Submission to Waitomo District Council on the Proposed Changes to the Roading Contributions

Greenplan Forestry Ltd.

Introduction

Greenplan Forestry Ltd. (Greenplan) is a company that manages on behalf of some 5,340 investors (rate payers), forest plantations in various regions of New Zealand, including the Waitomo District. Greenplan represents the interests of its investors and other stakeholders who are involved in the forestry sector. Greenplan is committed to sustainable forest management and environmental stewardship, as well as contributing to the economic and social development of the communities where it operates.

Greenplan for itself and on behalf of its investors is writing this submission to express strong opposition to the proposed changes to the roading contributions made by rate payers, in particular exotic forestry owners who have been targeted to contribute an unfair share of the roading costs through a targeted differential rate increase. This rate increase, of some 1,200%, is inequitable and ill-informed, and will have negative impacts on the forestry industry and the Waitomo District as a whole. Greenplan urges the Waitomo District Council (the Council) to reconsider its proposal and engage in meaningful consultation with the affected parties to find a more reasonable and balanced solution.

Background

The Council has proposed to change the way it funds the maintenance and improvement of its roading network, which is currently funded by a District Roading Rate based on land value. The Council's preferred option is to introduce new targeted roading rate based on land use, (Forestry Exotic and Mixed Use). The Council claims that this option would better reflect the different levels of demand and impact that each land use category has on the roading network, and that it would shift the burden of extra roading costs from the general rate payers to select few exotic forestry owners, who are allegedly the main users and beneficiaries of the roads.

The Council's proposal would result in a significant increase in the roading contributions made by exotic forestry owners. According to the Council's rates calculator, the proposed targeted differential roading rate for exotic forestry would be an

increase of some 1,200%. This means that the exotic forestry owners would pay up to 12 times more than other District Rate Payers.

- The Greenplan estate located within the Waitomo District comprises of some 8,796 hectares of land. Of these 4,380 hectares is planted forests.
- The forests were planted over the years from 1994 to 2004.
- As of writing approx. 60 hectares has been harvested from the Mapara Valley.
- Harvesting within the Waitomo District will continue for at least 20 years.
- As of writing 11,000 tonnes of wood on average has been extracted monthly from the Mapara Valley. This will ramp up to approx. 60,000 tonnes per month. (this equates to approx. 85 hectares per month across the Greenplan Estate)
- Approx $1million per month is been paid to local contractors. This will ramp up to $70 million per year ($5.8 million per month).
- The Mapara Valley has some 920 hectares of forestry to be extracted over the next 7 years.
- A total of 47.7 Kilometres of gravel roads will be used and some 70 kilometres of District Roads that are sealed.
- The pruned logs are supplied to the two local sawmills who have some 70 staff relying on the viability of these sawmills.

Issues and Concerns

Greenplan has several issues and concerns with the Council's proposal, which are summarized below:

- The proposal is based on inaccurate and incomplete data and assumptions about the roading network, the land use categories, and the impacts and benefits of exotic forestry.
- The proposal is disproportionate and discriminatory, as it targets a specific group of rate payers and imposes an excessive and unreasonable increase in their roading contributions, without providing any justification or evidence for the differential treatment.
- The proposal is inconsistent and contradictory, as it contradicts the Council's own policies and objectives, as well as the national and regional strategies and regulations that govern the forestry sector and the roading network.
- The proposal is detrimental and counterproductive, as it will have negative environmental, financial, and social impacts on the forestry industry and the Waitomo District and will undermine the Council's vision and goals of creating a prosperous and sustainable community.

Recommendations

Greenplan recommends that the Council withdraws its proposal and adopts the following actions:

- Conduct a comprehensive and independent review and analysis of the roading network, the land use categories, and the impacts and benefits of exotic forestry, using reliable and up-to-date data and methods.
- Engage in genuine and constructive consultation and communication with the affected parties, including the exotic forestry owners, the forestry industry representatives, the other land use categories, and the general public, to seek their feedback and input on the roading funding options and their implications.
- Develop and implement a fair and balanced roading funding solution that reflects the actual demand and impact of each land use category on the roading network, and that provides adequate and equitable funding for the maintenance and improvement of the roads, without imposing undue hardship or disadvantage on any group of rate payers.
- Recognize and support the positive contribution that exotic forestry makes to the Waitomo District, in terms of environmental protection, economic development, cultural and social well-being, and work collaboratively with the forestry industry to promote and enhance the sustainability and viability of the sector.

Conclusion

Greenplan appreciates the opportunity to make this submission to the Council on the proposed changes to the roading contributions. Greenplan hopes that the Council will take into account the issues and concerns raised by Greenplan and other exotic forestry owners and will reconsider its proposal and adopt a more reasonable and balanced approach. Greenplan is willing to work with the Council and other stakeholders to find a mutually acceptable and beneficial solution that will ensure the quality and safety of the roading network, and the prosperity and sustainability of the Waitomo District.

The Environmental, Financial and Social Impacts of the Proposed Roading Rate Increase for Forest Owners

Introduction

Greenplan on behalf of its investors and stakeholders are concerned about the Council's proposal to increase the roading rate for exotic forest land by 1,200%. We believe that this proposal is unfair, unsustainable, and counterproductive to the goals of reducing greenhouse gas emissions and enhancing rural development. In this document, we will outline the environmental, financial and social impacts of the proposed roading rate increase on our sector and the wider community.

The Environmental Impacts

Climate change is a pressing issue that affects our communities. We are still recovering from the effects of Cyclone Gabrielle, and we are anticipating more extreme weather events in the future. To reduce our impact on the environment and mitigate the effects of climate change, the Central Government has been promoting the planting of more trees. The One Billion Trees Programme aims to increase the area of land planted in trees by one billion by 2028, The programme recognises the multiple benefits of trees, such as carbon sequestration, biodiversity enhancement, erosion control, water quality improvement, and rural diversification.

However, the proposed roading rate increase for exotic forest land contradicts and undermines this national initiative. It creates a disincentive for forest owners and managers to plant and maintain exotic forests, which are an important part of the forestry sector and the carbon cycle. Exotic forests, especially radiata pine, have a higher growth rate and carbon sequestration potential than native forests. They also provide a renewable source of timber, pulp, and bioenergy, which can substitute for fossil fuels and reduce emissions from other sectors. Exotic forests also support a range of native flora and fauna, especially when they are managed with environmental best practices and integrated with native forest remnants and riparian buffers.

The proposed roading rate increase for exotic forest land also ignores the fact that forest owners and managers already contribute to the maintenance and improvement of the roading network through the payment of fuel taxes, road user charges, and registration fees. These charges are based on the actual use of the roads, rather than the land use classification. Furthermore, forest owners and managers are required to obtain

resource consents and comply with conditions for any forest harvesting or roading activities that may affect the environment, including the public roads. These conditions may include upgrading the roads, installing culverts, bridges, or traffic signs, and restoring the roads after harvesting. These costs are borne by the forest owners and managers, not the council.

The Financial Impacts

Forestry is a long-term investment that requires a high level of commitment and risk-taking. The forest owners who planted their trees in the early 1990s to the early 2000s did so with the expectation of a reasonable return on their investment after 25 to 30 years. However, the current market conditions and policy settings have undermined their prospects and reduced their incentives to continue investing in forestry.

The proposed increase in the roading rate by the Waitomo District Council is one of the factors that will negatively affect the financial returns of the forest owners.

The council has justified the increase in the roading rate by claiming that forestry causes more damage to the roads than other land uses, and that the council needs more revenue to maintain and upgrade the roading network.

The increase in the roading rate will not only affect the forest owners, but also the local contractors, businesses, and their families who depend on the forestry sector for their livelihoods. In some cases, the forest owners may decide to defer or cancel their harvesting plans, or sell their land to carbon farmers, which will further reduce the economic activity and viability of the forestry sector in the Waitomo District.

The council's proposal to increase the roading rate for exotic forest land is likely to have detrimental impacts not only on those directly affected, but on the community as a whole. Land values for rural properties not located adjacent to state highways will likely be negatively affected. Both Wairoa and Stratford Districts experienced a significant loss of interest from potential purchasers following an increased roading rate. This interest has also been impacted by uncertainty with the Emission Trading Scheme (ETS) and other regulatory constraints imposed on the forestry sector. A quick review of farms for sale in the Stratford District shows a large number of farms for sale. The time it takes to sell these farms is increasing.

The ETS was supposed to offer an alternative source of income to forest owners. This may be true for those who are so-called carbon farmers, who plant trees and sell carbon credits without harvesting. However, for those who are production foresters, who harvest trees and replant them, the ETS income has become a liability that requires careful management. The imposition of increased rates on these foresters will likely require them to sell carbon credits to pay for these rates, which will expose them to the

volatility and uncertainty of the carbon market. If the economics of production forestry become worse, these forests may simply revert to the permanent classification, which means they will never be harvested and will not provide any timber or employment opportunities.

- Forests registered into the ETS come under the stock change classification, which was possible form 2008 through to 2022.
- Any new plantings registered into the ETS are now either under the averaging classification or permanent.
- Carbon Farmers are increasingly becoming interested in purchasing exotic forestry properties that are under the Stock Change Classification.

The proposed 1,200% roading rate increase is likely to have a negative impact on rural land values, employment, and development. It will reduce the profitability and viability of forestry as a land use option and discourage new investment and innovation in the sector. It will also reduce the supply and availability of timber and wood products, which are essential for the construction, manufacturing, and energy industries. It will also affect the downstream businesses and services that depend on the forestry sector, such as transport, engineering, logging, silviculture, nurseries, and consulting. The forestry sector contributes significantly to the regional economy and employment, and any adverse impacts on it will have ripple effects on the whole community.

Social Impacts

Forestry also has significant social impacts on the Waitomo District, both positive and negative. On the positive side, forestry provides employment, income, and skills development for the local people, especially the young and the Maori, who often face barriers to access other sectors. Forestry also contributes to the social and environmental well-being of the community, by supporting local schools, sports clubs, charities, and conservation projects. Forestry also helps to mitigate climate change, by sequestering carbon dioxide and reducing greenhouse gas emissions.

On the negative side, forestry is often blamed for causing environmental and social problems, such as erosion, flooding, biodiversity loss, rural depopulation, and unemployment. However, these problems are not solely caused by forestry, but by a combination of factors, such as land use change, climate change, natural disasters, and market forces. Forestry is subject to strict regulations and standards, such as the National Environmental Standards for Plantation Forestry (NES-PF), the New Zealand Forest Accord, and the Forest Stewardship Council (FSC) certification, which aim to ensure that forestry is managed in a sustainable and responsible manner. Forestry also has the potential to provide solutions to some of these problems, by restoring degraded

land, enhancing water quality, creating habitat for native species, and diversifying the rural economy.

One of the main challenges that forestry faces in the Waitomo District is the threat of land conversion to permanent forests, driven by the changes in the ETS. The ETS is a market-based mechanism that puts a price on greenhouse gas emissions and creates incentives for reducing emissions and increasing removals. The ETS applies to forestry, which can earn carbon credits for sequestering carbon dioxide, or incur carbon liabilities for emitting carbon dioxide. The ETS has undergone several reforms in recent years, which have increased the complexity and uncertainty for the forest owners. Some of the key changes include:

- The introduction of the averaging accounting method, which allows forest owners to earn carbon credits up to a predetermined average level of carbon stock, and avoid carbon liabilities when they harvest their trees, as long as they replant them. This method applies to new forests registered in the ETS from 2019 onwards, or existing forests that opt in from 2021 onwards.
- The introduction of the permanent post-1989 forest activity, which allows forest owners to earn carbon credits for maintaining their forests in perpetuity, without harvesting or replanting them. This activity applies to new forests registered in the ETS from 2019 onwards, or existing forests that opt in from 2021 onwards.

These changes have created a strong incentive for the conversion of productive land to permanent forests, especially for low-value land or low-return crops. The permanent forest activity offers a higher and more secure income stream than the averaging activity, as the forest owners can earn carbon credits indefinitely, without facing any harvesting costs or carbon liabilities.

The conversion of productive land to permanent forests has several negative consequences for the Waitomo District, such as:

- The loss of productive land and economic activity, as the permanent forests cannot be harvested or used for any other purpose, such as agriculture, tourism, or recreation.
- The loss of employment and income, as the permanent forests do not require any management or maintenance, and do not generate any demand for forestry services or products.
- The loss of social and environmental benefits, as the permanent forests are often planted with exotic species, such as Pinus Radiata, which have lower biodiversity value and higher fire risk than native species.
- The loss of local control and ownership, as the permanent forests are often owned by absentee investors, such as carbon farmers, who have no connection or commitment to the local community.

Greenplan is approached on a regular basis by the carbon farmers, who offer to buy the forests owned by its investors. Greenplan has always tried to act in the best interests of the community, and to maintain a balance between the financial, social, and environmental objectives of forestry. However, Greenplan cannot ignore the preferences and expectations of its investors, who have the ultimate say over the fate of their forests. The imposition of the increased roading rate, as well as the low returns they are also expecting, may push some of them to sell their forests to the carbon farmers, or to register them as permanent forests in the ETS. This will have a detrimental impact on the future of forestry and the well-being of the Waitomo District.

Conclusion

We urge the council to reconsider its proposal to increase the roading rate for exotic forest land by 1,200%. We believe that this proposal is unjustified, unreasonable, and detrimental to the environmental and financial well-being of the forestry sector and the wider community. We request that the council engage in meaningful consultation and dialogue with the forest owners and managers and explore alternative and fairer ways of funding the roading network. We also ask that the council recognise and support the positive contributions of the forestry sector to the region's climate change mitigation, biodiversity enhancement, rural development, and economic growth.

Forestry is a vital and valuable sector for the Waitomo District, which provides financial and social benefits for the forest owners and the local community. However, forestry also faces several challenges that affect its viability and sustainability, such as the proposed increase in the roading rate, the changes in the ETS, and the negative perception of forestry. These challenges require a collaborative and constructive response from all stakeholders, including the Waitomo District Council, the central government, the forestry sector, and the public. Greenplan hopes that this report will contribute to a better understanding and appreciation of forestry in the Waitomo District, and to a more positive and productive dialogue and action for the future of forestry and the well-being of the Waitomo District.

Appendices

1 – DUST MITIGATION

UNSEALED ROADING DUST MITIGATION POLICY

WDC-Dust Mitigation Policy.pd

2 – NZ FOREST OWNERS ASSOCIATION

A REVIEW OF ISSUES RELATING TO THE USE OF DISTRICT ROAD FOR THE TRANSPORTATION OF FOREST HARVEST (SEPTEMBER 2003)

NZ FOREST OWNERS ASSOCIATI

3 – PLANTATION FORESTRY STATISTICS – MARCH 2017

Forestry statistics NZIER March 17.pdf

4 – ROADING REQUIREMENTS FOR THE GREENPLAN ESTATE

Roading%20requirements%20for%20ha

5 – GREENPLAN DATA

Greenplan%20Data%20.xlsx

6 – FORME CONSULTANTS COST ESCALATION GRAPH

Forme Cost esclation Graph.png

(TE REO TITLE)
UNSEALED ROADING DUST MITIGATION POLICY

CATEGORY:	Community Assets and Services	**STATUS:**	FINAL
DATE POLICY ADOPTED:	26 November 2019	**APPROVAL BY:**	Council
REVIEW PERIOD:	5 years	**NEXT REVIEW DUE BY:**	2024
DATE PREVIOUSLY ADOPTED:	N/A	**REVISION NUMBER:**	0

PURPOSE
To recognise that dust is a serious issue in the community and to offer a prompt alternative solution for the rate payer.

SCOPE
The policy comprises the following elements: application, assessment framework, extent of treatment, funding of dust mitigation treatments, construction and future maintenance.

BACKGROUND
A number of adverse effects can occur from dust arising from unsealed roads including nuisance, health and environmental impacts and road safety.

Up to ten requests for dust mitigation is received on an annual basis by Council but it varies from year to year.

Historically, the dust complaints are put onto the "Dust Matrix" held by Council. There are currently 56 sites on the matrix. This is not always a suitable response and the priority for action is variable due to the multiple factors taken into account.

APPLICATIONS
Applications for dust mitigation treatments are to be made in writing to the Council's Transport Asset Manager.

ASSESSMENT

Applications received will be assessed using the New Zealand Transport Agency (NZTA) dust assessment framework.

The framework pragmatically assesses the level of health risk associated with individual unsealed roads. Criteria includes the number of vehicles and heavy vehicles using the road, the number of receptors within 80m of the roadway and general site characteristics. Receptors include (dwellings, schools, hospitals, marae, ecologically sensitive areas (wetlands, or rare species habitats) and horticultural sensitive areas such as fruit orchards).

Undertaking an assessment using these criteria produces a numerical output which determines the risk of harm to receptors categorised as high, medium or low.

Assessments submitted to NZTA that are rated as high will probably be funded while medium rated assessments may possibly be funded. Low rated assessments will not be funded. Any NZTA investment in dust mitigation will be at the current approved organisations financial assistance rate. Approval will also be based on budget constraints.

EXTENT

The extent of treatment is limited to modest preparation of the road pavement to bring it up to sealing standard and for a length not exceeding 100m either side of the gate or nominated point on the road.

Lower cost/alternative treatments may be considered such as OTTA seal, or dust suppressant. Process outlined in this policy will be the same for alternative treatments.

FUNDING

Successful applications will be part-funded by NZTA at the approved organisations funding assistance rate (FAR). FThe remaining local share contribution will be funded by the applicant. For example, at current rates it is approximately $30,000 per 200m length and 5m width for sealing. The respective amounts to be funded by each party would be NZTA $21,000 and the applicant $9,000.

Should applications be unsuccessful using the NZTA assessment framework, the Council's Community Assets and Services department may still decide to approve the application. Council will fund the project at the Council's NZTA FAR rate, and the remaining share will be funded by the applicant. For example, 70% ($21,000) will be funded by Council while the applicant is responsible for 30% ($9,000) of the cost for sealing.

Construction will not commence until NZTA or Council funding has been approved and the applicant's contribution has been paid in full. Payment to be made to Wairoa District Council.

CONSTRUCTION

Construction of the dust mitigation seal will be undertaken by one of Council's maintenance contractors. The timing of construction will be agreed by the applicant and the Community Assets and Services department.

FUTURE MAINTENANCE

Any future maintenance obligations will be undertaken by Council under the relevant maintenance contract.

REFERENCE INFORMATION

NZTA dust assessment framework
https://www.nzta.govt.nz/assets/resources/general-circulars/docs/16-04.pdf

NZTA research report 590 summary
https://www.nzta.govt.nz/resources/research/reports/590/

APPENDIX 4

Roading Requirement

2024/25

Assuming we remove the Mapara South Road from the equation.

The 1995 Plantings

Tarseal

Mapara Forests – Kopaki Road (5.7 KM's)

Waipa Valley Forest – Mangaokewa Road (2.8 KM's)

Awakino Forests – Papakauri Road (3 KM's)

Gravel Roads

0 KM's

The proposed Contribution from The Greenplan Estate is estimated to be some $156,473 per year. This will contribute some $13,500 per kilometer for Maintenance and repairs if required if spent on the above roads.

2025/26

The 1996 Plantings – No new Tarseal movements, 2.9 KM's of new Gravel movements (Maybe an extra 3 KM's Gravel if we use the Mangaokewa North Road.

Tarseal

1995 Continue to be harvested

Mapara Forest – Kopaki Road (5.7 KM's)

Waipa Valley Forest – Mangaokew Road (2.8 KM's)

Awakino Forests – Papakauri Road (3 KM's)

1996 Plantings

Tarseal

0 KM's

Gravel

Moketenui Forests – Barker Road (1.3 KM's)

Brakeside Forest – Waitataura Road (1.6 KM's)

The 1997 Plantings – No new tarseal movements, 2.6 KM's of new gravel movements.

Tarseal

1995 Continue to be harvested

Mapara Forest – Kopaki Road (5.7 KM's)

Waipa Valley Forest – Mangaokewa Road (2.8 KM's)

Awakino Forests – Papakauri Road (3 KM's)

1996 Plantings – 0 KM's

1997 Plantings – 0 KM's

Gravel

Continues

Moketenui Forests – Barker Road (1.3 KM's)

New Gravel

Rim Rock Forest - Tikikaru Road, Tuhua Road (2.6 KM's)

The 1998 Plantings

No roads required.

The 1999 Plantings

No Roads required.

The 2000 Plantings

Centurion Forest –

Tarseal - Kaitaringa Road and Aria Road (12.1 KM's)

Gravel – 0 KM's

The 2001 Plantings – Expected harvest date 2031.

Tarseal – 0 KM's

Gravel – Ohirea Road (2.5 KM's)

The 2002 Plantings – No planting in 2002.

The 2003 Plantings – Expected harvest date 2033.

10.7 KM's of gravel and 21 KM's of Tarseal.

Tarseal

Mangaotaki Road (21 KM's)

Gravel

Pomerangi Road (6 KM's) to Waitanguru Road (4.7 KM's)

APPENDIX 5

The Roading Contribution is expected to capture some 43 Properties currently of which 20 are Owned and or Managed by Greenplan

The estimated contribution from theses 43 Properties is approx. $156,473 from Greenplan and $264,417 from other parties, Totaling some $420,890 per year. This is before the Carbon Farming Forests are captured.
As at 12 May the Waitomo District Rates Calculator did not seem to have included the Carbon Farming Forests.

Of the 21 properties that Greenplan Manages only 12 of them are affected by the proposed rate.

The Truck movements over roads for the Greenplan Estate are
Plantings:
Assume we remove the Mapara South Road.
The 1995 plantings will have truck movements over the
1/ Kopaki Road (5.7 KM's sealed)
2/ The Mangaokewa Road (2.8 KM's sealed)
3/ Papakauri Road (3 KM's sealed)
This is a total of 11.5 KM's of Sealed Roads. No gravel roads will be required.

The 1996 Plantings will have truck movements over the:
1/ Waitataura Road (1.6 KM's gravel)
2/ Barker Road (1.3 KM's gravel)
No new sealed roads required.

The 1997 plantings will have truck movements over the
1/ Tikikaru Road and the Tuhua Road (2.6KM's gravel)
No new Sealed roads required.

The 1998 and the 1999 plantings will require no district roads.

The 2000 plantings will have truck movements over the
1/ The Kaitaringa Road and the Aria Road(12.1 KM's sealed) - The aria Road is a heavy use road with Metal Truck movements. It is unlikely the Loggings operations due to commence in the year 2030 will damage this road.

The 2001 plantings will have truck movements over the
1/ Ohirea Road (2.5 KM's gravel)
No new sealed roads required.

No planting done in 2002

The 2003 plantings will have truck movements over the
1/ Pomerangi Road and the Waitanguru Road (10.7 KM's gravel)
2/ The Mangoatakl Road (21 KM's sealed)
Like the Mapara, this road use will be challenging and maybe uneconomical to harvest.

It is important to note that mosts forest will be havested over a period of time in excess of one year.

APPENDIX 5

Roading Rates Contribution	2023/24	2024/25	Capital Value	Number of hectares in Forestry	Year Planted	Gravel	Tarseal		Valuation Number	Address	Hectares	Titles	Total Rates	
			2023/24 (the 2024/25 CV's are assumed to be the same.)										2023/24	2024/25
Arapito 1 to 12	$ 4,636	$ 4,919	$ 3,900,000	300	1994	10 to 12 KM's	5.7 KM's		586204000	1168 Mapara South Road	739.4765	TN168/86 TN168/87 TN168/88 TN241/59	$ 13,833.25	$ 14,867.35
Aratoro 13	$ 537	$ 6,842	$ 425,000	145	1995	8 KM's	5.7 KM's		586206601	Mapara South Road, Mangapehi	150.9325	TN170/100 TNG4/905	$ 1,532.20	$ 7,920.31
Aratoro 14	$ 2,663	$ 2,826	$ 2,240,000	145	1995	6 KM's	5.7 KM's		586206600	512 Mapara South Road, Mangapehi	306.7517	TNE3/281 TN170/65	$ 8,351.20	$ 8,979.16
Aratoro 20	$ 788	$ 10,036	$ 663,000	150	1996	2 KM's	5.7 KM's		586208601	Mapara South Road, Mangapehi	186.0481	TN253/62 TNK2/200	$ 2,247.40	$ 12,428.62
Araplto 28	$ 434	$ 5,525	$ 365,000	70	1997	8 KM's	5.7 KM's		586206800	825 Mapara South Road, Mangapehi	131.75	557008, 558284, TNG4/220	$ 1,995.30	$ 7,206.82
Waipa Valley 15	$ -	$ 4,226	$ 3,350,000	90	1995	0 KM's	2.8 KM's		586236200	228 Mangaokewa Road, Mangaokewa	378.117	SA44A/780 SA1103/268	$ -	$ 13,026.78
Something Wrong with Waipa	$ -	$ 25	$ 20,000		1995	0 KM's	2.8 KM's		586236200A	228 Mangaokewa Road, Mangaokewa	13.3022	SA44A/780 SA1103/268	$ -	$ 72.93
	$ 3,958	$ 4,200	$ 3,330,000		1995	0 KM"s	2.8 KM's		586236200B	228 Mangaokewa Road, Mangaokewa	364.8148	SA44A/780 SA1103/268	$ 12,046.00	$ 12,953.85
Awakino 16,17 and 19	$ 1,356	$ 17,272	$ 1,141,000	405	1995/1996	0 KM's	3 KM's		583113101	Papakauri Road, Mahoenui	385.5659	617367	$ 4,645.75	$ 20,824.51
Barkers 18 Tin Whare 26 and Rhodes 29(Reeves)	$ 25,200	$ 26,742	$ 21,200,000	420	1995/1996/1997	4 KM's	5.7 KM's		586206905	2498 State Highway 30, Mangapeh	2629.692	193045 193046 242458 193042 TNA1/888	$ 75,686.80	$ 81,346.80
Brakeside 23	$ 713	$ 9,083	$ 600,000	200	1996	1.6 KM's	0 KM's		586201700	Waitalaura Road, Mapiu	224.6	TN/206/93	$ 2,791.85	$ 11,324.68
River Road 24, Smiths 25	$ 1,022	$ 1,085	$ 860,000	255	1996	3 KM's	0 KM's		586236500	State Highway 30, Kopaki	297.5	SA/59B/537	$ 3,673.25	$ 3,946.99
Touchwood 27	$ 775	$ 822	$ 652,000	220	1996	0 KM's	0 KM's		586212905	State Highway 4, Te Kuiti	269.8191	TN242/24	$ 2,210.20	$ 2,377.52
Rim Rock 33	$ 333	$ 4,239	$ 280,000	85	1997	3.8 KM's	2.6 KM's		582137300	Tikikaru Road, Piopio	92.25	TNK4/53	$ 949.15	$ 4,906.38
Gateway 36	$ -	$ -	$ 740,000	75	1998	0 KM's	0 KM's		585136701	3535 State Highway 4, Mapiu	144.2	TNJ2/245	$ -	$ -
	$ 687	$ 729	$ 578,000		1998	0 KM's	0 KM's		585136701A	3535 State Highway 4, Mapiu	144	TNJ2/245	$ 1,959.30	$ 2,107.68
	$ 193	$ 204	$ 162,000		1998	0 KM's	0 KM's		585136701B	3535 State Highway 4, Mapiu	0.2	TNJ2/245	$ 1,294.80	$ 1,401.73
Jones 39, Huntaway 40	$ 725	$ 769	$ 610,000	160	1999	0 KM's	0 KM's		586213000	State Highway 4, Te Mapara	179.487	TNL1/200	$ 2,825.80	$ 3,035.37
Bottaway 41, Clearwater 42	$ 3,204	$ 3,399	$ 2,695,000	320	1999	0 KM's	0 KM's		583108300	2984 State Highway 3, Mahoenui	652.5337	SA/53D/877	$ 9,893.50	$ 10,638.32
Wild Boar 43	$ 363	$ 4,617	$ 305,000	80	1999	0 KM's	0 KM's		583108301	Taumatamaire Road, Awakino	96.15	SA/53D/876	$ 1,033.90	$ 5,344.45
Millenium 44 Tunnel Rock 46	$ 1,456	$ 1,545	$ 1,225,000	365	1999/2000	0 KM's	0 KM's		583108303	State Highway 3, Mahoenui	345.5228	SA67A/672	$ 4,152.50	$ 4,466.96
Centurion 45	$ 654	$ 8,326	$ 550,000	135	2000	0 KM's	12.1 KM's		585100500	Kaitaringa Road, Arla	145.37	SA/L2/75	$ 2,642.40	$ 10,468.54
Jubilee 50, Twin Rivers 51 and Headwater 52	$ 2,167	$ 27,596	$ 1,823,000	550	2001	2.5 KM's	0 KM's		586245300	Ohiree Road, Maniaiti/Benneydale	671.8794	TNH4/282	$ 6,937.60	$ 32,755.06
Greatwood 57 (A)	$ 689	$ 8,780	$ 580,000	210	2003	13.1 KM's	21 KM's		579149303	Pomarangai Road, Piopio	197.4	50308	$ 2,724.10	$ 10,974.22
Greatwood 57 (B)	$ 209	$ 2,664	$ 176,000		2003	13.1 KM's	21 KM's		579149304	Pomarangai Road, Piopio	49.11	93929	$ 596.60	$ 3,084.01
				4380										
						37.3 KM's Gravel	47 KM's Sealed roads				8796.473			

APPENDIX 5

Examples of Proposed District Roading Rates

Greenplan (Aratoro 1995) Forest Partnership No. 13, Mapara South Road, Kopaki. Area = 150.9325 Ha's (CV = $452,000)

Rates Calculator

Instalment 3	$383.05
Instalment 4	$383.05
Current Year's Rates	**$1,532.20**
Previous Year's Rates	$1,449.35

Rates for Current Year 2023/2024

Next Rating Year (2024/2025)

Type	Description (Basis)	Factor	Rate	Estimated Amt
003	General Rate (C)	452,000.00	0.21249	$960.45
089	District Roading Rate (C)	452,000.00	0.11887	$537.30
105	Dist Development Rural Business (C)	452,000.00	0.00762	$34.45
Total				$1,532.20

History

Year	Land Value	Capital Value	Annual Rates
2022/2023	$425,000	$452,000	$1,449.35

Rates Calculator

Instalment 2	$383.05
Instalment 3	$383.05
Instalment 4	$383.05
Current Year's Rates	**$1,532.20**
Previous Year's Rates	$1,449.35

Rates for Next Year 2024/2025

Current Rating Year (2023/2024)

Type	Description (Basis)	Factor	Rate	Estimated Amt
003	General Rate (C)	452,000.00	0.23851	$1,078.07
121	District Roading Rate - Forestry Exotic (C)	452,000.00	1.51377	$6,842.24
Total				$7,920.31

History

Year	Land Value	Capital Value	Annual Rates
2022/2023	$425,000	$452,000	$1,449.35
2021/2022	$315,000	$340,000	$1,153.90
2020/2021	$315,000	$340,000	$1,185.85

Whakapirau Road, Tahoroa. (Property Area 40.46 Ha's) (CV = $600,000)

Rates Calculator

Current Year's Rates	**$2,791.85**
Previous Year's Rates	$2,686.90

Rates for Current Year 2023/2024

Next Rating Year (2024/2025)

Type	Description (Basis)	Factor	Rate	Estimated Amt
003	General Rate (C)	600,000.00	0.21249	$1,274.95
012	Solid Waste Rate (U)	1.00	242.00	$242.00
021	Uniform Annual General Charge (U)	1.00	340.00	$340.00
038	Stormwater Rural (U)	1.00	9.00	$9.00
059	Aquatic Centre Rural (U)	1.00	22.00	$22.00
084	Trade Waste Contribution TK (U)	1.00	39.00	$39.00
089	District Roading Rate (C)	600,000.00	0.11887	$713.20
105	Dist Development Rural Business (C)	600,000.00	0.00762	$45.70
119	District Wide Benefit Water (U)	1.00	51.00	$51.00
120	District Wide Benefit Wastewater (U)	1.00	55.00	$55.00
Total				$2,791.85

History

Rates Calculator

Instalment 2	$697.95
Instalment 3	$698.00
Instalment 4	$697.95
Current Year's Rates	**$2,791.85**
Previous Year's Rates	$2,686.90

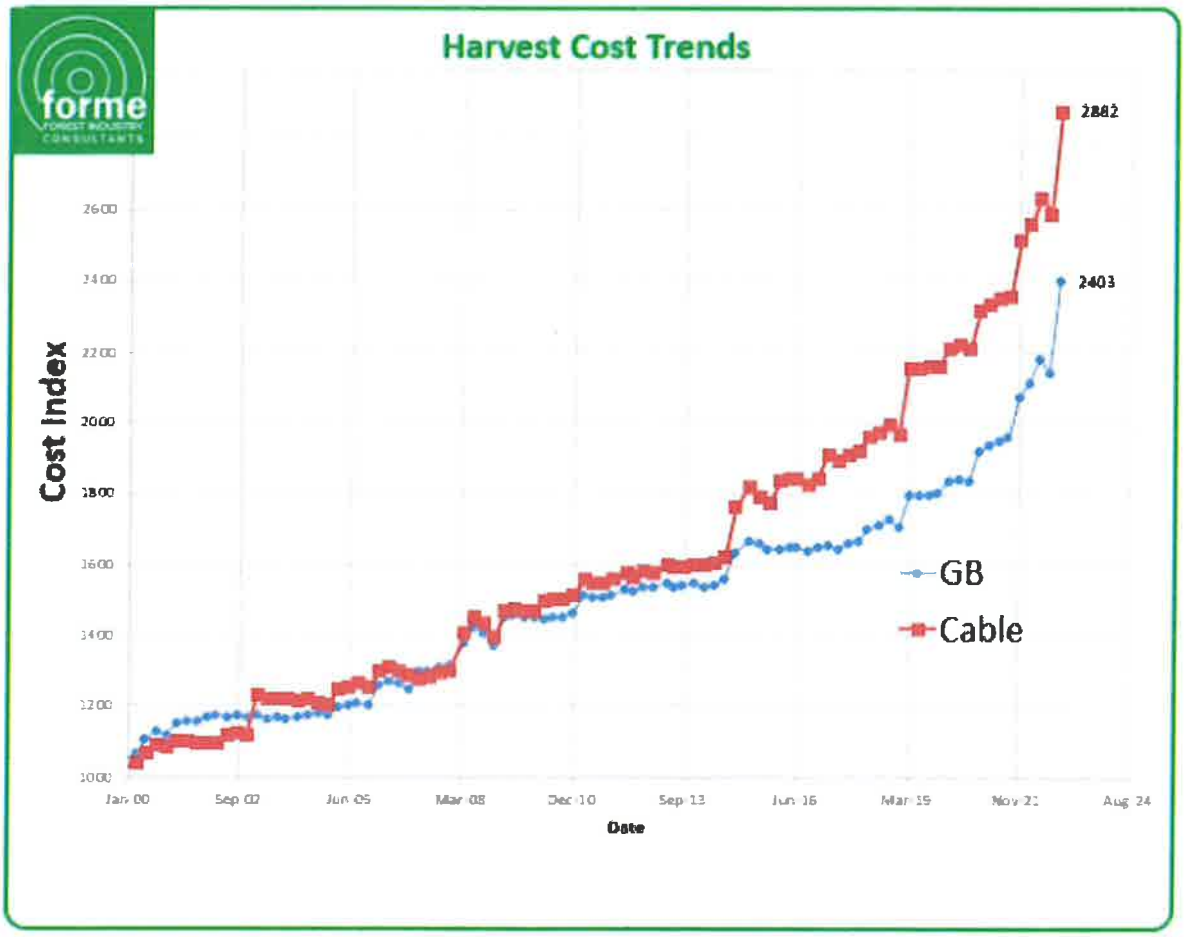
Rates for Next Year 2024/2025

Current Rating Year (2023/2024)

Type	Description (Basis)	Factor	Rate	Estimated Amt
003	General Rate (C)	600,000.00	0.23851	$1,431.06
012	Solid Waste Rate (U)	1.00	278.00	$278.00
021	Uniform Annual General Charge (U)	1.00	350.00	$350.00
038	Stormwater Rural (U)	1.00	20.00	$20.00
084	Trade Waste Contribution TK (U)	1.00	41.00	$41.00
119	District Wide Benefit Water (U)	1.00	61.00	$61.00
120	District Wide Benefit Wastewater (U)	1.00	63.00	$63.00
121	District Roading Rate - Forestry Exotic (C)	600,000.00	1.51377	$9,082.62
Total				$11,324.68

APPENDIX 5

Valuation No.	Property Address	C/T's	Total Rates 2023/24	Total Rates 2024/25	Roading Contribution 2023/24	Roading Contribution 2024/25	Capital Value 1st September 2021	
586202700	Takiri Road, Aria	TN/169/98	$ 3,864	$ 19,976	$ 1,355	$ 17,257	$ 1,140,000	Forestry Exotic
586203200	Takiri Road, Aria	TNE1/567	$ 2,487	$ 9,748	$ 606	$ 7,720	$ 510,000	Forestry Exotic Planted 2022 ?
579151501	Speedies Road, Te Anga	SA64C/600	$ 11,354	$ 55,502	$ 3,709	$ 47,230	$ 3,120,000	Forest Exotic 1676.71 ha
579121304	Brown Road, Taharoa	938256	$ 2,053	$ 4,613	$ 454	$ 2,891	$ 382,000	Forestry Mixed © Property area 46.25 Ha
579114700	684 Whakapirau Road, Tahar	SA32C/259	$ 1,561	$ 4,964	$ 282	$ 3,588	$ 237,000	Forestry Exotic ©
579116031	Whakapirau Road, Taharoa	SA790/15	$ 1,300	$ 3,615	$ 190	$ 2,422	$ 160,000	Forestry exotic
579115600	Whakapirau Road, Taharoa	SA25C/1403	$ 498	$ 2,274	$ 175	$ 1,113	$ 147,000	Forestry Mixed
579116002	Whakapirau Road, Taharoa	SA/29C/598	$ 2,792	$ 11,325	$ 713	$ 9,083	$ 600,000	Forestry Exotic Property Area 40.4686
579125300	Taharoa Road, Taharoa	SA1442/54 SA19C/651ASA60C/677 SA617/58	$ 4,995	$ 22,715	$ 1,486	$ 18,922	$ 1,250,000	Forestry Exotic Property area 438.19 Ha
583106301	Totoro Road, Ari	96105	$ 2,436	$ 9,485	$ 588	$ 7,493	$ 495,000	Forestry Exotic 114.6 Ha
585137300	591 Paraheka Road, Aria	TNA1/455	$ 19,594	$ 54,929	$ 6,383	$ 40,644	$ 5,370,000	Forestry Mixed 1,447 Ha (Redwoods)
583118005	Taumatamaire Road, Awakin	362152 SA25B/1002	$ 3,392	$ 14,426	$ 924	$ 11,762	$ 777,000	Forestry Exotic 265.26 Ha
583118800	Awakau Road, Awakino	SA16A/416 SA16A/415	$ 1,387	$ 4,061	$ 221	$ 2,808	$ 185,500	Forestry Exotic 29.28 Ha
586206902	102 Waimiha Road, Maniaiti/	272335 TNK4/730 TNB1/762 TN136/5	$ 3,826	$ 16,669	$ 1,076	$ 13,699	$ 840,000	Forestry Exotic 326.39 Ha
586244900	Mangaokewa Road, Mangaol	SA49D/335 SA49D/336	$ 4,585	$ 20,594	$ 1,342	$ 17,090	$ 1,129,000	Forestry Exotic 357.6 Ha
586244700	Mangaokewa Road, Mangaol	SA57A/650 SA57A/651	$ 1,426	$ 4,263	$ 234	$ 2,982	$ 197,000	Forestry Exotic 92.13 Ha
586245800	Allen Road, Te Kuiti	SA42B/971	$ 5,368	$ 24,642	$ 1,617	$ 20,587	$ 1,360,000	Forestry Exotic 423.39 Ha
586233900	Manu Road, Rangitoto	SA53B/564 SA57A/650 SA57A/651	$ 3,944	$ 17,282	$ 1,117	$ 14,229	$ 940,000	Forestry exotic 834.36 Ha
586229800	Manu Road, Rangitoto	SA57A/650 SA57A/651	$ 2,182	$ 8,171	$ 499	$ 6,358	$ 420,000	Forestry Exotic 249.5 Ha
581107601	Waitomo Valley Road, Waito	SA54B/302	$ 1,900	$ 6,716	$ 401	$ 5,101	$ 337,000	Forestry exotic 78.24 Ha
581107801	20 Waihohonu Road, Waitom	SA/58C/565	$ 1,731	$ 5,840	$ 341	$ 4,345	$ 287,000	Forestry Exotic 69.98 Ha
581106000	Waitomo Valley Road, Waito	SA29D/363	$ 1,302	$ 3,623	$ 191	$ 2,430	$ 160,500	Forestry Exotic 26.64 Ha
581145100	769 Oparure Road, Oparure	458157	$ 1,044	$ 5,397	$ 366	$ 4,662	$ 308,000	Forestry Exotic 82.5 Ha
		Totals		$ 330,831		$ 264,417	$ 20,352,000	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NEW ZEALAND
FOREST OWNERS' ASSOCIATION INC.

NZ FOREST OWNERS ASSOCIATION

A REVIEW OF ISSUES RELATING TO THE USE OF DISTRICT ROADS FOR THE TRANSPORTATION OF FOREST HARVEST

Prepared by: Frame Group Limited

Date: September 2003

NZ FOREST OWNERS ASSOCIATION
A REVIEW OF ISSUES RELATING TO THE USE OF DISTRICT ROADS FOR THE TRANSPORTATION OF FOREST HARVEST

Table of Contents

1.0 EXECUTIVE SUMMARY

The Forest Owners Association has commissioned this report, which is intended as a reference document for its members.

Territorial Local Authorities (TLAs) have the responsibility for maintaining rural roads other than State Highways.

The increase in total vehicle numbers and, in some cases, a disproportionate increase in heavy vehicle numbers on rural roads has placed an increasing demand on some TLAs. This increased demand has been particularly evident in areas where production forests have entered the harvesting phase.

In these areas, this has resulted in pressure on the limited rating revenue that the TLAs have available for meeting the local contribution1 to rural road maintenance and upgrading. As a result, many TLAs have turned to forest owners as a potential source of additional funding, using mechanisms available to them under the Local Government Act and the Resource Management Act. In many cases this has resulted in forest owners being singled out for special contributions that are not sought from other land owners or road users.

This report includes a collation of the technical issues and discussion on the relevance of these in relation to rural roading. This information is provided as background and reference for forest owners who may be involved in discussion or negotiations with TLAs on this issue. The information contained in this report is a collation of information obtained from a number of sources and is also based on the opinions and experience of the authors. This material is not specific to any particular road or forest. Readers should seek expert advice or make their own judgement on the applicability of any information contained in this report before applying it to specific roads or negotiations.

The report also provides brief notes on the legal and funding issues as they currently apply. These processes are subject to significant change at short notice and expert advice should always be sought before acting in these areas. The technical issues, however, are well established and are not likely to be subject to significant change or variation.

During negotiations between forest owners and TLAs many arguments have been raised, some of which have been based on solid technical facts and others that are based on misunderstanding or prejudice.

This report includes technical information on road geometric design, pavements, traffic control and bridges so that negotiations can be based on a correct understanding of the technical issues. When this is done, opportunities for mutually beneficial cooperation between forest owners and TLAs can often be found. Within

[1] Transfund provides subsidies that are usually close to about 55%.

the report, options for forest owners and for TLAs have been identified where these may assist in reaching an arrangement that is appropriate for particular situations.

The legal and funding issues surrounding negotiations are specialist areas and are not covered in detail in this report. When negotiations with TLAs involve detailed debate on these issues, the engagement of specialist legal and planning services is recommended.

2.0 DEFINITIONS

AADT	**Annual Average Daily Traffic:** The annual traffic volume averaged on a daily basis.
Aggregate	The various layers of granular material making up a road pavement, excluding the seal and the ground itself.
Axle Tramp	The oscillation effect of truck dual driving axles on unsealed pavements that occurs when grades are climbed under power. Traction and load oscillates between each of the driven axles resulting in the formation of road corrugations. Axle tramp is more prevalent with unloaded or lightly loaded trucks.
Carriageway	The portion of road devoted to use by travelling vehicles, exclusive of shoulders. Note that Australian practice is to consider carriageway width to include the shoulders in the assessment of carriageway width.
CTI	**Central Tyre Inflation:** A system that permits the vehicle operator to vary tyre inflation pressures from within the cab while the vehicle is in motion.
Chip Seal	A wearing course consisting of a layer or layers of stone chips originally spread onto the pavement over a film of freshly sprayed binder and subsequently rolled into place.
District Roads	**Public** roads, other than State Highways, within the territory of each TLA that generally provide access for landowners within the District. This includes all rural roads leading off the State Highway in a District as well as roads within the rural areas of City authorities. A large proportion of District Roads can be classified as Low Volume Roads.
EDA	**Equivalent Design Axle**: Defined as an axle with a dual-tyred wheel at each end and carrying a total load of 8 tonnes. Used as the unit of traffic load measurement
FOA	**NZ Forest Owners Association:** An industry organisation representing most plantation forest owners.
Formation	The final surface of the ground excluding any side batters after completion of the earthworks and upon which the pavement layers will be constructed. The formation extends from the top of the fill batter to the toe of the cut batter.

Geometry	The factors that determine the geometric shape of a road. This includes the width, grade, curvature, cross-fall, superelevation and other parameters involved during the formation of a road.
Grade	The slope or gradient (steepness) along the length of a section of road expressed in terms of percent or as a ratio of rise per distance (ie 1 in 8). Grade can be either adverse (uphill) or favourable (downhill) depending on the direction of the vehicle travel.
Heavy Vehicles	Trucks and trailers and articulated vehicles with or without trailers that have five or more axles in total. The Transfund Project Evaluation Manual defines six different vehicle classes ranging from passenger car to Heavy Commercial Vehicle II (HCV-II) as defined above. Trucks without trailers having three or four axles are defined as Heavy Commercial Vehicle I (HCV-I).
Light Vehicles	Passenger cars, vans, utilities and light trucks up to 3.5 tonnes gross laden weight. Two axle trucks without a trailer, over 3.5 tonnes gross laden weight are defined as Medium Commercial Vehicles. (MCV)
Low Volume Roads	Roads that carry relatively low traffic volumes in comparison to typical highways and motorways. Low Volume roads typically carry less than 100 vehicles per day, which may be any combination of heavy traffic and light traffic.
Off tracking	Term used to describe the effect when a vehicle passes around a curve where the rear wheels follow a track having a smaller curve radius that the front wheels. The rear wheels follow a path, which is inside that of the front wheels.
Pavement	That portion of a road placed on the underlying soil which is designed to support and to form the running surface for vehicular traffic. Pavement consists of constructed layers which disperse loads to over and area so that stress levels that are within the bearing capacity of the sub-grade soil.
Pore Water Pressure	The hydrostatic pressure of the water contained between the soil particles of a saturated or partially saturated soil. High pore water pressure causes the soil particles to be forced apart and the soil to have reduced shear strength.

Shoulders	The portion of the paved road that is contiguous and flush with the carriageway on either side of the road, which is not normally used by the travelling traffic.
State Highways	The road national road network that provides the arterial routes between regions. Because the State Highway network is used and provides benefit to users both within and outside a region, this road network is fully funded by Transfund without contribution from TLAs.
Sub-grade	The trimmed and prepared portion of ground (i.e. the in-situ material) upon which a road carriageway is constructed. This may be original ground or fill placed during the road formation process before the various layers making the road pavement are placed on it.
TLA	**Territorial Local Authority**: District Councils and City Councils that are empowered under the Local Government Act. TLAs have responsibility for the management and maintenance of roads other than State Highways within their territory.
Watertables	The side drains on each side of a road carriageway that are provided to carry surface water along the road to discharge points as well as to promote drainage of the pavement and sub-grade layers.

3.0 BACKGROUND

The NZ Forest Owners Association (FOA) represents the majority of production forest growers in New Zealand. As increasing areas of forest reach maturity, there is the increasing demand on the use of the district road network for the transportation of logs and timber. This increase is a result of:

- A steady increase in total harvest volumes nationally as new plantation forests reach the end of their first production cycle.
- An increase in the proportion of the harvest originating from smaller remote forest plantations rather than the large established forests.

In many cases, the significant increases in harvest volumes occur in rural regions where production forest harvesting has not previously been present and where the road infrastructure is of a low standard.

What is common to most of the harvest is that extraction of the timber will require the use of District Roads to transport the harvested volume to the State highways and then to processing facilities or export ports.

Additional demand on the District Roading networks has also arisen from significant changes in rural land use. These include:

- Increases in dairy farm yield as a result of improvements in farm and animal management practices.
- Conversion of land from dry-stock farming to dairy farming.
- Increased areas of land under cropping.
- Rural subdivision of land into lifestyle blocks resulting in increased population levels and associated vehicle movements.
- Significant increases in the size and weight of agricultural equipment that occasionally travels on rural roads.
- Changes in farm management regimes where large farms are managed with the input of contract resources, resulting in increased levels of machinery movement on roads.

Whilst the above effects have contributed to significant increases in the level of traffic on rural roads, production forestry is frequently cited as the major cause of the need for increased expenditure on public roads. In reality, forestry is one of several contributing factors to increased demand on rural roads. As result of the increased demand on the use of rural roads, a number of serious issues have arisen which threaten the potential for continued safe and economically viable harvesting of many plantation forests. These issues are characterised by the following:

- Many existing rural roads are of inadequate standard for the transport of high volumes of logs, particularly on a continuous or semi-continuous basis.
- Road safety may be significantly compromised as result of the use of inadequate roads by high volumes of logging traffic simultaneously with high use by other vehicles.

- Some TLAs have insufficient funding sources available to meet the local share of the cost of necessary road upgrading within their districts.
- The District Planning process and Resource Management Act are being used by some TLAs to control or limit production forestry or to coerce funding to cover increased road upgrading costs.
- Forest owners are coming under other forms of pressure from TLAs to contribute large sums toward road upgrading.
- The lack of an adequate district road network is inhibiting the economic harvest of forests in some areas.
- Relationships between Forest Owners and TLAs are, in many cases, becoming strained.

A clear understanding of the technical issues may help in discussions between FOA members and TLAs, and thus help avoid misunderstandings and facilitate fair and reasonable solutions to problem issues.

The FOA has commissioned this report, which is intended as a reference document for members. This report includes a collation of the technical and traffic management issues and discussion on the relevance of these. The report also notes some of the legal and funding issues that are associated with public road use and management. These matters are not covered in detail, as they often require specialist advice and are also subject to frequent change.

4.0 TECHNICAL ISSUES

4.1 Preamble

There are a number of technical issues that relate to the design, construction and operation of roads. An understanding of these is a pre-requisite for good planning, design, construction and management of roads that are required for the transport of logs. It is also a prerequisite for understanding funding issues and options.

This document is focused on rural roads that generally carry low volumes of traffic and are often constructed to a lower standard than State Highways or Motorways. Hence the technical issues noted below are those that are more likely to be relevant to Low Volume Roads rather than High Volume arterial District Roads or State Highways.

4.2 Road Design

4.2.1 Road Design Standards

Road design consists of determining the geometric layout of the road formation and the structure of the pavement on the carriageway

portion of the road formation. Signage, signals and other driver information are also part of the design process.

Road designers are guided by standards that provide appropriate parameters for geometric design and procedures for pavement design. The Guide to the Geometric Standards for Rural Roads (NRB 1985) was used in the past as a basis for the design of many District Roads in use currently. More recently, Austroads standards have been adopted in New Zealand. The Austroads geometric standards have generally been developed in relation to the less mountainous terrain of Australia and hence these set higher geometric standards than the previous NRB standards.

Several TLAs have specified their own geometric standards for rural roads which form the basis for new road construction or upgrading. Most large forestry companies have also established road geometric design standards. These standards tend to be lower that those used for public roading for a number of reasons:

- in a forest there is usually greater control over users and the average driver ability is higher;
- there is less probability of unexpectedly encountering opposing vehicles; and
- forest owners, who meet all the costs of this roading, have no incentives to over-design and strong incentives to consider alternative management practices.

Pavement design has in the past followed Transit NZ design procedures and more recently makes use of the Austroads Pavement design models. Forest road pavement design follows similar procedures but tends to accept a higher risk of partial pavement failure with the associated lower serviceability standard.

4.2.2 Existing District Roads

Many existing District Roads have been developed as a result of progressive improvement over a long period of time. Often such improvements have been limited by the funding available to a TLA at the time and as a result, specific design standards have not always been used. Consequently the geometric standards of many existing District Roads are well below the standard that a TLA may now have established for new road construction within the District.

Similarly, the pavement construction of many District Roads, especially Low Volume District Roads is likely to be well below that which would be provided if Austroads design procedures were applied. Typically, many District Road pavements have lasted beyond their original intended life and are maintained in a serviceable condition by

reactionary maintenance as deterioration occurs. For unsealed roads this consists of grading of the surface and application of thin surface layers of pavement aggregate. This is a similar approach to that used by most forest owners.

At the time of harvesting of forest land, many of the geometric and pavement deficiencies of existing District Roads become apparent as a result of the additional space requirements of higher numbers of heavy vehicles and the increased pavement loading. Note that while this may result is substantially increased maintenance costs over a period, the costs on a per tonne.km basis may be no higher than previously.

4.2.3 Appropriate Design

Selection of appropriate design parameters is a key initial part of road design. Whilst it requires less thought and political risk to adopt established standards within a District or standards such as Austroads for the geometric design for upgrading of District Roads for forest harvesting, use of such standards may result in highly conservative and un-economic solutions. This is particularly the case when log flows are relatively low or intermittent.

Selection of appropriate design standards should be the result of careful consideration of the existing traffic level and mix as well as the projected traffic level and mix. In the case of District Roads serving forest land, the future traffic flows can be easily forecast well in advance with a reasonable degree of accuracy. Since many of these roads will carry traffic levels well below the typical parameters on which the documented standards are based, a lower standard may be appropriate for Low Volume District Roads. Similarly, it may be appropriate to adopt a lower standard for road upgrading where agreement has been reached with a forest owner to manage traffic in one of several ways that reduces risk.

The need to consider alternative strategies is particularly critical where the logging traffic will be relatively short-term or intermittent.

4.2.4 Cost Effects of Inappropriate Design.

The cost of inappropriate design can be significant. In mountainous terrain, the choice of conservative geometric standards can result in extremely large earthwork volumes being necessary. The increase in carriageway width from 5.0m to 6.0m can often result in a 100% increase in the road formation earthworks volume, and hence a 100% increase in the road formation cost.

Use of conservative pavement design can increase costs as a result of use of high specification materials carried from remote sources,

whereas a less conservative design may make use of lower cost local materials2.

Many District Roads have been provided with a relatively thin pavement with a chip seal surfacing. Whilst this has improved the serviceability for most road users and is adequate for modest traffic flows, such roads often quickly deteriorate when there is a significant increase in traffic flow such as occurs when forests are harvested. Such roads can only be upgraded by sacrificing the chip seal and re-constructing the pavement to an appropriate standard for the heavy traffic loading. Had these roads been provided with an appropriate thicker pavement prior to sealing, in anticipation of future forest harvesting, the total cost of upgrading would have been significantly less.

4.2.5 Alternative Strategies

The design standards that are appropriate for the intended use of a road are influenced by the management strategy that is adopted for the road. Use of alternative strategies allow the use of alternative design standards. These alternative strategies include:

- Limiting time of daily use;
- Radio control of traffic;
- Seasonal road use;
- Weather limitations on use;
- Risk sharing, e.g. maintenance costs;
- One-way traffic flows;
- Use of Central Tyre inflation;

4.3 Road Geometry

4.3.1 Road Geometry Factors

The factors that make up the geometric standards of a road include the following:

- Carriageway width
- Curve Radius
- Curve Widening
- Grade
- Sight Distance

There are other geometric factors taken into account in the design of a road formation such as cross-fall, drainage etc, however these are part

[2] Refer to the (yet to be released) Transfund report on the audit of the 2002/03 Development Roading Programme which specifically raises this point.

of normal good practice and are not discussed in detail in this document.

The selection of an appropriate design for a new road or the upgrading of an existing road involves the selection of appropriate parameters for the above factors.

4.3.2 General Requirements

The geometry requirements of a road are determined by what is necessary to enable the expected traffic to physically pass over the road whilst maintaining reasonable levels of safety for all vehicles using the road. This generally requires the provision of sufficient space for vehicle passage as well as for reacting to and passing opposing traffic. The geometric requirements of a road are determined by several factors including:

- Maximum traffic capacity
- Average daily traffic
- Peak traffic flow
- Direction of flow (one or two directions)
- Vehicle Type
- User expectations
- Prevailing Conditions (frequent fog or ice)

4.3.3 Traffic Capacity

Traffic capacity is determined by the traffic volume at which a road is saturated with vehicles and has reached its maximum carrying capacity in vehicles per hour. (Typically over 500 vehicles per hour). District roads very rarely reach maximum traffic capacity and the traffic capacity of a road is unlikely to be a factor in the geometric design of District Roads for forestry use.

4.3.4 Average Annual Daily Traffic

The average number of vehicles passing in each direction over a road in a 24hr period is expressed as the average daily traffic. This figure is averaged over a year to allow for seasonal effects to derive the Annual Average Daily Traffic (AADT). This a measure of the frequency of vehicles passing a given point and is used to determine the probability of on-coming vehicle conflict over a given length of road. AADT is an important factor in road geometry design because the frequency of on-coming vehicle conflict determines the need for additional traffic lanes.

4.3.5 Peak Traffic Flow

Peak traffic flow is the number of vehicles passing a point (expressed in vehicles per hour) during the part of a day that a road carries its highest

traffic flow. Peak traffic flow on a District Road may occur between 7.30am and 8.00am if rural residents travel to a nearby town for employment. Similarly, peak flow may occur just before 7.00am on a District Road where logging crews as well as empty logging trucks arrive at the forest simultaneously. Forest owners may have an opportunity to control or limit peak traffic flows by managing forest operations so that forest generated traffic avoids conflict with peak flows from other sources.

4.3.6 Direction of Traffic Flow

Some District Roads may carry more traffic in one direction than another and this may vary throughout a day. Typically, a road providing access to a forest is likely to have forest traffic travelling toward the forest early in the morning whilst local traffic is travelling away from the forest toward local towns and schools. Determining the direction of traffic flow over time on a given road may enable forest operations to be managed in a way to reduce the potential for on-coming vehicle conflicts.

4.3.7 Vehicle Type

Vehicles range widely in width, length axle configuration, weight and turning characteristics. A typical light vehicle is comfortably capable of turning corners having a radius as low as 10 metres, however a typical truck and trailer requires a minimum curve radius of 18 metres or more for comfortable cornering even at very low speed. A transporter for shifting heavy equipment may have a larger minimum curve radius requirement and may also need flatter vertical curves at hill crests and dips to avoid grounding. Some agricultural equipment is very wide and may require additional carriageway width and bridge clearance width.

Improvements to road geometry are often necessary for the purpose of providing for logging truck and trailer units that may previously have not used a road. It is possible that limiting forest harvesting to the use of trucks without trailers would avoid the need for road geometric improvement in some cases, however this usually results in highly uneconomic transportation operations and increases the traffic numbers and potential vehicle conflicts. Often geometric improvements to the road are still necessary to enable haulers and other harvesting equipment to be transported to the forest on low loaders transporters.

4.3.8 User Expectations

The expectations of drivers on District Roads depends on their experience and capability. Landowners in remote rural locations in hill country have a relatively low expectation of road geometric standard

because they are aware that the logistics and cost of providing a higher geometric standard is un-justified. However this acceptance of a lower standard is concurrent with the expectation that a road carries low traffic volumes.

In less remote locations where there are a number of lifestyle blocks, the expectation of landowners may be higher and driver capability lower, hence pressure for a higher standard of road with ample space for passing of opposing traffic.

Generally, the road geometric standard expectations of forestry traffic is low because the drivers of logging trucks and equipment have a high capability to negotiate internal forest roads and are satisfied with the minimum standard accommodate the vehicle and maintain safe stopping distances to opposing traffic.

4.3.9 Prevailing Conditions

Other conditions may be a consideration in the design of appropriate geometric standard for a District Road. These include the frequency of ice on the pavement, fog that may limit visibility, high rainfall that may increase braking distances. The presence of such factors may be reason to adopt higher geometric standards that would otherwise be used.

4.3.10 Carriageway width

Carriageway width is generally determined by traffic volume in terms of AADT. Austroads Rural Road Design recommends a carriageway width of 5m to 6m for Low Volume roads and 8.0m to 8.5m where traffic volumes are higher. Note that Australian practice is to define carriageway width as including shoulders, whereas NZ practice excludes shoulders from carriageway width. NZ NRB Guidelines recommend a 5.0m carriageway width where AADT is below 30 vpd and 7.5m width where AADT is up to 250 vpd.

There are examples where TLAs have agreed to accept lower carriageway width standards than those noted above in circumstances where upgrading to a higher standard can only be achieved at a high cost or is not justified for the intended use. Low Volume unsealed roads of 4.5m carriageway width can safely carry heavy traffic. Sealed roads of 7.0m carriageway width can be safely operated in a high-speed environment and a 6.0m sealed carriageway width has been found adequate in a low speed environment.3

The carriageway widths recommended above allow for safe use by heavy vehicles whilst allowing sufficient space for opposing vehicles to

[3] NB, The Transfund Audit report on the 2002/03 Development Roading Programme will make these recommendations.

pass in most places. On single lane carriageways, this may require one or both vehicles to track onto the road shoulder. Light vehicles are able to track onto a properly constructed road shoulder without difficulty or risk of pavement failure. Where there is likely to be frequent opposing heavy vehicles on a single lane carriageway, the provision of passing bays or a wider carriageway width is recommended. The road shoulder may not carry repeated wheel loads from loaded heavy vehicles and result in rutting and vehicle roll-over.

Limited knowledge of other vehicle locations may compromise the effective use of passing bays. Typically roads are constructed to have wider carriageways for sections having very short sight distance (ie corners) and effective use of passing bays is achieved where opposing vehicle locations are known. This then relies on visibility of the road section between passing bays or on radio communication between vehicles. Where there is no visibility between passing bays, there is likely to be the occasional opposing traffic conflict because not all vehicles on a public road will have radio communications.

4.3.11 Curve Radius

Curve radius is the centre-line radius of the circular arc of a road curve. Properly designed road curves have a transition from the tangent point to the start of the true circular curve, although this is not a significant feature for Low-Volume roads. Selection of an appropriate curve radius is determined by the physical capability of a particular vehicle to negotiate the curve as well as the design speed value of the curve. For Low Volume Roads where speeds are very low, the physical limits of the largest vehicle tends to dictate the required curve radius. For other District Roads, the design speed value will determine the required curve radius.

The following table taken from a forest road specification indicates typical minimum curve radius recommendations.

Table 1 – Minimum Curve Radius

Road Type	Terrain Type	Minimum Curve Radius [m]
Track	All	10
Spur Road	Flat, Rolling	25
Spur Road	Steep	18
Secondary Road	Flat, Rolling	30
Secondary Road	Steep	20
Arterial Road	Flat, Rolling	50
Arterial Road	Steep	30

Whilst most vehicles are capable of turning sharper curves that those shown in the table, these figures allow for occasional use by vehicles that have poor turning capability.

4.3.12 Curve widening

Additional carriageway width is required on curves having low curve radii and large changes in direction to allow for off-tracking of the trailing axles. This is to prevent the trailer wheels tracking off the edge of the carriageway onto the shoulder which, in extreme cases, can result in trailer roll-over.

The amount of curve widening required varies depending on vehicle axle configuration and turntable geometry. Tables can be derived for various vehicle types giving the additional carriageway width necessary depending on the curve radius and net change of direction through the curve.

Curve widening is necessary to properly provide for long transporter vehicles and also truck and trailer combinations such as logging trucks, milk tankers, stock trucks and fertiliser trucks.

4.3.13 Maximum Grade

The maximum grade limit of a road is governed by the power capability of vehicles to climb the grade and also the capacity to transfer this power to the pavement to gain traction.

Most vehicles have sufficient power to climb very steep grades at acceptable speed, hence power limitations seldom govern the determination of maximum grade for District Road design. (On some arterial District Roads and on State Highays, maximum grade may be limited to reduce the speed reduction and congestion caused by slow heavy vehicles climbing steeper grades).

The maximum grade on District Roads is generally limited by the ability of vehicles to achieve traction. Steep grades on unsealed pavements result in loss of traction of the driving axles and the need for the vehicle to be towed or pushed. This is rare for light vehicles on roads but is an occasional occurrence for heavy vehicles, particularly those with axle combinations which have a low proportion of the total vehicle weight distributed on the driven axles. The problem usually appears when the pavement is wet or has become unbound and hence has a low coefficient of friction.

Limiting maximum road grade is the preferred method of overcoming traction loss. Most truck and trailer combinations can climb grades on

unsealed roads up to 1 in 8 (12.5%) without difficulty but some are likely to have difficulty on grades greater than 1 in 7 (14.3%).

Improvement of the coefficient of friction of the pavement by stabilisation or sealing can allow steeper grades to be negotiated without loss of traction.

4.3.14 Grade Uniformity

On long hill sections of District Road, the grade may vary significantly over the length of road which climbs the hill. Whilst this has little adverse effect on light vehicles, in heavy vehicles it necessitates the frequent changing of gear to maintain optimum engine speed.

This frequent gear changing can precipitate loss of traction and is also inefficient on truck operation. Good practice is to design new roads or upgraded roads with constant grades over hill sections. The exception to this is to provide reduced grade on sharp curves to offset the effect of steepening of the inside wheel track grade caused by the lesser radius of this wheel path and superelevation. Roads climbing over some distance on sharp corners should be designed with a maximum grade of 1 in 10 (10%).

4.3.15 Grade Effects on Maintenance

Where road grades are over 1 in 8 (12.5%) on unsealed roads, there is increased potential for corrugation of the surface due to Axle Tramp. This increases road maintenance costs and reduces road safety and comfort. The reduction in road comfort is typically more noticeable in light vehicles. It should be noted that corrugation of unsealed road surfaces occurs under medium commercial vehicle traffic as well as heavy vehicle traffic. The provision of a sealed surface to improve traction will reduce the maintenance requirements of steeper grades.

The use of CTI on the driving axles of trucks reduces the incidence of oscillating axle corrugations and hence reduces the frequency at which regular grading is required. This can be a significant cost saving for remote roads.

Where roads have steep grade, the water velocity in the side drains is higher and hence more prone to scour the formation. This requires more culverts to prevent excessive flows and scouring of water-tables. Roads having steep grades require more frequent maintenance than flatter roads, even if traffic volumes are very low.

Grade improvements to a District Road have a benefit to a TLA in the form of reduced maintenance cost.

4.3.16 Grade Effects on Safety

Roads having long sections of steep grade place a higher dependence on driver skill and vehicle condition. Brake wear or failure can result in vehicle loss of control on steep grades. Steep favourable grades require significant increases in stopping distances.

Grade improvements to roads result in increased safety for all road users.

4.3.17 Sight Distance

Sight distance determines the available time for reaction and stopping. This is particularly important on single lane unsealed roads where opposing vehicle conflict is the greatest hazard.

Austroads Rural Road Design provides the following stopping distances. (Rf=1.5 is appropriate where drivers are likely to be in an alerted state, ie conscious that extra care is needed).

Tabe 2 - Stopping and Manoeuvre Sight Distance [m]

Design Speed [km/h]	Normal Design R_f=2.0s	Restricted Situations R_f=1.5s	Manoeuvre Sight Distance
50	45	40	45
60	65	55	60
70	85	70	75
80	105		
90	130		

Stopping distances shown in the above table should be provided on District Roads for the safety of all users. Existing sight distances on District Roads are often much less than the figures in Table 2. Drivers should adjust their speed accordingly.

The lack of adequate sight distances becomes evident when traffic volumes increase. At low speeds on limited visibility roads, heavy vehicles often have shorter stopping distances than light vehicles due to their superior braking systems and high weight on braked axles.

It should be noted that the Road Code requires that drivers should at all times be able to stop within half the visible distance of road ahead of them.

4.4 Pavement

4.4.1 Pavement

A road pavement is the means of transferring the relatively concentrated loads from wheel contact points to the underlying soils which generally have low load bearing capacities. A pavement achieves this transfer of load by distributing the point loads from wheels over a larger area of subgrade. A road or track with little or no pavement can carry a small number of vehicle passes directly on the sub-grade soil when the wheel loads are low or when the sub-grade soil is dry4 and has a high load bearing capacity.

4.4.2 Pavement Design

The design of pavements to effectively carry predicted traffic loads and volumes over known soil conditions is a process for which there are established design procedures.

Whilst local knowledge and experience is often used during pavement design, there are well established design methods that can be used to increase the level of confidence in ensuring a particular pavement will remain serviceable under the expected traffic loading.

4.4.3 Flexible Pavements

Flexible pavements are the predominant pavement type in New Zealand. They usually consist of an aggregate layer (or layers). The aggregate pavement is designed to spread the high pressure under the wheel loads over a much larger area of sub-grade at the base of the pavement. This pavement layer is designed to deform elastically under load. It is often covered with a thin flexible chip seal which is designed to provide water-proofness and also skid resistance. Flexible pavements are relatively low cost and if suitably designed, constructed and maintained, can have a long life.

4.4.4 Rigid Pavements

Rigid pavements have a stiff structural layer, usually asphalt or concrete, and are designed to act as structural slab. The bending stiffness of the slab is used to distribute wheel loads over a wider area of sub-grade. The cost of a rigid pavement is usually considerably higher than that of a flexible pavement. Rigid pavements are usually only cost-effective on high traffic volume roads such as motorways or in log yards where very heavy wheel loads are carried in concentrated locations.

[4] Note that stabilisation techniques (cement, lime, bitumen, etc.) aim to maintain this "dry" strength by protecting a cheaper material from the effects of moisture, i.e. by "stabilising" the dry strength.

4.4.5 Standard Design Axle

Conventional pavement design uses a "standard" design axle as the basis for design. The "standard axle" is defined as being a twin tyred axle carrying eight tonnes. All vehicles are measured in terms of this Equivalent Design Axle (EDA). This allows various combinations of axle loads to be compared in terms of EDA's.

4.4.6 Relationship Between Different Axle Weights (4th power rule)

The fourth power rule states that the wear due to any axle load is in proportion to the wear caused by a standard axle raised to the fourth power of the relative axle weight. This rule has its origins in ASSHTO test undertaken in North America in the period 1956-61 on sealed flexible pavements. Recent research in NZ by John Du Pont of TERNZ and at the University of Canterbury has indicated that a 2nd power rule may be more appropriate for unsealed Low Volume roads.

To illustrate the effect of the power rules, a 12 tonne axle has 1.5 times the weight of an 8 tonne axle but has as an EDA of 5.06 (using a 4th power rule) or an EDA of 2.25 (using a 2nd power rule).

What this means is that at a particular point on a road one passage of a 12 tonne axle is equivalent to between 2.25 and 5.06 passes of an 8 tonne axle at that same point.

4.4.7 Pavement Damaging Effect

The amount of wear of flexible pavements resulting from the passage of an axle (pavement damaging effect) is considered by most widely accepted pavement design models to be a function of the EDA of that axle. Hence an axle that carries twice the load of another will cause between four and sixteen times the wear of another. Similarly, a truck that is overloaded by 10% will cause between 21% and 46% more damage than a truck loaded to its normal load. For this reason, light vehicles generally cause a negligible amount of pavement wear or damage on normal, properly constructed, road pavements.

4.4.8 Flexible Pavement Design Methods.

The design of flexible pavements is generally based upon the summation of EDAs that is expected over the design life of the pavement. For a given value of total design EDA and sub-grade strength, the required thickness of pavement to provide a serviceable pavement is derived from a design procedure, given predetermined acceptable limits on deflection, deformation or rutting.

4.4.9 Pavement Depth

Conventional pavement design (on flexible roads) calls for a depth of suitable aggregate to be provided as the road pavement. This aggregate serves a number of purposes including:

- Maintenance of a suitable road shape and cross-fall.
- Load spreading from the surface through the pavement depth to and sub-grade to ensure the pressures applied to the sub-grade are within its load capacity.
- Drainage of water entering the pavement from the surface or from the sub-grade.

The provision of aggregate to form pavements is usually a major portion of the cost of road construction. Selection of the minimum pavement depth that will provide the required performance is a key factor in cost-effective road design.

4.4.10 Pavement Requirements for Increased Traffic and Loading.

The additional pavement thickness required for an increase in pavement loading in terms of EDA is not linear. Under a typical design method, a 1000% increase in traffic loading would require an additional pavement thickness of only 25% above the original pavement if this was adequately designed for the original traffic loading. Hence the net effect of providing an adequately designed road pavement for an increased traffic level is much less than a direct proportion of the additional traffic loading in terms of DEA or tonnage carried or numbers of vehicles.

This effect means that the incremental cost of providing a suitably designed road pavement for forest harvesting is often not much more than the cost of providing a properly designed pavement for the non-forestry traffic.

4.4.11 Cost of Pavements

The cost of providing a road pavement is directly proportional to the thickness of pavement provided. A design procedure usually results in selection of the minimum thickness of pavement that will meet the design criteria.

4.4.12 Cost Effective Pavement Design

For Low Volume roads, it is often acceptable to use a higher risk approach to selection of a design pavement. In this approach, a thinner pavement depth is used in the design together with the acceptance that in some locations there may be pavement damage within the design life. If the road is unsealed, it is a relatively simple matter to add

additional pavement depth to any localised failed areas when they appear. This often results in a lower overall cost than would have been incurred if a more conservative pavement design had been adopted at the outset. This approach has the potential to significantly reduce the cost of upgrading Low Volume District Roads.

4.4.13 Subgrade Stength

The strength of the underlying sub-grade soils on which a road is constructed depends on the soil type and the moisture content of that soil. During dry periods the strength of the sub-grade soil will be higher, hence it is more capable of supporting vehicle loads than it would be during wet seasons. Roads with relatively weak pavements can be used successfully to carry logging traffic if the period of harvest is limited to dry periods.

Where the sub-grade soil has a very low strength, an option is to excavate the weak material and replace it with a better strength material that may be available nearby. Alternatively, the sub-grade soil strength may be increased by soil stabilisation. Stabilisation can take a variety of forms including the use of geotextiles or geogrids, or the use of cement, lime or other stabilising agent to bind soil particles together and increase the shear load capacity.

4.4.14 Heavy Traffic Capacity of Existing Pavements

A large proportion of existing rural road pavements are capable of carrying light traffic and comparatively low numbers of heavy vehicles. They have performed satisfactorily under this loading with maintenance that was within the financial resources of the TLA. As traffic levels and the frequency of heavy traffic increases, many of these pavements are now inadequate to carry the current traffic loadings without increased pavement deterioration giving rise to a need for additional maintenance.

This situation has arisen because many TLAs have had insufficient funding to reconstruct pavements to recognised design models and have been forced to provide lesser pavements in the acceptance that earlier pavement failure may occur and higher levels of maintenance will be necessary. Whilst this higher-risk approach to pavement provision is sensible and sustainable in the short-term, it is unforgiving in situations where there is a significant permanent increase in traffic loading. Such roads often exhibit rapid pavement failure when subjected to a sustained increase in traffic loading from forest harvesting.

Many existing rural road pavements are however capable of carrying short term increases in heavy traffic if such spikes in loading occur

during periods when pavements are dry and the pavement and sub-grade strengths are high.

4.4.15 Strength of Pavement Layers

The stress from axle loads decreases with depth within a pavement, hence a less durable lower-cost aggregate may be used in the lower layers of a pavement. This approach allows lower-cost, and possibly local, weaker aggregate to be used as the sub-base layers of a pavement. The upper layers of a pavement however require full strength regardless of the axle loads.

4.4.16 Pavement Deterioration Over Time

Flexible road pavements by their very nature, deteriorate through use and eventually fail. This failure can be classified into two groups:

- Structural failure is where the structural capacity of the road can no longer support the wheel loads without severe rutting caused by shear failure of the sub-grade soil or the pavement layers. The road becomes impassable, at least to light vehicles, within a very short time.
- Functional failure, where the road serviceability falls below a safe acceptable level. Serviceability relates to user comfort and is a function of roughness. Heavy vehicle road users can usually tolerate a higher levels of roughness than light vehicle users.

A road can have failed functionally but still be structurally sound.

4.4.17 Pavement Rutting

Rutting may initially be caused by compaction of an existing pavement or sub-grade material when the type and weight of vehicle using it changes. This rutting may be seen as the onset of failure, but in fact could be improving the sub-grade strength through compaction. A repair of the surface layers of such a pavement may then give rise to a far better pavement. Unfortunately rutting is sometimes left too long and the pavement collapses under shear failure before the benefits of compaction are captured.

4.4.18 Relative Pavement Deterioration

Pavement deformation of a chip seal surfaced unbound granular pavement (flexible pavement) will, under certain levels of sub-grade and pavement strength, be elastic and will recover after vehicle passage. However under heavier loads when sub-grade and pavement strengths are lower, very small amounts of permanent deformation occur due to sub-grade rutting and compaction of the granular layer. The accumulation of these deformations will cause surface rutting and

roughness. Rehabilitation will be required when the roughness exceeds a certain criteria. Structurally, nothing has changed in the unbound granular pavement and the rehabilitation treatment simply involves smoothing with a marginal increase in thickness to cater for the future traffic volumes.

Other pavement types with bound layers (rigid pavements) suffer by fatigue. At the end of their life the bound layers would have cracked through and the structural integrity of the pavement substantially reduced. Rehabilitation of this type of road is substantial, as the original structural integrity needs to be restored and an increase in future traffic volumes may need to be catered for. A major change in pavement type from the unbound granular could result in a significant increase in rehabilitation costs 30 years from now.

For the above reasons, the use of rigid pavements with bound layers is unlikely to be a cost effective or sustainable option for Low Volume rural roads.

4.4.19 Seasonal Effects

Extremes of weather, either wet or dry, may detrimentally affect a road pavement depending on the materials used in its construction as well as the traffic loads being carried. Seasonal effects are most noticeable on roads that have not been specifically designed for use during a particular season or weather extreme.

In the case of roads carrying heavy loads, such as those used by logging trucks, pavement problems arising from seasonal effects are mostly due to wet conditions, which lead to:

- Ingress of water into the sub-grade[5] and pavement aggregate resulting in reduced strength.
- Surface deterioration and slushing of wet unsealed roads.
- Poor drainage of the pavement, often caused by poor compaction during construction. Pavement movement under wheel loads then causes mixing with unsuitable materials (eg clay) from the sub-grade and consequently a reduction in pavement strength.
- Poor skid resistance due to clay material on seal or wet uncompacted surfaces on unsealed roads.

In some situations there may be potential for forest owners to limit the use of a District Road by forestry traffic during wet seasons thus allowing a lower standard of road pavement to be used without incurring the type of damage that would normally be expected during wet periods. This may be a cost-effective alternative to upgrading a road to a standard where it will remain serviceable in all conditions.

[5] Note that this will be much less of an issue when the subgrade has been stabilised.

Such restrictions on heavy traffic use should be based on evaluation of pavement strength characteristics and likely pavement damage in wet conditions rather than be allowed to become a mechanism to limit forestry activity in general. Seasonal restrictions may take the form of agreeing to a reduced axle loadings during periods when soil saturation levels are above a certain level.

For larger forests that are under continuous harvesting cycles, seasonal limits may be more difficult or costly to implement. Commercial sale commitments for specific species or log grades may also make this option difficult.

4.4.20 Effects of Frequent Heavy Passes in Quick Succession

Where there is a significant amount of moisture present in pavement aggregate or sub-grade soil, the effect of heavy axle loading in quick succession is believed to be more damaging than the same number of axle passes spread over a longer time period.

This effect is sometimes observed on rural roads having thin low quality pavement construction over saturated soils. On such sub-grades, an occasional heavy vehicle pass causes only minor damage, but an activity that gives rise to several heavy vehicles passing in a short time period results in more significant damage.

This effect is the result of the development of positive pore water pressure under a rapidly applied loads.

If successive loads are applied before the pore water pressure has time to dissipate and reach equilibrium, the pore water pressure continues to increase with each successive loading. Excessive pore pressure reduces effective shear strength resulting in permanent deformation of the pavement or sub-grade material.

This effect is a function of the time-period between successive loads and the permeability of the pavement or sub-grade material. Research conducted by Transfund in NZ and other overseas research appears to associate this effect with situations where there are large number of load cycles with a frequency between loadings ranging up to a few minutes. This effect is unlikely to be a factor in Low Volume District Roads except where the sub-grade soils or pavement are extremely impermeable or where the road is subjected to a large number of load repetitions in very quick succession (ie only minutes apart).

When road pavements or sub-grades are saturated, provided heavy vehicle passes are separated by a time period of 30 minutes or more, it is unlikely that pore water pressure increase will be a factor in road deterioration. It should be noted that road pavements and sub-grades

that are prone to this effect are likely to be in poor condition and in a state that is inadequate for carrying any significant levels of heavy traffic regardless of pore pressure increase effects.

Other than on very inadequate roads (as described above) that are liable to deteriorate with even infrequent heavy traffic, there is no evidence to support the theory that frequent heavy passes will causes more damage to rural roads that the same traffic over a more extended period.

4.4.21 Use of Central Tyre Inflation

Central Tyre Inflation systems for lowering the tyre pressure of truck wheels (CTI) have become quite common on logging trucks. Approx 20% of logging trucks in use in NZ have CTI systems fitted to the driving axles. These systems allow tyre pressure to be reduced and increased from within the truck cab whilst travelling.

Currently in NZ CTI is used predominantly on the driving axles of trucks to increase the tyre contact area with the pavement and hence increase the coefficient of friction. As a result these trucks are able to climb steeper grades without traction difficulties.

4.4.22 Effect of Reduced Tyre Pressure

Tyre pressure is one of the primary parameters underlying most pavement design procedures. Pavement design traditionally is based on the assumption that heavy vehicles will have tyre pressures at 100 psi. Recent studies show considerable benefit from lower tyre pressure when associated with heavy loading.

Practical trials show that for unsealed roads in particular, modest levels of reduced tyre pressure have significant benefits to the vehicle operator as well as reduced road wear including the following:

- Less punctures in heavy vehicles on unsealed roads
- Smoother ride
- Less stress on suspension and mechanical components
- More driver comfort
- Corrugations and surface ruts are healed by the low pressure tyres in a similar fashion to that achieved by passes of a rubber-tyred compactor.
- Testing at the Nevada Automotive Test Centre found that lowering tyre pressures reduced traffic related road maintenance by up 80% and healed existing ruts on unpaved roads. This test also found that truck component damage was reduced by as much as 85% on a rough road course when lowered tyre pressures were used. Reductions in tire wear and punctures were also noted.

If forest harvesting transport were to be fitted with CTI on all axles and lower tyre pressures are used on District Roads, pavement wear can be expected to be significantly reduced. There is potential for roads with weaker pavements to be used for forest harvesting on the basis that all logging trucks using the road are fitted with CTI on all axles.

The cost of fitting CTI to truck is significant for a transport operator. The benefit of having CTI fitted accrues to the forest owner as well as the transport operator. If the forest owner were to contribute to this cost (either directly or through an adjusted transport rate for CTI fitted trucks) then the availability of trucks fitted with CTI would increase. The result would be a significant reduction in road wear both in the forest and on District Roads.

The effects of lower tyre pressure on sealed roads have not been as extensively researched. There are suggestions that lower tyre pressures may actually damage the chip seal commonly used on roads in New Zealand.

Use of reduced tyre pressures at high speeds or over long distances results in heating of the tyre walls and increased tyre wear. Hence this option is only suitable for only a few kilometres of low standard road.

4.4.23 Acceptable Surfacing

The acceptability of a road surface is a subjective matter. Drivers of light vehicles prefer the ease and comfort of sealed roads, however these are more expensive than unsealed roads to initially construct, upgrade and may be more expensive to maintain.

Users of heavy vehicles will generally accept unsealed surfaces more readily than the general public. This is due to a number of factors but the prime ones are:

- Heavy traffic drivers usually have higher driver skills;
- Drivers of heavy vehicles experience less deterioration of driver comfort on unsealed roads than do the drivers of light vehicles; and
- Drivers of heavy commercial vehicles are likely to accept that use of unsealed roads is a necessity for their work.

Forestry roads are predominantly unsealed and generally use large size crushed rock as a surface. The use of a wearing surface layer consisting of a smaller sized aggregate and fines, on unsealed roads can increase the comfort level for truck drivers and light vehicle users as well as providing a much better medium for the maintenance of the road surface

Where road upgrading is necessary to increase pavement strength for forestry traffic, it is often not economically justified to provide a chip seal surface, even if the road had a chip seal surface prior to upgrading. In other situations where harvesting is to take place over a limited period only, there is merit in maintaining the road in an unsealed state until after harvesting is complete. This enables localised failure of the pavement to be easily repaired during the harvesting period.

4.5 Bridges

4.5.1 Bridge Load Evaluation

Bridges on District Roads have load limits assessed as per the evaluation procedures in the Transit NZ Bridge Manual. This evaluation is based on analysis of the capacity of the bridge to carry Highway Normal and Highway Overload (HN-HO-72) standard vehicle loads with the required load factors. A standard Highway Normal load consists of two 12 tonne axles spaced at 5.0m acting simultaneously with a deck uniformly distributed load of 3.5 kN/sq m.

Class 1 loading is equivalent to 85% of the HN load. The load capacity of the bridge beams normally determine the percentage of Class 1 loading that can safely be carried by a bridge. Bridge decks are also assessed as part of an evaluation. Deck capacity to carry wheel loads is expressed as the weight in kg per axle.

4.5.2 Bridge Load Posting

Load Posting defines the capacity of the bridge using normal live load factors or stress levels.

The calculations take into account bridge structural span length, beam material, size and condition and also the possible eccentricity and impact loading of heavy vehicles passing over the bridge. In some cases, the maximum vehicle speed on a bridge is limited to reduce the impact loading.

Load Posting on bridges is displayed on signage to the standard Transit NZ format which has the words "Heavy Vehicle Load Limits" and the percentage of Class 1 loading permitted followed by any limits on axle loading and vehicle speed.

Bridges that have a 100% Class 1 load capacity are deemed to be suitable for the passage of heavy vehicles meeting the normal requirements of the Heavy Motor Vehicle Regulations. Because the axle configuration and loading of heavy vehicles varies widely, the actual bridge stresses for a particular fully loaded heavy vehicle may be less than the stresses that arise from the passage of a standard Class 1

vehicle. In certain cases it is possible to show that some fully loaded heavy vehicles may pass over a particular bridge that has less that 100% Class 1 Load Posting without exceeding the safe load limits. This is dependent on bridge span length and the truck axle spacing and weight. This must be evaluated on a case by case basis for any bridge.

4.5.3 Bridge Overweight Rating

Bridge overweight capacity rating is determined as per the Transit NZ Bridge Manual and is based on calculation using reduced load safety factors compared with those used for normal Load Posting. This is because overweight use of a bridge is infrequent and can be carried out under controlled conditions. Bridge overweight capacity is generally significantly higher than the normal load posting and enables the occasional passage of overweight loads. A bridge that is designed to HN-HO-72 loading has an overweight capacity that can allow the passage of vehicles up to twice the normal bridge Load Posting capacity.

The TLA can issue overweight permits for the passage of heavy vehicles over specific bridges. Applications are made on a case by case basis and require the provision of heavy vehicle axle spacing and axle load data. This enables the TLA to determine if the proposed heavy vehicle can safely cross the bridge within the overload load safety factors. Sometimes special conditions will be imposed to control the alignment and/or speed of the vehicle during its passage over the bridge.

Overweight capacity enables the occasional use of bridges by overweight loads and allows large equipment such as haulers to cross bridges, subject to the loads being within the assessed overweight capacity.

4.5.4 Options for Low Capacity Bridges

When the normal load capacity of a bridge is below that required to carry fully loaded heavy vehicles, the following options may be available:

- Use an alternative transport route (if available)
- Limit the payload on the heavy vehicle
- Upgrade the bridge
- Install a temporary bridge over the existing bridge (if heavy vehicle capability is required for a short period only)

When the overload capacity of a bridge is insufficient to carry a proposed overweight vehicle, the following options may be available:

- Use an alternative transporter that has a more favourable axle configuration (eg a transporter with a "dolly" trailer)

- Temporarily prop the bridge during the overload use.
- Form a ford or low level crossing adjacent to the bridge.
- Reduce the weight of the load by removing parts from the equipment (ie remove the pole and cables from a hauler)

5.0 TRAFFIC MANAGEMENT

5.1 Preamble

The safe management and operation of a District Road can be influenced by the method of transport management adopted. In the absence of any special management, the traffic rules contained in the Road Code apply. In many cases the adoption of special traffic management measures can enable an otherwise inadequate road to be used safely for forest harvesting. Traffic management can take a number of forms as outlined in this section.

5.2 Information Signage

Information signage consists of signage advising road users of specific hazards they may encounter on a road. The most common of these is the advisory speed, intersection and curve signage found on highways. Installation of such signage on District Roads to inform drivers of hazards can improve safety. More frequent use is being made of signage to advise of the use of roads by logging traffic and to recommend caution. These are a cost effective alternative to what may be expensive road upgrading. Care is needed to ensure that signs are clear and current, and are only in place while the alerted conditions exist.

5.3 Regulatory Signage

Regulatory signage imposes compulsory controls on the use of a District Road.

