the effect of dampening log prices. On the other hand, if domestic log prices increased during this period of increased wood availability, then harvesting rates would rise more quickly to meet local demand.

Depending on the rate of harvesting from the region's post-1989 forests, wood availability is expected to decrease after 2034, leading to a drop in log volumes once the post-1989 forests have been harvested.

The Ministry of Agriculture and Forestry is currently finalising a report on the Northland forestry industry, in association with the major growers and processors in the region. This report will contain these wood availability forecasts along with descriptions of the region's forests, wood processing industries and infrastructure. The report will also describe the opportunities and constraints facing the Northland forest industry.

Appendix

Table 1: Northland harvest intentions survey results, large-scale owners

Table 2: Northland radiata pine availability under scenario 1 (unconstrained cut), for all owners

Table 3: Northland radiata pine availability under scenario 2

Scenario 2 assumes that large-scale owners cut at stated intentions, and small-scale owners cut at 30 years.

Table 4: Northland radiata pine availability under scenario 3

Scenario 3 assumes a non-declining yield with target rotation of 30 years.

Table 5: Northland radiata pine availability under scenario 4, by log grade, for all owners

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

Table 6: Northland radiata pine recoverable volume and average clearfell age for each target rotation age under scenario 5, for all owners

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

Northland wood availability forecast for the period 2008–2040

Table 1: Northland harvest intentions survey results, large-scale owners

Log type	Actual	Actual	Harvest intentions for subsequent 10 years									
	harvest 2004	harvest 2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Radiata pine (Pruned Stands)												
Pruned (m ³)	21000	33 000	74 169	192 922	216 744	229 850	233 673	241 522	264 243	222 080	210 800	227 912
Unpruned (m ³)	120000	85 250	326 956	670 210	623 738	734 624	657 459	682 358	744 659	521 407	603 418	715 574
Pulp (m ³)	34200	20 640	80 319	172 003	232 845	225 214	205 700	220 495	233 934	188 976	175 601	205 652
Total (m³)	175200	138 890	481 444	1 035 135	1 073 327	1 189 689	1 096 833	1 144 375	1 242 836	932 463	989 819	1 149 137
Area harvested, pruned stands	400	344	971	2 827	2 608	2 661	2 363	2 585	2 576	1 922	1 670	1 984
Radiata pine (Unpruned Stands)												
Unpruned (m ³)	94000	156 480	299 328	600 652	676 359	714 653	961 889	1 206 754	1 344 357	1 655 574	1 602 013	1 516 685
Pulp (m ³)	22800	27 630	67 970	130 852	302 946	376 256	490 919	546 540	635 942	656 774	636 557	624 753
Total (m³)	116800	184 110	367 298	731 504	979 305	1 090 910	1 452 808	1 753 294	1 980 299	2 312 348	2 238 570	2 141 438
Radiata pine (Production Thinned)												
Thin from Pruned Stands (m ³)	52000	52 000	45 423	25 000	0	0	0	0	0	0	0	0
Thin from Unpruned Stands (m ³)	0	0	13 904	5 318	15 000	7 500	0	0	0	0	0	0
Total (m³)	52000	52 000	59 327	30 318	15 000	7 500	0	0	0	0	0	0
Total all species (m³)¹	292000	323 000	848 742	1 766 639	2 052 632	2 280 598	2 549 641	2 897 669	3 223 135	3 244 811	3 228 389	3 290 575

Notes

1 Excludes production thinned volume

Northland wood availability forecast for the period 2008–2040

Table 2: Northland radiata pine availability under scenario 1 (unconstrained cut), for all owners

Year ending	Recoverable volume
December	(000 m³ i.b.)
2007	2 023
2008	2 293
2009	3 374
2010	1 629
2011	3 480
2012	4 691
2013	5 539
2014	6 038
2015	5 693
2016	7 109
2017	4 799
2018	2 798
2019	3 260
2020	1 924
2021	1 092
2022	2 872
2023	3 403
2024	6 884
2025	5 264
2026	6 306
2027	5 048
2028	3 505
2029	3 173
2030	2 607
2031	3 107
2032	3 667
2033	4 189
2034	2 715
2035	1 954
2036	1 616
2037	2 307
2038	2 321
2039	2 832
2040	4 393