These may take the form of traffic behaviour restrictions such as speed limits or may consist of vehicle type and weight restrictions. Vehicle restrictions create operational barriers to landowners and require the passing of a By-law before they can be imposed, unless they are of a temporary nature and are imposed to mitigate hazards, ie traffic speed on a failed pavement section.

Traffic behaviour restrictions in the form of stop signs, give way signs and speed restrictions can contribute to traffic safety. Speed restriction signage is however of limited value since speed limitations are often exceeded by many drivers. It is likely that information signage that is directly relevant to the hazards on a particular road will be more effective that standard speed restriction signage.

5.4 Vehicle Communications

Effective management of logging traffic can be achieved by implementing communication between logging trucks. Although it depends on the facilities in an area, most logging trucks have good radio communications. It is common practice for trucks travelling within a forest to notify their location by radio telephone and to listen for the location of other trucks.

There are a number of instances where such communication has enabled the safe use of a public road by logging trucks simultaneously with public traffic. Such communication virtually eliminates opposing truck conflicts on narrow road sections and reduces the frequency of unexpected light vehicle encounters because truck operators report the presence and direction of public vehicles to other truck operators. With good communication, a road of narrow carriageway width can be operated safely provided there are adequate passing bays. An important underlying principle is that all drivers must expect (and drive accordingly) to meet traffic which may not have communications equipment installed.

There are instances where a radio has been supplied by forest owners to a school bus to allow communication with logging traffic. A consequence of implementing communication between vehicles on a road is the increased awareness of traffic safety issues among drivers.

5.5 Community Communication

This involves consultation and communication with the other landowners and users on a particular road to identify hazards and develop operating procedures that reduce risk of conflicts and hence increase the safety of operation of the road. Whilst this approach relies on a community which is supportive of the forestry activity and a cooperative approach, there are examples where this is working effectively. Rural communities are always concerned particularly where school bus safety involved. Genuine efforts by forestry companies to manage operations to minimise risks can generate good community support.

This is due in some cases to good communication of the intention to use the road and by carefully explaining the circumstances and the reasons the particular action being taken. In cases where this is working well it is almost invariable that appropriate early contact was made and communication was maintained throughout the time.

5.6 Piloting of Heavy Vehicles

In instances where harvesting takes place over a short period and the length of inadequate standard District Road is short, successful use has been made of a pilot vehicle travelling in front of all logging trucks on a public road. Traffic is limited to one way and the road cleared by the pilot vehicle when it reaches

each end of the road. The pilot then turns around to pilot traffic in the other direction. Innovative schemes such as this can work well when there is good cooperation between forest owners and other land owners who make use of a road.

5.7 Traffic Control Signalling

This operates similarly to that used frequently a road works sites. Where the length of an inadequate section of District Road is relatively short, manual or automatic traffic signalling can be installed to limit the section of road to one way traffic. With the removal of any potential opposing traffic confrontation, narrower carriageway width and reduced sight distances can be tolerated.

Traffic signalling is unlikely to be suitable for any period of time on sections of road where the public AADT is high, but can be a very cost effective approach when traffic volumes are low.

5.8 Regulating Forest Operations

Voluntary control by the forest owner on time of use of a District Road by logging trucks is a option for improving the traffic safety. Given a forest owner usually has some level of control over harvesting activity, regulating logging traffic is reasonably easy to achieve if forest harvesting and transport is well planned. Regulation of forest traffic may be a particularly suitable mechanism when other traffic patterns are regular and its timing is well understood.

Another option that may be available to some forest owners is to control the entry and exit points to the forest such that loaded trucks exit via a different District Road than that used by un-loaded trucks on entry. This removes the opposing truck conflicts and also confines the loaded heavy vehicle use to one road only.

At intersections where visibility is poor, the use of mandatory left-turns is often an appropriate alternative to the provision of the necessary visibility for safe right-turn manoevoures. Trucks can then, if necessary, do a U-turn at a suitable turning place. Where volumes are low or intermittent, this is much cheaper than undertaking major improvements to increase sight distances.

5.9 Road Closure

Closure of a District Road by a TLA as a means of protecting public safety is rare. It is used predominantly in the event of storm damage or other exceptional event that renders a road unsafe for use or where a TLA believes that unacceptable damage will occur if the road is used by any traffic. Permanent road closure requires a public consultation process and is unlikely to be used by a TLA as a means of controlling forest transportation.

Temporary road closure has been used to achieve adequate safety during logging operations in close proximity to a District Road. Such temporary closures are established as a result of cooperation between forest owners, the TLA and other landowners who use the road.

5.10 Vehicle Restrictions

Local By-laws may be used by a TLA to impose regulatory controls on road use. These have been used to prohibit the use of engine brakes in certain areas, to impose vehicle weight limits and to impose vehicle type limits on certain roads.

Before passing a By-law restricting a particular vehicle the Local Government Act of 2002 requires that TLAs follow the special consultative procedure as determined by the Act. This enables forest owners and other land owners to make submissions on any proposed restrictions.

Any restriction of vehicles cannot discriminate against any particular landowner. A vehicle type or weight restriction must be applied equally regardless of whether a heavy vehicle is carrying timber, milk or livestock.

It is believed that in some instances, TLAs have introduced vehicle restrictions that have been outside their jurisdiction or they have not followed the correct processes. Where restrictions appear to be discriminatory or unjustified, it is recommended that legal advice be sought on the validity of such restrictions.

6.0 LEGAL ISSUES

6.1 Preamble

As a result of the increasing prominence of the issue of use of District Roads by forestry traffic, greater use is being made by the TLAs of legal mechanisms to limit or restrict activity or to extract funding from parties to cover the cost of road upgrading.

The relevant legislation is as follows:

- Local Government Act 2002 (LGA)
- Resource Management Act (RMA)
- Land Transport Act (LTA)
- Heavy Motor Vehicle Regulations

Detailed knowledge of these Acts and Regulations is necessary if they are proposed as a means of controlling forestry use or to extract funding from forest owners. Seeking advice from appropriately qualified and experienced legal and planning services is recommended in such circumstances.

6.2 Local Government Act

The LGA sets out the legislation under which TLAs have the authority to collect rates from land owners and the responsibilities of TLAs in relation to the management of public amenities. The LGA details the basis on which TLAs can set rates for various land classifications. It also details the basis on which By-laws can be established which may be used to control use of particular roads.

In the event of any TLA proposing the introduction of differential rating or By-laws that are in-equitable for forest owners, it is recommended that legal advice be sought to check the LGA for the validity of such proposals. There have been occasions when proposed rating and limits on road use by TLAs have been legally challenged and found to be outside the authority of the TLA.

6.3 Resource Management Act

The RMA empowers the Regional Councils to regulate activities for the purpose of protecting non-renewable resources such as soil and water. As such, the Regional Councils cannot impose funding requirements on Forest Owners for the purpose of upgrading of District Roads. However in the course of issuing a Resource Consent for controlled activities they may impose conditions that are aimed at reducing any potential adverse effects on non-renewable resources.

District Councils are empowered under the RMA to issue Resource Consents for controlled activities relating to Land Use or where a change in Land Use classification is sought. Such Consents may include as conditions, a requirement for Forest Owners to make payments to the District Council for the purpose of mitigating adverse effects. This mechanism is being increasingly used to require Forest Owners to fund improvements to District Roads where forest harvesting will increase the traffic loading.

TLAs are required within their District Plans to classify Land Uses and identify Permitted Activities, Controlled Activities and Prohibited Activities for each Land Use classification. What has become evident in recent years is that draft District Plans are being prepared which make forestry a Controlled Activity rather than a Permitted Activity in many rural land use classifications. This then forces forest owners into having to apply for a Resource Consent under the RMA to carry out activities relating to forest harvesting. This mechanism is being used to enable the TLA to obtain funding from forest owners for public road upgrading.

Active involvement by Forest Owners is necessary at District Plan drafting stage to resist moves to make forestry a controlled activity on rural land where production forestry is an appropriate land use.

This process requires Forest Owners to allocate adequate resources to keep account of the proposed District Plans and ensuring that appropriate submissions are lodged together with supporting information.

The lodgement of submissions to Draft District Plans and of Resource Consent applications is a subject that is beyond the scope of this report and it is recommended that Forest Owners obtain the advise of specialist Resource Planners and legal advice for these activities.

Heavy Motor Vehicle Regulations

The Motor Vehicle Regulations are enacted under the Land Transport Act and provide a mechanism to influence the safety of the road network. These include rules covering vehicle mass and dimensions.

Recent changes to allowable lengths of logging trucks in particular will lead to more stable trucks and trailers. Unfortunately the time and effort involved in making these changes to vehicles is so significant, that the effectiveness is limited.

7.0 FUNDING ISSUES

7.1 Preamble

The awareness of issues relating to demand on district roads for forest harvesting typically arises as a result of:

- Communication by a forest owner to the TLA in relation to requirements for upgrading of a particular road for proposed harvesting
- A Land Use Consent application by a forest owner in respect of harvesting or work associated with harvesting which is other than a permitted activity on a particular land holding.
- Awareness by a TLA that pending harvest of forested areas will increase traffic loading on particular roads to the extent that upgrading is necessary to maintain safety or serviceability standards.
- Response to deterioration in road serviceability or reductions in road safety as a result of forest harvesting already taking place.

Most forest owners and TLAs have attempted to take a pre-emptive approach to addressing issue. This has consisted of the following measures:

- Direct communication and negotiation between the forest owner and TLA to reach agreement on the required upgrading or controls and to agree on relative contributions to funding.
- Imposing requirements or restrictions as conditions of a Land Use Consent where these are required for a harvesting operation.
- Instigation of regulatory controls on roads by TLAs
- Introduction of differential rating at the time of District Plan review as a means for TLAs to gain additional funding from forest owners to address the roading issue.

The relative merits and issues surrounding the above measures is discussed below.

7.2 Transfund Role

7.2.1 State Highway Funding

Transfund is the Government Authority that allocates central government funding for the purpose of maintaining and developing the road transport network. Transfund provides 100% funding of State Highway maintenance and capital projects. This is distributed on the basis of projects being ranked in priority as per the Benefit/Cost ratio as derived from the Transfund Project Evaluation Manual. The allocation of funding for Transfund supported projects is guided by the funding allocation framework as set out in the National Land Transport Stretegy. As well as consideration of the Benefit/Cost, other factors are taken into account including:

- Congestion relief
- Road Safety
- Promotion of walking and cycling
- Regional development
- Passenger Transport
- Alternatives to Roading

7.2.2 District Road Funding

Transfund also provides funding contribution to TLAs for both the maintenance and upgrading of District Roads. The funding provided for maintenance is a function of the length of District Roads maintained. Funding provided for capital upgrade projects is allocated on the basis of the benefit/cost ratio for such projects using the same Transfund Project Evaluation Model as used for State Highway projects as well as other local factors. The balance of funding for road maintenance and for capital projects is provided from TLA funds raised from rates within the District or loans or user contributions or some combination of these.

Any capital projects that do not meet the threshold Benefit/Cost to qualify for Transfund funding, have to be fully funded by the TLA or from other sources within the District such as direct contribution from an interested party such as a forest owner.

7.2.3 Transfund Rules on Uneconomic Roads

Transfund rules prohibit the provision of funding to TLAs for "renewal, reinstatement, or structural upgrading" of any roads classed as "uneconomic". Transfund classifies a road as uneconomic where the

ratio of the total cost of the work to be undertaken per AADT is greater than or equal to $5,000 per vehicle.

When a forest is in its growing phase and not being harvested, many access roads would fall into this "uneconomic" category resulting in the TLA being unable to obtain any funding from Transfund to upgrade the road. Only when harvesting begins is the road likely to rise out of the "un-economic" category. By this stage, it is often too late to instigate a project to undertake the necessary upgrading except at a substantially increased cost due to the need to keep the road open for trucks. The Transfund Rules are un-sympathetic to the needs for upgradng of District Roads in preparation for forest harvesting. Early communication with TLAs before harvesting could assist in resolving this situation and the possibility of presenting a joint proposal to Transfund could yield benefits to the TLA as well as the forest owner.

(In one such example, a collaborative approach with the Hastings District Council, resulted in the District Council assisting in obtaining Transfund funding for the upgrade of District Council Roads into Ngatapa Forest. Council agreed to upgrade the road to the last resident, the forest company upgraded the narrow road through the farm to the Mohaka River. The District Council expected the Forestry Company to demand that they upgrade all the road. When the collaborative approach was confirmed they were very helpful in completing the project. This was an interesting case as the rates for about 2/3rds of the forest fell in Wairoa District Council, and the road in Hawkes Bay District.)

7.2.4 Regional Development Roading Fund

In 2002, the Government established a Regional Development Roading Fund which is administered by Transfund. The fund was made available in recognition of the inability of TLAs in these regions to fund the necessary infrastructure development to facilitate forestry and wood processing development.

The fund is available initially to TLAs in the Northland and Tairawhiti Regions and, in special circumstances, to other regions. The Government is currently considering the possible extension of the term and applicability of the fund.

Regional Development Funding is available to TLAs to undertake improvements to District Roads in advance of increases in traffic flow that relate to significant regional developments. This provides a 100% funding for upgrading works that meet the criteria of the Regional Development Fund

The priorities for provision of funding from the Regional Development Roading Fund are as follows:

- To provide improved access.
- To reduce transport costs
- To mitigate adverse effects on the environment and amenity arising from increased traffic.

Within the first priority noted above, funding allocation is ranked in the following order:

- Work relating to the development of new wood processing.
- Work relating to the expansion of existing processing.
- Work relating to expansion of log exports.

The provision of the Regional Development Funding provides an opportunity for TLAs in Northland and Tairawhiti to upgrade roads to a design standard that is appropriate for the expected traffic levels without having to make significant compromises because of funding limitations. Such upgrading enables a shift in road management regime from one of high annual maintenance cost in reaction to pavement deterioration to a regime of regular maintenance at a much lower annual cost.

7.3 TLA Role

7.3.1 Rate Contribution By Forest Owners

Forest Owners contribute rates to TLAs based on land value in the same way as other landowners. Whilst forestry land values tend to be lower than land used for dairy farming or cropping, the rate sums paid annually by forestry companies are very significant.

Large areas of plantation forest were established by the NZ Forest Service in the 1970s & 1980s. Whilst as a Government Department, the NZ Forest Service was exempt from the requirement of paying TLA rates, a "Grant in lieu of Rates" was paid to TLAs by the NZ Forest Service for all plantation forest land. This payment was made at exactly the same rate as would have been paid by any private owner of the same land.

During the establishment and growing phases of a plantation forest, the forest owner makes little demand on TLA services. This is because the traffic generation from such land is very low and because forestry land in the growing phase tends to be sparsely populated, there is a low level of demand on other Council services.

At the time of harvest, forest owners place a significant demand on TLA resources in the form of an expectation that District Roads are adequate for transport of timber from the forest.

It is reasonable to expect that the many years of rate payments made prior to harvesting will be considered as advance payment toward the demand on Council services that arise at the time of harvest.

7.3.2 TLA Ability to Invest Funds

In the past there were no mechanisms available to TLAs to invest funds for future projects, hence rate payments from forest owners were used for other projects within Districts.

Now, in terms of Section 105 of the Local Government Act of 2002 TLAs are now permitted to invest as long as they have an declared investment policy from which they can then receive dividends and interest payment. While in the short-term this does not help forestry owners, it could become the basis for a long-term solution to funding of forest access roads from rates paid by forest owners.

In the meantime, it is reasonable to expect that contributions to rates made by forest owners be taken into account when considering funding arrangements for District Road upgrading for forest harvesting.

7.3.3 TLA Funding of Depreciation

Even where 100% subsidy is available under the Development Roading Programme, some TLAs express concern about the impact of the requirement to fully fund depreciation on the new assets. The LGA requires TLAs to raise an amount from rates that includes the full cost of depreciation on assets. Therefore an increase in asset values requires an increase in rates.

The fallacy in this argument is that the amount raised from the depreciation charge is available to fund capital expenditure on assets and so reduces the amount of rates or borrowings for capital works by exactly the same amount.

There is no additional burden on TLAs or other ratepayers as a result of expenditure under the Development Roading Programme.

To the extent that such works reduce maintenance costs, there could in fact be a significant reduction in the burden on ratepayers.

7.4 Differential Rating

7.4.1 Differential Rating

Differential rating describes the application of a multiplier on a TLAs general rate which applies to specific land uses. This mechanism is proposed by some TLAs as a means of acquiring additional funds from

a group of ratepayers that the TLA believes makes a higher demand on Council services.

Differential rating is proposed in some Districts as a means of obtaining additional rates from forest owners for the purpose of funding upgrading and maintenance of the District Roads that will be used as a result of forest harvesting.

The validity of a differential rating system lies in the demonstration that a particular land use places a higher demand on TLA services than other forms of land use.

Some of the TLAs that have considered use of Differential Rating as a means of collecting increased funding from forest owners have subsequently rejected this as an option.

7.4.2 Relative Traffic From Different Land Uses

The traffic generated from rural land is partly related to the production yield from that land. Data provided by MAF in 1991 indicated the following typical yields from different land uses:

Table 3 Rural Land Production Yield [tonne/ha/yr]	
Dairy Farming	9
Kiwifruit	17
Forestry	22
Pip Fruit	40

Since 1991, improvements in pastoral farming practice have resulted in even higher yields being achieved. Some dairy farms achieve yields of 11 tonnes/ha/yr.

Research commissioned by the Waikato District Council in 2002 resulted in the following annual average estimates of truck movements per hectare per year for various land uses in the Waikato District:

Table 4 Truck Movements [trucks/ha/yr]	
Sheep	0.02
Mixed Sheep/Beef	0.09
Forestry	0.80
Beef	0.81
Dairy Farming	1.94

The higher level of truck movements associated with dairy farming arises from the collection system from dairy farms which involves milk collected from farms being accumulated in tankers and hence being transported to several properties before being taken to a processing facility.

The above tables indicate that some other land uses give rise to similar and higher traffic volumes in terms of vehicle numbers than forestry and that some cropping activities have higher yields per hectare per annum than forestry.

7.4.3 Timing of Traffic Generation

Most rural land uses operate on an annual production cycle, hence production tonnages from a property is regular each year. Forestry however has a long production cycle (typically 25 to 30 yrs). During the growth period, there is no yield from a forest (except in the case of production thinning) and hence demand on the District Road network takes place after a long period of little or no demand.

Given that forest owners make rate contributions throughout the growing cycle of a forest with little demand on council services, there is a long period during which funds can be accumulated by TLAs in preparation for road improvements needed for forest harvesting. Applying discounted cash flow principles, an equivalent annual yield can be derived that takes account of the long cycle nature of production forestry. Applying a 10% discount rate over a 25yr forestry cycle results in the time adjusted annual yield from production forestry being 5.6 tonnes/ha/annum or approx 0.22 trucks per yr. This places the demand on rural roads from forestry well below that from dairy farming and only slightly higher than mixed sheep/beef farming.

Unfortunately, the rate funds collected during the growing period of many forests has been used by TLAs for District Road improvements in locations other than where it is eventually needed for forest harvesting.

7.4.4 Inequity of Differential Rating

There is no evidence that suggests the demand on Council services from forest land is significantly higher than that of other land uses when the full growth cycle of a forest is taken into account. This indicates that the application of a differential rate on forestry land is inequitable and disadvantages a single land use to the benefit of others.

7.4.5 Disadvantages of Differential Rating

The use of Differential rating as a means for a TLA to collect funding to upgrade District Roads for forestry use has a number of disadvantages. These include:

- Inequity between ratepayers and inequity between forest owners.
- Differential rating detracts from the incentive to search for a more cost-effective alternative solution for forestry road use.
- Differential rating discourages the use of alternative transport options such as barging.

- Differential rating discourages cooperation between forest owners to develop transport network strategies where several forests owners have forests in the same locality.
- Differential rating detracts from a cooperative approach between forest owners and TLAs to the forest transport issue.
- Differential rating fails to take account of the benefit arising to other ratepayers as a result of road upgrading for access to forestry land.

7.5 Resource Management Act

7.5.1 Consent Requirements

Production forestry is a Permitted Activity on rural land in many Districts. Hence there is no requirement for the application of a Land Use Consent to carry out activities associated with forestry. There is however a requirement to obtain Land Use Consents for some of the activities necessary to establish infrastructure to enable forest harvesting such as bulk earthworks for the construction of roads and works adjacent to water bodies.

Where production forestry is a Conditional Activity in certain zones within a District, a Land Use Consent is required for a number of activities associated with forest operation.

7.5.2 Use of the Consent Process

Where Land Use Consents have been required for forest harvesting under the RMA, the impact of forestry traffic on District Roads has been considered by the TLA planners as an affect of the activity. Consequently, conditions have been included in Land Use Consents which either place restrictions on the forest owner or require contribution of funding.

There has been an increasing trend by TLAs to make use of the Resource Consent process to force forest owners to contribute funds as part of the Consent Conditions. Where the contribution amount is agreed as a result of consultation with the forest owners and an evaluation of other cost effective alternatives to road upgrading, the use of the RMA in this way is reasonable.

There is however a risk that the RMA process is used as a means for a TLA to extract funds from an applicant for a particular activity under the guise of mitigation of adverse effects.

7.6 Direct Contribution by Forest Owners to TLAs

7.6.1 Contribution Arrangements

Our survey of forest owners shows many are contributing financially, over and above rate payments, toward the upgrade of District Roads on a case by case basis. The amounts being contributed vary from a few hundred dollars toward maintenance to hundreds of thousands of dollars for substantial road upgrade works.

Contribution arrangements are reached as a result of communication and negotiation between forest owners and the TLA. This process works best when there is cooperation and a willingness to find appropriate and cost effective solutions and there is recognition of past contribution by way of rates.

Forest owners usually agree to making direct contribution to TLAs for the following reasons:

- Forestry transportation over a road in its original state would not be possible due to pavement or geometric inadequacies.
- The cost of upgrading and maintenance is high in comparison with past and current rate payments.
- High operational costs would be incurred if upgrading were not carried out.
- Use of a District Road by forestry transport without the road being upgraded would cause a significant reduction of the pavement life and reduction in serviceability. The forest owner chooses to avoid these adverse effects for the benefit of future access to his own forest as well as to maintain good relations with other landowners and the TLA.
- When a Land Use Consent is required by the forest owner for harvesting activity, the TLA has the opportunity to impose a condition requiring funding contribution. In such circumstances, the forest owner has no option but to make the contribution in order to be able to uplift the Consent.

7.6.2 Factors Taken Into Account

The value of the funds contributed are dependent upon a number of factors including:

- The initial condition of the road
- The number of other users of the road
- The lead time that is available for road upgrading prior to a forest owners intended harvest
- Previous contributions by way of rates
- Previous lump sum contributions to the TLA
- Maintenance and upgrade history of the road

- Voluntary limitations on road use by forestry traffic made by the forest owner (eg agreement to limit hours of use or to limit harvesting to the dry season only)

7.6.3 Benefits of Direct Contribution

Many of the forest owners we have surveyed indicated that a direct contribution to a TLA has been a successful solution to the issue. Benefits arising from this approach include:

- Once a road has been upgraded for heavy vehicle use the TLA can usually fund the continued maintenance from Council resources without the need for further forest owner contribution.
- The forest owner enjoys the benefit of an improved road which is reflected in reduced operating costs
- Community relations are improved.

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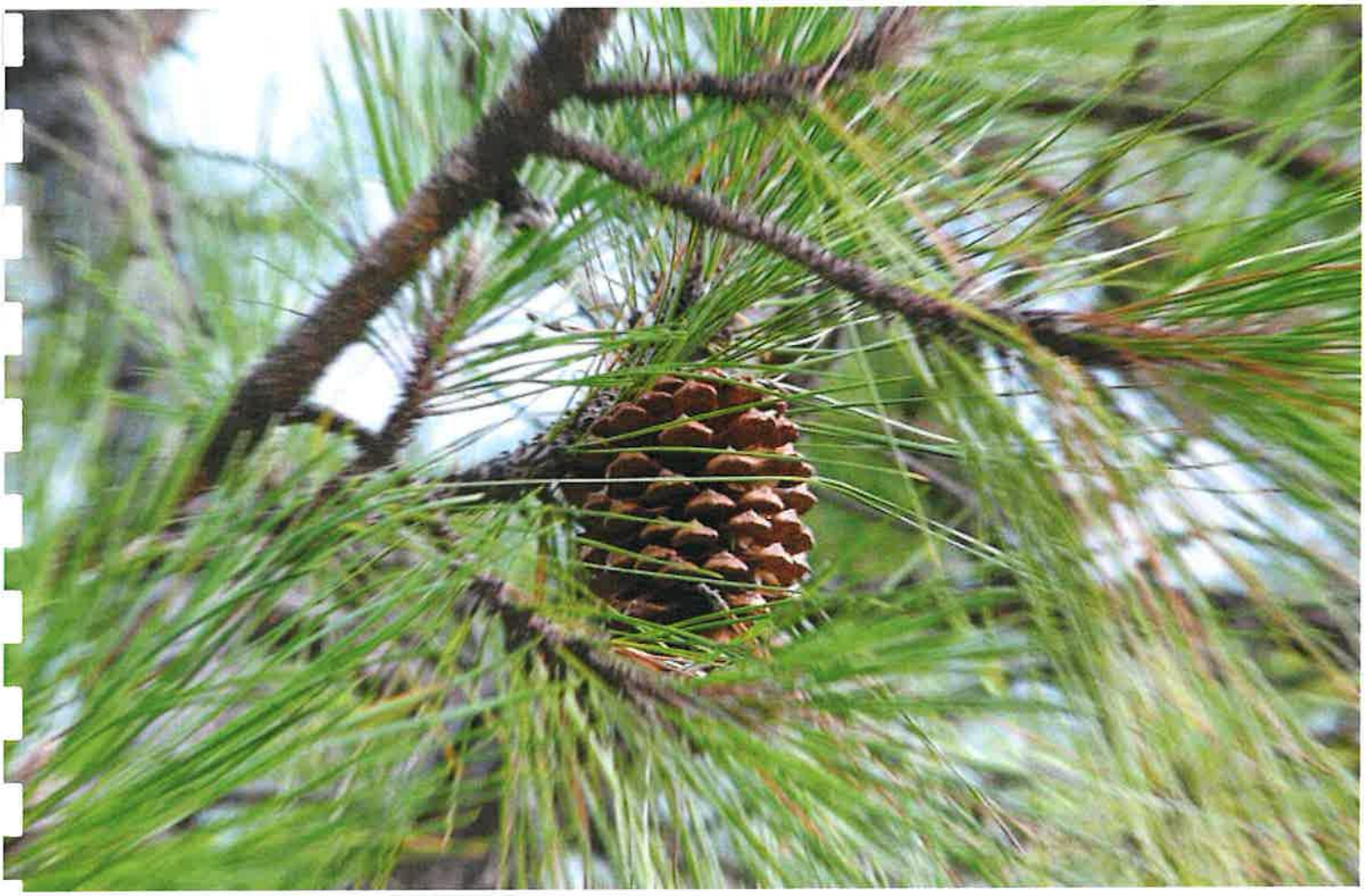

Plantation forestry statistics

Contribution of forestry to New Zealand

NZIER report to New Zealand Forest Owners Association and New Zealand Farm Forestry Association funded by the Forest Growers Levy Trust Inc

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Authorship

This paper was prepared at NZIER by Chris Nixon, Dion Gamperle, Daniel Pambudi, and Peter Clough.

It was quality approved by Mike Henson.

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L13 Grant Thornton House, 215 Lambton Quay | PO Box 3479, Wellington 6140
Tel +64 4 472 1880 | econ@nzier.org.nz

Key points

Plantation forestry and logging make a strong direct contribution to the New Zealand economy

The plantation forestry and logging sector[1] directly accounts for 0.6% of GDP or $1,389 million.

This contribution is:

- Greater than the GDP contribution of the sheepmeat and wool sector by over 20%
- About 45% larger than beef sector in GDP terms
- At a similar level of contribution with horticulture
- 0.9% of the total goods producing industries
- Approximately 2.9% of merchandised exports.

On the back of planting in the late 1980s and early 1990s, forestry production has risen from 10 million cubic metres in 1989 to 28.7 million cubic metres in 2016.

Forestry and logging are extremely important to regional New Zealand:

- To the Waikato and Bay of Plenty economies, forestry contributes nearly $280 million and $184 million respectively (just over 1% of regional GDP for both regions)
- The contribution to Gisborne and the surrounding area amounts to $96 million, nearly 5.5% of that region's GDP.

Plantation forestry is hugely important to New Zealand's environment (see Summary Table). Not the least of which is the importance of carbon capture. The wider contribution to the environment – worth at least $2 billion per annum – is made through:

- The extraction of materials from forests to provide food, fibre, energy and chemicals for pharmaceutical and other uses
- Contributions to the stabilisation of soils and reductions in erosion and sedimentation, moderation of water flows and microclimates, retention of carbon and nutrients from being discharged into the atmosphere and water
- Contributions to providing space for recreation and tourism, natural and historic heritage, general amenity and protection of biodiversity and spiritual associations of iconic locations
- Basic physical and chemical functions of nutrient and water recycling.

And contribute to the health of the New Zealand economy...

- The plantation forestry industry's influence extends well beyond its direct impacts. Forestry and logging are closely intertwined with the rest of the economy and society. This includes jobs, and the incomes it provides, its

[1] The plantation forestry sector consists of growing the plantation forests and the logging sector is the process of harvesting trees.

links to other industries (e.g. transport), the impact it has on rural and urban centres and the environment

- $3.8 billion[2] in plantation forestry production value was produced by growing and logging trees nationally in 2015:
  - $301 million went on wages and salaries
  - $1,100 million went on capital and land
  - $2,400 million was spent on inputs (mainly contractor services)
  - $171 million was spent on freight to get products to market (not included but dependent on forestry)
- The harvesting of logs is the first part of the marketing chain. It provides the wood flow to transport (domestic and export operations), domestic processing, exports, and domestic consumption all of which provide further contributions to GDP.

The sector generates jobs

- The plantation forestry sector is estimated to employ around 9,500 people (see Appendix D). The sector will support many more jobs in industries that supply forestry, and that experience benefits many regions e.g. it provides the transport industry with approximately 2,000 jobs and approximately 900 port service workers
- The plantation forestry sector accounts for 3.2 percent of all employment in Gisborne and 1.5 percent in Northland
- An increase in returns to the sector both upstream and downstream benefits workers in many different industries.

And creates exports that improves our standard of living

- Plantation forestry exports were nearly $5 billion in 2015 accounting for around 2.9% of New Zealand's total goods exports
- This is larger than sheepmeat (mutton and lamb) and wool exports
- This is larger than beef and veal exports
- Forestry makes a positive contribution to narrowing our current account deficit
- The forecast for forestry exports is extremely bright rising by 25% by 2020 (6,300 million).[3]

It drives many rural economies

- Forestry production is hugely important for many regional economies. It injects $262 million into the Gisborne regional economy and $377 million into the Northland economy

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2 Note that the contribution to GDP is included in the production calculation. The contribution to GDP includes wages ($301m) and capital and land (1,100m). This is slightly more that the contribution to GDP figure which takes off depreciation.

3 Ministry for Primary Industries (2016) Situation and Outlook for Primary Industries. www.mpi.govt.nz

- Nationally, forestry and logging's contribution to GDP ($1,389 million) compares favourably with sheepmeat and wool production ($1,115 million).
- Its GDP contribution is significantly more in the north of the North Island (such as Northland) and also Tasman/Nelson, relative to sheepmeat and wool
- Compared to beef production ($953 million), forestry also compares favourably ($1,389 million). Forestry is more important, relative to beef and veal production in Bay of Plenty, Tasman/Nelson and Otago.

Forestry faces constraints

- No one ministry or department is responsible for forestry. As forestry becomes more important with its dual roles as an export earner and its contribution to the environment (particularly carbon capture) policy coordination becomes more crucial
- Its environmental contribution is not factored into its economic value. The impact on soil conservation, nutrient run-off, water quantity and flow moderation, water quality and biodiversity are significant
- Its impacts on tourism and recreation are also important both for domestic and foreign tourists.

Recognition of forestry through a satellite account is needed to reflect its growing importance ...

- A satellite account rearranges existing information/data (economic data such as exports) from industries in the national accounting structure to highlight aspects of a specific industry with re-defined boundaries. It can be extended with the introduction of new information/data (such as social and environmental values) to properly reflect the industry's importance
- As plantation forestry becomes more important (increased removals and the necessity for carbon capture) a satellite account either connected to the tourism satellite account or as a stand-alone satellite account would assist in better reflecting forestry's wider benefit to New Zealand
- For the latest tourism satellite account (2016) go to: http://www.stats.govt.nz/browse_for_stats/industry_sectors/tourism/tourism-satellite-account-2016.aspx.

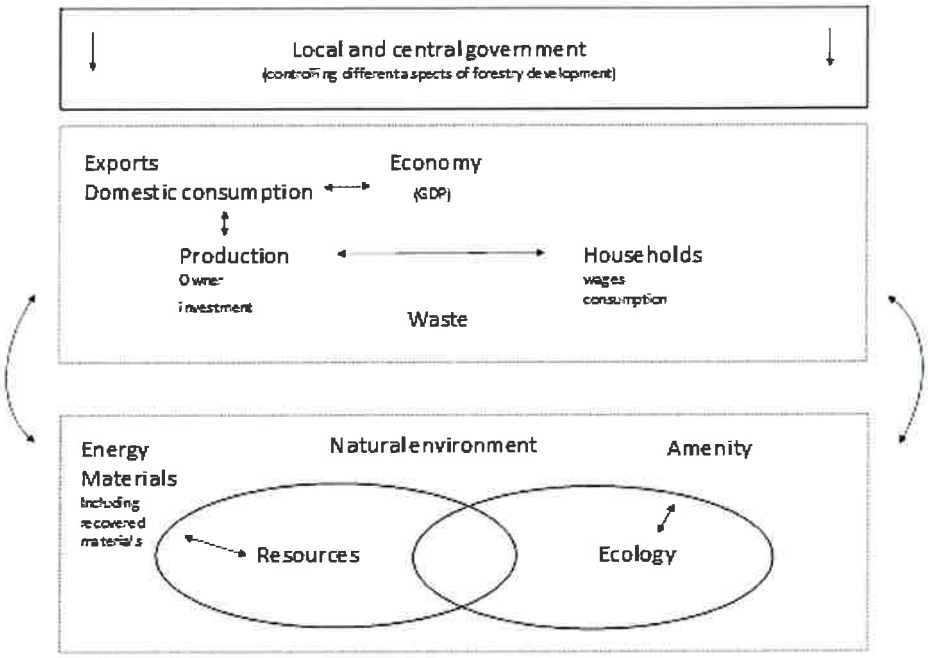
Approach taken to showing forestry's value

Below we have set out the approach to the project. We:

- Developed a framework for forestry which sets out how forestry is regulated, its economic contribution, and its contribution to the environment
- Used various economic and data tools to inform the importance of the industry e.g. consistent economy wide models at the national and regional level, the LEED database that uses tax data to better inform employment numbers, and literature that further helped us understand environmental values

- Engaged with the industry, government and other stakeholders to further understand industry detail and economic behaviour.

Plantation forestry connections



Source: NZIER

Summary of the economic, social and environmental impacts of plantation forestry

2015

	Per year ($ millions)	
Forestry and logging contribution to GDP	1,389 m	
Forestry and logging: Selected GDP contribution of regions		
Northland	138 m	
Waikato	280 m	
Bay of Plenty	184 m	
Gisborne district	96 m	
Hawkes' Bay	100 m	
Tasman / Nelson	114 m	
Otago / Southland	120 m	
Numbers directly involved in forestry and logging	9,500	
Transport	2,000	
Port service workers	900+	
Seasonal workers	Small	
Environmental and recreational values[1]		
	Ohiwa[3] est. extended over NZ	Conservative estimate
Overall eco-system services estimate[2]	9,600 m	1,900 m
Nutrient value (Taupo study)	5,800 m	
Energy saved by recycling resins and waste (value added)	789 m	
Value of carbon capture (conservative)	300 m	
Reduced soil erosion benefit	208 m	
Water quantity/ flow net benefit[4]	14 m	
Water quality benefit	420 m	
Biodiversity benefit	Only localised studies, no national figures	
Recreation (only localised studies but visitor numbers suggest at least 1 million visitors per year)	$40 m	
Relative externality value comparison[5]	Dairy	Forestry
	-18 m	31 m
Note (1) See environmental sections (Appendix J and K) for explanation of estimates. (2) The overall national figures for eco-system services are based site specific examples. (3) Yao RT & Velarde SJ (2014) Ecosystem services in the Ohiwa catchment; Report to Bay of Plenty Regional Council, Scion. (4) See section J.3.2: Water quantity and flow moderation for explanation of net benefits. (5) Monge et al 2015, Scion. A relative externality value shows the impact of different industry's activity on society measured in comparable terms. Monge et al (2015) is a study of 26,000 hectares of dairy land and the equivalent amount of forestry land in the central North Island		

Source: NZIER

Contents

Appendices

Figures

Tables

1. Forestry industry summary

Figure 1 Summary

National economic contribution

National GDP

Forestry & logging contribute

$1.39b

to national GDP.

Plus a further **$2.16m** in downstream activity.

Exports

Forestry products exports total

$4.8b

Forestry products are the second largest commodity export after dairy products. Australia and China are the main destinations.

Domestic sales

Logs and sawn timber are the main forestry products domestically. Domestic sales are mainly tied to local construction activity.

Employment

9,500 FTEs

are employed in the forestry sector.

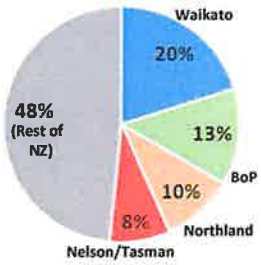
+ 2,000 Truck drivers

+ 900 Port services workers

Regional economic contribution

Regional GDP

Four regions (Waikato, Bay of Plenty, Northland and Nelson/Tasman) contribute over 50% of national forestry GDP.



Regional importance of forestry

Based on its share of regional GDP, forestry has the greatest significance to these regions:

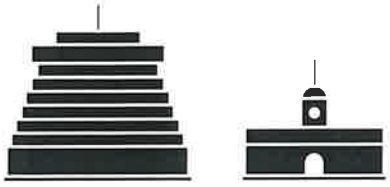
Region	Share of region's GDP
Gisborne	> 5%
Tasman/Nelson Northland Marlborough West Coast	> 1-4%

Regional employment

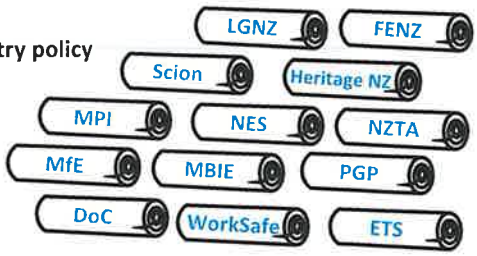
Source: Statistics NZ & NZIER

Central and local government

No single entity has control over all of forestry policy



Central government and local government develop the institutional setting (the regulatory environment).



Responsibility for government policy in forestry is spread over a number of government departments with no all-embracing national forestry policy.

Source: NZIER, icons8.com

Industry characteristics

Role of forestry managers

H&S

The majority of forest managers have robust health and safety standards because of the accountability of managers to owners, increased mechanisation, training, and operational transparency.

Number of forest owners

There are approximately

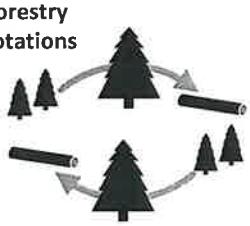
15,000

forest owners in New Zealand with forests of 5 ha or greater

Seasonal workers

Finding workers for silviculture & planting is increasingly difficult. The outlook for seasonal workers may become increasingly important to the industry.

Forestry rotations



New Zealand forests have not declined in yield past the 2nd rotation; they have gained in productivity through better genetic selection and better management.

Employment numbers

Removals are increasing and employment is static.

Stumpage values

Stumpage values remain flat.

Environmental values are important

Waste

Sawdust is used to fuel sawmills.

Carbon capture

Sequestering carbon through forestry is one way to assist in meeting our climate change agreement targets.

Land stabilisation and water quality

Forests in general can also create value or save costs by providing soil stability, reducing erosion and run-off into streams.

Recreation & tourism

Recreational uses of plantation forestry blocks includes users walking, mountain biking, horse riding, trail biking, hunting and fishing.

Habitat

Plantation forestry blocks provide habitat for native species and support local biodiversity.

Source: NZIER, icons8.com

2. The brief

This report has been commissioned by the New Zealand Forest Owners Association and New Zealand Farm Forestry Association funded by the Forestry Growers Levy Trust Inc. These entities are looking to facilitate a better understanding of the role of forestry in the New Zealand economy, environment, and society.

Our main focus is on the planting, silviculture, and harvesting that occurs on site. However, we do examine some of the ancillary services such as logging trucks, port service workers, and refer to processing, exporting, the domestic market and its economic contribution.

This report sets out the data available and approaches that can be potentially taken to systematically collect data and to illustrate forestry's economic potential and facilitate further understanding (e.g. environmental statistics).

Where statistics are not well described (e.g. forestry employment), we have focused on examining different approaches that can be used to obtain estimates (using the principle of triangulation). By triangulation we mean using two or more methods to estimate data points in a particular area.

Our examination has been to:

- Briefly survey the existing situation
- Set out the framework for identifying the areas where data should be collected
- Describe our approach to collecting data and estimating contribution to the economy
- Conclude with some final remarks.

The study consolidates the information gathered into a useable format: we have included forestry's direct contribution as well as the indirect effects. The latter would involve looking at the forest sector's contribution to the demand for goods and services of other industries such as transport, and the flow on effects to other sectors such as wood processing, retail and newsprint.

The direct and indirect contributions are measured and highlighted as summary indicators such as output, value added, employment, wages, payments to capital and land, and taxes. There are also a number of important functions forestry performs that may or may not go through markets (the non-market valuations).

3. Forestry is different from other land-based industries

The forestry (growing the trees) and logging (harvesting the trees) sector is an integral part of New Zealand's economy, environment, and society. Therefore, it is important for the industry to properly reflect the industry's social and economic value through up-to-date and transparent data and context.

As a completely different industry from any other land-based industry it is also important to reflect its complete contribution to the New Zealand economy and society, particularly given its positive environmental impact.

Forestry statistics represent a challenge given the biological processes are quite different from other land-based industries e.g.:

- It takes between 25 and 35 years before harvesting occurs requiring long term planning (longer for Douglass-Fir, Cypresses etc.)
- Harvesting presents challenges and costs that other industries do not face (e.g. first rotation forests on hill country might require large road networks to be built)
- There are positive environmental benefits such as carbon capture, biodiversity gains, high water quality, land stability and recreational options from commercial forests.

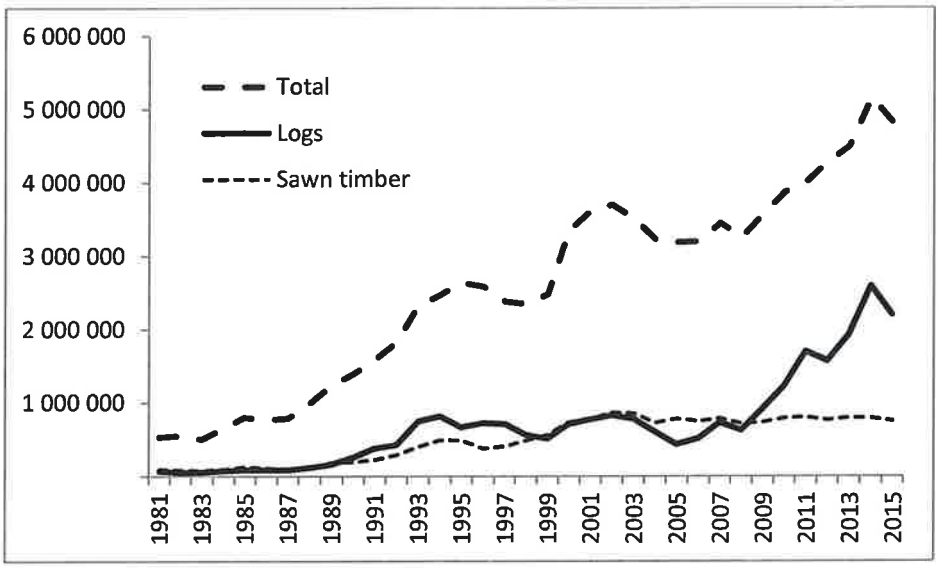
The Ministry for Primary Industries (MPI) sets out the parameters for forestry in the "*National Exotic Forest Description*". Key facts (p2) from that publication include:

- New Zealand's net stocked planted production forests covered an estimated 1.70 million hectares as at 1 April 2016
- The total planted forest standing volume is estimated to be 503 million cubic metres with an average forest stand age (area weighted) of 17.1 years
- As at 1 April 2016, New Zealand's net stocked forest area has **decreased** by 13,000 hectares from 1 April 2015
- Harvested areas awaiting either replanting or a land use decision decreased by 3,000 hectares in the year to 1 April 2016.

The forestry industry's importance to economic activity is highlighted in Figure 2 of selected forestry exports.

Figure 2 Exports of selected forestry products

Value, NZ$ 000s

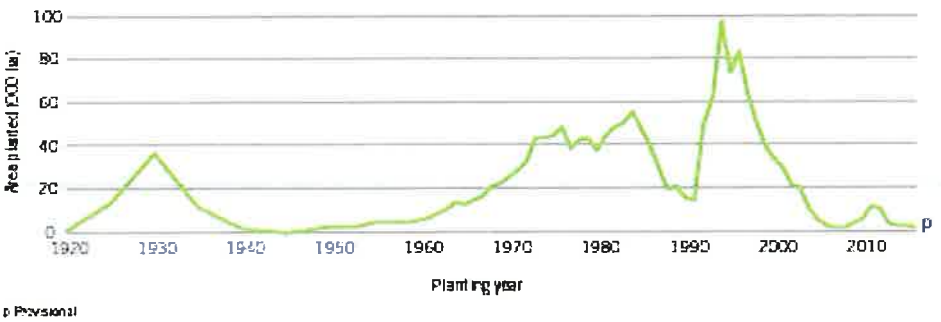


Source: Ministry for Primary Industries and Statistics New Zealand

Figure 3 shows new planting in New Zealand has declined from a peak in the mid-1990s to 3,000 hectares in 2015. Further plantings are dependent on:

- The profitability of selling logs
- Confidence in markets for all forestry products
- Confidence in future policy settings
- Further changes to the ETS scheme that favour New Zealand grown credits.[4]

Figure 3 New forest plantings 1920-2016



p Provisional

Source: National Exotic Forest Description, 2016 p5

Plantation forest sizes vary significantly. Further, we do not have a good statistical handle on the ownership profile. Ministry for Primary Industries (MPI) statistics

[4] There is some cause for optimism that as carbon credits rise in value the forestry planting supply response will also increase. However, there is a large debate about how emissions are accounted for after the wood is harvested. Some in the forestry industry would contend that the Government needs to give effect to the Harvested Wood Products emissions accounting to replace the current assumption of instant oxidisation at harvest in the liability rules.

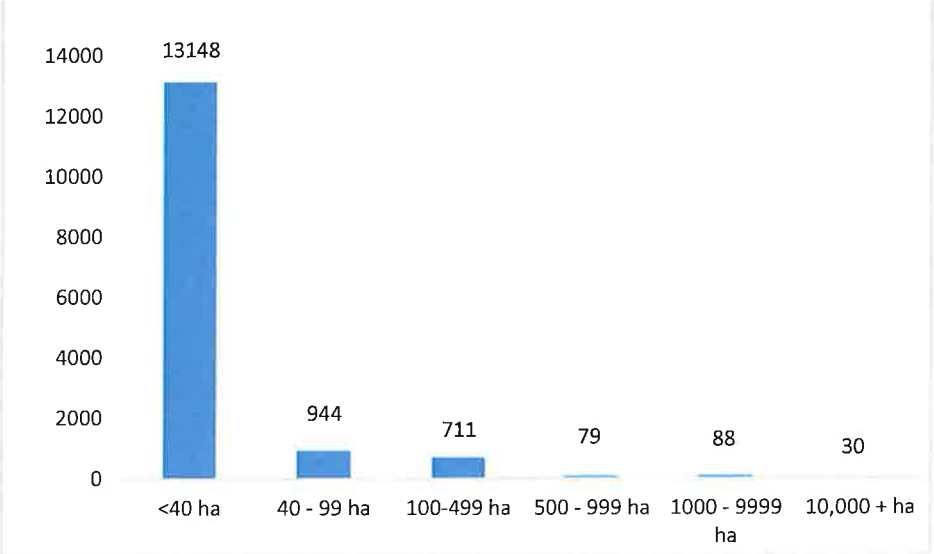
suggest that the majority of plantation forests are established on land holdings greater than 500 hectares (approximately 72%, National Exotic Forestry Description 2015, p25). The reverse is the case in relation to the numbers of owners. Approximately 89% of forest owners in New Zealand own less than 500 hectares (see National Exotic Forest Description 2015 p24).

However, these figures only represent larger known owners and are therefore biased towards those who report their situation. The number of forest owners reported in National Exotic Forest Description is 1,852 but the NEFD only surveys owners who hold more than 50 hectares. Thus the NEFD has an inherent bias as it does not survey the majority of the 15,000 forest owners estimated in Appendix C. Adding these numbers into the equation results in the number of forest owners by class size changing dramatically.

The number of forest owners with forests under 500 hectares rises to 98% when all forest owners are taken into account.

Figure 4 Adjusted forest owners by size class, 2015

Assumes that all the unidentified forest owners have forests under 40 hectares



Source: National Exotic Forest Description and NZIER

3.1. Non-market valuation

As an example of the quantification of the ecosystem benefits of plantation forestry. Scion (2014) has examined the eco-system services in the Bay of Plenty's Ohiwa catchment. It demonstrates a large positive ecosystem service value from exotic forestry of $5,609 a hectare each year (see Table 1).

Table 1 Value of ecosystem services from the Ohiwa catchment

Dollars per hectare

	$ per hectare
Carbon sequestration/emission and greenhouse gas regulation using $4 per New Zealand Unit	$48[5]
Avoided erosion and flood/disturbance regulation	$121
Regulating nutrient supply by avoiding leaching	$2,800
Pollination	$206
Water regulation	$6
Waste treatment	$244
Pest and disease regulation/biological control	$11
Water supply	$8
Recreation	$900
Species conservation	$257
Nutrient cycling	$994
Soil formation	$14
Net ecosystem services value in dollars per hectare each year	**$5,609**

Source: Source: Yao & Velarde, Scion (2014)[6]

Such values, if applied to 1.72 million hectares of planted exotic forest in 2015, would imply the generation of $9.6 billion per year in non-market benefits from forests in addition to the marketed output of wood and pulp products and recovered energy. However, a conservative approach should be taken in interpretation of these statistics. The ecosystem services approach is still at the experimental stage, uses mixed methods and is site specific and not able to be extrapolated or replicated across the country as yet. But even if the national average were only 1/5th that of the Ohiwa catchment in the Bay of Plenty ($1122 /ha/year), this would still amount to $1.9 billion of non-market value annually.

However, some forestry participants are frustrated that the current reported statistics do not fully reflect the importance of the industry in both economic and non-economic terms, particularly around:

- Estimates of employment in the industry
- The importance of the non-economic benefits of forests to New Zealanders.

Forestry's value is therefore understated. One of the reasons for this is that those trying to gauge the importance of the industry can only see part of the value that forestry is contributing.

[5] Since mid-2016 the value of New Zealand Emission Units has been $15/tonne or more, which would make the value per hectare $180 or greater.

[6] Yao RT & Velarde SJ (2014) Ecosystem services in the Ohiwa catchment; Report to Bay of Plenty Regional Council, Scion

4. Project organisation

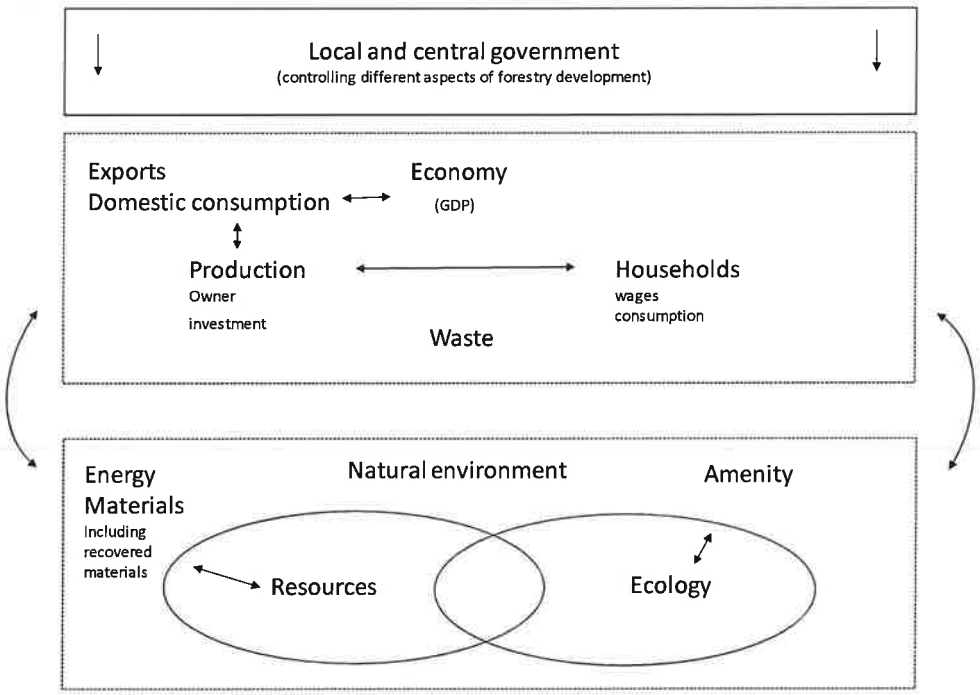
NZIER have constructed a simple model to demonstrate the relationships between forestry and the government, economy, society, and environment.

The model portrays a system of relationships which, although abstract, seeks to capture the salient elements of the real world. Any real world problem will have a large number of variables, often with complex, relationships between them. We wish to draw out the main points without the complications of all the issues. In this way we can focus on the issues that matter to the industry.

For example, one key advantage that the framework has is that it shows the positive contribution that forestry makes to both market and non-market values in New Zealand. Of particular importance, is the positive contribution forestry makes to the environment. This is portrayed in the following framework for the industry where we show the:

- Impact of central and local government control
- Domestic consumption and exports, employment, and economic activity generated by forestry through planting, silviculture and harvesting
- Environmental and amenity benefits delivered by forestry.

Figure 5 Framework for collecting plantation forestry statistics



Source: NZIER

Applying this approach, helps us to:

- Identify the important areas where we need to gather statistics
- Ensure that we cover the important activities of the forestry industry
- Demonstrate the interrelationships between economic and non-economic activity.

The design of the approach has been deliberately kept simple. We have abstracted from the detail of the physical and financial flows between the forestry industry and the economic, social and environmental forces that it interacts with. This approach allows us to capture and illustrate where available statistics "fit" within forestry activity and how to think about the use of those statistics e.g. do they contribute towards GDP calculations or other measures of value? And are they important?[7]

The approach focuses on the interactions between the government, economy, and the physical environment. Central and local government develop the institutional setting (the regulatory environment). Investment, domestic processing, export supply etc. are determined by firms through their interaction with households (e.g. through the supply of labour and demand for outputs). From both the production process and households, waste is generated with some of it recoverable (particularly in the processing industry).

Also important is the interaction between the market activity and the physical environment (e.g. households and the amenity, industry and the resource base, the interaction between resources and ecology etc.).

In this project, we have captured and reported on the work that identifies the various areas (amenity values and mountain biking, the role of forests in protecting flora and fauna), and other interacts that are important.

[7] It also allows us to understand where the gaps are in forestry statistics.

5. Conclusion

To inform the statistical approach we ensured that:

- Where practicable the principle of data triangulation was used where there is some question about its validity
- We engaged with policymakers prior to putting statistics together. In particular, with Ministry for Primary Industries and Statistics New Zealand.
- We spoke to industry participants to further understand the issues around forestry statistics.

We have set out to collect a comprehensive data set for forestry.

- Government policy (Appendix A)
- Market values: export and domestic (Appendix B)
- Number of forest owners (Appendix C)
- Employment (Appendix D)
- Seasonal overseas workers (Appendix E)
- Portable sawmills (Appendix F)
- Forestry rotations (Appendix G)
- Components of the value chain (Appendix H)
- Contribution to GDP: national and regional (Appendix I)
- Environmental values and studies (Appendices J and K)
- Potential satellite account (Appendix L).

The summary statistics are set out in the key facts section and the pictorial summary statistics at the beginning of the document. All other statistics are in the appendices.

Appendix A Government policy

A.1 Most change has occurred to plantation forestry management

New Zealand has large tracts of indigenous and plantation forests. Over time these forests have provided many benefits for society, the environment and the economy.

Most of the indigenous forests are owned by government. The Crown owns 5.187 million hectares of indigenous forest or nearly 83% of the total indigenous forests in New Zealand. The Department of Conservation manages this on behalf of the Crown. Other indigenous forests are in private ownership or owned and controlled by Māori entities.

Most of the changes in government forestry policy since the 1980s have related to plantation forestry. At one time the government owned at least 50% of the plantation forestry and large processing facilities. It has divested itself of its ownership of forests to facilitate Treaty Settlements with iwi with wood processing now solely owned by private sector companies. The current government has signalled to the sector that it will attempt to sell down its remaining forests overtime, though climate change policy imperatives could see that position change.[8]

A.2 There is no one government entity responsible for forestry

Responsibility for government policy in forestry is spread over a number of government ministries and departments with no all-embracing national forestry policy:

- This means needs of research, training, biosecurity, and policy advice are being delivered by different parts of government
- There is a longstanding lack of recognition of the long term (positive) consequences of forestry and the positive externalities generated by a long term sustainable crop, especially compared to Switzerland, Germany and elsewhere in Western Europe i.e. the prices received for forestry products do not reflect its positive contribution it makes to society, particularly the positive environmental impact.

The Ministry for Primary Industries (MPI) and its predecessor MAF, have over the past decade, largely focused on the role of planted forests in relation to climate change, and to a lesser extent the institutional relationships creating blockages to innovation within the sector. MPI initiatives include a limited afforestation grant scheme, Primary Growth Partnership projects for steepland harvesting and Methyl Bromide control and recapture at ports for export logs, a proposed National Environmental Standard for Plantation forestry (RMA), erosion control funds, biosecurity control, wilding pines etc.

[8] Conversation with Forestry Owners Association (FOA).

A.2.1 Carbon capture is likely to become more significant

The Ministry for the Environment's primary focus on plantation forests relates to carbon sequestration and emissions the NZ ETS. Currently, the ETS covers land use change (deforestation in pre-1990 forests, driven largely by dairy conversions), afforestation, transport and energy (42% of total 2012 emissions), industry (7% of total 2012 emissions) and waste (5% of total 2012 emissions) but not agriculture (46% of 2012 total emissions, and rising).

In October 2016, the government ratified the Paris Agreement that aims to limit global warming "well below" 2 degrees Celsius, and possibly below 1.5 degrees Celsius, by 2100, as part of an ultimate global commitment to go to Net Zero emissions.

New Zealand will now have to develop a plan that reduces emissions to 30 percent below 2005 levels by 2030. Sequestering carbon through forestry is likely to be part of this strategy. A possible increase in the carbon price could help this process (i.e. MfE's lead policy official Kay Harrison has signalled price projections of NZ$50 to $300/t).[9]

Forestry has a positive role to play in New Zealand's approach to a carbon policy. How to date, the government has been slow to partner with the industry to ensure the best outcomes for New Zealand.

A.2.2 The challenges of biosecurity and GMOs

Biosecurity is an issue for some forestry stakeholders because of the risks of a biosecurity breach allowing in pine pitch canker or other defoliation disease that impacts *Pinus radiata*.

One possible solution to this issue is the use of gene editing (CRISPR technology) or other genetic modification technique. Innovation in Biotechnology could see:

- Improved uniformity and wood properties
- Potentially shorter rotations
- Increased genetic resistance to pests and pathogens[10]
- Prevention of wilding spread from any new stands (through deployment of sterile clones).

However, there is considerable resistance within New Zealand to growing GMO crops. It will require significant consultation with the public to arrive at a situation that is supported by the majority of New Zealanders.

A.2.3 Science and innovation will be crucial

The Ministry for Business, Innovation and Employment's (MBIE) involvement in the forestry sector is primarily concerned with funding research. A recent project made $5 million available for research into developing a broader range of high value wood products from different species of trees.

The CRI Scion and its connections with the forest producing sector has is important in highlighting the value of forestry in the primary sector landscape & economy. Scion

[9] www.radionz.co.nz/news/national/316003/nz's-greenhouse-gas-bill-could-top-$70-billion
www.carbonnews.co.nz/tag.asp?tag=Carbon+prices

[10] See http://woodco.org.nz/images/Woodco_BiotechnologyPositionStatement_101116_public.pdf

are funded mainly by government to underpin, protect, and future-proof the forestry industry in New Zealand. Its research spans forestry management and tree improvement, biosecurity and risk management, wood processing, and forest-based ecosystem services.

A.2.4 Health and safety focus

A big recent challenges which will escalate over the next ten to twenty years is to improve health and safety standards, especially amongst some of the smaller players who will make up an increasing large part of the harvesting industry.

This is compounded by the potential for general rural earthwortks contractors to enter the forest industry as the demand for harvesting contractors ramps up. The ease of entry means that extra effort will be required to ensure that good health and safety levels are met and maintained.

The forestry industry is heavily involved in safety initiatives. The Forestry Industry Safety Council (FISC) is responsible for the Independent Forestry Safety Review (IFSR). The role of FISC is to document, evaluate and share forestry safety initiatives across the sector. By engaging with the industry in this way they can constructively assist government as a health and safety partner.

Most contractors and corporate forest owners have robust health and safety standards because of the accountability of managers as PCBUs under NZ's 2015 H&S at Work Act, increased mechanisation, training, and operational transparency.

Worksafe NZ provides educational material,[11] codes of practice, assessments, monitoring and enforcement. It also provides regulation and investigations of health and safety system failures. Worksafe has a focus on forestry because of the historical high rates of serious injuries and fatalities, the physical nature of the work, steep terrain, and the use of specialist heavy machinery including cable log extraction (hauling) systems.

[11] This includes educating duty holders about their work health and safety responsibilities (e.g. through guidance) http://www.worksafe.govt.nz/worksafe/about

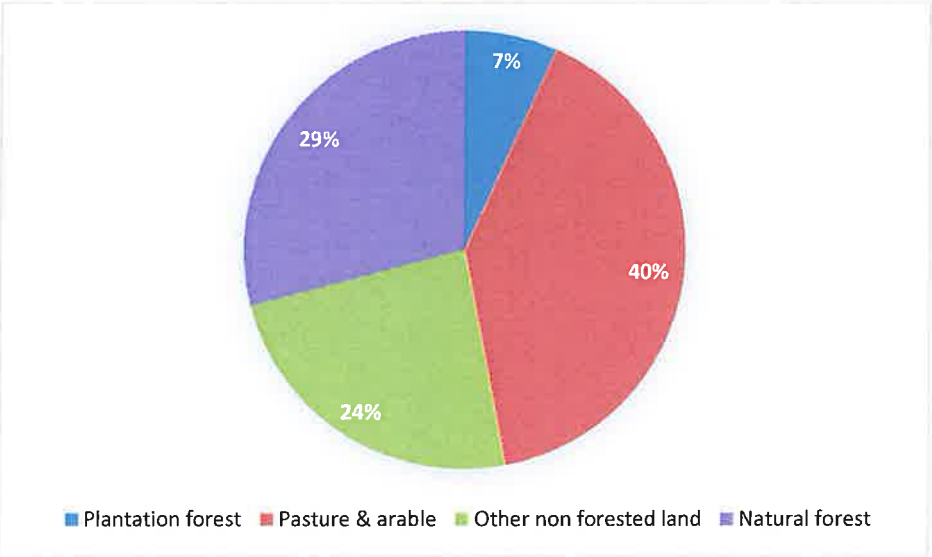
Appendix B Market values

Forestry is a substantial part of the New Zealand economy and in recent years the second largest commodity export after dairy.[12] Most commercial forestry use exotic tree species which are relatively fast growing in the New Zealand environment and yielding a range of wood qualities for use in sawn timber production, reconstituted panel products, pulp and paper manufacture.

Figure 6 below sets out New Zealand land use. Plantation forests use 1.8 million hectares of land (7%).

Figure 6 Land use

2016



Source: Forestry Facts and Figures (2015/16), New Zealand Forest Owners Association

Pinus radiata is the predominant species grown in plantation forestry in New Zealand, currently accounting for about 90% of planted area, 93% of harvested volume and 94% of exports by value.

Douglas-fir is the second most important species with about 6% of planted area and 4% of annual harvested volume.

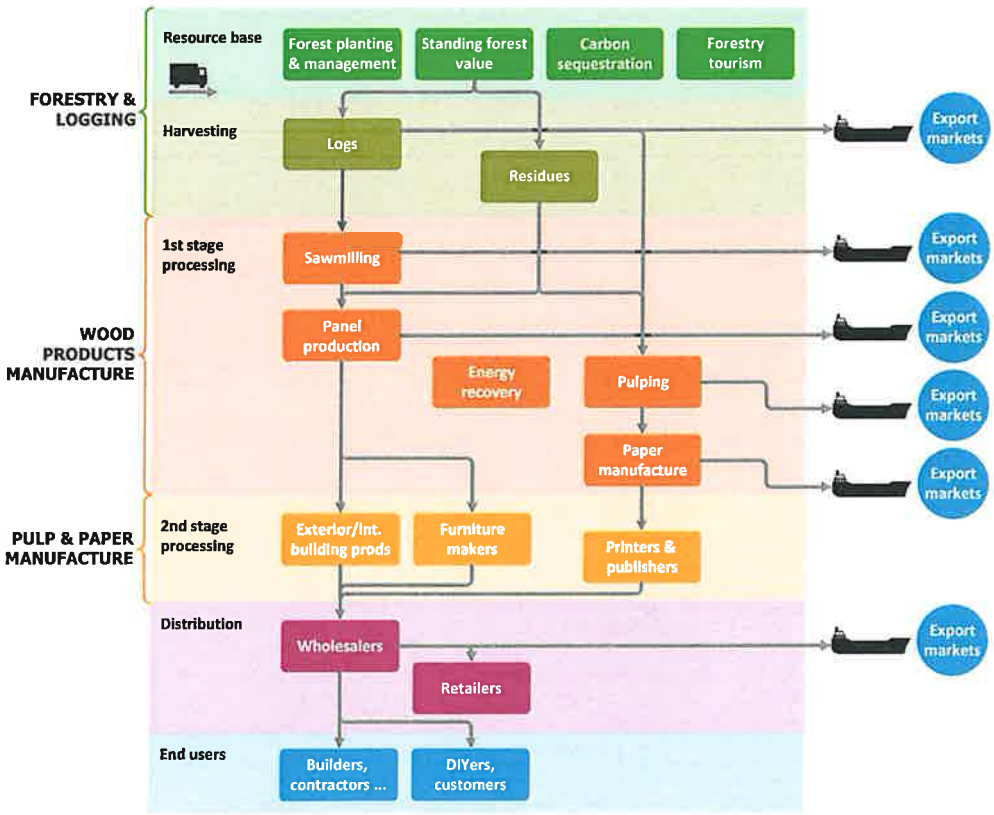
The remainder of exotic forests comprise *California Redwoods, Eucalyptus, Cupressus* and other "minor" or special purpose species. A part from Douglas fir, minor species face quite different marketing chain challenges in both growth and use, as described below.

[12] That is, if you split beef and veal and sheepmeat and wool into separate categories.

B.1 Economic connections of forestry

Forestry in the national accounts comprise forestry and logging, wood products and pulp and paper manufacture. The connections between these and other parts of the value chain are outlined in Figure 7 below.

Figure 7 Connections between industries in the forestry sector



Source: NZIER

Forestry and logging covers the management of the resource base – the planting and management of plantation forests – and harvesting.

First stage processing includes the New Zealand wood processing and manufacturing industry, which produces sawn timber, veneers, plywood and reconstituted panels such as fibreboards, and the pulp and paper manufacturing industry.

Second stage processing involves industries whose products have more specific wood components, including hygiene products and composite building materials for the construction industries. Furniture making, printing and publishing (other than online and electronic media publishers) are very minor end uses for New Zealand grown wood fibre.

The term 'forestry' is commonly applied only to forestry, logging and first stage processing, in which forest products (wood-fibre) comprises 25% or more of the value of inputs (according to Statistics New Zealand's Input-Output tables). In second stage

processing, non-wood inputs comprise more than 80% of total input value, and more substitutes exist for wood-fibre (e.g. steel framing in building, metal or plastic furniture, or cement and wood pulp composite wall cladding or cardboard wrapped plaster board interior wall linings) so the share of economic value added attributable to wood or tree species is lower than in first stage processing.

Figure 7 above also shows that the wholesale and retail trade and transport operators are involved in the distribution of forest products to domestic and export markets. If these services are specialised to distributing forest products, they would face a short term loss of revenue in the event of disruption of the wood harvest. But such services as building supplies wholesaling and retailing often trade in more than just forest products, and in the longer term, resources in these distribution services would be redeployed to other things, so they are less directly part of the value at risk from threats to forestry activity.

Other features to note from Figure 7 are:

- While the main material flow between forestry-related parts of the value chain is of logs from harvest to wood processing and pulping, there are also large flows of residues from both harvesting and sawmilling activities that are collected and provide inputs to reconstituted wood products (e.g. MDF panels and chip board flooring) and wood pulp manufacture
- Residues are also used to provide heat and power to parts of the manufacturing process, particularly in pulp making and timber drying, providing value savings in the cost of energy. In the South Island, wood fibre is also used as a feedstock for bioenergy production i.e. wood pellets for domestic home heating and wood chips for commercial and industrial heating[13]
- There is limited commercial value in standing forests in their role as the setting for forest-based recreation and tourism
- There is a role for plantation forests to foster biodiversity as a home for kiwi, falcon, karearea, kokako and other native birds, skinks, frogs, native fish bats, plants, and invertebrates
- There is potential value to be gained by storage of carbon under New Zealand's greenhouse gas accounting system (but also matching emissions liability under the NZ ETS).

The harvesting of trees seldom impacts domestic recreation and tourism since in forests such as Woodhill, Bottle Lake and Naseby the clubs or concessionaires are generally able to move their operations. However, it does have an impact on carbon storage and biodiversity, at least in the short term until forest growth recovers.

In economic terms an estimate of the contribution that forestry makes is set out in Table 2.

These figures are based on preliminary estimates (for biosecurity purposes) of economically valuable plants.[14] While the NZIER estimates are only approximate,[15] and

[13] The wood processing industry has long utilised bio-energy for a good portion of its energy needs.

[14] This is an initial examination of the impact of selected economically valuable plants. At this stage it does not include native plants.

[15] Relatively simple approaches to estimates for GDP contribution were produced because of costs (therefore estimates are only approximate).

have been devised for ranking purposes only, they do point to the importance of plantation forestry products.

Table 2 Ranking of selected economically valuable plants

2012 base year, $ M

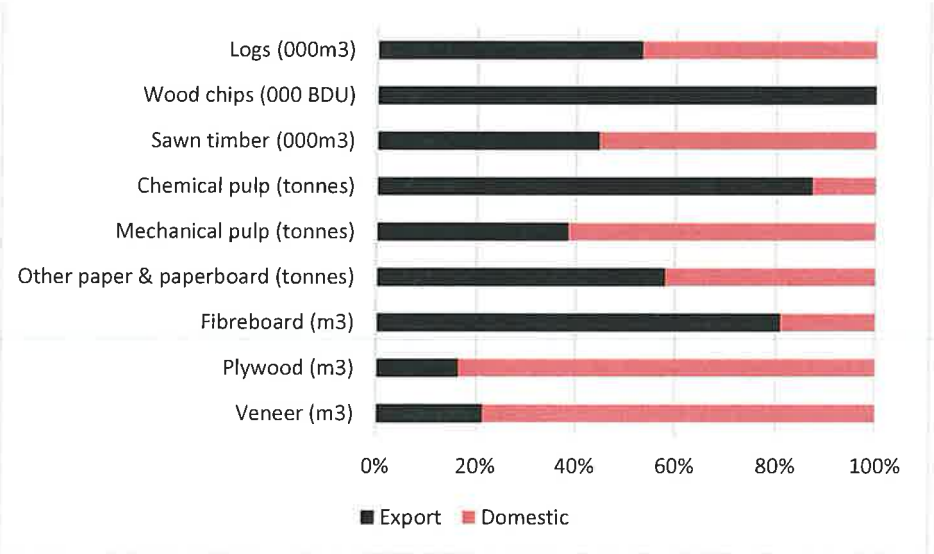
Ranking	Plant	Estimate (including dependent industry)
1	Rye grass	14,000 – 15,000 million
2	Pinus radiata	3,500 – 4,500 million
12	Douglas-fir	150 – 200 million
23	Eucalyptus	30 – 50 million
31	Cypress	15 – 25 million

Source: NZIER (2016) How valuable is that plant? Working paper for the Ministry for Primary Industries

Further the split between domestic and export forestry products is set out in Figure 8. The domestic wood products market is a significant part of New Zealand's economic activity, even without taking into account domestic and overseas tourism, recreational activities, and the contribution of eco system services.

Figure 8 Export-domestic split

June year 2016



Note that wood chips do not include MDF, wood chips used in energy production or wood chips used in sheds, particularly for over-wintering dairy cattle. Further it does not include woodchips generated in sawmills that are mainly used domestically in pulp and fibreboard production.

Source: Forestry Facts and Figures (2015/16), New Zealand Forest Owners Association

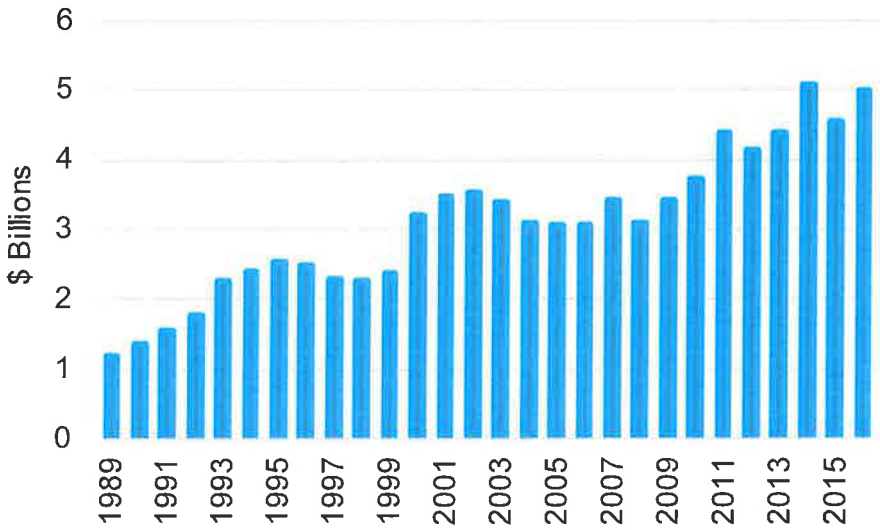
B.1.1 Non-market considerations

Plantation forests can also create value or save costs by providing soil stability, reducing erosion and run-off into streams, and moderating water flows, but these effects are often experienced as externalities that do not provide commercial return to those who own the forests.

B.2 Exports

The data comes from Statistics New Zealand (SNZ). We have good data on all products[16] that cross the New Zealand border. Forestry exports have risen from below $2 billion in 1990 (inflation adjusted) to nearly $5 billion in 2015 (see Figure 9). The rise in value has been production-led driven by plantings in the early to late 1980s. MPI expect that forestry value will reach $6,000 million by 2020.

Figure 9 The rise in forestry exports



Source: Statistics New Zealand

B.2.1 Export destinations

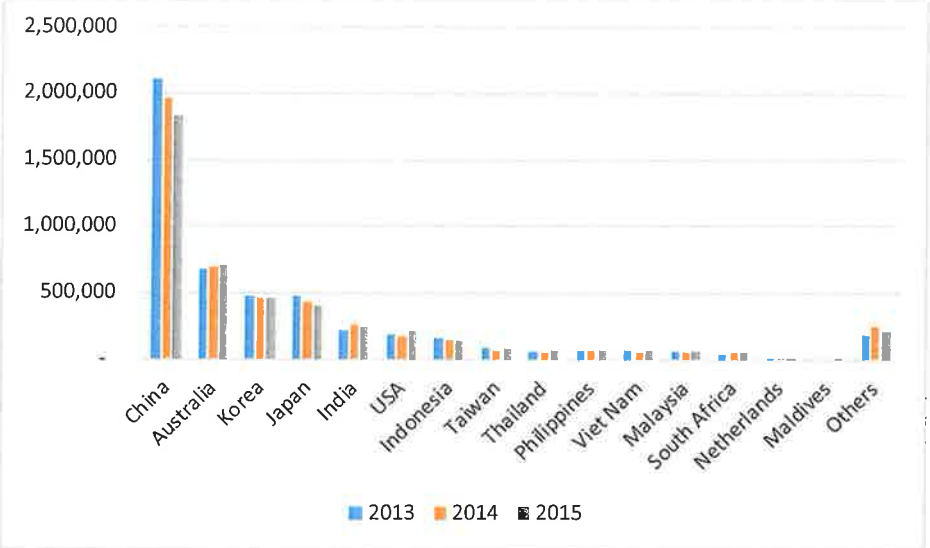
The plantings of the late 1980s and early 1990s coincided with the integration of China on to world markets. A sustained infrastructure boom in China has created a maturing demand for logs. Demand from other markets has remained steady.

The importance of China is set out in Figure 10. Roughly 80% of the exports are logs. Australia and Japan take a wider range of wood products (logs, lumber, wood pulp, paper & paperboard, and panel products). The Republic of Korea has a similar, but much smaller, importing profile to China.

[16] The information on services is less clear.

Figure 10 Exports of wood products by destination

December years, NZ$



Source: Forestry Facts and Figures (2015/16), New Zealand Forest Owners Association

Most of the forestry exports are channelled through ports on the east coast of the North Island. Three ports (Whangarei, Tauranga, and Gisborne) export 63% of all sawn timber and log exports. Without forestry exports the Gisborne port would not be viable.

Table 3 Volume of sawn timber and logs exported by port

Quantity m^3

	Sawn timber	Logs	Share of sawn timber & log exports
Whangarei	10,182	2,613,742	15%
Auckland	198,896	122,602	2%
Tauranga	837,189	5,158,739	35%
Gisborne	279	2,167,697	13%
New Plymouth	-	280,692	2%
Napier	322,048	1,012,167	8%
Wellington	2,173	930,446	5%
Nelson	114,284	559,081	4%
Picton	1,561	665,150	4%
Christchurch	132,805	421,320	3%
Timaru	537	258,958	2%
Dunedin	73,328	773,555	5%
Invercargill	93,721	431,486	3%

Source: Forestry Facts and Figures (2015/16), New Zealand Forest Owners Association

B.2.2 Domestic consumption of forestry products

Understanding the markets associated with domestic activity is much more difficult. Products that do not cross a border are typically not as well tracked.

The fiercely competitive nature of the domestic market also means that information is tightly held by companies involved in the trade e.g. BRANZ does a quarterly survey that indicates approximately the breakdown between steel framing (6%) and wood framing (94%) for houses.[17] However, apartment buildings are more likely to favour concrete or steel framing.[18]

We expect further pressure in this market as smaller incumbents feel increased economic pressure because of their lack of scale.

Sawn timber

The past few years have seen an increase in domestic consumption of sawn timber. Per capita consumption of wood has remained flat, although New Zealand experienced 40% population growth since 1990.

Further, the total production of sawn timber has also remained flat since 2011, despite a decline in exports. Domestic production of sawn timber has increased at the expense of export sawn timber.

The sharp dip in sawn timber production in 2009/10 followed the GFC and coincided with a reduction in demand for sawn timber from New Zealand and abroad, but an increase in export log prices.

Total sawn timber production is approximately 4.0 million cubic metres with 2.3 million cubic metres domestically consumed. This is a dramatic increase from 2011 where approximately 1.7 million cubic metres was consumed domestically. The main reason for this has been the huge growth in demand from:

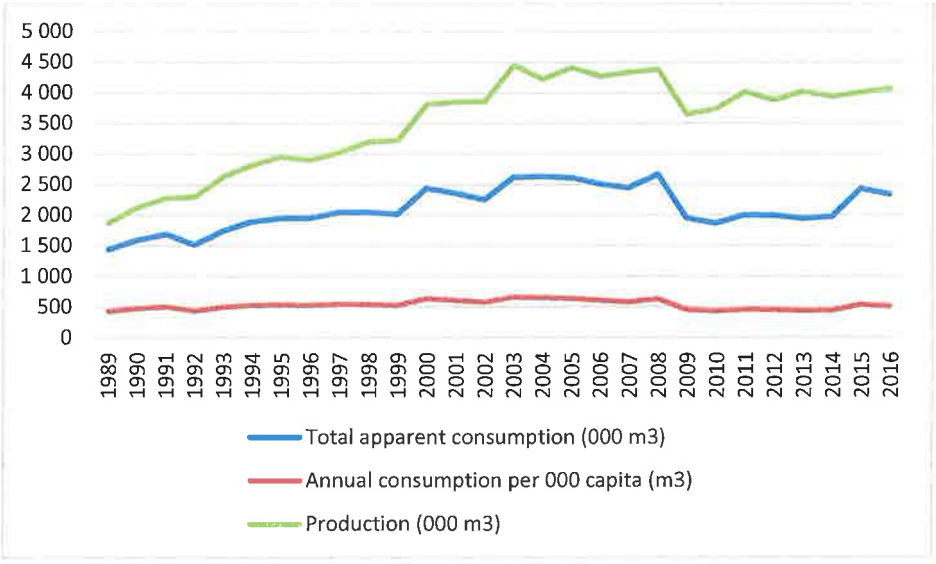
- Christchurch because of the post-earthquake construction boom
- Housing demand, mainly in Auckland due to increased population pressures.

[17] Pers. Comm. Ian Page, BRANZ. 16th February 2017.

[18] The article referenced in this footnote sets out what we know about the battle between wood and steel framing. http://www.stuff.co.nz/dominion-post/business/residential-property/9435020/The-battle-between-steel-and-wood

Figure 11 Domestic production and consumption of sawn timber

March years (000s, m^3, total consumption and production, m^3 per capita consumption)



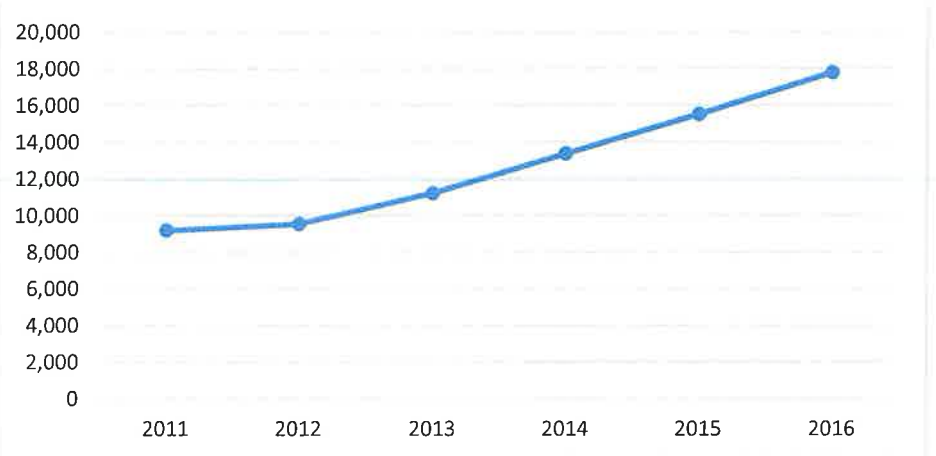
Source: Statistics New Zealand

Figure 12 below sets out the value of consents, rising nearly 80% in the past 5 years.

BRANZ forecasts in 2011 suggested that sawn timber increases under quite sober assumptions could increase by 146,000 cubic metres (on 2010 consumption of 832,000 cubic metres).[19] Because of the Christchurch earthquake and high population growth (fuelled by migration) this assumption has been dramatically exceeded with total consumption approximately 1.42 million cubic metres (an increase of 600,000 cubic metres).

Figure 12 Value of building consents

$ Millions



Source: Statistics New Zealand

[19] The time period for this potential increase was not specified by BRANZ.

Other uses for sawn timber include:

- Agriculture (e.g. fencing, structures such as hay sheds etc.)
- Manufacturing (e.g. furniture etc.)
- Transport and storage (pallets, creates and packaging)
- Civil infrastructure (port facilities, formwork for concrete, civil structures, etc.)

Is the future LVL and CLT?

New technology is also having an impact on sawn timber consumption. The development of laminated veneer lumber (LVL) and cross-laminated timber (CLT) are becoming increasingly important in New Zealand construction. LVL is an engineered wood product that uses multiple layers of thin wood assembled with adhesives. CLT is layers of timber that are glued perpendicular to their adjacent layers - cross lamination.[20]

LVL has been around for some time but it only in recent years that it has been sawn to specifications (e.g. 90 x 45mm) to compete head on with sawn lumber, while CLT is relatively new to the New Zealand market. According to BRANZ (2015), over the past twenty years there has been some remarkable progress in the technology using LVL and CLT in building structures.

These engineered woods provide greater carrying loads over longer spans relative to conventional sawn timber and also use knotty woods. This is significant advantage and potentially opens up new market possibilities.

CLT and LVL materials are becoming favoured by the many design professionals in the engineering community in New Zealand given their uses in seismic resistant design for earthquake prone areas. A number of high profile buildings such as the Tait Electronics building in Christchurch use CLT and LVL. In the recent Kaikoura earthquake the newly completed Kaikoura District Council building, which makes extensive use of CLT came through the earthquake unscathed. The three- storey building has been used as the civil defence headquarters.

BRANZ (2015)[21] suggests that CLT and LVL products will become extremely important building materials in the Asia-Pacific region as their properties are realised by the markets. Already the prospects for the use of CLT and LVL are very good in the New Zealand market. Both Juken New Zealand and Nelson Pine Industries have developed quality LVL products – most of which is exported.[22]

Currently, LVL and CLT face strong competition from imported Chinese steel in the New Zealand market. However, if Chinese steel continues to have quality and anti-dumping issues the case for increased use of LVL and CLT will improve.

LVL and CLT products are also much more environmentally friendly than steel. The potential for this technology is large. Government encouragement will ensure that this part of the industry maximises its chance of success.

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20 For further information see: http://www.wpma.org.nz/UserFiles/WPMA/File/New_Zealand_Pine_E-Manual.pdf

21 http://www.branz.co.nz/cms_show_download.php?id=b2f57abbdf05f70b1b8eda1dfed82dd38ead0d30

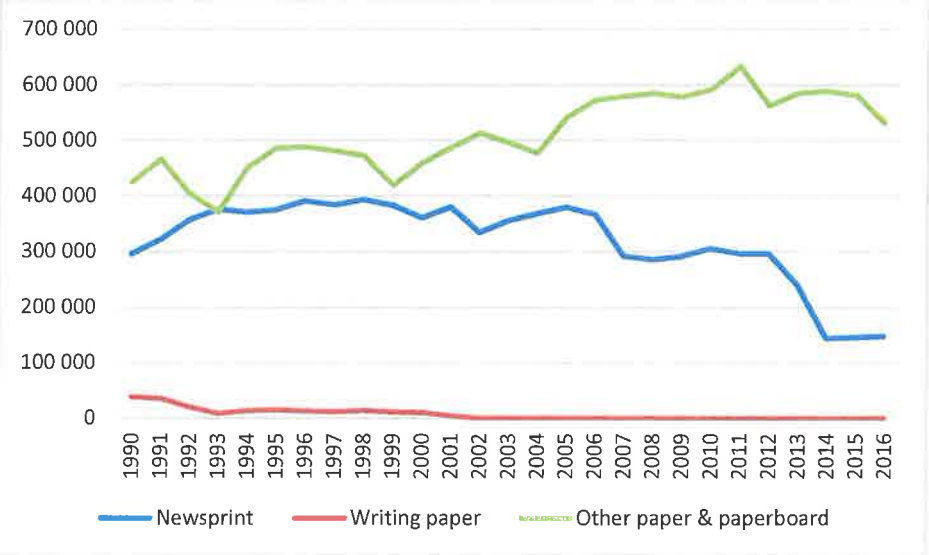
22 The majority of LVL products are exported and include LVL beams, ceiling battens and stair treads.

Newsprint

Newsprint production, has declined dramatically over the past five years, driven by declining exports and domestic market sales. The main reason for this has been the decline in demand for newsprint as consumers switch to electronic media. All major daily newspapers have declining circulations, paper products such as diaries are declining in sales, businesses use paper more efficiently, and emails are replacing letters. PwC (2012)[23] expect this decline in paper products to continue as the shift to electronic media increases.

Figure 13 Newsprint, writing paper, and other paper & paperboard

Production, Tonnes, March years



Source Ministry for Primary Industries

Pulp

Production in pulp has remained relatively stable over the past thirty years, although it has declined since 2011/12. Currently production is approximately 1.4 million air dried tonnes much of which is exported. Production is down from 1.6 million air dried tonnes in 2011 to 1.4 million air dried tonnes in 2016 driven by a reduction in domestic newsprint consumption (production of tissue and hygiene products are mainly made from imported pulp or recycled fibre). The decline in demand for newsprint has been a major reason for the reduced pulp consumption in New Zealand.

Pulp exports are up since 2011 driven by increased Chinese demand, although the demand has not been as great for pulp relative to logs. The demand for market pulp is expected to soften over the next five years as global supply increases.[24]

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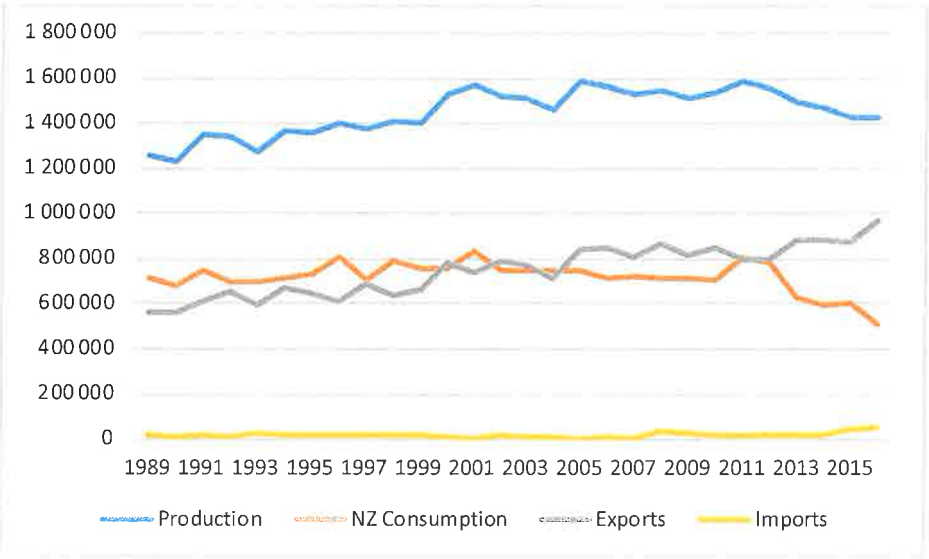
[23] Quoted in the New Zealand Herald http://www.newshub.co.nz/business/can-the-paper-industry-survive-in-new-zealand-2013011613.

[24] Pers. Comm. Dr Jon Tanner 18th December 2016.

Pulp imports are up to approximately 50,000 tonnes in 2016. Imports have increased with the ending of hardwood pulp manufacture at Tasman. Imported hardwood pulp is being used at the Kawerau tissue mill (ex Caxton) and also used at Kinleith for speciality paper board.[25]

Figure 14 Total pulp production, New Zealand consumption, exports, and Imports

Air dried tonnes



Source: Ministry for Primary Industries

Woodchip industry

We have almost no volume numbers on the local wood chip industry, although we know volumes are small. However, interest is growing in the woodchip industry for bioenergy both from government and potential users.

The Energy Efficiency and Conservation Authority (ECCA) believe that wood energy has numerous benefits – economic (lower unit running costs than diesel LPG or electricity), social (increased local employment) and environmental (lower CO_2 emissions). But like any fuel, there are pros and cons. If the sole criterion is fuel cost, then wood is unlikely to be cost effective relative to coal, which has fallen drastically in price and is cheaper to buy.[26] Looking at the bigger picture however, wood can be cost-effective – when considering environmental and social factors. As a result, ECCA have assisted 31 schools to switch from coal to wood energy, under the Renewable Heating in Schools pilot, with the Ministry of Education. Reasons for assisting the change include:

[25] Once the eucalyptus plantations were depleted there was no raw material to make hardwood pulp in sufficient quantities. Growing eucalyptus for pulp is less profitable due to the slower growth rates relative to warmer and wetter climates such as Brazil, Indonesia, Vietnam etc. Pers Comm. Dr Jon Tanner 20th December 2016.

[26] Cheaper coal is mainly due to the introduction of fracking in the US market which has produced large amounts of cheap gas. This has displaced coal in the US market which is now being exported in large quantities. As a result, the price of coal around the world has tumbled.

- In cities like Christchurch and Dunedin, emissions standards for new boilers are very stringent due to air quality constraints. Emissions control equipment on a coal boiler can cost as much as the boiler itself. Switching to wood was often a low-cost option when assessed on a 'whole-of-life' economic basis because of on-going operations, maintenance, and labour costs were lower
- Modern wood energy technology can produce 80% less particulate (PM10) emissions than older coal boilers. Some types of coal discharge heavy metals (including mercury) plus sulphur and nitrous oxides to the air – as well as other pollutants that worsen air quality and can be harmful to human health
- Coal ash can be toxic, so needs careful disposal to prevent soil contamination. Wood produces only about a fifth of the volume of coal ash – and as a natural fertiliser can be simply spread on school grounds. Many of the pilot schools commented positively on the reduction in waste disposal costs, and found caretakers spent far less time cleaning boilers.

A number of hospitals (e.g. Burwood in Christchurch) and other medical and aged care facilities have converted to woodchip burners for similar reasons.

Industry is also taking a closer look at woodchips as a source of energy. Heavy industry (e.g. cement works), commercial enterprises (such as office blocks), and exporting business (e.g. wineries) have found that woodchip burners are cost effective and environmentally friendly. This not only saves money through "whole of life economic costings" but also assists in branding products by reducing their carbon footprint.

BRANZ – the building research and testing agency – has also installed a woodchip burner in its office complex. Their view is that it reduces fossil emissions and reduces running costs, despite the high initial capital investment.

Other uses for woodchips include bedding for cows over-wintering in purpose built sheds. If this practice continues to increase, then the demand for woodchips will increase dramatically.

Wood pellets

Wood pellets are a dense form of biomass produced from the forest industry. Residues come from both harvesting and processing depending on price, availability, and transport costs. The production and demand for wood pellets has increased considerably in recent years around the world as countries looked to meet their emissions targets.

Pellets are the highest grade wood fuel providing a consistent, high energy density, and easy to handle product. They do however require specialised plant[27], special storage (i.e. must be kept dry), and availability of alternative sources of fuel is always an issue since it is usually cheaper (BANZ[28], 2010).

[27] BANZ (2010) commented that the choice of wood pellet heating relative to other heating forms such as from electricity is constrained because of a lack of familiarity with wood pellet heaters and poor performance by some previously installed equipment.

[28] Bioenergy Association of New Zealand.

The market for wood pellets in New Zealand is well established. There are two major producers (in Nelson and Taupo)[29] who provide fuel for both residential and industrial burners.

Domestic consumption statistics are scarce but most pellets are consumed in Canterbury and Otago.[30] Since 2010 the household pellet market has been through a major downturn which it is only now just recovering from.[31] The recovery may be further helped by recent ECAN and Nelson City Council rules stating that pellet burners are low carbon emitters and do not require a consent to be installed.

The distribution of wood pellets in Canterbury is well established and pellets are easily available. In other parts of the country (according to BANZ) pellets can be purchased:

- Directly from the producers
- At local hardware DIY stores and service stations in 15kg bags
- At heating specialists.

BANZ estimates that 80% of pellets are sold through retail outlets.

The increased popularity by householders of pellets has been driven by the replacement of open fires to more efficient forms of heating. However, the current growth potential for household use of wood pellets is limited. This is because of previous house design approaches; although as new heating design approaches become more common and new regulation has an impact, pellet burners are likely to become more popular.

Commercial use of pellets is also growing and the government has provided leadership on the conversion to pellet burners. More than 40 schools have converted to using wood pellet fuel.

There are several examples of innovation in pellets use, not least Radford Yarn Technologies, an innovative Christchurch manufacturer of high - quality carpet yarns who converted from electricity to wood pellets for its primary energy.

The supply of wood pellets to commercial scale buyers requires bulk delivery capability. Consistency of product, overseas market regulations (particularly tightening EU regulations), and easy handling are some of the advantages that firms state for opting for pellet burners.[32]

Further the ease of obtaining, storing, and handling wood pellet fuel with its low ash characteristics makes it an ideal fuel for operators such as school or institutional heating.

Firewood

Firewood market volumes are difficult to quantify. However, the regional firewood markets are highly competitive indicating a vibrant market. Price comparisons

[29] While the Taupo plant was set up to export pellets only a small amount is exported, given the low prices.

[30] BANZ (2010), New Zealand Wood Pellets: Making the most of National and International Opportunities. Occasional Paper No. 18, 28th July 2010.

[31] Pers. Comm. Brian Cox, 10th February 2017. One of the main reasons for this is that heater retailers – in the past - preferred to promote efficient wood burners in preference to wood pellet burners.

[32] Pers. Comm. Brian Cox 10th February 2017.

therefore are readily available in the market. As an example, we set out below the various costs of different types of firewood in New Zealand.

Another indication of the importance of firewood is that Consumer magazine provides a guide to buying firewood focusing on storage, drying, and discusses the use of wood burners and open fires.

According to www.firewood.co.nz prices of firewood vary markedly between cities i.e. prices of firewood in Auckland and Wellington can be 80% more expensive than in Christchurch. Therefore, the figures below need to be treated with some caution.

Other types of logs used include sawdust logs which can be bought from Bunnings, Mitre 10, the Warehouse and supermarkets. These have the advantage of being convenient. Anecdotal evidence suggests that they have the same heat output as other firewood and burn quickly. Many consumers prefer to mix and match sawdust logs with traditional firewood.

Molly Melhuish, a long time electricity consumer advocate and Grey Power member argues that New Zealand is not making enough use of firewood as a heat source,[33] suggesting that wood burning has been supressed by air quality rules. Melhuish understands that firewood that previously provided 45% of home heating requirements in 2005 now only provides 12% in 2015.[34] By implication this reduces heating options for less well-off sections of society.

EECA's energy end-use statistics shows that wood provided 36% of delivered household energy in 2014, but 63% of that was in open fires without wetbacks which lose a lot of heat up the chimney. Air quality standards have phased out installation of new open fires and replaced them with closed burners that are cleaner and more efficient at heating homes. Very recent ECAN regulations (November 2016) now allow wood pellet burners without consent requirements.

[33] Melhuish M (2016), It's time for action against electricity monopolies. Stuff, April 10th 2016.

[34] This cannot all be attributed to air quality rules as other factors have been influential, like the convenience of heat pumps and their promotion with subsidy under the Warm Up NZ Clean Heat scheme.

Table 4 Types, quality, and costs of different types of firewood

These values are based on a 20% moisture content. Firewood is typically as a "thrown measure" so will reduce by one-third in volume when stacked.

Firewood	NZ Avg. cost $/m^3	Heat output kWh/m^3	Price per kW heat produced (cents)	Burn time	Type	Firewood NZ rating
Poplar	100	1,200	0.08	Fast burning	Soft hard wood	C-
Eucalyptus	140	1,270	0.11	Fast burning	Hard wood	A-
Pine	80	1,091	0.07	Fast burning	Soft wood	B-
Macrocarpa	130	1,150	0.11	Slow burning	Medium density wood	B+
Manuka	180	1,860	0.10	Slow burning	Very hard wood	A
Kanuka	180	1,860	0.10	Slow burning	Very hard wood	A

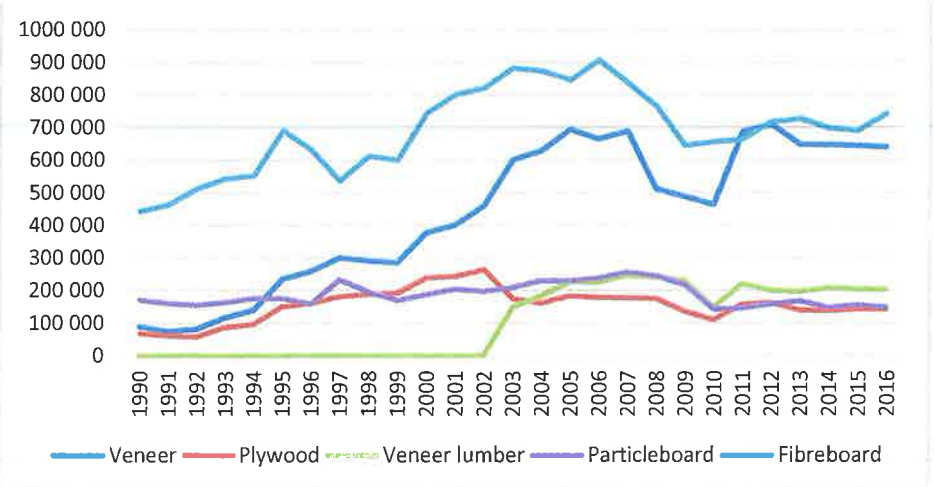
Source: www.firewood.co.nz

Other timber uses

Production of other wood products (plywood, MDF, veneer, and particleboard etc.) has been relatively stable over time as domestic demand has been static. There are limited opportunities to export because of the tough international conditions, particularly strong competition from Chinese mills.

Figure 15 Veneer, plywood, veneer lumber, particleboard, and fibreboard

New Zealand Production, Cubic metres



Source: Ministry for Primary Industries

Summary

Table 5 sets out production and domestic demand for the March 2016 period. Highlights include:

- Just over half of all logs are exported
- Heavy domestic demand for sawn timber has tipped the balance in favour of domestic demand, although total production has remained stable for the past 6 years. New technology in the form of CLT and LVL offers real potential for domestic and export growth
- Paper production is declining both for domestic and export consumption
- Pulp production is declining although exports (mainly to China) and imports (hardwood pulp) are increasing
- Other forestry products (veneer, plywood and fibreboard etc.) production, exports, and domestic consumption has remained static. There are limited opportunities to export because of the tough international conditions and particularly strong competition from Chinese mills
- Woodchip and firewood markets are predominately domestically focused and are relatively small volume markets. Both markets have potential for expansion.

Table 5 Summary of production

March year, 2016

	Production	Domestic demand	Comments
Sawn timber	4,066,000 m^3	2,334,000 m^3	Heavy domestic demand. Total production is stable. New technology
Paper (total production and trade)	679,262 tonnes	782,888 tonnes[1]	Domestic demand peaked in 2008 (1m tonnes). Declining demand ever since
Other manufactured wood products	1,875,037 m^3	784,194 m^3 [2]	Static demand. Production peaked in 2007 (2.2m^3)
Pulp (air dried tonnes)	1,425,422	508,611	Reducing domestic demand but increasing exports and imports
Woodchips, wood pellets, and firewood	Unknown[3]	Focused on domestic demand	Potential to expand giving more favourable policy settings
Notes (1) This includes New Zealand production of 337,208 tonnes and 445,680 tonnes of imports. (2) Veneer, plywood, and fibreboard. (3) BANZ report that there are no statistics collected on individual suppliers to domestic wood burning markets. Work is currently underway to rectify this. Pers. Comm. Brian Cox, 10th February 2017.			

Source: Statistics New Zealand and Ministry for Primary Industries

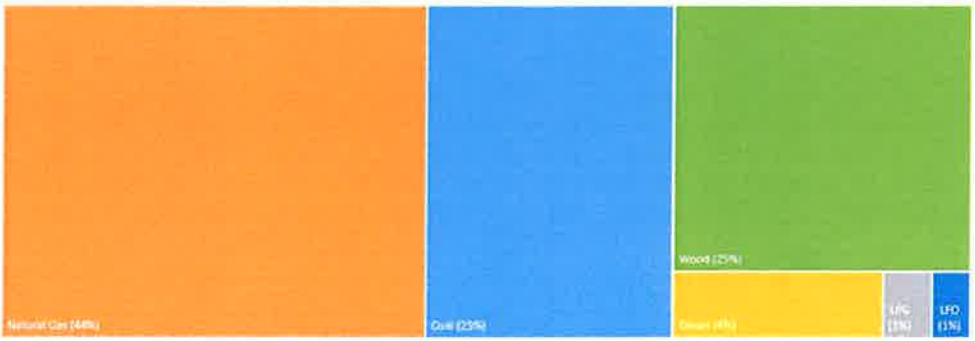
While we have no statistics on the use of wood in domestic New Zealand markets one way of gaining an indication of woods importance is to look at installed capacity of heat plant per sector. Wood provides 25% of installed capacity (1420 MW) over all sectors (see Figure below).

Caution is required in interpreting these numbers since we are measuring installed capacity. However, it does give an indication of the importance of wood as a source of fuel. Most of the installed capacity (1232.94 MW or 78%) for wood is used in the wood processing sector.

In the household sector BANZ (Facts and Figures,2016) p4 report that 12% of fuel heating requirements are met by wood, with 50% of households having a solid wood burner of some description.

Figure 16 Installed Capacity of Heat Plant by Fuel Type

Percent



Source: BANZ Facts and Figures 2016 p9

Appendix C Number of forest owners[35]

The New Zealand Farm Forestry Association (NZFFA) has identified approximately 15,000 forest owners in New Zealand with forests over 5 hectares.[36]

To identify small owners, the NZFFA used satellite imagery and land survey data to create a compilation of exotic forests by location, area, and owner.

Public domain addresses were found for approximately 49% of the owners. Of the identified 49%, 26% were individuals and 23% were companies.

A further survey in the lower North Island was carried out to understand in more detail the ownership of forests. Table 6 sets out the results.

Table 6 Breakdown of forest owners

2011

Owner type	Share
Private individuals	54%
Companies	30%
Trusts/councils	6%
Unknown	10%

Source: Levack H and Moore H (2013)

[35] In is not strictly correct to call the owners forest owners. They are forest owning entities.

[36] Levack H & Moore H (2013) Why identify forest owners? NZFFA AGM April 2013 Orewa, New Zealand.

Appendix D Employment

Measuring who is employed in forestry is not a trivial exercise. Due to the seasonal nature of silviculture and planting, some official statistics can under-estimate forestry employment depending on when employees are surveyed. Statistics New Zealand also classifies industries by main economic activity, this means any part-time forestry operators will not be included in official statistics.

The Census showed that on 5 March 2013 there were 7,056 employed in the forestry sector. The Census is self-reported; it relies on people correctly filling in their occupation and employer and for Statistics New Zealand to correctly classify that occupation.

To demonstrate the impact of classifying industry by main activity and self-reported occupation. In the latest Census, 35 percent of forestry related occupations[37] were employed in non-forestry industries (largest being Management Advice and Related Consulting Services).

Further, the Census will under report forestry employment since it collects data in March, while the peak typically in occurs in September/December quarters.

A more reliable approach is to use the Linked Employer Employee Data (LEED). The LEED database uses employer monthly tax returns. Being administrative data of all economical significant businesses[38] that file a tax return it has great coverage and unlike the Census collects monthly tax returns. However, like the Census it has problems with industry data being classified by main activity.

The LEED database shows 7,287 people employed in the forestry sector, with an additional 2,223 people self-employed in the sector. A total of 9,510 people working in forestry.

For health and safety reasons the major industry players also collect the number of hours worked through the Incident Recording Information System (IRIS) database. It records the number of hours worked by employees in larger forest owner/management companies. Unfortunately, not all companies contribute consistently to the IRIS database.

The number of hours can be converted using average hours from the quarterly employment survey. This suggests 7,142 FTEs. Since we know that not all companies contribute or contribute only infrequently to the database, this number therefore is conservative.

Informetrics also report on the Competenz[39] website that forestry has 10,846 filled jobs. A filled job is not equivalent to FTE since it could be part time. Therefore, the Informetrics estimates are not comparable.

[37] Forestry Worker, Production Manager (Forestry), Logging Assistant, and Forest Scientist.

[38] Turnover greater than $30,000 per year.

[39] https://www.competenz.org.nz/

Table 7 Triangulation of employment data

2015

Source	Totals
Census	7,056[1]
LEED database	9,510[1]
IRIS database	7,142[1]
Informetrics	10,846[2]
Note (1) full time equivalents. (2) Filled jobs.	

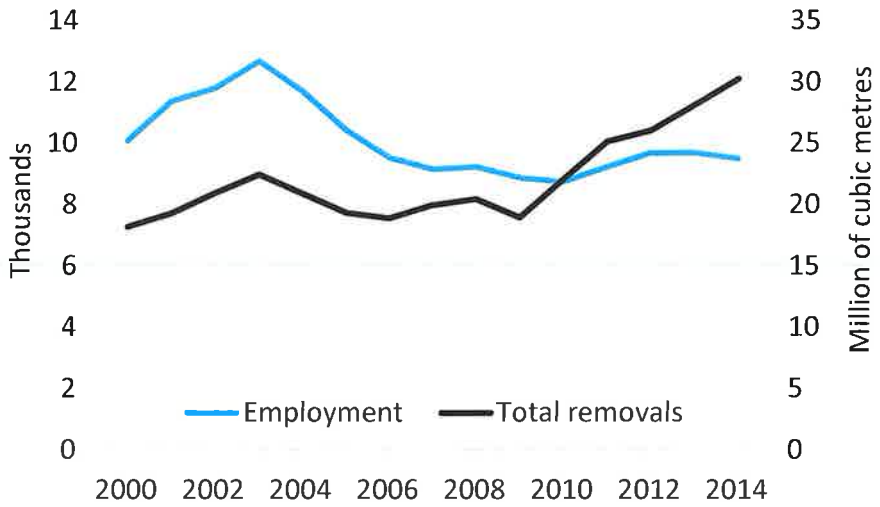
Source: NZIER

There are other sources of employment related to forestry in addition to the figures above:

- Approximately 2,000 employees/contractors are involved in the forestry road transport sector[40]
- Approximately 600 science related jobs are focused on forestry
- Approximately 900 employees are involved in the transport support services sector (which includes port service workers i.e. stevedores, marshallers, fumigation services etc.).[41]

The Figure below shows that productivity is constantly improving (employment numbers are slowly declining as mechanisation increases production per worker) in combination with a reduction in silviculture activity (cessation of pruning).

Figure 17 Numbers employed in the plantation/forestry industry



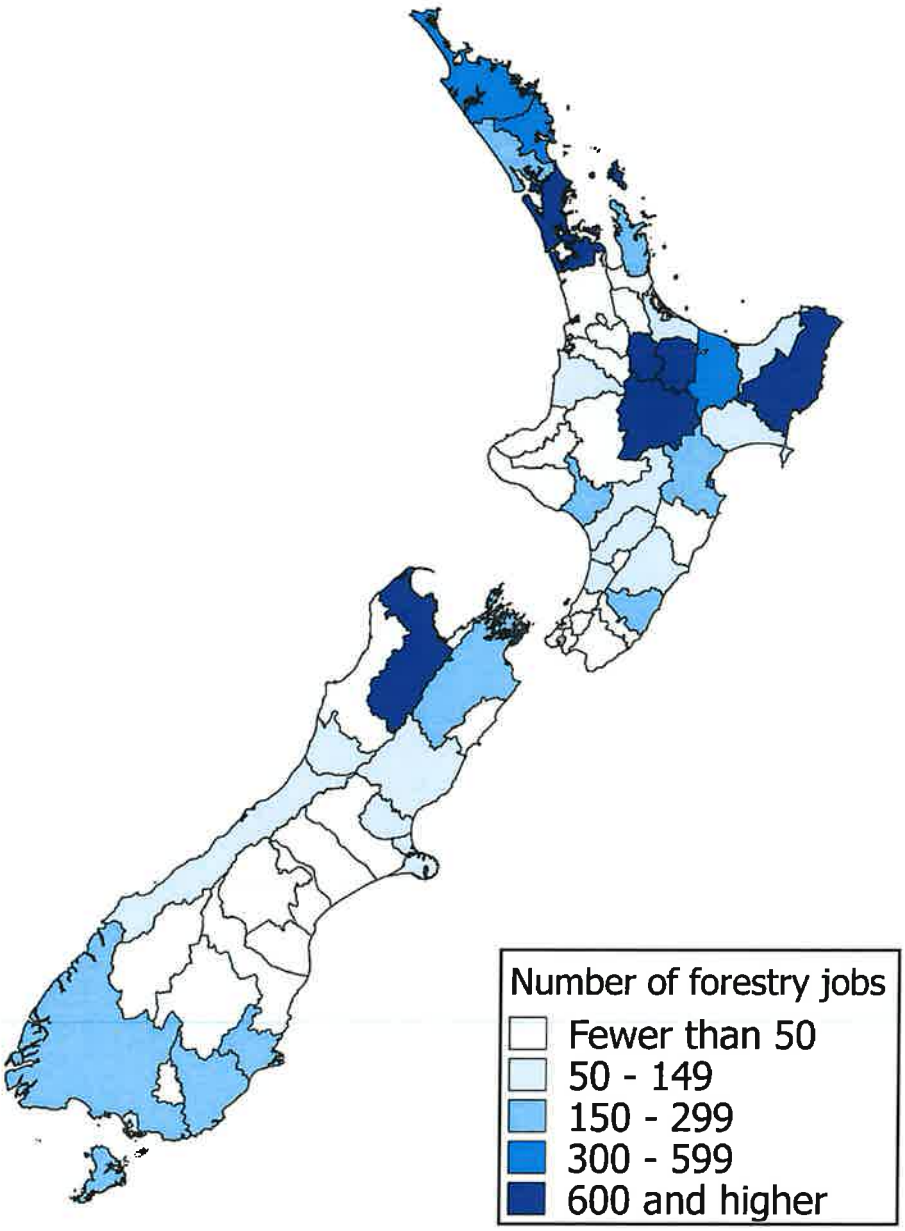
Source: Statistics New Zealand

[40] Input-Output table calculation.

[41] Estimates from a number of port service companies within New Zealand.

The following Figure sets out forestry job locations. There is a concentration of jobs on the east coast of the North Island (Bay of Plenty, Waikato and Gisborne), Northland, Tasman/Nelson, and Southland.

Figure 18 Location of forestry jobs



Source: Statistics New Zealand, NZIER

Appendix E Temporary overseas workers

Those working in the forestry industry are more likely to have been born in New Zealand. Our assumption was that most of those employed in the New Zealand forestry sector are New Zealanders.

The predominant employment of New Zealanders in the industry is confirmed by an informal survey of large forestry managers conducted as part of this project. However, large forestry managers say that it is getting harder and harder for their contractors to find employees to work in silviculture and planting. Many silvicultural contractors said they were considering their options, and there was a much stronger possibility that they would look to employ seasonal workers from overseas in the future.

Possibly, the strong economy means that workers suitable for forestry work are more difficult to attract from other industries.[42]

In recent work for MPI (forthcoming), NZIER has shown that increasing wages in the horticultural industry would only lead to a minimal increase in the number of New Zealand horticultural workers. This is not just the response in New Zealand but also the response in other countries.[43] We would expect that the same is true for the forestry industry. What this means is that an increase in the price of forestry labour is unlikely to increase substantially the supply of labour from New Zealand sources.

We have few statistics to understand the size of the overseas workforce. A MBIE (2013)[44] paper shows that the relatively high growth in temporary migrant employment in some industries (e.g. horticulture) is not matched in forestry. MBIE aggregates forestry employment with fishing and other agriculture so we are unsure of the exact temporary overseas worker numbers.

Information from forest owners obtained through an informal survey suggests that there are a few temporary migrants currently only working on silviculture and planting.

[42] Silviculture is often done on piece rates, and tough working conditions and is poorly paid, therefore there are problems of recruitment and retention.

[43] In the jargon the supply of labour is relatively inelastic.

[44] http://www.mbie.govt.nz/publications-research/research/migrants---economic-impacts/rise-of-temporary-migration-in-NZ-and-its-Impact-on-the-Labour-Market2013.pdf

Appendix F Portable sawmills

The portable sawmill industry began in New Zealand in the 1980s. It allowed the do-it-yourself community to have a go at the milling process on site using their own equipment.

While still a cottage industry, technology has advanced to the point where portable sawmilling can be:

- Developed as a hobby
- Run as a small business.

The entry value for new equipment can be anywhere between $4,000-$80,000 for new sawmilling equipment – a similar price (at the top end) to what it was twenty years ago but the technology/quality of the machinery is better.

The number of portable sawmills in operation are increasing as second hand equipment comes on to the market reducing further the barriers to entry e.g. there are a number of websites selling brand new equipment but also organisations such as Trademe selling second hand equipment.

The portable nature means that mills are able to move location, going directly to the site where the logs are stored or where they are harvested.

Between 10 and 20 websites offer machine sales and services associated with portable mills. Industry participants could not be specific about the numbers of portable sawmills in operation, however portable mill operators said that number was likely to be in the low hundreds. Some are in constant use, others brought out occasionally, and others rusting in a back shed.

If follows that the degree of professional services varies and depends on the objectives of the owner and other equipment that supplements the portable sawmill e.g. to successfully mill eucalyptus trees requires drying facilities which can include kiln drying to stop the milled wood from warping.

Different strategies are in operation by portable sawmill operators. Some operators believe to be successful requires access to different varieties of wood lots since they are uncompetitive when it comes to milling *Pinus radiata*. Others participants have other strategies in play which include milling *Pinus radiata*.

We do know that the stationary mills are becoming larger and more competitive in the domestic market as new entrants take advantage of new technology and make themselves more efficient. How portable sawmills will attempt to counter this new competition is unclear. In other self-employed businesses, we have seen "life-style" type behaviour where operators accept lower prices to maintain their business and/or taken other jobs to supplement incomes. Some of this behaviour is already evident in the portable sawmill business.

We expect the focus on a variety wood lots (including macrocarpa) to continue. Whether portable mill owners will be able to mill *Pinus radiata* in any quantity looks unlikely. This will depend on regional competition, location and accessibility of wood lots and profit margins (and the degree that profitability is important to the operator).

Appendix G Forestry rotations

A concern in the international literature has been the declining yields between forestry rotations. Australian studies have demonstrated a significant decline in yields from 2nd rotation onwards e.g. South Australia in the 1960s saw a 30% drop in yields in 2nd rotation forests.[45]

New Zealand has not experienced similar issues. Evidence suggests that not only have New Zealand forests not declined in yield past the 2nd rotation, they have gained in productivity through:

- Better genetic selection
- Careful silviculture management
- Ensuring that slash is left behind
- A warmer climate.

The combination of effects is important. A warmer climate may improve productivity, fix more carbon, increase nutrient cycling, and build up soil fertility through enhanced soil organic matter, but it may also increase the prevalence of foliar diseases which reduce site productivity. A warmer climate in combination with elevated CO^2 concentrations will only be beneficial if other aspects of forest management are done well.[46]

Better genetic selection, careful silviculture management, good weed management, and land preparation are crucially important since not many soils on land affordable to forest owners have naturally high fertility, in fact some soils were extremely poor when forests were first planted.

There is evidence of soil improvement as rotations progress on some of these very poor soils as management has added limited amounts of phosphate fertilisers or trace elements such as boron as well adopting careful site management to avoid soil compaction. As a result of this, yields have improved in some case by as much as 15%.[47]

A number of conclusions can be drawn from the literature:

- Care is required to ensure that sites do not deteriorate over rotations. Weed management, conservation of organic material (including slash), and adoption of best practice harvesting techniques are all critical in minimising nutrient loss
- Successive rotations are unlikely to have an impact on yield given best practice site management and fertilisation
- Improving the genetic stock offers the best chance of sustaining long term yield gains over successive generations.

We have informally surveyed forest owners/managers about the age of their estate. Below we set out the national rotation profile for radiata.

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45 http://www.fao.org/forestry/25863-0cff9cd2dd78cc5b1b0bfee2b24991027.pdf

46 Personal communication with Tim Payn, Scion 16th December 2016.

47 Personal communication with Tim Payn, Scion, 25th November 2016.

Table 8 National rotation profile

Self-reported from large forestry managers/owners

Rotation	Percent
First rotation forest[1]	35.8%
Second rotation forest	56.3%
Third rotation forest	4.6%
Fourth rotation forest	0.4%
Unknown	0.9%
Total[2]	**100%**
Note (1) 40% of all forests under 10 hectares assumed to be first rotation forests. (2) Numbers rounded.	

Source: NZIER

Appendix H Components of the value chain

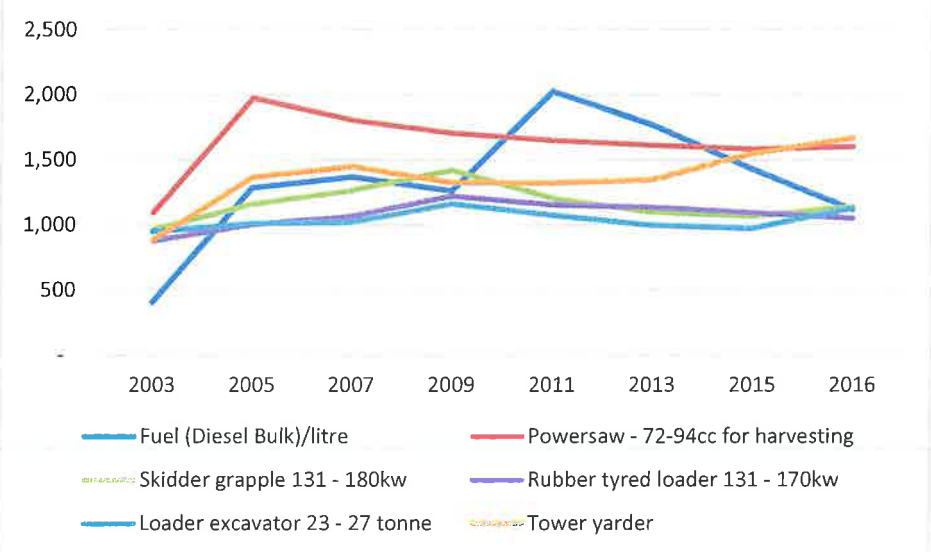
H.1 Factors affecting stumpage value

H.1.1 Harvesting

The general capital price index has dropped for most capital items. In New Zealand, the cost of imported machinery in the 2000s dropped by almost 50% because of the impact of Chinese imports.[48] However, the price index for forestry harvesting equipment does not follow the general capital price index, since specialised equipment is not sourced from China. Figure 19 shows a steady real price in forestry harvesting equipment since 2003. Unlike machinery for other land-based industries (e.g. tractors), forestry equipment is specialised with a much smaller market, therefore competition for equipment is much less. Movements in the price index for forestry machinery have steady as demand has grown. Prior to the 2000s harvesting equipment costs remained relatively stable.

Figure 19 Movements in the costs of harvesting equipment

Index, Adjusted for CPI, 2006 dollars



Source: Forme Consulting

Current costs are set out in Table 9. Much of the equipment required for forestry is fit for purpose. Yarders towers, loaders, rubber-tyred loaders, log forwarders, and grapple skidders are almost exclusively used in forestry. They all require considerable capital expenditure.

[48] http://www.treasury.govt.nz/publications/research-policy/wp/2013/13-15/15.htm

Table 9 Current harvesting equipment costs

March 2016

Category	Cost implication
Powersaw - 72-94cc for harvesting	$2,500
Skidder grapple 131 - 180kw	$502,800
Rubber tyred loader 131 - 170kw	$361,000
Loader excavator 23 - 27 tonne	$423,900
Tower yarder	$1,840,000

Source: Frome Consulting

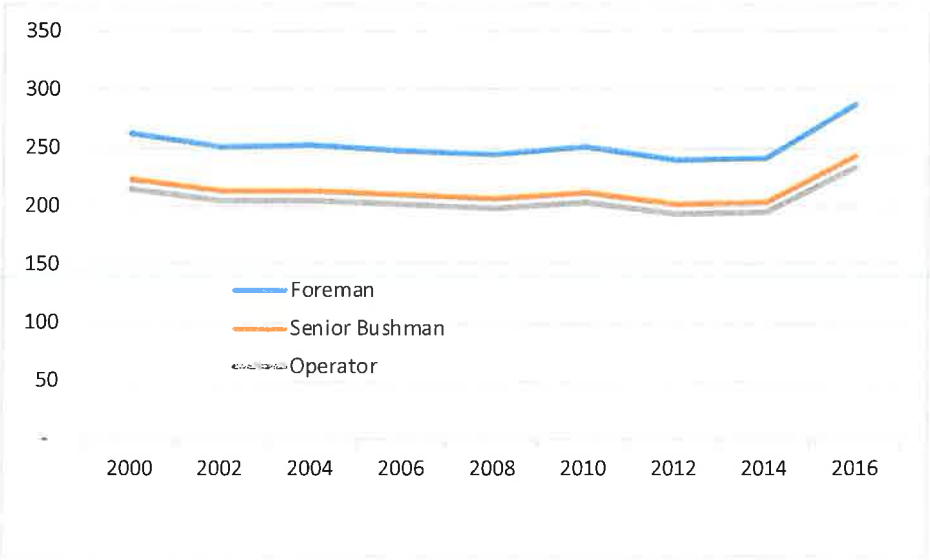
H.1.2 Labour costs

Labour cost relativities have remained constant through the period. Wages are also keeping pace with inflation with some being slightly above levels (in real terms). There has been a significant increase in labour cost over the past 2/3 years. There are a number of reasons for this:

- The increase in production
- The shortage of skilled labour required for harvesting, planting and silviculture
- The increase in competition for jobs in other sectors as the economy grows more quickly.

Figure 20 Labour costs

2006 Dollars, March years, Daily rates



Source: Frome Consulting

Table 10 sets out surveyed labour cost data for harvesting. Costs range from approximately $280 to $350 per day per worker, while a harvesting crew costs can reach approximately $2,500 per day.

Some in the industry believe this figure to be on the low side, suggesting that a 10-person crew could be as much as $4,000 per day.

Table 10 Labour costs

March 2016

	Per day	Annual[2]
Foreman	$345	$84,600
Senior Bushman	$290	$71,250
Operator	$279	$68,400
Harvesting crew [1]	$2,323	$570,000
Notes (1) To estimate harvest crew cost e.g. 1 foreman, 2 leading bushmen, 5 operators at March 2016: ((345.56 + (290.82*2) + (279.28*5)) = 2,323/day. Calculated sample labour costs using 8-hour day + 2-hour travel. (2) Based on 245 working day year.		

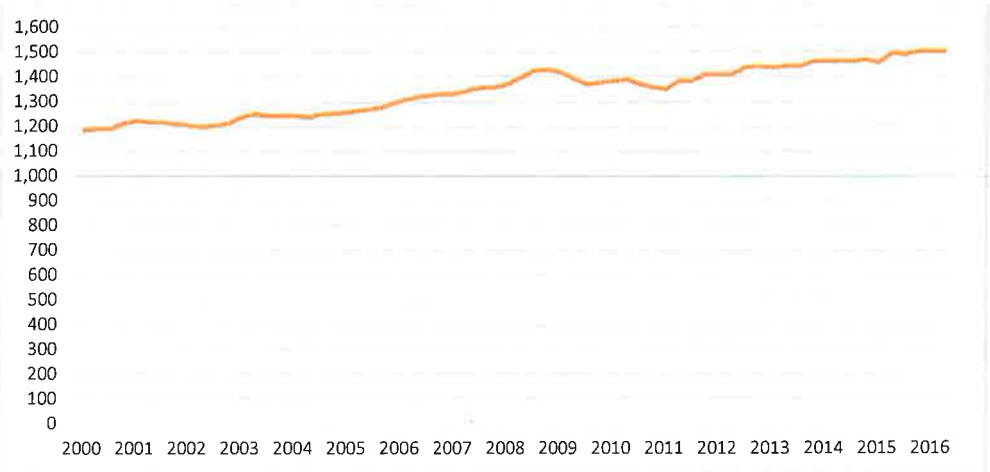
Source: Frome Consulting

H.1.3 Transport costs

Transport costs are hugely influential in determining forestry profitability. Since 2000 transport costs in forestry have risen steadily in real terms, although costs have risen more slowly since 2008/09 (see Figure 21). Transport can either be to mills or to the wharf.

Figure 21 Real transport costs

March years, index base year = 1000 (1997), 2006 dollars



Source: Adapted from information supplied by Forme Consulting

H.1.4 Forestry roading costs

The Table below sets out forestry roading costs. On best sites the wood yield is more than double that of a poor site. This is reflected in the ratio between yield and roading costs. For smaller forest owners where sites are less accessible, this may have large ramifications for profitability.

The NZFOA suggest that this does not give the picture of roading costs since the roading cost per hectare can vary depending on terrain and soil. Therefore, the costs need to be treated with some caution and the calculations are purely illustrative of the type of costs that can be incurred.

Table 11 Indication of roading costs

2016

Site quality	Expected yield per hectare m^3	Roading cost per hectare ($)	Roading costs $/$m^3$
Best	868	4,357	5.02
Good	684	4,357	6.37
Typical	526	4,357	8.28
Poor	368	4,357	11.84

Source: Frome Consulting

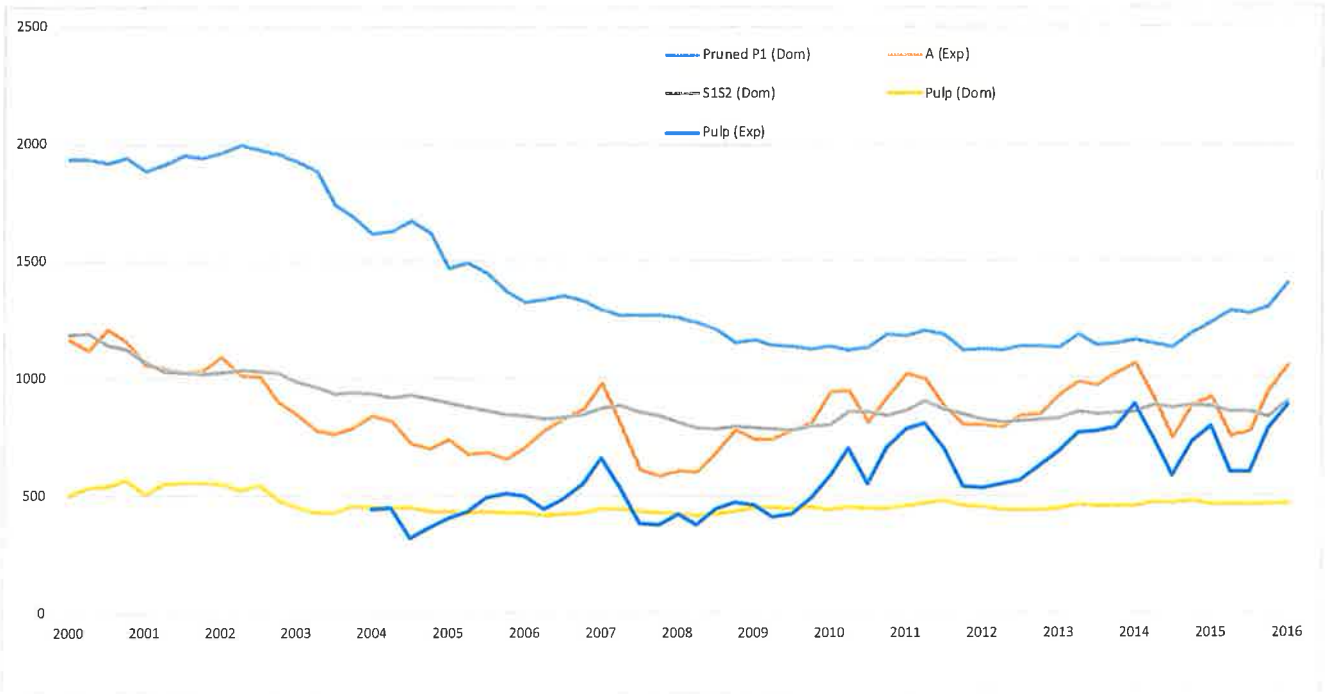
H.2 Log price trends

Figure 24 below sets out log prices for a variety of different log markets. They include pruned grades (P1), export grades (A (Exp), and Industrial Pulp (Exp)) and domestic (S1S2, and Domestic Pulp). While products such as pulp attract lower prices, export and domestic prices are in a relatively narrow band.

After the high prices of the 1990s, prices settled at a lower level over most of the 2000s. Price expectations have been mainly governed by supply constraints in countries such as Russia and US. Over the past five years the dominant force has been the export tax imposed on Russian logs. This has restricted supply and lifted prices for Pacific Rim exporters, especially New Zealand.

Figure 22 Real Log price trends

2000 – 2016, Index adjusted for CPI, 2006 dollars



Source: Adapted from Frome Consulting

H.3 Harvest stumpage values

Stumpage values are set out on the following page (see Figure 25). They reflect prices relatively closely. Stumpage consists of stumpage values less transport and site harvesting costs. Transport costs are to port or mill.

The most profitable sites are on easy (flat) country, where trees had been pruned with easy access to a port. In most cases, good profits have been realised this has occurred (refer blue line).

Company data suggest that stumpage prices (the log price at the forest) are more volatile month-to-month. In the following Figure, this is masked by the quarterly averaging of stumpage prices and the inclusion of transport and harvesting costs.[49]

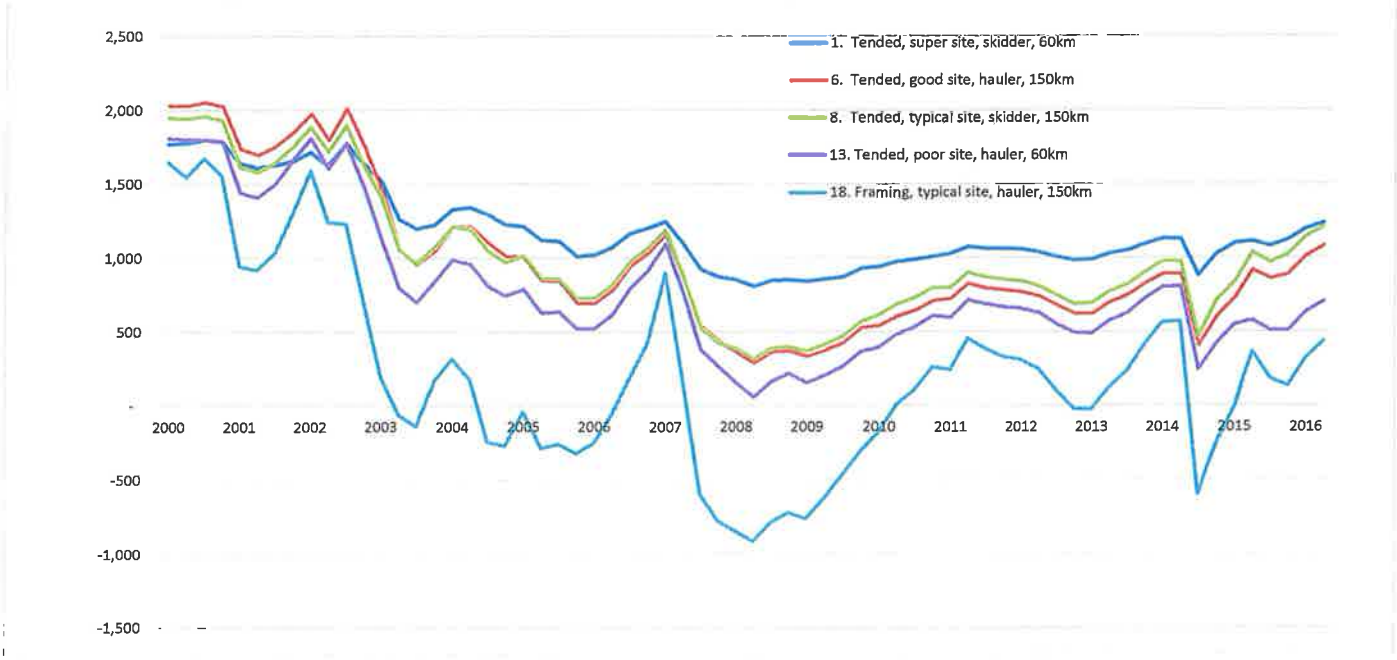
On good sites, typical sites, and poor sites with a mixture of transport costs (high and low), stumpage prices relativities tend to clump together.

Stumpage values of poor sites, with larger transport costs, and with wood suitable for framing (unpruned but thinned) and suitable for the domestic market, prices are much more variable. This reflects wood quality, higher transport costs, and a variable domestic market.

[49] Taking off the transport and harvesting costs means that some sites are not profitable to harvest.

Figure 23 Stumpage values adjusted for transport and site costs (from port or mill)

2000 – 2016, CPI adjusted index, 2006 dollars



Source: Frome Consulting

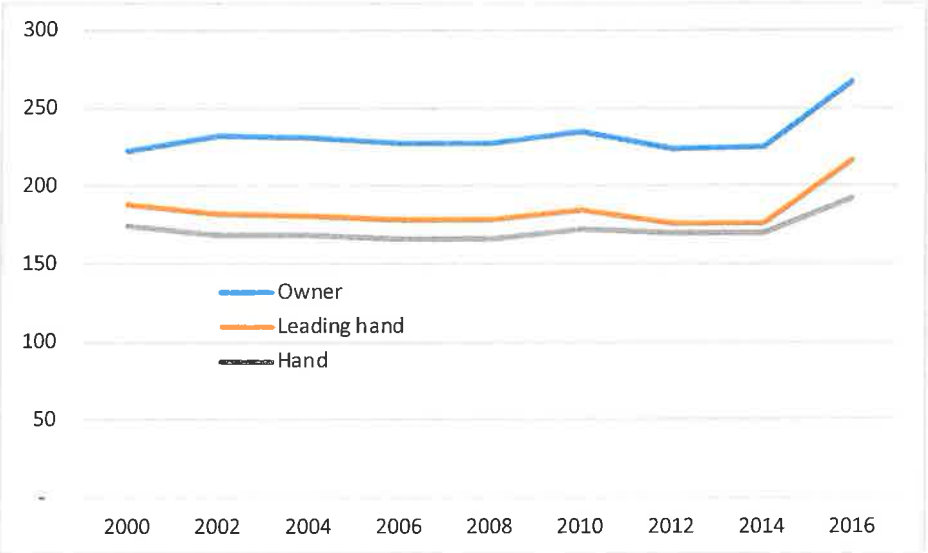
H.4 Silviculture and planting costs

H.4.1 Labour

Labour costs for planting and silviculture are similar to harvesting costs, although they have risen slightly faster than harvesting wages. Costs have risen more quickly in the past few years for reasons discussed earlier (under harvesting).

Figure 24 Silviculture and planting labour costs

2000 – 2016, Dollar per day in 2006 dollars



Source: Forme Consulting

Current rates for silviculture and planting are set out in Table 12.

Table 12 Current labour costs

March 2016

Description	Per day
Owner	$320.00
Leading hand	$259.00
Hand	$230.00

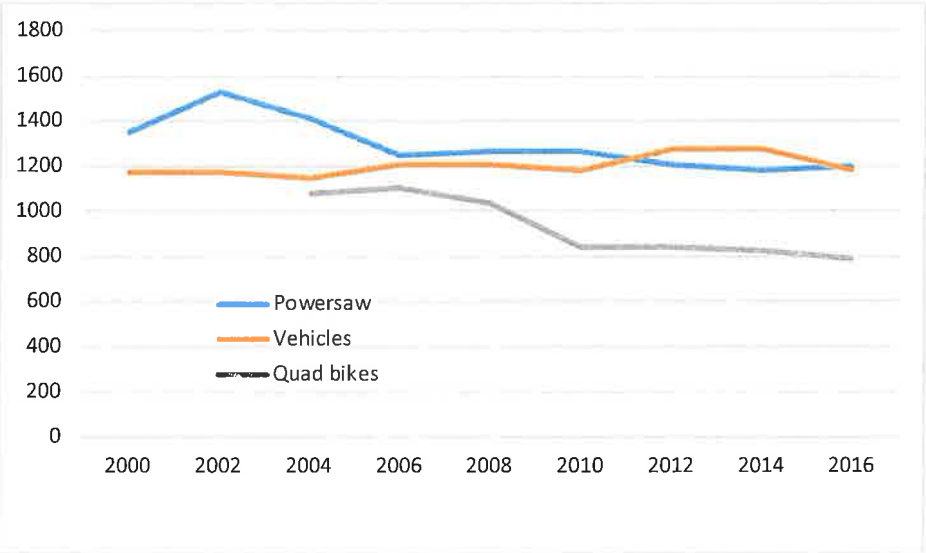
Source: Forme Consulting

H.4.2 Equipment prices

Equipment such as chainsaws, 4WD vehicles and quad bikes have dropped in real price terms (see Figure 25 below). This suggests that the market for these products is highly competitive as suppliers compete for market share.

Figure 25 Equipment required for planting and maintenance

Index, Adjusted for CPI base year = June 2006



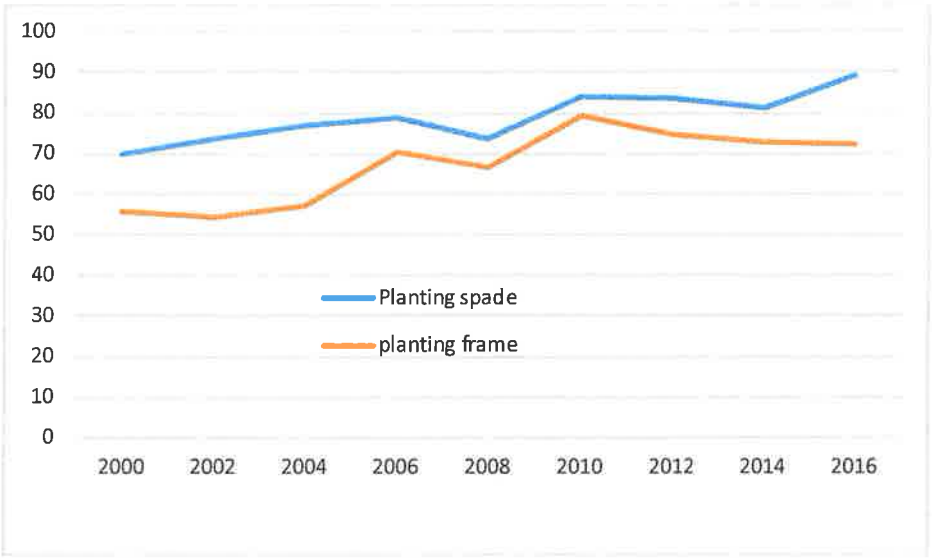
Source: Forme Consulting

The indexes for establishment equipment (planting spades and planting frames) has moved faster than inflation since 2000 while pruning equipment (pruners, jacksaws, belt and holsters, and ladders) have moved less quickly and become cheaper in real terms overtime.

Possibly, the more specialised equipment has managed to maintain higher prices overtime.

Figure 26 Establishment equipment

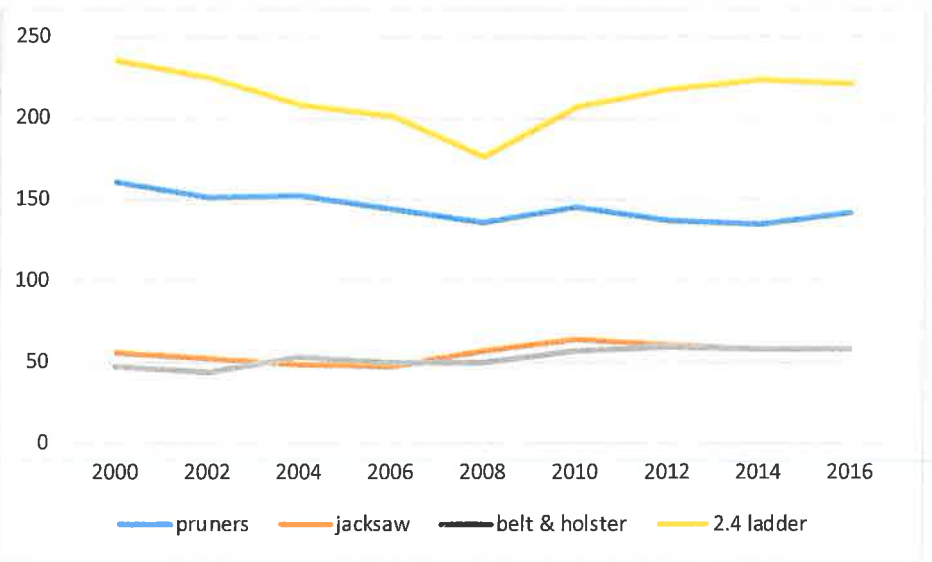
2000 – 2016, Real prices (CPI adjusted base year June 2006)



Source: Forme Consulting

Figure 27 Pruning equipment

2000 – 2016, Real prices (CPI adjusted base year June 2006)



Source: Forme Consulting

Appendix I Contribution to GDP

I.1 Objectives

Forestry is witnessing significant growth as plantings from the late 1980s and early 1990s come ready for harvest.

With the value of forestry increasing key questions include what is the economic contribution nationally and regionally of forestry?

We use two consistent economy wide models to examine these questions.

The economy wide models have major advantages over other commonly used approaches (such as Input-Output tables or multiplier analysis). These advantages are that:

- Multiplier analysis and Input-Output tables do not accurately reflect the reallocation of resources as forestry grows. They do not consider how those resources are reallocated. In reality if forestry is growing then it must bid resources away from other industries. The output of those industries must fall. Overall impacts must consider gains and losses to the economy
- Wage rates don't change in a multiplier analysis. This assumes that forestry can take unlimited labour from other sectors at the same wage rate while it grows.

Multiplier analysis therefore tends to vastly overstate the economic impacts of changes in demand in a specific sector. These unrealistically large impacts are not particularly informative for policy makers or firms.

Economy wide models address both resource allocation and relative price shifts, allowing for a more credible, richer analysis of economic contribution. These models tend to produce more conservative estimates of impacts, but are more consistent with theory and practice.

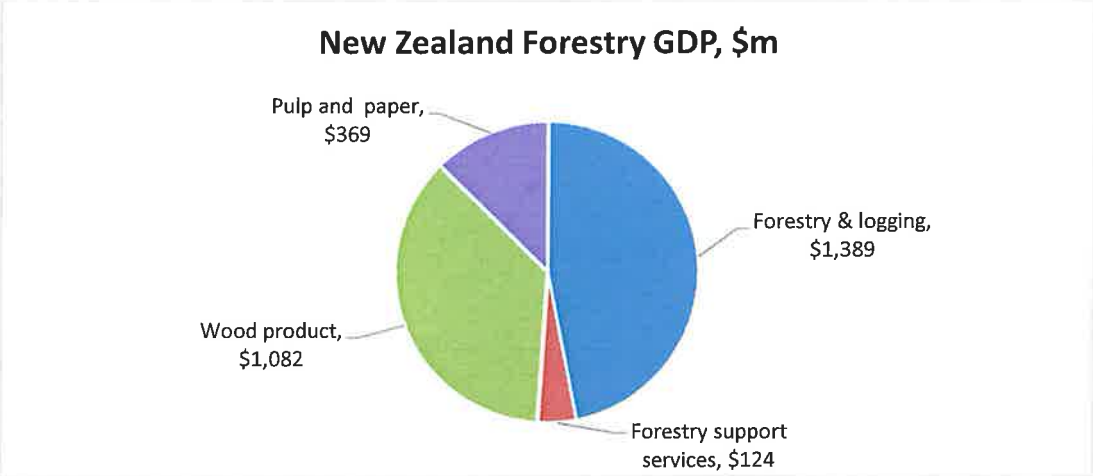
I.2 Total forestry GDP

Figure 28 shows that the total forestry industry contribution to New Zealand's GDP was $2,965 million in 2015 comprising of Forestry and logging ($1,389 million), Forestry support services ($124 million), Wood product ($1,082 million), and Pulp and paper ($369 million).[50]

[50] This information has been updated from the latest Statistics New Zealand estimates from 2013.

Figure 28 Contribution of forestry to GDP

In $ million

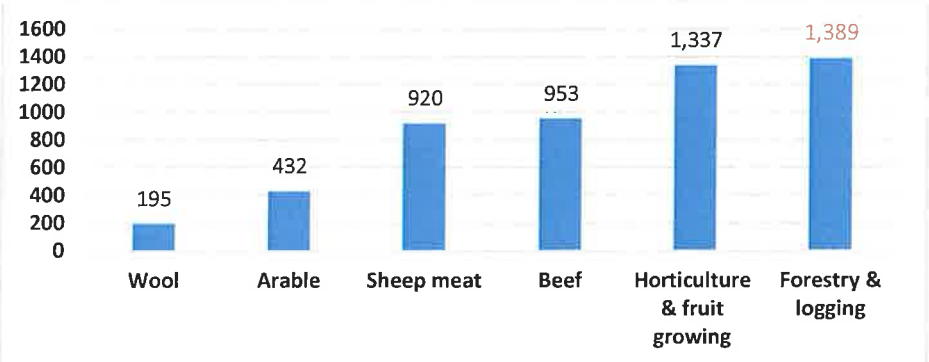


Source: NZIER

Figure 31 compares GDP of Forestry and logging ($1,389 million) to Horticulture & fruit growing ($1,337 million), Beef and veal ($953 million), Sheep meat ($920 million), Arable ($432 million), and Wool ($195 million).

Figure 29 GDP comparison

In $ million



Source: NZIER

I.3 Regional GDP

Figure 32 shows contribution of forestry to regional and national GDP by sector.

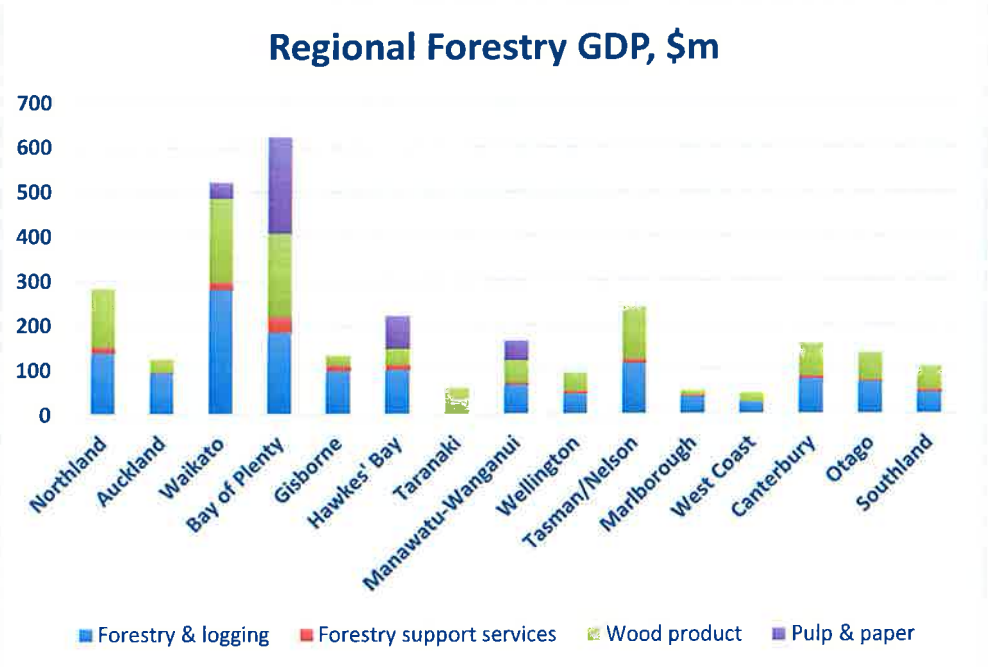
The highlights are:

- The main growing areas are Northland, Waikato, Bay of Plenty Otago/Southland, and Tasman/Nelson. The Bay of Plenty also has processing facilities
- Gisborne is highly dependent on forestry and the percentage contribution to GDP is much greater than any other region

- Hawkes' Bay has significant forestry and logging operations as well as pulp operations
- Tasman/Nelson has significant forestry and logging operations and wood processing
- Canterbury, Otago, and Southland all have significant forestry operations.

Figure 30 Contribution of forestry to regional GDP

In $ million



Source: NZIER

Figure 31shows the share of forestry in regional and national GDP. Nationally, forestry contributes 0.6 percent ($1,389 million) to New Zealand's GDP ($239,500 million).

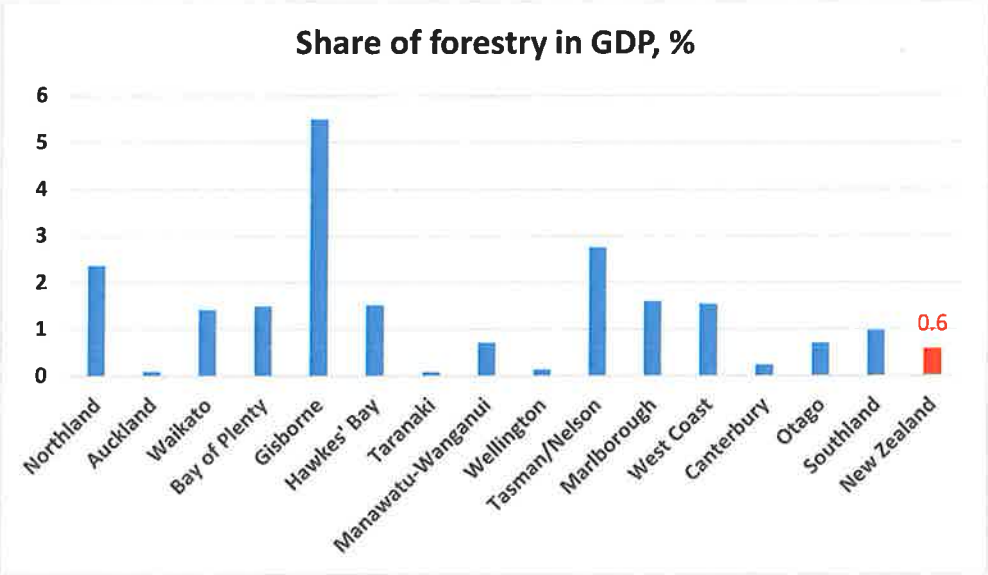
Of interest is in which districts forestry's contribution to the share of regional GDP is significant. Three regions stand out where forestry is extremely important to the local economy:

- Gisborne region where forestry is the most significant contributor with between 5% and 6% of regional GDP
- Tasman/Nelson where forestry contributes nearly 3% to the regional GDP
- Northland where forestry contributes approximately 2.5%.

In the Bay of Plenty, Waikato, Hawkes' Bay, Marlborough, West Coast, and Southland/Otago the forestry contribution to the regional economies is higher than the national average.

Figure 31 Share of forestry in GDP

percent



Source: NZIER

The contribution to GDP numbers that correspond to Figure 31 are presented below in Table 13.

Table 13 Contribution of forestry to regional GDP

Dollar millions

Regions	Forestry and logging	Forestry support services	Wood product processing	Pulp and paper
Northland	138	12	133	0
Auckland	92	2	30	0
Waikato	280	17	188	36
Bay of Plenty	184	34	189	216
Gisborne	96	13	23	0
Hawkes' Bay	100	11	37	74
Taranaki	8	1	50	0
Manawatu-Wanganui	66	5	51	43
Wellington	46	4	43	0
Tasman/Nelson	114	8	119	0
Marlborough	39	3	10	0
West Coast	26	0	21	0
Canterbury	79	6	74	0
Otago	72	2	63	0
Southland	48	5	53	0
New Zealand	**1389**	**124**	**1,082**	**369**

Source: NZIER

I.4 Comparisons with other industries

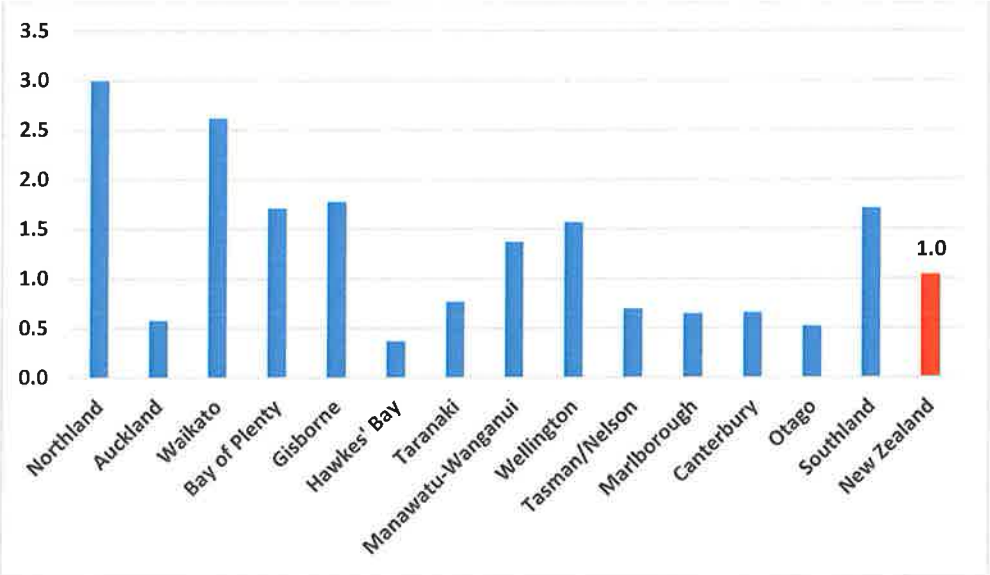
Figure 32 shows the relative size of forestry and logging to other land users' GDP. For example, Forestry and logging GDP in Northland is three times larger than Horticulture and fruit growing. Nationally Forest and logging GDP is the same size of Horticulture and fruit growing GDP.

Forestry is much more significant relative to horticulture in regions such as the West Coast,[51] Northland, Waikato, Bay of Plenty, the lower North Island, and Southland.

[51] The West Coast is not included in this graph because 46 times less important than forestry.

Figure 32 Comparison of foresty and logging to other land users' GDP

Ratio of Forestry and logging to Horticulture and fruit growing GDP by region (*)

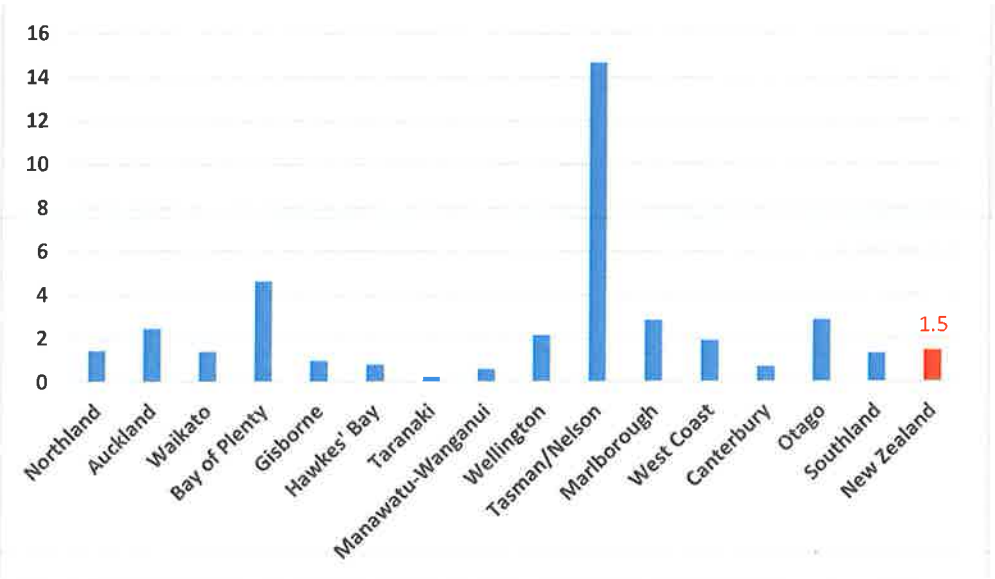


Source: NZIER

Relative to beef the region that stands out the most is Tasman/Nelson. Forestry's contribution is 14 times more than beef production (in regional GDP terms). Other areas where forestry is more important in GDP contribution terms are Otago, Marlborough, Wellington, Auckland and the Bay of Plenty.

Figure 33 Regional comparison between beef and forestry

Ratio of Forestry and logging to Beef GDP by region

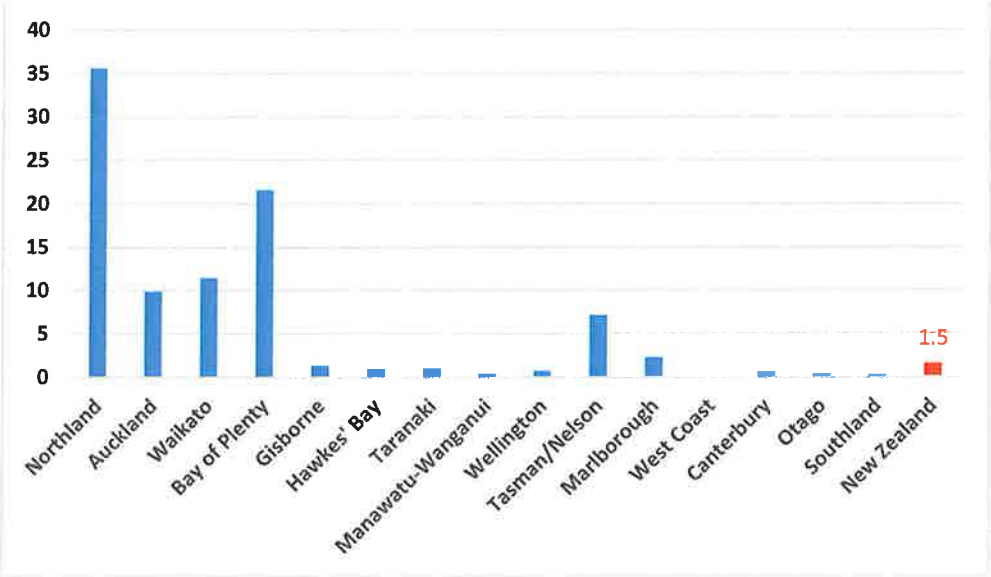


Source: NZIER

Forestry is more important in the northern half of the North Island (Northland, Auckland, Waikato and the Bay of Plenty) as well as the Tasman/Nelson regions.

Figure 34 Regional comparison between sheepmeat and forestry

Ratio of Forestry and logging to Sheep meat GDP by region



Source: NZIER

Appendix J Environmental values

J.1 What we know: forestry has a large benefit beyond timber production

Forestry is now recognised as contributing to a range of benefits for the economy that fall beyond growing trees as timber and pulping material. Because they are external to the growers' primary interest they may not be taken properly into account in national decision-making processes, resulting in under-provision of forestry in potentially beneficial situations, and distortion of policies around use of land for which forestry competes.

J.2 Setting out the framework: eco-system services is one way of classifying environmental effects

The ecosystem services framework is one way to describe what the natural environment provides to New Zealanders. It is a framework to understand the relationship between natural resources like forestry, the bio-physical functions they perform and their contribution of services to human well-being (Figure 35).

Figure 35 Definition of ecosystem services[52]

Source: NZIER

Ecosystem services are defined as the benefits people obtain from ecosystems. Ecosystem services are divided into four categories of services (Millennium Ecosystem Assessment, 2005). This breaks down the services obtained from natural ecosystem functions into:

- Provisioning services: in the case of forests, the extraction of materials from forests to provide food, fibre, energy and chemicals for pharmaceutical and other uses
- Regulating services: for forests, contributions to stabilisation of soils and reductions in erosion and sedimentation, moderation of water flows and microclimates, retention of carbon and nutrients from being discharged into atmosphere and water

[52] The ecosystem structure refers to biological, physical and chemical components.

- Cultural services: for forests these are contributions to providing space for recreation and tourism, natural and historic heritage, general amenity and protection of biodiversity and spiritual associations of iconic locations
- Supporting services: these are basic bio-physical and chemical functions of nutrient and water recycling, pollination of plants.

Ecosystem services contribute to human well-being in different ways which require different approaches to valuation.

The cultural services of forest visitation commonly exhibit characteristics of market failure, due to high transaction costs in enforcing access controls over wide areas and relatively small numbers of participants, although there are exceptions where access can be controlled and use concentrated in manageable areas. Even in those cases cultural services retain positive external benefits for the wider community that it is hard for forest owners to assess or get recognition for, such as the contribution to a community's physical and mental health of recreation and sporting events held in forest settings.

Although fundamental, the value of supporting services is commonly not separately accounted for, because they are difficult to ascribe value to without double counting values included elsewhere in the ecosystem service supply chain.

J.2.1 Non-market values

The ecosystem services approach covers many benefits that are not explicitly traded in markets, but still have value. The economic approach to non-market value is based on a framework of Total Economic Value comprising a number of components:

- The direct value of current uses of a resource or site (e.g. of recreational visits to a forest)
- The indirect value of current uses of a resource (e.g. the downstream effects of a forest's impact on water quality)
- The value of retaining a resource for future uses:
  - option value is the "pure" value of retaining for future use
  - quasi-option value is the value of waiting for improved information
- Non-use values associated with a resource:
  - the "existence value" of retaining a resource for its own sake
  - the "bequest value" of retaining a resource to pass on to the future.

This indicates the value is not confined to currently observed activity, and for some environmental attributes that current value may not be the main component (e.g. species loss). Techniques used to infer non-market values fall between:

- Market surrogates or cost-based estimates – these can provide a value for only some non-market attributes (e.g. forestry's contribution to water flow management could be estimated as the avoided costs of damage from reduced flood frequency and severity) and depend on data availability
- Revealed preference methods that infer a value for the non-market attribute from the value of related activity e.g.:
  - the premium of in-house prices attributable to proximity to desirable environmental features, such as parks, clean air

  - the value of recreation sites inferred from analysis of travel costs incurred by visitors in using the sites
- Stated preference methods that infer a value for a non-market attributes using market-research type methods of direct questioning:
  - people's willingness to pay for securing (or accept compensation for giving up) some component of environmental quality
  - choice modelling of people's preferences for different combinations of attributes that affect environmental quality.

These methods figure largely in the valuations of recreation and amenity outlined below. There are limitations in using these methods alongside compilations of statistics of contributions of forestry to the economy. These limitations include:

- These methods are context specific in application and too few have been undertaken in New Zealand to reliably infer generic values to apply to questions like the "what is the value of forests to recreation" across the country as a whole
- Internationally there are more examples of such studies, but the context of such studies is so variable that it is difficult to reliably infer a value relevant to New Zealand contexts
- The basis of all non-market valuation methods is to estimate an economic surplus for consumers of the attributes in question – which makes them incompatible with the System of National Accounts, which measures values in production, not the economic surplus that consumers obtain from all their consumption decisions (not just those relating to non-market goods).

While non-market values may be used in cost benefit analysis of individual project proposals, in their current form they are problematic for inferring the aggregate value of externalities across the national economy.

J.2.2 Value estimates

Table 1 in Section 3.1 above reproduced results of one study applying the ecosystem service approach to valuing forestry in the Ohiwa catchment in the Bay of Plenty. These provide values per hectare of various components of ecosystem services. Table 1 estimates the net ecosystem services value to be $5,609 per year, half of which is attributable to forestry's reduced leaching of nutrients compared to other productive uses of the land. Other significant components of value are the supporting service of nutrient cycling (18% of value, but carries risk of double counting in other values) and the value of recreation which is site specific and unlikely to be characteristic of all forests. Excluding those values the remaining components sum to $897 per hectare per year.

These are average values per hectare specific to that catchment, so extrapolating them across other areas can only give rough indicative figures of the scale of values associated with forestry across the country. More such studies customised to different sites across the country that can be considered representative of variation in terrain and environment would be required to refine such figures to closer approximation of a national figure.

A more recent study has examined the relative returns in ecosystem services of forestry and dairying.[53] This compared the market values of production and non-market values of environmental externalities from similar areas of land used for dairying and forestry, ecosystem services. From this modelling, although 26,000 hectares of land in dairying could produce a production surplus per year of $96 million about three times that from forestry on the same land, on externalities there is an estimated loss of $18 million from dairying compared to an estimated benefit of $30 million from forestry. Dairying also has a relatively high probability of low returns and negative surplus on production, whereas the production returns on forestry have lower variability. So forestry has lower returns but its environmental impacts are net positive, whereas dairy may have productive returns that can be higher or lower than those from forestry, but its environmental impacts are significantly net negative.

Table 14 Relative externality value of forest and dairying

Monge et al (2015) estimates are based on 26,000 hectares of dairy land in the central North Island and an equivalent amount of forestry land.

	Forest	Dairy
Land value $/ha	$10,000	$36,100
Surplus range Low $m/yr[1]	22	-6
Surplus range High $m/yr[1]	32	96
Probability of loss %	0%	13%
Environmental benefit $m/yr	31.0	-18.0
Note (1) The economic surpluses are based on revenue minus easily observable costs for the 26,0000 hectares.		

Source: Monge et al 2015, Scion

An earlier Scion report examined the impact of carbon forestry under the ETS,[54] adapting a method for comparing returns from major rural land uses.[55] Assuming carbon prices would be higher than those recently experienced ($22 and $50/t CO_2-e), the Scion report examined the effect of afforestation ("carbon farming") against dairying and a range of sheep and beef farms on different land classes, finding the ETS lowered the farm internal rate of return on all classes examined except two (on which the IRR was unchanged). This pointed to the importance of bringing other environmental benefits of forestry into the analysis which has been demonstrated in the later studies, but not yet in detailed studies comparing all land uses across all regions.

Two New Zealand studies that estimate ecosystem services for forestry at the national level are outlined in Appendix K.

53 Monge JJ, Velarde SJ, Yao RT, Pizzirani S & Parker WJ (2015) Identifying complementarities for the dairy and forestry industries in the Central North Island; Report by Scion for Oji Fibre Solutions and Waikato Regional Council.

54 West G, Wakelin S, Wall A, Turner JA, Poole B (2011) Achieving multiple regional goals with carbon forestry; Scion report to Environment Waikato.

55 Evison, D. 2008b. A method for comparing investment returns from major rural land uses including forestry. New Zealand Journal of Forestry, 53, 3, 27-32.

J.2.3 Compatibility with national accounts

The ecosystem services approach described above (and employed in the study behind Table 1) used a variety of methods to infer the value of benefits not traded in markets. These may include non-market valuation techniques which measure value as preferences of a representative sample of people affected by the benefit, both revealed preference and stated preference techniques. The essence of these is to estimate the consumer surplus associated with a given level of benefit from people's willingness to pay for it.

These values are not strictly commensurable with the national accounts, which are focused on production, unless the accounting frame is enlarged to account for consumer surplus from all spending. The non-market values are more suited to providing values for situations of choices at the margin, than for preparing national aggregate figures like adjusted GDP. The UN System of National Accounts recognises this and provides for two levels of satellite accounts compatible with, but not within, the main GDP accounts: a set of core accounts for things that can be measured in market terms (like the market value of standing timber) and more experimental accounts for things that cannot.

J.3 New Zealand: setting out the analysis gaps

J.3.1 Provisioning services – materials and energy

Provisioning services of supplying timber, recovered energy and sometimes foodstuffs from forests are for the most part subject to market exchange, so their value is covered by the national accounting structure. For New Zealand's planted forests the material provisioning services are currently well covered by the main production statistics contained in MPI's National Exotic Forest Description (NEFD) and Statistics New Zealand's export data and inter-industry transaction tables. No further adjustments are required to cover the value of wood production.

In the New Zealand context provisioning of foodstuffs from planted forests is negligible, much of it a by-product of the cultural ecosystem service of recreational hunting.

Energy

Energy production from forest residues is already covered by statistics prepared by MBIE in its energy balances and by MPI in its forestry statistics. Most of this is energy recovered from the use of saw-milling and pulp production residues that can be used in heat-requiring processes on site (e.g. drying timber). There remains a proportion of waste material and residues left in forests after clearing that could enable greater energy recovery from forest materials. These forest residues contribute to soil fertility so there are limits to recovery beyond which such recovery affects forest growth.

There is also the hard to quantify use of firewood and wood pellets in domestic heating, much of it supplied through the informal market (e.g. farmers supplying shelterbelt trimmings to neighbours), or scavenging in public forests, river beds and beaches. Value estimates can be inferred through such sources as EECA's Energy End Use statistics which show wood accounting for 36% of delivered household energy; the Bioenergy Association's Facts and Figures which suggest 50% of houses have solid

wood burning appliances, and that wood accounts for 12% of household energy use on space heating and water heating; and the Household Energy End Use Project (BRANZ).

Yao et al (2013) estimated that in 2011 wood-based bioenergy was approximately 54.4 petajoules (7.4% of the country's primary energy demand) with a value of $921 million (assuming a value of $16.9 million per petajoule). This is $921 million of input cost that the forestry industry saves by utilising its wastes and residues, and is a gross output value rather than a contribution to GDP (value added). If the industry did not do this it would need to acquire the energy it needs from some other source, which would be more expensive (assuming the industry regards biomass is its least cost energy option). A portion of that cost of alternative energy would be value added for the sectors supplying the alternative energy so the value to New Zealand of recovered biomass energy can be estimated as the net cost of the next best alternative energy source, i.e.:

Annual Energy Volume x Mean Cost of Alternative Energy – Value Added Component

In Calendar year 2015 wood processing residues provided 58.3 Gross Petajoules for the wood processing industry. Valued on the same basis as Yao et al (2013) this would be worth $987 million gross or $789 million net of value added at 20% which accrues to another sector in the economy.

J.3.2 Regulatory services – resources and ecology

Most regulatory services are not exchanged through markets, except for carbon sequestration. For the rest, there is clear scientific evidence of the existence of benefits from forestry, but a less clear indication of the generic rate of benefit that would support a nationwide value estimate as most studies are site specific and reflect local characteristics. But indicative values can be inferred by extrapolation from such studies. Care is needed in using these diverse studies to ensure that there is no double counting (e.g. between value of avoiding erosion and value of improved water quality) and to clarify whether values used equate to gross output or to value added, consistent with the definitions used in the System of National Accounts and the System of Environmental and Economic Accounts.

Carbon storage

Among regulating services, the most readily estimated in economic terms is the value of carbon storage. The estimation of carbon stored by forestry is in principle relatively straightforward from the volume of standing timber, the carbon content of that timber (varying with species and age profile) and the value of carbon credits available in New Zealand. The Ministry for the Environment's National Greenhouse Gas Inventory provides details of carbon sequestered or emitted by land use change and forestry, from which annual values (consistent with annual production) and long term stock value can be estimated.

Carbon capture in growing trees and their root systems is subject to market prices under the New Zealand emissions trading scheme. This scheme was distorted in the early years of its operation due to the oversupply on the market of overseas-sourced UN approved carbon credits of questionable integrity, but since March 2015 supply from such sources has been ineligible for use in the New Zealand ETS and carbon prices have started to recover to levels where the incentive for tree planting is stronger (but not yet realised). The unit value of carbon will vary over time and there will be periods

in the forest production cycle around harvesting when this will turn negative with net deforestation.

In practice, only a portion of forests – those newly planted since 1990, excluding replantings – are eligible for creating carbon credits. The cumulative area of new plantings since 1991 amounted to 714,000 hectares at 1 April 2016.[56] Assuming Yao et al's (2014) $48 per hectare on average (see Table 1) that amounts to just $34,300 carbon value. But Yao et al assume a carbon price of $4.00 per tCO_2-e, considerably lower than the current price of around $18 and the prices that could arise in future. At $18 the value of new planting rises to $154,000 and at $30 per tonne to $257,000.[57]

Deforestation of any forest attracts liability to surrender carbon units which can be offset by continuous replanting. So there is value in retaining existing forests in continuous rotation to the extent that it avoids the cost of surrendering carbon units in proportion to the volume of carbon in the trees.[58] Applying Yao et al's average carbon value to 1.72 million hectares of planted forest implies a total value of $82 million for the year; at $18/tonne that would be $372 million and at $30/tonne $619 million.

Ideally a long term expected value of carbon would be used or inferences drawn from the futures market, and applied to age-weighted models of the growing stock of trees, but the market for New Zealand units is relatively thin with a focus on relatively short term futures and reorientation to longer term value is highly unlikely under current policy settings. As a rough indicator, retaining the current area of planted forest is worth in excess of $300 million per year.

Nutrient retention and avoidance of run-off

Forests displace other land uses which apply more nitrates per hectare (e.g. livestock) and reduce the volume of nutrients leached into waterways. There is no market for this service in New Zealand to date, but there is value implicit in this as regional councils apply regulations to control nutrient application to land uses to reduce the run-off into waterways.

The Lake Taupo nitrate trading scheme is a partial nascent market introduced in one catchment to reduce nitrate leaching to groundwater. Larger taxpayer subsidies have encouraged retirement of surplus nitrate application entitlements. While some lessons can be drawn from studies of this scheme, extrapolation across other catchments with different land uses and intensity of nitrate use would be indicative, at best.

Recent estimates of the ecosystem services from forestry have placed a very high value on the reduction of nutrients entering the waterway of $400 per kilogram. These are based on the cost of fertiliser and the implicit waste of valuable input into agriculture. As a rough indicator of scale, if Yao and Velarde's estimate of $2,800 per hectare saved applied to the whole of the planted forest area, this would have an annual value of $5.8 billion to the nation.

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56 MPI (2016) National Exotic Forest Description Table 9.1. New land planted in production forest.

57 Yao et al's estimates imply a gross sequestration of 12 tonnes of CO_2-e per year, a conservative rate considering planted forests as a whole have sequestered 10 to 19 tCO2-e per hectare since 1990 (Yao et al 2013).

58 Dairy conversions show that on many types of land the expected return from dairy exceeds the expected return from forestry including carbon storage value.

Avoidance of soil erosion

Trees and their roots help to bind soils and reduce their susceptibility to erosion and run-off of sediment into waterways. The effect of trees tends to depend on local conditions of terrain and climate. Previous studies that estimate the national costs of erosion could be used to infer indicative value of the value of erosion prevention attributable to forested landscapes e.g. Krausse et al (2001).[59]

Later studies have developed a model for calculating regional estimates of erosion[60] and estimating values for specific regions.[61] But these still draw on Krausse's values which were derived from the diverse but few estimates available at the time and are more indicative than accurate depictions of the values across different terrains.

Yao and Velarde estimate the value of erosion protection at $121 per hectare per year. If this were applied to the whole planted forest area of 1.72 million hectares, the annual value would be $208 million per year to the nation.