Note

i.b. denotes inside bark: the recoverable volume

Northland wood availability forecast for the period 2008–2040

Table 3: Northland radiata pine availability under scenario 2

Scenario 2 assumes that large-scale owners cut at stated intentions, and small-scale owners cut at 30 years.

Year ending	Recoverable volume		
	Large-scale owners	Small-scale owners	All owners
December	(000 m ³ i.b.)	(000 m ³ i.b.)	(000 m ³ i.b.)
2007	1 767	256	2 023
2008	2 053	240	2 293
2009	2 281	1 116	3 397
2010	2 550	253	2 803
2011	2 898	346	3 244
2012	3 223	418	3 641
2013	3 245	291	3 536
2014	3 228	529	3 757
2015	3 291	622	3 913
2016	2 996	444	3 440
2017	2 996	187	3 183
2018	2 996	63	3 058
2019	2 996	861	3 857
2020	2 996	479	3 475
2021	2 996	369	3 365
2022	2 996	1 495	4 491
2023	2 996	1 741	4 737
2024	2 996	3 043	6 039
2025	2 996	2 381	5 377
2026	2 996	3 496	6 492
2027	2 996	2 588	5 584
2028	2 996	2 120	5 116
2029	2 996	1 826	4 822
2030	2 996	1 125	4 121
2031	2 996	1 200	4 196
2032	2 996	938	3 934
2033	2 996	1 023	4 019
2034	2 996	707	3 703
2035	2 996	258	3 254
2036	2 996	230	3 226
2037	2 996	125	3 121
2038	2 996	252	3 248
2039	2 996	256	3 252
2040	2 996	1 319	4 315

Note

i.b. denotes inside bark: the recoverable volume of wood excluding bark.

Northland wood availability forecast for the period 2008–2040

Table 4: Northland radiata pine availability under scenario 3

Scenario 3 assumes a non-declining yield with target rotation of 30 years.

Year ending	Recoverable volume		
	Large-scale owners	Small-scale owners	All owners
December	(000 m ³ i.b.)	(000 m ³ i.b.)	(000 m ³ i.b.)
2007	1 767	256	2 023
2008	2 053	240	2 293
2009	2 281	433	2 714
2010	2 550	433	2 983
2011	2 898	433	3 331
2012	3 223	433	3 656
2013	3 245	433	3 678
2014	3 228	450	3 678
2015	3 291	450	3 741
2016	2 996	746	3 741
2017	2 996	746	3 741
2018	2 996	746	3 741
2019	2 996	746	3 741
2020	2 996	1 094	4 090
2021	2 996	1 094	4 090
2022	2 996	1 094	4 090
2023	2 996	1 094	4 090
2024	2 996	1 094	4 090
2025	2 996	1 094	4 090
2026	2 996	1 094	4 090
2027	2 996	1 094	4 090
2028	2 996	1 094	4 090
2029	2 996	1 094	4 090
2030	2 996	1 094	4 090
2031	2 996	1 094	4 090
2032	2 996	1 094	4 090
2033	2 996	1 094	4 090
2034	2 996	1 094	4 090
2035	2 996	1 094	4 090
2036	2 996	1 094	4 090
2037	2 996	1 094	4 090
2038	2 996	1 094	4 090
2039	2 996	1 094	4 090
2040	2 996	1 094	4 090

Note

i.b. denotes inside bark: the recoverable volume of wood excluding bark.