Water quantity and flow moderation

Tree planting has been shown to moderate peak flood flows in small to medium sized storms. In low rainfall areas (e.g. east coast of the South Island) tree planting reduces the water yield by 30% or more, potentially impacting abstractive water users.

Forestry reduces the frequency and severity of flood events. The damage caused by such events, and their frequency in catchments with similar climatic characteristics but different distributions of forests would provide an indication of the specific value of forestry for this benefit. A number of previous studies of the cost of floods can be used to give indicative values of the avoided costs due to the extent of forests.

Flood events cause damage to the economy, reflected in insurance claims, lost productivity due to disruption of normal activities. Insurable damage includes both that caused by water and the clean-up of sedimentation which is the end result of erosion, so it is unclear where the distinction between erosion damage and flood damage falls. For instance, Yao and Velarde estimate $121 per hectare per year as the avoided cost from forestry of sedimentation and flooding, but of just $8 per hectare per year to the nation.

if this water supply value applied across 1.7 million hectares of forest the ecosystem service value would amount to $14 million per year. But this is a rough average which may not reflect the variability across catchments in the benefit achieved or the netting off of negative impacts on other water abstractors, which is site specific and can only be assessed through local monitoring.

Water quality

Water quality clean-up operations in the Lake Taupo and the greater Waikato catchment, and in the Rotorua lakes give an indication of the value of cleaner water bodies (i.e. society's willingness to pay for water improvements) and some local

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59 Krausse M, Eastwood C and Alexander R (2001), Muddied Waters: estimating the national economic cost of soil erosion and sedimentation in New Zealand. Landcare Palmerston North 2001.

60 Dymond JR, Betts HD, and Schierlitz CS (2010) "An erosion model for evaluating regional land use scenarios" *Environmental modelling and Software* 15(3) 289-298.

61 Dominati E & Mackay A (2013) "An ecosystems services approach to the cost of soil erosion and value of soil conservation" Report for Hawkes' Bay Regional Council by Agresearch, Palmerston North.

studies give an indication of the cost effectiveness of forestry as a contributor to such clean-ups. Indicative value of forestry for such purposes can be made by extrapolating from such local studies across a wider national setting, although with a wide margin for error.

Since 2000, government and local government have committed $526 million to multi-year (taxpayer funded) programmes to clean up freshwater bodies, including $220 million on the Waikato and Waipa Rivers, $144 million on four Rotorua lakes, $30 million on Lake Taupo and $30 million on the Manawatu River. The full costs of clean-up, including private costs and opportunity cost of lost production from other regulatory measures, are unclear but would be higher than government costs alone.

Afforestation (new land plantings) can contribute to improved water quality because of its lower nitrate leaching than other potential land uses; existing forestry makes the clean-up task less severe than it would otherwise be. But the extent to which these avoided clean-up costs can be attributed to forestry – i.e. how different would they be if there were more (or less) forestry – is not clear from current information on average values of ecosystem services.

Yao and Velarde estimate a forest benefit of $6 per hectare per year as the benefit of water regulation. As a rough indicator, if this value were applied to the 1.72 million hectares of planted forest it would amount to a benefit of $10 million per year. They also estimate a value of $244 per hectare per year for waste treatment, which presumably reflects forest undergrowth's ability to assimilate waste which could otherwise end up in waterways. That would be worth $420 million per year to the nation if it applied to 1.72 million hectares of planted forests.

Biodiversity

Although biodiversity is commonly associated with indigenous forests, planted exotic forests in New Zealand also provide habitat for at least 118 threatened native species and may have particular value in providing forested corridors linking areas of other indigenous habitats.[62] The implication is that planted forests can reduce the probability of irreversible loss of threatened species compared to other modified land uses like pasture, and thus contribute to biodiversity protection goals that government has drawn up in accord with international agreements.

In principle the value of planted forests for biodiversity can be inferred by examining its cost effectiveness in protecting native species compared to the cost effectiveness of protecting the same species in other ways (e.g. through native forest restoration). In practice there are too few studies that attempt to do this to draw generalisable values for applying across the national forestry estate. Assessments of the value of improvements in biodiversity are often couched in terms of a public choice question of willingness to pay for more protected habitat, and as such can be considered under the heading of the value of cultural ecosystem services to environmental amenity.

Yao and Velarde estimate a value of forests for biodiversity to be $257 per hectare in Ohiwa catchment. However, this is based on relatively few studies of willingness to pay for localised biodiversity improvement measures, mainly applying to indigenous forest and transferred to planted forest by assumption. It is unlikely that these local

[62] Pawson SM, Ecroyd CE, Seaton R, Shaw WB, Brockerhoff EG 2010. New Zealand's exotic plantation forests as habitats for threatened indigenous species. New Zealand Journal of Ecology 34: 342–355.

estimates are representative of the average value across all planted forests, many of which are not accessible to the public and hence lack the value of watchable wildlife that attaches to more accessible forests.[63] Hence there is no firm basis for estimating value for biodiversity of planted forests as a whole.

J.3.3 Cultural services – amenity values

Cultural values from ecosystem services refer to non-extractive activities that derive benefit from the forests, including the active uses for recreation and tourism and the more passive uses of appreciation of amenity, biodiversity and landscape. Most of these are not exchanged in a market context, so various techniques of non-market valuation have emerged to infer value in other ways.

Recreation and tourism values

Several planted forests in New Zealand provide public access opportunities for recreational activities such as walking, mountain biking, horse riding, running, 4WD outings, picnics and in some cases more formal provision such as paintballing, high wire courses, zip-lines and flying fox rides. Some forests are accessible by permit for activities such as hunting and fishing but there is no public access over most planted forest area in New Zealand.

The forests with most access are commonly close to urban centres, such as Whakarewarewa and Redwoods forest near Rotorua, Woodhill Forest near Auckland, planted forests around Hanmer Springs, Bottle Lake in Christchurch, and Naseby, Wanaka, and Queenstown. Only some activities such as zip-lining are charged for, so there is a mix of market and non-market values generated by such forests. The forests may also host special events which generate revenues for their organisers and spending in the district by people drawn to the event.

A study of Whakarewarewa Forest in 2007 estimated the total mountain bike spending in Rotorua to be $7.37 million, of which $2.56 million could be directly attributed to the Forest. Rotorua residents comprised around 26% of recreational visitors to the Forest, but accounted for 69% of the recreational activities undertaken there, indicating the Forest's contribution to local amenity and to attracting people from outside.

More recently, a single event in the Forest, the 2016 Crankworx Festival, is estimated to have boosted spending in Rotorua by $8 million, with 73% attributable to New Zealanders and 27% attributable to international visitors (including competitors).

Although recreation attractions in natural surroundings are recognised as an important drawcard for tourism in New Zealand there is a paucity of national level statistics to pinpoint the amount of time and value associated with these activities in specific settings.[64] Tourism statistics from MBIE identify participation by overseas tourists in various nature based activities, but not the level of use (visitor days) or whether forest activity is in indigenous forest or planted forest. Statistics New Zealand's Tourism Satellite Account identifies domestic (i.e. New Zealand) tourists account for more

[63] Non-accessible forest reduces the risk of interference by humans and dogs and may improve chances of rare species survival but this depends on the level of pest and predator control which is often higher close to public access ways.

[64] Clough P 2013. "The value of ecosystem services for recreation". *In* Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand.

national expenditure than international tourists, but gives little breakdown on where that spending occurs.

At present information on the economic value of planted forests for recreation is limited to reports on local economic impacts (like for Whakarewarewa above) or non-market valuation studies of particular forested areas. The latter include studies using a mix of methods and wide variability of results which are not strictly comparable, from which it is difficult to infer the generalised value of forests for recreation.[65] Some examples are tabled below.

Table 15 Selection of estimates of forest recreation values

	$/visit	Visits/year	$m/yr	$/ha/yr
Bottle Lake	47	400,000	18.8	15,667
Whakarewarewa MTB	52	304,000	15.8	2,468
Whakarewarewa Walk	36	304,000	10.9	2,468
Coromandel planted	93	20,000	1.9	26

Source: Yao et al (2013), Scion

Yao et al (2013) compare twelve studies calculating an economic value of culture ecosystem services in New Zealand forests. These include Dhakal et al's (2012) study of Whakarewarewa Forest that estimated values of $36 per walker visit and $52 per mountain biker visit;[66] and Barry et al's (2012) study of the Tauranga Energy Consumers' Trust park which estimated values of $4.40 per walker visit, $7.70 per mountain biker visit, $9.04 per horse riding visit and $18.76 per motocross visit.[67] Most other estimates are old, dating back to the 1980s.

The difference in values between estimates for similar activities of walking and mountain biking raises questions about what is a representative value for recreation. However, it is clear that some particular forests generate large economic benefit for their surrounding districts, both for local recreation and as visitor attractions that provide market value for local businesses that service the recreational activity and accommodation for visitors.

The importance of the development of forest recreation facilities particularly in peri-urban forestry settings is highlighted by the recently opened Christchurch Adventure Park (5km from the city centre in the Port Hills). This $20 million development includes

[65] See Yao RT, Barry LE, Wakelin SJ, Harrison DR, Magnard L-A and Payn TW (2013) "Planted forests" *In* Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand

[66] Dhakal B, Yao RT, Turner JA, Barnard TD 2012. Recreational users' willingness to pay and preferences for changes in planted forest features. Forest Policy and Economics 17: 34–44

[67] Barry L, Yao R, Bayne K 2012a. Estimating non-market values for a new forest park in New Zealand. Rotorua, Scion

a 4-seater high-speed chairlift[68], mountain bike trails, zipline (flying fox) canopy tour, sightseeing, lodging, bike rental, retail and bar/restaurant facilities. The operation opened in December 2016 and employs over 100 staff.[69] Strong early demand has meant that the 9 month season passes have been popular. Over 1000 season passes costing $759 each have already been reserved.[70]

The level of investment in these types of activities is growing on the back of surging tourist numbers and increased local demand.

Amenity, biodiversity and landscape values

As with recreation, previous studies of ecosystem services of forests for amenity, biodiversity and landscape have drawn on non-market valuation studies of different sites or locations, rather than estimating an overall value of recreation to the nation (e.g. Yao et al 2013).[71] Studies that infer public preferences across a broader set of choices – for instance the relative preference for more planted forest or more indigenous forest – or that examine the relative costs and benefit in terms of contribution to biodiversity protection of different land uses and landscape elements to not appear to have been published in the New Zealand context.

While there are examples of non-market values of amenity, biodiversity and landscape, and it would be possible to infer value of planted forests for biodiversity, from the expenditures on pest control, as with previous estimates the result is a partial mosaic of localised values rather than a comprehensive picture of the value for these activities obtained from forests.

J.4 Summary

Table 16 below indicates the current state of knowledge of the economic value of different ecosystem services related to forests. A brief explanation of the components of an ecosystem services account of forest benefits is outlined below.

The principal provisioning services from planted forests, wood fibre for sawn timber, pulp and paper products, is relatively well covered by the production and export statistics of the sort that underpin this report's Table 2 above. Also well covered by current statistics is the plant based energy obtained from sawmilling and pulping residues that are recovered to heat parts of the respective production processes. Less well-covered is the energy derived from domestic firewood and some new bio-digester processes using forest materials. No reliable statistics exist on the production of food from planted forests or the extraction of bio-chemical materials for pharmaceutical and other uses.

Of the other ecosystem services from forests:

- Carbon worth is relatively straight forward, although the form of calculation will vary between valuing entire stock of forest carbon stored or the annual

[68] The chairlift is 1.8kms long, has an evaluation of 430 metres, and can handle 1,200 people and bikes per hour. See http://www.porthillsleisure.nz/christchurch-adventure-park-video/

[69] http://www.stuff.co.nz/travel/themes/adventure/81791461/100-jobs-at-christchurch-adventure-park

[70] http://www.stuff.co.nz/the-press/news/85653924/early-bird-passes-for-christchurch-adventure-park-close-to-selling-out

[71] Yao RT, Barry LE, Wakelin SJ, Harrison DR, Magnard L-A, Payn TW 2013. Planted forests. *In* Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand

increments from new planting, and on the basis for pricing the stored value (past, current or expected future values of carbon)

- Soil conservation, sediment and water quality are more difficult, as there are some very high level aggregate estimates of national costs, and a few site-specific estimates of impacts on individual catchments, but these rest on a few local estimates that are now dated. But more such local specific estimates across different types of forested catchment would be required to extrapolate to national level estimates, and such estimates would also need to account for variations in harvest cycle.
- Recreation and tourism values are currently only available for a few specific forested sites and employ methods that may not be compatible with each other or with the national accounts statistics. More consistent data on visitors to the main publicly accessible planted forest areas, and visitor surveys to establish activity patterns by visitors in these areas would give improved picture of the value associated with different activities at forest sites, and trace the share of local economic activity their visits stimulate through payments for forest-related access, hire services, and payments for ancillary services like accommodation and goods retailing. A recent report on the value of recreational marine fishing gives an example of what could be achieved for forest recreation and tourism activity.[72]
- Biodiversity and natural heritage also require further work to establish their contribution to preservation of heritage and the use value and non-use value of these services for the public. This can only be approached through surveys of visitors to forests to probe their reason for visiting and to establish the relative preferences of visitors for these and more active recreational activities

Table 16 Forestry benefits

	Current situation	Gaps	What success looks like
Provisioning services			
Wood fibre (sawn timber, pulp and panel products)	Current statistics indicate $3.7-$4.8 billion/year (see Table 2 above)		
Plant based energy resources	Residues from sawmilling and pulping used as heat for wood and paper production. Equivalent in 2016 to 58.3 Gross PJ would be worth $987 million to industry or $789 m to NZ at large	Domestic firewood and wood pellets and industrial wood chip boilers incompletely covered: estimates could be made from building energy surveys	Estimate of the volume of energy from domestic and other sources to match against the industrial energy estimates already made

[72] New Zealand Marine Research Association (2016) Recreational Fishing in New Zealand. A Billion Dollar Industry.

	Current situation	Gaps	What success looks like
Forest food (game, honey, plants and animal products)	Assorted hunting, gathering and cultivated animals in forests (e.g. crayfish in firebreak ponds)	No comprehensive tally of outputs from disparate activities	Specific surveys of different activities could provide estimates, but overall value is probably not large
Forest based genetic materials & pharmaceuticals	Bio-chemical extracts from forest resources	Essential oils extracted from douglas-fir	Estimates would need specific surveys but value is probably not large
Regulating services			
Global climate regulation	Forest contribution to carbon storage and value to offset against emissions cost is currently prepared by MfE. Current mean annual increment of over $300M at $15/tCO2	Distinction between planted forest and natural forest is not clear from published estimates	Engage with MfE to separate their stock estimates into values for planted and natural indigenous forests
Nutrient run-off	Significant advantage over other land uses; may be worth $5.86 billion a year	Too few specific estimates of different forest contexts exist to reliably extrapolate to national level	Prepare a range of estimates of characteristic estimates that enable reliable aggregate estimates
Soil conservation, sediment and flood mitigation	Crude national level estimates and site-specific estimates exist, but not reconcilable. Estimated forest annual benefit of $208 million for soil conservation and $6 million for flood mitigation	Critical gap is in knowing how more or less forest cover affects sediment and severity of flooding downriver	Develop functions of flood frequency variation with forest cover that can be applied to different terrains
Water quantity	One estimate of $10 million/year but may overlap with flood mitigation estimate. One study exists of how land cover affects cost of downstream water treatment	Critical gap is in knowing how more or less forest cover affects water quality and treatment costs	Develop functions of water quality variation with forest cover that can be applied to different terrains
Water quality	Catchment clean ups in Waikato and Lake Taupo indicate value. These values are significant	A full understanding of the average costs nationally is required.	Development of functions that illustrate forestry benefit on different terrains/catchments

	Current situation	Gaps	What success looks like
	suggesting at least $420 m per year		
Cultural services			
Recreation and tourism	Some forests well used, but most not accessible. Site specific studies of various forest activities and sites exist, using various estimation methods, but little consistency for comparisons	Critical gap is in knowing visitor numbers and their activities in different forests. Aggregate values across all forests not feasible	Develop standard values per visitor and per activity in forest, to apply to survey-based estimates of the number of visitors in forests
Heritage protection	Visits to historic heritage sites in forest areas have value, but New Zealand valuation studies focus on natural heritage	Critical gaps in knowing how many people visit historic heritage in forest settings, and the value they place on doing so	Consistent surveys of visitors to a range of forest settings, purpose of visit and costs they incur in doing so, to build up a matrix of the types of setting, activity undertaken and value of activities across different types of forests
Biodiversity protection	New Zealand valuation studies are few in number and variable in method, providing no basis for overall valuation	Critical gap is value people place on use (wildlife visits) and non-use (supporting conservation)	
Supporting services			
Not separately estimated, to avoid double counting.			

Source: NZIER

The ecosystem services approach could be readily adapted to include current production statistics, and extended to include energy value and carbon storage value using other existing statistics. Recreation and tourism is a relatively tangible further extension, but that would depend on surveying forest owners to improve data on visitor numbers, and surveys of visitors to understand better the value they place in their forest visits.

Other cultural services would be even more heavily dependent on generating a wide range of survey data, and the regulatory services other than carbon all require a greater range of observational studies of forests' biophysical effects than currently exists.

Appendix K Environmental studies

K.1 General

Two studies reported in *Ecosystem Services in New Zealand* (Dymond ed. 2013) have attempted to value the contribution of New Zealand's forests to the wider range of ecosystem services. Yao et al (2013) follow the approach of MEA (2005) and UKNEA (2011) to estimate value components of planted forests' conventional market-based production, energy recovery and carbon sequestration and then infer values for effects not exchanged in markets, including avoided erosion and cultural services of recreation at a selection of sites.[73] Patterson and Cole[74] present a chapter on "Total Economic Value of New Zealand's Land-based ecosystems and their services", which follows the approach of Costanza et al (1997)[75] with a section that suggests forest ecosystems account for about 20% of the total calculated ecosystem services of all land uses across New Zealand.

Patterson and Cole's estimate covers all forests, including natural indigenous forest which is around 7 times more extensive in land area than planted exotic forests. Their estimates are in economic value added and identify value that is not covered in GDP. Yao et al's estimates are of gross output, and if converted to a value added equivalent (by applying the ratio of GDP: Gross Output of 0.47) their estimate of provisioning services value would be 55% of that of Patterson and Cole. This appears disproportionate to the share of national land use in exotic and indigenous forest and these two approaches are not yet readily reconciled.

Nevertheless, the approach of Yao et al in building on existing production statistics with more indicative estimates of other values is like the SEEA split between central accounts and experimental accounts and provides a practical way to proceed. Details of putting such an approach into practice for each element are outlined below.

73 Yao RT, Barry LE, Wakelin SJ, Harrison DR, Magnard L-A, Payn TW 2013. Planted forests. *In* Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand.

74 Patterson MG, Cole AO 2013. "Total economic value" of New Zealand's land-based ecosystems and their services. *In* Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand.

75 Costanza R, d'Arge R, de Groot R, Farber S, Grasso M, Hannon B, Limburg, K, Naeem S, O'Neill RV, Paruelo J, Raskin RG, Sutton P, van den Belt M 1997. The value of the world's ecosystem service and natural capital. Nature 387: 253–260.

Appendix L The aim: A Forestry Satellite Account

L.1 The first best option is a Forestry Satellite Account

One way of bring together the market and non-market attributes of forestry is through a Forestry Satellite Account. Ideally the Forestry Satellite Account would be linked to, and consistent with, the existing New Zealand System of National Accounts, and with the guidelines of the UN System of Economic and Environmental Accounts, which were reviewed in 2012.

Satellite accounts involve the rearrangement of existing information found in the national accounts so that an area of particular environmental and social importance can be analysed more closely.

Satellite accounts could serve two ends relevant to forestry statistics:

- Focus on New Zealand-forestry related activity (similar to the tourism satellite account's focus on tourism activity – see below) to more clearly highlight value added from forestry in New Zealand (as distinct from forest products based on imported wood fibre)
- Bring into accounts some sources of value attributable to forestry which are currently not in them or obscured by them (e.g. non-market values).

Resources will be a constraint to achieving this goal

Any new idea for funding will need to be socialised with policymakers sometime in advance. Even at that stage there is low likelihood of making the priority list early on. Despite the growing importance of forestry on economic, social and environmental grounds there is unlikely to be universal acceptance for the idea because of resource constraints and competing resource interests.

Option for moving forward

Reports such as this one highlight the need for further action and keep the pressure by showing the importance of forestry and the gaps that need to be filled. They present credible consistent evidence which is accepted by policy makers.

Including forestry in the tourism satellite account may also be an option that is more palatable and more easily accepted by policy makers. The tourism satellite account could potentially point to the value of forestry to visitors.

The detail of what should be put into the tourism account would need to be worked out with Statistics New Zealand. However, the process of engagement with Statistics New Zealand is likely to positive since it will raise awareness within Statistics New Zealand of the increasing importance of forestry to New Zealand in economic, social, and environmental terms.

This has the advantage of:

- Being less resource intensive than a Forestry Satellite Account
- Socialising the idea for further work on non-market activity and encouraging research that conforms to national accounting principles
- Acting as a bridge towards a Forestry Satellite Account i.e. its sets up the structure and framework for further work as non-market forestry activities become more important.

L.2 The rationale for a Forestry Satellite Account

Forestry plays a significant and increasing role in the New Zealand economy – both in terms of market and non-market activity. Forestry does not have its non-market values explicitly measured in the official economic statistics. A Forestry Satellite Account, similar to the Tourism Satellite Account would assist in beginning to fill that gap.

Statistics New Zealand produced a set of physical and monetary forestry stock and flow accounts for the period 1996-2002. This followed the then SEEA guidelines and had a fairly narrowly defined sector coverage, including the supply of inputs to forestry from the forest industry itself and agricultural sectors, and the use of outputs in wood product manufacturing industries, pulp and paper manufacturing, printing and publishing, furniture manufacturing, construction sectors, building supplies wholesalers and owner occupied dwellings.

Forestry's use of and impacts on rural contract services, transport and sundry other industries (like toys and sporting goods manufacture) were excluded. Forestry's contribution to national energy was also excluded, and carbon storage was not a matter of concern at that time.

An update of these accounts would both enable them to be aligned with SEEA's 2012 revised guidelines, and present an opportunity to experiment with extending them into new coverage (e.g. carbon stocks).

L.3 The Tourism Satellite Account

Statistics New Zealand produces annual satellite accounts for tourism, which extract from the national inter-industry transaction tables those activities that are directly and indirectly related to tourism activity by both foreign visitors and New Zealand travellers.

In other recent satellite accounts, Statistics New Zealand has pushed the boundaries of national accounting, for instance its 2013 accounts for Non-Profit Industries included an extension to account for the value of volunteer labour, which sits outside of, but consistent with, the main sector account.

In that light, a Forestry Satellite Account which includes more of the sectors that supply or use the forestry sectors, and has extensions to highlight Forestry's contributions to national energy supply, carbon sequestration and perhaps other environmental benefits such as tourism and recreation, could provide in a single source a fuller picture of the national impact of planted forestry and related industries.

GREENPLAN
FORESTRY LIMITED

PROSPECTUS
for

Greenplan (Whitecliffs 2003) Forest Partnership No. 59

(For the purposes of the Securities Act 1978)

Dated 29 November 2002

Table of Contents

* Third Schedule of the Securities Regulations 1983

REGISTERED PROSPECTUS

A signed copy of this Prospectus, together with copies of the documents required by Section 41 of the Securities Act 1978, being the Auditor's Report, the Forestry Consultant's Report (with their respective consents appearing in this Prospectus), and the material contracts (as specified in section 15) were delivered for registration at the District Registrar of Companies at 3 Kingston Street, Auckland on 29 November 2002 ("Prospectus Date").

This prospectus complies with the Forestry Investment Information Standard issued by the New Zealand Institute of Forestry Inc.

General Matters

1 Main terms of the Offer

1.1 The Offeror and Issuer is Greenplan Forestry Limited ("Manager" or "Greenplan") whose registered office is at 57 Te Kumi Road, Te Kuiti.

1.2 The Manager offers participation in a Partnership, to be called Greenplan (Whitecliffs 2003) Forest Partnership No. 59. The Partnership will have an initial capital of 180 participatory securities ("units"), each having a nominal value of $7,300, offered in minimum parcels of one unit.

1.3 The Partnership will accordingly have a maximum of 180 Partners. Partners may, however, subscribe for as many participatory securities as they wish.

1.4 All these participatory securities are offered for subscription and are fully paid as to $7,300 per security. This amount is due on allotment of the participatory securities and shall be paid as and at the times prescribed by the Manager.

2 Manager and Advisers

2.1 The Manager is:

Greenplan Forestry Limited
57 Te Kumi Road
PO Box 24
Te Kuiti

2.2 The Directors of the Manager and their professional qualifications are:

John Richard Barton Dip V.F.M. Te Kuiti Managing Director	Matthew Louis Barton BBS (Pty Mgmt & Valn) Te Kuiti Manager
Bruce Andrew Maunsell BBS Te Kuiti Manager	Simon John McArley LL.B(Hons) Auckland

All the Directors can be contacted at 57 Te Kumi Road (PO Box 24) Te Kuiti.

2.3 Neither the Manager, nor any of its directors have been adjudicated bankrupt at any time (including within the past 5 years).

2.4 The names of the auditors, bankers, solicitors and securities registrar are:

Auditors:	Deloitte Touche Tohmatsu, Wellington
Solicitors	KPMG Legal, Auckland
Bankers:	ANZ Banking Group (New Zealand) Limited, Te Kuiti
Securities Registrar:	Kidd Falconer & Co, Te Kuiti

2.5 The forest consultants/auditors are:

PF Olsen and Company Ltd
430 Ngongotaha Road
PO Box 1127
Rotorua
New Zealand

3 Statutory Supervisor

3.1 The Statutory Supervisor is Perpetual Trust Limited.

3.2 The Statutory Supervisor does not guarantee the repayment of the securities to which this Prospectus relates nor the payment of interest on the securities, nor the payment of any amount payable in future in respect of the securities whether by way of profits or otherwise. The Statutory Supervisor is appointed in accordance with the provisions of the Securities Act 1978 and its duties are more particularly set out in the Deed of Participation annexed to this Prospectus. Except in so far as this Prospectus refers to the rights, powers, responsibilities and duties of the Statutory Supervisor, the Statutory Supervisor accepts no responsibility for statements made in this Prospectus or the merits of any investment in the participatory securities offered by this Prospectus. The Statutory Supervisor and its advisers take no responsibility for any statement herein as to the prospects of the venture or any statement made as to legal or taxation ramifications of investment in the securities offered.

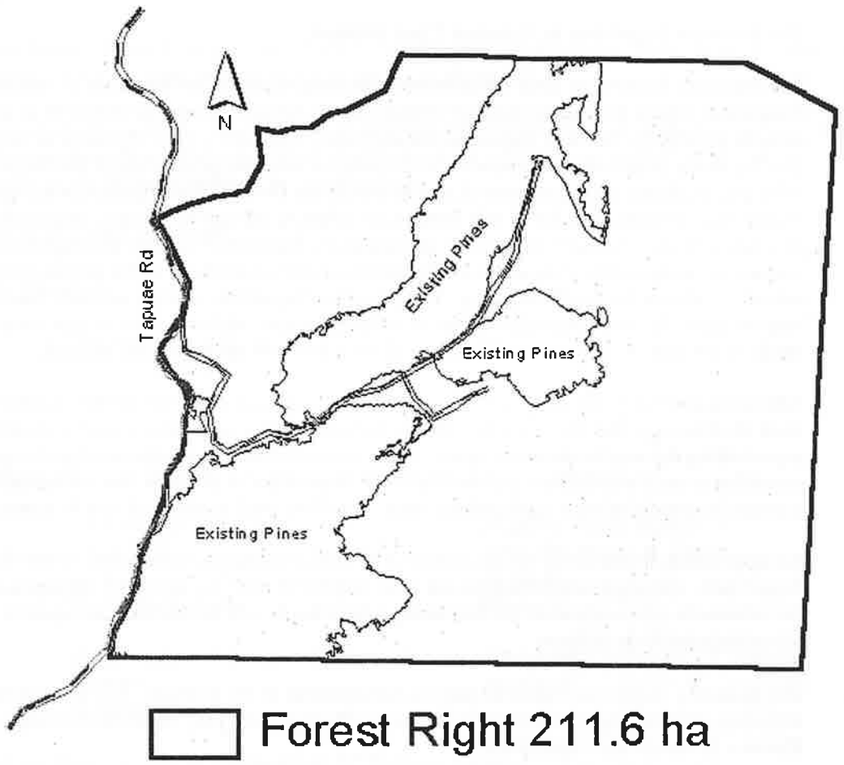
3.3 Allotment shall not take place until the Statutory Supervisor receives written confirmation from the Manager that the Securities Registrar holds application forms from investors representing the minimum subscription, such forms authorising allotment of participatory securities to such subscribers and the Statutory Supervisor is satisfied that subscription moneys in respect of such applications have, or will be paid in terms of this Prospectus.

3.4 All application forms are to be completed in a form and content satisfactory to the Statutory Supervisor. All application moneys are to be deposited with the Statutory Supervisor until the minimum subscription is met following which funds will be released as required in accordance with the scheme.

3.5 The Statutory Supervisor takes no part in management of the scheme. It will receive reports including annual financial statements from the Manager and may convene meetings of Partners to obtain their directions.

4 Description of the scheme and development thereof

4.1 **The Forest Right**: The Partnership will obtain an individual Forestry Right over approximately 211.6 ha of land, which will be registered in terms of the Forestry Rights Registration Act 1983 against the relevant title. The division of the land area is shown in the plan below.



The Forestry Right will entitle the Partnership to plant, maintain and harvest the land area for a maximum term of 40 years. The land comprises approximately 211.6 hectares situated approximately 20 kms west of Otorohanga. Access to the property is gained off Tapuae Road, a well formed district road which follows the western boundary of the property. The property has good access to ports and to processing facilities in the central North Island. Distances by road from the Whitecliffs property to major log markets are:

• Te Kuiti	40 kms
• Putaruru	91 kms
• Tokoroa/Kinleith	115 kms
• Mount Maunganui	158 kms

The land is clean hill country with no buildings, yards or other improvements to remove. Farm tracks provide internal access to most parts of the block for management purposes. These tracks would require upgrading prior to harvest. The land experiences an almost complete absence of summer droughts and its medium fertility soils are well suited to forestry. 180 hectares of the land is suitable for planting and of which 7 hectares were

planted in 1991, 15.1 hectares were planted in 1993, 6.3 hectares were planted in 1994, and 21.1 hectares were planted in 1995. It is proposed to plant the remaining 130.5 hectares of land in July to August 2003.

The Forestry Right will rank in priority to all other registered charges that affect the land.

In return for the granting of the Forestry Right, the Land Owner will receive the right to 10% of the harvested crop, without contribution to the planting, development or maintenance costs. The Land Owner will for the first eight years of the term of the Forestry Right, meet all rates, taxes and assessments charged upon the land not directly attributable to the presence of the forest. The Land Owner also bears a pro rata share of harvest costs.

The Forestry Right will be terminable by the Land Owner only if the Partnership fails to plant or ceases to maintain and develop the forestry venture in the manner envisaged by this Prospectus.

A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.

4.2 **The Management Contract**: The majority of the forestry development will take place in the initial eight years of the scheme (2003 - 2011) (see section 4.4). The Manager has arranged for the Land Owner to contract with the Partnership to provide to it either directly or by way of sub-contracts all of the services that it is anticipated the Partnership will require in this period to develop and maintain its forest. This includes:

- all planting, establishment and forestry maintenance (as described in the Forest Management Plan at sections 4.4(b) to (j))
- forest fire insurance
- annual accounting services
- forest supervision and routine maintenance
- forest audits in years 2 and 8

A single fee of $738,000 ($4,100 per unit) by the Partnership is payable to achieve this and is included within the initial $7,300 per unit payment. It is not anticipated that any further amounts will be sought from the members of the Partnership during this period to meet these costs. The risk of cost escalations, caused by inflation or poor budgeting is borne by the Land Owner.

In the event of the Partnership requiring as a result of unforeseen circumstances, services additional to those covered by the Management Contract, the cost of these services will be borne by the Partners. However, all works described in the Forest Management Plan set out in section 4.4(b) to (k) are covered by the Management Contract.

The Partners will bear the remainder of the Partnership's administrative costs. It is anticipated that an annual payment of $10,800 per annum (or $60 per unit) will meet this.

The Management Contract requires that the Land Owner sub-contract the forest development and management to a forest manager ("Forest Manager") approved by the Manager. The initial Forest Manager will be GFM Limited. The appointment of the Forest Manager can be varied at any time by the Land Owner (with the consent of the Manager). The appointment is reviewed annually. A description of the Forest Management Agreement is set out in section 4.3.

The Management Contract also requires the Partnership to advance to the Land Owner $540,000 ($3,000 per unit). This advance will be repayable upon harvest of the forest at maturity and will not bear interest. The Land Owner will charge its 10% interest in the forest to the Partnership as security for repayment of this Advance.

The Management Contract will be terminable upon default by the Land Owner or the Partnership or by agreement between the Partnership and the Manager.

Upon termination of the Management Contract all sub-contracts arranged by the Manager including the Forest Management Agreement, will be transferred to the Partnership. Subsequent management will then be arranged by the Partnership and the Manager Greenplan on terms to be agreed at that time.
The Partnership bears the risk that the Land Owner may be unable to perform, or may default in performance of, its obligations under the Management Contract, in particular to meet cost overruns. However, to ensure the Land Owner's performance of its obligations under the Management Contract, the Land Owner has charged its 10% interest in the forestry development to the Partnership.

To further secure the Land Owner's performance of its obligations it will deposit with the Statutory Supervisor a deposit of a sum not less than the amount of the projected expenditure required to complete the services set out in the Management Contract. The deposit will be released to the Land Owner as it completes the services. The deposit will be held and invested by the Statutory Supervisor in accordance with the Management Contract. Interest accrued will be paid to the Land Owner. The deposit will be available to the Partnership to meet the costs of services not completed by the Land Owner as required by the Management Contract.

4.3 **The Forest Management Agreement**: The Land Owner's Management Contract requires that the Land Owner contract with a Forest Manager approved by the Manager, for performance of the forestry development and maintenance. The form of the Management Contract to be entered into between the Land Owner and the Forest Manager is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.

The Forest Management Agreement provides for annual work programs to be prepared and for setting and agreeing of costs and work. Agreement as to the annual work programme cannot be made by the Land Owner without consultation with the Manager. The Forest Management Agreement also provides for preparation of annual Status Reports which will be made available to the Partners. The Forest Management Agreement is reviewed annually and can be terminated upon the giving of six months' notice prior to the annual anniversary date.

The Forest Management Agreement requires the Forest Manager to maintain adequate records and accounts relating to management of the crop and to hold public liability insurance.

The Land Owner is liable in accordance with its Management Contract, for all amounts payable to the Forest Manager for performance of the work set out in the Forest Management Plan in the first eight year period.

4.4 **Forest Management Plan**:

a. **Management Objectives**: The management objective is to grow and market a forest crop so as to maximise the economic return on the venture to the Partners of the Partnership.

b. **Land Preparation**: The Land to be planted is grazed pasture which will require little preparation. Patches of manuka and scrub will be removed over summer 2002/2003 at the Land Owner's expense prior to granting the forestry right.

c. **Establishment**: In addition to the existing plantings, genetically improved Pinus Radiata cuttings of a Growth and Form ("G.F.") plus rating of 22 or better will be planted at an average initial stocking of 740 stems per hectare on 130.5 hectares of the land resulting in a total additional planting of approximately 96,570 stems on the land subject to the Forest Right. Planting will be in rows 4 metres apart, with trees 3.4 metres apart in each row. A variation in stocking rate of between 700 and 850

stems per hectare will be accepted. Quality Control plot data will be collected by the Forest Manager during planting and supplied to the Landowner within one month of the completion of planting. At age 12 months to 2 years the data will be supplied to the Forest Auditor to confirm that the stocking levels will achieve the yields forecast. Additional confirmation will comprise the forest auditor visually observing the forest noting growth and condition of the trees.

d. **Releasing**: To prevent grass growing close to the young trees, a controlled dose of herbicide will be applied around each tree in the spring following planting. A second release will be carried out before year 2 on up to 10% of the area if necessary, as determined by the Forest Manager.

e. **Remedial Stability Pruning:** Remedial stability pruning may be required to remedy damage caused by an unusually strong wind event and will be completed once only prior to year 4, if and where determined necessary by the Forest Manager and up to a limit of $8,158.

f. **Thinning and Pruning**: The object of thinning is to reduce competition between trees by removing poor trees and maximising the size and yield of the remaining better trees. Thinning will be carried out before year 8 as determined by STANDPAK computer model analysis. Stocking will be reduced to approximately 375 stems per planted hectare for existing forestry planted between 1991 – 1994, 350 stems per hectare for existing forestry planted in 1995 and 350 stems per planted hectare for the planted forestry. The object of pruning is to remove side branches as early as possible so as to reduce the size of knotty core. All the wood produced outside this core will be knot free and have a high-grade and high priced end usage. The planted forestry will be pruned in three stages between age 4 and 8. Pruning is aimed at an average final pruned height of as close as practicable to 6 metres. To ensure that the knotty core diameter is as small as possible, timing of all pruning operations will be closely controlled, based on assessment figures taken before each lift.

g. **Fertiliser**: It is not anticipated that fertiliser will be applied as the present fertility is satisfactory. The Forest Manager will be instructed to take appropriate action if future soil or foliage testing indicates a nutritional problem. No provision is made for such a cost in the estimates and the cost of fertilising will be borne by the Partnership.

h. **Spraying**: Allowance has been made for spraying of the needle-cast fungus Dothistroma pini between years 3 and 6 if required.

i. **Forest Audit**: At age 12 months to 2 years, the success of the planting phase will be confirmed by the forest auditor by checking a 10% sample of the quality control plot data as well as noting the growth, condition of the crop visually. The Forest Audit will be deemed successful if the condition of the tree crop supports the ability to achieve the yields forecast in the prospectus. At age 8, or at such time as the Forest Manager has completed all works described in sections 4.4 (a) to (j), the plantation will be inspected by an independent forest auditor who will report to the Manager and certify that the work has been done in accordance with the Management Plan. On the issue of such a certificate the contract between the Partnership and the Land Owner will be deemed complete.

j. **Mapping and Operational Audit**: At the commencement of pruning operations, aerial mapping and/or GPS surveys of the forest will be completed. After completion of pruning and thinning operations the operational records relating to the forest will be updated.

k. **Grazing by Livestock**: No income from livestock grazing has been budgeted for and none will be allowed until after year 2. If, in the Forest Manager's opinion, some

grazing would be beneficial to the plantation, then the Land Owner may be asked to supply some stock for that purpose.

l. **Maintenance Operations**: Between final pruning and the harvesting of the crop, the following operations will be carried out:

- Aerial monitoring, and, if necessary, spraying of the needle-cast fungus Dothistroma pini.
- Regular health inspections by expert independent observers to ensure early warning of attack by pests or disease.
- Periodic checks on condition of access, noxious weeds, fire danger and fences
- Preparation of a detailed harvest plan.

m. **Unexpected Costs**: Any unexpected or unpredicted costs, such as fertiliser, deemed necessary by the Forest Manager and confirmed by the Manager will be outside the Management Contract between the Partners and the Land Owner and will be the direct responsibility of the Partners.

n. **Projected Yield**: An estimate of yield, log mix and stumpage based on this Management Plan has been made by the independent Forestry Consultant, PF Olsen and Company Limited ("PF Olsen"), and is set out in the Forestry Consultant's Technical Report, which appears in Schedule 1 of this Prospectus. These show a total net return of $9,179,280 ($50,996 per hectare for the 180 hectares planted) based upon clearfell harvest in the 31st year of the project. This results in a return of $8,261,352 to the Partnership in the 31st year, after deduction of the Land Owner's 10% interest. An alternative estimate, based upon clearfell harvest in the 26th year of the project show a total net return of $7,252,920 ($40,294 per hectare for the 180 hectares planted) which results in a return of $6,527,628 in the 26th year, after deduction of the Land Owner's 10% interest. While the current Forest Management Plan provides for harvest in the 31st year, the Forest Management Plan may be varied, and the harvest brought forward or deferred, following consultation between the Manager and the Partners.

4.5 The scheme has not yet commenced and accordingly no development of the scheme has taken place in the 5 years preceding the Prospectus Date.

4.6 The principal fixed asset to be used by the Partnership will be the registered Forestry Right to be granted as described in section 4.1. The Forestry Right will be held by the Statutory Supervisor as trustee for the Partners.

5 Subscribers Liability

5.1 An investor in the Partnership will become a full Partner thereof and will on application be liable for the amount of the initial capital contribution to the Partnership. Investors will be liable for further Partnership contributions in proportion to the number of securities held in the capital of the Partnership. These contributions cannot be quantified in advance. An estimation of the expenditure of the Partnership and the projected contributions required from Partners are set out in the Cash Flow Projections in section 7.7 of this Prospectus. Expenditure in excess of that shown in the Cash Flow Projections will require additional contributions from Partners.

5.2 Investors will join the Partnership by their attorney signing a Deed of Participation, in accordance with the power of attorney set out in the application form. Partners will be liable, both jointly and severally, for all Partnership obligations. There is no limitation on this liability.

6 Summary of Financial Statements

6.1 The Partnership has not been formed or commenced business. Accordingly, no financial statements can be prepared in respect of any period prior to Prospectus Date.

7 Plans, Prospects and Forecasts

7.1 **Plans**: The Partnership will obtain the Forestry Right and enter into the Management Contract with the Land Owner as described in the Prospectus. Planting will take place during July to August 2003. The scheme will be managed by the Manager in accordance with the Deed of Participation and by the Land Owner in accordance with the Management Contract described in the Prospectus. It is not anticipated that any finance beyond the subscriptions for the securities offered in this Prospectus will be required.

7.2 **Prospects**: The Forest Consultant's report (set out in Schedule 1) estimates the net proceeds of harvest of the forest in its 31st year as $9,179,280 ($50,996 per hectare for the 180 hectares planted) based on current market prices. Cash flow projections based on these estimates show a partner receiving $45,896 (pre tax) per unit in the 31st year of the project arising from total cash inputs of $9,040 over the term of the project. Repayment of the Land Owner advance increases this to $48,896 per unit. The Forest Consultants Report also contains an alternative estimate based upon harvest of the forest in the 26th year. This estimates the net proceeds of harvest as $7,252,920 ($40,294 per hectare for the 180 hectares planted) based on current market prices. Cash flow projections based on this estimate show a partner receiving $36,265 (pre tax) per unit in the 26th year of the project resulting from total cash inputs of $8,740. Again, repayment of the Landowner Advance increases this to $39,265. The current Forest Management Plan projects harvest in the 31st year, however ,the Manager and the Partners may agree to harvest at any time before that or after that up to the 40th year. These estimates will be affected by fluctuations in the real (inflation adjusted) price of timber, by variation in tree growth from that assumed and by changes in net stocked area. Further the return would be reduced by unforeseen or additional costs.

For an analysis of historical variations in the real price of timber prospective Investors are encouraged to study "Is Forestry Investment Profitable", a study undertaken in 1996 by G.Horgan, Economist with NZ Forest Research Institute. This is available by contacting Greenplan Forestry Limited.

This study of the history of forestry investment in New Zealand shows that stumpage prices increased on average by 3.67% over the 60 years to 1996 and by just under 5% over the 30 years to 1996. During this period there have been some significant developments which have resulted in this variation. Most importantly average log quality 30 years ago was very low (logs were all unpruned) whereas today, as in the Whitecliffs 2003 Forest, up to 22% of the logs are higher valued pruned logs. The quality of the logs produced by the project will be determined by the planting and silviculture regime adopted early in the project and consequently no further increase can be assumed on the basis of improved log quality over the life of the project. Further, up until 30 odd years ago, long term Government fixed price sales dominated and depressed the market. Today the market is highly competitive resulting in higher prices.

Conversely, Investors should also take into account the continuing developments and enhancements being made to Radiata Pine products, the introduction of new or expanded use of Radiata Pine products and the effect of a diminishing world wide supply of indigenous timber. Environmental concerns have also halted the harvest of indigenous forests. These factors can be expected to affect the real price of timber, though the likely extent of that effect can not be predicted.

In addition, overseas markets are beginning to demand evidence that timber products are sourced from forests that are grown and managed on a sustainable basis. This evidence is being provided by maintenance of adequate records relating to the management of the crop.

Of equal importance is the international acceptance of measures to reduce global warming. Plantation forestry is an acceptable method of off-setting industrial emissions. The following price Sensitivity Analysis (for harvest in both the 31st and 26th years) show what happens to the Internal Rate of Return to the Investor (see clause 7.4) and net return to Partners if the price of timber increases or decreases by up to 5% p.a. over the period of the project.

Harvest in 31st Year

Sensitivity Analysis	Annual Price Change (%)	Total Net Revenue Pre-Tax Per Unit	Pre-Tax IRR	Post Tax IRR	Price per Cubic Metre	Net Return Per Unit* Pre-Tax
	5%	$220,402	11.44%	10.56%	$260.52	$201,361.60
Increasing	4%	$165,400	10.38%	9.53%	$195.51	$151,860.27
Real	3%	$123,781	9.32%	8.51%	$146.31	$114,402.61
Prices	2%	$92,372	8.26%	7.50%	$109.19	$86,134.98
	1%	$68,735	7.21%	6.50%	$81.25	$64,861.41
Current Prices	0%	$50,996	6.17%	5.51%	$60.28	$48,896.40
	-1%	$37,722	5.14%	4.55%	$44.59	$36,949.58
Decreasing	-2%	$27,818	4.13%	3.61%	$32.88	$28,035.77
Real	-3%	$20,450	3.14%	2.71%	$24.17	$21,404.78
Prices	-4%	$14,986	2.19%	1.86%	$17.71	$16,487.01
	-5%	$10,946	1.29%	1.06%	$12.94	$12,851.15

Harvest in 26th Year

Sensitivity Analysis	Annual Price Change (%)	Total Net Revenue Pre-Tax Per Unit	Pre-Tax IRR	Post Tax IRR	Price per Cubic Metre	Net Return Per Unit* Pre-Tax
	5%	$136,450	11.78%	10.73%	$188.73	$125,804.81
Increasing	4%	$107,417	10.72%	9.72%	$148.57	$99,675.49
Real	3%	$84,367	9.67%	8.71%	$116.69	$78,930.02
Prices	2%	$66,107	8.62%	7.72%	$91.43	$62,495.92
	1%	$51,674	7.58%	6.74%	$71.47	$49,506.88
Current Prices	0%	$40,294	6.56%	5.78%	$55.73	$39,264.60
	-1%	$31,342	5.54%	4.85%	$43.35	$31,207.38
Decreasing	-2%	$24,316	4.55%	3.93%	$33.63	$24,884.41
Real	-3%	$18,816	3.58%	3.06%	$26.03	$19,934.65
Prices	-4%	$14,522	2.63%	2.22%	$20.09	$16,069.64
	-5%	$11,177	1.73%	1.43%	$15.46	$13,059.42

*Calculated after repayment of the land owner advance, in the same manner as shown in the cash flow projections in Section 7.7

Prospective Investors should note that in 1993 timber prices peaked at a level which equates to a stumpage on the Whitecliffs block of $179 per cubic metre. A return to this price would, over the 30 years of the project, require an annual increase in timber prices of under 4% per annum over the prices used by PF Olsen to calculate the stumpage revenues stated in their report on page 7, and the resultant IRR is shown in the sensitivity analysis.

7.3 **Internal Rate of Return:** An accepted method of comparing one investment with another is to use the Internal Rate of Return or IRR. The IRR to the Investor for this investment is as follows:

Valuation Basis	**Harvest in 31st Year**		**Harvest in 26th Year**	
	Pre Tax IRR	Post Tax IRR	Pre Tax IRR	Post Tax IRR
PF Olsen Valuation	6.17%	5.51%	6.56%	5.78%
Ministry of Forestry Log Return (Stumpages set out on page 7 of PF Olsen report, Schedule 1)	5.90%	5.26%	6.26%	5.51%

The Greenplan investment structure whereby 80% of the funds are paid up front results in a lower IRR than a structure that requires contributions only as expenditure is incurred on the forest. Conversely, the advantage of the up front payment is to minimise the risk of the forest's development being curtailed or adversely affected by unavailability of funds resulting from future non-payment by partners.

Other forest investment schemes are based on projected expenses to be reimbursed by partners as they occur. Resultant IRR based on these projections are higher. They may, however, prove to be inaccurate as there is no certainty of the timing or quantum of the future payments or receipts. The Greenplan structure with an up-front payment and the benefit of the Management Contract minimises the risks of budget projections escalating and reducing the actual IRR and the investor's return.

7.4 **Contributions:** The following contributions (on a per unit basis) are projected to be:

- Year 1 $7,300 per unit
- Year 2 - 30 $60 per unit per annum

Being a total contribution of $9,040 per unit over the estimated 30 years of the project or $8,740 if the project terminates after 25 years. Any extraordinary or unexpected costs, not covered within the Land Owner's Management Contract will be borne by the Partners on a pro-rata basis, after approval by the Partners by ordinary resolution.

7.5 **Tax:** The costs of planting and forest maintenance such as pruning and thinning are deductible against income from other sources in the year in which they are incurred. In the initial eight years these costs are represented by the payments made to the Land Owner under the Management Contract with the Land Owner. Other overheads such as management, rates, insurance, etc. are also deductible. The deductible costs and overheads will cause the Partnership to return a loss in its tax return. This loss is available (on a pro rata basis) to the Partners, and can be applied by them to reduce their other taxable income. It is estimated that for a 30 year investment 65% of the projected costs of a Greenplan investment will be deductible in this manner. The Manager will advise Investors each year of the amount of their share of the Partnership's loss for tax purposes. Income derived from the sale of forest produce is taxable. There is provision in Section EJ1 of the Income Tax Act 1994 for this income to be spread over the year of receipt and the preceding three years. A projection of the anticipated available deductions is set out in the cash flow projections in section 7.7. At an assumed marginal tax rate of 33 cents in the dollar, the post tax cost of the investment is estimated at $7,131 per unit in the first year with tax credits of $129 per annum available in the next seven years. From year 8 until harvest, the post tax cost of the investment is estimated to be $40 per annum. The effect of taxation on this forestry proposition is significant when comparing the after-tax profitability of the venture with other investments. Investors should note that the tax benefit projections are based on current tax legislation which may change during the 25 to 30 year term of the project. As the Partnership will be registered for Goods and Services Tax, GST has been excluded from all calculations. GST refunds will be obtained by the Manager.

7.6 **Risk**: The venture is not free of risk. A statement of the foreseeable risks are:

- Risks affecting Forestry investments generally

  a. Tax or other legislation may change;

  b. Exchange rate variations could affect crop values;

  c. Market prices for timber may be adversely affected by substitution, economic and other factors;

  d. Forests may be subject to natural disaster such as fire (although fire insurance cover will be arranged) or new diseases and pests, which affect yields. An assessment of these risks appears in the Forest Consultant's Report in Schedule 1;

  e. Future costs may change (although cost escalations in the projected expenses covered by the Management Contract will be borne by the Land Owner);

  f. Unforeseen costs or expenses may arise, requiring further payments by the Partners.

- Particular risks associated with a Greenplan Partnership investment are:

  g. Joint and several liability of every Partner for debts of the Partnership. These are associated with any Partnership investment. Partners are jointly and severally liable for the debts of the Partnership. Partners may be called upon to meet the liabilities of co-partners who fail to meet their obligations.

  h. An investor's ability to obtain contributions from other members of the Partnership for debts of the Partnership that the investor has met, will be limited by the financial resources of those other Partners. Where other Partnership interests are held by limited liability companies an investor's ability to obtain contributions will be limited to the capital of that company.

  The following measures are taken to reduce the possibility of liability:

  i. The Partnership has no initial or projected bank debt and 80% of the projected costs are met by the initial payment.

  ii. All invoices to be paid are perused by the Manager prior to release of funds.

  iii. Should any Partners have difficulty in meeting calls and/or wish to withdraw from the Partnership the procedures set out in the Deed of Participation are available for disposal of their interest.

  iv. In the event that a Partner fails to meet a financial obligation, there is provision in the Deed of Participation to allow the interest of the defaulting Partner to be forfeited and sold with the proceeds of sale being applied against the outstanding obligation.

  v. The Partnership will hold forest fire insurance cover. The sum insured is an agreed value based on a compounding cost basis up to year 8 and from then on as a discounting value basis. Re-establishment insurance is also held in the initial period of the forest development.

  i. The Land Owner may be unable to perform, or may default in performance of, its obligations under the Management Contract, in particular to meet cost overruns. Section 4.2 sets out the steps taken to minimise this risk.

  j. Because of the long duration of the project, present management may change.

7.7 **Feasibility Study**: The cash flow projections below set out projected cash flows for the scheme and reflect the planned course of action envisaged by the Forest Management Plan. Separate cash flow projections are shown for harvest in the 31st year and harvest in the 26th year. These statements have been prepared from assumptions as to future costs, returns and revenues to enable the viability of the Scheme to be assessed. The projections should not be used for any other purpose. These assumptions are made as at Prospectus Date and are based upon Greenplan Forestry Limited's judgement as to the most probable economic conditions, following consultation with its advisers. It is not intended that the projections be subsequently updated. The first projection shows a cash flow on a Partnership basis, and the second projection shows a cash flow on a per unit basis. Apart from the Landowner's Advance no investing or financing activities are envisaged. These are projections only and no actual results are incorporated. The actual financial costs and returns over the period to harvest are unforeseeable and may differ materially. The projected costs are based on current prices (or estimates thereof), and assume zero inflation and exclude GST. The returns and revenues are based upon the independent forest consultant's estimation of the net value of the forest produce. The projected receipts from partners and expenses paid to the landowner are based on an assumption that all contributions from partners will be received within the first year of the project. This will not be the case and the actual dates of receipt and payment will depend upon the number of partners choosing the 3 payment options available. This information will not be known until after allotment. Variation of the timing of actual receipts against the assumptions will not have a material effect on the partnership as funds will be applied to payment as received and no additional interest will be incurred or accrued as a result of timing of receipt or payment. The notes on costs and returns are set out below the projections and should be read in conjunction with them. The Partnership will have a 31 March balance date. The projections have been, and all Financial Statements will be, prepared based around this date. All Financial Statements will be and where relevant, these statements have been, prepared in accordance with the general accounting policies recommended by the Institute of Chartered Accountants of New Zealand for the measurement and reporting of results. Historical costs, accrual accounting and the "going concern" assumption will be adopted.

All the major costs of forest development are projected to occur within the first 8 years. This expenditure is governed by the Forest Management Plan and incorporated in the Management Contract between the Partnership and the Land Owner. The Major costs, which are paid by the Landowner under the Management Contract, are estimated to be:

Planting and releasing	Year 1	$688 per planted ha
Low Prune	Year 3-4	$655 per planted ha
Medium Prune	Year 5-6	$616 per planted ha
High Prune and Thin	Year 7-8	$1084 per planted ha

In addition, provision has been made for fire insurance, Dothistroma control, audit costs, maintenance of forest records, animal control, forest inspections and general surveillance. Investors should note that these projected expenses are borne by the Land Owner under the Management Contract (for which the Partnership pays a fixed fee) and are not expenses of the Partnership. Cost escalations in the projected expenses covered by the Management Contract will be met by the Land Owner.

Cash Flow Projection on a Partnership Basis
Harvest in 31st Year

	Total	Note	2003-2004	2004-2011	2011-2033	2033-2034
CASH FLOWS FROM OPERATING ACTIVITIES						
EXPENDITURE						
Management Contract	$738,000	1	$738,000	$-	$-	$-
Legal Costs	$14,000	2	$14,000	$-	$-	$-
Forest Consultant	$10,000	3	$10,000	$-	$-	$-
Audit	$23,700	4	$2,200	$1,500	$500	$500
Forest Maintenance	$72,600	5	$-	$-	$3,300	$3,300
Rates	$35,200	6	$-	$-	$1,600	$1,600
Security Register	$3,800	7	$3,800	$-	$-	$-
Accountant	$12,500	8	$-	$1,000	$250	$250
Statutory Supervision	$64,000	9	$6,000	$2,000	$2,000	$2,000
Allotment Costs	$-		$-	$-	$-	$-
Management & Administration	$113,400	10	$-	$6,300	$3,150	$3,150
TOTAL EXPENDITURE	$1,087,200	11	$774,000	$10,800	$10,800	$10,800
RECEIPTS						
Log Revenues	$8,261,352	12	$-	$-		$8,261,352
TOTAL RECEIPTS	$8,261,352					$8,261,352
NET CASH FLOWS FROM OPERATING ACTIVITIES	$7,174,152		-$774,000	-$10,800	-$10,800	$8,250,552
CASH FLOWS FROM INVESTING ACTIVITIES						
EXPENDITURE						
Landowners advance	$540,000	11 and 13	$540,000	$-	$-	$-
RECEIPTS						
Advance to Land Owner Repaid	$540,000		$-	$-	$-	$540,000
NET CASH FLOWS FROM INVESTING ACTIVITIES	$-		-$540,000	$-	$-	$540,000
Funds received from (payable to) partners	-$7,174,152	14	$1,314,000	$10,800	$10,800	-$8,790,552
TOTAL NET CASH FLOWS	$7,174,152		-$1,314,000	-$10,800	-$10,800	$8,790,552

Cash Flow Projection on a per Unit basis

	Total	2003-2004	2004-2011	2011-2033	2033-2034
OPERATING CASH FLOWS PER UNIT					
Log Revenue	$45,896	$-	$-	$-	$45,896
Cash paid in by Partners	-$6,040	-$4,300	-$60	-$60	-$60
Tax benefit to (payable by) the Partners	-$13,219	$169	$189	$20	-$15,126
INVESTING CASH FLOWS PER UNIT					
Landowner Advance	-$3,000	-$3,000	$-	$-	$-
Advance to Landowner Repaid	$3,000	$-	$-	$-	$3,000
TOTAL NET CASH INFLOWS AFTER TAX	$26,638	-$7,131	$129	-$40	$33,710
Tax benefit to (payable by) the Partners is calculated as follows					
Log Revenues	$45,896	$-	$-	$-	$45,896
Deductible Expenses	-$5,840	-$513	-$573	-$60	-$60
Taxable Income (Loss)	$40,056	-$513	-$573	-$60	$45,836
Tax benefit to (payable by) the Partners at 33%	-$13,219	$169	$189	$20	-$15,126

Cash Flow Projection on a Partnership Basis
Harvest in 26th Year

	Total	Note	2003-2004	2004-2011	2011-2028	2028-2029
CASH FLOWS FROM OPERATING ACTIVITIES						
EXPENDITURE						
Management Contract	$738,000	1	$738,000	$-	$-	$-
Legal Costs	$14,000	2	$14,000	$-	$-	$-
Forest Consultant	$10,000	3	$10,000	$-	$-	$-
Audit	$21,200	4	$2,200	$1,500	$500	$500
Forest Maintenance	$56,100	5	$-	$-	$3,300	$3,300
Rates	$27,200	6	$-	$-	$1,600	$1,600
Security Register	$3,800	7	$3,800	$-	$-	$-
Accountant	$11,250	8	$-	$1,000	$250	$250
Statutory Supervision	$54,000	9	$6,000	$2,000	$2,000	$2,000
Allotment Costs	$-		$-	$-	$-	$-
Management & Administration	$97,650	10	$-	$6,300	$3,150	$3,150
TOTAL EXPENDITURE	$1,033,200	11	$774,000	$10,800	$10,800	$10,800
RECEIPTS						
Log Revenues	$6,527,628	12	$-	$-		$6,527,628
TOTAL RECEIPTS	$6,527,628					$6,527,628
NET CASH FLOWS FROM OPERATING ACTIVITIES	$5,494,428		-$774,000	-$10,800	-$10,800	$6,516,828
CASH FLOWS FROM INVESTING ACTIVITIES						
EXPENDITURE						
Landowners advance	$540,000	11 and 13	$540,000	$-	$-	$-
RECEIPTS						
Advance to Land Owner Repaid	$540,000		$-	$-	$-	$540,000
NET CASH FLOWS FROM INVESTING ACTIVITIES	$-		-$540,000	$-	$-	$540,000
Funds received from (payable to) partners	-$5,494,428	14	$1,314,000	$10,800	$10,800	-$7,056,828
TOTAL NET CASH FLOWS	$5,494,428		-$1,314,000	-$10,800	-$10,800	$7,056,828

Cash Flow Projection on a per Unit basis

	Total	2003-2004	2004-2011	2011-2028	2028-2029
OPERATING CASH FLOWS PER UNIT					
Log Revenue	$36,265	$-	$-	$-	$36,265
Cash paid in by Partners	-$5,740	-$4,300	-$60	-$60	-$60
Tax benefit to (payable by) the Partners	-$10,139	$169	$189	$20	-$11,948
INVESTING CASH FLOWS PER UNIT					
Landowner Advance	-$3,000	-$3,000	$-	$-	$-
Advance to Landowner Repaid	$3,000	$-	$-	$-	$3,000
TOTAL NET CASH INFLOWS AFTER TAX	$20,385	-$7,131	$129	-$40	$27,257
Tax benefit to (payable by) the Partners is calculated as follows					
Log Revenues	$36,265	$-	$-	$-	$36,265
Deductible Expenses	-$5,540	-$513	-$573	-$60	-$60
Taxable Income (Loss)	$30,725	-$513	-$573	-$60	$36,205
Tax benefit to (payable by) the Partners at 33%	-$10,139	$169	$189	$20	-$11,948

Notes on Costs and Returns

Note 1 Management Payment
The Management Contract described in section 4.2 provides for payment of $738,000 to cover the projected costs of forestry development and maintenance in the first eight years.

Note 2 Legal Cost
These costs represent the legal costs associated with the establishment of the legal structure of the Partnership.

Note 3 Forestry Consultant
These costs are the costs of the initial forest consultant's report appearing in this Prospectus. Costs of the forest audits in years 2 and 8 (provided for in the Forest Management Plan) are borne by the Land Owner pursuant to the Management Contract.

Note 4 Audit
These costs represent the initial audit (see Schedule 2) and the ongoing annual audit of the Partnership.

Note 5 Forestry Maintenance
These costs represent the ongoing Forest Maintenance, insurance and other costs incurred by the Partnership (for the period from years 9 for the balance of the term of the project) following expiry of the Land Owner's Management Contract in year 9, estimated at an average of $3,300 per annum.

Note 6 Rates
Projected at current levels from year 9 for the balance of the project. Rates of years 2 to 8 are paid by the Land Owner (to the extent they are not attributable to the presence of the forest) pursuant to the Forestry Right.

Note 7 Securities Register
These costs provide for establishment of the Securities Register in year 1. Costs of maintaining the Register in subsequent years will be met from transfer fees.

Note 8 Accountant
These costs provide for preparation of annual financial statements for the Partnership from Year 2 for the balance of the term of the project.

Note 9 Statutory Supervision
This cost provides for the provision of Statutory Supervision required by the Partnership pursuant to the Securities Act 1978 at the rate of $6,000 initial set up and an annual fee estimated to be an average of $2,000 per annum over the remaining term of the project.

Note 10 Management and Administration
This cost represents the management fee of $6,300 per annum for years 2 to 8 and projected management fee of $3,150 per annum (subject to the Manager's agreement) for the remaining term of the project, payable to Greenplan Forestry Limited for co-ordination and administration of the Partnership. (See clause 13 of the Deed of Participation set out in Schedule 3)

Note 11 Contributions from Partners
Contributions from partners will be applied to expenditure on operating activities and expenditure on investing activities (being the Landowner Advance).

Note 12 Net Log Receipts
90% of the stumpage per planted hectare (see the Forest Consultant's Report Schedule 1). This represents the estimated sale price of the forest crop after deduction of harvest costs, cartage costs and the Land Owner's 10% interest.

Note 13 Land Owner Advance
The Partnership will advance the sum of $540,000 to the Land Owner. This Advance will be repaid at final harvest and will not bear interest. The Advance is secured against the Land Owner's 10% interest.

Note 14 Payments and Receipts
These payments and receipts represent funds received from partners and paid to the landowner. The cashflows are calculated on the assumption that these receipts and payments will all be received and paid in the first year of the scheme. This will not be the case as the actual timing of receipt and payment will depend on the number of partners which choose each of the 3 payment options offered. This will not be known until after allotment. However variation of the dates of actual receipt and payment against the assumption will not be material to the partnership as no additional interest, costs or income will be payable or accrued as a result of any delay in receipt or payment.

7.8 **Prospective Financial Performance:** The prospective statement of financial performance for the scheme is as follows:

Prospective Statement of Financial Performance	Harvest in 31st Year	Harvest in 26th Year
Log Revenue	$8,261,352	$6,527,628
Management and Administrative Costs	-$1,087,200	-$1,033,200
Net Profit before Taxation	$7,174,152	$5,494,428
Taxation	0	0
Net Profit after Taxation	$7,174,152	$5,494,428

This statement has been prepared on a Partnership basis and covers the period from commencement of trading through to the harvest of the forest. No taxation has been provided as any tax liability is the responsibility of the individual partners.

8 Minimum Subscription

8.1 For the purposes of Section 37(2) of the Securities Act 1978 the minimum amount that must be raised by the issue of Securities in respect of the Partnership is $36,000 (being $200 per unit in the Partnership) comprising preliminary expenses. However, as set out in section 36.1 of this Prospectus, participatory securities will not be allotted in the Partnership until all the participatory securities offered in the Partnership have been fully subscribed.

9 Guarantors

9.1 No person guarantees the repayment of the securities or the payment of any interest or other money to the Partners of the Partnership.

10 **Acquisition of Business or Subsidiary:** No existing business or shares in a business have been, or are proposed to be, acquired by the Partnership.

11 **Securities Paid up otherwise than in Cash:** No participatory securities have been, or are proposed to be, allotted by or subscribed for in the Partnership as fully or partly paid up otherwise than in cash.

12 **Options to Subscribe for Securities of the Scheme:** No option to subscribe for participatory securities of the Partnership has been or is proposed to be granted to any person.

13 Manager's Interest

13.1 The Manager will manage the Partnership. The Manager will provide administrative services to the Partnership. The Manager will initially be remunerated by the Partnership for provision of these services at $6,300 per annum for years 2 to 8 as set out in note 10 in section 7.7 of this Prospectus. Thereafter the Manager's remuneration will be determined by agreement and approved by a resolution of the partners. In addition, the Land Owner has agreed to pay to the Manager a procurement fee of $162,000 to meet Prospectus development and promotion costs. No director or principal officer of the Manager is entitled to remuneration for provision of services in respect of the scheme.

13.2 The following Material Contracts will be entered into between the Manager (on behalf of the Partnership) and Greenplan Holdings Limited (the "Land Owner") being a subsidiary of the Manager:

a. The Land Owner will grant to the Partnership a registered forestry right over approximately 211.6 ha of the Land Owner's property. The property to be subject to the Forestry Right and the terms of the Forestry Right are described in Section 4.1 of this Prospectus. A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15. The

Land Owner will receive a 10% share of the produce of the scheme without obligation to contribute to the costs of developing the scheme, which in accordance with the projections set out in section 7.7 is projected to return $917,928 to the Land Owner upon final harvest in the 31st year. The alternative projection for a final harvest in the 26th year projects this return to the Land Owner as $725,292;

b. The Land Owner will also enter into a Management Contract with the Manager (acting on behalf of the Partnership) to provide services to the Partnership in the initial eight year period. The terms of the Management Contract are described in section 4.2 of this Prospectus. A copy of the proposed Management Contract is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15. The Land Owner will receive the remuneration referred to in the Management Contract, being a total fee of $738,000 from the Partnership and will also receive an interest free advance, referred to in the Management Contract of $540,000 from the Partnership. The advance is repayable on final harvest of the forest and will be secured against the Land Owner's 10% share of the produce of the scheme referred to in subparagraph (a) above.

14 **Promoters' Interest:** No person other than the directors of the Manager have been instrumental in the plan pursuant to which the securities are offered and accordingly no person other than the Manager is a Promoter of the securities. The Manager's interest is disclosed in Section 13.

15 **Material Contracts:** The Manager has entered into an option agreement with Greenplan Holdings Limited (the "Land Owner") entitled "Option to Grant Forestry Right and Management Contracts" and dated 29 November 2002. The Option Agreement grants the option to the Manager to require the Land Owner to:

15.1 Grant to the Partnership a registered forestry right over approximately 211.6 ha of the Land Owner's property. The property is to be subject to the Forestry Right and the terms of the Forestry Right are described in section 4.1 of this Prospectus. A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in this section 15.1. The Land Owner will receive a 10% share of the produce of the scheme without obligation to contribute to the cost of developing the scheme.

15.2 Enter into a Management Contract with the Manager (acting on behalf of the Partnership) to provide services to the Partnership in the initial eight year period. The terms of the Management Contract are described in section 4.2 of this Prospectus. A copy of the proposed Management Contract is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.1. The Land Owner will receive the remuneration referred to in the Management Contract, being a total fee of $738,000 from the Partnership and will receive an interest free advance from the Partnership of $540,000 for the term of the scheme. This advance will be payable on the final harvest and will be secured against the Land Owner's 10% share of the produce of the scheme referred to in section 15.1 above.

16 **Pending Proceedings:** There are no legal proceedings or arbitrations pending at Prospectus Date that may have a material adverse effect on any of the Partnership, the Manager, the Land Owner or the scheme.

17 **Issue Expenses:** Preliminary and Issue expenses are estimated for the Partnership to be as follows:

Legal Fees	$14,000.00
Statutory Supervisor	$6,000.00
Forest Consultant Fees	$10,000.00
Audit Fees	$2,200.00
Securities Register	$3,800.00
Sub-Total	**$36,000.00**
Prospectus Costs	$36,000.00
Printing and Postage	$26,000.00
Advertising	$28,000.00
Promotion	$32,000.00
Brokerage	$40,000.00
Sub-Total	**$162,000.00**
Total	**$198,000.00**

A commission of $250 per unit is payable to those persons (other than the Manager or its Directors) approved by the Manager who procure subscriptions for the Partnership.

These expenses will be shared between the Partners and the Manager. The Partnership will contribute $36,000 towards the Partnership's establishment costs. The Manager will meet all other Prospectus development and promotion costs.

18 **Terms of Deed of Participation:** A copy of the Deed of Participation to be used for the Partnership is set out in Schedule 3 to this Prospectus and is dated 29 November 2002.

19 **Other Terms of Offer and Securities:** All terms of the offer and all terms of the securities being offered are set out in this Prospectus except those implied by law or set out in the documents registered with a public official, referred to in section 15 of this Prospectus and available for public inspection at the places referred to in section 35 below.

Financial Matters

20-34 **Application**

The Partnership has not commenced business as at Prospectus Date and accordingly, clauses 20-34 of the Third Schedule of the Securities Regulations 1983 in respect of financial statements, do not apply.

Miscellaneous Matters

35 **Places of Inspection of Documents:** Copies of the contract mentioned in section 15 may be inspected without fee at the following locations between the hours of 9am and 5pm on business days: the offices of Greenplan Forestry Limited, 57 Te Kumi Road, Te Kuiti, the offices of Perpetual Trust Limited, 233 Cambridge Terrace, Christchurch and the offices of KPMG Legal, Solicitors, 22 Fanshawe Street, Auckland. The documents may also be inspected upon payment of the prescribed fee at the offices of the District Registrar of Companies, Level 5, District Court Building, 3 Kingston Street, Auckland between the hours of 9am and 5pm on business days.

36 **Other Material Matters**

36.1 Applications, Subscriptions Procedures, Allotment and other matters:

a. **Applications**: Applications must be made and will be accepted only on the application form distributed by the Issuer.

b. **Opening and Closing Dates**: Subscription lists for applications will open on Prospectus Date and will close on 20 March 2003 ("Closing Date") unless filled earlier. The Manager reserves the right to either:

i. extend the Closing Date for acceptance of applications; or

ii. withdraw this Prospectus and decline all applications at any time prior to the Closing Date.

The Manager will inform subscribers by letter on or before Closing Date of any extension of the Closing Date or withdrawal of this Prospectus.

c. **Subscriptions**: Subscriptions will be accepted and placed successively to the Partnership in their order of receipt. The maximum subscription for the Partnership is 180 units of $7,300. Upon full subscription of the Partnership, it will be closed. If insufficient subscriptions are received prior to Closing Date to subscribe the Partnership fully, the proposal will not proceed.

d. **Payment:** The payment of $7,300 on subscription may be paid by either:

i. One initial payment of $300 per unit now and one payment $7,000 per unit for the balance of the subscription price on 20 March 2003;

ii. One initial payment of $300 per unit now, then 14 monthly payments of $500 per unit from 20 March 2003 to 20 April 2004 (total payments equal $7,300);

iii. One initial payment of $100 per unit now, then 36 monthly payments of $200 per unit from 20 March 2003 to 20 February 2006 (total payments equal $7,300).

iv. As otherwise agreed with the Manager.

e. **Subscription Moneys Held on Trust**: All subscription moneys will be deposited in a trust account maintained by the Statutory Supervisor with its bankers. Should the minimum subscription of 180 participatory securities not be received by the Closing Date then the subscription moneys together with any interest will be repaid no later than 30 days after the Closing Date or any extended closing date, whichever is the later. If the Prospectus is withdrawn, then all subscriptions will be refunded within 30 days of the date of withdrawal.

In the event that the granting of the Forestry Right or completion of the Management Contract described in sections 4.1 and 4.2 of this Prospectus are not completed for any reason within six months of the Closing Date then the subscription moneys together with any interest will be repaid within thirty (30) days of that date.

No moneys will be released to the Manager or the Land Owner to meet any expenses of any of the Partnership until it is fully subscribed and the minimum subscription levels referred to above have been achieved.

f. **Allotments**: Allotment of the participatory securities will proceed on the same date, being a date as soon as practicable following the Closing Date. No allotments will be made in the Partnership until:

i. all the participatory securities in the Partnership are fully subscribed for; and

ii. subscription for and receipt of payment for the minimum number of securities specified in section 8 pursuant to Section 37(2) of the Securities Act 1978 are completed; and

iii. the Land Owner has granted the Forestry Right and entered into the Management Contract with the Partnership pursuant to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.

The Manager reserves the right to reject or accept any application in whole or in part, without assigning any reason therefore.

In the event of subscription moneys relating to applications being declined they will be refunded (with any interest) to applicants not later than 30 days following Closing Date or any extended closing date, whichever is the later. Receipts for application moneys will not be issued, the banking of a cheque being deemed to constitute an acknowledgement.

g. **Register of Participatory Securities**: The Securities Registrar will maintain on behalf of the Manager, a register of all participatory securities issued. The Register will be maintained at the office of the Securities Registrar, Kidd Falconer & Co, Chartered Accountants, 46 Taupiri Street, PO Box 61, Te Kuiti.

h. **Balance Date**: It is proposed that the Partnership will adopt a 31 March balance date.

i. **Stock Exchange**: The participatory securities issued under this Prospectus will not be listed on the New Zealand Stock Exchange or any other stock exchange.

36.2 Except as mentioned in this Prospectus there are no material matters relating to the offer of securities to which this Prospectus relates (other than matters set out elsewhere in the Prospectus).

37 **Manager's Statement:** Since the Partnership has yet to commence business and no previous financial statements are therefore available, the Manager cannot give an opinion as to whether or not there are any events which affect the venture between the previous balance date and Prospectus Date.

38 **Auditor's Report:** The auditor's report and statement required by paragraph 38 of the Third Schedule to the Securities Regulations 1983 is attached as schedule 2.

This Prospectus has been signed:

by John Richard Barton
as Director of the Manager:

by Bruce Andrew Maunsell
as Director of the Manager:

by Matthew Louis Barton
as Director of the Manager:

by Simon John McArley
as Director of the Manager:

SCHEDULE 1

Forest Consultant's Report

PF Olsen and Company ltd
Forestry Consultants and Managers

14 November 2002

The Directors
Greenplan Forestry Ltd
P O Box 24
Te Kuiti
New Zealand

Dear Sirs

At your request, we have prepared this report on the development and management of approximately 180 hectares of *Pinus radiata* forest, to be known as Greenplan (Whitecliffs 2003) Forest Partnership No. 59. The report describes the site, outlines a development plan and estimates the financial returns at maturity arising from afforestation and management assuming current best forestry practice.

The author inspected the property on 9 October 2002.

1. SITE DESCRIPTION

1.1 Legal Description

Whitecliffs forest is to be established on a property with the following legal description:

CT SA622/31	Section 2 Block VI Orahiri SD	223.7912 hectares

The tenure is freehold. There are no encumbrances on the title that would constrain a forestry land use.

Greenplan Holdings Ltd have purchased this property. They will subdivide and sell approximately 12.2 hectares, and issue a forestry right over the remaining 211.6 hectares to the partnership.

1.2 Location and Access

The property is located approximately 20 kms west of Otorohanga. Distances by road from the Whitecliffs property to major log markets are:

- Te Kuiti 40 kms
- Putaruru 91 kms
- Mount Maunganui 158 kms
- Tokoroa/Kinleith 115 kms

Access to the property is gained off Tapuae Road, a well formed district road which follows the western boundary of the property.

A substantial track of good grade leads from the public road into the property. A network of farm tracks affords internal access through most of the block. These tracks will require upgrading and realignment for harvest operations.

1.3 Topography

The topography is comprised of a series of minor catchments draining into the Turitea Stream. Slopes are moderate to steep, but relatively short. Broad ridge tops are a feature of the property allowing ready access to most parts of the block. The general aspect of the property is northeast, though there are slopes of all aspects.

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Forestry Consultants and Managers

Approximately 60% of the property will require harvesting by cable hauler systems. The balance can be harvested with ground based systems.

1.4 Soils

Soils on the property are comprised of Te Kuiti silt loam and Ounu silt loam, overlying sandstone and mudstone. Their natural fertility is moderate. The regular fertiliser applications associated with the property's farming history should ensure that the fertility will be more than adequate for forestry production. While nutrient deficiencies are not anticipated, the Forest Manager should regularly monitor the nutrient status of the crop.

The soils exhibit slight to moderate erosion potential.

1.5 Climate and Altitude

NZ Met Service records for nearby Otorohanga indicate a mean annual rainfall of 1,340 mm. Temperatures range from lows of around 3 to 5°C in the winter months, to highs of 22 to 25°C in the summer. Ground frosts are relatively common during the winter months of May through September. Gale force winds are infrequent, occurring on average 2 days in five years.

The altitude ranges from around 120m in the northeast corner of the property, to a high point of around 270m on the western boundary of the block along the Tapuae Road.

1.6 Legislation

Whitecliffs forest is located in the Rural Zone and subject to the rules of the Otorohanga District Plan. Under this plan, plantation forestry is a permitted activity in the Rural Zone subject to the following conditions:

- Forests are not established in any position where their shade will cause icing on roads, or shade a neighbouring dwelling.
- Earthworks exceeding 0.5 hectare in extent will require a resource consent.

The development plan described in this report takes account of these conditions.

1.7 Existing Trees

There is an area of approximately 49.5 hectares which is stocked in four separate age classes of *P. radiata*. Greenplan sampled the area through a structured inventory in October 2002. The resulting data is summarised below.

Crop	NSA (ha)	Stocking (s/ha)	DBH (cm)	Height (m)	Pruned Height (m)	Pruned Stocking (s/ha)
91 P.rad	7.0	550	31.1	21.5	5.7	217
93 P.rad	15.1	717	24.0	16.0	2.6	654
94 P.rad	6.3	1,042	18.6	12.8	1.9	162
95 P.rad	21.1	730	19.0	12.3	2.1	277

Areas have been measured by Greenplan off recent aerial photography. Additional information supplied by the previous owner has been used to apportion the area among the four age classes. In the opinion of PF Olsen and Company Ltd (Olsens), the above areas are accurate to within plus or minus 5%. The trees are exhibiting symptoms of infection by *Dothistroma pini*, a common fungal disease. If treated soon with an aerial spraying of fungicide, they should recover. Thinning to a final crop stocking of 350-375 should also help suppress the fungus by opening the stands to air circulation.

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1.8 Plantable Area

The balance of the property is currently in pasture with scattered scrub. Scrub areas will be treated. Allowance has been made for unproductive areas comprising native bush, riparian areas, boundary setbacks and other small areas within the forest considered unsuitable to plant.

Greenplan Forestry Ltd has estimated that an area of 130.5 ha is suitable for planting in radiata pine. This has been derived from inspection of aerial photography, augmented by a GPS survey. Olsens consider this estimate to be achievable providing adequate site preparation is completed. Combining this area with the area of existing trees brings the total productive area of Whitecliffs to 180 hectares.

1.9 Growth Potential

The growth potential of a forestry site is indicated by two measures: site index and basal area level (or fertility level). The site index for Whitecliffs is estimated to be 33, and the basal area level is estimated to be medium plus 20%. These estimates are supported by the data collected from the older trees on the property.

2. FOREST DEVELOPMENT AND MANAGEMENT

2.1 Land Preparation

There are areas of scrub that will need to be cleared prior to planting. The existing network of farm tracks will need only minor upgrading to provide access to all parts of the block for forest management purposes. External fences are in good condition. Heavy grazing should be undertaken prior to planting.

2.2 Planting

The entire plantable area will be established with genetically improved (GF22 or better) *Pinus radiata* treestock. It is recommended that the treestock be GF Plus rated, with an emphasis on Dothistroma resistance and improved wood density characteristics.

Establishment is to take place at a rate of 740 stems per hectare (s/ha), within the range of 700-850 s/ha. Particular attention should be paid to the care and handling of the trees from the time of lifting at the nursery to the actual planting on site. Planting depth, degree of cultivation and root orientation must be closely monitored.

2.3 Releasing

In the spring following planting, all trees should be released from grass and weed competition. Effective control is generally achieved through a spot spray application of appropriate herbicide. A second application may be needed on a portion of the area.

2.4 Silviculture

The bulk of the forest is to be intensively managed using industry recognised and accepted silvicultural practices to maximise the future returns to the investors.

Three pruning lifts to an average final pruned height of 6.0m and thinning to a final crop stocking of approximately 350 s/ha is proposed for the new plantings to produce a quality final crop. Natural mortality is expected to reduce this to around 305 s/ha at harvest.

The existing crop of trees will have a final thinning. In addition, the 1995 crop will have a single pruning lift to 5.8m.

The growth and yield modelling has assumed the following tending schedule:

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Tending Schedule

Crop	Tree age (yrs)	Mean Height (m)	Operation
1991 P.rad	11	21.5	Waste thin to 375 s/ha
1993 P.rad	9	16.0	Waste thin to 375 s/ha
1994 P.rad	8	12.8	Waste thin to 375 s/ha
1995 P.rad	7	12.3	Prune 350 s/ha to 5.8m
	7	12.3	Waste thin to 350 s/ha
2003 P.rad	4.5	6.5	Prune 380 s/ha to 2.5m
	6	9.0	Prune 365 s/ha to 4.5m
	7.5	11.0	Prune 350 s/ha to 6.0m
	7.5	11.0	Waste thin to 350 s/ha

The objective of tending is to produce the minimum pruned defect core on selected crop trees while maintaining rapid diameter growth and preserving the quality of the top logs via timely pruning and thinning operations. To achieve this the timing of operations must be flexible, as growth will vary with site quality.

Care must be taken during crop tree selection during tending operations to ensure that quality stems are selected within the constraints of spacing. Provision should be made for stand assessment inventories to be carried out in conjunction with the tending operations.

2.5 Forest Protection

The risk of loss to fire can be minimised through good work practices, ensuring contractors are equipped to put out small accidental fires and by making arrangements for the rapid deployment of men, helicopters and equipment in the event of a fire being detected. Restricting public access also reduces the fire risk.

Historically, wind has caused far more damage to forest plantation in New Zealand than fire. Catastrophic losses from wind in NZ have averaged 0.38% of the stocked area per annum, compared with 0.05% for fire, but regional differences are significant. The Waikato has suffered relatively little wind damage in the past. The risk of loss can be reduced through correct establishment techniques.

Goats and possums need to be eliminated from the property prior to planting, and an effective programme put in place to control their numbers over the initial years of the project.

The common fungal disease *Dothistroma pini* is present in the region. Control is easily effected by aerial spraying with the fungicide copper oxychloride. There are other established pathogens affecting radiata pine, but they are generally considered unimportant with good management practices. However, there is always the possibility that a serious disease or insect pest will become established in the country and will affect tree growth. Regular forest health monitoring is essential to identify any such introductions at an early stage.

2.6 Forest Management

Forest management will include the following:

- Planning and supervising forest operations
- Ensure compliance with rules and regulations
- Monitoring, recording and reporting of physical and financial performance
- Maintenance of stand records and maps
- Collection of inventory data, including Permanent Sample Plot (PSP) data
- Risk management

Forest management at Whitecliffs is to be carried out by GFM Ltd.

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3. GROWTH AND YIELD

3.1 Growth Modelling

Growth and yield is modelled using the Standpak suite of computer growth models developed by the NZ Forest Research Institute. Key settings used in the growth modelling are shown below:

Growth Model Settings

Growth Models	Early and NAPIRAD	Breakage function	1 P.rad KANG
GF rating (new plantings)	22	Sweep level (new plantings)	Low
GF rating (existing trees)	7	Sweep level (existing trees)	Medium
Site index	33.0	Stump height	0.4m
Basal area level	medium +20%	Malformation loss	10%
Volume and taper function	182 P.rad NZ Direct Sawlog	Downgrades	5% to lower grade; 5% to pulp

Use of the NAPIRAD growth model is considered appropriate for ex-farm sites in the Waikato. The malformation loss includes a component to allow for possible attrition losses to the tree crop throughout the rotation. Other settings are considered appropriate for the Whitecliffs site. No validation has been carried out.

3.2 Forecast Yields

Yields are forecast assuming a project length of 31 years as nominated by Greenplan, when the age of the main plantings will be 30. There is some reluctance on the part of sawmillers to source wood from stands less than this age, especially on ex-farm sites. This is due to reductions in wood quality in younger aged wood which is not yet reflected in the log pricing.

Yields are expressed in the following log grades.

Log Grade	Description
Pruned	Minimum small end diameter (sed) 35 cm; pruned
Export A grade	Min 30cm sed; avg. 34 cm sed; 10cm knot; 4m 8m 12m lengths
Export K grade	Min 20cm sed; avg. 26cm sed; 10cm knot; 5.5m 7.4m 11.1m lengths
Domestic sawlogs	Min 25cm sed; 15cm knot
Pulpwood	Min 10cm sed

Forecast yields at clearfell for Whitecliffs are shown below. Overall yields for the project are calculated on an area-weighted basis. They are therefore sensitive to assumptions of net stocked area. Yields are expressed on a fully stocked hectare basis.

Yields by Log Grade

	Yield (m^3/ha)					
Log Grade	**2003 plantings (130 ha)**	**1995 plantings (21.1 ha)**	**1994 plantings (6.3 ha)**	**1993 plantings (15.1 ha)**	**1991 plantings (7.0 ha)**	**Area-weighted Average**
Clearfell age (yrs)	30	38	39	40	42	32.5
Pruned	209	203	0	0	127	180
Export A grade	172	373	504	543	489	250
Export K grade	213	143	150	150	130	194
Domestic sawlogs	93	117	190	184	139	109
Pulpwood	117	104	94	98	104	112
Total	**804**	**938**	**938**	**975**	**988**	**846**

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4. LOG PRICES

4.1 Assumed Prices

The base prices used in this report are what Olsens consider to be conservative long term projections. They are based on the average of the last twelve quarters as published by MAF. No real price growth is assumed. MAF prices current as at September 2002 are shown for comparison.

Log Prices (NZ$/$m^3$ at wharf/mill gate)

Log Grade	Olsens Prices Used in This Report	MAF Prices as at September 2002
Pruned	176.00	172.00
Export A grade	105.00	91.00
Export K grade	78.00	82.00
Domestic sawlogs	67.00	66.00
Pulpwood	44.00	44.00

4.2 Price Points

The bulk of the sawlog volume is priced as export quality at the wharf gate. A small proportion is assumed sold to the domestic market. It is likely that increased investment in log processing in the region will lead to more domestic log marketing options. However, it is expected that domestic prices will be driven by export parity eventually making the distinction between destinations immaterial, i.e. export and domestic prices for the same quality of sawlog will equate at the forest gate.

4.3 Pruned Logs

High quality pruned logs will achieve price premiums over lower quality pruned logs. This is a reflection of the increased amount of clear timber able to be sawn from such logs. These high quality logs will be of large dimension, have small defect cores and be relatively straight. This emphasises the need for proper timing of silviculture to capture the high end of this market. We have based the price of pruned logs on the pruned log index (PLI), a measure of pruned log quality.

Current prices for pruned logs are around $172/m3 delivered. Pruned logs being marketed today were pruned some 20 years ago. Pruning standards prevalent at that time were somewhat lower than they are today. With proper management, we can expect pruned logs from Whitecliffs forest to be of higher quality than pruned logs being sold on the current market.

For this project we have assumed a pruned log price of $189/$m^3$ for logs with an average PLI of 7.8. The pruned logs from the 1995 plantings have been priced at $173/$m^3$ with a corresponding PLI of 6.6.

4.4 Unpruned Logs

The traditional markets for unpruned logs in the past have been for domestic sawing into framing grade or structural timber, for export in log form and for conversion into packaging grade timber.