Northland wood availability forecast for the period 2008–2040

Table 5: Northland radiata pine availability under scenario 4, by log grade, for all owners

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

Year ending	Recoverable volume by log type			
	Total (000 m ³ i.b.)	Pruned logs (000 m ³ i.b.)	Unpruned (000 m ³ i.b.)	Chip logs (000 m ³ i.b.)
2007	2 023	199	1 327	496
2008	2 293	249	1 497	545
2009	2 664	274	1 735	655
2010	2 933	298	1 911	723
2011	3 281	320	2 147	813
2012	3 606	298	2 384	923
2013	3 628	268	2 412	947
2014	3 628	278	2 406	943
2015	3 691	306	2 438	946
2016	3 691	337	2 425	929
2017	3 691	370	2 408	909
2018	3 691	346	2 423	919
2019	3 691	381	2 406	906
2020	3 691	419	2 397	875
2021	4 060	461	2 639	961
2022	4 466	507	2 915	1 045
2023	4 695	556	3 061	1 079
2024	4 695	612	3 028	1 056
2025	4 695	662	3 071	961
2026	4 695	728	3 027	938
2027	4 695	656	3 078	959
2028	4 695	682	3 062	951
2029	4 695	614	3 106	973
2030	4 695	589	3 123	980
2031	4 695	564	3 139	989
2032	4 695	508	3 176	1 008
2033	4 695	457	3 209	1 026
2034	4 695	411	3 238	1 042
2035	4 225	370	2 915	938
2036	3 803	333	2 624	845
2037	3 422	300	2 360	761
2038	3 422	270	2 378	772
2039	3 422	243	2 396	781
2040	3 422	235	2 401	784

Note

i.b. denotes inside bark: the recoverable volume of wood excluding bark.

Northland wood availability forecast for the period 2008–2040

Table 6: Northland radiata pine recoverable volume and average clearfell age for each target rotation age under scenario 5, for all owners

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

Year ending	28-year rotation		30-year rotation		32-year rotation	
	Recoverable volume	Average age	Recoverable volume	Average age	Recoverable volume	Average age
December	(000 m ³ i.b.)	(years)	(000 m ³ i.b.)	(years)	(000 m ³ i.b.)	(years)
2007	2 023	33	2 023	32	2 023	32
2008	2 293	31	2 293	32	2 293	32
2009	2 851	30	2 664	30	2 410	30
2010	3 120	30	2 933	30	2 652	30
2011	3 468	30	3 281	31	2 965	31
2012	3 793	30	3 606	31	3 258	31
2013	3 815	31	3 628	31	3 292	31
2014	3 815	30	3 628	31	3 292	31
2015	3 878	31	3 691	31	3 348	31
2016	3 878	31	3 691	32	3 397	33
2017	3 878	32	3 691	33	3 397	33
2018	4 224	31	3 691	33	3 397	33
2019	4 449	31	3 691	33	3 397	35
2020	4 449	32	3 691	33	3 397	35
2021	4 449	32	4 060	33	3 472	34
2022	4 449	32	4 466	33	3 502	36
2023	4 449	32	4 695	33	3 852	34
2024	4 449	31	4 695	32	4 237	35
2025	4 449	31	4 695	32	4 661	35
2026	4 449	31	4 695	31	4 877	33
2027	4 449	33	4 695	33	4 877	33
2028	4 449	32	4 695	33	4 877	34
2029	4 449	33	4 695	33	4 877	34
2030	4 449	33	4 695	33	4 877	35
2031	4 449	31	4 695	33	4 877	35
2032	4 449	31	4 695	32	4 877	34
2033	4 004	31	4 695	32	4 877	35
2034	3 604	31	4 695	32	4 877	34
2035	3 394	30	4 225	31	4 877	34
2036	3 394	29	3 803	30	4 877	34
2037	3 394	29	3 422	30	4 389	33
2038	3 394	29	3 422	30	3 950	33
2039	3 394	28	3 422	30	3 555	32
2040	3 394	29	3 422	29	3 555	32

Note

i.b. denotes inside bark, ie, the recoverable volume of wood excluding bark.