Recently in world markets we have seen an increasing number of diverse processors looking to unpruned radiata logs as a source of raw material for other products. Examples include plywood bound for Japan and laminated veneer lumber (LVL) produced by the Juken Nissho mills in Gisborne, Kaitaia and Masterton, and now CHH in Whangarei. Short clears cut from internodes of unpruned radiata logs are increasingly gaining acceptance as a substitute for ponderosa pine clears in the US componentry market.

In summary, the growing appreciation for the intrinsic value of unpruned radiata logs provides a foundation for the base prices used in this report.

4.5 Pulpwood

Pulpwood prices remained relatively constant during the price turmoil of the mid-nineties. Prices for pulpwood will remain largely indexed to world pulp and paper prices and influenced by regional competition for supply.

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5. PROJECTED REVENUE

5.1 Log Production Costs

Log production costs are based on current contract and average operation costs. Logging costs take into account the topography of the block and the anticipated piece size. Average log production costs in $/m^3 for the 2003 plantings at Whitecliffs are estimated as follows:

Log Production Costs

Operation	Cost ($/m^3)
Logging and loading	22.50
Management	3.25
Roading and skid formation	1.50
Post-harvest costs	0.56
Total	**27.81**

Log production costs for the existing trees are expected to be similar.

5.2 Cartage Costs

Log cartage by truck is assumed. Cartage costs are based on current contract rates and set out below.

Cartage Costs

Log Grade	Destination	Distance (kms)	Cost ($/m^3)
Pruned	Te Kuiti	40	7.35
Export A grade	Mt Maunganui	158	20.57
Export K grade	Mt Maunganui	158	20.57
Domestic sawlogs	Te Kuiti	40	7.35
Pulpwood	Kinleith	115	15.75

5.3 Net Stumpage Revenue

Subtracting log production costs and cartage costs from the gross revenue realised at the price point gives the following net stumpage revenues. The assumption is made that all plantings will be harvested together. Therefore area-weighted average figures are shown.

Stumpage Revenue Forecast in the 31st year

	Total Recoverable Yield (m^3/ha)	Stumpage Revenue using Olsens Prices ($/ha)	Stumpage Revenue using MAF Prices as at Sept 2002 ($/ha)
Clearfell Age 32.6	846	50,996	47,086
Clearfell Age 27.6	723	40,294	37,501

Stumpages are expressed in dollars per fully stocked hectare. They are also sensitive to changes in net stocked area assumptions. The estimated stumpages for the earlier clearfell option in the 26th year are shown for comparative purposes only, and do not take account of the reduction in wood quality of the unpruned logs.

5.4 Conclusion

In the opinion of PF Olsen and Company Ltd, an area-weighted average stumpage revenue of $50,996 per fully stocked hectare is achievable for Whitecliffs forest in the 31st year of the project, given the assumptions and qualifications in this report.

PF Olsen and Company ltd
Forestry Consultants and Managers

6. CONSENT AND DISCLAIMERS

This report was commissioned by the Directors of Greenplan Forestry Ltd for the purpose of estimating the financial returns at maturity for Whitecliffs Forest to be included in a public prospectus. It should not be construed as an opinion on the profitability of the venture.

The projected wood volumes and stumpage revenues are based on our assessment of current costs and future revenues. This assessment of costs and revenues is not a promise or guarantee by PF Olsen and Company Ltd of actual returns which may be greater or lesser than the calculated returns due to future events beyond our control.

No promise or warranty is given pertaining to the accuracy or completeness of information supplied by Greenplan Forestry Ltd, or by third parties, except to the extent that this has been validated by PF Olsen and Company Ltd.

This report is only for the use by the entity that commissioned it and solely for the purposes stated above. Subject to provisions of Sec. 57 of the Securities Act 1978, PF Olsen and Company Ltd, and its employees, shall have no liability to any other person or entity in respect of this report, or for its use other than for the stated purpose.

PF Olsen and Company Ltd have given, and have not withdrawn before delivery of a copy of the Prospectus for registration, its written consent for distribution of the Prospectus with its report included in the form and context in which it is included herein.

PF Olsen and Company Ltd may provide consultancy services to Greenplan Forestry Ltd from time to time. However, neither PF Olsen and Company Ltd, nor any of its shareholders or directors, is presently or intends to be, a director, officer, or employee of the issuer of the prospectus.

Yours faithfully
PF OLSEN AND COMPANY LTD

Jeff Schnell
NZIF Registered Forestry Consultant

SCHEDULE 2

Audit Report

Deloitte Touche Tohmatsu

22 November 2002

The Directors
Greenplan Forestry Limited
PO Box 24
Te Kuiti
NEW ZEALAND

Dear Sirs

GREENPLAN (WHITECLIFFS 2003) FOREST PARTNERSHIP NO. 59

In accordance with the requirements of the Securities Act 1978 and Clause 38 of the Third Schedule of the Securities Regulations 1983 we report as follows:

1. We have prepared this report for inclusion in the Prospectus dated 29 November 2002 for the issue of 180 units of $7,300 each in the partnership known as Greenplan (Whitecliffs 2003) Forest Partnership No 59. The partnership is subject to the terms and conditions of the Deed of Participation forming part of the prospectus.

2. The partnership has not yet commenced business. Accordingly, no financial statements have been prepared.

3. **Issuer's Responsibilities**
The Issuer is responsible for the projections set out in sections 7.7 and 7.8 including the assumptions set out in section 7.7 on which they are based.

4. **Auditors' Responsibilities**
It is our responsibility to express an independent opinion on the projections presented by the Issuer and report our opinion as required under Clause 38 of the Third Schedule of the Securities Regulations 1983.

5. **Basis of Opinion**
We have examined the cash flow and financial performance projections set out in sections 7.7 and 7.8 including the assumptions set out in section 7.7 in accordance with New Zealand auditing standards and guidelines.

Other than in our capacity as auditors we have no relationship with or interests in the Partnership.

6. **Audit Opinion**
In our opinion:

- the projections, so far as accounting policies and calculations are concerned, have been properly compiled on the footing of the assumptions made or adopted by the Issuer set out in section 7.7 of this prospectus and are presented on a basis consistent with generally accepted accounting practice in New Zealand.

Actual results may differ from the projections since anticipated events frequently do not occur as expected and the variation may be significant.

7. Our examination of the cash flow and financial performance projections was completed on 22 November 2002 and our opinion is expressed at that date.

Yours faithfully
DELOITTE TOUCHE TOHMATSU

Deloitte Touche Tohmatsu

Chartered Accountants
Wellington, New Zealand

In terms of Regulation 7(1)(b)(ii) of the Securities Regulations 1983, we hereby give our consent to the inclusion in the above mentioned Prospectus of this report in the form in which it appears. We also confirm that we have not, before delivery of this Prospectus for registration, withdrawn our consent to the issue thereof.

SCHEDULE 3

Deed of Participation

Deed made 29 November 2002 and executed on behalf of the Partners on 2002

Parties
1 **Greenplan Forestry Limited** at Te Kuiti ("the Manager")
2 The persons whose names, addresses and occupations are set out in the Third Schedule hereto and on whose behalf the Statutory Supervisor has executed this Deed (hereinafter together with their respective executors and administrators called ("the Partners")
3 **Perpetual Trust Limited** (together with its successors and assigns called "the Statutory Supervisor")

Background
A The Partners wish to form an ordinary Partnership under the Partnership Act 1908 for the purpose of establishing and carrying on a forestry business at Te Kuiti, pursuant to a Prospectus dated 29 November 2002 and pursuant to the Forestry Right.
B The Manager has agreed to act as manager of the Partnership.
C The Manager has appointed the Statutory Supervisor to act as Statutory Supervisor pursuant to the Securities Act 1978.
D The Partners are entitled to be registered as proprietors of the Forestry Right as tenants in common in their respective shares but have requested and the Statutory Supervisor has agreed to be registered as the proprietor of the Forestry Right in trust on behalf of the Partners.
E The terms of the Partnership, the contractual relationship between the Partners and the relationship between the Partnership and the Manager are set out in this Deed.

Covenants
1 **Definitions and interpretation**
1.1 In this Deed, its Recitals and the Schedules, unless the context otherwise requires:
"Crop" means the crop established and maintained in accordance with the Plan;
"Forestry Right" means the registered Forestry Right held by the Partnership for the purposes of the Plan and granted pursuant to the Option Agreement;
"Independent Forest Auditor" means PF Olsen and Company Limited or such other person as shall be appointed Independent Forest Auditor by the Manager in accordance with Clause 14;
"Option Agreement" means the Option to Grant Forestry Right and Management Contracts entered into by the Manager on behalf of the Partnership on 29 November 2002;
"Partnership" means the Greenplan (Whitecliffs 2003) Forest Partnership No. 59 constituted by the Partners pursuant to this Deed;
"Plan" means the plan for planting, tending, maintaining, managing and harvesting Pinus radiata trees and carrying away any forest produce, set out in the Prospectus as such plan may be varied from time to time in accordance with this Deed;
"Prospectus" means the Prospectus dated 29 November 2002 issued in respect of the offer of units in the Partnership;
"Rules" and **"Rules of the Partnership"** means the rules of the Partnership set out in Schedule 1.
1.2 References to clauses and schedules are references to clauses of and schedules to this Deed respectively.
1.3 Expressions defined in the main body of this Deed bear the defined meaning in the whole of this Deed including the recitals and schedules.
1.4 Clauses and other headings are for ease of reference only and shall not be deemed to form any part of the context or to affect the interpretation of this Deed.
1.5 References to parties are references to parties in this Deed.
1.6 References to persons shall be deemed to include references to individuals, companies, corporations, firms, partnerships, joint ventures, associations, organisations, trusts, states or agencies of state, government departments and local and municipal authorities in each case whether or not having separate legal personality.
1.7 Words importing the singular number shall include the plural and vice versa.
1.8 The schedules and appendices to this Deed and the provisions and conditions contained in such schedules and appendices shall have the same effect as if set out in the body of this Deed.
2 **Formation of Partnership**
2.1 The Partners shall be parties to a Partnership known as the Greenplan (Whitecliffs 2003) Forest Partnership No. 59.
2.2 Upon allotment of a Unit to a Partner, such Partner will be deemed to have entered into a Partnership with every other Partner.
2.3 No Partner (except if the Manager is also a Partner, the Manager acting in its capacity as Manager) shall have the power or authority (express or implied) to bind the Partnership or any other Partner to act as agent, employee or servant of the Partnership or of any other Partner or to incur any obligation or otherwise pledge the credit of the Partnership or of any other Partner, except as expressly provided in this Deed.
3 **Partnership Business**
3.1 The business of the Partnership shall be:
a. to develop and carry on the business of forestry, tree farming and silviculture and to own, manage, operate, harvest, process, market and sell forests and trees of all kinds;
b. to purchase, lease, take on hire or by other means acquire any real or personal property, any rights, privileges or easements over or in respect of any such property and to sell or dispose of the same in such manner and subject to such terms and conditions as the Partnership shall deem fit;
c. to manage, develop, sell, lease or otherwise deal with or dispose of any property acquired or held by the Partnership;
d. to borrow moneys upon the security of any real and personal property or part thereof upon such terms and conditions as the Partners shall think fit for carrying out the ordinary business of the Partnership; and
e. to undertake such further or other business or operations as the Partners shall consider appropriate in all the circumstances.
4 **Duration of the Partnership**
4.1 The Partnership shall be deemed to have commenced on the date of execution of this Deed and shall be dissolved upon completion of the Plan or prior thereto in accordance with Clause 18.
5 **Rules of the Partnership**
5.1 The Rules of the Partnership means those rules set out in Schedule 1.
6 **Partnership Structure**
6.1 The Partnership shall be initially divided into 180 units of $7,300.00 each. Such initial capital shall be payable in the manner set out in the Prospectus. Each Partner shall be required to make any contributions to the capital of the Partnership required under this Deed in direct proportion to the number of units held in the Partnership.
6.2 Each Partner shall make additional contributions to the capital of the Partnership as set out in the Prospectus or otherwise as the Manager may with the consent of the Statutory Supervisor from time to time determine as being appropriate and prudent for the further development and maintenance of the Partnership business in accordance with the Plan, or necessary to preserve or promote the best interests of the Partnership.
6.3 The minimum number of units which must be subscribed for as a precondition to the allotment shall be 180. No participatory securities will be allotted until all 180 units are subscribed for. The scheme will commence when all 180 units are allotted.
6.4 No Partner shall, during the continuance of the Partnership, be entitled to withdraw or receive back all or any share of the capital of the Partnership except as expressly provided in this Deed.
6.5 The Partners shall be jointly and severally liable for all Partnership debts except if a creditor has specifically agreed otherwise. There is no limit on this liability.
6.6 Each Partner shall bear the expenses and damages incidental to the affairs of the Partnership in proportion to the number of units held by such Partner **provided that** expenses or damages attributable to the act, omission or default of a Partner (including without limitation by way of wilful destruction or fraud) shall be borne by that Partner.
6.7 Each Partner shall at all times duly and punctually pay and discharge its separate obligations including any contributions or payments in respect of the Partnership whether present or future and shall indemnify and keep indemnified the other Partners and the assets of the Partnership and all other Partners against the same and all claims, demands, expenses or action on account thereof. No Partner shall be liable for the contributions, demands or payments due by another Partner to the Manager and there shall be between the Partners and the Manager no joint liability for another Partner.

6.8 The Partnership shall have a first and paramount lien over a Partner's units in and share of the assets of the Partnership in respect of all contributions or other moneys from time to time payable by such Partner to the Partnership which for the time being remain unpaid. The lien shall extend to all profits and distributions payable in respect of any units and the Manager may deduct from any profits or distribution any contribution or other moneys payable by the holder of the units to the Partnership.

7 **Forest Right**

7.1 The Partners request and direct the Statutory Supervisor to be registered as proprietor of the Forestry Right in trust for the Partners as tenants in common in shares equal to the proportion that the number of units held by each Partner in the Partnership bears to the total number of units issued by the Partnership. Upon transfer or assignment of any unit or units in the Partnership the beneficial interest in the Forestry Right relevant thereto shall be deemed to have automatically transferred to the transferee or assignee of the unit or units in the Partnership. The Partners acknowledge that their interest in the Forestry Right shall not be capable of transfer, assignment or other disposition otherwise than in conjunction with and as a result of transfer or assignment of units in the Partnership.

7.2 The Partners delegate to the Statutory Supervisor all the powers, authorities and discretions vested in them as beneficial owners of the Forestry Right to be exercised by the Statutory Supervisor on behalf of the Partnership. This delegation shall not release the Manager or the Partners from their obligations under this Deed and the Statutory Supervisor shall not be obliged to exercise any of the powers, authorities or discretions of the Partners unless authorised by the Partners in such form as the Statutory Supervisor may require.

7.3 The Statutory Supervisor covenants and agrees with the Manager and the Partners to become registered as the proprietor of the Forestry Right in trust for the Partners as tenants in common in their respective shares and to hold all income, profits, accretion and capital arising therefrom in trust for the Partners absolutely in accordance with their respective shares. The Statutory Supervisor further agrees to sign any document, deed, lease, mortgage, pledge, encumbrance or transfer of any property of the Partnership or any part thereof at the request of the Manager. The Statutory Supervisor shall first be satisfied by the Manager that the request for a signature has been duly authorised by a properly passed resolution of the Partners in accordance with this Deed.

7.4 The Partners agree that the reason the Statutory Supervisor is to be registered as the legal owner of the Forestry Right on their behalf is purely to achieve simplification of ownership inter se. The Partners agree (with the intention of conferring an enforceable obligation for the benefit of the grantor of the Forest Right (including the successors and assigns thereof) for the purposes of the Contracts (Privity) Act 1982) that the grantor (including the successors or assigns thereof) may exercise or enforce any rights and powers under the Forest Right as against the Partners notwithstanding that the Partners are not party to the Forest Right.

7.5 The Manager covenants and agrees with the Parties and the Statutory Supervisor to advise the Statutory Supervisor immediately of any dealing with the unit or units held by any Parties in the Partnership.

7.6 The Partners shall not be entitled to require the Statutory Supervisor to individually transfer to them the legal title to their beneficial interest in the Forestry Right. The Statutory Supervisor shall be obliged however to transfer the Forestry Right to the Partners or to such person as they shall nominate in writing pursuant to the resolution of the Partners properly passed under the terms of this Deed. When the Statutory Supervisor receives such written direction it shall be entitled before signing such transfer, to obtain payment of all fees, costs and expenses to which it is entitled under this Deed and to recover all moneys expended by it on behalf of or advanced to the Partnership or the Partners. Each Partner must also discharge the Statutory Supervisor from any liability to the Partners under this Deed and indemnify it against all actions, claims, losses, suits or damages brought or charged against it for any matter arising in respect of the Forestry Right either before or after the date of signing of the said transfer. The indemnity shall not relate to any wilful or negligent act or omission of the Statutory Supervisor.

7.7 The Statutory Supervisor may upon giving to the Partners and the Partnership not less than three (3) months written notice of its intention so to do, resign and retire as trustee pursuant to clause 16.6 (without prejudice to the rights of the Partners and the Manager in respect of any breach of its duties and responsibilities prior to the date of retirement).

7.8 The Statutory Supervisor in its capacity as trustee pursuant to this clause shall be subject to no liability or obligation whatsoever other than any liability or obligation that arises as a consequence of this Deed as trustee for the Partners and the Partners shall not have any action or claim against the Statutory Supervisor (in its capacity as trustee pursuant to this clause 7) for any damages, loss, expenses or orders unless the same arises directly from a breach by the Statutory Supervisor of any of the duties and obligations set out in this Deed. The Partners jointly and severally indemnify the Statutory Supervisor and agree to hold it indemnified in respect of any action or claim for damages, losses, expenses or orders brought against the Statutory Supervisor arising from the act, neglect, default or omission of the Partners or any of them or of the Manager.

8 **Bankers**

8.1 The bankers of the Partnership shall be ANZ Banking Group (New Zealand) Limited or such other Bank as from time to time agreed by the Partnership.

8.2 All cheques, drafts and bills of exchange drawn on the Partnership shall be signed by such persons as are authorised by the Manager in writing. All Partnership moneys shall be as and when received paid into the Partnership's bank account.

9 **Auditors and Solicitors**

9.1 Unless otherwise decided by the Partners by ordinary resolution, the auditors of the Partnership shall be Deloitte Touche Tohmatsu, Chartered Accountants who shall hold office until such time as the Partnership shall by ordinary resolution appoint another qualified auditor as Auditor. The solicitors shall be KPMG Legal, Solicitors, Wellington and Auckland or such other suitably qualified solicitor or solicitors as the Partnership shall by ordinary resolution appoint.

10 **Manager**

10.1 The Partners and each of them appoint the Manager and the Manager accepts appointment as and from the date hereof to be sole manager of the Partnership. The Manager shall manage the business of the Partnership and the interests of the Partners therein and receive on behalf of the Partnership all income and profits of whatsoever nature from the Partnership business.

10.2 The Manager shall subject to any direction of the Partnership to the contrary, use its best endeavours and skill to ensure that the affairs of the Partnership are conducted in a proper and efficient manner and in accordance with the Plan and will use due diligence and vigilance in the exercise and performance of its functions, powers and duties as the Manager of the business of the Partnership but provided that the Manager performs its duties diligently and vigilantly at all times it shall in no way be liable to the Partners or any of them for any diminution in the capital of the Partnership or the income from the business of the Partnership or any other loss, costs, damages, expenses or inconvenience of any nature whatsoever which may result from any act or omission of the Manager.

10.3 Notwithstanding anything else contained in this Deed, the Manager shall not be deemed to be in breach of any of its obligations under this Deed if and to the extent that fulfilment and performance of such obligations shall be prevented or delayed by factors or events beyond the Manager's reasonable control or where performance of such obligation requires the Manager to expend funds for the business of the Partnership in circumstances where the Manager has properly called for but failed to be provided by the Partners or any of them with funds to enable the Manager to perform such obligation.

10.4 If during the term of this Deed the Manager shall be of the reasonable opinion that it may be to the commercial advantage of the Partnership to vary the Plan or that any variation of the Plan is necessary or desirable to protect the interests of the Partnership then the Manager may vary the Plan provided the Manager first (except in the case of an emergency requiring prompt action by the Manager to protect or preserve the interests of the Partnership):

a. obtains an opinion in writing from the Independent Forest Auditor that the variation to the Plan may be reasonably regarded as being to the commercial advantage of the Partnership or reasonably necessary or desirable to protect the interests of the Partnership; and

b. gives at least 30 days prior notice in writing to each of the Partners and the Statutory Supervisor of any intended variation of the Plan together with a copy of the Independent Forest Auditor's opinion in respect thereof and in the case of a variation which would increase to any material extent the likely contributions to be made by the Partners above the real value of the projected estimated contributions required to be made by the Partners as set out in the Prospectus, such variation is first sanctioned by an extraordinary resolution of the Partners.

11 **Powers of Manager**

11.1 The Manager shall have the following powers and authorities in respect of the conduct of the affairs and business of the Partnership:

a. to carry on the business for which the Partnership is established and to do or cause to be done all things and to enter into all agreements which may be necessary or desirable for such purposes;

b. to give valid and effectual receipts for all moneys coming into its hands on behalf of the Partnership or any Partner;

c. to open or otherwise operate a current account with any bank or other lending institution into which all moneys coming into its hands on behalf of the Partnership or any Partner shall be paid as soon as practicable and to make deposits and withdrawals therefrom and to sign cheques drawn on the same in respect of any expenditure authorised by these presents;

d. to enter into arrangements for profit sharing, union of interests, amalgamation, co-operation, joint venture, reciprocal concessions, licensing distribution or otherwise with any person or company carrying on or engaged in or about to carry on or engage in any business or transaction capable of being conducted so as to directly or indirectly benefit the Partnership and to take or otherwise acquire and deal in choses in action, choses in possession, shares and securities of any such company and to sell, hold, re-issue with or without guarantee or otherwise deal with the same and to grant licences and rights in and to any property of the Partnership to any such person or company;

e. subject to approval of the Partners by means of an extraordinary resolution, to borrow, raise or secure the payment of money in such manner as it shall think fit and in particular to issue notes, bonds, obligations and securities of all kinds and to frame, constitute and secure the same as may seem expedient with full power to make the same transferable by delivery or by instrument of transfer or otherwise and to charge or secure the same on the assets of the Partnership or upon any specific property and rights present and future of the Partnership or otherwise howsoever;

f. subject to the approval of the Partners by means of an extraordinary resolution to lend or advance money or give credit to any person or company and to guarantee and give guarantees for payment of money or the performance of contracts or obligations by any person or company otherwise assist any person or company;

g. to pay all rates, taxes, interest, insurance premiums, wages, legal and accounting fees and expenses and all such other outgoings, expenses, charges and costs payable in respect of the Partnership business or the Management or supervision thereof;

h. to attend and vote for and represent the Partnership at any meeting or meetings of creditors of any bankrupt or any insolvent person or under the winding up or liquidation of any company or companies or otherwise in respect of any debt or claim which the Partnership may have or in which the Partnership may be interested and to prove debts and receive compositions or dividends and to take or join in taking proceedings for having any debtor adjudicated bankrupt or for obtaining a winding up order in respect of any company, corporation, association or syndicate and for all or any of the purposes as aforesaid to sign, make and do all such notices, applications, declarations, petitions and things as the Manager may consider necessary or expedient and for any of the purposes aforesaid to appoint any person or persons as the Manager's proxy or proxies and to sign all necessary documents for such purposes;

i. for the purposes of exercising the aforesaid powers and authorities or any of them to employ such solicitors, accountants and other professional persons as the Manager shall think necessary or expedient and to pay all fees and charges in respect of such employment as are customary and reasonable for work of that nature;

j. to sign, seal, execute, deliver, give and execute in the name of any Partner any contract, agreement, memorandum or other document which may be necessary or desirable in the exercise of any of the powers or remedies conferred upon the Manager by this Deed;

k. to employ such employees, agents, advisers and contractors or other persons to perform, or assist in the performance of the Partnership business as the Manager shall deem necessary;

l. subject to the approval of the Partners by means of an extraordinary resolution to do or perform any other act, matter or thing which may seem to the Manager in its absolute discretion to be expedient in the interests of the Partnership.

12 **Obligations of Manager**

12.1 The Manager shall devote such time as is necessary to faithfully and diligently perform such duties and exercise such powers as may from time to time be assigned to or vested in it and shall use its best endeavours to promote the interests of the Partnership.

12.2 The Manager shall (in addition to the Manager's obligations under Clause 3 of the Seventh Schedule to the Securities Regulations 1983):

a. from time to time call meetings of the Partners for the purposes of discussing the affairs of the Partnership without in any way limiting the Manager's rights and duties to transact the business of the Partnership. The Manager will call a meeting of Partners as required by Rule 1(a) of the Rules of the Partnership or otherwise as the Manager believes necessary;

b. attend to the transfer of Partnership units on the request of any Partners as provided in the Rules of the Partnership;

c. supervise the collection of the Partnership's income (whether by way of contributions of capital, sales of timber, rent or otherwise);

d. cause to be paid as and when they become due and payable, all accounts of contractors and claims for wages and salaries for services rendered and shall keep any Partnership assets free from liens and encumbrances resulting from such operations save to the extent only that the same may arise from a bona fide dispute with respect thereto;

e. permit any shareholder, or any duly authorised representative of the Partners, or the Statutory Supervisor at their sole risk and expense, full and free access at all reasonable times for the purpose of inspection and observation of all operations of every kind and character being conducted by the Manager for the purpose of the Partnership;

f. market any forest produce to the best commercial advantage of the Partners;

g. in respect of all operations conducted in carrying on the business of the Partnership under this Deed effect and maintain in full force at the expense of the Partnership and for the benefit of the Partnership any and all insurances required by any applicable law as well as:

i. insurance cover for damage or destruction of the Crop by fire;

ii. insurance cover of all other Partnership assets against all usual risks;

h. compromise, settle or defend any and all claims and suits by third parties arising out of the conduct of the Partnership business to the extent not covered by insurance at the expense of the Partnership, provided that the Manager shall not pay more than the equivalent of $5,000 in settlement of any claim or suit without obtaining the approval of an ordinary resolution of the Partners;

i. provide the Independent Forest Auditor with such assistance as the Independent Forest Auditor may reasonably require;

j. cause all work required to establish, maintain, manage and harvest the Crop on the Land in accordance with the Plan to be carried out in a proper manner in accordance with recognised good forestry practices, with all reasonable skill and effort required in the circumstances, and in accordance with the terms and conditions of any applicable legislation;

k. furnish to each of the Partners, and the Statutory Supervisor at the same time as the annual financial statements referred to in Clause 15.3, an annual management report detailing progress in the Plan in a form as agreed between the Statutory Supervisor and the Manager.

12.3 Nothing in this Deed shall operate to prevent, interfere with or limit any other work the Manager may wish to perform elsewhere including work on behalf of any other forestry partnership.

13 **Manager's Remuneration**

13.1 The Manager shall be remunerated for its services at the rate of $6,300 per annum, payable in advance on the 1 April in each year commencing on 1 April 2004. No remuneration shall be payable for the period prior to that date. The Manager's remuneration may be reviewed from time to time at the request of the Manager. Any increase shall be subject to the agreement of the Partners by ordinary resolution.

14 **Independent Forest Auditor**

14.1 The Manager shall on behalf of the Partnership, engage the Independent Forest Auditor to act at such time or times as required by the Plan, as the Manager shall consider necessary or desirable or as otherwise required by ordinary resolution of the Partners as the Independent Forest Auditor to the Partnership. The Independent Forest Auditor's fees shall be for the account of the Partnership. The report of the Independent Forest Auditor shall be furnished by the Manager to each Partner and the Statutory Supervisor within thirty (30) days of receipt by the Manager.

15 **Accounting and Division of Profits**

15.1 The Manager shall at all times keep in such manner as will enable any audit to be conveniently and properly carried out, accounting records that:

a. correctly record and explain all the transactions of the Partnership;

b. will at any time enable the financial position of the Partnership to be determined with reasonable accuracy; and

c. comply with the provisions of the Companies Act 1993, the Securities Act 1978, the Financial Reporting Act 1993 and all other applicable legislation, together with all regulations made pursuant thereto.

15.2 The Manager shall produce at the end of each financial year of the Partnership financial statements as are required pursuant to the Financial Reporting Act 1993 in respect of the Partnership business. The financial statements shall be audited at least once in every year, unless the Statutory Supervisor grants the Manager written dispensation from this requirement and all Partners present at a general meeting of the Partnership in person or by proxy by

unanimous resolution agree to such dispensation. The Auditor may report directly to the Statutory Supervisor any matter or aspect of the Accounts that the Auditor believes is necessary or desirable to so report.

15.3 The Manager shall cause a copy of the audited financial statements to be furnished to the Statutory Supervisor within five (5) calendar months from the balance date. Thereafter the Manager shall cause a copy of the financial statements to be furnished to any Partner upon request by that Partner. The Manager may complete such financial statements itself or it may employ chartered accountants in public practice to keep the Partnership accounts and to prepare the financial statements and may charge the cost of doing so as an expense of the Partnership business.

15.4 The accounting records shall be kept at the office of the Manager or at such other place as the Statutory Supervisor may approve. Such records shall be kept in a written form and shall be available to any Partner, or the Statutory Supervisor, at any time, without charge to that person so requesting it.

15.5 The Manager shall distribute to the Partners from the profits of the Partnership such amounts as shall be recommended by the Manager and approved of by the Partners. The net profits of the Partnership shall be allocated pro rata in accordance with the units held by each Partner Provided That the Manager shall deduct from any share of profits available for distribution to any Partner any contribution, interest or other moneys which may be due or owing by such Partner to the Partnership. Unless otherwise approved by the Statutory Supervisor, the net profits of the Partnership shall be distributed in full in each year Provided That if there are any losses which must be carried forward to a succeeding year then such losses shall be deducted from any profits in such succeeding year.

15.6 All losses of the Partnership shall be allocated pro rata in accordance with the units held by the Partners.

16 **Statutory Supervisor**

16.1 The Statutory Supervisor shall exercise reasonable diligence to ascertain whether or not any breach of the terms of this Deed or of the offer of the units has occurred and, except where it is satisfied that the breach will not materially prejudice the interest of the Partners, shall do all such things as it is empowered to do to cause any breach of those terms to be remedied.

16.2 The Statutory Supervisor will be registered as proprietor in trust for the Partners of any land or registered Forestry Rights acquired by the Partnership in accordance with the provisions of clause 7.

16.3 The Statutory Supervisor shall be entitled to receive all notices and other communications relating to the Partnership which any Partner is entitled to receive.

16.4 The Manager shall from time to time:

a. at the request in writing of the Statutory Supervisor, make available for its inspection the whole of the accounting and other records relating to the Partnership;
b. give to the Statutory Supervisor such information as it requests with respect to all matters relating to such records; and
c. give to the Statutory Supervisor notice of any matter or circumstance that arises which may materially adversely effect the interests of the Partners or the Partnership and shall give notice of any change in the effective management or control of the Manager.

16.5 The appointment of the Statutory Supervisor under this Deed shall (subject to the provisions of the Securities Act 1978) be terminated forthwith if the Statutory Supervisor:

a. ceases to carry on business or if a liquidator or provisional liquidator is appointed (except for the purpose of amalgamation or reconstruction);
b. has a receiver or receiver and manager appointed who is not removed or withdrawn within thirty (30) days after appointment;
c. ceases to be a trustee corporation approved by the Securities Commission under Section 48 of the Securities Act to act as a trustee; or
d. is removed by extraordinary resolution of the Partners for any reason whatsoever.

16.6 The Statutory Supervisor may (subject to the provisions of the Securities Act 1978) retire upon giving three (3) months written notice to the Manager of its desire to do so.

16.7 On the termination of the Statutory Supervisor's appointment or the retirement of the Statutory Supervisor the Manager shall forthwith, subject to any approval required by law, appoint in its stead some other persons or corporation where necessary approved by the Securities Commission.

16.8 The new Statutory Supervisor shall execute a deed of undertaking to the Manager and the Partners to be bound by all the obligations of the Statutory Supervisor as from the date of the appointment and thereafter the new Statutory Supervisor will be entitled to exercise all the powers and shall be subject to all the duties and obligations of the Statutory Supervisor as though the new Statutory Supervisor had been originally named as a party to this Deed. The removed or retiring Statutory Supervisor shall from such date be released from complying with the obligations under this Deed but remains liable for any antecedent breach thereof.

16.9 The Statutory Supervisor may be released from liability where the Statutory Supervisor has failed to show the degree of care and diligence required either with respect to specific prior acts or omissions or on the Statutory Supervisor ceasing to act, but only where such release is given pursuant to an extraordinary resolution of the Partners.

16.10 The remuneration for the Statutory Supervisor shall be such amount or rate as may from time to time be agreed between the Statutory Supervisor and the Manager. The Statutory Supervisor shall also be reimbursed by the Partnership all reasonable costs and expenses (including legal and accounting costs and expenses) incurred by the Statutory Supervisor in carrying out its duties under these presents.

16.11 The Statutory Supervisor may from time to time hold funds pursuant to this deed as trustee for and on behalf of one or more Partners. The Statutory Supervisor shall invest such funds in such manner as it thinks fit and shall account to the Partner or Partners on whose behalf such funds are held for any income accrued on such investment Provided That:

a. in making any such investment, the Statutory Supervisor shall exercise the care, diligence and skill required of a trustee pursuant to Section 13C of the Trustee Act 1956;
b. for the purpose of this clause, the Statutory Supervisor shall not be deemed to have breached such standard of care, diligence and skill by reason only of investing the whole of such funds in one or more "Registered Banks" (as that term is defined in the Reserve Bank of New Zealand Act 1989);
c. notwithstanding anything to the contrary contained elsewhere in this Agreement, the Trustee Act 1956 or otherwise, the Statutory Supervisor shall be entitled (subject to being satisfied in accordance with its duty under paragraph a. above as to the available security for any such advance) to invest such funds by advancing the same to any member of the Partnership, the Manager, any person involved in the promotion of the Partnership or any related company or relative (as defined in Section 2(1) of the Companies Act 1993) of any such person.

17 **Securities Register**

17.1 The Manager shall maintain or cause to be maintained a register of units issued by the Partnership in accordance with Section 51 of the Securities Act 1978 and shall issue to each Partner entered in the register a certificate in respect of the units held in the Partnership in accordance with Section 54 of the Securities Act 1978.

17.2 The Auditor shall, in conjunction with and at the time of the audit of the Partnership prepare financial statements in accordance with Clause 15.2, inspect and audit the securities register and may report directly to the Statutory Supervisor any matter or aspect of the securities register or its operation that the Auditor believes is necessary or desirable to so report, including without limitation, any failure by the Manager to comply with the provisions of the Securities Act 1978 in respect of the securities register.

18 **Dissolution of Partnership**

18.1 No one Partner or combination of Partners shall have the right or power to call for or effect a dissolution of the Partnership unless the Partners pass an extraordinary resolution of the Partners that the Partnership shall be dissolved.

18.2 Without derogating from Clause 18.1 of this Deed, the Partnership shall be dissolved upon the sooner to occur of:

a. the passing of an extraordinary resolution of the Partners that the Partnership be dissolved;
b. the completion of the Plan.

18.3 The death, bankruptcy, liquidation or insanity of any Partner or the transfer of any share in the Partnership shall not dissolve the Partnership and the Partnership shall continue in existence between the Partners and the person or persons acceding to the interest of the such deceased, bankrupt, liquidated or insane Partner (any rule of law or equity notwithstanding) upon the terms embodied in this Deed.

18.4 In the event of the Partnership being dissolved, then the Manager shall, as soon as practicable after the date of dissolution, cause a full and general account to be taken of all assets, credits, debts and liabilities of the Partnership and shall, in accordance with any resolution of the Partners in that regard, proceed as soon as practicable, to realise and dispose of the assets of the Partnership and shall from the proceeds thereof discharge or satisfy debts and liabilities of the Partnership and the expenses of the dissolution and realisation of the assets of the Partnership.

18.5 Upon completion of the realisation of the assets of the Partnership, payment of the expenses thereof and the discharge or satisfaction of the debts and liabilities of the Partnership, the Manager shall cause final accounts of the Partnership business to be drawn up, which accounts shall be audited by the Auditor. The Manager shall furnish each Partner and the Statutory Supervisor with a copy of the audited accounts and each of the Partners shall be entitled to receive such share of the unpaid profits of the Partnership and the net assets of the Partnership shown in such

accounts as is equal to that Partner's proportion of the units issued in the Partnership.

19 **Removal of Manager/Retirement of Manager**

19.1 The provisions relating to the removal or retirement of the Manager are more particularly set out in Schedule 1 (Rule 5).

20 **Statutory Provisions**

20.1 In the event of any conflict between the statutory provisions of the Seventh Schedule to the Securities Regulations 1983 and this Deed then the Statutory provisions shall prevail.

21 **Amendment of Deed**

21.1 The Statutory Supervisor may, on behalf of the Partners, concur with the Manager in making any alteration, modification, variation or addition ("the Change") to this Deed in the following cases, namely:

a. if in the opinion of the Statutory Supervisor the Change is made to correct a manifest error or is of a formal or technical nature or is convenient and is not prejudicial to the general interests of the Partners; or
b. if the same is authorised by an extraordinary resolution of the Partners; or
c. if the Statutory Supervisor is of the opinion that such Change is clearly not, or is clearly not likely to become, prejudicial to the general interests of the Partners; or
d. if the same is required to comply with the provisions of any statute or statutory regulation.

21.2 Any Change to the Deed shall be recorded in a Deed of Modification of this Deed. The Statutory Supervisor shall be authorised to sign any such Deed of Modification on behalf of each of the Partners.

21.3 This Deed may be altered, modified, added to or varied if the Statutory Supervisor and the Partners agree and the same is authorised by an ordinary resolution of the Partners, or if the same is required to comply with the provisions of the Securities Act 1978 or regulations thereunder.

22 **Indemnity of Statutory Supervisor**

22.1 The Statutory Supervisor and its respective agents, advisers and consultants shall be indemnified out of the assets of the Partnership against all liabilities, claims, costs and expenses incurred by any of them in relation to any act, omission or advice made or given by them or any one of them for the purposes and in connection with the business of the Partnership other than acts, omissions or advice made or given in a grossly negligent or fraudulent manner and giving rise to such liabilities, claims, costs and expenses.

23 **Binding Nature of Deed**

23.1 Notwithstanding that this Deed has not been signed by the Partners it is nevertheless binding on those Partners as if they themselves had executed the Deed.

24 **Arbitration**

24.1 All disputes and questions which shall either during the continuance of the Partnership or afterwards arise between any of the Partners and the Statutory Supervisor and the Manager touching upon this Deed or a constructural application of this Deed or as to any matter in any way relating to the Partnership business shall be referred to a single arbitrator agreed to by the parties and failing agreement to a single arbitrator nominated by the President for the time being of the Waikato Bay of Plenty District Law Society and any such arbitration shall be in accordance with the Arbitration Act 1996 or any Act amending or passed in substitution therefore.

25 **Confidentiality**

25.1 Each Partner shall treat the business of the Partnership as strictly confidential.

26 **Notices**

26.1 Any notice hereunder shall be properly served if it is posted by prepaid mail or by personal delivery, in the case of:

a. the Manager, if such notice is addressed to the Manager at 57 Te Kumi Road (PO Box 24), Te Kuiti or such other address as shall from time to time be notified by the Manager to the Statutory Supervisor and the Partners;
b. any Partner, addressed to such Partner at the address recorded in the securities register of the Partnership;
c. the Statutory Supervisor, if such notice is addressed to the Statutory Supervisor 233 Cambridge Terrace, (PO Box 112), Christchurch.

Any notice served in accordance with this clause shall be deemed to be served on the third day following posting or on the day of actual delivery if delivered personally.

Execution

Signed for and on behalf of
Perpetual Trust Limited
for and on behalf of each
of the persons listed in the
Third Schedule hereto as
their duly authorised attorney by:

In the presence of:

Signed for and on behalf of
Greenplan Forestry Limited
by two directors:

Signed for and on behalf of
Perpetual Trust Limited
by:

In the presence of:

Schedule 1

1 **Meetings**

1.1 Rules relating to meetings and the conduct thereof are as follows:

a. The Manager shall summon a meeting of Partners if upon requested in writing by the Statutory Supervisor (or its representative) or one tenth ($1/10^{th}$) in number of the Partners or of a Partner or Partners holding not less than one tenth ($1/10^{th}$) of the units of the Partnership. The Manager may summon a meeting at any time at its own initiative, and shall summon such meetings as otherwise required by law.
b. The Manager, the Statutory Supervisor, the Auditor and each Partner shall be entitled to receive notice of each meeting of the Partnership and may attend such meetings (either in person or by representative) and speak but only Partners may vote.
c. A person elected by the Partners shall preside as chairperson at every meeting. A person nominated by the Statutory Supervisor shall preside as chairperson until a person is elected by the Partners.
d. Any Partner may be represented by a proxy. Such proxy need not be a Partner and may be the Statutory Supervisor, the Manager or any officer or representative of either of them.
e. Each Partner shall have one vote for every unit held by him or her or it (or his or her or its predecessor in title). All decisions relating to the Partnership shall be by ordinary resolution except where an extraordinary resolution is expressly required. Equality of voting shall result in the resolution being deemed lost. The chairperson shall have a vote if she or he is a Partner, but not a casting vote. An extraordinary resolution shall be carried if three-quarters of the votes cast (in person or by proxy) are in favour of the resolution.
f. A resolution in writing signed or assented to by letter, telegram, facsimile or any other electronic written communication or printed message by, in the case of an ordinary resolution, one half, and in the case of an extraordinary resolution, three quarters of the Partners entitled to vote at a meeting of the Partnership shall be deemed to have been passed as if it had been passed at a duly constituted meeting of the Partnership. For the purposes of this Rule 1.
If, two or more separate documents in identical or substantially similar form signed by one or more Partners are together deemed to constitute one document containing a statement in those terms signed by those Partners on the respective dates on which the separate documents are signed or otherwise assented to. A letter, telegram, facsimile or other electronic written communication or printed message shall be adequate and conclusive proof of such assent.
g. No business shall be transacted without a quorum. Subject to the provisions of Rule 1.1h.ii, a quorum shall be not less than one third of all Partners in number (including those persons holding proxies) holding in the aggregate at least one third of the units of the Partnership.
h. If within a quarter of an hour from the time appointed for the meeting a quorum is not present the meeting shall (at the election of the Manager) either:
   i. be dissolved; or
   ii. stand adjourned to such day and time not being less than fourteen (14) days thereafter and to such place as may be appointed by the Chairperson and at such adjourned meeting the Partners present (in person or by proxy) and entitled to vote whatever the number of units held by them shall be a quorum. Notice of any such adjourned meeting shall be given in the same manner (except in respect of the period of notice) as of an original meeting and such notice shall state that the Partners present at the adjourned meeting whatever their number and whatever the number of units held by them shall form a quorum. Any proxy shall, unless the contrary is stated thereon be as valid for any adjournment of the meeting as for the meeting to which it relates.
i. Where any unit in the Partnership is held by more than one participant whether jointly or as tenants in common then in such instances such participants shall between them have only one vote for each unit as aforesaid held by such

participant or by their predecessor in title and it is further agreed and declared that any participant so holding a unit share jointly or as tenants in common shall be entitled to one proxy only pursuant to the provisions hereof and that in the event of two proxies being present at any meeting of the Partnership the Statutory Supervisor or his representative shall have the discretion as to which proxy it will acknowledge and accept as valid to represent the participant holding any unit jointly inter se or as tenants in common and it is further agreed and declared that in ascertaining whether a quorum of Partners is present account will be taken only of one person representing the joint owners of any unit as aforesaid.

j. The Manager shall cause to be kept a minute book wherein shall be recorded the minutes and resolutions of each meeting.

k. At any meeting a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is demanded by the Chairperson or by any Partner present in person or by proxy.

l. Entry of a resolution in the minute book shall be conclusive evidence of the fact without proof of the number of votes recorded in favour of or against the resolution.

m. If a poll is duly demanded or required, it shall be taken in such a manner as the chairperson directs and the result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.

n. Any resolution of the Partnership passed at a duly constituted meeting and/or otherwise in accordance with these rules shall be final and binding on all Partners and the Manager whether present at the meeting or not.

o. The common law rules concerning "fraud on a minority" applicable to companies shall apply equally hereto and a resolution of the Partnership shall be invalid if it constitutes a fraud on those Partners who oppose the resolution.

p. All meetings shall be called by sending written notice to that effect to the address for service of each Partner. Except where the Statutory Supervisor considers it to be contrary to the interests of the Partnership, such notice shall be sent so as to give each Partner at least fourteen (14) days notice of the meeting. The notice shall contain particulars of all business to be transacted or considered at the meeting and failure to mention any matter of business in the said notice shall invalidate any resolution passed in respect of that matter at the meeting as advertised unless the Partners present or represented by proxy shall by memorandum endorsed on such resolution determine unanimously to the contrary in writing. Meetings shall be held at the offices of the Manager, or at such other place as:

   i. the Partners shall determine by ordinary resolution; or
   ii. in the absence of an ordinary resolution of the Partnership, such other place as the Manager may determine.

2 **Transfer and Transmission of Shares in Partnership**

2.1 A Partner may sell or otherwise dispose of any unit or units in the Partnership held by that Partner.

2.2 Upon transfer or other disposition of any unit or units in the Partnership, the transferor shall also transfer or assign and shall be deemed to have transferred and assigned to the transferee all the assignor's right, title or interest in the assets of the Partnership relating to that unit or units including, without limitation, the relevant interest in the Forestry Right.

3 **Deed of Assignment and Covenant**

3.1 Any new Partner shall execute a Deed of Assignment and Covenant in the form set out in Schedule 2.

3.2 The Manager shall upon:

   a. execution and delivery to the Manager of the Deed of Assignment together with the certificate issued in respect of the units; and
   b. payment of a fee of $100 or such lesser sum as the Manager may prescribe;

enters the new Partners interest in the Partnership's securities register.

3.3 From the date of such registrations the new Partner shall be entitled to a share in the net profit or be obliged to contribute to the losses.

3.4 Any interest acquired by a new Partner shall be taken subject to all existing liabilities of the Partnership arising in whatsoever manner.

4 **Forfeiture of Units**

4.1 If a Partner ("Defaulting Partner") fails to pay any moneys due from him, her or it to the Partnership on the day specified for payment, the Manager (on behalf of the remaining Partners) may serve a notice on the Defaulting Partner requiring payment of the unpaid moneys, together with interest thereon, calculated daily at the rate determined by the Manager being a rate not exceeding 4% per annum above the interest rate which is or would be charged to the Partnership by its bank on current overdraft terms, and any expenses that may have been incurred by the Company by reason of such non-payment.

4.2 The notice shall specify a further day (not earlier than the expiration of fourteen days from the date of service of the notice) on or before which the payment required by the notice is to be made. The notice shall also state that in the event that payment in full is not made by the time appointed the shares in respect of which the call was made will be liable to be forfeited.

4.3 If full payment is not made by the time appointment in any notice under Rule 4.2 the Manager may, at any time thereafter, declare (on behalf of the remaining Partners) the units in the Partnership capital in respect of which the notice has been given to be forfeited. Such forfeiture shall include all Profits and distributions payable in respect of the forfeited units and all the assets of the Partnership relating to those units (including, without limitation the relevant interest in the Forest Right).

4.4 Any units so forfeited and all the assets of the Partnership relating to that unit (including without limitation the relevant interest in the Forest Right) shall be deemed to be the property of the remaining Partners and may be sold, re-issued, or otherwise disposed of in such manner, on such terms and for such consideration as the Manager in its absolute discretion thinks fit. The Manager may, at any time before such share is disposed of, annul the forfeiture upon such terms and for such considerations as it may approve.

4.5 A person whose units have been forfeited shall cease to be a Partner in respect of the forfeited units, but shall remain liable to pay to the Partnership all money which at the date of forfeiture was payable by the Defaulting Partner to the Partnership in respect of the units. The Defaulting Partner's liability shall cease if and when the Partnership receives payment in full of all such money in respect of the units.

4.6 On the forfeiture of any unit, the Manager shall:

   a. Cause a note of such forfeiture and the date thereof to be entered in the partnership register;
   b. Cause notice of such forfeiture and the date of forfeiture to be given to the Defaulting Partner in whose name it stood immediately prior to the forfeiture; and
   c. Upon the disposal of any forfeited share cause a note of the manner and date of such disposal to be similarly entered and given.

4.7 An entry in the partnership register that a unit has been forfeited on a date stated in the partnership register shall be conclusive evidence of the facts stated in the partnership register as against all persons claiming to be entitled to the unit. The Manager, on behalf of the remaining Partners, may execute a transfer, or assignment of the unit in favour of the person to whom the unit is sold or disposed of, and may receive the consideration from such disposal or sale. In the case of a reissue, the person to whom the unit shall have been reissued, and in the case of a sale or other disposition, the person or persons to whom the unit shall be sold or disposed of, shall:

   a. Be entered in the partnership's register as the holder of the unit; and
   b. Shall not be bound to see to the application of the purchase money;

and nor shall such person's title to the unit or to the property of the Partnership relating to that unit (including, without limitation the relevant interest in the Forest Right) be affected by any irregularity or invalidity in the proceedings in reference to the forfeiture, reissue, sale or other disposal of the unit.

4.8 Any surplus moneys (if any) resulting from sale, reissue or other disposal of forfeited units after deduction of all moneys owing, all interest accrued, all expenses incurred by reason of the non-payment which gave rise to the forfeiture and all costs and expenses of sale, reissue or disposal shall be paid to the Defaulting Partner or that Defaulting Partner's executors, administrators or assigns.

5 **Retirement of Manager**

5.1 The Manager shall cease to be the Manager of the Partnership if the Manager resigns from office by giving not less than six months (or such shorter period as the Manager and Statutory Supervisor shall agree) notice in writing to that effect to each Partner and the Statutory Supervisor.

5.2 The Statutory Supervisor shall also have the right to remove the Manager by notice in writing if:

   a. the Manager is in breach of its obligations under the Deed or fails to carry out its duties to the reasonable satisfaction of the Statutory Supervisor and fails to remedy such breach, failure or neglect within 28 days after the service of a written notice on it by the Statutory Supervisor requiring the breach to be remedied; or
   b. a liquidator or provisional liquidator of the Manager is appointed or if the Manager is adjudicated bankrupt, enters into a scheme of arrangement (except for the purposes of amalgamation or reconstruction or some similar purpose) or ceases to carry on business;

   c. a receiver or manager of the undertakings of the Manager or any part thereof is appointed and has not been removed or withdrawn within 30 days after appointment; or
   d. there is a change in the effective management or control of the Manager without the prior written consent of the Statutory Supervisor.

5.3 The Manager shall cease to be the Manager of the Partnership by the passing of an extraordinary resolution to that effect at a meeting convened and conducted in accordance with the rules.

5.4 Such removal of the Manager shall take effect contemporaneously with the appointment by the Partners (pursuant to an ordinary resolution at a meeting convened and conducted in accordance with the Rules) of a new manager.

5.5 Upon the removal of the Manager the Partnership shall not dissolve (any rule of law or equity notwithstanding) and the new manager shall covenant to observe and perform all and singular the covenants herein contained on the part of the Manager to be observed and performed under these presents and thereafter the new manager will be entitled to exercise all powers of the Manager and shall be subject to all the duties and obligations of the Manager contained in these presents.

5.6 If on the removal of the Manager the Partners shall fail contemporaneously to appoint a new Manager the Statutory Supervisor shall be entitled to appoint a new manager of the Partnership by notice in writing entered in the Minute Book of the Partnership.

Schedule 2

This Schedule is an example of the Document to be used in the event of a transfer of a Partnership units from a retiring Partner to an incoming Partner.

(Deed of Assignment and Covenant)

Deed dated

Parties

1 [ ] (hereinafter called "the Vendor")
2 [ ] (hereinafter with its executors and administrators and permitted assigns called "the Purchaser")

Background

A The Vendor is a Partner in the Partnership known as the Greenplan (Whitecliffs 2003) Forest Partnership No. 59 (hereinafter called "the Partnership") pursuant to and under and by virtue of the Deed of Participation dated 29 November 2002 ("Deed of Participation").

B The Vendor is the registered proprietor of [ ] units in the Partnership.

C The Vendor is desirous of transferring to the Purchaser such units for consideration hereinafter appearing.

D The Statutory Supervisor (as that term is defined in the Deed of Participation) is registered proprietor of the Forestry Right (as that term is defined in the Deed of Participation) as trustee for the members of the Partnership pursuant to Clause 7 of the Deed of Participation.

Covenants

1 In consideration of the sum of $[ ] paid to the Vendor by the Purchaser (the receipt whereof is hereby acknowledged) the Vendor transfers to the Purchaser all his, her or its right, title, estate and interest as the registered proprietor of [ ] units in the Partnership together with the Vendor's right, title and interest in all the assets of the Partnership relating thereto including, without limitation, the Vendor's interest in the Forestry Right (as that term is defined in the Deed of Participation) and the Vendor covenants with the Purchaser that she, he or it has up to the date hereof paid all moneys and observed and performed all covenants, conditions and agreements contained and implied in the Deed of Participation and will keep indemnified the Purchaser from all actions, claims and demands under the Deed of Participation and the Purchaser covenants with the Partners, the Manager and the Statutory Supervisor that he or she or it will at all times and in the manner therein described be bound by and observe, perform and keep all the covenants, conditions and agreements contained and implied in the Deed of Participation and covenants as if he, she or it had been an original signatory thereto. The Purchaser acknowledges that:

   a. he, she or it is jointly and severally liable for all debts and liabilities of the Partnership (howsoever or whensoever arising or incurred) and that there is no limit on that liability; and
   b. that the units transferred to the Purchaser are taken subject to all existing liabilities of the Partnership.

2 The Purchaser ratifies and confirms all the powers and authorities conferred upon the Manager (as that term is defined in the Deed of Participation) of the Partnership pursuant to the Deed of Participation and all acts, matters and things done by the Manager pursuant to or in exercise of those powers and authorities prior to the date hereof. The Purchaser appoints the Statutory Supervisor (as that term is defined in the Deed of Participation) to be his/her or its true and lawful attorney (hereinafter referred to as "Attorney") to act on behalf of the Purchaser to execute or cause to be executed in the Purchaser's name and on the Purchaser's behalf, any deed, document or writing necessary to effect or complete the transfer of the units in the Partnership to the Purchaser or to transfer any interest or right to any asset of the Partnership, or to assume any existing liability of the Partnership as the Attorney may think proper and expedient and which the Purchaser could lawfully do or cause to be done if acting personally and declares that no person or corporation dealing with the Attorney shall be concerned to see or enquire as to the propriety or expediency of any act, deed or matter which the Attorney may do or purport to agree to do or perform in the Purchaser's name by virtue of this deed and the Purchaser agrees to ratify and confirm any such act, deed or matter.

Execution

Signed by the said

as Vendor in the presence of:

Signed by the said

as Purchaser in the presence of:

Schedule 3

The Persons who are to be party to this Deed are:

Name Address Occupation No. of Participatory Securities

GREENPLAN
FORESTRY LIMITED

PROSPECTUS
for

Greenplan (Centurion 2000) Forest Partnership No. 45

(For the purposes of the Securities Act 1978)

Dated 15 October 1999

Table of Contents

* Third Schedule of the Securities Regulations 1983

REGISTERED PROSPECTUS

A signed copy of this Prospectus, together with copies of the documents required by Section 41 of the Securities Act 1978, being the Auditor's Report, the Forestry Consultant's Report (with their respective consents appearing in this Prospectus), and the material contracts (as specified in section 15) were delivered for registration at the District Registrar of Companies at 47 Boulcott Street, Wellington on 15 October 1999 ("Prospectus Date").

This prospectus complies with the Forestry Investment Information Standard issued by the New Zealand Institute of Forestry Inc.

General Matters

1 Main terms of the Offer

1.1 The Offeror and Issuer is Greenplan Forestry Limited ("Manager") whose registered office is at 57 Te Kumi Road, Te Kuiti.

1.2 The Manager offers participation in a Partnership, to be called Greenplan (Centurion 2000) Forest Partnership No. 45. The Partnership will have an initial capital of 135 participatory securities ("units"), each having a nominal value of $500, offered in minimum parcels of one unit.

1.3 The Partnership will accordingly have a maximum of 135 Partners. Partners may, however, subscribe for as many participatory securities as they wish.

1.4 All these participatory securities are offered for subscription and are fully paid as to $500 per security. Immediately upon allotment of the participatory securities, an additional capital contribution of $6,000 per unit will be payable, resulting in a total initial payment of $6,500 per unit. The initial payment is due on allotment of the participatory securities and shall be paid as and at the times prescribed by the Manager.

2 Manager and Advisors

2.1 The Manager is:

Greenplan Forestry Limited
57 Te Kumi Road
PO Box 24
Te Kuiti

2.2 The Directors of the Manager and their professional qualifications are:

John Richard Barton
Dip V.F.M.
Te Kuiti
Managing Director

Matthew Louis Barton
BBS (Pty Mgmt & Valn)
Te Kuiti
Manager

Bruce Andrew Maunsell BBS
Te Kuiti
Manager

Simon John McArley LL.B(Hons)
Wellington

All the Directors can be contacted at 57 Te Kumi Road (PO Box 24) Te Kuiti.

2.3 Neither the Manager, nor any of its directors have been adjudicated bankrupt at any time (including within the past 5 years).

2.4 The names of the auditors, bankers, solicitors and securities registrar are:

Auditors:	Deloitte Touche Tohmatsu, Wellington
Solicitors	Kensington Swan, Wellington
Bankers:	ANZ Banking Group (New Zealand) Limited, Te Kuiti
Securities Registrar:	Kidd Falconer & Co, Te Kuiti

2.5 The forest consultants/auditors are:

Jaakko Pöyry Consulting (Asia Pacific) Limited
4 Kingsford Smith Place
PO Box 73-141
Mangere
Auckland

3 Statutory Supervisor

3.1 The Statutory Supervisor is Perpetual Trust Limited.

3.2 The Statutory Supervisor does not guarantee the repayment of the securities to which this Prospectus relates nor the payment of interest on the securities, nor the payment of any amount payable in future in respect of the securities whether by way of profits or otherwise. The Statutory Supervisor is appointed in accordance with the provisions of the Securities Act 1978 and its duties are more particularly set out in the Deed of Participation annexed to this Prospectus. Except in so far as this Prospectus refers to the rights, powers, responsibilities and duties of the Statutory Supervisor, the Statutory Supervisor accepts no responsibility for statements made in this Prospectus or the merits of any investment in the participatory securities offered by this Prospectus. The Statutory Supervisor and its advisers take no responsibility for any statement herein as to the prospects of the venture or any statement made as to legal or taxation ramifications of investment in the securities offered.

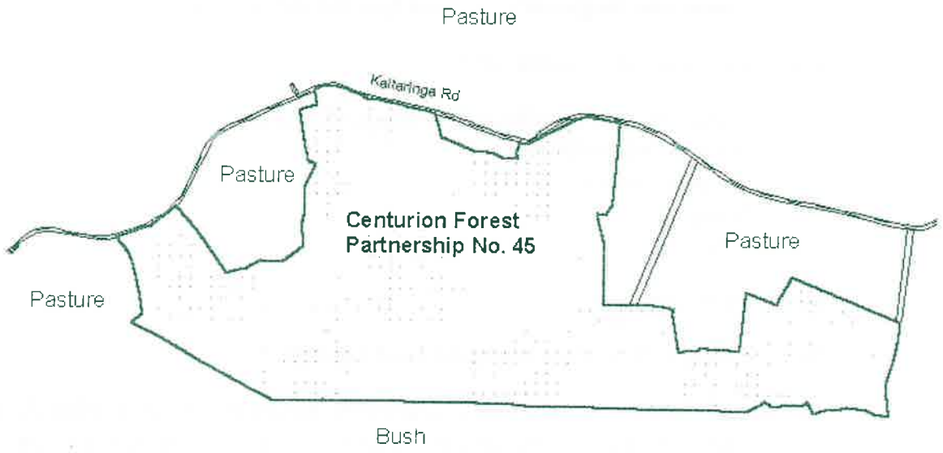
3.3 Allotment shall not take place until the Statutory Supervisor receives written confirmation from the Manager that the Securities Registrar holds application forms from investors representing the minimum subscription, such forms authorising allotment of participatory securities to such subscribers and the Statutory Supervisor is satisfied that subscription moneys in respect of such applications have, or will be paid in terms of this Prospectus.

3.4 All application forms are to be completed in a form and content satisfactory to the Statutory Supervisor. All application moneys are to be deposited with the Statutory Supervisor until the minimum subscription is met following which funds will be released as required in accordance with the scheme.

3.5 The Statutory Supervisor takes no part in management of the scheme. It will receive reports including annual financial statements from the Manager and may convene meetings of Partners to obtain their directions.

4 Description of the scheme and development thereof

4.1 **The Forest Right**: The Partnership will obtain an individual Forestry Right over approximately 142 ha of land, which will be registered in terms of the Forestry Rights Registration Act 1983 against the relevant title. The division of the land area is shown in the plan below.



The Forestry Right will entitle the Partnership to plant, maintain and harvest the land area for a maximum term of 40 years. The land comprises approximately 142 hectares situated near Piopio on the Kaitaringa Road approximately 32 km south west of Te Kuiti and is approximately 150 km from the Port of New Plymouth. The property is 112 km from Carter Holt Harvey Forestry Limited's pulp mill at Tokoroa. The property has good access to New Plymouth's port, to major processing facilities in the central North Island and to local mills in the King Country or on its eastern boundary.

The land is clean hill country with no buildings, yards or other improvements to remove. The majority of the land area has access tracks in place. The land experiences an almost complete absence of summer droughts and its medium fertility soils are well suited to forestry. 135 hectares of the land is suitable for planting.

It is proposed to plant 135 hectares of the land in July to August 2000.

The Forestry Right will rank in priority to all other registered charges that affect the land.

In return for the granting of the Forestry Right, the Land Owner will receive the right to 10% of the harvested crop, without contribution to the planting, development or maintenance costs. The Land Owner will for the first eight years of the term of the Forestry Right, meet all rates, taxes and assessments charged upon the land not directly attributable to the presence of the forest. The Land Owner also bears a pro rata share of harvest costs.

The Forestry Right will be terminable by the Land Owner only if the Partnership fails to plant or ceases to maintain and develop the forestry venture in the manner envisaged by this Prospectus.

A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.

4.2 **The Management Contract**: The majority of the forestry development will take place in the initial eight years of the scheme (2000 - 2008) (see section 4.4). The Manager has arranged for the Land Owner to contract with the Partnership to provide to it either directly or by way of sub-contracts all of the services that it is anticipated the Partnership will require in this period to develop and maintain its forest. This includes:

- all planting, establishment and forestry maintenance (as described in the Forest Management Plan at sections 4.4(b) to (j))
- forest fire insurance
- annual accounting services
- forest supervision and routine maintenance
- forest audits in years 2 and 8

A single fee of $472,500 ($3,500 per unit) by the Partnership is payable to achieve this and is included within the initial $6,500 per unit payment. It is not anticipated that any further amounts will be sought from the members of the Partnership during this period to meet these costs. The risk of cost escalations, caused by inflation or poor budgeting is borne by the Land Owner.

In the event of the Partnership requiring as a result of unforeseen circumstances, services additional to those covered by the Management Contract, the cost of these services will be borne by the Partners. However, all works described in the Forest Management Plan set out in section 4.4(b) to (k) are covered by the Management Contract.

The Partners will bear the remainder of the Partnership's administrative costs. It is anticipated that an annual payment of $8,100 per annum (or $60 per unit) will meet this.

The Management Contract requires that the Land Owner sub-contract the forest development and management to a forest manager ("Forest Manager") approved by the Manager. The initial Forest Manager will be GFM Limited. The appointment of the Forest Manager can be varied at any time by the Land Owner (with the consent of the Manager). The appointment is reviewed annually. A description of the Forest Management Agreement is set out in section 4.3.

The Management Contract also requires the Partnership to advance to the Land Owner $378,000 ($2,800 per unit). This advance will be repayable upon harvest of the forest at maturity and will not bear interest. The Land Owner will charge its 10% interest in the forest to the Partnership as security for repayment of this Advance.

The Management Contract will be terminable upon default by the Land Owner or the Partnership or by agreement between the Partnership and the Manager.

Upon termination of the Management Contract all sub-contracts arranged by the Manager including the Forest Management Agreement, will be transferred to the Partnership. Subsequent management will then be arranged by the Partnership and the Manager Greenplan on terms to be agreed at that time.

The Partnership bears the risk that the Land Owner may be unable to perform, or may default in performance of, its obligations under the Management Contract, in particular to meet cost overruns. However, to ensure the Land Owner's performance of its obligations under the Management Contract, the Land Owner has charged its 10% interest in the forestry development to the Partnership.

To further secure the Land Owner's performance of its obligations it will deposit with the Statutory Supervisor a deposit of a sum not less than the amount of the projected expenditure required to complete the services set out in the Management Contract. The deposit will be released to the Land Owner as it completes the services. The deposit will be held and invested by the Statutory Supervisor in accordance with the Management Contract. Interest accrued will be paid to the Land Owner. The deposit will be available to the Partnership to meet the costs of services not completed by the Land Owner as required by the Management Contract.

4.3 **The Forest Management Agreement**: The Land Owner's Management Contract requires that the Land Owner contract with a Forest Manager approved by the Manager, for performance of the forestry development and maintenance. The form of the Management Contract to be entered into between the Land Owner and the Forest Manager is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.

The Forest Management Agreement provides for annual work programs to be prepared, and for setting and agreeing of costs and work. Agreement as to the annual work programme cannot be made by the Land Owner without consultation with the Manager. The Forest Management Agreement also provides for preparation of annual Status Reports which will be made available to the Partners. The Forest Management Agreement is reviewed annually and can be terminated upon the giving of six months' notice prior to the annual anniversary date.

The Forest Management Agreement requires the Forest Manager to register and complete Stand Certification requirements and to hold public liability insurance.

The Land Owner is liable in accordance with its Management Contract, for all amounts payable to the Forest Manager for performance of the work set out in the Forest Management Plan in the first eight year period.

4.4 **Forest Management Plan**:

(a) **Management Objectives**: The management objective is to grow and market a forest crop so as to maximise the economic return on the venture to the Partners of the Partnership.

(b) **Land Preparation**: The Land to be planted is grazed pasture which will require little preparation. Patches of manuka and punga will be removed over the autumn of July to August 2000 at the Land Owner's expense prior to granting the forestry right.

(c) **Establishment**: Genetically improved Pinus Radiata cuttings of G.F.30 ranking will be planted at an average initial stocking of 740 stems per hectare on 135 hectares of the land resulting in a total planting of approximately 99,900 stems on the land subject to the Forest Right. Planting will be in rows 4 metres apart, with trees 3 metres apart in each row. A variation in stocking rate of between 700 and 850 stems per hectare will be accepted.

(d) **Releasing**: To prevent grass growing close to the young trees, a controlled dose of herbicide will be applied around each tree in the spring following planting. A second release will be carried out before year 2 on up to 10% of the area if necessary, as determined by the Forest Manager.

(e) **Remedial Stability Pruning:** Remedial stability pruning may be required to remedy damage caused by an unusually strong wind event and will be completed once only prior to year 4, if and where determined necessary by the Forest Manager and up to a limit of $9,000.

(f) **Thinning and Pruning**: The object of thinning is to reduce competition between trees by removing poor trees and maximising the size and yield of the remaining better trees. Thinning will be carried out between year 4 and year 8 as determined by STANDPAK analysis. Stocking will be reduced to 320 stems per planted hectare. The object of pruning is to remove side branches as early as possible so as to reduce the size of knotty core. All the wood produced outside this core will be knot free and have a high-grade and high priced end usage. Between age 4 and 8, pruning will be done in three stages aimed at a minimum of 6.2 metres of clear stems. To ensure that the knotty core diameter is as small as possible, timing of all pruning operations will be closely controlled, based on assessment figures taken before each lift.

(g) **Fertiliser**: It is not anticipated that fertiliser will be applied as the present fertility is satisfactory. The Forest Manager will be instructed to take appropriate action if future soil or foliage testing indicates a nutritional problem. No provision is made for such a cost in the estimates and the cost of fertilising will be borne by the Partnership.

(h) **Grazing by Livestock**: No income from livestock grazing has been budgeted for and none will be allowed until after year 2. If in the Forest Manager's opinion, some grazing would be beneficial to the plantation, then the Land Owner may be asked to supply some stock for that purpose.

(i) **Maintenance Operations**: Between final pruning and the harvesting of the crop, the following operations will be carried out:

- Aerial monitoring, and if necessary spraying, of the needle-cast fungus Dothistoma pini. An allowance has been made for spraying in years 2 and 4 and again in years 11 and 14.
- Regular health inspections by expert independent observers to ensure early warning of attack by pests or disease.
- Periodic checks on condition of access, noxious weeds, fire danger and fences
- Preparation of a detailed harvest plan.

(j) **Forest Audit**: At age 12 months to 2 years, the success of the planting phase will be checked by independent audit and at age 8, or at such time as the Forest Manager has

completed all works described in sections 4.2 (a) to (j), the plantation will be inspected by an independent forest auditor who will report to the Manager and certify that the work has been done in accordance with the Management Plan. On the issue of such a certificate the contract between the Partnership and the Land Owner will be deemed complete.

(k) **Mapping and Operational Audit**: At the commencement of pruning operations, aerial mapping and/or GPS surveys of the forest will be completed. After completion of pruning and thinning operations the operational records relating to the forest will be updated.

(l) **Unexpected Costs**: Any unexpected or unpredicted costs, such as fertiliser, deemed necessary by the Forest Manager and confirmed by the Manager will be outside the Management Contract between the Partners and the Land Owner and will be the direct responsibility of the Partners.

(m) **Projected Yield**: A calculation of yield, log mix and stumpage based on this Management Plan has been made by the independent Forestry Consultant, Jaako Pöyry, and is set out in the Forestry Consultant's Technical Report, which appears in Schedule 1 of this Prospectus. These projections show a total net return of $7,641,000 ($56,600 per hectare for the 135 hectares planted) which results in a return of $6,876,900 to the Partnership, after deduction of the Land Owner's 10% interest.

4.5 The scheme has not yet commenced and accordingly no development of the scheme has taken place in the 5 years preceding the prospectus date.

4.6 The principal fixed asset to be used by the Partnership will be the registered forestry right to be granted as described in section 4.1. The forestry right will be held by the Statutory Supervisor as trustee for the Partners.

5 Subscribers Liability

5.1 An investor in the Partnership will become a full Partner thereof and will on application be liable for the amount of the initial capital contribution to the Partnership. Investors will be liable for further Partnership contributions in proportion to the number of securities held in the capital of the Partnership. These contributions cannot be quantified in advance. An estimation of the expenditure of the Partnership and the projected contributions required from Partners are set out in the Cash Flow Projections in section 7.7 of this Prospectus. Expenditure in excess of that shown in the Cash Flow Projections will require additional contributions from Partners.

5.2 Investors will join the Partnership by their attorney signing a Deed of Participation, in accordance with the power of attorney set out in the application form. Partners will be liable, both jointly and severally, for all Partnership obligations. There is no limitation on this liability.

6 Summary of Financial Statements

6.1 The Partnership has not been formed or commenced business. Accordingly, no financial statements can be prepared in respect of any period prior to Prospectus Date.

7 Plans, Prospects and Forecasts

7.1 **Plans**: The Partnership will obtain the Forestry Rights and enter into the Management Contract with the Land Owner as described in the Prospectus. Planting will take place during July to August 2000. The scheme will be managed by the Manager in accordance with the Deed of Participation and by the Land Owner in accordance with the Management Contract described in the Prospectus. It is not anticipated that any finance beyond the subscriptions for the securities offered in this Prospectus will be required.

7.2 **Prospects**: The Forest Consultant's report (set out in Schedule 1) estimates the net proceeds of harvest of the forest as $7,641,000 based on current market prices. Cash flow projections based on these estimates show a partner receiving $50,940 (pre tax) per unit in the 31st year of the project arising from total cash inputs of $8,240 over the term of the project. Repayment of the Land Owner advance increases this to $53,740 per unit. This return will be affected by fluctuations in the real (inflation adjusted) price of timber. Further the return would be reduced by unforeseen or additional costs.

For an analysis of historical variations in the real price of timber prospective Investors are encouraged to study "Is Forestry Investment Profitable", a study by G.Horgan, Economist with NZ Forest Research Institute. This is available by contacting Greenplan Forestry Limited.

This study of the history of forestry investment in New Zealand shows that stumpage prices have increased on average by 3.67% over the last 60 years and by just under 5% over the last 30 years. During this period there have been some significant developments which have resulted in this variation. Most importantly average log quality 30 years ago was very low (logs were all unpruned) whereas today, as in the Centurion Forest up to 31% of the logs are higher valued pruned logs. The quality of the logs produced by the project will be determined by the planting and silviculture regime adopted early in the project and consequently no further increase can be assumed on the basis of improved log quality over the life of the project.

Further up until 30 odd years ago, long term Government fixed price sales dominated and depressed the market. Today the market is highly competitive resulting in higher prices.

Conversely Investors should also take into account the continuing developments and enhancements being made to Radiata Pine products, the introduction of new or expanded use of Radiata Pine products and the effect of a diminishing world wide supply of indigenous timber. Some nations such as China and India have recently become buyers of New Zealand Radiata. These nations have almost exhausted their own supply of indigenous timber. Environmental concerns have also halted the harvest of indigenous forests. These factors can be expected to effect the real price of timber, though the likely extent of that effect can not be predicted.

In addition overseas markets are beginning to demand evidence that timber products are sourced from forests that are grown and managed on a sustainable basis. This evidence is being provided by stand certification with various international agencies. New Zealand's plantation forestry is able to easily achieve that certification.

Of equal importance is the international acceptance of measures to reduce global warming. Plantation forestry is an acceptable method of off-setting industrial emissions and already there is significant interest from industry in buying the carbon credits that New Zealand plantation forestry controls. Annual payments based on growth and the resultant ability of the forest to absorb carbon could considerably enhance the future return to the forest owner.

The following price Sensitivity Analysis shows what happens to the Internal Rate of Return to the Investor (see clause 7.3) and net return to Partners if the price of timber increases or decreases by up to 5% p.a. over the period of the project.

Sensitivity Analysis	Annual Price Change (%)	Total Net Revenue Per Unit Pre-Tax	Pre-Tax IRR	Post Tax IRR	Price per Cubic Meter	Net Return Per Unit* Pre-Tax	Equivalent Bank Interest Rate
	5%	$244,622	12.24%	11.32%	$321.45	$222,959.74	16.90%
Increasing	4%	$183,576	11.17%	10.28%	$241.23	$168,018.67	15.34%
Real	3%	$137,383	10.09%	9.24%	$180.53	$126,444.75	13.79%
Prices	2%	$102,523	9.03%	8.22%	$134.72	$95,070.76	12.27%
	1%	$76,288	7.96%	7.20%	$100.25	$71,459.42	10.75%
Current Prices	0%	$56,600	6.90%	6.19%	$74.38	$53,740.00	9.24%
	-1%	$41,867	5.86%	5.20%	$55.02	$40,480.34	7.76%
Decreasing	-2%	$30,874	4.82%	4.24%	$40.57	$30,586.97	6.33%
Real	-3%	$22,697	3.81%	3.31%	$29.83	$23,227.30	4.94%
Prices	-4%	$16,632	2.83%	2.42%	$21.86	$17,769.11	3.61%
	-5%	$12,149	-	1.58%	$15.96	$13,733.70	2.36%

*Calculated after repayment of the land owner advance, in the same manner as shown in the cash flow projections in Section 7.7

The annual growth of a Forest is not taxed until the Forest is harvested and the timber sold. This gives forestry an advantage when compared to interest on a bank deposit where the growth of your investment is taxed every year. When comparing an investment in forestry with a bank deposit the effect of this advantage must be taken in to account. This is done by calculating a "Equivalent Bank Deposit Rate" being the rate required by an investor to achieve the same return as a forestry investment. The Equivalent Bank Deposit Rates for a Greenplan forestry investment are set out in the sensitivity analysis above. They have been calculated by grossing up the post tax IRR of the Greenplan forestry investment to reflect an annually taxable return. This is achieved by multiplying the Post Tax IRR by 100/67. The calculation is based on the assumptions that:

- All income earned on the deposit is reinvested;
- That no bank fees are incurred on the deposit;
- That all income is taxed at the 33% marginal Tax rate
- That both the deposit and the forestry investment are held for the full term of 30 years.

Prospective Investors should note that in 1993 timber prices peaked at a level which equates to a stumpage on the Centurion block of $179 per cubic meter.

This equates to approximately +3% p.a. increase in the Jaakko Pöyry valuation of $56,600 per planted hectare as stated in their report on page 7, and the resultant IRR is shown in the sensitivity analysis.

7.3 **Internal Rate of Return:** An accepted method of comparing one investment with another is to use the Internal Rate of Return or IRR. The IRR to the Investor for this investment is as follows:

Valuation Basis	Pre Tax IRR	Post Tax IRR
Jaakko Pöyry Valuation	6.90%	6.19%
Ministry of Forestry Log Return (page 7 of Jaakko Pöyry report)	6.98%	6.26%

The Greenplan investment structure whereby 79% of the funds are paid up front results in a lower IRR than a structure that requires contributions only as expenditure is incurred on the forest. Conversely the advantage of the up front payment is to minimise the risk of the forests development being curtailed or adversely affected by inavailability of funds resulting from future non-payment by partners.

Other forest investment schemes are based on projected expenses to be reimbursed by partners as they occur. Resultant IRR based on these projections are higher. They may however prove to be inaccurate as there is no certainty that of the timing or quantum of the future payments or receipts. The Greenplan structure with an up-front payment and the benefit of the Management Contract minimises the risks of budget projections escalating and reducing the actual IRR and the investors return.

7.4 **Contributions:** The following contributions (on a per unit basis) are projected to be:

- Year 1 $6,500 per unit
- Year 2 - 30 $60 per unit per annum

Being a total contribution of $8,240 per unit over the estimated 30 years of the project. Any extraordinary or unexpected costs, not covered within the Land Owner's Management Contract will be borne by the Partners on a pro-rata basis, after approval by the Partners by ordinary resolution.

7.5 **Tax:** The costs of planting and forest maintenance such as pruning and thinning are deductible against income from other sources in the year in which they are incurred. In the initial eight years these costs are represented by the payments made to the Land Owner under the Management Contract with the Land Owner. Other overheads such as management, rates, insurance, etc. are also deductible. The deductible costs and overheads will cause the Partnership to return a loss in its tax return. This loss is available (on a pro rata basis) to the Partners, and can be applied by them to reduce their other taxable income. It is estimated that 64% of the projected costs of a Greenplan investment will be deductible in this manner. The Manager will advise Investors each year of the amount of their share of the Partnership's loss for tax purposes. Income derived from the sale of forest produce is taxable. There is provision in Section EJ1 of the Income Tax Act 1994 for this income to be spread over the year of receipt and the preceding three years. A projection of the anticipated available deductions is set out in the cash flow projections in section 7.7. At an assumed marginal tax rate of 33 cents in the dollar, the post tax cost of the investment is estimated at $6,356 per unit in the first year with tax credits of $104 per annum available in the next seven years. In years 8 to 29, the post tax cost of the investment

is estimated to be $40 per annum. The effect of taxation on this forestry proposition is significant when comparing the after-tax profitability of the venture with other investments. Investors should note that the tax benefit projections are based on current tax legislation which may change during the 25 to 30 year term of the project. As the Partnership will be registered for Goods and Services Tax, GST has been excluded from all calculations. GST refunds will be obtained by the Manager.

7.6 **Risk**: The venture is not free of risk. A statement of the foreseeable risks are:

- Risks affecting Forestry investments generally

  (a) Tax or other legislation may change;

  (b) Exchange rate variations could affect crop values;

  (c) Market prices for timber may be adversely affected by substitution, economic and other factors;

  (d) Forests may be subject to natural disaster such as fire (although fire insurance cover will be arranged) or new diseases and pests, which affect yields. An assessment of these risks appears in the Forest Consultant's Report in Schedule 1;

  (e) Future costs may change (although cost escalations in the projected expenses covered by the Management Contract will be borne by the Land Owner);

  (f) Unforeseen costs or expenses may arise, requiring further payments by the Partners.

- Particular risks associated with a Greenplan Partnership investment are:

  (a) Joint and several liability of every Partner for debts of the Partnership. These are associated with any Partnership investment. Partners are jointly and severally liable for the debts of the Partnership. Partners may be called upon to meet the liabilities of co-partners who fail to meet their obligations.

  (b) An investor's ability to obtain contributions from other members of the Partnership for debts of the Partnership that the investor has met, will be limited by the financial resources of those other Partners. Where other Partnership interests are held by limited liability companies an investor's ability to obtain contributions will be limited to the capital of that company.

  The following measures are taken to reduce the possibility of liability:

  (i) The Partnership has no initial or projected bank debt and 79% of the projected costs are met by the initial payment.

  (ii) All invoices to be paid are perused by the Manager prior to release of funds.

(iii) Should any Partners have difficulty in meeting calls and/or wish to withdraw from the Partnership the procedures set out in the Deed of Participation are available for disposal of their interest.

(iv) In the event that a Partner fails to meet a financial obligation, there is provision in the Deed of Participation to allow the interest of the defaulting Partner to be forfeited and sold with the proceeds of sale being applied against the outstanding obligation.

(v) The Partnership will hold forest fire insurance cover. The sum insured is an agreed value based on a compounding cost basis up to year 7 and from then on as a discounting value basis. Re-establishment insurance is also held in the initial period of the forest development.

(c) The Land Owner may be unable to perform, or may default in performance of, its obligations under the Management Contract, in particular to meet cost overruns. Section 4.2 sets out the steps taken to minimise this risk.

(d) Because of the long duration of the project, present management may change.

7.7 **Feasibility Study**: The cash flow projections below set out projected cash flows for the scheme and reflect the planned course of action envisaged by the Forest Management Plan. These statements have been prepared from assumptions as to future costs, returns and revenues to enable the viability of the Scheme to be assessed. The projections should not be used for any other purpose. These assumptions are made as at Prospectus Date and are based upon Greenplan Forestry Limited's judgement as to the most probable economic conditions, following consultation with its advisers. It is not intended that the projections be subsequently updated. The first projection shows a cash flow on a Partnership basis, and the second projection shows a cash flow on a per unit basis. Apart from the Landowner's Advance no investing or financing activities are envisaged. These are projections only and no actual results are incorporated. The actual financial costs and returns over the period to harvest are unforeseeable and may differ materially. The projected costs are based on current prices (or estimates thereof), and assume zero inflation and exclude GST. The returns and revenues are based upon the independent forest consultant's determination of the net value of the forest produce. The notes on costs and returns are set out below the projections and should be read in conjunction with them. The Partnership will have a 31 March balance date. The projections have been and all Financial Statements will be prepared based around this date. All Financial Statements will be and where relevant, these statements have been, prepared in accordance with the general accounting policies recommended by the Institute of Chartered Accountants of New Zealand for the measurement and reporting of results. Historical costs, accrual accounting and the "going concern" assumption will be adopted.

All the major costs of forest development are projected to occur within the first 8 years. This expenditure is governed by the Forest Management Plan and incorporated in the Management Contract between the Partnership and the Land Owner. The Major

costs, which are paid by the Landowner under the Management Contract are estimated to be:

Planting and releasing	Year 1	$734 per planted ha
Low Prune	Year 3-4	$422 per planted ha
Medium Prune	Year 5-6	$400 per planted ha
High Prune and Thin	Year 7-8	$680 per planted ha

In addition provision has been made for fire insurance, dothistoma control, audit costs, operational audit, animal control, forest inspections and general surveillance. Investors should note that these projected expenses are borne by the Land Owner under the Management Contract (for which the Partnership pays a fixed fee) and are not expenses of the Partnership. Cost escalations in the projected expenses covered by the Management Contract will be met by the Land Owner.

Cash Flow Projection on a Partnership Basis

	Total	Note	2000-2001	2001-2008	2008-2030	2030
CASH FLOWS FROM OPERATING ACTIVITIES						
EXPENDITURE						
Management Contract	$472,500	1	$472,500	$-	$-	$-
Legal Costs	$9,000	2	$9,000	$-	$-	$-
Forest Consultant	$3,800	3	$3,800	$-	$-	$-
Audit	$23,700	4	$2,200	$1,500	$500	$500
Forest Maintenance	$36,300	5	$-	$-	$1,650	$1,650
Rates	$44,000	6	$-	$-	$2,000	$2,000
Security Register	$6,000	7	$6,000	$-	$-	$-
Accountant	$28,400	8	$-	$1,700	$750	$750
Statutory Supervision	$64,000	9	$6,000	$2,000	$2,000	$2,000
Allotment Costs	$-		$-	$-	$-	$-
Management & Administration	$46,700	10	$-	$2,900	$1,200	$1,200
TOTAL EXPENDITURE	$734,400	11	$499,500	$8,100	$8,100	$8,100
RECEIPTS						
Log Revenues	$6,876,900	12	$-	$-		$6,876,900
TOTAL RECEIPTS	$6,876,900					$6,876,900
NET CASH FLOWS FROM OPERATING ACTIVITIES	$6,142,500		-$499,500	-$8,100	-$8,100	$6,868,800
CASH FLOWS FROM INVESTING ACTIVITIES						
EXPENDITURE						
Landowners advance	$378,000	11 and 13	$378,000	$-	$-	$-
RECEIPTS						
Advance to Land Owner Repaid	$378,000		$-	$-	$-	$378,000
NET CASH FLOWS FROM INVESTING ACTIVITIES	$-		-$378,000	$-	$-	$378,000
TOTAL NET CASH FLOWS	$6,142,500		-$877,500	-$8,100	-$8,100	$7,246,800

Cash Flow Projection on a per Unit basis

	Total	2000-2001	2001-2008	2008-2030	2030
OPERATING CASH FLOWS PER UNIT					
Log Revenue	$50,940	$-	$-	$-	$50,940
Cash paid in by Partners	-$5,440	-$3,700	-$60	-$60	-$60
Tax benefit to (payable by) the Partners	-$15,081	$144	$164	$20	-$16,790
INVESTING CASH FLOWS PER UNIT					
Landowner Advance	-$2,800	-$2,800	$-	$-	$-
Advance to Landowner Repaid	$2,800	$-	$-	$-	$2,800
TOTAL NET CASH INFLOWS AFTER TAX	$30,419	-$6,356	$104	-$40	$36,890
Tax benefit to (payable by) the Partners is calculated as follows					
Log Revenues	$50,940	$-	$-	$-	$50,940
Deductible Expenses	-$5,240	-$438	-$498	-$60	-$60
Taxable Income (Loss)	$45,700	-$438	-$498	-$60	$50,880
Tax benefit to (payable by) the Partners at 33%	-$15,081	$144	$164	$20	-$16,790

Notes on Costs and Returns

Note 1 Management Payment $472,500

The Management Contract described in section 4.2 provides for payment of $472,500 to cover the projected costs of forestry development and maintenance in the first eight years.

Note 2 Legal Cost $9,000

These costs represent the legal costs associated with the establishment of the legal structure of the Partnership.

Note 3 Forestry Consultant $3,800

These costs are the costs of the initial forest consultant's report appearing in this Prospectus. Costs of the forest audits in years 2 and 8 (provided for in the Forest Management Plan) are borne by the Land Owner pursuant to the Management Contract.

Note 4 Audit $23,700

These costs represent the initial audit (see Schedule 2) and the ongoing annual audit of the Partnership.

Note 5 Forestry Maintenance (Years 9 to 30) $36,300

These costs represent the ongoing Forest Maintenance, insurance and other costs incurred by the Partnership following expiry of the Land Owner's Management Contract in year 9, estimated at an average of $1,650 per annum.

Note 6 Rates (Years 9 to 30) $44,000

Projected at current levels. Rates of years 2 to 8 are paid by the Land Owner (to the extent they are not attributable to the presence of the forest) pursuant to the Forestry Right.

Note 7 Securities Register $6,000

These costs provide for establishment of the Securities Register in year 1. Costs of maintaining the Register in subsequent years will be met from transfer fees.

Note 8 Accountant (Years 2 to 30) $28,400

These costs provide for preparation of annual financial statements for the Partnership in years 2 to 30.

Note 9 Statutory Supervision $64,000

This cost provides for the provision of Statutory Supervision required by the Partnership pursuant to the Securities Act 1978 at the rate of $6,000 initial set up and an annual fee estimated to be an average of $2,000 per annum over the remaining 29 years.

Note 10 Management and Administration $46,700

This cost represents the management fee of $2,900 per annum for years 2 to 8 and projected management fee of $1,200 per annum for the years 9 to 30, payable to Greenplan Forestry Limited for co-ordination and administration of the Partnership. (See clause 13 of the Deed of Participation set out in Schedule 3)

Note 11 Contributions from Partners $1,112,400

Contributions from partners will be applied to expenditure on operating activities and expenditure on investing activities (being the Landowner Advance).

Note 12 Net Log Receipts $6,876,900

90% of $56,600 net stumpage per planted hectare (see the Forest Consultant's Report Schedule 1). This represents the estimated sale price of the forest crop after deduction of harvest costs, cartage costs and the Land Owner's 10% interest.

Note 13 Land Owner Advance $378,000

The Partnership will advance the sum of $378,000 to the Land Owner. This Advance will be repaid at final harvest and will not bear interest. The Advance is secured against the Land Owner's 10% interest.

7.8 **Prospective Financial Performance:** The prospective statement of financial performance for the scheme is as follows:

Prospective Statement of Financial Performance	
Log Revenue	$6,876,900
Management and Administrative Costs	-$734,400
Net Profit before Taxation	$6,142,500
Taxation	0
Net Profit after Taxation	$6,142,500

This statement has been prepared on a Partnership basis and covers the period from commencement of trading through to the harvest of the forest. No taxation has been provided as any tax liability is the responsibility of the individual partners.

8 **Minimum Subscriptions**: For the purposes of Section 37(2) of the Securities Act 1978 the minimum amount that must be raised by the issue of Securities in respect of the Partnership is $27,000 (being $200 per unit in the Partnership) comprising preliminary expenses. However, as set out in section 36.1 of this Prospectus, participatory securities will not be allotted in the Partnership until all the participatory securities offered in the Partnership have been fully subscribed.

9 **Guarantors**: No person guarantees the repayment of the securities or the payment of any interest or other money to the Partners of the Partnership.

10 **Acquisition of Business or Subsidiary**: No existing business or shares in a business have been, or are proposed to be, acquired by the Partnership.

11 **Securities Paid up otherwise than in Cash**: No participatory securities have been, or are proposed to be, allotted by or subscribed for in the Partnership as fully or partly paid up otherwise than in cash.

12 **Options to Subscribe for Securities of the Scheme**: No option to subscribe for participatory securities of the Partnership has been or is proposed to be granted to any person.

13 **Manager's Interest**:

13.1 The Manager will manage the Partnership. The Manager will provide administrative services to the Partnership. The Manager will initially be remunerated by the Partnership for provision of these services at $2,900 per annum for years 2 to 8 as set out in note 10 in section 7.7 of this Prospectus. Thereafter the Manager's remuneration will be determined by agreement and approved by a resolution of the partners. In addition, the Land Owner has agreed to pay to the Manager a procurement fee of $81,000 to meet Prospectus development and promotion costs. No director or principal officer of the Manager is entitled to remuneration for provision of services in respect of the scheme.

13.2 The following Material Contracts will be entered into between the Manager (on behalf of the Partnership) and Greenplan Holdings Limited (the "Land Owner") being a subsidiary of the Manager:

(a) The Land Owner will grant to the Partnership a registered forestry right over approximately 142 ha of the Land Owner's property. The property to be

subject to the Forestry Right and the terms of the Forestry Right are described in Section 4.1 of this Prospectus. A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to section 15. The Land Owner will receive a 10% share of the produce of the scheme without obligation to contribute to the costs of developing the scheme, which in accordance with the projections set out in section 7.7 is projected to return $764,100 to the Land Owner upon final harvest;

(b) The Land Owner will also enter into a Management Contract with the Manager (acting on behalf of the Partnership) to provide services to the Partnership in the initial eight year period. The terms of the Management Contract are described in section 4.2 of this Prospectus. A copy of the proposed Management Contract is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15. The Land Owner will receive the remuneration referred to in the Management Contract, being a total fee of $472,500 from the Partnership and will also receive an interest free advance referred to in the Management Contract, $378,000 from the Partnership. The advance is repayable on final harvest of the forest and will be secured against the Land Owner's 10% share of the produce of the scheme referred to in subparagraph (a) above.

14 **Promoters' Interest**: No person other than the directors of the Manager have been instrumental in the plan pursuant to which the securities are offered and accordingly no person other than the Manager is a Promoter of the securities. The Manager's interest is disclosed in Section 13.

15 **Material Contracts**: The Manager has entered into an option agreement with Greenplan Holdings Limited (the "Land Owner") entitled "Option to Grant Forestry Right and Management Contracts" and dated 15 October 1999. The Option Agreement grants the option to the Manager to require the Land Owner to:

15.1 Grant to the Partnership a registered forestry right over approximately 142 ha of the Land Owner's property. The property is to be subject to the Forestry Right and the terms of the Forestry Right are described in section 4.1 of this Prospectus. A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15. The Land Owner will receive a 10% share of the produce of the scheme without obligation to contribute to the cost of developing the scheme:

15.2 Enter into a Management Contract with the Manager (acting on behalf of the Partnership) to provide services to the Partnership in the initial eight year period. The terms of the Management Contract are described in section 4.2 of this Prospectus. A copy of the proposed Management Contract is annexed to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15. The Land Owner will receive the remuneration referred to in the Management Contract, being a total fee of $472,500 from the Partnership and will receive an interest free advance from the Partnership of $378,000 for the term of the scheme. This advance will be payable on the final harvest and will be secured against the Land Owner's 10% share of the produce of the scheme referred to in subparagraph (a) above.

16 **Pending Proceedings**: There are no legal proceedings or arbitrations pending at Prospectus Date that may have a material adverse effect on any of the Partnership, the Manager, the Land Owner or the scheme.

17 **Issue Expenses**: Preliminary and Issue expenses are estimated for the Partnership to be as follows:

Legal Fees	9000
Statutory Supervisor	6000
Forest Consultant Fees	3800
Audit Fees	2200
Securities Register	6000
Sub-Total	**27000**
Prospectus Costs	20000
Printing and Postage	10000
Advertising	11000
Promotion	20000
Brokerage	20000
Sub-Total	**81000**
Total	**108000**

A commission of $180 per unit is payable to those persons (other than the Manager or its Directors) approved by the Manager who procure subscriptions for the Partnership.

These expenses will be shared between the Partners and the Manager. The Partnership will contribute $27,000 towards the Partnership's establishment costs. The Manager will meet all other Prospectus development and promotion costs.

18 **Terms of Deed of Participation**: A copy of the Deed of Participation to be used for the Partnership is set out in Schedule 3 to this Prospectus and is dated 15 October 1999.

19 **Other Terms of Offer and Securities**: All terms of the offer and all terms of the securities being offered are set out in this Prospectus except those implied by law or set out in the documents registered with a public official, referred to in section 15 of this Prospectus and available for public inspection at the places referred to in section 35 below.

FINANCIAL MATTERS

20-34 **Application:** The Partnership has not commenced business as at Prospectus Date and accordingly, clauses 20-34 of the Third Schedule of the Securities Regulations 1983 in respect of financial statements, do not apply.

MISCELLANEOUS MATTERS

35 **Places of Inspection of Documents**: Copies of the contract mentioned in section 15 may be inspected without fee at the following locations between the hours of 9am and 5pm on business days: the offices of Greenplan Forestry Limited, 57 Te Kumi Road, Te Kuiti, the offices of Perpetual Trust Limited, 233 Cambridge Terrace, Christchurch and the offices of Kensington Swan, Solicitors, Level 4, 89 The Terrace, Wellington. The documents may also be inspected upon payment of the prescribed fee at the offices of the District Registrar of Companies, Boulcott House, 47 Boulcott Street,

Wellington between the hours of 9am and 5pm on business days.

36 Other Material Matters:

36.1 **Applications, Subscriptions Procedures, Allotment and other matters**:

(a) **Applications**: Applications must be made and will be accepted only on the application form distributed by the Issuer.

(b) **Opening and Closing Dates**: Subscription lists for applications will open on Prospectus Date and will close on 15 December 1999 ("Closing Date") unless filled earlier. The Manager reserves the right to either:

(i) extend the Closing Date for acceptance of applications; or

(ii) withdraw this Prospectus and decline all applications at any time prior to the Closing Date.

The Manager will inform subscribers by letter on or before Closing Date of any extension of the Closing Date or withdrawal of this Prospectus.

(c) **Subscriptions**: Subscriptions will be accepted and placed successively to the Partnership in their order of receipt. The maximum subscription for the Partnership is 135 units of $500. Upon full subscription of the Partnership, it will be closed. If insufficient subscriptions are received prior to Closing Date to subscribe the Partnership fully, the proposal will not proceed.

(d) **Subscription Moneys Held on Trust**: All subscription moneys will be deposited in a trust account maintained by the Statutory Supervisor with its bankers. Should the minimum subscription of 135 participatory securities not be received by the Closing Date then the subscription moneys together with any interest will be repaid no later than 30 days after the Closing Date or any extended closing date, whichever is the later. If the Prospectus is withdrawn, then all subscriptions will be refunded within 30 days of the date of withdrawal.

In the event that the granting of the Forestry Right or completion of the Management Contract described in sections 4.1 and 4.2 of this Prospectus are not completed for any reason within six months of the Closing Date then the subscription moneys together with any interest will be repaid within thirty (30) days of that date.

No moneys will be released to the Manager or the Land Owner to meet any expenses of any of the Partnership until it is fully subscribed and the minimum subscription levels referred to above have been achieved.

(e) **Allotments**: Allotment of the participatory securities will proceed as soon as practicable following the Closing Date. No allotments will be made in the Partnership until:

(i) all the participatory securities in the Partnership are fully subscribed for; and

(ii) subscription for and receipt of payment for the minimum number of securities specified in section 8 pursuant to Section 37(2) of the Securities Act 1978 are completed; and

(iii) the Land Owner has granted the Forestry Right and entered into the Management Contract with the Partnership pursuant to the "Option to Grant Forestry Right and Management Contracts" referred to in section 15.

The Manager reserves the right to reject or accept any application in whole or in part, without assigning any reason therefore.

In the event of subscription moneys relating to applications being declined they will be refunded (with any interest) to applicants not later than 30 days following Closing Date or any extended closing date, whichever is the later. Receipts for application moneys will not be issued, the banking of a cheque being deemed to constitute an acknowledgement.

(f) **Register of Participatory Securities**: The Securities Registrar will maintain on behalf of the Manager a register of all participatory securities issued. The Register will be maintained at the office of the Securities Registrar, Kidd Falconer & Co, Chartered Accountants, 46 Taupiri Street, PO Box 61, Te Kuiti.

(g) **Balance Date**: It is proposed that the Partnership will adopt a 31 March balance date.

(h) **Stock Exchange**: The participatory securities issued under this Prospectus will not be listed on the New Zealand Stock Exchange or any other stock exchange.

36.2 Except as mentioned in this Prospectus there are no material matters relating to the offer of securities to which this Prospectus relates (other than matters set out elsewhere in the Prospectus).

37 Manager's Statement: Since the Partnership has yet to commence business and no previous financial statements are therefore available, the Manager cannot give an opinion as to whether or not there are any events which affect the venture between the previous balance date and Prospectus Date.

38 Auditor's Report: The auditor's report and statement required by paragraph 38 of the Third Schedule to the Securities Regulations 1983 is attached as schedule 2.

This Prospectus has been signed:

by John Richard Barton
as Director of the Manager:

by Bruce Andrew Maunsell
as Director of the Manager:

by Matthew Louis Barton
as Director of the Manager:

by Simon John McArley
as Director of the Manager:

SCHEDULE 1

Forest Consultant's Report

JAAKKO PÖYRY
Jaakko Pöyry Consulting

30 September 1999
The Directors
Greenplan Forestry Ltd.
P O Box 24
Te Kuiti
New Zealand

Dear Sirs,

FORESTRY CONSULTANT'S REPORT

This report has been prepared for inclusion in the prospectus to be issued by Greenplan Forestry Ltd (Greenplan), for the Greenplan (Centurion 2000) Forest Partnership No. 45. It covers the financing of approximately 135 hectares of *Pinus radiata* plantation forest near Te Kuiti, New Zealand. Jaakko Pöyry Consulting (Asia Pacific) Ltd has only addressed the technical afforestation issues. This statement should not be construed as an opinion on the profitability of the venture or on its promotion or management.

The report has been prepared following inspection of the property in September 1999, and discussions with the directors and managers of Greenplan.

1. SUITABILITY OF SITE

1.1 Location and Access

The property is situated near Piopio, some 22 km south-west of Te Kuiti on State Highway 3. Major wood processing facilities are located at Kinleith and Tokoroa in the South Waikato region 112 km to the east, with smaller plants at Te Kuiti 32 km to the north-east, and at New Plymouth 150 km to the south west, which is also the location of the nearest log export port.

Access to the property is via State Highway 3 to Piopio 22 km south-west from Te Kuiti, then south on the Aria Road for 8km, and east on the Kaitaringa Road. These roads are sealed to the property. Alternatively access from the east is from State Highways 3 and 4 for 32 km south from Te Kuiti, west on the unsealed Tikitiki Road for 7.5 km then 2 km south on Kohua Road and 5 km east on Kaitaringa Road, which is unsealed at this point. The property has one 1km and one 300 metre frontage onto Kaitaringa road, and farm tracks will provide good access into the block. For harvesting and log extraction, the tracks will need upgrading and a few new roads will require construction.

1.2 Plantable Area and Vegetation Cover

The block is mainly in pasture and is actively farmed with sheep and cattle. Most fences are in good condition, and others are planned to be upgraded. Seven hectares of the property, including allowances for native bush, powerlines, road set-backs, tracks, streams and wet land, will not be planted.

The titles of the project area have not been searched by Jaakko Pöyry Consulting (Asia Pacific) Ltd and we thus cannot confirm legal ownership. The land is part of Section 9 Block VII Totoro Survey District PT Aorangi B3A No 2 Block, and Blocks VI and VII Totoro Survey District. Jaakko Pöyry Consulting (Asia Pacific) Ltd has viewed Greenplan's area calculations, which combine field GPS readings with scanned aerial photography, to provide an estimate of plantable area and land clearing requirements.

Jaakko Pöyry Consulting (Asia Pacific) considers that the block when delineated, will be representative of the area inspected in September 1999, and we consider that Greenplan's estimate that 135 ha of the 142 ha block is suitable for forestry development with radiata pine is appropriate and achievable providing adequate site preparation is done.

1.3 Topography

The general topography ranges from flat to rolling land through to short steep slopes. The land drains mainly north into the Mokau River which is across the road from the property, and aspects are mainly north-easterly and north-westerly, with a small area of southerly aspect.

JAAKKO PÖYRY CONSULTING (ASIA-PACIFIC) Ltd
Postal Address P.O. Box 73-141 Auckland Int'l Airport Auckland NEW ZEALAND
Telephone +64-9-256 0003
Telefax +64-9-256 0000
GST reg no 36-793-358

1.4 Soils and Erosion

Soils on the property are sandy silt, silt loam and clay loam formed from mudstone and overlain by Mairoa ash. Erosion under plantation forest is expected to be negligible once canopy closure and full site occupancy is attained.

Soils are of moderate to high natural fertility. No nutrient deficiencies are anticipated though it will be prudent for the Forest Manager to regularly monitor nutrient levels by foliar analysis.

1.5 Climate and Altitude

Altitude ranges from 140 m to 240 m above mean sea level. Predominant winds are from the west. With the exception of ridge tops and part of the western boundary there is no significant exposure. Average annual rainfall is 1800 mm more or less evenly distributed over the year which is ample for radiata pine growth. There can be extended periods of high relative humidity.

1.6 Resource Management Act Considerations

The Centurion property falls under the jurisdiction of the Waitomo District Council. This council currently has a draft District Plan which is about to be released for public consultation and appeal. The plan is effects based, meaning it concerns itself over the down-stream effects of activities rather than over the activities themselves. The main aspect of the establishment, management and harvesting of Centurion Forest which may be effected by the plan is a restriction on planting within 20 metres of eastern, western and southern boundaries. This regulation will have no impact on planting on the southern boundary which is almost all in native bush. Parts of the eastern and western boundaries may be effected, and allowances have been made for this. No other operations are expected to require resource consent.

No consent is required to carry logs over the local roads. The Council may require that after harvesting the land is replanted either in trees or in some other form of soil protecting vegetation such as pasture.

2.0 FOREST MANAGEMENT

2.1 Species to be Planted

The selected species, radiata pine, accounts for over 90% of all new plantation forest establishment in New Zealand. It is well suited to these King Country sites. Common practice is to harvest radiata pine at between ages 25 - 30 years. New Zealand's radiata forests typically achieve growth rates in the order of 15 - 30 cubic metres per hectare per annum which are amongst the highest in the world for commercially grown softwood species.

2.2 Planting Stock

Tree breeding programmes have improved the genetic quality of radiata pine with respect to stem form, branch habit, growth rates, wood density and disease resistance. The genetic quality is indicated by the Growth and Form (GF) factor, where the higher the number the better the GF characteristics, average expected growth rates and branch size and frequency.

Greenplan proposes to use GF 30 rooted cuttings, which are amongst the highest GF improvement level of planting stock currently commercially available for forest establishment.

2.3 Forest Establishment Procedures

Following heavy grazing of the pasture to prepare the site for planting, GF 30 cuttings will be planted at 740 stems per hectare, within the range of 700 - 850 stems per hectare. Competent planting with subsequent grass and weed control should result in good survival and low incidence of malformation. Two releasing operations may be required in places, and budgets have allowed for this.

2.4 Silvicultural Regimes

The blocks are to be intensively managed to maximise the yield of high quality pruned logs, using industry recognised and accepted silvicultural practices.

Pruning is planned to take place in three lifts to restrict the diameter of the defect core and maximise the volume of clear wood in the pruned butt logs. Final pruning will be to a height of 6.5 metres with a single non-commercial thinning at age 8 years to produce a final stocking of 320 stems per hectare (sph). Natural stand mortality over the remainder of the rotation is expected to result in a stocking of 291 sph at harvest. To account for further attrition to the stand area from such things as wind, and patches of poor survival, the projected yield as generated in the STANDPAK growth modelling program has been reduced by 5% across all log grades (see Section 3.2).

Timing is critical to maximise growth and log quality. Control systems, including computer based growth modelling, should be used to optimise operational timing at an individual stand level.

2.5 Forest Protection

The block is considered to have a low fire risk. Although the northern boundary of the planting area is on Kaitaringa Road, the road itself has very low traffic levels. The eastern and western boundaries are in pasture, while the southern boundary is in native bush. The property is generally well sheltered, and is considered to have a low risk of wind damage from the prevailing westerly winds.

High relative humidity in the region poses a risk of infection with *Dothistroma pini,* (Pine Needle Blight). Regular monitoring can provide early detection allowing control measures to be put in place by the aerial application of copper fungicide. The early thinning and pruning regime prescribed will reduce the severity of any infection by providing air flow through the stands. Aerial spraying is regularly carried out in the Central North Island and is recommended as a routine protective measure.

Goats were seen during the inspection, and opossums are also likely to be present. Monitoring of wild goats should be undertaken by Greenplan, especially during the initial establishment phases, and control measures introduced as necessary. Most boundary fences are in good condition and can exclude domestic stock from the planting area, and plans have been made to repair those areas where breaches are possible.

There are few insect pests present in New Zealand which are likely to cause serious damage to *Pinus radiata* plantations. Apart from *Dothistroma*, other fungal diseases which could potentially infect the plantations include *Cyclaneusma* needle cast, *Armillaria* root rot which can infect first rotation pine on indigenous cut-over sites, and *Diplodea pini* causing shoot die-back if pruning has been overly severe. The Asian Gypsy Moth is not present in New Zealand at present, but could conceivably evade the import quarantine barriers. This insect could potentially cause major damage to pine plantations throughout the country, although strenuous control efforts would undoubtedly be made by large and small forest owners.

3 FOREST GROWTH AND YIELD

3.1 Growth Modelling

Jaakko Pöyry Consulting (Asia Pacific) have derived the yield projections by using the STANDPAK computer software package developed by the New Zealand Forest Research Institute. STANDPAK is regarded as the industry standard for modelling radiata pine growth and yields. Whilst the software does not have a specific function for the King Country, Jaakko Pöyry Consulting (Asia Pacific) have tested projections derived from functions constructed for the South Waikato, Rotorua and the volcanic plateau areas in developing forecasts presented in this report.

Site fertility, abundant rainfall and intensive management supports a projected mean annual increment at the upper end of the range currently achieved in New Zealand Jaakko Pöyry Consulting (Asia Pacific) do not expect that the high GF rating of the planting stock will result in significantly higher total volume production. However, the average quality of the logs produced is expected to be better than calculated directly in the STANDPAK modelling program, which can account for a maximum GF of 22.

The yields are presented on a fully stocked, per hectare basis, and the improvement is reflected by the low percentage pulp yield (16%), which in turn slightly increases proportions of the higher log grades. The property has an estimated site index of 33 metres, and yields predicted from the computer modelling assume good management practices are followed.

3.2 Rotation Length and Yield Projection

In New Zealand plantation forestry the basis for rotation length is generally linked to the concept of the "optimum economic rotation age". At this age the value of the forest investment, at a nominated cost of capital, is maximised. In practice the returns are generally maximised across a range of clearfall ages from 25 - 30 years. Presuming that shorter investment cycles are preferred, a rotation length of about 25 years appears likely. There is growing evidence however that younger trees have lower average wood density which adversely affects their strength and drying characteristics to the point that New Zealand sawmillers are expressing a preference for rotations of at least 30 years.

The current price differentials between pruned and unpruned logs will almost certainly result in a more discriminating pruned log market, which in turn could result in longer rotations in order to maximise returns. The STANDPAK modelling undertaken by Jaakko Pöyry Consulting (Asia Pacific) has used a rotation length of 30 years as nominated by Greenplan. STANDPAK run settings are presented below.

Settings for STANDPAK Yield Calculation

Model	Setting	Model	Setting
Early growth Later growth	23 – Early 19 – KGM3	Early monthly growth Later monthly growth	3 – Early 5 – Whakarewarewa
Basal area increment	High	Site Index	33 m
Height model	34 – KGM3	Stand volume table	30 – NZFP Rotorua
Weibull table	1 – radiata, Rotorua	GF rating	22 (=maximum)
Volume table Taper table	237 – Kaingaroa Transitional Crop	Sweep, internodes and wood density settings	Medium
Age 4.0 start points	5.7m MTH, 4.9m MH 5.9m PMH, 833 sph 5.3 m^2/ha basal area 9.0 cm mean diameter	% downgrade to pulp	Pruned logs – 2% Unpruned sawlogs 4%

Yield projections are given below. To account for attrition over the rotation, the STANDPAK output has been reduced by 5% for each log grade.

Yield Projection - Clearwood regime, 30 year rotation

Log Grade	Description	Yield:(m3/ha)	% of yield
Pruned	Minimum small end diameter (sed) 30 cm	236	31%
Export A Grade	Minimum sed 30 cm; Average sed 34 cm lengths: 4m, 8m, 12m; at least 70% of logs 12m	203	27%
Export K Grade	Minimum sed 20 cm; Average sed 26 cm Lengths: 3.75m, 5.55m, 7.45m; 11.15m; at least 40% of logs 11.15m	114	15%
Domestic sawlogs	Minimum sed 20 cm; Log lengths 3.7m - 6.1m	90	12%
Pulpwood		118	16%
TOTAL		**761**	**100%**

4. LOG PRICES

4.1 Pruned Logs

Export and domestic log prices have been subject to marked variability since 1992, with a peak in late 1993. Domestic log prices have been driven by export price parity, but in both markets prices have not fallen to the 1992 levels and therefore show a real price stability. The export market is expected to firm, with domestic buyers having demonstrated their ability to at least match export price levels for high grade logs and are willing to maintain these levels to ensure continuity of supply.

Pruned logs currently command a premium over export A grade logs, but all buyers are becoming more discerning about the actual quality of such logs in respect of the clearwood content and form. Management and silviculture practices will need to be timely to produce a premium product.

Pruned log prices have moved from a 1993 peak price of over NZD 400/m^3 to a third quarter 1999 level of approximately NZD 165/m^3 delivered to the mill.

4.2 Japanese A Grade Logs

Long established as the backbone of the New Zealand log export trade the "A" grade is primarily a large diameter long length log suitable for a wide range of end uses. Typical of the older untended stands of the past the trade has remained firm in terms of volumes traded, but cyclical in pricing depending on season and availability of other softwood species from the Northern Hemisphere. Price levels since 1992 have ranged from approximately NZD 110/m^3 to NZD 140 m^3 with a peak in June 1993 at approximately NZD 220/m^3. By convention prices are FOB. Third quarter 1999 wharf gate prices are around NZD 95/m^3.

4.3 Korean K Grade Logs

K Grade are smaller average diameter logs and have become a very significant part of the log export trade. Priced on CIF basis the trade has had price swings in line with other grades. There has been sporadic competition from China for similar specification logs and this has helped to support prices. Price levels have ranged from USD 75/m^3 to USD 110/m^3 CIF, while third quarter 1999 wharf gate prices are around NZD 66/m^3.

4.4 Domestic Sawlogs

The requirement for certain percentages of export shipments to be in long length (11m +), gives rise to "shorts" and these together with other specific cuts have provided the bulk of domestic grade sawlogs when the export trade is buoyant. Most lengths are between 3.7 and 6.1 m, with a range of diameters.

The application of export equivalent pricing by suppliers to the domestic market in recent years has meant that local users are now able to specify their log requirements as opposed to "taking what was left over from exports". The role of the "local" sawmill is important in determining stumpages as the returns are often greater than export given the often shorter cartage distances and absence of "middle men" and hidden costs. The trade is usually based on Free at Mill Gate prices, and currently ranges between approximately NZD 55 - 110/m^3 for unpruned logs and approximately NZD 110 - 190/m^3 for pruned logs

4.5 Pulpwood

Pulpwood is priced Free at Mill Gate and comprises logs that do not meet sawlog specification due to diameter, sweep, taper, branch size and shatter. Current prices range from NZD 32-46 /m^3 at mill.

4.6 Assumed Log Prices

There is no consistent price trend for logs in the New Zealand market and it is difficult to project future prices, or indeed rely on previous market prices for analyses of this nature. There is general belief within the industry that prices will be firm in the longer term.

Given the trend over recent years, Jaakko Pöyry Consulting (Asia Pacific) believe that the price schedule given below fairly reflects prevailing price levels as a basis for projecting future revenue. Although some analysts are forecasting real gains in log prices, Jaakko Pöyry Consulting (Asia Pacific) have preferred to make conservative assumptions of static real prices in the long term, with fluctuations in the short and medium terms. In deriving a log price forecast, log prices have been sourced from the Jaakko Pöyry Consulting (Asia Pacific) internal data-base, MAFF export log data, and other external reports of log prices. The log prices adopted for the projection are given below.

Log Grade	Price (NZD/m³) at Price Point	
Pruned Logs	175	Average at Mill/Wharf Gate
A grade Logs	105	Free at Wharf Gate
K grade Logs	95	Free at Wharf Gate
Domestic Sawlog (average grade mix)	85	Free at Mill Gate
Domestic Pulpwood	45	Free at Mill Gate

5. Derivation of Net Stumpage

Net stumpage has been calculated by deducting direct logging and transport costs (production costs) from sale prices at the respective price points, to derive a net value per log grade on stump. Costs have been treated as real costs with inflation assumed to impact at the same rate on both inputs and outputs.

Regime	Clearwood
Clearfell age	30 years
Total Recoverable Volume	761 m³/ha
Recoverable Stems per hectare	291
Average stem volume	2.6 m³

Production Costs

Log and Load	$17.00/m³
Roading and Skids	$ 2.00/m³
Marketing and Supervision	$ 3.50/m³
Total	$22.50/m³

The main component of the production costs is harvesting. Some 50% of the block is suited to ground-based harvesting, with the remainder requiring cable logging. The resulting average log and load cost is estimated to be $17.00/m³. New track formation at harvesting should be straightforward, and a cost of $2/m³, equivalent to around $205,000 for the full block, is considered a reasonable estimate of road and skid formation work. Actual cost figures from a variety of sites throughout the country indicate that for a site such as this, a cost of $3.50/m³ for harvest planning and supervision and for marketing is reasonable.

Cartage Costs

At current prices, road transport provides the most efficient means of transporting logs from Centurion Forest. The transport costs are calculated below.

Log Grade	Destination	Av. Distance	Cost
Pruned	50% Te Kuiti 50% Tokoroa	72 km	12.00/m³
A & K Export	Taranaki	150 km	21.50/m³
Domestic	50% Te Kuiti 50% Tokoroa	72 km	12.00/m³
Pulpwood	Kinleith (Tokoroa)	112 km	16.60/m³

Stumpage

Log Grade	Product Volume (m³/ha)	Delivered Price ($/m³)	Production Cost ($/m³)	Stumpage ($/m³)	Net Revenue ($/ha)
Pruned+	236	175	34.50	140.50	33 158
A Grade	203	105	44.00	61.00	12 383
K Grade	114	95	44.00	51.00	5 814
Domestic Sawlog	90	85	34.50	50.50	4 545
Pulpwood	118	45	39.00	6.00	708
Total	761				56 608

As a comparison, stumpage has also been calculated using the median log prices from the last 12 quarters to June 1999, as published by the Ministry of Agriculture, Forests and Fisheries (MAFF). These are FOB/JASm³ prices, and equate to wharf gate per m³ prices of: pruned $199; A grade $100; K grade $71; and pulp $38. Assuming a price of $85/m³ for domestic sawlogs, the net revenue under this price scenario is $ 57,813/ha.

Disclaimer

Jaakko Pöyry Consulting (Asia Pacific) has prepared this report which appears in the Prospectus. Jaakko Pöyry Consulting (Asia Pacific) was involved only in the preparation of this report and specifically disclaims liability to any person in the event of any omission from, or false or misleading statements included in the Prospectus, other than in respect of this report. Jaakko Pöyry Consulting (Asia Pacific) believe that, given the assumptions and qualifications used in this technical review of Greenplan's proposal, in 1999 dollar terms, a revenue of approximately $56,600 per fully stocked hectare can be projected for the Greenplan forest partnership. The projected net revenues given in this report do not represent a promise or guarantee of actual returns by Jaakko Pöyry Consulting (Asia Pacific) Ltd. They may be greater or lesser due to future events beyond our control.

6. CONSENT

Jaakko Pöyry Consulting (Asia Pacific) Ltd has given, and has not withdrawn before delivery of a copy of the prospectus for registration, its written consent to the distribution of the prospectus with this report included in the form and context in which it was prepared.

Jaakko Pöyry Consulting (Asia Pacific) has offered itself as available to provide consultancy services to Greenplan Forestry Ltd. However, neither Jaakko Pöyry Consulting (Asia Pacific), nor any of its shareholders or directors, is presently or intends to be, a director, officer, or employee of the issuer of the prospectus.

Yours faithfully

G Thorp
Registered Forestry Consultant, NZ Institute of Forestry
Jaakko Pöyry Consulting (Asia Pacific) Ltd

SCHEDULE 2

Audit Report

Deloitte Touche Tohmatsu

11 October 1999

The Directors
Greenplan Forestry Limited
PO Box 24
Te Kuiti
NEW ZEALAND

Dear Sirs

GREENPLAN (Centurion 2000) FOREST PARTNERSHIP NO 45

In accordance with the requirements of the Securities Act 1978 and Clause 38 of the Third Schedule of the Securities Regulations 1983 we report as follows:

1. We have prepared this report for inclusion in the Prospectus dated 15 October 1999 for the issue of 135 units of $500 each in the partnership known as Greenplan (Centurion 2000) Forest Partnership No 45. The partnership is subject to the terms and conditions of the Deed of Participation forming part of the prospectus.

2. The partnership has not yet commenced business. Accordingly, no financial statements have been prepared.

3. **Issuer's Responsibilities**
The Issuer is responsible for the projections set out in sections 7.7 and 7.8 including the assumptions set out in section 7.7 on which they are based.

4. **Auditors' Responsibilities**
It is our responsibility to express an independent opinion on the projections presented by the Issuer and report our opinion as required under Clause 38 of the Third Schedule of the Securities Regulations 1983.

5. **Basis of Opinion**
We have examined the cash flow and financial performance projections set out in sections 7.7 and 7.8 including the assumptions set out in section 7.7 in accordance with accepted auditing standards and guidelines.

Other than in our capacity as auditors we have no relationship with or interests in the Partnership.

6. **Audit Opinion**
In our opinion:
- the projections, so far as accounting policies and calculations are concerned, have been properly compiled on the footing of the assumptions made or adopted by the Issuer set out in section 7.7 of this prospectus and are presented on a basis consistent with generally accepted accounting practice.

Actual results may differ from the projections since anticipated events frequently do not occur as expected and the variation may be significant.

7. Our examination of the cash flow and financial performance projections was completed on 11 October 1999 and our opinion is expressed at that date.

Yours faithfully
DELOITTE TOUCHE TOHMATSU

Deloitte Touche Tohmatsu.

Chartered Accountants
Wellington, New Zealand

In terms of Regulation 7(1)(b)(ii) of the Securities Regulations 1983, we hereby give our consent to the inclusion in the above mentioned Prospectus of this report in the form in which it appears. We also confirm that we have not, before delivery of this Prospectus for registration, withdrawn our consent to the issue thereof.

SCHEDULE 3

Deed of Participation

DEED made 15 October 1999 and executed on behalf of the Partners on 1999

PARTIES
1 **GREENPLAN FORESTRY LIMITED** at Te Kuiti ("the Manager")
2 The persons whose names, addresses and occupations are set out in the Third Schedule hereto and on whose behalf the Statutory Supervisor has executed this Deed (hereinafter together with their respective executors and administrators called ("the Partners")
3 **PERPETUAL TRUST LIMITED** (together with its successors and assigns called "the Statutory Supervisor")

BACKGROUND
A The Partners wish to form an ordinary Partnership under the Partnership Act 1908 for the purpose of establishing and carrying on a forestry business at Te Kuiti, pursuant to a Prospectus dated 15 October 1999 and pursuant to the Forestry Right.
B The Manager has agreed to act as manager of the Partnership.
C The Manager has appointed the Statutory Supervisor to act as Statutory Supervisor pursuant to the Securities Act 1978.
D The Partners are entitled to be registered as proprietors of the Forestry Right as tenants in common in their respective shares but have requested and the Statutory Supervisor has agreed to be registered as the proprietor of the Forestry Right in trust on behalf of the Partners.
E The terms of the Partnership, the contractual relationship between the Partners and the relationship between the Partnership and the Manager are set out in this Deed.

COVENANTS
1 **DEFINITIONS AND INTERPRETATION**
1.1 In this Deed, its Recitals and the Schedules, unless the context otherwise requires:
"Crop" means the crop established and maintained in accordance with the Plan;
"Forestry Right" means the registered Forestry Right held by the Partnership for the purposes of the Plan and granted pursuant to the Option Agreement;
"Independent Forest Auditor" means Jaakko Pöyry Consulting (Asia Pacific) Limited or such other person as shall be appointed Independent Forest Auditor by the Manager in accordance with Clause 14;
"Option Agreement" means the Option to Grant Forestry Right and Management Contracts entered into by the Manager on behalf of the Partnership on 15 October 1999;
"Partnership" means the Greenplan (Centurion 2000) Forest Partnership No. 45 constituted by the Partners pursuant to this Deed;
"Plan" means the plan for planting, tending, maintaining, managing and harvesting Pinus radiata trees and carrying away any forest produce, set out in the Prospectus as such plan may be varied from time to time in accordance with this Deed;
"Prospectus" means the Prospectus dated 15 October 1999 issued in respect of the offer of units in the Partnership;
"Rules" and "Rules of the Partnership" means the rules of the Partnership set out in Schedule 1.
1.2 References to clauses and schedules are references to clauses of and schedules to this Deed respectively.
1.3 Expressions defined in the main body of this Deed bear the defined meaning in the whole of this Deed including the recitals and schedules.
1.4 Clauses and other headings are for ease of reference only and shall not be deemed to form any part of the context or to affect the interpretation of this Deed.
1.5 References to parties are references to parties in this Deed.
1.6 References to persons shall be deemed to include references to individuals, companies, corporations, firms, partnerships, joint ventures, associations, organisations, trusts, states or agencies of state, government departments and local and municipal authorities in each case whether or not having separate legal personality.
1.7 Words importing the singular number shall include the plural and vice versa.
1.8 The schedules and appendices to this Deed and the provisions and conditions contained in such schedules and appendices shall have the same effect as if set out in the body of this Deed.
2 **FORMATION OF PARTNERSHIP**
2.1 The Partners shall be parties to a Partnership known as the Greenplan (Centurion 2000) Forest Partnership No. 45.
2.2 Upon allotment of a Unit to a Partner, such Partner will be deemed to have entered into a Partnership with every other Partner.
2.3 No Partner (except if the Manager is also a Partner, the Manager acting in its capacity as Manager) shall have the power or authority (express or implied) to bind the Partnership or any other Partner to act as agent, employee or servant of the Partnership or of any other Partner or to incur any obligation or otherwise pledge the credit of the Partnership or of any other Partner, except as expressly provided in this Deed.
3 **PARTNERSHIP BUSINESS**
3.1 The business of the Partnership shall be:
(a) to develop and carry on the business of forestry, tree farming and silviculture and to own, manage, operate, harvest, process, market and sell forests and trees of all kinds;
(b) to purchase, lease, take on hire or by other means acquire any real or personal property, any rights, privileges or easements over or in respect of any such property and to sell or dispose of the same in such manner and subject to such terms and conditions as the Partnership shall deem fit;
(c) to manage, develop, sell, lease or otherwise deal with or dispose of any property acquired or held by the Partnership;
(d) to borrow moneys upon the security of any real and personal property or part thereof upon such terms and conditions as the Partners shall think fit for carrying out the ordinary business of the Partnership; and
(e) to undertake such further or other business or operations as the Partners shall consider appropriate in all the circumstances.
4 **DURATION OF THE PARTNERSHIP**
4.1 The Partnership shall be deemed to have commenced on the date of execution of this Deed and shall be dissolved upon completion of the Plan or prior thereto in accordance with Clause 18.
5 **RULES OF THE PARTNERSHIP**
5.1 The Rules of the Partnership means those rules set out in Schedule 1.
6 **PARTNERSHIP STRUCTURE**
6.1 The Partnership shall be initially divided into 135 units of $500 each. Such initial capital shall be payable in the manner set out in the Prospectus. Each Partner shall be required to make any contributions to the capital of the Partnership required under this Deed in direct proportion to the number of units held in the Partnership.
6.2 Each Partner shall make additional contributions to the capital of the Partnership as set out in the Prospectus or otherwise as the Manager may with the consent of the Statutory Supervisor from time to time determine as being appropriate and prudent for the further development and maintenance of the Partnership business in accordance with the plan, or necessary to preserve or promote the best interests of the Partnership.
6.3 The minimum number of units which must be subscribed for as a precondition to the allotment shall be 135. No participatory securities will be allotted until all 135 units are subscribed for. The scheme will commence when all 135 units are allotted.
6.4 No Partner shall, during the continuance of the Partnership, be entitled to withdraw or receive back all or any share of the capital of the Partnership except as expressly provided in this Deed.
6.5 The Partners shall be jointly and severally liable for all Partnership debts except if a creditor has specifically agreed otherwise. There is no limit on this liability.
6.6 Each Partner shall bear the expenses and damages incidental to the affairs of the Partnership in proportion to the number of units held by such Partner provided that expenses or damages attributable to the act, omission or default of a Partner (including without limitation by way of wilful destruction or fraud) shall be borne by that Partner.
6.7 Each Partner shall at all times duly and punctually pay and discharge its separate obligations including any contributions or payments in respect of the Partnership whether present or future and shall indemnify and keep indemnified the other Partners and the assets of the Partnership and all other Partners against the same and all claims, demands, expenses or action on account thereof. No Partner shall be liable for the contributions, demands or payments due by another Partner to the Manager and there shall be between the Partners and the Manager no joint liability for another Partner.
6.8 The Partnership shall have a first and paramount lien over a Partner's units in and share of the assets of the Partnership in respect of all contributions or other moneys from time to time payable by such Partner to the Partnership which for the time being remain unpaid. The lien shall extend to all profits and distributions payable in respect of any units and the Manager may deduct from any profits or distribution any contribution or other moneys payable by the holder of the units to the Partnership.
7 **FOREST RIGHT**
7.1 The Partners request and direct the Statutory Supervisor to be registered as proprietor of the Forestry Right in trust for the Partners as tenants in common in shares equal to the proportion that the number of units held by each Partner in the Partnership bears to the total number of units issued by the Partnership. Upon transfer or assignment of any unit or units in the Partnership the

beneficial interest in the Forestry Right relevant thereto shall be deemed to have automatically transferred to the transferee or assignee of the unit or units in the Partnership. The Partners acknowledge that their interest in the Forestry Right shall not be capable of transfer, assignment or other disposition otherwise than in conjunction with and as a result of transfer or assignment of units in the Partnership.

7.2 The Partners delegate to the Statutory Supervisor all the powers, authorities and discretions vested in them as beneficial owners of the Forestry Right to be exercised by the Statutory Supervisor on behalf of the Partnership. This delegation shall not release the Manager or the Partners from their obligations under this Deed and the Statutory Supervisor shall not be obliged to exercise any of the powers, authorities or discretions of the Partners unless authorised by the Partners in such form as the Statutory Supervisor may require.

7.3 The Statutory Supervisor covenants and agrees with the Manager and the Partners to become registered as the proprietor of the Forestry Right in trust for the Partners as tenants in common in their respective shares and to hold all income, profits, accretion and capital arising therefrom in trust for the Partners absolutely in accordance with their respective shares. The Statutory Supervisor further agrees to sign any document, deed, lease, mortgage, pledge, encumbrance or transfer of any property of the Partnership or any part thereof at the request of the Manager. The Statutory Supervisor shall first be satisfied by the Manager that the request for a signature has been duly authorised by a properly passed resolution of the Partners in accordance with this Deed.

7.4 The Partners agree that the reason the Statutory Supervisor is to be registered as the legal owner of the Forestry Right on their behalf is purely to achieve simplification of ownership inter se. The Partners agree (with the intention of conferring an enforceable obligation for the benefit of the grantor of the Forest Right (including the successors and assigns thereof) for the purposes of the Contracts (Privity) Act 1982) that the grantor (including the successors or assigns thereof) may exercise or enforce any rights and powers under the Forest Right as against the Partners notwithstanding that the Partners are not party to the Forest Right.

7.5 The Manager covenants and agrees with the Parties and the Statutory Supervisor to advise the Statutory Supervisor immediately of any dealing with the unit or units held by any Parties in the Partnership.

7.6 The Partners shall not be entitled to require the Statutory Supervisor to individually transfer to them the legal title to their beneficial interest in the Forestry Right. The Statutory Supervisor shall be obliged however to transfer the Forestry Right to the Partners or to such person as they shall nominate in writing pursuant to the resolution of the Partners properly passed under the terms of this Deed. When the Statutory Supervisor receives such written direction it shall be entitled before signing such transfer, to obtain payment of all fees, costs and expenses to which it is entitled under this Deed and to recover all moneys expended by it on behalf of or advanced to the Partnership or the Partners. Each Partner must also discharge the Statutory Supervisor from any liability to the Partners under this Deed and indemnify it against all actions, claims, losses, suits or damages brought or charged against it for any matter arising in respect of the Forestry Right either before or after the date of signing of the said transfer. The indemnity shall not relate to any wilful or negligent act or omission of the Statutory Supervisor.

7.7 The Statutory Supervisor may upon giving to the Partners and the Partnership not less than three (3) months written notice of its intention so to do, resign and retire as trustee pursuant to clause 16.6 (without prejudice to the rights of the Partners and the Manager in respect of any breach of its duties and responsibilities prior to the date of retirement).

7.8 The Statutory Supervisor in its capacity as trustee pursuant to this clause shall be subject to no liability or obligation whatsoever other than any liability or obligation that arises as a consequence of this Deed as trustee for the Partners and the Partners shall not have any action or claim against the Statutory Supervisor (in its capacity as trustee pursuant to this clause 7) for any damages, loss, expenses or orders unless the same arises directly from a breach by the Statutory Supervisor of any of the duties and obligations set out in this Deed. The Partners jointly and severally indemnify the Statutory Supervisor and agree to hold it indemnified in respect of any action or claim for damages, losses, expenses or orders brought against the Statutory Supervisor arising from the act, neglect, default or omission of the Partners or any of them or of the Manager.

8 BANKERS

8.1 The bankers of the Partnership shall be ANZ Banking Group (New Zealand) Limited or such other Bank as from time to time agreed by the Partnership.

8.2 All cheques, drafts and bills of exchange drawn on the Partnership shall be signed by such persons as are authorised by the Manager in writing. All Partnership moneys shall be as and when received paid into the Partnership's bank account.

9 AUDITORS AND SOLICITORS

9.1 Unless otherwise decided by the Partners by ordinary resolution, the auditors of the Partnership shall be Deloitte Touche Tohmatsu, Chartered Accountants who shall hold office until such time as the Partnership shall by ordinary resolution appoint another qualified auditor as Auditor. The solicitors shall be Kensington Swan, Solicitors, Wellington and Auckland or such other suitably qualified solicitor or solicitors as the Partnership shall by ordinary resolution appoint.

10 MANAGER

10.1 The Partners and each of them appoint the Manager and the Manager accepts appointment as and from the date hereof to be sole manager of the Partnership. The Manager shall manage the business of the Partnership and the interests of the Partners therein and receive on behalf of the Partnership all income and profits of whatsoever nature from the Partnership business.

10.2 The Manager shall subject to any direction of the Partnership to the contrary, use its best endeavours and skill to ensure that the affairs of the Partnership are conducted in a proper and efficient manner and in accordance with the Plan and will use due diligence and vigilance in the exercise and performance of its functions, powers and duties as the Manager of the business of the Partnership but provided that the Manager performs its duties diligently and vigilantly at all times it shall in no way be liable to the Partners or any of them for any diminution in the capital of the Partnership or the income from the business of the Partnership or any other loss, costs, damages, expenses or inconvenience of any nature whatsoever which may result from any act or omission of the Manager.

10.3 Notwithstanding anything else contained in this Deed, the Manager shall not be deemed to be in breach of any of its obligations under this Deed if and to the extent that fulfilment and performance of such obligations shall be prevented or delayed by factors or events beyond the Manager's reasonable control or where performance of such obligation requires the Manager to expend funds for the business of the Partnership in circumstances where the Manager has properly called for but failed to be provided by the Partners or any of them with funds to enable the Manager to perform such obligation.

10.4 If during the term of this Deed the Manager shall be of the reasonable opinion that it may be to the commercial advantage of the Partnership to vary the Plan or that any variation of the Plan is necessary or desirable to protect the interests of the Partnership then the Manager may vary the Plan provided the Manager first (except in the case of an emergency requiring prompt action by the Manager to protect or preserve the interests of the Partnership):

(a) obtains an opinion in writing from the Independent Forest Auditor that the variation to the Plan may be reasonably regarded as being to the commercial advantage of the Partnership or reasonably necessary or desirable to protect the interests of the Partnership; and

(b) gives at least 30 days prior notice in writing to each of the Partners and the Statutory Supervisor of any intended variation of the Plan together with a copy of the Independent Forest Auditor's opinion in respect thereof and in the case of a variation which would increase to any material extent the likely contributions to be made by the Partners above the real value of the projected estimated contributions required to be made by the Partners as set out in the Prospectus, such variation is first sanctioned by an extraordinary resolution of the Partners.

11 POWERS OF MANAGER

11.1 The Manager shall have the following powers and authorities in respect of the conduct of the affairs and business of the Partnership:

(a) to carry on the business for which the Partnership is established and to do or cause to be done all things and to enter into all agreements which may be necessary or desirable for such purposes;

(b) to give valid and effectual receipts for all moneys coming into its hands on behalf of the Partnership or any Partner;

(c) to open or otherwise operate a current account with any bank or other lending institution into which all moneys coming into its hands on behalf of the Partnership or any Partner shall be paid as soon as practicable and to make deposits and withdrawals therefrom and to sign cheques drawn on the same in respect of any expenditure authorised by these presents;

(d) to enter into arrangements for profit sharing, union of interests, amalgamation, co-operation, joint venture, reciprocal concessions, licensing distribution or otherwise with any person or company carrying on or engaged in or about to carry on or engage in any business or transaction capable of being conducted so as to directly or indirectly benefit the Partnership and to take or otherwise acquire and deal in choses in action, choses in possession, shares and securities of any such company and to sell, hold, re-issue with or without guarantee or otherwise deal with the same and to grant licences and rights in and to any property of the Partnership to any such person or company;

(e) subject to approval of the Partners by means of an extraordinary resolution, to borrow, raise or secure the payment of money in such manner as it shall think fit and in particular to issue notes, bonds, obligations and securities of all kinds and to frame, constitute and secure the same as may seem expedient with full power to make the same transferable by delivery or by instrument of transfer or otherwise and to charge or secure the same on the assets of the Partnership or upon any specific property and rights present and future of the Partnership or otherwise howsoever;

(f) subject to the approval of the Partners by means of an extraordinary resolution to lend or advance money or give credit to any person or company and to guarantee and give guarantees for payment of money or the performance of contracts or obligations by any person or company otherwise assist any person or company;

(g) to pay all rates, taxes, interest, insurance premiums, wages, legal and accounting fees and expenses and all such other outgoings, expenses, charges and costs payable in respect of the Partnership business or the Management or supervision thereof;

(h) to attend and vote for and represent the Partnership at any meeting or meetings of creditors of any bankrupt or any insolvent person or under the winding up or liquidation of any company or companies or otherwise in respect of any debt or claim which the Partnership may have or in which the Partnership may be interested and to prove debts and receive compositions or dividends and to take or join in taking proceedings for having any debtor adjudicated bankrupt or for obtaining a winding up order in respect of any

company, corporation, association or syndicate and for all or any of the purposes as aforesaid to sign, make and do all such notices, applications, declarations, petitions and things as the Manager may consider necessary or expedient and for any of the purposes aforesaid to appoint any person or persons as the Manager's proxy or proxies and to sign all necessary documents for such purposes;

(i) for the purposes of exercising the aforesaid powers and authorities or any of them to employ such solicitors, accountants and other professional persons as the Manager shall think necessary or expedient and to pay all fees and charges in respect of such employment as are customary and reasonable for work of that nature;

(j) to sign, seal, execute, deliver, give and execute in the name of any Partner any contract, agreement, memorandum or other document which may be necessary or desirable in the exercise of any of the powers or remedies conferred upon the Manager by this Deed;

(k) to employ such employees, agents, advisers and contractors or other persons to perform, or assist in the performance of the Partnership business as the Manager shall deem necessary;

(l) subject to the approval of the Partners by means of an extraordinary resolution to do or perform any other act, matter or thing which may seem to the Manager in its absolute discretion to be expedient in the interests of the Partnership.

12 OBLIGATIONS OF MANAGER

12.1 The Manager shall devote such time as is necessary to faithfully and diligently perform such duties and exercise such powers as may from time to time be assigned to or vested in it and shall use its best endeavours to promote the interests of the Partnership.

12.2 The Manager shall (in addition to the Manager's obligations under Clause 3 of the Seventh Schedule to the Securities Regulations 1983):

(a) from time to time call meetings of the Partners for the purposes of discussing the affairs of the Partnership without in any way limiting the Manager's rights and duties to transact the business of the Partnership. The Manager will call a meeting of Partners as required by Rule 1(a) of the Rules of the Partnership or otherwise as the Manager believes necessary;

(b) attend to the transfer of Partnership units on the request of any Partners as provided in the Rules of the Partnership;

(c) supervise the collection of the Partnership's income (whether by way of contributions of capital, sales of timber, rent or otherwise);

(d) cause to be paid as and when they become due and payable, all accounts of contractors and claims for wages and salaries for services rendered and shall keep any Partnership assets free from liens and encumbrances resulting from such operations save to the extent only that the same may arise from a bona fide dispute with respect thereto;

(e) permit any shareholder, or any duly authorised representative of the Partners, or the Statutory Supervisor at their sole risk and expense, full and free access at all reasonable times for the purpose of inspection and observation of all operations of every kind and character being conducted by the Manager for the purpose of the Partnership;

(f) market any forest produce to the best commercial advantage of the Partners;

(g) in respect of all operations conducted in carrying on the business of the Partnership under this Deed effect and maintain in full force at the expense of the Partnership and for the benefit of the Partnership any and all insurances required by any applicable law as well as:

(i) full insurance cover for damage or destruction of the Crop by fire;

(ii) full insurance cover of all other Partnership assets against all usual risks;

(h) compromise, settle or defend any and all claims and suits by third parties arising out of the conduct of the Partnership business to the extent not covered by insurance at the expense of the Partnership, provided that the Manager shall not pay more than the equivalent of $5,000 in settlement of any claim or suit without obtaining the approval of an ordinary resolution of the Partners;

(i) provide the Independent Forest Auditor with such assistance as the Independent Forest Auditor may reasonably require;

(j) cause all work required to establish, maintain, manage and harvest the Crop on the Land in accordance with the Plan to be carried out in a proper manner in accordance with recognised good forestry practices, with all reasonable skill and effort required in the circumstances, and in accordance with the terms and conditions of any applicable legislation;

(k) furnish to each of the Partners, and the Statutory Supervisor at the same time as the annual financial statements referred to in Clause 15.3, an annual management report detailing progress in the Plan in a form as agreed between the Statutory Supervisor and the Manager.

12.3 Nothing in this Deed shall operate to prevent, interfere with or limit any other work the Manager may wish to perform elsewhere including work on behalf of any other forestry partnership.

13 MANAGER'S REMUNERATION

13.1 The Manager shall be remunerated for its services at the rate of $2,900 per annum, payable in advance on the 1st April in each year commencing on 1 April 2001. No remuneration shall be payable for the period prior to that date. The Manager's remuneration may be reviewed from time to time at the request of the Manager. Any increase shall be subject to the agreement of the Partners by ordinary resolution.

14 INDEPENDENT FOREST AUDITOR

14.1 The Manager shall on behalf of the Partnership, engage the Independent Forest Auditor to act at such time or times as required by the Plan, as the Manager shall consider necessary or desirable or as otherwise required by ordinary resolution of the Partners as the Independent Forest Auditor to the Partnership. The Independent Forest Auditor's fees shall be for the account of the Partnership. The report of the Independent Forest Auditor shall be furnished by the Manager to each Partner and the Statutory Supervisor within thirty (30) days of receipt by the Manager.

15 ACCOUNTING AND DIVISION OF PROFITS

15.1 The Manager shall at all times keep in such manner as will enable any audit to be conveniently and properly carried out, accounting records that:

(a) correctly record and explain all the transactions of the Partnership;

(b) will at any time enable the financial position of the Partnership to be determined with reasonable accuracy; and

(c) comply with the provisions of the Companies Act 1993, the Securities Act 1978, the Financial Reporting Act 1993 and all other applicable legislation, together with all regulations made pursuant thereto.

15.2 The Manager shall produce at the end of each financial year of the Partnership financial statements as are required pursuant to the Financial Reporting Act 1993 in respect of the Partnership business. The financial statements shall be audited at least once in every year, unless the Statutory Supervisor grants the Manager written dispensation from this requirement and all Partners present at a general meeting of the Partnership in person or by proxy by unanimous resolution agree to such dispensation. The Auditor may report directly to the Statutory Supervisor any matter or aspect of the Accounts that the Auditor believes is necessary or desirable to so report.

15.3 The Manager shall cause a copy of the audited financial statements to be furnished to the Statutory Supervisor within five (5) calendar months from the balance date. Thereafter the Manager shall cause a copy of the financial statements to be furnished to any Partner upon request by that Partner. The Manager may complete such financial statements itself or it may employ chartered accountants in public practice to keep the Partnership accounts and to prepare the financial statements and may charge the cost of doing so as an expense of the Partnership business.

15.4 The accounting records shall be kept at the office of the Manager or at such other place as the Statutory Supervisor may approve. Such records shall be kept in a written form and shall be available to any Partner, or the Statutory Supervisor, at any time, without charge to that person so requesting it.

15.5 The Manager shall distribute to the Partners from the profits of the Partnership such amounts as shall be recommended by the Manager and approved of by the Partners. The net profits of the Partnership shall be allocated pro rata in accordance with the units held by each Partner Provided That the Manager shall deduct from any share of profits available for distribution to any Partner any contribution, interest or other moneys which may be due or owing by such Partner to the Partnership. Unless otherwise approved by the Statutory Supervisor, the net profits of the Partnership shall be distributed in full in each year Provided That if there are any losses which must be carried forward to a succeeding year then such losses shall be deducted from any profits in such succeeding year.

15.6 All losses of the Partnership shall be allocated pro rata in accordance with the units held by the Partners.

16 STATUTORY SUPERVISOR

16.1 The Statutory Supervisor shall exercise reasonable diligence to ascertain whether or not any breach of the terms of this Deed or of the offer of the units has occurred and, except where it is satisfied that the breach will not materially prejudice the interest of the Partners, shall do all such things as it is empowered to do to cause any breach of those terms to be remedied.

16.2 The Statutory Supervisor will be registered as proprietor in trust for the Partners of any land or registered Forestry Rights acquired by the Partnership in accordance with the provisions of clause 7.

16.3 The Statutory Supervisor shall be entitled to receive all notices and other communications relating to the Partnership which any Partner is entitled to receive.

16.4 The Manager shall from time to time:

(a) at the request in writing of the Statutory Supervisor, make available for its inspection the whole of the accounting and other records relating to the Partnership;

(b) give to the Statutory Supervisor such information as it requests with respect to all matters relating to such records; and

(c) give to the Statutory Supervisor notice of any matter or circumstance that arises which may materially adversely effect the interests of the Partners or the Partnership and shall give notice of any change in the effective management or control of the Manager.

16.5 The appointment of the Statutory Supervisor under this Deed shall (subject to the provisions of the Securities Act 1978) be terminated forthwith if the Statutory Supervisor:

(a) ceases to carry on business or if a liquidator or provisional liquidator is appointed (except for the purpose of amalgamation or reconstruction);

(b) has a receiver or receiver and manager appointed who is not removed or withdrawn within thirty (30) days after appointment;

(c) ceases to be a trustee corporation approved by the Securities Commission under Section 48 of the Securities Act to act as a trustee; or

(d) is removed by extraordinary resolution of the Partners for any reason whatsoever.

16.6 The Statutory Supervisor may (subject to the provisions of the Securities Act 1978) retire upon giving three (3) months written notice to the Manager of its desire to do so.

16.7 On the termination of the Statutory Supervisor's appointment or the retirement of the Statutory Supervisor the Manager shall forthwith, subject to any approval required by law, appoint in its stead some other persons or corporation where necessary approved by the Securities Commission.

16.8 The new Statutory Supervisor shall execute a deed of undertaking to the Manager and the Partners to be bound by all the obligations of the Statutory Supervisor as from the date of the appointment and thereafter the new Statutory Supervisor will be entitled to exercise all the powers and shall be subject to all the duties and obligations of the Statutory Supervisor as though the new Statutory Supervisor had been originally named as a party to this Deed. The removed or retiring Statutory Supervisor shall from such date be released from complying with the obligations under this Deed but remains liable for any antecedent breach thereof.

16.9 The Statutory Supervisor may be released from liability where the Statutory Supervisor has failed to show the degree of care and diligence required either with respect to specific prior acts or omissions or on the Statutory Supervisor ceasing to act, but only where such release is given pursuant to an extraordinary resolution of the Partners.

16.10 The remuneration for the Statutory Supervisor shall be such amount or rate as may from time to time be agreed between the Statutory Supervisor and the Manager. The Statutory Supervisor shall also be reimbursed by the Partnership all reasonable costs and expenses (including legal and accounting costs and expenses) incurred by the Statutory Supervisor in carrying out its duties under these presents.

16.11 The Statutory Supervisor may from time to time hold funds pursuant to this deed as trustee for and on behalf of one or more Partners. The Statutory Supervisor shall invest such funds in such manner as it thinks fit and shall account to the Partner or Partners on whose behalf such funds are held for any income accrued on such investment Provided That:

(a) in making any such investment, the Statutory Supervisor shall exercise the care, diligence and skill required of a trustee pursuant to Section 13C of the Trustee Act 1956;

(b) for the purpose of this clause, the Statutory Supervisor shall not be deemed to have breached such standard of care, diligence and skill by reason only of investing the whole of such funds in one or more "Registered Banks" (as that term is defined in the Reserve Bank of New Zealand Act 1989);

(c) notwithstanding anything to the contrary contained elsewhere in this Agreement, the Trustee Act 1956 or otherwise, the Statutory Supervisor shall be entitled (subject to being satisfied in accordance with its duty under paragraph (a) above as to the available security for any such advance) to invest such funds by advancing the same to any member of the Partnership, the Manager, any person involved in the promotion of the Partnership or any related company or relative (as defined in Section 2(1) of the Companies Act 1993) of any such person.

17 SECURITIES REGISTER

17.1 The Manager shall maintain or cause to be maintained a register of units issued by the Partnership in accordance with Section 51 of the Securities Act 1978 and shall issue to each Partner entered in the register a certificate in respect of the units held in the Partnership in accordance with Section 54 of the Securities Act 1978.

17.2 The Auditor shall, in conjunction with and at the time of the audit of the Partnership prepare financial statements in accordance with Clause 15.2, inspect and audit the securities register and may report directly to the Statutory Supervisor any matter or aspect of the securities register or its operation that the Auditor believes is necessary or desirable to so report, including without limitation, any failure by the Manager to comply with the provisions of the Securities Act 1978 in respect of the securities register.

18 DISSOLUTION OF PARTNERSHIP

18.1 No one Partner or combination of Partners shall have the right or power to call for or effect a dissolution of the Partnership unless the Partners pass an extraordinary resolution of the Partners that the Partnership shall be dissolved.

18.2 Without derogating from Clause 18.1 of this Deed, the Partnership shall be dissolved upon the sooner to occur of:

(a) the passing of an extraordinary resolution of the Partners that the Partnership be dissolved;

(b) the completion of the Plan.

18.3 The death, bankruptcy, liquidation or insanity of any Partner or the transfer of any share in the Partnership shall not dissolve the Partnership and the Partnership shall continue in existence between the Partners and the person or persons acceding to the interest of the such deceased, bankrupt, liquidated or insane Partner (any rule of law or equity notwithstanding) upon the terms embodied in this Deed.

18.4 In the event of the Partnership being dissolved, then the Manager shall, as soon as practicable after the date of dissolution, cause a full and general account to be taken of all assets, credits, debts and liabilities of the Partnership and shall, in accordance with any resolution of the Partners in that regard, proceed as soon as practicable, to realise and dispose of the assets of the Partnership and shall from the proceeds thereof discharge or satisfy debts and liabilities of the Partnership and the expenses of the dissolution and realisation of the assets of the Partnership.

18.5 Upon completion of the realisation of the assets of the Partnership, payment of the expenses thereof and the discharge or satisfaction of the debts and liabilities of the Partnership, the Manager shall cause final accounts of the Partnership business to be drawn up, which accounts shall be audited by the Auditor. The Manager shall furnish each Partner and the Statutory Supervisor with a copy of the audited accounts and each of the Partners shall be entitled to receive such share of the unpaid profits of the Partnership and the net assets of the Partnership shown in such accounts as is equal to that Partner's proportion of the units issued in the Partnership.

19 REMOVAL OF MANAGER/RETIREMENT OF MANAGER

19.1 The provisions relating to the removal or retirement of the Manager are more particularly set out in Schedule 1 (Rule 5).

20 STATUTORY PROVISIONS

20.1 In the event of any conflict between the statutory provisions of the Seventh Schedule to the Securities Regulations 1983 and this Deed then the Statutory provisions shall prevail.

21 AMENDMENT OF DEED

21.1 The Statutory Supervisor may, on behalf of the Partners, concur with the Manager in making any alteration, modification, variation or addition ("the Change") to this Deed in the following cases, namely:

(a) if in the opinion of the Statutory Supervisor the Change is made to correct a manifest error or is of a formal or technical nature or is convenient and is not prejudicial to the general interests of the Partners; or

(b) if the same is authorised by an extraordinary resolution of the Partners; or

(c) if the Statutory Supervisor is of the opinion that such Change is clearly not, or is clearly not likely to become, prejudicial to the general interests of the Partners; or

(d) if the same is required to comply with the provisions of any statute or statutory regulation.

21.2 Any Change to the Deed shall be recorded in a Deed of Modification of this Deed. The Statutory Supervisor shall be authorised to sign any such Deed of Modification on behalf of each of the Partners.

21.3 This Deed may be altered, modified, added to or varied if the Statutory Supervisor and the Partners agree and the same is authorised by an ordinary resolution of the Partners, or if the same is required to comply with the provisions of the Securities Act 1978 or regulations thereunder.

22 INDEMNITY OF STATUTORY SUPERVISOR

22.1 The Statutory Supervisor and its respective agents, advisers and consultants shall be indemnified out of the assets of the Partnership against all liabilities, claims, costs and expenses incurred by any of them in relation to any act, omission or advice made or given by them or any one of them for the purposes and in connection with the business of the Partnership other than acts, omissions or advice made or given in a grossly negligent or fraudulent manner and giving rise to such liabilities, claims, costs and expenses.

23 BINDING NATURE OF DEED

23.1 Notwithstanding that this Deed has not been signed by the Partners it is nevertheless binding on those Partners as if they themselves had executed the Deed.

24 ARBITRATION

24.1 All disputes and questions which shall either during the continuance of the Partnership or afterwards arise between any of the Partners and the Statutory Supervisor and the Manager touching upon this Deed or a constructural application of this Deed or as to any matter in any way relating to the Partnership business shall be referred to a single arbitrator agreed to by the parties and failing agreement to a single arbitrator nominated by the President for the time being of the Waikato Bay of Plenty District Law Society and any such arbitration shall be in accordance with the Arbitration Act 1996 or any Act amending or passed in substitution therefore.

25 CONFIDENTIALITY

25.1 Each Partner shall treat the business of the Partnership as strictly confidential.

26 NOTICES

26.1 Any notice hereunder shall be properly served if it is posted by prepaid mail or by personal delivery, in the case of:

(a) the Manager, if such notice is addressed to the Manager at 57 Te Kumi Road (PO Box 24), Te Kuiti or such other address as shall from time to time be notified by the Manager to the Statutory Supervisor and the Partners;

(b) any Partner, addressed to such Partner at the address recorded in the securities register of the Partnership;

(c) the Statutory Supervisor, if such notice is addressed to the Statutory Supervisor 233 Cambridge Terrace, (PO Box 112), Christchurch.

Any notice served in accordance with this clause shall be deemed to be served on the third day following posting or on the day of actual delivery if delivered personally.

EXECUTION

SIGNED for and on behalf of
PERPETUAL TRUST LIMITED
for and on behalf of each
of the persons listed in the
Third Schedule hereto as
their duly authorised attorney by:

SIGNED for and on behalf of
GREENPLAN FORESTRY LIMITED
by two directors:

SIGNED for and on behalf of
PERPETUAL TRUST LIMITED
by:

SCHEDULE 1

1 MEETINGS

1.1 Rules relating to meetings and the conduct thereof are as follows:

(a) The Manager, the Statutory Supervisor (or its representative) or any seven Partners may call a meeting of the Partners in the manner set out below.

(b) The Manager, the Statutory Supervisor, the Auditor and each Partner shall be entitled to receive notice of each meeting of the Partnership and may attend such meetings (either in person or by representative) and speak but only Partners may vote.

(c) A person elected by the Partners shall preside as chairperson at every meeting.

(d) Any Partner may be represented by a proxy. Such proxy may be the Statutory Supervisor or its representative.

(e) Each Partner shall have one vote for every unit held by him or her or it (or his or her or its predecessor in title). All decisions relating to the Partnership shall be by ordinary resolution except where an extraordinary resolution is expressly required. Equality of voting shall result in the resolution being deemed lost. The chairperson shall have a vote if she or he is a Partner, but not a casting vote. An extraordinary resolution shall be carried if three-quarters of the votes cast (in person or by proxy) are in favour of the resolution.

(f) A resolution in writing signed or assented to by letter, telegram, facsimile or any other electronic written communication or printed message by, in the case of an ordinary resolution, one half, and in the case of an extraordinary resolution, three quarters of the Partners entitled to vote at a meeting of the Partnership shall be deemed to have been passed as if it had been passed at a duly constituted meeting of the Partnership. For the purposes of this Rule 1(f), two or more separate documents in identical or substantially similar form signed by one or more Partners are together deemed to constitute one document containing a statement in those terms signed by those Partners on the respective dates on which the separate documents are signed or otherwise assented to. A letter, telegram, facsimile or other electronic written communication or printed message shall be adequate and conclusive proof of such assent.

(g) No business shall be transacted without a quorum. A quorum shall be not less than one third of all Partners in number (including those persons holding proxies) holding in the aggregate at least one third of the units of the Partnership.

(h) Where any unit in the Partnership is held by more than one participant whether jointly or as tenants in common then in such instances such participants shall between them have only one vote for each unit as aforesaid held by such participant or by their predecessor in title and it is further agreed and declared that any participant so holding a unit share jointly or as tenants in common shall be entitled to one proxy only pursuant to the provisions hereof and that in the event of two proxies being present at any meeting of the Partnership the Statutory Supervisor or his representative shall have the discretion as to which proxy it will acknowledge and accept as valid to represent the participant holding any unit jointly inter se or as tenants in common and it is further agreed and declared that in ascertaining whether a quorum of Partners is present account will be taken only of one person representing the joint owners of any unit as aforesaid.

(i) The Manager shall cause to be kept a minute book wherein shall be recorded the minutes and resolutions of each meeting.

(j) At any meeting a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is demanded by the Chairperson or by any Partner present in person or by proxy.

(k) Entry of a resolution in the minute book shall be conclusive evidence of the fact without proof of the number of votes recorded in favour of or against the resolution.

(l) If a poll is duly demanded or required, it shall be taken in such a manner as the chairperson directs and the result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.

(m) Any resolution of the Partnership passed at a duly constituted meeting and/or otherwise in accordance with these rules shall be final and binding on all Partners and the Manager whether present at the meeting or not.

(n) The common law rules concerning "fraud on a minority" applicable to companies shall apply equally hereto and a resolution of the Partnership shall be invalid if it constitutes a fraud on those Partners who oppose the resolution.

(o) All meetings shall be called by sending written notice to that effect to the address for service of each Partner. Except where the Statutory Supervisor considers it to be contrary to the interests of the Partnership, such notice shall be sent so as to give each Partner at least seven (7) days notice of the meeting. The notice shall contain particulars of all business to be transacted or considered at the meeting and failure to mention any matter of business in the said notice shall invalidate any resolution passed in respect of that matter at the meeting as advertised unless the Partners present or represented by proxy shall by memorandum endorsed on such resolution determine unanimously to the contrary in writing. Meetings shall be held at the offices of the Manager, or at such other place as:

(i) the Partners shall determine by ordinary resolution; or

(ii) in the absence of an ordinary resolution of the Partnership, such other place as the Manager may determine.

2 TRANSFER AND TRANSMISSION OF SHARES IN PARTNERSHIP

2.1 A Partner may sell or otherwise dispose of any unit or units in the Partnership held by that Partner.

2.2 Upon transfer or other disposition of any unit or units in the Partnership, the transferor shall also transfer or assign and shall be deemed to have transferred and assigned to the transferee all the assignor's right, title or interest in the assets of the Partnership relating to that unit or units including, without limitation, the relevant interest in the Forestry Right.

3 DEED OF ASSIGNMENT AND COVENANT

3.1 Any new Partner shall execute a Deed of Assignment and Covenant in the form set out in Schedule 2.

3.2 The Manager shall upon:

(a) execution and delivery to the Manager of the Deed of Assignment together with the certificate issued in respect of the units; and

(b) payment of a fee of $100 or such lesser sum as the Manager may prescribe;

enters the new Partners interest in the Partnership's securities register.

3.3 From the date of such registrations the new Partner shall be entitled to a share in the net profit or be obliged to contribute to the losses.

3.4 Any interest acquired by a new Partner shall be taken subject to all existing liabilities of the Partnership arising in whatsoever manner.

4 FORFEITURE OF UNITS

4.1 If a Partner ("Defaulting Partner") fails to pay any moneys due from him, her or it to the Partnership on the day specified for payment, the Manager (on behalf of the remaining Partners) may serve a notice on the Defaulting Partner requiring payment of the unpaid moneys, together with interest thereon, calculated daily at the rate determined by the Manager being a rate not exceeding 4% per annum above the interest rate which is or would be charged to the Partnership by its bank on current overdraft terms, and any expenses that may have been incurred by the Company by reason of such non-payment.

4.2 The notice shall specify a further day (not earlier than the expiration of fourteen days from the date of service of the notice) on or before which the payment required by the notice is to be made. The notice shall also state that in the event that payment in full is not made by the time appointed the shares in respect of which the call was made will be liable to be forfeited.

4.3 If full payment is not made by the time appointment in any notice under Rule 4.2 the Manager may, at any time thereafter, declare (on behalf of the remaining Partners) the units in the Partnership capital in respect of which the notice has been given to be forfeited. Such forfeiture shall include all Profits and distributions payable in respect of the forfeited units and all the assets of the Partnership relating to those units (including, without limitation the relevant interest in the Forest Right).

4.4 Any units so forfeited and all the assets of the Partnership relating to that unit (including without limitation the relevant interest in the Forest Right) shall be deemed to be the property of the remaining Partners and may be sold, re-issued, or otherwise disposed of in such manner, on such terms and for such consideration as the Manager in its absolute discretion thinks fit. The Manager may, at any time before such share is disposed of, annul the forfeiture upon such terms and for such considerations as it may approve.

4.5 A person whose units have been forfeited shall cease to be a Partner in respect of the forfeited units, but shall remain liable to pay to the Partnership all money which at the date of forfeiture was payable by the Defaulting Partner to the Partnership in respect of the units. The Defaulting Partner's liability shall cease if and when the Partnership receives payment in full of all such money in respect of the units.

4.6 On the forfeiture of any unit, the Manager shall:

(a) Cause a note of such forfeiture and the date thereof to be entered in the partnership register;

(b) Cause notice of such forfeiture and the date of forfeiture to be given to the Defaulting Partner in whose name it stood immediately prior to the forfeiture; and

(c) Upon the disposal of any forfeited share cause a note of the manner and date of such disposal to be similarly entered and given.

4.7 An entry in the partnership register that a unit has been forfeited on a date stated in the partnership register shall be conclusive evidence of the facts stated in the partnership register as against all persons claiming to be entitled to the unit. The Manager, on behalf of the remaining Partners, may execute a transfer, or assignment of the unit in favour of the person to whom the unit is sold or disposed of, and may receive the consideration from such disposal or sale. In the case of a reissue, the person to whom the unit shall have been reissued, and in the case of a sale or other disposition, the person or persons to whom the unit shall be sold or disposed of, shall:

(a) Be entered in the partnership's register as the holder of the unit; and

(b) Shall not be bound to see to the application of the purchase money;

and nor shall such person's title to the unit or to the property of the Partnership relating to that unit (including, without limitation the relevant interest in the Forest Right) be affected by any irregularity or invalidity in the proceedings in reference to the forfeiture, reissue, sale or other disposal of the unit.

4.8 Any surplus moneys (if any) resulting from sale, reissue or other disposal of forfeited units after deduction of all moneys owing, all interest accrued, all expenses incurred by reason of the non-payment which gave rise to the forfeiture and all costs and expenses of sale, reissue or disposal shall be paid to the Defaulting Partner or that Defaulting Partner's executors, administrators or assigns.

5 RETIREMENT OF MANAGER

5.1 The Manager shall cease to be the Manager of the Partnership if the Manager resigns from office by giving not less than six months notice in writing to that effect to each Partner and the Statutory Supervisor.

5.2 The Statutory Supervisor shall also have the right to remove the Manager by notice in writing if:

(a) the Manager is in breach of its obligations under the Deed or fails to carry out its duties to the reasonable satisfaction of the Statutory Supervisor and fails to remedy such breach, failure or neglect within 28 days after the service of a

written notice on it by the Statutory Supervisor requiring the breach to be remedied; or
(b) a liquidator or provisional liquidator of the Manager is appointed or if the Manager is adjudicated bankrupt, enters into a scheme of arrangement (except for the purposes of amalgamation or reconstruction or some similar purpose) or ceases to carry on business;
(c) a receiver or manager of the undertakings of the Manager or any part thereof is appointed and has not been removed or withdrawn within 30 days after appointment; or
(d) there is a change in the effective management or control of the Manager without the prior written consent of the Statutory Supervisor.
5.3 The Manager shall cease to be the Manager of the Partnership by the passing of an extraordinary resolution to that effect at a meeting convened and conducted in accordance with the rules.
5.4 Such removal of the Manager shall take effect contemporaneously with the appointment by the Partners (pursuant to an ordinary resolution at a meeting convened and conducted in accordance with the Rules) of a new manager.
5.5 Upon the removal of the Manager the Partnership shall not dissolve (any rule of law or equity notwithstanding) and the new manager shall covenant to observe and perform all and singular the covenants herein contained on the part of the Manager to be observed and performed under these presents and thereafter the new manager will be entitled to exercise all powers of the Manager and shall be subject to all the duties and obligations of the Manager contained in these presents.
5.6 If on the removal of the Manager the Partners shall fail contemporaneously to appoint a new Manager the Statutory Supervisor shall be entitled to appoint a new manager of the Partnership by notice in writing entered in the Minute Book of the Partnership.

SCHEDULE 2

This Schedule is an example of the Document to be used in the event of a transfer of a Partnership units from a retiring Partner to an incoming Partner. (Deed of Assignment and Covenant)

DEED dated

PARTIES
1 [ ] (hereinafter called "the Vendor")
2 [ ] (hereinafter with its executors and administrators and permitted assigns called "the Purchaser")

BACKGROUND
A The Vendor is a Partner in the Partnership known as the Greenplan (Centurion 2000) Forest Partnership No. 45 (hereinafter called "the Partnership") pursuant to and under and by virtue of the Deed of Participation dated 15 October 1999 ("Deed of Participation").
B The Vendor is the registered proprietor of [ ] units in the Partnership.
C The Vendor is desirous of transferring to the Purchaser such units for consideration hereinafter appearing.
D The Statutory Supervisor (as that term is defined in the Deed of Participation) is registered proprietor of the Forestry Right (as that term is defined in the Deed of Participation) as trustee for the members of the Partnership pursuant to Clause 7 of the Deed of Participation.

COVENANTS
1 In consideration of the sum of $[ ] paid to the Vendor by the Purchaser (the receipt whereof is hereby acknowledged) the Vendor transfers to the Purchaser all his, her or its right, title, estate and interest as the registered proprietor of [ ] units in the Partnership together with the Vendor's right, title and interest in all the assets of the Partnership relating thereto including, without limitation, the Vendor's interest in the Forestry Right (as that term is defined in the Deed of Participation) and the Vendor covenants with the Purchaser that she, he or it has up to the date hereof paid all moneys and observed and performed all covenants, conditions and agreements contained and implied in the Deed of Participation and will keep indemnified the Purchaser from all actions, claims and demands under the Deed of Participation and the Purchaser covenants with the Partners, the Manager and the Statutory Supervisor that he or she or it will at all times and in the manner therein described be bound by and observe, perform and keep all the covenants, conditions and agreements contained and implied in the Deed of Participation and covenants as if he, she or it had been an original signatory thereto. The Purchaser acknowledges that:
(a) he, she or it is jointly and severally liable for all debts and liabilities of the Partnership (howsoever or whensoever arising or incurred) and that there is no limit on that liability; and
(b) that the units transferred to the Purchaser are taken subject to all existing liabilities of the Partnership.
2 The Purchaser ratifies and confirms all the powers and authorities conferred upon the Manager (as that term is defined in the Deed of Participation) of the Partnership pursuant to the Deed of Participation and all acts, matters and things done by the Manager pursuant to or in exercise of those powers and authorities prior to the date hereof. The Purchaser appoints the Statutory Supervisor (as that term is defined in the Deed of Participation) to be his/her or its true and lawful attorney (hereinafter referred to as "Attorney") to act on behalf of the Purchaser to execute or cause to be executed in the Purchaser's name and on the Purchaser's behalf, any deed, document or writing necessary to effect or complete the transfer of the units in the Partnership to the Purchaser or to transfer any interest or right to any asset of the Partnership, or to assume any existing liability of the Partnership as the Attorney may think proper and expedient and which the Purchaser could lawfully do or cause to be done if acting personally and declares that no person or corporation dealing with the Attorney shall be concerned to see or enquire as to the propriety or expediency of any act, deed or matter which the Attorney may do or purport to agree to do or perform in the Purchaser's name by virtue of this deed and the Purchaser agrees to ratify and confirm any such act, deed or matter.

EXECUTION

SIGNED by the said
as Vendor in the presence of:

SIGNED by the said
as Purchaser in the presence of:

SCHEDULE 3

The Persons who are to be party to this Deed are:

Name	Address	Occupation	No. of Participatory Securities

Greenplan
Forestry Investments

GREENPLAN
FORESTRY INVESTMENTS

Greenplan (Centurion 2000) Forest Partnership No.45

15 October 1999

How do I invest?
Easy Steps Checklist

Applying to invest in the Greenplan (Centurion 2000) Forest Partnership No.45 is easy:

1) We suggest you read the information contained in this brochure and the enclosed Investment Statement carefully. Seek independent professional advice if you require extra assistance.

2) Complete the application form enclosed and ensure it is signed. You can apply in the name of one or more individuals, on behalf of a trust or in the name of a company.

   If you are investing as a trustee of a trust, or on behalf of a child under 18 years, please note that you are treated as having invested in your own right. Please provide trustees own contact details, and ensure each trustee signs the application form.

   If you are investing on behalf of a company, a minimum of two directors must sign the application form, except where there is only one director of the company.

3) Enclose a cheque for $200(options A,B,C) or $500 (option D). Cheques should be made out payable to 'Perpetual Trust Ltd - Greenplan Account' and crossed 'Not Transferable'.

4) Sign and date the Application Form and Power of Attorney, and have your signature witnessed by an independent adult witness.

5) Mail the completed application form in the Free Post envelope provided.

If you need assistance please call Greenplan on 0800 800 154.

Only 135 units are available in the Centurion Forest Partnership. Units will be allotted on a first-in, first-served basis.

The closing date for applications is 15 December 1999. Applications received after this date will be accepted only if Greenplan elects to extend the closing date. You will receive written acknowledgement of your application upon its receipt.

PAYMENT OPTIONS

There are a number of different ways to pay the $6,500 purchase price:

A. One initial payment of $200 per unit now and one payment of $6,300 per unit for the balance of the subscription price on 15 December 1999; or

B. One initial payment of $200 per unit now, one payment of $3,150 per unit on 15 December 1999 and one payment of $3,150 per unit on 15 February 2000; or

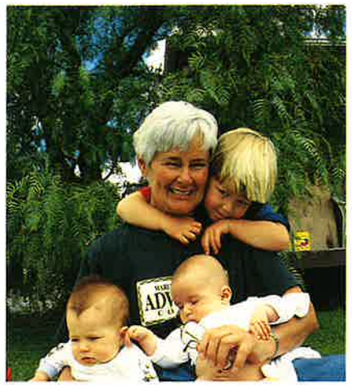
C. One initial payment of $200 per unit now, and monthly payments of $300 per unit from 15 December 1999 to 15 August 2001; (Total payments equal $6,500) or

D. One initial payment of $500 per unit now, and monthly payments of $200 per unit from 15 December 1999 to 15 May 2002. (Total payments equal $6,500)

Contents

Investment
Summary

"My own retirement plans are under control, so now I'm starting to plan for my grandchildren's future. I've bought each of them a Greenplan forest - long after I'm gone, they'll benefit from it."



Low cost, affordable investment.

By investing in the Centurion Forest Partnership No.45, you can own the equivalent of a hectare of forest for just $6,500, plus a $60 annual fee. Because 64% of this cost is tax deductible, the post-tax cost of this investment can reduce from $8,240 to under $6,500 (assuming a 33% marginal tax rate).

Excellent projected returns of $53,740.

Conservatively, based on today's timber prices, this investment is projected to return $53,740 after costs of harvesting and marketing have been deducted. This is equivalent to having your money compounding in the bank at 9.24% for 30 years (assuming a marginal tax rate of 33%).

Due to a number of factors, the harvest value of New Zealand Radiata has increased by an average of just under 5% per year over the past 30 years.* If timber prices were to continue to increase by 5% per year over 30 years, the return could increase to $222,959. This would be equivalent to having your money compounding in the bank at 16.9% for 30 years. (See page 5 of this brochure, and the enclosed Prospectus for more details).

Simple, no surprises, up-front payment with flexible payment options.

Many of our investors like Greenplan because it is so simple and easy to pay for. The initial cost of the investment covers all the budgeted expenses of establishing and managing your forest. You do not have to budget to come up with further capital during the establishment phase. Greenplan pays if any of these costs go over budget. Very easy payment options allow you to choose to pay for your forest investment over time, with monthly payments as low as $200. The only additional cost is a $60 annual administration fee.

It's a carefully structured, no hassle investment.

With this investment, all the work is done for you. Your forest is developed and managed by forestry professionals. Your money is also cared for by independent financial professionals. Comprehensive checks by independent auditors ensure that all work is done correctly and on time, and that money is managed as it should be. You can relax, knowing that your forest is growing with good people looking after it. What's more you can visit your forest at any time, and we keep you up to date with regular newsletters.

*Horgan G., Is Forestry Investment Profitable?, NZ Forest Research Institute, 1996.

An efficient, professionally managed secondary market enables you to sell your investment if your circumstances change.

Most people invest in forestry because they like the idea of a long term investment that grows over time. However, occasionally some people find that they need to sell earlier than they planned. Greenplan operates an efficient secondary market selling units in established forests.

"This is the start of our retirement planning. For us, Greenplan has given us an affordable way to plan for the future. The time payment options are great."

Professional joint venture partners.

Greenplan is not just an investment promoter and manager. We also have a stake in the forest. This means we are totally committed to ensuring that this investment is as successful as possible. It's always in our interest to make decisions that maximise the value of investors' forests. Ask any Greenplan investor and they will tell you one of our real strengths is the fact that the people you deal with are very professional, knowledgeable and friendly - we care about the forests we grow and the people we grow them for.

Investors' risks are minimised through Forest Rights.

Under Greenplan's unique investment structure, investors own the trees, while a Greenplan company owns the land they grow on. Title to the forest is indisputable through the registration of a Forestry Right on the land title. This means that investors have none of the hassles and risks associated with owning forestry land, including rehabilitation of land after harvest, and Resource Management Act considerations.

This investment is purely and simply a forestry investment.

When you invest with Greenplan you are doing something positive for the environment.

Greenplan's forests are sustainable and renewable, which means that we're not wasting native forests to provide timber. Forests also reduce greenhouse gases in the atmosphere and make our earth a nicer place to live.

Greenplan is the ideal investment for all stages of life.

A forestry investment suits all sorts of people:

- **People planning for their own retirement.**
- **Young people on a limited income making their first investment.**
- **Parents of young children doing something for their future.**
- **Experienced investors wanting to diversify their portfolio.**
- **Grandparents wanting to provide for the future of their family.**
- **Older people wanting an investment that provides for their own later years of retirement.**

What is the
Centurion Forest Partnership?

Centurion will be Greenplan's 45th partnership. Each partnership is a group of investors who jointly own a forest. Greenplan is the manager of the partnerships, and also owns 10% of each forest.

The Centurion Forest Partnership will plant, develop and harvest approximately 135 hectares of Radiata pine forest on the Centurion block, around 32 kilometres south west of Te Kuiti, near Piopio. It will be made up of 135 units, each equivalent to approximately one hectare of forest.

How much will this investment cost me?

This investment is very affordable. After the initial investment of $6,500 has been paid, the only projected additional cost is an annual administration fee of $60. This covers fire insurance, rates and forest consultancy.

Year 1	$6,500 payable through the easy payment options outlined on the inside cover
Year 2 to year of harvest	$60 per year

The $6,500 covers the full costs of establishing the forest as detailed in the Forest Management Plan. Inflation and cost overruns on these projected expenses will be met by Greenplan without further calls on the investors. Unforeseen or additional work may require further contributions.

The initial cost can either be paid in one lump sum or by one of the payment options outlined on the inside cover. For more financial details see financial forecasts in the Prospectus.

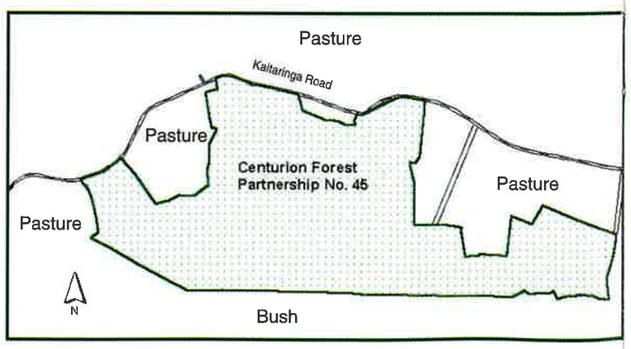
The Land

The Centurion property has been chosen for:
- Its superb King Country growing conditions;
- Access to existing roads, highways and rail lines;
- Proximity to the concentration of processing facilities around Tokoroa; and the log export port at New Plymouth.
- Easy harvesting;

This property is particularly well suited to growing a quality forest (see Forest Consultant's Report page 20). Fertile soils, an ideal climate, and good topography will all contribute to help maximise investor returns. A high proportion of the area to be planted is of easy, rolling topography. This will enable harvesting using economic and efficient ground based machinery. A sealed road runs right to the property.

The Forest

The Centurion forest is to be planted in 2000. It will be developed according to the specific guidelines contained in the Forest Management Plan, which is detailed in the enclosed Prospectus.



Establishment of the forest takes eight years and includes a number of tasks, including planting, releasing, three prunes and thinning. After year eight, nature takes over and the trees are left to grow fatter and taller. Unlike some types of investments that depreciate over time and demand increasingly costly maintenance, the older a forest gets the less care it requires and the more valuable it gets. This will create a quality forest that yields the highest proportion of high value clearwood.

What returns
Can I Expect?

The projected return for each unit in the Centurion Forest is $53,740 net[1] at harvest in 30 years time.

When reviewing these forecasts you should consider the following points:

- A return of $53,740[1] would be equivalent to investing your money in the bank at 9.24% compounding for 30 years, (assuming a 33% marginal tax rate and other assumptions as detailed in the Prospectus). Current long term bank interest rates are much lower than this! These forecasts are based on conservative assumptions as to the volume and mix of timber the forest produces, and the market value of that timber.

- Analysis of the history of forestry investment[2] shows that stumpage prices have increased on average by nearly 5% over the past 30 years, and just under 4% over the past 60 years. A number of factors contributed to this trend of increased returns, including increased average log quality; improved quality of radiata pine products; improved marketing of timber; the effect of the diminishing supply of indigenous timber worldwide.

  While some of these factors will not be relevant over the next 30 years, some will continue to affect timber prices in the future. Other factors may further enhance the value of forest investments, including technological improvements in wood processing; carbon trading i.e. the possible future introduction of trading in carbon absorption properties; certification of sustainable forestry.

Table 1

What happens if timber prices change?

Annual Average Projected Change	Projected net return	Equivalent bank deposit rate
+5%	$222,959	16.90%
+1%	$71,459	10.75%
0%	$53,740	9.24%
-1%	$40,480	7.76%
-5%	$13,733	2.36%

- Sensitivity analysis shows the effects on investment returns of different rates of price change. As Table 1 shows, if the long term trend of about 5% continues, a unit in the Centurion Forest could be worth $222,959 in 30 years time. This is equivalent to a compounding bank interest rate of 16.9%. Even if prices decline by 5% annually, investors should still receive $13,733, equivalent to a bank interest rate of over 2% (see Prospectus page 10).

- The forecasts are based on a conservative 30 year growing cycle. Greenplan is confident that trees in the Centurion Forest will reach target volumes some years prior to this, and may well be considered ideal for harvest around twenty five years of age. The average age of Radiata pine at harvest in the central North Island is currently around 26 years. Greenplan's genetically improved planting stock should result in trees that grow faster and bigger than trees from unimproved stock, which are currently being harvested.

"Greenplan forests have provided a sensible, solid diversification to my investment portfolio. Frankly, if the timber prices continue to follow long-term trends, it will be one of my better investments."

1 This projected return includes return of capital represented by repayment of the Land Owner Advance - see Prospectus for details.

2 Horgan G., Is Forestry Investment Profitable?, NZ Forest Research Institute, 1996.

Why should I *Invest in Forestry?*

Let s Go Back to Basics...

Plantation forestry is a type of farming - Tree Farming.

Instead of farming animals a forest owner farms trees for human consumption. Just like farmed animals, these are normally trees of one species selected on the basis of usefulness, ease of management and ability to grow quickly.

Radiata pine, the dominant New Zealand plantation species, has been chosen and developed because it grows quickly, responds well to intensive management and genetic improvement programs, resists pests and diseases and is suitable for a wide range of uses.

People developed the skills to farm animals because they could no longer collect enough food from wild sources. Today we are facing the same problems with wood supply. We are learning to farm trees because there is not going to be sufficient timber available from indigenous forests.

Wood is almost as important for human survival as the production of food.

The world consumes as much wood by volume as it does food. The average annual consumption of wood and wood products in the western world is about 300kg per person. This requires the equivalent of about a quarter of a Radiata tree to produce. In undeveloped countries people consume less paper and other processed products but use far more wood for fuel. There are many countries in the world that have little or no forests left.

China and India, the two most populated countries in the world, have banned all logging of what remaining forests they do have.

They are now beginning to import all their timber - much of it from New Zealand.

One hundred years ago New Zealand too was fast exhausting its native forests. A third had disappeared in pre-European times. A further third was cleared by European colonists, creating farmland and providing timber for the developing nation.

Fortunately, people realised late last century that we were going to run out of timber. Our young nation couldn't wait 300 years for the native species such as rimu and matai to grow, so the concept of plantation forestry was introduced. Radiata pine was chosen from a large number of exotic species because it suited New Zealand conditions.

Today, New Zealand is world renowned by forest industry experts as a leader in sustainable plantation based forestry.

New Zealand has 1.5 million hectares of plantion forest, of which 95% is Radiata pine.

100 years of experience, world class research and development facilities have resulted in a high degree of understanding of Radiata pine health, management, technology and plantation economics. Over the last 30 years the New Zealand Forest Research Institute has co-ordinated a program to develop the genetic quality of Radiata pine. Improvements of up to 30% in wood volume yields, form and quality over current harvests are expected.

New Zealand produces large saw logs of higher quality at younger ages than the world's major timber regions.

Additionally a number of other factors means New Zealand has a unique competitive advantage in timber production, and is an ideal location for forestry investment:

- Location close to the most important markets of South East Asia and the Pacific Rim
- Well established industry infrastructure, including transport, handling and processing
- Very high level of forest management expertise which enables forests to be intensively managed for optimum returns
- Ready availability of affordable land
- Excellent growing conditions including fertile soils and temperate maritime climate
- Stable democracy and strong market driven economy, with internationally competitive costs.

A growing cycle of 22 to 30 years means that investors can expect to be well positioned to benefit from forecast global supply shortfalls over the next few decades.

Greenplan offers you the chance to be involved in an investment that others believe.

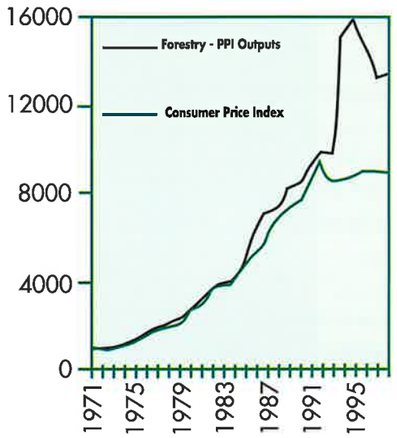
Over 70% of New Zealand plantation forests are owned by overseas companies, including International Paper, Weyerhauser, Rayonier, Juken-Nissho and Wenita. The majority of these forests are less than 20 years old. There is expected to be a considerable increase in the volume of harvested timber over the next fifteen years. Considerable investment is being made in timber processing, with over $US1 billion being committed to new facilities over the next five years.

New planting, not including replanting of harvested areas, has averaged 70,000 hectares over the past five years. Until recently, new forestry land has been confined to marginal agricultural land, mainly on the wind exposed, drought prone and less fertile east coasts of the North and South Islands. With the decline in pastoral farming and the subsequent fall in land prices, it is now viable to source and plant higher quality land in traditionally agricultural areas.

As history shows
forestry is a top performer

Figure 1

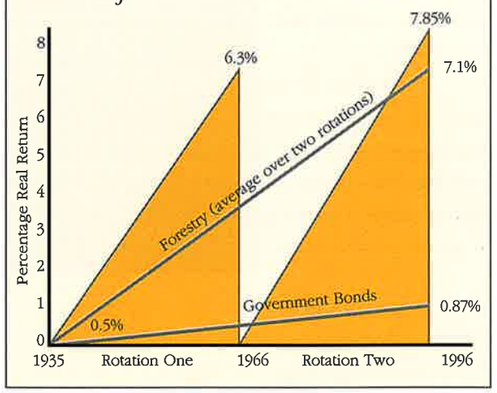
Forestry Returns and Inflation Index 1971-1997



Source: Ministry of Forestry and Reserve Bank of New Zealand

Figure 2

Forestry vs Government Bonds
Internal Rate of Return Comparison -
Adjusted to 1996 Dollar Terms



Source: Horgan G, NZFRI 1996.

Historical performance provides no guarantee of future outcomes. However, analysis of past trends combined with forecasts of market conditions, provide a basis on which to develop a picture of the future.

Greenplan's forecasts are conservative, based on current market prices, and conservative projections of timber yield.

Being a staple commodity with worldwide demand, timber prices tend to follow cycles of rising and falling prices. The overall trend has been upwards. Of course, forestry's advantage is that if prices are not favourable, harvest can simply be delayed until market conditions improve, while the trees continue to grow in size and value.

Through the late 1990s, world timber prices have been moving through the trough of a cycle. This has influenced some investors who mistakenly believe that current conditions are an indication of how forest investments will perform in the future.

More far-sighted investors understand that future timber prices will depend on more long term, fundamental changes in economic and social conditions. They continue to invest in forestry. They realise that current market conditions such as the Asian economic crisis have been caused by short term influences, which will have no influence on prices in 25 or so years.

Timber price trends have been remarkably steady over time, without the inconsistency of other more volatile investment options such as the sharemarket. Forestry has consistently produced returns above the rate of inflation (see figure 1).

Since 1935, Radiata forestry has produced an internal rate of return of over 7%, compared to less than 1% for New Zealand Government Bonds (see figure 2).

Figure 3

Forecast World Timber Supply and Demand

Source: Apsey and Reed 1995

The success of a forestry investment depends on being able to successfully sell the crop at harvest. The long term prospects for timber supply and demand are of key importance.

Today we are on the brink of major changes in world timber supply patterns. Supply is forecast to be level over the next decade, and then to increase only slowly.

At the same time global long term demand is increasing at a much faster rate, in line with population growth and accelerated by higher standards of living.

As Figure 3 illustrates, over the next few decades we are predicted to move from a situation where supply satisfies demand, to one where demand exceeds supply by approximately 25%.

The logical outcome of decreasing supply and increasing demand is increased prices. Historical performance, current developments and market forecasts provide strong indicators that today's forest investors will profit from owning forests over the next few decades.

Some pessimists point to new technology as a cause of increased substitution and decreasing demand for timber. Research shows the opposite to be true. New technology is increasingly finding more uses for timber. These include substitutes for oil-based products in plastic and ceramic production, as a textile base in clothing, and in food production.

Increased energy and environmental costs of traditional substitutes such as steel, plastic, concrete and aluminium will further increase the competitive appeal of wood products. Overall, wood will not be substituted. It is more likely to become a substitute for more products in the future.

What is *Greenplan?*

Greenplan investments are designed for sensible, forward thinking people who want to provide for their own and their family's future.

The idea for Greenplan began in the late 1980s, when its originators saw the need for a simple, affordable, risk averse, well thought out investment product that allowed ordinary New Zealanders to take part in the rapidly growing New Zealand Radiata pine forestry industry.

At the time, there were few options available for the public to invest in forestry, other than buying shares in one of the listed companies on the sharemarket, or investing a significant amount of money (over $20,000) into other forestry partnerships.

The goal was to make forestry investment accessible to the average New Zealander. And, indeed, average New Zealanders now make up most of the investors in the 39 existing Greenplan partnerships.

Greenplan investments are not like other forestry schemes.

Greenplan provides investors with a comprehensive forest development program. The risks and shortcomings of standard forestry investment programs are identified and minimised within a structure which aims to provide certainty and security to investors.

Typically forestry investment has required investors to commit ongoing capital contributions to the development of a forest. This leaves investors vulnerable to a number of risks:

- Unpredicted cost escalations over the forest's eight to ten year establishment phase.
- Poor management by a fee earning manager/promoter with little or no incentive to minimise costs and maximise returns over the life of the investment.
- Climatic risks including droughts and wind damage.
- Land ownership. Investors who own the land their forest grows on bear the risks and costs of management of surplus land unsuitable for forestry, post harvest rehabilitation, and uncertain future value of the land. Most forests today are planted on clean farmland with a range of improvements. This land becomes cutover forest land with few improvements and looks like a battleground after harvest.

With Greenplan you have:

- The certainty of knowing exactly how much you will pay for the scheduled work to establish your forest.
- A joint venture participating land owner with a vested interest in maximising the success of the investment, and whose role is clearly defined and monitored by relevant professional entities.
- Forests growing in the King Country, an area recognised as a top forestry region and with no previous drought record, or significant wind problem.
- You have none of the problems or risks associated with land ownership.
- A number of different payment options, allowing you to spread your payments, interest free, over a longer time period.

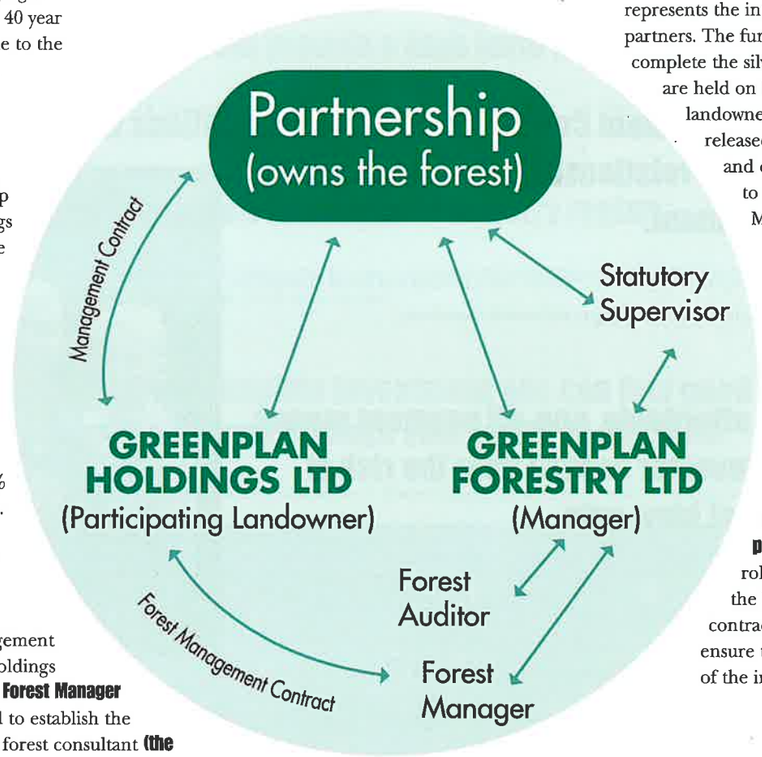
"I've got a good feeling about this investment and the best bit is, I don't have to do anything - nature does it all."

How is the *Investment Structured?*

A Greenplan investment consists of:

A group of investors (the Partnership) who collectively own a forest planted on land belonging to Greenplan Holdings. A 40 year Forest Right secures title to the forests for the partners.

A Management Contract between the partnership and Greenplan Holdings requires the forest to be established and managed according to strict guidelines. In return for providing the land and taking responsibility for any cost overruns in establishing the forest, Greenplan receives 10% of the return at harvest.



In executing the Management Contract, Greenplan Holdings contracts a **professional Forest Manager** to do the work required to establish the forest. An independent forest consultant **(the Forest Auditor)** prepares initial feasibility reports and monitors the development of the forest to ensure it progresses according to the requirements of the Management Contract.

Investors' funds are paid directly to the **Statutory Supervisor** who represents the interests of the partners. The funds necessary to complete the silviculture regime are held on behalf of the landowner and are only released as work is done and certified according to the Forest Management Plan.

Greenplan Forestry (as distinct from Greenplan Holdings) is the **investment manager and promoter.** Their main role is liaison between the Partnership and the contracted professionals to ensure the smooth running of the investment.

All forest and financial management roles are performed by **independent professionals.**

At maturity, budgeted to be at 30 years, but possibly as early as 22 years, **the crop is sold and the proceeds are shared** amongst the Partnership.

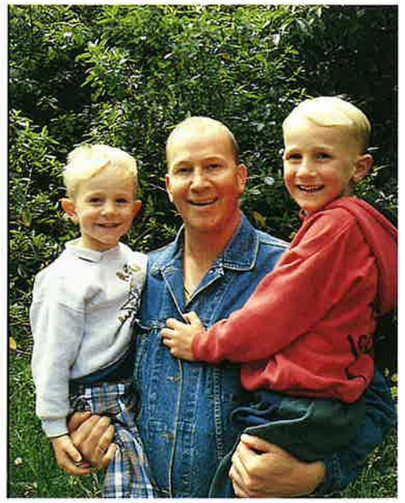
What makes Greenplan *So Special?*

The joint venture relationship.

In return for ensuring that the forest is developed according to strict criteria, and within budget, Greenplan has a 10% share of the crop at harvest. This creates a joint venture relationship designed to ensure the development of a high quality forest and maximum return to investors.

A Management Contract with Greenplan defines the joint venture relationship as a legal binding agreement.

Greenplan is required to contract with a professional Forest Manager to develop the forest according to prescribed conditions.



Our forest will be harvested about the time we plan to retire - a lump sum that will enable us to fund our retirement plans.

The affordable, one-off payment means the investor doesn't bear the risk of budget blow outs.

Greenplan, who is in a position to monitor and control costs, is responsible for ensuring budgets are met, and bears the cost of any overruns. Unexpected or additional work not included in the forest management plan may require further contributions from investors.

The security of ownership of the forest through a statutory Forest Right.

Because the investor owns the trees but not the land, there is no problem with disposal of land, rehabilitation at harvest or other Resource Management issues.

The investment structure enables total investor control.

Investors have indisputable ownership of the forest through the Forest Right which is registered on the Certificate of Title for the land. There is total investor control over all appointees including Greenplan itself. The partnership can dismiss or replace any of the professional appointees at any time.

Comprehensive safeguards and independent audits are designed to eliminate risk of mismanagement.

Independent professionals are responsible for specific forest and financial management functions. Their involvement and a tight Forest Management plan ensure investors' interests are safeguarded. At all times uncommitted funds are held by the Statutory Supervisor, until each budgeted task is completed.

Before the issue of each investment prospectus, forest consultants assess and develop a comprehensive Forest Management plan. The objective of this plan is to grow the maximum volume of highest quality and highest value timber. A Forest Manager is then engaged to follow this plan and tend the forest. The Forest Auditor monitors the management of the forest.

Greenplan's role is to look after its clients and ensure the professionals are able to perform their roles as necessary.

Greenplan investments provide a high level of tax deductibility.

Over 60% of the costs of a Greenplan investment are deductible against taxable New Zealand income or overseas income in countries where there is a reciprocal tax agreement. This substantially reduces the real cost of the investment.

Greenplan forests grow in a premier forestry region.

King Country has the infrastructure, climate and growing conditions to ensure investors will own a top quality forest that will be harvested for optimum returns (see page 16 for more details).

Greenplan is a real, tangible investment you can feel good about. You can touch, visit and walk through your forest at any time.

In fact, limited inexpensive accomodation is available at Arapito Lodge if you want to make a weekend of it.

Who are the people *behind Greenplan?*

Greenplan is a privately owned company, set up and operated by the owners. The owners plan on, and look forward to, being involved in Greenplan for a very long time. After all they have a vested interest in seeing the forests harvested for maximum return in order to maximise the value of their 10% stake in the crop.

The management team consists of five key staff. One non-executive director is also involved. The operation is run from Greenplan's office in the King Country, close to the forests planted to date. The team works in close contact to oversee all functions involving the promotion and management of Greenplan partnerships.

John Richard Barton
Dip. VFM
Managing Director

Deputy Mayor of Waitomo District, former farmer, farm management consultant and rural valuer. John has lived in the King Country for over 30 years and knows the area intimately. He oversees all aspects of the Greenplan operation.

Bruce Andrew Maunsell
BBS
Marketing Director

Former investment banker and award winning tourism business person, Bruce has been involved with Greenplan since its early development. He is involved primarily in marketing, promotion and client services.

Matthew Louis Barton
BBS
Director

Matthew graduated as a valuer and has been with Greenplan since its early stages. He is involved mainly in Greenplan sales management, client servicing and operations management.

Simon John McArley
LL.B. (Hon)
Non Executive Director

Simon is a partner at Kensington Swan, Greenplan's solicitors. He has been involved with the development and operation of Greenplan since its conception.

Warwick Shardlow
Property Manager

Former Forest Operations Supervisor with nearly 20 years forestry experience, Warwick is responsible for inspection and supervision of Greenplan forests. Liaison with the forest manager is an important part of his job.

Jon Jensen
Dip For (Man)
Forest Manager

A former top forestry student, with over 10 years hands on forestry experience, Jon is responsible for all operational aspects of forest management.

None of the owners, directors, contractors or advisors of Greenplan Forestry Ltd guarantee payment of any monies due in respect of the securities.

A number of leading professional companies have the most important roles in Greenplan s investment structure;

Forest Manager by Jon Jensen - G.F.M Ltd, Te Kuiti

G.F.M Ltd, a sister company of Greenplan, is the forest management company charged with taking care of Greenplan investor's forests. It is responsible for all operational tasks involved with the establishment, and on-going management, of the forests. All operational tasks undertaken by G.F.M Ltd are autited by independant consultants.

Forest Auditor - Jaakko Pöyry Consulting (Asia - Pacific) Ltd., Auckland

JAAKKO PÖYRY
Jaakko Pöyry Consulting

Jaakko are an international company of New Zealand and Finnish origins. They offer a wide range of forest consultancy services with offices around the world. As well as their auditing and management consultancy role with Greenplan, they are also able to provide advice on all aspects of forest management, future global market trends and timber marketing.

Statutory Supervisor - Perpetual Trust Limited, Christchurch

Perpetual Trust
TRUST is Forever

One of only five trustee companies, and formed under its own Act of Parliament in 1884, Perpetual Trust, is owned by Pyne Gould Corporation, one of New Zealand's oldest and most respected rural and financial services companies. As the representative of the investors they play a particularly important role within the Greenplan structure.

Solicitor - Kensington Swan, Wellington

Kensington Swan
Barristers, Solicitors & Notaries Public

Kensington Swan is one of New Zealand's major law partnerships. The firm has been involved with Greenplan since 1987 when the concept and investment structure first began to be developed. Kensington Swan partner, Simon McArley, is a director of Greenplan.

Securities Registrar -
Kidd Falconer & Co, Te Kuiti

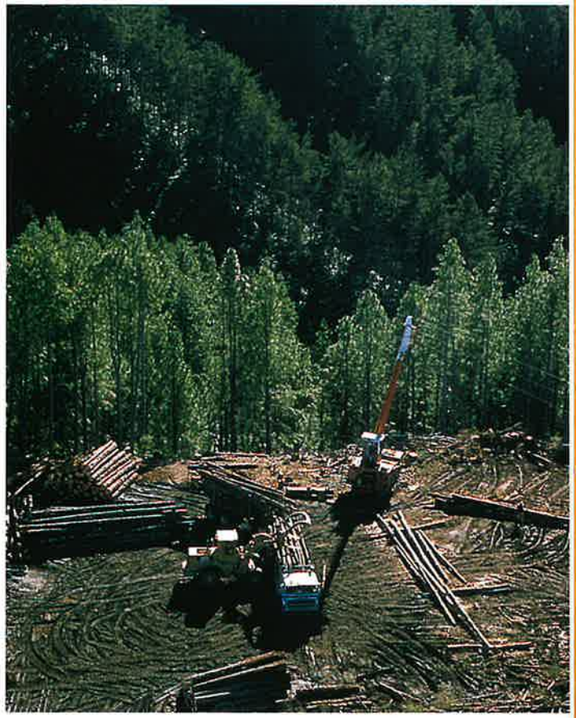
Kidd Falconer & Co

Kidd Falconer & Co is also based in Te Kuiti and works closely with Greenplan in managing investor registrations and overseeing all aspects of investors financial accounts. Two staff work fulltime on Greenplan business.

Financial Auditor -
Deloitte Touche Tohmatsu, Wellington

Deloitte Touche Tohmatsu

This respected international accounting firm audits each partnership's annual financial statements as well as reviewing the financial projections for each new investment offering.



Where *will my forest grow?*

One of Greenplan's strengths is that our forests grow in the King Country, a premier forestry region due to:

Climate

The King Country's climate is ideal for growing trees. Consistent rainfall and a minimum amount of wind both contribute significantly to maximising survival of new plantings, growth rates and timber quality.

New Zealand's Ministry of Forestry Zone Study* for the area states: "The King Country zone generally has an excellent climate for forest growth, with reliable and ample rainfall and mild temperatures. Rainfall in most areas ranges from 1500-3000 millimetres per annum, and is well distributed through the year".

Overall damage by wind is the most significant problem facing a forest owner in New Zealand. The Ministry of Forestry Zone Study also states: "The King Country is a sheltered area with winds being generally light". Consequently trees in the area suffer less damage.

By growing trees in the King Country you are minimising the climatic risk of your forestry investment.

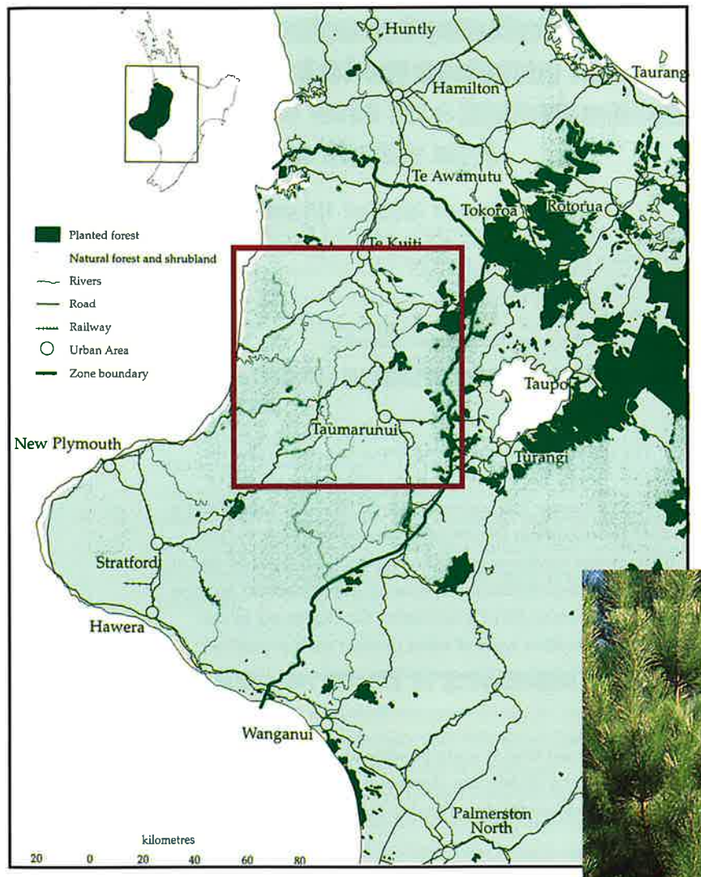
Quality Land

Greenplan forests have the advantage of growing on former farmland that has been fertilised over several decades. Soils are mainly sedimentary, of high natural fertility and with no mineral deficiencies.

Plantation forestry is a growth industry in the King Country, which has traditionally been a pastoral farming stronghold. This is a direct reflection of the steadily increasing returns that forestry offers relative to traditional farming in New Zealand. Until recently, new forestry ventures were limited to the cheaper marginal land of the East Coast and central North Island. With increasing relative returns, better land such as that in the King Country can be selected for forestry development.

* Forest Growing Investment in Taranaki and King Country, Ministry of Forestry Zone Study 1996.

The King Country



Source: New Zealand Ministry of Forestry

Growth Rates

Trees grow faster and bigger in the King Country than most other regions of New Zealand. It is Greenplan's opinion that this means higher returns, sooner, for investors.

Infrastructure

Location close to New Zealand's largest concentration of timber processing facilities centred around the giant Kaiangaroa and Kinlieth forests gives the region an excellent advantage. The area is also served by three log export ports and by the Main Trunk Rail Line which links the main cities of the North Island. Roading is of high quality and well suited to forestry.

Before farming became established in the King Country, forestry was a major industry. Roading was established to efficiently transport logs and sawn timber from native forest as land was cleared. Today many of the modern roads still follow the same routes as those early tracks.

"Whether it's for our retirement, or the kids education, we've paid for it, it's growing and we're happy."

How safe *is my investment?*

One of the overriding objectives in developing Greenplan was to create an investment structure that minimised the risks associated with other forestry investments.

Partnership Risk

Investors in a partnership are potentially liable for the debts of the partnership, including the debts of partners who fail to meet their obligations. With Greenplan these risks are minimised because:
(a) there is no partnership debt,
(b) unexpended funds are held by the Statutory Supervisor,
(c) the manager can forfeit and sell the unit of any partner who is unable to meet obligations.

Market Risk

Greenplan investments are forestry investments. The return on the investment depends primarily on the price of timber at harvest time and the quantity of timber produced. To minimise the risks associated with timber markets, Greenplan forests are managed under an intensive management regime. The objective of this is to produce the maximum volume of clearwood timber at harvest time. If clearwood continues to be the highest value grade of timber, investors should then receive the maximum possible return on their investment. If, however, there is no market for clearwood, or the relative returns on other types of wood product such as pulp or framing timber are higher, then that timber can be used for those purposes.

The reverse is not true. It is not possible to turn lower grade pulpwood or framing timber into clearwood. Management regimes that produce only lower grades of timber are a higher risk strategy.

Fire

All Greenplan's forests are comprehensively insured for fire. Additionally the King Country is a low-risk fire area because of its consistent year-round rainfall, and low level of wind.

Pests

Other than an easily treated fungal disease (dothistroma pini) and animals such as goats and possums, New Zealand Radiata forests are virtually free from pests. Greenplan budgets to spray each forest 4 times during its lifecycle with the chemical required to treat dothistroma. Greenplan also maintains an active program to kill off goats and possums and other animals that may threaten its trees.

Climatic Risks

Thanks to their location in the King Country, Greenplan forests have very low risk of loss or damage due to climatic events compared to other areas of New Zealand.

Plantation forestry *benefits the environment*

World attention is increasingly focused on the need to slow climate change and take more care of the environment. By growing forests to produce wood for a profit we are also benefiting the environment in a number of other ways:

Substitution for natural forests.

Plantations or tree farms provide an alternative to non- sustainable logging of native forests. At present rates of exploitation, there won't be any indigenous forests from which to harvest timber in a couple of decades. Remaining indigenous forests are increasingly becoming too inaccessible or reserved for conservation. Plantation forests are the only alternative.

Substitution for products that produce pollution and for non renewable resources.

Wood is a clean material that enables the substitution of 'dirty' products. The production of materials such as aluminium, plastics or oil-fired electricity generation releases carbon-based greenhouse gases into the atmosphere. Wood's versatility means that it can often be used as an economic and environmentally friendly substitute for many of these 'dirty' products. Many of the alternatives or substitutes for wood, such as steel, aluminium and plastic rely heavily on non-renewable resources such as oil and gas for their manufacture. Their production can't continue indefinitely. By using wood as a substitute for these products, natural resources are preserved.

Mitigating the effects of greenhouse gases.

The reduction of greenhouse gases caused by industrial pollution has become an international issue. The UN sponsored 1992 Rio Conference and 1997 Kyoto Conference highlighted this. In the process of manufacturing a cubic metre of steel, 8117 kilograms of carbon are released into the atmosphere. Treated wood products actually result in a net 228kg of carbon being absorbed, per cubic metre produced, because there is more carbon stored in the end product than is released in the production process.

Carbon rights trading is likely to be introduced early in the new century, enabling forest owners to benefit from their forests' ability to absorb carbon. This development has the potential to dramatically increase returns to forest owners and provide an income during the life of the forest. Greenplan is actively exploring ways to ensure its investors benefit from carbon rights trading.

Soil and water conservation, and flood control.

Plantation forestry is effective in preserving erodable land, reducing soil sedimentation and improving water quality. Research has shown that soil quality can be improved with Radiata forestry if quality forest management practices are followed.

JAAKKO PÖYRY
Jaakko Pöyry Consulting

11 October 1999

The Directors
Greenplan Forestry Ltd.
P O Box 24
Te Kuiti
New Zealand

Dear Sirs,

GREENPLAN (CENTURION 2000) FOREST PARTNERSHIP No. 45
FORESTRY CONSULTANT'S REPORT

Jaakko Pöyry Consulting (Asia Pacific) Ltd has prepared a report for inclusion in the prospectus to be issued by Greenplan Forestry Ltd (Greenplan) for the above Partnership. The report has been prepared following inspection of the property in September 1999, and securing data from the directors and managers of Greenplan.

We consider that the location and soil type of the block is well suited to radiata forestry, and that a plantable area of 135 ha is achievable. The general topography of the block ranges from easy to medium with a few steep slopes, and an estimated 50% of the block can be harvested using ground based systems.

Jaakko Pöyry Consulting (Asia Pacific) Ltd has evaluated the silvicultural regime proposed by Greenplan, which will result in a final crop of 320 sph all pruned to 6.5 metres. Based on this regime, we have forecast the wood volume expected from the block using a combination of computer-based growth modelling programs and our knowledge of yields from other forests in the region. The results have then been multiplied by the expected log prices for the various grades, after deduction of harvesting and associated costs.

The results indicate that the forest should yield an average 761 m^3/ha, comprising 31% pruned logs, 27% A-grade export logs, 15% K-grade export logs, 12% domestic sawlogs and 16% pulp logs. Jaakko Pöyry Consulting (Asia Pacific) Ltd forecasts that Centurion Forest will realise a net stumpage return of $56,600/ha

A copy of our full report dated 30 September 1999 is contained in the prospectus.

Yours faithfully
JAAKKO PÖYRY CONSULTING (ASIA PACIFIC) LTD

Jaakko Pöyry Consulting (Asia Pacific) Ltd
Forestry Consultants
Auckland, New Zealand

JAAKKO PÖYRY CONSULTING (ASIA-PACIFIC) Ltd

Postal Address
P.O. Box 73-141
Auckland Int'l Airport
Auckland
NEW ZEALAND

Telephone
+64-9-256 0003

Telefax
+64-9-256 0000

GST reg no
36-793-358

Common Questions

and Answers

What effect will current market conditions have on my investment?

Short and medium term market conditions and fluctuations such as the Asian economic crisis, and weakening prices for forest products have little relevance to investors planting trees for harvest in 25 to 30 years. Long term investors need to focus on market fundamentals affecting supply and demand for timber in the long term(see page 8 for more details). The facts are, that global demand is forecast to continue to increase while supply remains flat or decreases. This should result in a continuation of the trend of increasing prices for forest products. Short and medium term market fluctuations are part of the cyclical nature of all commodity markets and provide opportunities to optimise returns.

By the time my forest is ready for harvest will the competition from countries like Chile, who are planting their own large Radiata estates, reduce its value?

Over the last decade 96% of the world's saw logs came from native forests. By the time your logs are harvested in around thirty years, the logging of native forests will be a thing of the past. Even at accelerated planting rates, Greenplan believes it is unlikely that the world's plantation forests will make up for the reduction in timber from native forests, let alone the increased demand due to increased population and standards of living. What's more because New Zealand's growth rates are faster than other countries, to compete with your trees when they are marketed, those countries' forests already have to have been growing for a significant period of time.

Will wood substitution affect my returns?

Experts regard the likelihood of wood being replaced by substitutes as remote. All substitutes for wood come from non-renewable resources. Oil supplies, used as the basis for many products, or to fuel the production of them, are limited. Not only are dangerous by-products produced in the extraction and manufacture of these products, but the energy required is enormous. A concrete floor requires 21 times more energy to produce than a wooden one. 370 times more energy is required to produce a given volume of steel than timber.

In an enlightened world, increasingly concerned with global warming and sustainable management of resources, increased use of wood substitutes such as plastics, steel and aluminium does not make sense.

In fact , timber is being increasingly used as a substitute for other products. Japan, for example, is replacing oil-based plastics used in the agricultural and computer industries with a product made from wood. You can buy fashion clothing made completely from wood. In Finland a low cholesterol margarine substitute made from a wood product is popular.

What is the Management Contract?

Greenplan's responsibilities in developing and maintaining the forest are specified in the Management Contract. Under the contract, Greenplan must employ a professional Forest Manager to perform specified tasks, according to strict requirements. Any cost overruns in the budgeted costs of developing the forest are Greenplan's responsibility.

In this way the investors know exactly how much their forest will cost. They can also be confident that they own a quality forest, looked after by a joint venture participant with a vested interest in the success of their investment. Greenplan has a 10% share of the harvested crop.

"We're planning to live a lot longer - our Greenplan forest will provide for our later retirement years."

What's to say that forestry will not become another boom and bust industry like ostriches?

Timber is not a new "niche" product, but is a basic staple that has been traded since the earliest civilisations. Today the world consumes as much timber by weight as it does food! Far from being based on fashionable surges in demand, the success of forestry rests on the solid long term demand for a highly pragmatic product.

What is a Forest Right?

A Forest Right is the means by which you are able to own trees planted on someone else's land. Under the Forestry Rights Registration Act 1983 a Forest Right is registered on the property's certificate of title. This gives the Forest Right priority over any other claim on the land e.g. mortgages, and ensures indisputable ownership of the forest by the partnership.

Greenplan investors can visit their forests at any time.

What measures have been taken to ensure that my forest will fetch the best possible price by harvest time?

Planting of the best available genetically improved G.F.28 cuttings on top forestry land, with modern silviculture techniques, implemented by recognised forest experts, is aimed at producing the largest possible yield of highest value clearwood logs. Greenplan's one payment system makes sure that the funds will be available when needed to perform all the forest operations on time. This is critical to the production of high quality timber. If, due to a lack of funds, pruning in other forestry schemes is delayed, the resultant effect on clearwood yield can never be rectified.

Why does Radiata grow so well?

All trees grow by absorbing CO^2 out of the atmosphere and using the sun's energy via the leaves and needles, plus some water and minerals from the soil, to convert the CO^2 into carbon. Wood is nearly all carbon. A Radiata pine tree grows so well because it literally wakes up every morning and asks "How much can I grow today"? If temperatures and soil moisture are right it will grow. Once the trees are planted nature takes over. And nature's contribution to the wealth you are creating when you plant a forest is free.

Most importantly nature's wealth is stored for your benefit in the form of wood. Nature's contribution to growing apples or kiwifruit is free too, but if you don't harvest the fruit when it is ready, nature will take it back. Not so with a tree. If you don't harvest this year or next, the wood stays safely stored for when you do harvest. And of course it continues to grow.

How is Radiata pine perceived in the market?

Not only have the returns that forest owners receive increased over most of the last century, but more recently New Zealand's Radiata pine is becoming recognised as a quality timber with a wide range of uses. It is increasingly gaining acceptance as a replacement for various indigenous timbers that are no longer available. Traditionally Radiata has been used for pulp, construction framing and other lower end uses. With improved research and marketing, and higher quality timber being produced, the uses of radiata are expanding. It is being used increasingly for higher quality end uses such as veneer and furniture manufacture.

Can overseas investors purchase Greenplan units?

Yes, a large number of foreign citizens and New Zealanders living overseas have invested in Greenplan.

Can I purchase multiple units?

Of course, many of our investors do. In fact many of Greenplan current investors purchase units on an ongoing basis, building a mixed age forest investment portfolio that will give them a regular income flow as their different forests are harvested. Larger investors often purchase multiple units, sometimes in a range of partnerships to diversify their exposure. As a number of larger investors have found, Greenplan's cost structure is extremely competitive.

Having made the initial investment, what are my ongoing responsibilities?

You simply pay the annual partnership fee and that's it. Greenplan acts as the partnership manager, providing you with regular forestry reports, financial statements and so on. But although Greenplan is very much a "hands off" investment, you still retain full control over the project at all times.

What if I want to sell my Greenplan unit?

Greenplan investors can sell their investment at any time on Greenplan's efficiently managed secondary market. The sale process is quite straightforward. The investor informs Greenplan that the unit is for sale. The seller decides on a price, usually in consultation with Greenplan. The unit is advertised in Greenplan's quarterly newsletter.

What would my units be worth if I sold them before harvest time?

Generally forests increase in value at a moderate rate over the initial establishment phase. From about year 12, the rate of increase in value accelerates as nature takes over and the trees begin to have real value as timber. If long term timber price trends continue the longer you hold your investment the better your return will be.

To date all units for sale have sold for at least their initial cost. A number of units in Greenplan forests have already been sold at 50% above the purchase price within a few years of planting.

"One of our younger forest owners."

How many logs will actually be harvested from my hectare?

The forest consultant forecasts that the forest will produce 761 cubic metres of wood being about 900 saw logs in total (see Forest Consultant's Report pg 23). If we assume that a logging truck and trailer unit carries about 30 tonnes of logs then the harvest from your hectare will fill 25 trucks!

Can I visit my forest?

Yes of course - you own it! This is an investment you can watch grow. You can get pleasure out of walking under, touching and even hugging it! How different to participation in a Unit Trust where quite often you never really know what companies (or country) you have invested in. Greenplan has regular Field Days and provides every investor with a quarterly newsletter to keep them in touch. Greenplan investors are also welcome to use the accommodation at Arapito Lodge.

What about Treaty of Waitangi claims on the land?

There are a number of reasons why Greenplan investors will not be affected by Treaty of Waitangi claims on the land their forests grow on.

Firstly, Greenplan ensures that all the land it purchases for forestry is free of known claims or potential claims. Secondly, a detailed analysis of the history of the King Country shows that there are limited grounds for land claims such as have occurred in other parts of New Zealand. Thirdly, even if the land was to change ownership for any reason including a Treaty claim the partnership would still have legal title of the forest by way of the Forest Right.

How could a forest owner benefit from greenhouse gas controls?

If measures to control greenhouse gas emissions are introduced, products that are taxed or controlled because they produce toxic byproducts will become more expensive. Many of these products are substitutes for wood products. As they become more expensive demand for timber will increase and prices will rise.

A tree grows through the process of photosynthesis. Carbon dioxide is absorbed from the atmosphere, and combined with water and the energy of the sun to produce carbohydrates. Wood is a carbohydrate consisting almost entirely of carbon, hydrogen and oxygen. A forest is a carbon sink, absorbing carbon from the atmosphere and storing it.

Forestry is recognised as a way of offsetting carbon emissions by reabsorbing the carbon dioxide released in industrial processes. This is called Carbon Offset Forestry. The New Zealand government is lobbying internationally for a system of tradeable tax credits to be introduced as a method of reducing and controlling CO2 emissions. If such a system is introduced forest owners will benefit from being able to sell the carbon credits which accrue on their forests.

Currently New Zealand has 1.5 million hectares of plantation forests. It has been calculated that if every New Zealander owned a hectare of Radiata forest our country would absorb more carbon than we produce.

Why does Greenplan own the land my forest grows on?

Land ownership should be viewed in the context of the overall investment structure. The involvement of an independent land owner, who is responsible for all cost overruns on projected costs, and who has a 10% share of the harvest, means that investors know from the outset what their financial commitment will be. Other forestry investment options do not give you this certainty. With them you are responsible for all cost overruns, and you do not have a land owner with a vested interest in the success of the investment to provide an extra level of security.

The purchase of land for forestry means that all the land, whether it is suitable for forestry or not, has to be either planted or subdivided and resold. The result is that often investors are paying for hopelessly inaccessible pieces of land, requiring high roading costs.

On-selling of surplus land can involve expensive subdivision costs with no certainty of return. Using Forest Rights enables us to plant the most suitable top quality and easily accessed land to the ultimate financial benefit of investors. You are not obliged to deal with surplus or unsuitable land.

Additionally, ownership of forestry land could become a liability in the future. Who knows what Resource Management regulations may require land owners to do to their land after harvest. Greenplan investors do not have exposure to any rehabilitation costs.

Historically increases in value of forestry land have generally been much lower in comparison to returns from forests growing on that land.

Greenplan was designed to be as simple and risk free as possible for investors. We believe that land ownership increases the risks of the investment and therefore does not suit New Zealanders' investment needs.

What types of people invest in Greenplan?

All sorts of people invest in Greenplan:

- People planning for their own retirement
- Young people on a limited income making their first investment.
- Parents of young children doing something for their future.
- Experienced investors wanting to diversify their portfolio.
- Grandparents wanting to provide for the future of their family.
- Older people wanting an investment that provides for their own later years of retirement.

How does the tax deductibility work in reality?

Each year Greenplan sends investors a tax loss advice, telling them how much of the cost of the investment is deductible from their taxable income that year. Most of this is spread evenly over the first eight years while the forest is being established. When the investor completes an annual tax return the amount of deductible expenses are deducted from taxable income and therefore tax to be paid.

Can I stagger my payments or do I have to pay it all at once?

You can spread your payments over a long period if you choose, at no extra cost. Greenplan offers a range of interest free payment options. Of course the investment can be paid for immediately, or payment completed at any time if a time payment option is initially chosen.

GREENPLAN
FORESTRY LIMITED

Prospectus 2

22 AUGUST 1994

TABLE OF CONTENTS

1. Prospectus Registration

A copy of this Prospectus duly signed, together with copies of the documents required by Section 41 of the Securities Act 1978, being the Auditor's Report, the Forest Consultant's Report (with their respective consents appearing in this Prospectus), and the material contracts (as specified in paragraph 13.15) were delivered for registration at the District Registrar of Companies at 47 Boulcott Street, Wellington on the 22nd August 1994 ("Prospectus Date").

PGG Trust Limited is the Statutory Supervisor of each of the Greenplan Forest Partnerships. PGG Trust Limited does not guarantee the repayment of any of the securities to which this Prospectus relates nor the payment of interest on the securities, nor the payment of any amount payable in future in respect of any of the Securities whether by way of profits or otherwise.

GREENPLAN
FORESTRY LIMITED

2. Directory

Manager of the Greenplan Forest Partnerships:

Greenplan Forestry Limited
46 Taupiri Street
P O Box 24 TE KUITI

Directors of Greenplan Forestry Limited:

John Richard Barton Dip V.F.M.,A.N.Z.I.V
Arapito Station,
RD3 TE KUITI
Bruce Andrew Maunsell B.B.S.
1 Russell Street
P O Box 61 PICTON
Sydney Douglas Cox M.B., F.R.C.S., F.R.A.C.O.
2 Dilicar Street
HAMILTON

Auditors:

Deloitte Touche Tohmatsu
61 Molesworth Street
P O Box 1990 WELLINGTON

Forestry Consultants:

Groome Poyry Ltd
4 Kingsford Smith Place
P O Box 73-141 Mangere AUCKLAND

Forest Manager:

Carter Holt Harvey Forests Limited
Kinleith Regional Office Limited
Greyburn House, Leith Place
P O Box 648 TOKOROA

Securities Registrar:

Kidd Falconer & Co
Chartered Accountants
46 Taupiri Street
P O Box 61 TE KUITI

Statutory Supervisor:

PGG Trust Limited
178 Cashel Street
P O Box 112 CHRISTCHURCH

Solicitors:

Kensington Swan
Level 3, 89 The Terrace
P O Box 10 246 WELLINGTON

3. Management Profile

Each Partnership will be managed by the Manager, Greenplan Forestry Limited.

Greenplan Forestry Limited was specially established to promote the Greenplan proposal and manage the Greenplan Partnerships. Its main task will be liaising with investors, certifying accounts for reimbursement by the Statutory Supervisor and organising annual ongoing administrative matters.

Greenplan has already promoted eight Greenplan partnerships and the planting of 200 hectares of forestry on Arapito Station has been completed.

John Barton graduated from Lincoln Agricultural College (now Lincoln University) in 1959. In 1963, he commenced practice as a valuer and farm management consultant in Te Kuiti, a practice from which he has just recently retired. In 1973, he and his wife bought a small sheep farm south of Te Kuiti in the Northern King Country and over the last twenty years have bought adjoining farms to develop what is now Arapito Station - 760 hectare property on which they live and work. In 1992, John Barton was elected a councillor with the Waitomo District Council and serves on the Policy and Regulatory Committee and on the Rating Sub-committee of that body. He has a vast and intimate knowledge of the King Country area, gained over thirty years as a valuer and consultant.

Bruce Maunsell is a 31 year old and has a Bachelor of Business Studies (Marketing). He was a futures and options broker and currently operates a successful tourism operation in Picton - winner of the 1993 New Zealand Tourist Board's annual award for best visitor activity.

Douglas Cox is a 52 year old Ophthalmic Surgeon. He has a successful private practice in Hamilton and has been a consultant at Waikato Hospital for 21 years. He has managed a major private hospital for 8 years including 2 years as chairman of the trustees and management committee. He is also chairman of the Waikato Medical Specialists Association and President of the New Zealand Society for the Prevention of Blindness. He has been actively involved in sheep and cattle farming and horticulture for the past 15 years.

All Greenplan directors have proven management and administration skills. Greenplan is proud of the professional appointments it has made to work with these directors for the Partners' benefit.

4. Introduction to Greenplan Forestry

Until now forestry investment was beyond the reach of the small investor. Owning a forest has been too complicated or too expensive for most people. Greenplan has changed all that.

This Number 2 Prospectus follows the successful launch of our 1993/94 offering which closed fully subscribed. That forest is now planted. This new prospectus offers the same formula for forest investment. A low cost, simple, uncomplicated investment with tangible ownership of your own high producing radiata forest.

Greenplan's unique protection against cost over-runs and 97% tax deductibility are outstanding features of this investment.

In the following pages we detail what forestry has to offer both the small and large investor.

Product consumption :- everyone uses the forest's product. In fact the world consumes as much timber annually as it does food.

Demand :- the world population is predicted to increase by 40% in the next 30 years.

Supply :- over-cutting, environmental and extraction difficulties are predicted to cause global shortfalls in supply,

High cost of substitution :- many experts place future timber and energy supply in the same threatened category. To produce steel as a substitute for wood makes no sense when you consider steel takes over 2000% more energy to produce.

Historical price trends :- since 1910 some benchmark timber grades have increased on average 4 % per year (in real terms). Over this time the world has had an abundant supply of timber.

Finally don't overlook that most important and special growth factor in forestry - nature's growth.

It is nearly impossible to stop a 30 cm seedling becoming a 2 tonne log, and once you initiate that process nature's contribution costs almost nothing.

Take time to read pages 6 and 9 to get forestry investment in the right perspective. If you still have questions, just contact us.

And finally act now to secure your share. We suggest that not to have a share in N.Z.'s forest industry is almost financially irresponsible.

John Barton

Managing Director

GREENPLAN
FORESTRY LIMITED

Greenplan Prospectus No.2

This prospectus details Greenplan Forestry Limited's offer of participation in four Greenplan Forestry Partnerships to be known as:

Greenplan (Arapito 1995) Forest Partnership No.9
Greenplan (Arapito 1995) Forest Partnership No.10
Greenplan (Arapito 1995) Forest Partnership No.11
Greenplan (Arapito 1995) Forest Partnership No.12

Each of these partnerships will plant, develop and harvest twenty five hectares of Radiata forest on the "Arapito" blocks, located 40km south of Te Kuiti. Each partnership will comprise twenty five units, thus each unit will return the equivalent of approximately one hectare of radiata at harvest time.

The selection of land has been weighted in favour of land with low roading costs and good growing potential. The Forest Consultants Report in paragraph 8 provides a detailed evaluation of the land's suitability for radiata forestry.

As one of the last areas to be extensively logged for native timber the King Country has a substantial forestry infrastructure already in place. The Arapito blocks are located near the eastern edge of the large radiata plantations around Tokoroa. The mild climate of this region keeps it free from serious droughts. Planting will take place in June 1995. The Arapito partnerships are very affordable. After the base investment of $6,000 has been paid in year one, the only projected additional cost that investors will face is the annual partnership fee of $80 (this covers the partnership's administration costs.)

Your investment of $6,000 covers the full costs of planting, pruning and thinning the forests as detailed in the Forest Plan.

Inflation and cost overruns on these projected expenses will be met by the land owner without further calls on the investors.

Tax Deductibility

97% of the total costs of a Greenplan investment are tax deductible under current law. The total projected cost of each unit ($6,000 plus $80 x 29 years) is $8320. At a marginal tax rate of 33 cents in the dollar the nett cost of each unit would effectively reduce this to $5673.

Greenplan Forestry Limited will advise the partners each year of their share of tax deductible expenses.

Ownership of the Forests

Ownership of your forest is registered as a Forestry Right by way of the Forestry Rights Registration Act 1983. The Forestry Right entitles each partnership to plant, maintain and harvest 25 ha of prime quality radiata pine forest for a maximum of 32 years. The land owner is compensated for the loss of income from his land by granting him a 10% share of the crop at harvest time. Thus one hectare, valued at $85,000 at current log prices, will return $76,500 to the investor, and $8,500 to the land owner.

Growing the Forests

The first eight years are the most critical phase, as the forests are planted, thinned and pruned :

Year 1- Planting, 670 cuttings/ha.
Year 2 - First prune
Year 6 - Thinning to 320 stems/ha.
Year 8 - Final prune

From year eight nature takes over and the trees are left to grow taller and fatter. Unlike some types of investment which depreciate over time, and demand increasingly costly maintenance, the older a forest gets the less care it requires and the more valuable it becomes.

The three investment options:

1. Pay $600 on application, plus $5,400 on December 7th 1994.
2. Pay $600 on application, plus $2,700 on December 7th 1994, plus $2,700 on May 7th 1995.
3. Pay $600 on application, plus $2,700 on December 7th 1994, plus twelve monthly payments of $225 per month from January 7th 1995 to December 7th 1995.

You can buy as many units in a Greenplan partnership as you wish.

Projected Costs

Year 1	$6000.00
Years 2 - 30	$80.00

Projected Returns

Each unit (equivalent to one hectare of radiata) is projected to return $76,500 based on current log prices.

The table on page 6 shows the effects of rising log prices on this base $76,500 over thirty years.

Greenplan's Forest Philosophy

Large scale afforestation projects, where once productive farms are bought up and turned into forests, can have undesirable consequences for rural New Zealanders :

Depopulates rural areas, leading to the termination of rural services, especially schools and businesses.

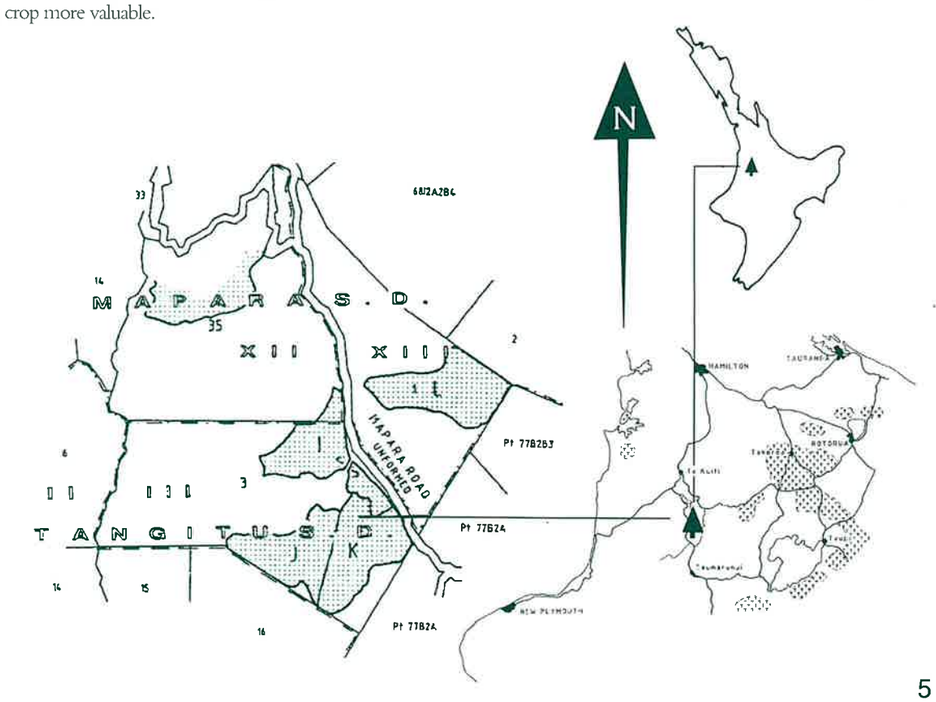
Reduced maintenance of roads and bridges by local councils.

Reduced maintenance of farm tracks, bridges and culverts by farmers.

Lowers adjoining property values.

Greenplan is all about putting trees onto farms, not turning farms into forests. By maintaining the diversity of the landscape we lessen the risk of fire and disease - the farmland acts as an extra large fire break.

By preserving rural infrastructures like roads, bridges, farm access tracks, culverts and so on we minimise the extraction costs to buyers in thirty years, making the crop more valuable.



GREENPLAN
FORESTRY LIMITED

Why invest in Forestry?

Millions of dollars are being invested into our forestry industry right now, by some of the world's toughest investors. What do they know about forestry that most New Zealanders do not? Simply that forestry has the potential to outperform almost any other type of long term investment. This has nothing to do with optimistic industry forecasts or fancy number crunching - it is the fact that, unlike other investments, trees grow. To understand how powerful a force this is you need to compare forestry to other types of investment:

This table allows you to compare different investments according to what you consider to be realistic growth factors for each type :

	PROPERTY	SHARES	BANK	GOLD	FORESTRY
FACTORS THAT CAN AFFECT THE INVESTMENT					
PHYSICAL GROWTH	None	None	None	None	Nature's growth
CAPITAL GROWTH	Rising property prices	Rising share prices	None	Rising gold prices	Rising log prices
EARNINGS	Rent	Dividends	Interest	None	None
POSSIBLE RETURNS AFTER THIRTY YEARS (ON A BASE INVESTMENT OF $6,000)					
If all factors move at 0% pa	$6000	$6000	$6000	$6000	$76,500
If all factors move at 4% pa	$42,812	$42,812	$19,460	$19,460	$248,164
If all factors move at 8% pa	$205,278	$205,278	$60, 376	$60, 376	$769,793
If all factors move at 10% pa	$418,785	$418,785	$104,696	$104,696	$1,334,879

Note: This table is provided as a guide only, and makes no allowance for taxation, inflation, or such costs as insurance and rates on property, the fees associated with other investments, or Greenplan's annual partnership fees.

Nature's growth is something you can count on. In most investments you have to choose between high risk and low risk :
High risk investments offer the potential to make enormous profits, but at the risk of losing everything.
Low risk investments reduce your chance of losing everything, but tend to limit the chances of making enormous returns. Forestry offers the best of both worlds (some of the risks involved in forestry are detailed on page 28, paragraph 11.2):

The Pessimistic Scenario

$76,500 from $6,000 invested.

So long as your trees grow they will return an impressive $76,500 from a base $6,000 investment, even if log prices do not rise one cent in the next thirty years, for the simple reason that $76,500 is what the trees would be worth at current log prices. This is a pessimistic view, as we think it is highly unlikely that timber prices will remain static for the next thirty years, any more than they have for the past thirty years! Also note that if share prices, property prices, gold prices, or whatever did not rise once cent in the next thirty years you would only return the $6,000 you invested.

Because we feel that it is important that investors do not base their decision on optimistic industry forecasts, all of the cashflows in this prospectus (see paragraph 9) have been based on the conservative assumption that the forests will return $76,500 (ie. 0% growth in log prices).

The Realistic Scenario

$248,164 from $6,000 invested.

Data from Resource Economics Inc. shows that US Douglas Fir prices (the international benchmark for stumpage prices) increased by an average 4% per annum from 1910 to 1992 in real terms (ie. adjusted for inflation.) In New Zealand a tonne of radiata worth $1.60 in 1960 would fetch over $100.00 today.

This historical evidence suggests that anticipating a return of around $248,164 from your Greenplan forest is not at all unrealistic.

The Optimistic Scenario

Over the past three years NZ export log prices have risen by a staggering 300%. Of course this will not happen every year, its just that forestry is in one of its boom periods right now. The good news is that these boom periods are likely to become more frequent in future as the predicted global timber crisis takes effect. It is frequently said that forestry's positive future has the potential to make New Zealand one of the western world's wealthiest nations by the year 2020. There is so much evidence in support of this view that we can only outline the basic trends in a document this size:

1. International demand for timber and wood fibre is predicted to increase dramatically:
The United Nations Food & Agricultural Organisation forecasts that demand for timber will increase by 40% in the next 20 years!

2. The supply of timber and wood fibre is predicted to collapse dramatically in the near future:
Over 96% of the world's saw logs still come from native forests, yet right now the world is losing a native forest the size of a rugby field every second! Massive world-wide shortages appear inevitable, as the harvests from these native forests will decline within the next decade. Major world suppliers like Sarawak have already been forced to completely ban or drastically reduce their harvest.

3.Large scale global supply/demand imbalances seem inevitable:
The predicted shortages of timber are staggering. By the year 2001 the gap between supply and demand in Asia alone is predicted to be 350-500 million tonnes every year. By then NZ's total output will be able to meet less than 5% of this Asian shortfall (and we have the second largest plantation estates in the world !) The factors which have caused the 300% rise in NZ export log prices since 1990 are just the tip of the iceberg - the real crisis is still a decade or so away. If only some of these global predictions come true, then people who grow and harvest their own forest have the potential to make impressive returns.

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What makes Forestry Investments perform?

Forestry is one of the few investments that grows physically:

The 10oz gold bar that you buy today for $6,000 will still weigh 10oz in 30 years.

The building that you buy today for $6,000 will still be the same size in 30 years.

But the small radiata seedlings that you plant today for $6,000 will grow into 320 two tonne logs by harvest time.

If they were ready for harvest today these logs are predicted to return $76,500 based on the Forest Consultant's report, paragraph 8. (current log prices are the benchmark for calculating forestry returns).

Over the coming years, while the forest is growing, rising log prices will act on this $76,500 benchmark, not on the $6,000 that it cost you to plant the seedlings (because nobody harvests seedlings!) The table on page 6 shows that if log prices rise by an average 4% per annum, the $76,500 (today's log value) will become $248,164 in thirty years (the log price at harvest time)

Because other types of investment experience no physical growth their benchmark is just the basic $6,000 investment cost. Take shares for example; compound $6,000 (today's share value) by 4% per annum (the shares increase in value by 4% per annum for 30 years, plus pay an annual dividend of 4% on the increasing share price, plus the dividend is reinvested at 4% compounding interest) and you will get only $42,812 after 30 years.

Nature's growth not only helps forestry to perform exceptionally well against other investments, it is also a lot more reliable than investments which depend solely on market forces (the ups and downs in the share and property markets since 1987 show what can happen when market forces get out of balance).

By adding the dimension of physical log growth to your investment, forestry puts at least part of your future beyond the reach of these volatile market forces. If log prices rise over the next 30 years (which we think is inevitable) you will return perhaps several hundred thousand dollars from the $6,000 you invest today. But if they do not, you will still return $76,500 (at current log prices) simply because your seedlings will grow into valuable logs.

Buying a small radiata forest could be one of the best investment decisions you can make. In fact to live in a country like New Zealand, with the best growing conditions and radiata forestry expertise in the world, and not to have a stake in what could soon become our most profitable industry could be to miss out on one of life's great opportunities.

But until now New Zealand forestry partnerships have been costly - $15,000 to $50,000 per unit is not uncommon. For most people this is simply too expensive, or means putting too many eggs into one basket.

Now Greenplan has changed all that, with a unique forestry investment structure that is custom-designed around smaller investment sums, yet offers the same potential high rates of return. This investment structure is detailed on the following pages.

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FORESTRY LIMITED

The advantages of investing in Forestry through Greenplan

The previous pages demonstrate that forestry is a sound, sensible investment, with a proven history and a bright future.

Basically there are two ways to invest directly into forestry by growing your own forest - plant it yourself, or combine your resources with other investors in a forestry venture.

Planting your own forest is fine, so long as you have the land, the capital, the expertise and access to modern genetically improved radiata stocks. For many people this is unrealistic, hence the popularity of forestry partnerships.

Until now New Zealand's forestry ventures have mainly catered for the large investor, demanding capital input of between $15,000 to $50,000 per partner. Greenplan differs from other forestry partnerships in that its investment structure has been specifically designed to suit smaller investment sums, while still retaining the same high rates of return.

Greenplan's investment structure has been fully researched and developed. Some of New Zealand's leading forestry, financial and legal firms have been consulted. The Greenplan investment structure is best described as it relates to three key issues :

1. GROWING A TOP QUALITY FOREST.

Using modern silvicultural techniques it is now possible to grow knot-free "clearwood" radiata, which is highly valued and fetches the best prices. This is our objective.

Top genetic stock:

Greenplan forests are planted using G.F.25 Pinus radiata rooted cuttings. G.F. 25 cuttings are extremely difficult to obtain, and perform significantly better than the more commonly used lesser-ranked G.F.14 to 17 stocks.

Top forest management:

Planting and tending the forests will be contracted to Carter Holt Harvey Forests Limited, New Zealand's largest forest owner. Their expertize in implementing the Forest Plan will contribute to our aim of growing a high production forest, and producing top quality timber for sale.

Top forestry land:

The suitability of the Arapito blocks for forestry is confirmed in the Forest Consultant's report, which is printed in full on paragraph 8 of this prospectus.

Vigilence:

The land owner has a 10% share in the forest. This encourages the land owner to be a careful guardian of your investment. As he lives on the land it also means that the forests benefit from the permanent presence of an interested caretaker.

2. PROTECTIONS AND SAFEGUARDS.

Greenplan puts considerable emphasis on investor confidence. The investment structure is specifically designed with important safeguards that leave the partners firmly in control of the project.

Outright ownership of the forests:

This rests solely in the investors' hands - the trees are yours by law, registered as a Forest Right under the Forestry Rights Registration Act 1983. You have registered ownership of the trees.

Full investor control of the project:

All appointments made to look after the forests and the partnerships (Greenplan Forestry Limited, the Forest Manager, the Forest Auditor and the Statutory Supervisor) can be dismissed by the partners if their performance is unsatisfactory.

Consistent forest management:

The forest manager's role does not end after the planting, thinning and pruning is completed, but extends to ongoing forest inspections for the full thirty years.

Independent forest audits:

Independent forest audits are held in years two and eight. These will be conducted by the internationally respected forestry consultants Groome Poyry Limited, who will check that the planting, pruning and thinning has been carried out to the standards defined in the Forest Plan. Investors will be provided with a full copy of these reports.

Independent financial management:

All investors' funds are held by an independent Statutory Supervisor and Trustee Custodian, PGG Trust Limited of Christchurch. They will release funds only as the forest work is completed and approved by the land owner and Greenplan Forestry Limited. By separating the role of funds manager from the other key participants Greenplan is able to provide investors with an important safeguard.

Effective protection against cost overruns:

The Land Owner Management Contract is a significant contract, and unique to Greenplan. It obliges the land owner to pay all of the projected costs of the forest works for the full eight years that it takes to plant, thin and prune the forests (after the eighth year nature takes over.)

The land owner pays these costs out of your $6,000 investment, but if the scheduled costs turn out to be higher than projected (due to inflation or poor budgeting), the responsibility to meet these extra costs lies with the land owner.

Unlike other forestry partnerships, the first person asked to meet the cost of budget overruns is not you, it is the land owner.

Effective protection against partnership debt:

The drawback with partnerships is that each partner is liable for all the partnership debts. If one partner defaults, the other partners become liable.

Most forestry partnerships demand substantial ongoing cash contributions from their investors for up to twelve years ($15,000 to $50,000 is common.) The problem is that only a small part of this debt is paid up in year one. Thus all partners have large obligations to the partnership from day one. If over the first eight to twelve years, any of the partners default on this obligation, the other partners must pay for it.

To get around this problem Greenplan have created a simple "up front" investment structure, in which projected costs (apart from the $80.00 p.a. administration fee) are paid in full.

Independent financial audits:

Full financial audits of each partnership's accounts will be conducted annually by the Auditors, Deloitte Touche Tohmatsu. Copies of this audit will be supplied to each investor.

3. SIMPLE, EFFECTIVE PARTNERSHIP MANAGEMENT.

The Greenplan investment structure allows you to set your investment, then forget it and get on with your life. Although investors have full and final control, a great deal of time and effort has been spent designing the investment structure to minimise the time and effort required to stay fully informed - Greenplan investments do not demand constant vigilence on your part.

Reputable experts to perform the key functions:

Greenplan's "hands off" investment structure is achieved mainly through the initial appointment of reputable firms like Carter Holt Harvey Forests Ltd, PGG Trust Limited, Groome Poyry, and Deloitte Touche Tohmatsu. Their participation offers peace of mind, and the knowledge that your investment is in good hands.

As a partner you are directly represented at all Work Programme and other meetings with the key participants by Greenplan Forestry Limited, whose sole task is to represent your interests at all times. Greenplan Forestry Limited will correspond with you on a regular basis, detailing progress in the forest plan, providing annual financial accounts and advising you of your share of tax deductible expenses for the year.

GREENPLAN
FORESTRY LIMITED

Common questions about Forestry and Greenplan

Is the demand for timber and wood fibre expected to remain firm over the next thirty years? What about substitute materials ?

The chances of wood being replaced by substitute products is extremely remote. Apart from the aesthetic qualities, wood is incredibly versatile, and is used in a diverse mix of products. Alternatives for some of these applications do exist, but their costs are currently prohibitive. For example, the energy required to produce a tonne of timber is just 600kW. Aluminium is 73,000 kW, steel is 14,000 kW, plastics are around 3,500 kW and cement is 3,000 kW.

What is to say that forestry will not become another boom and bust industry like kiwifruit and venison?

Timber is not a new "niche" product, but is a basic staple that has been traded since the earliest civilisations. Today the world consumes as much timber (on a green weight basis) every year as it does food! Far from being based on fashionable surges in demand, the success of forestry rests on the solid long term demand for a highly pragmatic product. Although timber prices are booming right now, the table on page 6 clearly demonstrates that good returns do not depend on a continuation of this boom.

By the time my forest is ready for harvest will the competition from countries like Chile, who are planting their own large radiata estates, reduce its value?

Over the last decade 96% of the world's saw logs came from native forests, but by the time your logs are harvested in thirty years the logging of native forests will be a thing of the past. Even at accelerated planting rates it is unlikely that the world's plantation forests will be able to meet the predicted global shortage.

Am I putting too many eggs into one basket by investing in a single crop with a thirty year growth cycle?

No. Certainly it would be irresponsible to commit your future wealth to any one type of investment, be it forestry or anything else. A balanced mix of investments is always best. As the first forestry partnership in New Zealand that is specifically designed around smaller investment sums, Greenplan allows you to participate in forestry in "bite sized chunks" that will not interfere with your other investment plans.

What measures have been taken against the possibility of fire damage?

Less than a half of one percent of New Zealand's forests have ever been damaged by fire in any growing season. In fact the chances of your house burning down are probably higher than losing your forest through fire. To guard against this remote possibility the Arapito forests are of course fully insured.

Are the forests protected against damage from disease or pests?

The disease most likely to effect Radiata is a fungal disease called Dothistroma Pini. Aerial monitoring and spraying will detect and eliminate this disease should it occur. Budget provisions have been made for this. The potential threat of the well publicised Asian Gypsy Moth should be seen in the context that our border controls are very strict and, more importantly, the means of control and elimination are known and available.

How much real control do I have over the investment?

As much control as you want. All appointments can be dismissed by the partners if their performance is unsatisfactory.

Over recent years many New Zealand investments have collapsed through mismanagement. What protection does Greenplan offer against this possibility?

The many safeguards offered by the Greenplan investment structure are detailed on pages 10 & 11 But remember that the "bottom line" is that you own the Forest Right, and none of the key participants will be able to borrow against your trees without the partners' consent. Thus, in a "worst case" scenario the forests would never be lost, even if any of these companies got into financial difficulties.

Having made the initial investment, what are my ongoing responsibilities?

You simply pay the projected annual $80 partnership fee and that's it. Greenplan act as the partnership managers, providing you with regular forestry reports, financial statements and so on. But although Greenplan is very much a "hands off" structure, you still retain full control over the project at all times.

Why does the cost overrun protection offered by the Land Owner Management Contract finish in year eight?

Simply because after eight years the forest work finishes (ie. no more thinning and pruning). From this point nature takes over and does the work, and nature's growth is free! Thus there will be no further scheduled costs after year eight, apart from the annual forest inspections (which are covered by the annual $80 partnership fees.)

I know very little about forestry, so how can I be certain that my trees are being well looked after?

1. Forest management by Carter Holt Harvey Forests Limited.
2. Independent forest reports provided by Groome Poyry Limited (in years two and eight) will check that the forest work has been completed to the required standard.
3. Each year you will be sent a full set of reports that detail exactly what has been done over the past year, and what is planned for the coming year.

What measures have been taken to ensure that my forest will fetch the best possible price by harvest time?

Planting of G.F.25 rooted cuttings on top forestry land, with modern silviculture techniques, to be implemented by recognised forest experts, is aimed at producing the largest possible yeild of A Grade clearwood logs. Greenplan's one payment system makes sure that the funds will be available when needed to perform all the forest operations on time. This is critical to the production of high quality timber. If, due to a lack of funds, pruning is delayed, the resultant effect on clearwood yeild can never be recouped.

Has Greenplan's Forest Plan been audited by independent experts?

Yes. Full evaluations of the land and the forest plan have been conducted by the Forest Consultants. This report is printed in full on paragraph 8.

Have earnings from livestock grazing or the sale of thinnings been included in the projected returns?

No. While it is true that some forestry schemes add such figures into their projections, we believe that this practice can mislead investors. Firstly livestock and trees do not mix - the possible extra returns are very small, and do not compensate for the damage that livestock can cause to the trees. Secondly, there is no guaranteed demand for thinnings in the future. In fact the demand is currently in decline. However, if the opportunity to sell the thinnings in year 5 to 6 does arise it will of course be pursued.
It is also important to note that, due to their superior performance, G.F.25 cuttings are only planted at just 670 stems per hectare (not the 1000 stems per hectare that lesser-ranked stocks require) so therefore there are fewer thinnings.

Is Greenplan planting with assistance from government or local body subsidies?

No. The directors believe that this practice has serious potential to compromise the investment at harvest time - if subsidies are granted to control erosion, how free will the partners be to harvest their crop whenever and however they choose at harvest time?

Why do Greenplan not combine land ownership with the forestry project?

The purchase of land for forestry means that all the land, whether it is suitable for forestry or not, has to be either planted or subdivided and resold. The result is that often hopelessly inaccessible pieces of land, requiring high roading costs, will be included in the forestry scheme. On-selling of surplus land can involve expensive subdivision costs with no certainty of return. The use of Forest Rights enables us to plant the most suitable top quality and easily accessed land to the ultimate financial benefit of investors. We are not obliged to deal with surplus or unsuitable land.

Does the land owner's 10% share come off my projected returns?

No. The $76,500 projected base return is nett of all harvest costs. In fact your hectare is projected to return $85,000, from which the land owner's 10% (ie. $8,500) has already been deducted

How many logs will actually be harvested from my hectare?

Approximately 320 saw logs in total, being 784 cubic metres of wood. If we assume that a logging truck and trailer unit carries about 30 tonnes of logs then the harvest from your hectare will fill 26 trucks!

Do we have to harvest in year 30?

No. Pinus radiata can be harvested any time after year fifteen. Harvesting after twenty-five years will provide the best returns. Your Forest Right extends for thirty two years, which therefore gives you a seven year "window" in which you can choose the optimum time to harvest (ie. to coincide with market peaks and avoid market troughs.)

How flexible is the investment - can I sell my forestry units before the forests are mature?

Yes. Subject only to your partner's pre-emptive rights (see rule 2 of the Deed of Participation) Greenplan units are fully transferable, and can be sold or transferred at any time you choose. The buying and selling of immature forests in New Zealand is a rapidly developing market. In addition to the open market, Greenplan's investment structure provides three potential buyers right at hand - fellow partners, the forest manager and the land owner may all be interested buyers, especially as they each have a detailed knowledge of the forests' history.

What would my units be worth if I sold them before harvest time?

Nobody can predict the future, but last year some forestry units were reported as selling for 25% above purchase price less than a year after planting.
Greenplan forests should fetch premium prices, partly because they are planted with superior G.F.25 cuttings, and partly because each forest will have a full set of forest reports that detail exactly how and when the forests were pruned and thinned.

Will there be opportunities to purchase more forests through Greenplan in the future?

Yes. One of Greenplan's basic aims is to enable investors to purchase low cost forests from time to time as their finances permit.

What is the risk that I will become liable for large partnership debts?

While you are fully liable for all the partnership debt, Greenplan have taken measures to reduce this possibility. All partners are fully paid up by the end of year one (apart from the $80 annual partnership fee). Because there are no borrowings (unlike many other forestry partnerships) there is no debt for which any partners may become liable. Investors may also invest through a Qualifying Company. The advantages and disadvantages of this option are described on paragraph 11.4.

If I borrow money to purchase my unit(s) is the interest I pay on these borrowings tax deductible?

Yes. In fact many current Greenplan investors have extended their mortgage or overdraft to purchase their units, knowing that the cost of this finance is fully tax deductible under current legislation.

Can I visit my forest?

Yes of course - you own it!

GREENPLAN
FORESTRY LIMITED

The next step

Call this number to discuss any questions or to go onto our priority mailing list:

Phone 07 878 6730
Fax 07 878 7861

We emphasise the need to act promptly. Greenplan's most recent prospectus for 200 units was fully subscribed, and units are allocated strictly on a "first come, first served" basis.

5. Introduction

This prospectus details Greenplan Forestry Limited's offer of participation in four Greenplan Forestry Partnerships to be known as:

Greenplan (Arapito 1995) Forest Partnership No. 9
Greenplan (Arapito 1995) Forest Partnership No. 10
Greenplan (Arapito 1995) Forest Partnership No. 11
Greenplan (Arapito 1995) Forest Partnership No. 12

Each Partnership will have 25 units of $6,000 each. Subscriptions may be made for one or more units and will be placed successively to each Partnership in their order of receipt. Upon full subscription of each Partnership that partnership will be closed and further subscriptions placed to a further Partnership. A maximum of four and a minimum of two Partnerships will be created. A full description of the subscription and allotment procedure is set out in paragraph 12.2 of this Prospectus.

Each Partnership will obtain a registered Forestry Right by way of the Forestry Rights Registration Act 1983 over approximately 25 hectares of land located near Te Kuiti in the Northern King Country.

The Forestry Right will entitle each Partnership to plant, maintain and harvest 25 ha of prime quality Radiata Pine forest for a maximum of 32 years.

The land is currently owned by John Barton (the "Land Owner") who will receive in return a 10% interest in the forest at maturity. No other costs are payable for the Forestry Right. The Land Owner's return is accordingly dependent upon the success of the forest.

The total cost of growing the forest is projected at $8,320 per hectare. The return is estimated to be, using prices and costs determined by the independent forest consultant, $76,500 per partnership unit, resulting in a pre-tax internal rate of return of 8.68 %. Approximately 97% of total contributions will be fully tax deductible. There are no non-deductible land purchase costs and no bank funding liabilities. The only non-deductible costs are set-up expenses of $200 per unit.

84% of the projected forest development and maintenance costs have been fixed. The Land Owner will enter into a binding agreement with each Partnership to establish and develop the forest for the initial eight years for a total fee of $5,800 per hectare. Inflation and cost overruns on these projected expenses will be met by the Land Owner without further calls on the investors. Thus there are no major projected costs or expenses which you may not have the ability to meet when they arise.

To secure his performance, the Land Owner will deposit with the Statutory Supervisor a security deposit equal to the projected cost of completing the eight year development and maintenance programme. The deposit will be released to the Land Owner only as he completes the programme.

For further security, the Land Owner will charge his 10% interest in the forest to the Partnership. Again, the Land Owner's return is dependant upon the success of the forest.

By Year 9 (2003), all the major costs have been met by the Land Owner and only a small annual maintenance cost, estimated at $80 per year per hectare remains to be paid by the investor.

Unforeseen costs, which are not provided for in the Management Contract with the Land Owner, will be borne by the Partnership and may require further payments.

6. Investment Structure

6.1 The Forestry Right

Each Partnership will obtain an individual Forestry Right over approximately 25 ha of land, which will be registered in terms of the Forestry Rights Registration Act 1983 against the relevant title. The division of the land area is shown in the plan on page 5.

The Forestry Right will entitle each Partnership to plant, maintain and harvest 25 ha of the land area for a maximum term of 32 years. The land area comprises 100 hectares situated on the Land Owner's 760 ha property, Arapito Station. The property is 40 km from Te Kuiti and is approximately equidistant from the Port of Tauranga and the Port of New Plymouth. The property is 104 km from Carter Holt Harvey Forestry Limited's nearest saw and pulp mill. There are 22 wood processing plants already present in the King Country or on its eastern boundary.

The land is clean hill country with no buildings, yards or other improvements to remove. The majority of the land area has access tracks in place. The land experiences almost a complete absence of summer droughts and its medium fertility soils are well suited to forestry.

It is proposed to plant the land in June 1995.

The Forestry Right will rank in priority to all other registered charges that affect the land.

In return for the granting of the Forestry Right, the Land Owner will receive the right to 10% of the harvested crop, without contribution to the planting, development or maintenance costs. The Land Owner will for the first eight years of the term of the Forestry Right, meet all rates, taxes and assessments charged upon the land not directly attributable to the presence of the forest. The Land Owner also bears a pro rata share of harvest costs.

The Forestry Right will be terminable by the Land Owner only if the Partnership fails to plant or ceases to maintain and develop the forestry venture in the manner envisaged by this Prospectus.

A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Rights and Management Contract" referred to in paragraph 13.15

6.2 The Management Contract

The majority of the forestry development will take place in the initial eight years of the scheme (1995 - 2002) (see paragraph 7). The Manager has arranged for the Land Owner to contract with each Partnership to provide to each Partnership either directly or by way of sub-contracts all of the services that it is anticipated the Partnership will require in this period to develop and maintain its forest. This includes:

- all planting, establishment and forestry maintenance (as described in the Forest Management Plan at paragraphs 7.2 to 7.5)
- forest fire insurance
- forest supervision and routine maintenance
- annual accounting services
- forest audits in years 2 and 8

A single fee of $145,000 per Partnership is payable to achieve this and is included within the initial $6,000 per unit payment. It is not anticipated that any further amounts will be sought from the members of the Partnership during this period to meet these costs. The risk of cost escalations, caused by inflation or poor budgeting is borne by the Land Owner. In the event of any Partnership requiring as a result of unforeseen

circumstances, services additional to those covered by the Management Contract, the cost of these services will be borne by the Partners. However, all works described in the Forestry Plan set out in paragraphs 6.2 to 6.5 are covered by the Management Contract.

The Partners of each Partnership will bear the remainder of the Partnerships' administrative costs. It is anticipated that an annual payment of less than $2,000 per annum per Partnership (or $80 per unit) will meet this.

The Management Contract requires that the Land Owner sub-contract the Forest Development and Management to Carter Holt Harvey Forests Limited. A description of the Forest Management Agreement is set out in paragraph 6.3.

The Management Contract will be terminable upon default by the Land Owner or the Partnership or by agreement between the Partnership and the Manager.

Upon termination of the Management Contract all sub-contracts arranged by the Manager including the Carter Holt Harvey Forests Limited Forest Management Agreement, will be transferred to the Partnership concerned. Subsequent management will then be arranged by the Partnership and Greenplan on terms to be agreed at that time.

The Partnerships bear the risk that the Land Owner may be unable to perform, or may default in performance of, his obligations under the Management Contract, in particular to meet cost overruns. However, to ensure the Land Owner's performance of his obligations under the Management Contract, the Land Owner has charged his 10% interest in the forestry development to the relevant Partnership.

To further secure the Land Owner's performance of his obligations he will deposit with the Statutory Supervisor a deposit of a sum not less than the amount of the projected expenditure required to complete the services set out in the Management Contract. The deposit will be released to the Land Owner as he completes the services. The deposit will be held and invested by the Statutory Supervisor in accordance with the Management Contract. Interest accrued will be paid to the Land Owner. The deposit will be available to the Partnerships to meet the costs of services not completed by the Land Owner as required by the Management Contract.

6.3 The Forest Management Agreement

The Land Owner's Management Contract requires that the Land Owner contract with Carter Holt Harvey Forests Limited for performance of the forestry development and maintenance. The form of the management contract to be entered into between the Land Owner and the Forest Manager is annexed to the "Option to Grant Forestry Rights and Management Contracts" referred to in paragraph 13.15.

The Forest Management Agreement provides for annual work programmes to be prepared, and for the setting and agreeing of costs and work. Agreement as to the annual work programme cannot be made by the Land Owner without consultation with the Manager. The Forest Management Agreement also provides for preparation of annual Status Reports which will be made available to the Partners. The Forest Management Agreement is an annual agreement and can be terminated upon the giving of six months' notice prior to the annual anniversary date.

The Forest Management Agreement requires the Forest Manager to arrange forest fire insurance and to hold public liability insurance.

The Forest Management Agreement contains a first right of refusal in favour of the Forest Manager. This right sets out a procedure to establish the best price for each log class of the crop. If the Land Owner or Partnership can find a third party willing to purchase a log class at a higher value, then they are free to sell that log class to the third party if the Forest Manager does not wish to pay that higher price.

The Land Owner is liable in accordance with his Management Contract, for all amounts payable to Carter Holt Harvey Forestry Limited for performance of the work set out in the Forest Management Plan in the first eight year period.

7. Forest Management Plan

7.1 Management Objectives

To grow and market a forest crop so as to maximise the economic return on the venture to the Partners of each Partnership.

7.2 Land Preparation

The Land to be planted is grazed pasture which will require little preparation. Small patches of manuka and ring-fern will be cleared and sprayed over the summer of 1994 - 1995, at the Land Owner's expense prior to granting the forestry right.

7.3 Establishment

The highest grade of genetically improved Pinus radiata rooted cuttings, of GF25 ranking will be planted at an average initial stocking of 660 stems per hectare.

Planting will be in rows 5 metres apart, with trees 3 meters apart in each row. A variation in stocking rate of between 600 and 700 stems per hectare will be accepted.

7.4 Releasing

In the absence of livestock and to prevent grass growing close to the young trees, a controlled dose of herbicide will be applied around each tree in the spring following planting.

7.5 Thinning and Pruning

The object of thinning is to reduce competition between trees by removing poor trees and maximising the size and yield of the remaining better trees. Thinning will commence at age 4 or 5 when stocking will be reduced to 320 stems per hectare. The object of pruning is to remove side branches as early as possible so as to reduce the size of knotty core. All the wood produced outside this core will be knot free and have a high-grade and high priced end usage. Between age 4 and 8, pruning will be done in three stages aimed at a minimum of 6 metres of clear stems. To ensure that the knotty core diameter is as small as possible, timing of all pruning operations will be closely controlled, based on assessment figures taken before each lift.

7.6 Fertiliser

It is not anticipated that fertiliser will be applied as the present fertility is satisfactory. The Forest Manager will be instructed to take appropriate action if future soil or foliage testing indicates a nutritional problem. No provision is made for such a cost in the estimates and the cost of fertilising will be borne by the Partnerships.

7.7 Grazing by Livestock

No income from livestock grazing has been budgeted for and none will be allowed until after year 3. If in the Forest Manager's opinion, some grazing would be beneficial to the plantation, then the Land Owner may be asked to supply some stock for that purpose.

7.8 Maintenance Operations

Between final pruning and the harvesting of the crop, the following operations will be carried out:

- Aerial monitoring, and if necessary spraying, of the needle-cast fungus Dothistroma pini. The Cash Flow Projections in paragraph 9.5 allow, under the heading "Forest Maintenance", for the cost of four spray applications between years 9 and 30.
- Regular health inspections by expert independent observers to ensure early warning of attack by pests or disease.
- Periodic checks on condition of access, noxious weeds, fire danger and fences.
- Preparation of a detailed harvest plan, and the construction of logging roads and landings.

7.9 Forest Audit

At age 1 1/2 to 2 years, the success of the planting phase will be checked by independent audit and at age 8, or at such time as the Forest Manager has completed all works described in paragraphs 7.2 to 7.5, the plantation will be inspected by an independent forest auditor who will report to the Manager and certify that the work has been done in accordance with the Management Plan.

On the issue of such a certificate the contract between the Partnership and the Land Owner will be deemed complete.

7.10 Unexpected Costs

Any unexpected or unpredicted costs, such as fertiliser, deemed necessary by the Forest Manager and confirmed by the Manager will be outside the Management Contract between the Partners and the Land Owner and will be the direct responsibility of the Partners.

7.11 Boundary Lines

The boundary between Partnerships will be defined by an unplanted strip of land to conform with the boundaries of the Forestry Right. These strips will be planted with poplar poles or eucalyptus to give visual identification.

7.12 Projected Yield

A calculation of yield, log mix and stumpage based on this Management Plan has been made by the independent Forestry Consultant, Groome Poyry, and is set out in the Forestry Consultant's Technical Report, which appears in paragraph 8 of this Prospectus.

These projections show a total net return of $85,000 per hectare which results in a return of $1,912,500 to each Partnership, after deduction of the Land Owner's 10% interest.

15 July 1994

The Directors
Greenplan Forestry Ltd.
P O Box 24
Te Kuiti
New Zealand

Dear Sirs,

FORESTRY CONSULTANT'S REPORT

This report has been prepared for inclusion in the prospectus to be issued by Greenplan Forestry Ltd. (Greenplan), during 1994, for the financing of approximately 100 hectares of *Pinus radiata* plantation forest near Te Kuiti, New Zealand. Groome Pöyry has only addressed the technical afforestation issues, and as such our brief has not required an examination of profitability or other matters.

The report has been prepared after an inspection of the property in June 1994, and discussions with the directors and managers of Greenplan.

1. SUITABILITY OF SITE

1.1 Location and Access

The property is located in Mapara South, some 40 km south of Te Kuiti. Major wood processing facilities are located at Kinleith and Tokoroa in the South Waikato region 105 km to the east, and the export ports of New Plymouth and Tauranga are located 160 km to the west and 200 km to the north east respectively. The main trunk railway line is located 20 km to the east at Mangapehi.

Access to the property is via sealed State Highway and District roads 32 km south of Te Kuiti, with a further 8 km of metalled road being the Mapara South Road. The subject property is located a further 1 km from the end of the metalled road, via an unformed gazetted paper road from which access to the four partnership blocks can be gained.

1.2 Plantable Area and Vegetation Cover

The blocks are predominantly grassland with isolated areas of fern, manuka and heather. Fences are in good condition and the property is being actively farmed with sheep and cattle.

The titles of the project area have not been searched by Groome Pöyry Ltd and we thus cannot confirm boundaries. Nonetheless, the blocks when delineated, will be representative of the area inspected in June 1994, and we believe that they are suitable for forestry investment using radiata pine, and that there will be no significant reduction in net plantable area.

1.3 Topography

The general topography is moderate to steep with concave slopes, lying either side of the main north-south valley system. One block is on the eastern side of the property adjoining the paper road on a north facing ridge; the other three are contiguous on the western side of the paper road as a series of basins.

1.4 Soils and Erosion

Soils are Mapara sandy silt, silt loam and clay loam formed from mudstone overlain by Mairoa and Taupo ash. Though susceptible to slumping, revegetation occurs rapidly. Erosion under plantation forest is however, expected to be negligible once canopy closure and full site occupation is attained.

GROOME PÖYRY LTD | Mailing Address: PO Box 73-141, Auckland Int'l Airport, AUCKLAND, NEW ZEALAND | Street Address: Groome Pöyry House, 4 Kingsford Smith Place, Mangere Airpark, AUCKLAND NEW ZEALAND | Telephone: Int +64 9 256 0003 | Facsimile: Int +64 9 256 0000

Soils are of moderate to high natural fertility. No nutrient deficiencies are anticipated though it will be prudent for the forest manager to regularly monitor nutrient levels by foliar analysis.

1.5 Climate and Altitude

Altitude ranges from 300 m to 550 m above mean sea level. Predominant winds are from the south west. With the exception of ridge tops there is no significant exposure.

Average annual rainfall is 2100 mm more or less evenly distributed over the year and is ample for radiata pine growth. There can be extended periods of high relative humidity.

2.0 FOREST MANAGEMENT

2.1 Species to be planted

The selected species, radiata pine, accounts for over 90% of all new plantation forest establishment in New Zealand. It is well suited to these King Country sites. No other species can yet match radiata's growth rates, site tolerance, marketability and economic potential.

Common practice is to harvest radiata pine at between ages 25 - 30 years. New Zealand's radiata forests have achieved growth rates in the order of 15 - 25 cubic metres per hectare per annum which are amongst the highest in the world for commercially grown softwood species.

2.2 Planting stock

Tree breeding programmes have improved the genetic quality of radiata pine with respect to stem form, branch habit, growth rates, wood density and disease resistance. The genetic quality is indicated by the Growth and Form (GF) factor, where the higher the number the better the GF characteristics, average expected growth rates and log quality.

Greenplan proposes to use GF 25 rooted cuttings which are amongst the best currently commercially available.

2.3 Forest Establishment Procedures

Following heavy grazing to prepare the site for planting, GF 25 rooted cuttings will be planted at 667 stems per hectare, within the range of 630 - 700 stems per hectare. Competent planting with subsequent grass and weed control should result in good survival rates and low incidence of malformation.

2.4 Silvicultural Regimes

The blocks are to be intensively managed to maximise the yield of high quality pruned logs, using industry recognised and accepted silvicultural practices.

Pruning is planned to take place in three lifts to restrict the diameter of the defect core and maximise the volume of clear wood in the pruned butt logs. Final pruning will be to a height of 6.2 metres with a single non-commercial thinning at age 5 years to produce a final stocking of 320 stems per hectare.

Timing is critical to maximise growth and as such support systems, including computer based growth modelling, can be used to optimise operational timing at an individual stand level.

Quality standards have to be maintained and in this respect the contract with Carter Holt Harvey Forests Ltd will ensure high standards of supervision and quality control as part of the on going management of the forests and access to support systems.

2.5 Forest Protection

The blocks are largely surrounded by grazed farmland which significantly reduces the fire risk. The proximity of the initial Greenplan (1994) plantings does not pose any further significant threat. Other than on very exposed ridge tops there is little risk of wind damage from the prevailing south westerlies.

High relative humidities in the sheltered valleys poses a risk to infection with *Dothistroma pini,* Pine Needle Blight. Regular monitoring will provide early detection allowing control measures to be put in place by the aerial application of copper. Initial low stocking and early thinning will in themselves reduce the severity of any infection by providing air flow through the stands. Aerial spraying is regularly carried out in the Central North Island and is considered a routine protective measure.

Regular monitoring and control of wild goats will be required during initial establishment phases. Domestic stock can be excluded by the present fencing system which is adequate for the purpose at this point in time.

3 FOREST GROWTH AND YIELD

3.1 Growth Modelling

Groome Pöyry have derived the yield projections by using the STANDPAK computer software package developed by the New Zealand Forest Research Institute. It is regarded as the industry standard for modelling radiata pine growth and yields. Whilst the software does not have a specific function for the west King Country, Groome Pöyry have tested projections derived from functions constructed for the South Waikato, the volcanic plateau and yellow brown earths of the Wanganui/Ruapehu district in developing forecasts presented in this report.

Data collected from 3 year old and 14 year old radiata pine stands on the Mapara South property and from plantations in the district have been used to provide control points for the yield projections.

Site fertility, abundant rainfall, high quality planting stock and intensive management supports a projected mean annual increment at the upper end of the range currently achieved in New Zealand. The high GF rating of the planting stock is considered by Groome Pöyry Ltd. to justify a 5% gain in net volume production relative to those in the standard STANDPAK projections. The yields predicted from the computer modelling are given on a fully stocked per hectare basis, and reflect this 5% growth advantage.

3.2 Rotation Length

In New Zealand plantation forestry the basis for rotation length is generally linked to the concept of the "optimum economic rotation age". At this age the value of the forest investment , at a nominated cost of capital, is maximised. In practice the returns are generally maximised across a range of clearfall ages from 25 - 30 years.

Presuming that shorter investment cycles are preferred, suggests a rotation length of about 25 years. There is growing evidence that younger trees have lower average wood density which adversely affects their strength and drying characteristics to the point that New Zealand sawmillers are expressing a preference for rotations of at least 30 years.

The current price differentials between pruned and unpruned logs will almost certainly result in a more discriminating pruned log market, which in turn could result in longer rotations in order to maximise returns.

The STANDPAK modelling undertaken by Groome Pöyry has used a rotation length of 30 years as nominated by Greenplan. Yield projections are given below.

3.3 Greenplan Yield Projections

Regime	Clear wood
Clearfell Age	30 years
Total Recoverable Volume	784 m3/ha

Product Outturn

Pruned Logs	Export grade	245 m3/ha	31%
Export Sawlogs	A grade	183 m3/ha	23%
Domestic Sawlogs		202 m3/ha	26%
Pulpwood		154 m3/ha	20%

Pruned Logs A Grade export	Minimum small end diameter (sed) 30 cm Minimum sed 30 cm; Average sed 34 cm Log lengths 4m, 8m, 12m; at least 70% of logs 12m
K Grade export	Minimum sed 20 cm; Average sed 26 cm Log lengths 3.75m, 5.55m, 7.45m, 11.15m, at least 40% 11.15
Domestic Sawlog	Minimum sed 20cm; Log lengths 3.7m - 6.1m

4. LOG PRICES

4.1 Pruned Logs

Export and domestic log prices have been subject to marked variability since 1992, with a peak in September and October 1993. Domestic log prices have been driven by export price parity, but in both markets prices have not fallen to the 1992 levels and therefore show a real price stability, albeit below the peak prices of 1993 but above the 1992 levels.

The export market remains firm and domestic buyers have demonstrated their ability to at least match export price levels for high grade logs and are willing to maintain these levels to ensure continuity of supply. Pruned logs currently command a premium of approximately 100% over A grade export on both export and domestic markets, but all buyers are becoming more discerning about the actual quality of such logs in respect of the clearwood content and form. This will become more apparent and as such growers will need to ensure management and silviculture practices are timely to produce a premium product.

Pruned log prices have moved from a May 1993 price of over NZD400 m3 to the current,June 1994, level of approximately NZD250 m3.

4.2 Japanese A Grade Logs

Long established as the backbone of the New Zealand log export trade the "A" grade is primarily a large diameter long length log suitable for a wide range of end uses. Typical of the older untended stands of the past the trade has remained firm, in terms of volumes traded but cyclical in pricing depending on season and availability of other softwood species from the Northern Hemisphere. Price levels since June 1992 have ranged from approximately NZD 110 m3 to NZD 140 m3 with a peak in June 1993 at approximately NZD 220 m3. By convention prices are FOB.

4.3 Korean K Grade Logs

K Grade are smaller average diameter logs and have become a very significant part of the log export trade. Priced on CIF basis the trade has had price swings in line with other grades. There has been sporadic competition from China for similar specification logs and this has helped to support prices. Price levels have ranged from USD 75 m3 to USD 110 m3 CIF.

4.4 Domestic Sawlogs

The requirement for certain percentages of export shipments to be in long length (11 m +), gives rise to"shorts" and these together with other specific cuts are the domestic grade sawlogs generally with lengths between 3.7 and 6.1 m, and a range of diameters.

Competitive pricing by the domestic market has meant that local users are able to specify their log requirements as opposed to "taking what was left over from exports". The role of the "local" sawmill is important in determining stumpages as the returns are often greater than export given the often shorter cartage distances and absence of "middle men" and hidden costs. The trade is usually based on Free at Mill Gate prices ranging between approximately NZD80 - 120 m3 for unpruned logs and approximately NZD 180 - 250 for pruned logs

4.5 Pulpwood

Pulpwood is priced Free at Mill Gate and comprises logs that do not meet sawlog specification due to small end diameter,sweep, taper, branch size and shatter. Prices are approximately NZD 50 m3.

4.6 Assumed Log Prices

There is no consistent price trend for logs in the New Zealand market and it is difficult to project future prices, or indeed rely on previous market highs for analyses of this nature. There is general agreement within the industry that prices will be firm in the longer term and real gains will be made.

Given the trend over the past 2 years Groome Pöyry believe that the price schedule given below fairly reflects prevailing price levels as a basis for projecting future revenue. Given that some analysts are forecasting real gains in log prices, Groome Pöyry have preferred to make conservative assumptions of static real prices in the long term, with fluctuations in the short and medium terms.

The log prices adopted for the projection reflect the June 1994 schedules for the respective log grades and are given below.

Log Grade	Price (NZD/m3) at Price Point	
Pruned Logs	250	average at Mill/Wharf Gate
A grade Logs	140	Free at Wharf Gate
K grade Logs	100	Free at Wharf Gate
Domestic Sawlog (average grade mix)	85	Free at Mill Gate
Domestic Pulpwood	50	Free at Mill Gate

5. Derivation of Net Stumpage

Net stumpage has been calculated by deducting direct logging and transport costs, (production costs), from sale prices at the respective price points, to derive a net value per log grade on stump. Costs have been treated as real costs and that inflation will impact at the same rate on both inputs and outputs.

Regime	Clear wood
Clearfell age	30 years
Total Recoverable Volume	784 m3 /ha
Stems per hectare	320
Average stem volume	2.45 m3

Production Costs

Log and Load	$15.00 / m3
Roading and Skids	$ 1.50 / m3
District Roads *	$ 1.00 /m3
Marketing and Supervision	$ 3.00 /m3
Contingencies	$ 0.50 /m3
Total	**$21.00 /m3**

* - provision for contribution to District Council should such a scenario become a reality.

Cartage Costs

Export	200 km	$28.00 /m3
Domestic **	85 km	$13.20 /m3
Pulpwood	105 km	$15.75 /m3

** - weighted for sale of logs 40% to Te Kuiti; 60 % to Tokoroa

Stumpage

Log Grade	Product Volume (m3/ha)	Delivered Price ($/m3)	Production Cost ($/m3)	Stumpage ($/m3)	Net Revenue ($/ha)
Pruned	245	250	34.20	215.80	52,871.00
A Grade	183	140	49.00	91.00	16,653.00
Domestic Sawlog	202	100	34.20	65.80	13,291.00
Pulpwood	154	50	36.75	13.25	2,040.00
Total	**784**				**84,856.00**

Disclaimer

Groome Pöyry believe that, given the assumptions and qualifications used in this technical review of Greenplan's proposal, in 1994 dollar terms, a revenue of approximately $85,000 per fully stocked hectare can be projected for the Greenplan forest partnerships. The projected net revenues given in this report do not represent, promise or guarantee by Groome Pöyry Ltd actual returns, which may be greater or lesser due to future events beyond our control.

6. CONSENT

Groome Pöyry Ltd has given, and has not withdrawn before delivery of a copy of the prospectus for registration, its written consent to the distribution of the prospectus with this report included in the form and context in which it was prepared.

Groome Pöyry has offered itself as available to provide consultancy services to Greenplan Forestry Ltd. Neither Groome Pöyry, nor any of its shareholders or directors, is presently or intends to be, a director, officer, or employee of the issuer of the prospectus.

Yours faithfully

Colin R McKenzie B.Sc./M.S.(Michigan)
Recognised Forestry Consultant, NZ Institute of Forestry
Chief Executive
Groome Pöyry Ltd

GREENPLAN
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9. Financial Information

9.1 Internal Rate of Return

Based on a one unit investment in a Greenplan Partnership, cash flow projections show a Partner receiving $76,500 in the thirtieth year of the project arising from total cash inputs of $8,320 over the full term of the project.

The return on a forestry investment is usually calculated as the Internal Rate of Return (IRR). The IRR is the compounded annual interest rate return of all funds invested.

The projected IRR of each Greenplan Partnership is 8.68% before tax and 8.27% after tax (assuming all projected tax benefits are available and are fully utilised and an investor's marginal tax rate is 33%) and assuming the full subscription of $6,000 is paid on allotment. If either of the deferred payment options set out in paragraphs 12.1(c), (B) or (C) are adopted, the IRR may be improved.

The effect of price increases of timber would increase this projected return (see page 6). Conversely, a reduction in the price of timber, or the incidence of unforeseen or additional costs would adversely affect the projected return.

9.2 Payments Required from Partners

The projected annual contributions (on a per unit basis) are set out in the Cash Flow Statement in paragraph 9.6. These contributions are projected (on a per unit basis):

- Year 1 (to 30 March 1995) $6,000 per unit
- Years 2 - 30 $80 per unit per annum

Being a total contribution of $8,320 per unit over the estimated 30 years of the project. Any extraordinary or unexpected costs, not covered within the Land Owner's Management Contract will be borne by the Partners on a pro-rata basis, after approval by the Partners by ordinary resolution.

9.3 Projected Tax Deductions

The projected tax benefits (on a per unit basis) are shown at the third to bottom row of the Cash Flow Projections in paragraph 9.6.

These projected benefits are based upon the assumption that each Partner will fully utilise all the possible tax benefits, and are calculated upon a marginal tax rate of 33 cents in the dollar.

Investors should note that the tax benefit projections are based on current tax legislation which may change during the 25 to 30 year term of the project. Further detail of the tax treatment of each Partnership is set out in paragraph 11.1.

As each Partnership will be registered for Goods and Services Tax, GST has been excluded from all calculations. GST refunds will be obtained by the Manager.

9.4 Cash Flows

Paragraphs 9.5, and 9.6 and 9.8 set out projected cash flows and statement of financial performance for the scheme and reflect the planned course of action envisaged by the Forest Management Plan. These statements have been prepared from assumptions as to future costs, returns and revenues to enable the viability of the Scheme to be assessed. The projections should not be used for any other purpose. These assumptions are made as at Prospectus Date and are based upon Greenplan Forestry Limited's judgment as to the most probable economic conditions, following consultation with its advisers. It is not intended that the projections be subsequently updated.

Paragraph 9.5 shows a cash flow on a per Partnership basis, paragraph 9.6 shows a cash flow on a per unit basis and paragraph 9.8 shows a statement of financial performance on a partnership basis. No investing or financing activities are envisaged and the cash flow projections are accordingly presented as a single statement of operating activities. These are projections only and no actual results are incorporated. The actual financial costs and returns over the period to harvest are unforseeable and may differ materially. The projected costs are based on current prices (or estimates thereof), and assume zero inflation and exclude GST. The returns and revenues are based upon the independent forest consultant's determination of the net value of the forest produce. The notes on costs and returns set out in paragraph 9.7 should be read in conjunction with the cash flows.

Each Greenplan Forest Parnership will have a 31 March balance date. The projections have been and all Financial Statements will be prepared based around this date. All Financial Statements will be and where relevant, these statements have been, prepared in accordance with the general accounting policies recommended by the New Zealand Society of Accountants for the measurement and reporting of results. Historical costs, accural accounting and the "going concern" assumption will be adopted.

9.5 Cash Flow Projection on a per Partnership basis

EXPENDITURE	Total	Note	1994-1995	1995-2001	2002-23	2024
Management Contract	$145,000	1	145,000	-	-	-
Legal Costs	2,125	2	2,125	-	-	-
Forest Consultant	$625	3	625	-	-	-
Audit	$6,600	4	500	400 p.a.	150 p.a.	150
Forest Maintenance	$13,200	5	-	-	600 p.a.	600
Rates	$4,400	6	-	-	200 p.a.	200
Securities Register	$500	7	500	-	-	-
Accountant	$5,050	8	-	250 p.a.	150 p.a.	150
Statutory Supervision	$23,000	9	1,250	750 p.a.	750 p.a.	750
Management & Administration	$7,500	10	-	600 p.a.	150 p.a.	150
Total Payments	**$208,000**	11	$150,000	2,000 p.a	2,000 p.a.	2,000
RECEIPTS						
Log Revenues	**$1,912,500**	12	-	-	-	1,912,500
Net Cash Flow	$1,704,500		-150,000	-2,000 p.a	-2,000 p.a.	1,910,500

`Pre tax IRR = 8.68% **Post tax IRR = 8.27%**

9.6 Cash Flow Projection on a per Unit basis

EXPENDITURE	Total	Note	1994/1995	1995-2001	2002-23	2024
Payments (per Unit)	**$8,320**	11	$6,000	80 p.a.	80 p.a.	80
Deductible Expenses	**$8,040**		$725	805 p.a.	80 p.a.	-
Net Taxable Inflow	$76,420		-	-	-	76,420
Taxable Net Cashflow	$68,380		-	-	-	-
Tax Benefit at 33 Cents	**$2,647**		239	266 p.a.	26 p.a.	-
Tax Payable at 33 cents	$25,219		-	-	-	25,219
Cash Payable After Tax	**$6,895**		5,761	-	54 p.a.	-
Tax Credits	$1,302		-	186 p.a.	-	-
Cash Received After Tax	**$51,201**		-	-	-	51,201
Net Cash Inflow (Outflow) After Tax	$45,608		(5,761)	186 p.a.	(54) p.a.	51,201

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9.7 Assumptions and Notes on Costs and Returns

Note 1 Management Payment **$145,000**

The Management Contract described in paragraph 6.2 provides for one payment of $145,000.00 to cover the projected costs of forestry development and maintenance in the first eight years.

Note 2 Legal Costs **$2,125**

These costs represent the legal costs associated with the establishment of the legal structure of each Partnership.

Note 3 Forestry Consultants **$625**

These costs are the costs of the initial forest consultant's report appearing in this Prospectus. Costs of the forest audits in years 2 and 8 (provided for in the Forest Management Plan) are borne by the Land Owner pursuant to the Management Contract.

Note 4 Audit **$6,600**

These costs represent the initial audit (see paragraph 10) and the ongoing annual audit of each Partnership.

Note 5 Forestry Maintenance (Years 9 to 30) **$13,200**

These costs represent the on going Forest Maintenance, insurance and other costs incurred by each Partnership following expiry of the Land Owner's Management Contract in year 9, estimated at an average of $600 per annum.

Note 6 Rates (Years 9 to 30) **$4,400**

Projected at current levels. Rates for years 2 to 9 are paid by the Land Owner (to the extent they are not attributable to the presence of the forest) pursuant to the Forestry Right.

Note 7 Securities Register **$500**

These costs provide for establishment of the Securities Register in year 1. Costs of maintaining the Register in subsequent years will be met from transfer fees.

Note 8 Accounts (years 9 to 30) **$5,050**

These costs provide for annual account preparation for each Partnership in years 2 to 30.

Note 9 Statutory Supervision **$23,000**

This cost provides for the provision of the Statutory Supervision required by each Partnership pursuant to the Securities Act 1978 at the rate of $1,250 initial set up and an annual fee estimated to be an average of $750 per annum over the remaining 29 years.

Note 10 Management and Administration **$7,500**

This cost represents the Management fee of $600 per annum for years 2 to 8 and $150.00 per annum for the years 10 to 30, payable to Greenplan Forestry Limited for co-ordination and administration of each Partnership. (See Clause 13(c) of the Deed of Participation which forms part of this Prospectus).

Note 11 Contributions From Partners **$208,000**

(See paragraph 9.2)

Note 12 Net Log Receipts **$1,912,500**

90% of $85,000 net stumpage per hectare (see the Forest Consultant's Report paragraph 8). This represents the estimated sale price of the forest crop after deduction of harvest costs, cartage costs and the Land Owner's 10% interest.

9.8 Projected Statement of Financial Performance

Log Revenue	**$1,912,500**
Management and Administrative Costs	**(208,000)**
Net Profit before Taxation	**1,704,500**
Taxation	**-**
Net Profit after Taxation	**$1,704,500**

This statement has been prepared on a Partnership basis and covers the period from commencement of trading through to the harvest of the forest. No taxation has been provided as any tax liability is the responsibility of the individual partners.

Deloitte Touche Tohmatsu

10. Auditor's Report

22 August 1994

Greenplan Forestry Limited
PO Box 24
Te Kuiti
NEW ZEALAND

Dear Sirs

GREENPLAN FORESTRY PARTNERSHIPS NO'S 9 TO 12

In accordance with the requirements of the Securities Act 1978 and Clause 38 of the Third Schedule of the Securities Regulations 1983 we report as follows:

1. We have prepared this report for inclusion in the Prospectus dated 22 August 1994 for the issue of 25 units of $6,000 each in each of four partnerships known as Greenplan (Arapito 1995) Forestry Partnership No. 9 to Greenplan (Arapito 1995) Forestry Partnership No. 12 (inclusive).

   Each partnership is subject to the terms of the Deed of Participation forming part of the prospectus.

2. The Partnerships have not yet commenced business. Accordingly, no financial statements have been prepared.

3. We have examined the cash flow and financial performance projections set out in paragraphs 9.5, 9.6 and 9.8 in accordance with accepted auditing standards and guidelines. The issuer is responsible for these projections including the assumptions set out in paragraph 9.7 on which they are based.

   In our opinion, the projections, so far as accounting policies and calculations are concerned, have been properly compiled on the footing of the assumptions made or adopted by the issuer set out at paragraph 9.7 of the prospectus and are presented on a basis consistent with the accounting policies to be adopted by the partnerships.

   Actual results may differ from the projections since anticipated events frequently do not occur as expected and the variation may be significant.

Yours faithfully
DELOITTE TOUCHE TOHMATSU

Deloitte Touche Tohmatsu

Chartered Accountants
Wellington, New Zealand

Deloitte Touche Tohmatsu have given, and have not before Prospectus Date withdrawn, their consent to inclusion of this report in the form and context in which it appears.

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11. Taxation, Risks and Liability

11.1 Taxation

The costs of planting and forest maintenance such as pruning and thinning are deductible against income from other sources in the year in which they are incurred. In the initial eight years these costs are represented by the payments made to the Land Owner under the Management Contract with the Land Owner.

Other overheads such as management, rates, insurance, etc are also deductible.

The deductible costs and overheads will cause each Partnership to return a loss in its tax return. This loss is available (on a pro rata basis) to the Partners, and can be applied by them to reduce their other taxable income. It is estimated that 97% of the projected costs of a Greenplan investment will be deductible in this manner. If any Partner is a Qualifying Company (see paragraph 11.4) the benefit of the Partnership's loss can flow through to the Qualifying Company's shareholders. The Manager will advise Investors each year of the amount of their share of the Partnership's loss for tax purposes. Income derived from the sale of forest produce is taxable. There is provision in Section 81A of the Income Tax Act 1976 for this income to be spread over the year of receipt and the preceding three years.

A projection of the anticipated available deductions is set out in paragraph 9.6. At an assumed marginal tax rate of 33 cents in the dollar, the post tax cost of the investment is estimated at $5,673 per unit in the first year with tax credits of $186 per annum available in the next seven years. In years 8 to 29, the post tax cost of the investment is estimated to be $54 per annum.

The effect of taxation on this forestry proposition is significant when comparing the after-tax profitability of the venture with other investments.

11.2 Risks

No investment is without some risk. Some of the risks associated with any forestry investment are:

(a) Tax or other legislation may change;
(b) Exchange rate variations could affect crop values;
(c) Market prices for timber may be adversely affected by substitution, economic and other factors;
(d) Forests may be subject to natural disaster such as fire (although fire insurance cover will be arranged) or new diseases and pests, which affect yields. An assessment of these risks appears in the Forest Consultant's Report in paragraph 8;
(e) Future costs may change (although cost escalations in the projected expenses covered by the Management Contract will be borne by the Land Owner);
(f) Unforeseen costs or expenses may arise, requiring further payments by the Partners.

Particular risks associated with a Greenplan Partnership investment are:

(i) Joint and several liability of every Partner for debts of the Partnership. These are associated with any Partnership investment. See paragraph 11.3 for details of these.
(ii) The Land Owner may be unable to perform, or may default in performance of, his obligations under the Management Contract, in particular to meet cost overruns. Paragraph 6.2 sets out the steps taken to minimise this risk.
(iii) Because of the long duration of the project, present management may change.

11.3 Partnership Structure - Advantages and Disadvantages

Advantages

The Partnership structure allows a number of different investors to pool their financial resources to obtain economies of scale in a business venture.

In effect, Partners can write off allowable expenditure of the Partnership against other income in the year that the expenditure is incurred. This facility is not available to an individual Investor in a Unit Trust or Company (except a Qualifying Company).

Disadvantages

Partners are jointly and severally liable for the debts of the Partnership. Partners may be called upon to meet the liabilities of co-partners who fail to meet their obligations.

An investor's ability to seek contribution from other members of the Partnership for debts of the Partnership that the investor has met, will be limited by the financial resources of those other Partners. Where other Partnership interests are held by limited liability companies (including Qualifying Companies as described in paragraph 11.4 of this Prospectus) an investor's ability to seek contribution will be limited to the capital of that company.

Measures Taken to Reduce the Possibility of Liability

1. Any personal liability which Partners could, in theory, have is underwritten by the net worth of the Partnership i.e. excess of value of assets over liabilities.
2. Greenplan Partnerships have no initial or projected bank debt and 72% of the projected costs are met by the initial payment.
3. All invoices to be paid are perused by the Manager prior to release of funds.
4. Should any Partners have difficulty in meeting calls and/or wish to withdraw from the Partnership the procedures set out in the Deed of Participation are available for disposal of their interest. These provisions provide existing members of a Partnership with a first right of refusal for any units in their Partnership.
5. In the event that a Partner in a Partnership fails to meet a financial obligation, there is provision in the Deed of Participation to allow the interest of the defaulting Partner to be forfeited and sold with the proceeds of sale being applied against the outstanding obligation.
6. Each Greenplan Partnership will hold forest fire insurance.

11.4 Qualifying Companies

The disadvantages and risks of the Partnership structure can be further limited where a Partner elects to hold their interest in the Partnership in a Qualifying Company structure.

The advantages of this are:

1. The liability of shareholders in Qualifying Companies is limited to the capital of the Company.
2. Shareholders in Qualifying Companies can transfer their share in a Forest Partnership without incurring a tax liability on the value of the standing trees. This allows substantial flexibility if required for estate or income tax planning purposes.
3. Indirectly, shareholders in a Qualifying Company can derive the benefit of the Forest Partnership's loss for their own tax purposes. This is achieved by a Qualifying Company electing to become a "loss attributing company" and passing a share of its taxable loss through to its own shareholders. Investors wishing further information or clarification of the taxation of Qualifying Companies should seek advice from a tax advisor.

Up to five investors can join together and establish a Qualifying Company to purchase one or more units in a Partnership. This allows smaller investors to pool their resources. The number of shareholders may be more than five if there is a relationship of blood, marriage or adoption in the first degree.

The disadvantages of a Qualifying Company structure are:

(i) Shareholders must accept personal liability for the tax of the Qualifying Company to the extent of their percentage interest in the Qualifying Company;
(ii) Establishment and administration of a Qualifying Company will give rise to additional costs. Incorporation of a Company will require payment of $360 in fees to the Registrar of Companies. Legal and/or accounting fees will be in addition to this if professional advisers are used. Annual return fees of $75 per annum will also be payable to the Registrar of Companies. A company must also complete annual accounts, tax returns and other administrative functions. Again, legal and/or accounting costs will be incurred if professional advisers are used to assist in these functions;
(iii) The ability of a Qualifying Company to perform its obligations to the Partnership is dependent upon the shareholders performing their obligations to the company. Accordingly, if you are a shareholder in a Qualifying Company with other people, you may have to pay their contribution to the company to enable the company to pay its obligation to the Partnership in which it holds units. You may not wish to be in a Qualifying Company with up to four other persons you do not know.

12. Applications, Subscription, Allotment and Miscellaneous

12.1 Applications

(a) Applications must be made and will be accepted only on the application form included and forming part of this Prospectus;
(b) The completed application form must be accompanied by an initial payment of $600 and forwarded to:

Greenplan Forestry Limited
C/- Kidd Falconer & Co
Chartered Accountants
P O Box 61
TE KUITI

Cheques should be made payable to "PGG Trust Limited - Greenplan Account".

(c) An automatic payment authority to complete payment of the balance payable for each unit by either:
(A) one payment of $5,400 per unit on 7 December 1994; or
(B) two payments of $2,700 per unit on 7 December 1995, and 7 May 1995; or
(C) one payment of $2,700 per unit on 7 December 1994 and 12 payments of $225 per month per unit from 7 January 1994.

(whichever payment option is indicated in the application form) will be forwarded, to each subscriber for completion and return upon receipt of the application.

12.2 Opening and Closing Dates

Subscription lists for applications will open on Prospectus Date and will close on 7 December 1994 ("Closing Date") unless filled earlier. The Manager reserves the right to either:
(i) extend the Closing Date for acceptance of applications; or
(ii) withdraw this Prospectus and decline all applications at any time prior to the Closing Date.

The Manager will inform subscribers by letter on or before Closing Date of any extension of the Closing Date or withdrawal of this Prospectus.

12.3 Subscriptions

Subscriptions will be accepted and placed successively to each of the Partnerships in their order of receipt. The maximum subscription for each Partnership is 25 units of $6,000. Upon full subscription of each Partnership that Partnership will be closed and further subscriptions placed to a further Partnership. A maximum of four Partnerships and a minimum of two Partnerships will be created. If insufficient subscriptions are received prior to Closing Date to meet the minimum of two fully subscribed Partnerships the proposal will not proceed. If insufficient further subscriptions are received prior to Closing Date to fully subscribe a third, or subsequent Partnerships, the proposal will proceed in respect of those Partnerships already fully subscribed but will not proceed in respect of any further Partnerships.

12.4 Subscription Monies Held on Trust

All subscription monies will be deposited in a trust account maintained by the Statutory Supervisor with its bankers. Should the minimum of two fully subscribed Partnerships of 25 participatory securities each not be received by the Closing Date or a possible extended closing date referred to in paragraph 12.2, then the subscription monies together with any interest will be repaid no later than 30 days after the Closing Date or any extended closing date, whichever is the later. Similarly, should the minimum subscription of 25 participatory securities required for a third or subsequent Partnership not be received by the Closing Date or a possible extended closing date referred to in paragraph 12.2, then those additional subscription monies together with any interest will be repaid no later than 30 days after the Closing Date or any extended closing date whichever is the later. If the Prospectus is withdrawn, as referred to in paragraph 12.2 then all subscriptions will be refunded within 30 days of the date of withdrawal.

In the event that the granting of the Forestry Right or completion of the Management Contract described in paragraphs 6.1 and 6.2 of this Prospectus are not completed for any reason within six months of the Closing Date then the subscription monies together with any interest will be repaid within thirty (30) days of that date.

No monies will be released to the Manager or the Land Owner to meet any expenses of any of the Partnerships until the relevant Partnership is fully subscribed and the minimum subscription levels referred to in paragraph 12.3 have been achieved.

12.5 Allotments

Allotment of the participatory securities will proceed as soon as practicable following the Closing Date. No allotments will be made in any Partnership until:
(i) all the participatory securities in that Partnership are fully subscribed for; and
(ii) subscription for and receipt of payment for the minimum number of securities specified in paragraph 13.8 pursuant to Section 37(2) of the Securities Act 1978 are completed; and
(iii) the Land Owner has granted the Forestry Right and entered into the Management Contract with the Partnership pursuant to the "Option to Grant Forestry Rights and Management Contract" referred to in paragraph 13.15.

The Manager reserves the right to reject or accept any

application in whole or in part, without assigning any reason therefore.

In the event of subscription monies relating to applications being declined they will be refunded (with any interest) to applicants not later than 30 days following Closing Date or any extended closing date, whichever is the later. Receipts for application monies will not be issued, the banking of a cheque being deemed to constitute an acknowledgement.

12.6 Register of Participatory Securities

The Securities Registrar will maintain on behalf of the Manager a register of all participatory securities issued. The Register will be maintained at the office of the Securities Registrar, Kidd Falconer & Co, Chartered Accountants, 46 Taupiri Street, P O Box 61, Te Kuiti.

12.7 Balance Date

It is proposed that the Partnerships adopt a 31 March balance date.

12.8 Stock Exchange

The participatory securities issued under this Prospectus will not be listed on the N.Z. Stock Exchange or any other stock exchange.

13. Statutory Information (required by Securities Regulations 1983)

13.1 Main Terms of Offer

The Offeror and Issuer is Greenplan Forestry Limited ("the Manager") whose registered office is 46 Taupiri Street, Te Kuiti.

The Manager offers participation in one of up to four Partnerships, to be called respectively:

- Greenplan (Arapito 1995) Forest Partnership No. 9
- Greenplan (Arapito 1995) Forest Partnership No. 10
- Greenplan (Arapito 1995) Forest Partnership No. 11
- Greenplan (Arapito 1995) Forest Partnership No. 12

Each Partnership will have an initial capital of 25 participatory securities of $6,000 each offered in minimum parcels of one unit. Each Partnership will accordingly have a maximum of 25 Partners. Partners may, however, subscribe for as many participatory securities, in minimum parcels of $6,000 as they wish. All these participatory securities are offered for subscription and are fully paid as to $6,000 per security.

13.2 Managers and Advisers

The name, residential address and technical or professional qualifications (if any) of the Manager and each of the Manager's directors appears in the directory on page 2 of the Prospectus.

The names of the auditors, forestry consultants, forest managers, bankers, solicitors and securities registrar for the scheme also appear in the directory on page 2 of this Prospectus.

13.3 Statutory Supervisor

The Statutory Supervisor is PGG Trust Limited. The Statutory Supervisor does not guarantee the repayment of the securities to which this Prospectus relates nor the payment of interest on the securities, nor the payment of any amount payable in future in respect of the securities whether by way of profits or otherwise. The Statutory Supervisor is appointed in accordance with the provisions of the Securities Act 1978 and its duties are more particularly set out in the Deed of Participation annexed to this Prospectus. The Statutory Supervisor and its advisers do not take any responsibility for the contents of this Prospectus or the merits of an investment in the participatory securities offered by this Prospectus. The Statutory Supervisor and its advisers take no responsibility for any statement herein as to the prospects of the venture or any statement made as to legal or taxation ramifications of investment in the securities offered.

Allotment shall not take place until the Statutory Supervisor receives written confirmation from the Manager that the Securities Registrar holds application forms from investors representing the minimum subscription, such forms authorising allotment of participatory securities to such subscribers and the Statutory Supervisor is satisfied that subscription monies in respect of such applications have, or will be paid in terms of this Prospectus.

All application forms are to be completed in a form and content satisfactory to the Statutory Supervisor. All application monies are to be deposited with the Statutory Supervisor until the minimum subscription is met following which funds will be released as required in accordance with the scheme.

The Statutory Supervisor takes no part in management of the scheme. It will receive reports including annual accounts from the Manager and may convene meetings of Partners to obtain their directions.

13.4 Scheme and Development Thereof

(1) A description of the scheme is contained under "Introduction" in paragraph 5 of this Prospectus and the Forest Management Plan in paragraph 7 of this Prospectus.

(2) The scheme has not yet commenced and accordingly, no development of the scheme has taken place during the five years preceding the Prospectus Date.

(3) The principal fixed asset to be used by the Partnership will be the registered forestry right to be granted as described in paragraph 6.1. The forestry right will be held by the Statutory Supervisor as trustee for the Partners.

13.5 Subscriber's Liability

An investor in each Partnership will become a full Partner thereof and will on application be liable for the amount of the initial capital contribution to each Partnership. Investors will be liable for further Partnership contributions in proportion to the number of securities held in the capital of the Partnership. These contributions cannot be quantified in advance. An estimation of the expenditure of each Partnership is set out in the Cash Flow Projections in paragraph 9.5 of this Prospectus and the projected contributions required from Partners are set out in the Cash Flow Projections in paragraph 9.6 Expenditure in excess of that shown in the Cash Flow Projections will require additional contributions from Partners.

Investors will join the Partnership by their attorney signing a Deed of Participation, in accordance with the power of attorney set out in the application form. Partners will be liable, both jointly and severally, for all Partnership obligations.

13.6 Summary of Financial Statements

None of the Partnerships have been formed or have yet commenced business. Accordingly, no financial statements can be prepared in respect of any period prior to Prospectus Date.

13.7 Plans, Prospects and Forecasts

(1) Each Partnership will obtain the Forestry Rights and enter into the Management Contract with the Land Owner as described in the Prospectus. Planting will take place during June 1995. The scheme will be managed by the Manager in accordance with the Deed of Participation and by the Land Owner in accordance with the Management Contract described in the Prospectus. It is not anticipated that any finance beyond the subscriptions for the securities offered in this Prospectus will be required.

(2) The statement as to the prospects of the scheme is set out in the Financial Information, paragraph 9, of this Prospectus.

(3) The venture is not free of risk. A statement of the foreseeable risks are set out in paragraph 11.2.

(4) A feasibility study of the scheme and the earnings prospects in relation to each of the Partnerships are set out in the Financial Information in paragraph 9, of this Prospectus.

(5&6) The forecast statement of changes in the financial position for the year commencing on the Prospectus Date is set out in the Financial Information in paragraph 9 of this Prospectus.

13.8 Minimum Subscriptions

For the purposes of Section 37(2) of the Securities Act 1978 the minimum amount that must be raised by the issue of Securities in respect of each Partnership is $5,000 (being $200 per unit in each Partnership) comprising preliminary expenses. However, as set out in paragraph 12.5 of this Prospectus, participatory securities will not be allotted in a Partnership until all the participatory securities offered in that Partnership have been fully subscribed.

13.9 Guarantors

No person guarantees the repayment of the securities or the payment of any interest or other money to the Partners of any of the Partnerships.

13.10 Acquisition of Business or Equity Securities

No existing business or shares in a business have been, or are proposed to be, acquired by any of the Partnerships.

13.11 Securities Paid Up Other than Cash

No participatory securities have been, or are proposed to be, allotted by or subscribed for in any of the Partnerships as fully or partly paid up otherwise than in cash.

13.12 Options to Subscribe for Securities

No option to subscribe for participatory securities of any of the Partnerships has been or is proposed to be granted to any person.

13.13 Manager's Interest

(1) Greenplan Forestry Limited ("the Manager") will manage each of the Partnerships. The Manager will provide administrative services to the Partnerships. The Manager will initially be remunerated by the Partnerships for provision of these services at $600 per annum for years 2 and 8 as set out in note 10 in paragraph 9.7, of this Prospectus. Therafter the Manager's remuneration will be determined by agreement and approved by a resolution of the partners. In addition, the Land Owner has agreed to pay to the Manager a procuration fee of $10,000 per completed Partnership to meet Prospectus development and promotion costs.

(2&3) John Barton (the "Land Owner") is a director of the Manager. The following Material Contracts will be entered into between the Manager (on behalf of each of the Partnerships) and the Land Owner:

(i) The Land Owner will grant to each of the Partnerships a registered forestry right over approximately 25 ha of the Land Owner's property. The property is to be subject to the Forestry Right and the terms of the Forestry Right are described in paragraph 6.1, of this Prospectus. A copy of the proposed Forestry Right is annexed to the "Option to Grant Forestry Rights and Management Contracts" referred to in paragraph 13.15. The Land Owner will receive a 10% share of the produce of the scheme without obligation to contribute to the cost of developing the scheme;

(ii) The Land Owner will also enter into a Management Contract with the Manager (acting on behalf of each Partnership) to provide services to the Partnerships in the initial eight year period. The terms of the Management Contract are described in paragraph 6.2 of this Prospectus. A copy of the proposed Management Contract is annexed to the "Option to Grant Forestry Rights and Management Contracts" referred to in paragraph 13.15. The Land Owner will receive the remuneration referred to in the Management Contract, being a total fee of $145,000 from each Partnership.

13.14 Promoter's Interest

No person other than the directors of the Manager have been instrumental in the plan pursuant to which the securities are offered and accordingly no person is a Promoter of the securities.

13.15 Material Contracts

The Manager has entered into an option agreement with the Land Owner entitled "Option to Grant Forestry Rights and Management Contracts" and dated 25th July 1994. The Option Agreement grants the option to the Manager to require the Land Owner to grant the registered Forestry Right described in paragraph 6.1, of this Prospectus and enter into the Management Contract described in paragraph 6.2, of this Prospectus. Annexed to the Option Agreement are copies of the proposed form of Forestry Right, Management Contract and Forest Management Agreement.

Copies of the Option Agreement can be inspected at the places referred to in paragraph 13.35 below.

13.16 Pending Proceedings

There are no legal proceedings or arbitrations pending at Prospectus Date that may have a material adverse effect on any of the Partnerships, the Manager, the Land Owner or the scheme.

13.17 Issue Expenses

Preliminary and Issue expenses are estimated for each Partnership to be as follows:

Legal Fees	$ 2,125
Statutory Supervisor	$ 1,250
Forest Consultants Fees	$ 625
Audit Fees	$ 500
Securities Registrar	$ 500
Sub-Total	**$ 5,000**
Prospectus Costs	$ 2,000
Printing and Postage	$ 1,000
Advertising	$ 1,500
Promotion	$ 1,750
Brokerage	$ 3,750
Sub-Total	**$10,000**
Total	**$15,000**

A commission of 3% is payable to those persons approved by the Manager who procure subscriptions for each Partnership.

These expenses will be shared between the Partners of each Partnership and the Manager. Each Partnership will contribute $5,000 towards the Partnership's establishment costs. The Manager will meet all other Prospectus development and promotion costs.

13.18 Deed of Participation

A copy of the Deed of Participation to be used for each of

the Partnerships is set out in paragraph 14 of this Prospectus.

13.19 Other Terms of Offer of Securities

All terms of the offer and all terms of the securities being offered are set out in this Prospectus except those implied by law or set out in the documents registered with a public official, referred to in paragraph 13.15 of this Prospectus and available for public inspection at the places referred to in paragraph 13.35 below.

13.20 to 13.34 Financial Statements

None of the Partnerships have commenced business as at Prospectus Date and accordingly, Clauses 20-34 of the Third Schedule of the Securities Regulations 1983 in respect of financial statements, do not apply.

13.35 Places of Inspection of Documents

Copies of the contract mentioned in paragraph 13.15 may be inspected without fee at the following locations; the District Registrar of Companies, Boulcott House, 47 Boulcott Street, Wellington between the hours of 9am and 5pm; the offices of Kidd Falconer & Co, 46 Taupiri Street, Te Kuiti, the offices of PGG Trust Limited, 178 Cashel Street, Christchurch and the offices of Kensington Swan, Barristers and Solicitors, Level 3, 89 The Terrace, Wellington and 22 Fanshawe Street, Auckland during normal business hours.

13.36. Other Material Matters

Except as mentioned in this Prospectus there are no material matters relating to the offer of securities to which this Prospectus relates (other than matters set out elsewhere in the Prospectus).

13.37. Manager's Statement

Since none of the Partnerships have yet commenced business and no previous accounts are therefore available, the Manager cannot give an opinion as to whether or not there are any events which affect the venture between the previous balance date and Prospectus Date.

13.38. Auditor's Report

The auditor's report and statement required by paragraph 38 of the Third Schedule to the Securities Regulations 1983 is set out in paragraph 10 of this Prospectus.

This Prospectus has been signed by:

John Richard Barton as
Director of the Manager:

Bruce Andrew Maunsell as
Director of the Manager

Sydney Douglas Cox as
Director of the Manager

14. Deed of Participation

DEED OF PARTICIPATION made 22 August 1994 and executed on behalf of the partners on 1994

BETWEEN GREENPLAN FORESTRY LIMITED a duly incorporated company having its registered office at Te Kuiti (hereinafter called "the Manager")

AND The persons whose names, addresses and occupations are set out in the Third Schedule hereto and on whose behalf the Statutory Supervisor has executed this Deed (hereinafter together with their respective executors and administrators called "the Partners")

AND PGG TRUST LIMITED a duly incorporated company having its registered office at Christchurch (together with its successors and assigns called "the Statutory Supervisor")

WHEREAS

A. The Partners are desirous of forming an ordinary Partnership under the Partnership Act 1908 for the purpose of establishing and carrying on at Arapito Station, Te Kuiti, a forestry business, pursuant to a Prospectus dated 2 August 1994 and pursuant to the Forestry Right.

B. The Manager has agreed to act as manager of the Partnership.

C. The Manager has appointed the Statutory Supervisor to act as Statutory Supervisor pursuant to the Securities Act 1978.

D. The Partners are entitled to be registered as proprietors of the Forestry Right as tenants in common in their respective shares but have requested and the Statutory Supervisor has agreed to be registered as the proprietor of the Forestry Right in trust on behalf of the Partners.

E. The terms of the Partnership, the contractual relationship between the Partners and the relationship between the Partnership and the Manager are set out in this Deed.

NOW THIS DEED WITNESSETH that in consideration of the premises it is hereby agreed by the parties as follows:

1. Definitions and Interpretation

1.1 In this Deed, its Recitals and the Schedules hereto, unless the context otherwise requires:

"Crop" means the crop established and maintained in accordance with the Plan.

"Forestry Right" means the registered Forestry Right held by the Partnership for the purposes of the Plan and granted pursuant to the Option Agreement.

"Independent Forest Auditor" means Groome Poyry Limited or such other person as shall be appointed Independent Forest Auditor by the Manager in accordance with Clause 13.

"Option Agreement" means the option to grant Forestry Rights and Management contracts entered into by the Manager on behalf of the Partnership on the 25th July 1994.

"Partnership" means the Greenplan (Arapito 1995) Forest Partnership No. [9-12] constituted by the Partners pursuant to this Deed.

"Plan" means the plan for planting, tending, maintaining, managing and harvesting Pinus radiata trees and carrying away any forest produce set out in the Prospectus as such plan may be varied from time to time in accordance with this Deed.

"Prospectus" means the Prospectus dated 22 August 1994 issued in respect of the offer of units in the Partnership.

1.2. References to Clauses and Schedules are references to Clauses of and Schedules to this Deed respectively;

1.3. Expressions defined in the main body of this Deed bear the defined meaning in the whole of this Deed including the Recitals; and

1.4. Clause and other headings are for ease of reference only and shall not be deemed to form any part of the context or to affect the interpretation of this Deed.

1.5. References to parties are references to parties in this Deed;

1.6. References to persons shall be deemed to include references to individuals, companies, corporations, firms, partnerships, joint ventures, associations, organisations, trusts, states or agencies of state, government departments and local and municipal authorities in each case whether or not having separate legal personality;

1.7. Words importing the singular number shall include the plural and vice versa.

1.8. The Schedules and Appendices to this Deed and the provisions and conditions contained in such Schedules and Appendices shall have the same effect as if set out in the body of this Deed.

2. Formation of Partnership

2.1. The Partners shall be parties to a Partnership known as the Greenplan (Arapito 1995) Forest Partnership No. 9-12

2.2. Upon allotment of a Unit to a Partner, such Partner will be deemed to have entered into a Partnership with every other Partner.

2.3. No Partner (except the Manager, if the Manager is also a Partner, acting in its capacity as Manager) shall have the power or authority (express or implied) to bind the Partnership, or any other Partner, to act as agent, employee or servant of the Partnership or of any other Partner or to incur any obligation or otherwise pledge the credit of the Partnership or of any other Partner, except as expressly provided in this Deed.

3. Partnership Business

The business of the Partnership shall be:

(a) to develop and carry on the business of forestry, tree farming and silviculture and to own, manage, operate, harvest, process, market and sell forests and trees of all kinds;

(b) to purchase, lease, take on hire or by other means acquire any real or personal property, any rights, privileges or easements over or in respect of any such property and to sell or dispose of the same in such manner and subject to such terms and conditions as the Partnership shall deem fit;

(c) to manage, develop, sell, lease or otherwise deal with or dispose of any property acquired or held by the Partnership;

(d) to borrow monies upon the security of any real and personal property or part thereof upon such terms and conditions as the Partners shall think fit for carrying out the ordinary business of the Partnership; and

(e) to undertake such further or other business or operations as the Partners shall consider appropriate in all the circumstances.

4. Duration of Partnership

The Partnership shall be deemed to have commenced on the date of execution of this Deed and shall be dissolved upon completion of the Plan or prior thereto in accordance with Clause 17 hereof.

5. Rules of Partnership

The rules of the Partnership shall be those as contained in the First Schedule hereto.

6. Partnership Structure

6.1. The Partnership shall be initially divided into 25 units of $6,000 each. Such initial capital shall be payable in the manner set out in the Prospectus. Each Partner shall be required to make any contributions to the capital of the Partnership required under this Deed in direct proportion to the number of units held in the Partnership.

6.2. Each Partner shall make additional contributions to the capital of the Partnership as the Manager may with the consent of the Statutory Supervisor from time to time determine as being appropriate and prudent for the further development and maintenance of the Partnership business in accordance with the Plan or necessary to preserve or promote the best interests of the Partnership.

6.3. The minimum number of units which must be subscribed for as a precondition to the allotment shall be 25. No participatory securities will be allotted until all 25 units are subscribed for. The scheme shall commence when all such 25 units are allotted.

6.4. No Partner shall, during the continuance of the Partnership, be entitled to withdraw or receive back all or any share of the capital of the Partnership except as expressly provided in this Deed.

6.5. The Partners shall be jointly and severally liable for all Partnership debts except if a creditor has specifically agreed otherwise. There is no limit on this liability.

6.6. Each Partner shall bear the expenses and damages incidental to the affairs of the Partnership in proportion to the number of units held by such Partner provided that expenses or damages attributable to the act, omission or default of a Partner (including without limitation by way of wilful destruction or fraud) shall be borne by that Partner.

6.7. Each Partner shall at all times duly and punctually pay and discharge its separate obligations including any contributions or payments in respect of the Partnership whether present or future and shall indemnify and keep indemnified the other Partners and the assets of the Partnership and all other Partners against the same and all claims, demands, expenses or action on account thereof. No Partner shall be liable for the contributions, demands or payments due by another Partner to the Manager and there shall be between the Partners and the Manager no joint liability for another Partner.

6.8. The Partnership shall have a first and paramount lien over a Partner's units in and share of the assets of the Partnership in respect of all contributions or other monies from time to time payable by such Partner to the Partnership which for the time being remain unpaid.

7. Forest Right

7.1. The Partners request and direct the Statutory Supervisor to be registered as proprietor of the Forestry Right in trust for the Partners as tenants in common in shares equal to the proportion that the number of units held by each Partner in the Partnership bears to the total number of units issued by the Partnership. Upon transfer or assignment of any unit or units in the Partnership the beneficial interest in the Forestry Right relevant thereto shall be deemed to have automatically transferred to the transferee or assignee of the unit or units in the Partnership. The Partners acknowledge that their interest in the Forestry Right shall not be capable of transfer, assignment or other disposition otherwise than in conjunction with and as a result of transfer or assignment of units in the Partnership.

7.2. The Partners delegate to the Statutory Supervisor all the powers, authorities and discretions vested in them as beneficial owners of the Forestry Right to be exercised by the Statutory Supervisor on behalf of the Partnership. This delegation shall not release the Manager or the Partners from their obligations under this Deed and the Statutory Supervisor shall not be obliged to exercise any of the powers, authorities or discretions of the Partners unless authorised by the Partners in such form as

the Statutory Supervisor may require.

7.3. The Statutory Supervisor covenants and agrees with the Manager and the Partners to become registered as the proprietor of the Forestry Right in trust for the Partners as tenants in common in their respective shares and to hold all income, profits, accretion and capital arising therefrom in trust for the Partners absolutely in accordance with their respective shares. The Statutory Supervisor further agrees to sign any document, deed, lease, mortgage, pledge, encumbrance or transfer of any property of the Partnership or any part thereof at the request of the Manager. The Statutory Supervisor shall first be satisfied by the Manager that the request for a signature has been duly authorised by a properly passed resolution of the Partners in accordance with this Deed.

7.4. The Partners agree that the reason the Statutory Supervisor is to be registered as the legal owner of the Forestry Rights on their behalf is purely to achieve simplification of ownership inter se.

7.5. The Manager covenants and agrees with the Parties and the Statutory Supervisor to advise the Statutory Supervisor immediately of any dealing with the unit or units held by any Parties in the Partnership.

7.6. The Partners shall not be entitled to require the Statutory Supervisor to individually transfer to them the legal title to their beneficial interest in the Forestry Right. The Statutory Supervisor shall be obliged however to transfer the Forestry Right to the Partners or to such person as they shall nominate in writing pursuant to the resolution of the Partners properly passed under the terms of this Deed. When the Statutory Supervisor receives such written direction it shall be entitled before signing such transfer, to obtain payment of all fees, costs and expenses to which it is entitled under this Deed and to recover all monies expended by it on behalf of or advanced to the Partnership or the Partners. Each Partner must also discharge the Statutory Supervisor from any liability to the Partners under this Deed and indemnify it against all actions, claims, losses, suits or damages brought or charged against it for any matter arising in respect of the Forestry Right either before or after the date of signing of the said transfer. The indemnity shall not relate to any wilful or negligent act or omission of the Statutory Supervisor.

7.7. The Statutory Supervisor may upon giving to the Partners and the Partnership not less than three (3) months written notice of its intention so to do, resign and retire as trustee pursuant to Clause 7.3 (without prejudice to the rights of the Partners and the Manager in respect of any breach of its duties and responsibilities prior to the date of retirement).

7.8. The Statutory Supervisor in its capacity as trustee pursuant to this clause shall be subject to no liability or obligation whatsoever other than any liability or obligation that arises as a consequence of this Deed as trustee for the Partners and the Partners shall not have any action or claim against the Statutory Supervisor (in its capacity as trustee pursuant to this Clause 7) for any damages, loss, expenses or orders unless the same arises directly from a breach by the Statutory Supervisor of any of the duties and obligations set out in this Deed. The Partners jointly and severally indemnify the Statutory Supervisor and agree to hold it indemnified in respect of any action or claim for damages, losses, expenses or orders brought against the Statutory Supervisor arising from the act, neglect, default or omission of the Partners or any of them or of the Manager.

8. Bankers

(a) The bankers of the Partnership shall be ANZ Banking Group (New Zealand) Limited or such other Bank as from time to time agreed by the Partnership.

(b) All cheques, drafts and bills of exchange drawn on the Partnership shall be signed by such persons as are authorised by the Manager in writing. All Partnership monies shall be as and when received paid into the Partnership's bank account.

9. Auditors and Solicitors

Unless otherwise decided by the Partners by ordinary resolution, the auditors of the Partnership shall be Deloitte Touche Tohmatsu, Chartered Accountants who shall hold office until such time as the Partnership shall by ordinary resolution appoint another qualified auditor as Auditor. The solicitors shall be Kensington Swan, Solicitors, Wellington and Auckland or such other suitably qualified solicitor or solicitors as the Partnership shall by ordinary resolution appoint.

10. Manager

10.1. The Partners and each of them do hereby appoint the Manager and the Manager accepts appointment as and from the date hereof to be sole manager of the Partnership and the Manager shall manage the business of the Partnership and the interests of the Partners therein and receive on behalf of the Partnership all income and profits of whatsoever nature from the Partnership business.

10.2. The Manager shall subject to any direction of the Partnership to the contrary, use its best endeavours and skill to ensure that the affairs of the Partnership are conducted in a proper and efficient manner and in accordance with the Plan and will use due diligence and vigilance in the exercise and performance of its functions, powers and duties as the Manager of the business of the Partnership but provided that the Manager performs its duties diligently and vigilantly at all times it shall in no way be liable to the Partners or any of them for any diminution in the capital of the Partnership or the income from the business of the Partnership or any other loss, costs, damages, expenses or inconvenience of any nature whatsoever which may result from any act or omission of the Manager.

10.3. Notwithstanding anything else contained in this Deed, the Manager shall not be deemed to be in breach of any of its obligations under this Deed if and to the extent that fulfilment and performance of such obligations shall be prevented or delayed by factors or events beyond the Manager's reasonable control or where performance of such obligation requires the Manager to expend funds for the business of the Partnership in circumstances where the Manager has properly called for but failed to be provided by the Partners or any of them with funds to enable the Manager to perform such obligation.

10.4. If during the term of this Deed the Manager shall be of the reasonable opinion that it may be to the commercial advantage of the Partnership to vary the Plan or that any variation of the Plan is necessary or desirable to protect the interests of the Partnership then the Manager may vary the Plan provided the Manager first (except in the case of an emergency requiring prompt action by the Manager to protect or preserve the interests of the Partnership):

(a) obtains an opinion in writing from the Independent Forest Auditor that the variation to the Plan may be reasonably regarded as being to the commercial advantage of the Partnership or reasonably necessary or desirable to protect the interests of the Partnership; and

(b) gives at least 30 days prior notice in writing to each of the Partners and the Statutory Supervisor of any intended variation of the Plan together with a copy of the Independent Forest Auditor's opinion in respect thereof and in the case of a variation which would increase to any material extent the likely contributions to be made by the Partners above the real value of the projected estimated contributions required to be made by the Partners as set out in the Prospectus, such variation is first sanctioned by an extraordinary resolution of the Partners.

11. Powers of Manager

11.1. The Manager shall have the following powers and authorities in respect of the conduct of the affairs and business of the Partnership:

(a) to carry on the business for which the Partnership is established and to do or cause to be done all things and to enter into all agreements which may be necessary or desirable for such purposes;

(b) to give valid and effectual receipts for all monies coming into its hands on behalf of the Partnership or any Partner;

(c) to open or otherwise operate a current account with any bank or other lending institution into which all monies coming into its hands on behalf of the Partnership or any Partner shall be paid as soon as practicable and to make deposits and withdrawals therefrom and to sign cheques drawn on the same in respect of any expenditure authorised by these presents;

(d) to enter into arrangements for profit sharing, union of interests, amalgamation, co-operation, joint venture, reciprocal concessions, licensing distribution or otherwise with any person or company carrying on or engaged in or about to carry on or engage in any business or transaction capable of being conducted so as to directly or indirectly benefit the Partnership and to take or otherwise acquire and deal in choses in action, choses in possession, shares and securities of any such company and to sell, hold, re-issue with or without guarantee or otherwise deal with the same and to grant licences and rights in and to any property of the Partnership to any such person or company;

(e) subject to approval of the Partners by means of an extraordinary resolution, to borrow, raise or secure the payment of money in such manner as it shall think fit and in particular to issue notes, bonds, obligations and securities of all kinds and to frame, constitute and secure the same as may seem expedient with full power to make the same transferable by delivery or by instrument of transfer or otherwise and to charge or secure the same on the assets of the Partnership or upon any specific property and rights present and future of the Partnership or otherwise howsoever;

(f) subject to the approval of the Partners by means of an extraordinary resolution to lend or advance money or give credit to any person or company and to guarantee and give guarantees for payment of money or the performance of contracts or obligations by any person or company otherwise assist any person or company;

(g) to pay all rates, taxes, interest, insurance premiums, wages, legal and accounting fees and expenses and all such other outgoings, expenses, charges and costs payable in respect of the Partnership business or the Management or supervision thereof;

(h) to attend and vote for and represent the Partnership at any meeting or meetings of creditors of any bankrupt or any insolvent person or under the winding up or liquidation of any company or companies or otherwise in respect of any debt or claim which the Partnership may have or in which the Partnership may be interested and to prove debts and receive compositions or dividends and to take or join in taking proceedings for having any debtor adjudicated bankrupt or for obtaining a winding up order in respect of any company, corporation, association or syndicate and for all or any of the purposes as aforesaid to sign, make and do all such notices, applications, declarations, petitions and things as the Manager may consider necessary or expedient and for any of the purposes aforesaid to appoint any person or persons as the Manager's proxy or proxies and to sign all necessary documents for such purposes;

(i) for the purposes of exercising the aforesaid powers and authorities or any of them to employ such solicitors, accountants and other professional persons as the Manager shall think necessary or expedient and to pay all fees and charges in respect of such employment as are customary and reasonable for work of that nature;

(j) to sign, seal, execute, deliver, give and execute in the name of any Partner any contract, agreement, memorandum or other document which may be necessary or desirable in the exercise of any of the powers or remedies conferred upon the Manager by this Deed;

(k) to employ such employees, agents, advisers and contractors or other persons to perform, or assist in the performance of the Partnership business as the Manager shall deem necessary;

(l) subject to the approval of the Partners by means of an extraordinary resolution to do or perform any other act, matter or thing which may seem to the Manager in its absolute discretion to be expedient in the interests of the Partnership.

12. Obligations of Manager

12.1. The Manager shall devote such time as is necessary to faithfully and diligently perform such duties and exercise such powers as may from time to time be assigned to or vested in it and shall use its best endeavours to promote the interests of the Partnership.

12.2. The Manager shall (in addition to the Manager's obligations under Clause 3 of the Seventh Schedule to the Securities Regulations 1983):

(i) from time to time call meetings of the Partners for the purposes of discussing the affairs of the Partnership without in any way limiting the Manager's rights and duties to transact the business of the Partnership. The Manager will call a meeting of Partners as required by Rule 1(a) of the Rules of the Partnership or otherwise as the Manager believes necessary;

(ii) attend to the transfer of Partnership units on the request of any Partner as provided in the Rules;

(iii) supervise the collection of the Partnership's income (whether by way of contributions of capital, sales of timber, rent or otherwise).

(iv) cause to be paid as and when they become due and payable, all accounts of contractors and claims for wages and salaries for services rendered and shall keep any Partnership assets free from liens and encumbrances resulting from such operations save to the extent only that the same may arise from a bona fide dispute with respect thereto;

(v) permit any shareholder, or any duly authorised representative of the Partners, or the Statutory Supervisor at their sole risk and expense, full and free access at all reasonable times for the purpose of inspection and observation of all operations of every kind and character being conducted by the Manager for the purpose of the Partnership;

(vi) market any forest produce to the best commercial advantage of the Partners;

(vii) in respect of all operations conducted in carrying on the business of the Partnership under this Deed effect and maintain in full force at the expense of the Partnership and for the benefit of the Partnership any and all insurances required by any applicable law as well as:

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FORESTRY LIMITED

(i) full insurance cover for damage or destruction of the Crop by fire;
(ii) full insurance cover of all other Partnership assets against all usual risks;
(viii) compromise, settle or defend any and all claims and suits by third parties arising out of the conduct of the Partnership business to the extent not covered by insurance at the expense of the Partnership, provided that the Manager shall not pay more than the equivalent of $5,000 in settlement of any claim or suit without obtaining the approval of an ordinary resolution of the Partners;
(ix) provide the Independent Forest Auditor with such assistance as the Independent Forest Auditor may reasonably require;
(x) cause all work required to establish, maintain, manage and harvest the Crop on the Land in accordance with the Plan to be carried out in a proper manner in accordance with recognised good forestry practices, with all reasonable skill and effort required in the circumstances, and in accordance with the terms and conditions of any applicable legislation;
(xi) furnish to each of the Partners, and the Statutory Supervisor at the same time as the annual financial accounts referred to in Clause 14.3, an annual management report detailing progress in the Plan in a form as agreed between the Statutory Supervisor and the Manager.

12.3. Nothing in this Deed shall operate to prevent, interfere with or limit any other work the Manager may wish to perform elsewhere including work on behalf of any other forestry partnership;

13. Manager's Remuneration

The Manager shall be remunerated for its services at the rate of $600 per annum, payable in advance on the 1st April in each year commencing on the 1st April 1996. No remuneration shall be payable for the period prior to that date. The Manager's remuneration may be reviewed from time to time at the request of the Manager. Any increase shall be subject to the agreement of the Partners by ordinary resolution.

14. Independent Forest Auditor

The Manager shall on behalf of the Partnership, engage the Independent Forest Auditor to act at such time or times as required by the Plan, as the Manager shall consider necessary or desirable or as otherwise required by ordinary resolution of the Partners as the Independent Forest Auditor to the Partnership. The Independent Forest Auditor's fees shall be for the account of the Partnership. The report of the Independent Forest Auditor shall be furnished by the Manager to each Partner and the Statutory Supervisor within thirty (30) days of receipt by the Manager

15. Accounting and Division of Profits

15.1. The Manager shall at all times keep in such manner as will enable any audit to be conveniently and properly carried out, accounting records that:
(i) correctly record and explain all the transactions of the Partnership; and
(ii) will at any time enable the financial position of the Partnership to be determined with reasonable accuracy; and
(iii) comply with the provisions of the Companies Act 1955, the Securities Act 1978 and all other applicable legislation, together with all regulations made pursuant thereto;

15.2. The Manager shall produce at the end of each financial year of the Partnership a Profit and Loss Account and Balance Sheet and such other accounts as are usually produced in accordance with good accounting practice, in respect of the Partnership business. The Profit and Loss Account and the Balance Sheet shall be audited at least once in every year, unless the Statutory Supervisor grants the Manager written dispensation from this requirement and all Partners present at a general meeting of the Partnership in person or by proxy by unanimous resolution agree to such dispensation. The Auditor may report directly to the Statutory Supervisor any matter or aspect of the Accounts that the Auditor believes is necessary or desirable to so report.

15.3. The Manager shall cause a copy of the audited Balance Sheet, Profit and Loss Account and other accounts to be furnished to each of the Partners and the Statutory Supervisor within three (3) calendar months from the balance date of the Partnership. The Manager may complete such accounts itself or it may employ chartered accountants in public practice to keep the said accounts and may charge the costs of so doing as an expense of the Partnership business.

15.4. The accounting records shall be kept at the office of the Manager or at such other place as the Statutory Supervisor may approve. Such records shall be kept in a written form and shall be available to any Partner, or the Statutory Supervisor, at any time, without charge to that person so requesting it.

15.5. The Manager shall distribute to the Partners from the profits of the Partnership such amounts as shall be recommended by the Manager and approved of by the Partners. The net profits of the Partnership shall be allocated pro rata in accordance with the units held by each Partner provided that the Manager shall deduct from any share of profits available for distribution to any Partner any contribution, interest or other monies which may be due or owing by such Partner to the Partnership. Unless otherwise approved by the Statutory Supervisor, the net profits of the Partnership shall be distributed in full in each year provided that if there are any losses which must be carried forward to a succeeding year then such losses shall be deducted from any profits in such succeeding year.

15.6. All losses of the Partnership shall be allocated pro rata in accordance with the units held by the Partners.

16. Statutory Supervisor

16.1. The Statutory Supervisor shall exercise reasonable diligence to ascertain whether or not any breach of the terms of this Deed or of the offer of the units has occurred and, except where it is satisfied that the breach will not materially prejudice the interest of the Partners, shall do all such things as it is empowered to do to cause any breach of those terms to be remedied.

16.2. The Statutory Supervisor will be registered as proprietor in trust for the Partners of any land or registered Forestry Rights acquired by the Partnership in accordance with the provisions of Clause 7.

16.3. The Statutory Supervisor shall be entitled to receive all notices and other communications relating to the Partnership which any Partner is entitled to receive.

16.4. The Manager shall from time to time:
(i) at the request in writing of the Statutory Supervisor, make available for its inspection the whole of the accounting and other records relating to the Partnership; and
(ii) give to the Statutory Supervisor such information as it requests with respect to all matters relating to such records;
(iii) give to the Statutory Supervisor notice of any matter or circumstance that arises which may materially adversely affect the interests of the Partners or the Partnership and shall give notice of any change in the effective management or control of the Manager.

16.5. The appointment of the Statutory Supervisor under this Deed shall (subject to the provisions of the Securities Act 1978) be terminated forthwith if the Statutory Supervisor:
(i) ceases to carry on business or if a liquidator or provisional liquidator is appointed (except for the purpose of amalgamation or reconstruction); or
(ii) has a receiver or receiver and manager appointed who is not removed or withdrawn within thirty (30) days after appointment; or
(iii) ceases to be a trustee corporation approved by the Securities Commission under Section 48 of the Securities Act to act as a trustee; or
(iv) is removed by extraordinary resolution of the Partners for any reason whatsoever.

16.6. The Statutory Supervisor may (subject to the provisions of the Securities Act 1978) retire upon giving three (3) months written notice to the Manager of its desire to do so.

16.7. On the termination of the Statutory Supervisor's appointment or the retirement of the Statutory Supervisor the Manager shall forthwith, subject to any approval required by law, appoint in its stead some other persons or corporation where necessary approved by the Securities Commission.

16.8. The new Statutory Supervisor shall execute a deed of undertaking to the Manager and the Partners to be bound by all the obligations of the Statutory Supervisor as from the date of the appointment and thereafter the new Statutory Supervisor will be entitled to exercise all the powers and shall be subject to all the duties and obligations of the Statutory Supervisor as though the new Statutory Supervisor had been originally named as a party to this Deed. The removed or retiring Statutory Supervisor shall from such date be released from complying with the obligations under this Deed but remains liable for any antecedent breach thereof.

16.9. The Statutory Supervisor may be released from liability where the Statutory Supervisor has failed to show the degree of care and diligence required either with respect to specific prior acts or omissions or on the Statutory Supervisor ceasing to act, but only where such release is given pursuant to an extraordinary resolution of the Partners.

16.10. The remuneration for the Statutory Supervisor shall be such amount or rate as may from time to time be agreed between the Statutory Supervisor and the Manager. The Statutory Supervisor shall also be reimbursed by the Partnership all reasonable costs and expenses (including legal and accounting costs and expenses) incurred by the Statutory Supervisor in carrying out its duties under these presents.

16.11. The Statutory Supervisor may from time to time hold funds pursuant to this deed as trustee for and on behalf of one or more Partners. The Statutory Supervisor shall invest such funds in such manner as it thinks fit and shall account to the Partner or Partners on whose behalf such funds are held for any income accrued on such investment provided that:
(i) in making any such investment, the Statutory Supervisor shall exercise the care, diligence and skill required of a trustee pursuant to Section 13C of the Trustee Act 1956;
(ii) for the purpose of this Clause, the Statutory Supervisor shall not be deemed to have breached such standard of care, diligence and skill by reason only of investing the whole of such funds in one or more "Registered Banks" (as that term is defined in the Reserve Bank Act 1988);
(iii) notwithstanding anything to the contrary contained elsewhere in this Agreement, the Trustee Act 1956 or otherwise, the Statutory Supervisor shall be entitled (subject to being satisfied in accordance with its duty under paragraph (i) above as to the available security for any such advance) to invest such funds by advancing the same to any member of the Partnership, the Manager, any person involved in the promotion of the Partnership or any related person or relative (as defined in Section 2(1) of the Companies Act 1955) of any such person.

17. Securities Register

17.1. The Manager shall maintain or cause to be maintained a register of units issued by the Partnership in accordance with Section 51 of the Securities Act and shall issue to each Partner entered in the register a certificate in respect of the units held in the Partnership in accordance with Section 54 of the Securities Act.

17.2. The Auditor shall, in conjunction with and at the time of the audit of the Partnership accounts in accordance with Clause 14.2, inspect and audit the securities register and may report directly to the Statutory Supervisor any matter or aspect of the securities register or its operation that the Auditor believes is necessary or desirable to so report, including without limitation, any failure by the Manager to comply with the provisions of the Securities Act in respect of the securities register.

18. Dissolution of Partnership

18.1. No one Partner or combination of Partners shall have the right or power to call for or effect a dissolution of the Partnership unless the Partners pass an extraordinary resolution of the Partners that the Partnership shall be dissolved.

18.2. Without derogating from Clause 18.1 of this Deed, the Partnership shall be dissolved upon the sooner to occur of:
(i) the passing of an extraordinary resolution of the Partners that the Partnership be dissolved;
(ii) the completion of the Plan.

18.3. The death, bankruptcy, liquidation or insanity of any Partner or the transfer of any share in the Partnership shall not dissolve the Partnership and the Partnership shall continue in existence between the Partners and the person or persons acceding to the interest of such deceased, bankrupt, liquidated or insane Partner (any rule of law or equity notwithstanding) upon the terms embodied in this Deed.

18.4. In the event of the Partnership being dissolved, then the Manager shall, as soon as practicable after the date of dissolution, cause a full and general account to be taken of all assets, credits, debts and liabilities of the Partnership and shall, in accordance with any resolution of the Partners in that regard, proceed as soon as practicable, to realise and dispose of the assets of the Partnership and shall from the proceeds thereof discharge or satisfy debts and liabilities of the Partnership and the expenses of the dissolution and realisation of the assets of the Partnership.

18.5. Upon completion of the realisation of the assets of the Partnership, payment of the expenses thereof and the discharge or satisfaction of the debts and liabilities of the Partnership, the Manager shall cause final accounts of the Partnership business to be drawn up, which accounts shall be audited by the Auditor. The Manager shall furnish each Partner and the Statutory Supervisor with a copy of the audited accounts and each of the Partners shall be entitled to receive such share of the unpaid profits of the Partnership and the net assets of the Partnership shown in such accounts as is equal to that Partner's proportion of the units issued in the Partnership.

19. Removal of Manager/Retirement of Manager

The provisions relating to the removal or retirement of the Manager are more particularly set out in the First Schedule (Rule 5).

GREENPLAN
FORESTRY LIMITED

20. Statutory Provisions

In the event of any conflict between the statutory provisions as provided in the Seventh Schedule to the Securities Regulations 1983 and this Deed then such statutory provisions shall prevail.

21. Amendment of Deed

21.1. The Statutory Supervisor may, on behalf of the Partners, concur with the Manager in making any alteration, modification, variation or addition ("the Change") to this Deed in the following cases, namely:

(a) if in the opinion of the Statutory Supervisor the Change is made to correct a manifest error or is of a formal or technical nature or is convenient and is not prejudicial to the general interests of the Partners; or

(b) if the same is authorised by an extraordinary resolution of the Partners; or

(c) if the Statutory Supervisor is of the opinion that such Change is clearly not, or is clearly not likely to become, prejudicial to the general interests of the Partners; or

(d) if the same is required to comply with the provisions of any statute or statutory regulations.

21.2. Any Change to the Deed shall be recorded in a Deed of Modification of this Deed. The Statutory Supervisor shall be authorised to sign any such Deed of Modification on behalf of each of the Partners.

21.3. This Deed may be altered, modified, added to or varied if the Statutory Supervisor and the Partners agree and the same is authorised by an ordinary resolution of the Partners, or if the same is required to comply with the provisions of the Securities Act 1978 or regulations thereunder.

22. Indemnity of Statutory Supervisor

The Statutory Supervisor and its respective agents, advisers and consultants shall be indemnified out of the assets of the Partnership against all liabilities, claims, costs and expenses incurred by any of them in relation to any acts, omissions or advice made or given by them or any one of them for the purposes and in connection with the business of the Partnership other than acts, omissions or advice made or given in a grossly negligent or fraudulent manner and giving rise to such liabilities, claims, costs and expenses.

23. Binding Nature of Deed

Notwithstanding that this Deed has not been signed by the Partners it is nevertheless binding on those Partners as if they themselves had executed the Deed.

24. Arbitration

All disputes and questions which shall either during the continuance of the Partnership or afterwards arise between any of the Partners and the Statutory Supervisor and the Manager touching upon this Deed or a constructural application of this Deed or as to any matter in any way relating to the Partnership business shall be referred to a single arbitrator agreed to by the parties and failing agreement to a single arbitrator nominated by the President for the time being of the Hamilton District Law Society and any such arbitration shall be in accordance with the Arbitration Act 1908 or any Act amending or passed in substitution therefore.

25. Confidentiality

Each Partner shall treat the business of the Partnership as strictly confidential.

26. Notices

Any notice hereunder shall be properly served if it is posted by prepaid mail or by personal delivery, in the case of:

(a) the Manager, if such notice is addressed to the Manager at 46 Taupiri Street (P O Box 24), Te Kuiti or such other address as shall from time to time be notified by the Manager to the Statutory Supervisor and the Partners;

(b) any Partner, addressed to such Partner at the address recorded in the securities register of the Partnership;

(c) the Statutory Supervisor, if such notice is addressed to the Statutory Supervisor 178 Cashel Street, (P.O. Box 112), Christchurch.

Any notice served in accordance with this clause shall be deemed to be served on the third day following posting or on the day of actual delivery if delivered personally.

IN WITNESS WHEREOF
these presents have been executed the
day and year first hereinbefore written.

THE COMMON SEAL of
PGG TRUST LIMITED
for and on behalf of each
of the persons listed in
the Third Schedule hereto
as their duly authorised
attorney was hereto affixed
by the authority of:

[Authorised Signatory]

[Authorised Signatory]
SIGNED FOR
GREENPLAN FORESTRY
LIMITED by two of its directors

THE COMMON SEAL of
PGG TRUST LIMITED
was affixed hereto
in the presence of:

[Authorised Signatory]

[Authorised Signatory]

CERTIFICATE OF NON-REVOCATION OF POWER OF ATTORNEY

PGG TRUST LIMITED hereby certifies:

1. THAT it is Attorney of the Partners under and by virtue of certain Powers of Attorney executed by the Partners individually on diverse dates when making application to become a Partner of the Greenplan (Arapito 1995) Forest Partnership No. [9 - 12]
2. THAT the company has executed the Deed of Participation as Attorney for the Partners under and pursuant to the powers conferred upon the company by such Powers of Attorney.
3. THAT at the date hereof it has not received any notice or information of the revocation of the said Power of Attorney by death or otherwise.

Dated at this day of 1994
THE COMMON SEAL of
PGG TRUST LIMITED
was hereto affixed by the
authority of:

FIRST SCHEDULE

1. Meetings

1. Rules relating to meetings and the conduct thereof are as follows:

(a) The Manager, the Statutory Supervisor (or its representative) or any seven Partners may call a meeting of the Partners in the manner set out below.

(b) The Manager, the Statutory Supervisor, the Auditor and each Partner shall be entitled to receive notice of each meeting of the Partnership and may attend such meetings (either in person or by representative) and speak but only Partners may vote.

(c) A person elected by the Partners shall preside as chairperson at every meeting.

(d) Any Partner may be represented by a proxy. Such proxy may be the Statutory Supervisor or its representative.

(e) Each Partner shall have one vote for every unit held by him or her or it (or his or her or its predecessor in title). All decisions relating to the Partnership shall be by ordinary resolution except where an extraordinary resolution is expressly required. Equality of voting shall result in the resolution being deemed lost. The Chairperson shall have a vote if she or he is a Partner, but not a casting vote. An extraordinary resolution shall be carried if three-quarters of the votes are in favour of the resolution.

(f) A resolution in writing signed or assented to by letter, telegram, facsimile or any other electronic written communication or printed message in the case of an ordinary resolution, one half, and in the case of an extraordinary resolution, three quarters of the Partners entitled to vote at a meeting of the Partnership shall be deemed to have been passed as if it had been passed at a duly constituted meeting of the Partnership. For the purposes of this Rule 1(f), two or more separate documents in identical or substantially similar form signed by one or more Partners are together deemed to constitute one document containing a statement in those terms signed by those Partners on the respective dates on which the separate documents are signed or otherwise assented to. A letter, telegram, facsimile or other electronic written communication or printed message shall be adequate and conclusive proof of such assent.

(g) No business shall be transacted without a quorum. A quorum shall be not less than one-half of all Partners in number (including those persons holding proxies) holding in the aggregate at least one-half of the units of the Partnership.

(h) Where any unit in the Partnership is held by more than one participant whether jointly or as tenants in common then in such instances such participants shall between them have only one vote for each unit as aforesaid held by such participant or by their predecessor in title and it is further agreed and declared that any participant so holding a unit share jointly or as tenants in common shall be entitled to one proxy only pursuant to the provisions hereof and that in the event of two proxies being present at any meeting of the Partnership the Statutory Supervisor or his representative shall have the discretion as to which proxy it will acknowledge and accept as valid to represent the participant holding any unit jointly inter se or as tenants in common and it is further agreed and declared that in ascertaining whether a quorum of Partners is present account will be taken only of one person representing the joint owners of any unit as aforesaid.

(i) The Manager shall cause to be kept a minute book wherein shall be recorded the minutes and resolutions of each meeting.

(j) At any meeting a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is demanded by the Chairperson or by any Partner present in person or by proxy.

(k) Entry of a resolution in the minute book shall be conclusive evidence of the fact without proof of the number of votes recorded in favour of or against the resolution.

(l) If a poll is duly demanded or required, it shall be taken in such a manner as the Chairperson directs and the result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.

(m) Any resolution of the Partnership passed at a duly constituted meeting and/or otherwise in accordance with these rules shall be final and binding on all Partners and the Manager whether present at the meeting or not.

(n) The common law rules concerning "fraud on a minority" applicable to companies shall apply equally hereto and a resolution of the Partnership shall be invalid if it constitutes a fraud on those Partners who oppose the resolution.

(o) All meetings shall be called by sending written notice to that effect to the address for service of each Partner. Except where the Statutory Supervisor considers it to be contrary to the interests of the Partnership, such notice shall be sent so as to give each Partner at least seven (7) days notice of the meeting. The notice shall contain particulars of all business to be transacted or considered at the meeting and failure to mention any matter of business in the said notice shall invalidate any resolution passed in respect of that matter at the meeting as advertised unless the Partners present or represented by proxy shall by memorandum endorsed on such resolution determine unanimously to the contrary in writing. Meetings shall be held at the offices of the Manager, or at such other place as:

(i) the Partners shall determine by ordinary resolution; or

(ii) in the absence of an ordinary resolution of the Partnership, such other place as the Manager may determine.

2. Transfer and Transmission of Shares in Partnership

Subject as hereinafter set out, a Partner may sell or otherwise dispose of any unit or units in the Partnership held by that Partner.

If any Partner wishes to sell or otherwise dispose of his, her or its interest in the Partnership or any part thereof or if any Partner dies or becomes bankrupt then the remaining Partners shall have the opportunity to purchase the units of such retiring, deceased or bankrupt Partner on the following terms:

(a) a notice in writing of intention to retire from the Partnership or the death or bankruptcy of a Partner shall be lodged with the Manager, including the sale price;

(b) the Manager shall forthwith notify in writing that the units are for sale and the sale price thereof to the remaining Partners and shall invite offers to buy such units;

(c) the units shall be offered to the remaining Partners in proportion to the existing units held by them respectively;

(d) any Partner wishing to purchase units in excess of his, her or it proportion shall advise the Manager how many extra units he,

GREENPLAN
FORESTRY LIMITED

she or it desires to purchase and if all the other Partners do not claim their proportions the unpurchased units shall be applied in satisfying the claims in excess;

(e) the remaining Partners must give notice in writing of intention to make such purchase and shall be served on the Manager within twenty-eight (28) days of receipt of notice from the Manager of such retirement, death or bankruptcy;

(f) immediately on the expiry of the twenty-eight day period the Manager shall advise such retiring Partner or the personal representative of the deceased Partner or the Official Assignee as the case may be of the decision of the remaining Partners and all parties shall be bound by that decision.

(g) If the units of such retired, deceased or bankrupt Partner or any portion thereof are not purchased by the remaining Partners the retiring Partner or the personal representative of the deceased Partner or the Official Assignee as the case may be shall at any time afterwards be at liberty to sell such units or portion thereof not purchased by the remaining Partners to a non-Partner but not at any reduced price unless he, she or it or they shall again submit the same for sale to the remaining Partners in the manner hereinbefore provided PROVIDED ALWAYS that if a Partner is a company and there is any change in the legal or beneficial ownership of any of its shareholding or any issue of new capital whereby in either case there is a change in the effective management or control of the company from that applying at the time of signing this Deed or if a receiver shall be appointed in respect of the Partner or in case an order shall be made or a resolution passed for the winding up of the Partner then for the purposes of this Clause such Partner shall be deemed to be a retiring or bankrupt Partner.

(h) Notwithstanding the provisions of the preceding paragraphs of this Clause any Partner may without the consent of the remaining Partners assign, transfer or dispose of his or her or its interest in the Partnership to an associated person or to the trustees of any trust established for the benefit of any associated person. The term "associated person" where used in this rule 4(h) shall have the meaning ascribed in Section 8 of the Income Tax Act 1976.

(i) Upon transfer or other disposition by a Partner of any unit or units in the Partnership, that Partner shall also transfer or assign and shall be deemed to have transferred and assigned to the transferee all the assignor's right, title or interest in the assets of the Partnership relating to that unit or units including, without limitation, the relevant interest in the Forestry Right.

3. Deed of Assignment and Covenant

(a) Any new Partner shall execute a Deed of Assignment and Covenant in the form set out in the Second Schedule hereto.

(b) The Manager shall upon:

(i) execution and delivery to the Manager of the Deed of Assignment together with the certificate issued in respect of the units; and

(ii) payment of a fee of $50 or such lesser sum as the Manager may prescribe;

enter the new Partners interest in the Partnership's securities register.

(c) From the date of such registrations the new Partner shall be entitled to a share in the net profit or be obliged to contribute to the losses in accordance with Clause 12 of the Deed.

(d) Any interest acquired by a new Partner shall be taken subject to all existing liabilities of the Partnership arising in whatsoever manner.

4. Forfeiture of Interest in Partnership

(a) If any Partner shall fail to pay any monies due from him or her or it on any date specified for payment thereof and the Partner is advised by the Manager to so pay then the Manager on behalf of the remaining Partners may at any time thereafter serve notice on such defaulting Partner requiring payment together with interest thereon at the rate not exceeding four per centum per annum greater than the interest rate which is then or would be charged to the Partnership by its banker on current overdraft terms, with such penalty interest to be calculated daily.

(b) The notice shall specify a further date (being not earlier than the expiration of sixty (60) days from the date of service of the notice) on or before which the payment required by the notice is to be made and shall state that in the event of non-payment the units in the Partnership capital in respect of which such payment was due will be liable to be forfeited.

(c) If the requirements of such notice as aforesaid are not complied with, then the units in the Partnership capital in respect of which notice has been given may thereafter be forfeited by ordinary resolution of the remaining Partners to that effect. Such units may then be sold. Any surplus monies resulting from such sale, after deduction of monies owing, including interest as aforesaid together with costs and expenses thereof shall be paid to the Partner whose units are so forfeited.

5. Retirement of Manager

(a) The Manager shall cease to be the Manager of the Partnership if the Manager resigns from office by giving not less than six months notice in writing to that effect to each Partner and the Statutory Supervisor.

(b) The Statutory Supervisor shall also have the right to remove the Manager by notice in writing if:

(i) the Manager is in breach of its obligations under the Deed or fails to carry out its duties to the reasonable satisfaction of the Statutory Supervisor and fails to remedy such breach, failure or neglect within 28 days after the service of a written notice on it by the Statutory Supervisor requiring the breach to be remedied; or

(ii) a liquidator or provisional liquidator of the Manager is appointed or if the Manager is adjudicated bankrupt, enters into a scheme of arrangement (except for the purposes of amalgamation or reconstruction or some similar purpose) or ceases to carry on business;

(iii) a receiver or manager of the undertakings of the Manager or any part thereof is appointed and has not been removed or withdrawn within 30 days after appointment; or

(iv) there is a change in the effective management or control of the Manager without the prior written consent of the Statutory Supervisor.

(c) The Manager shall cease to be the Manager of the Partnership by the passing of an extraordinary resolution to that effect at a meeting convened and conducted in accordance with the rules.

(d) Such removal of the Manager shall take effect contemporaneously with the appointment by the Partners (pursuant to an ordinary resolution at a meeting convened and conducted in accordance with the Rules) of a new manager.

(e) Upon the removal of the Manager the Partnership shall not dissolve (any rule of law or equity notwithstanding) and the new manager shall covenant to observe and perform all and singular the covenants herein contained on the part of the Manager to be observed and performed under these presents and thereafter the new manager will be entitled to exercise all powers of the Manager and shall be subject to all the duties and obligations of the Manager contained in these presents.

(f) If on the removal of the Manager the Partners shall fail contemporaneously to appoint a new Manager the Statutory Supervisor shall be entitled to appoint a new manager of the Partnership by notice in writing entered in the Minute Book of the Partnership.

SECOND SCHEDULE

This Schedule is an example of the Document to be used in the event of a transfer of a Partnership units from a retiring Partner to an incoming Partner.

(Deed of Assignment and Covenant)

THIS DEED made the day of 1994

BETWEEN [ ]

(hereinafter called "the Vendor") of the first part

AND[ ]

(hereinafter with its executors and administrators and permitted assigns called "the Purchaser") of the other part

WHEREAS

A. The Vendor is a Partner in the Partnership known as the Greenplan (Arapito 1995) Forest Partnership No.• (hereinafter called "the Partnership") pursuant to and under and by virtue of the Deed of Participation dated 22 August 1994 ("Deed of Participation").

B. The Vendor is the registered proprietor of [ ] units in the Partnership.

C. The Vendor is desirous of transferring to the Purchaser such units for consideration hereinafter appearing.

D. The Statutory Supervisor (as that term is defined in the Deed of Participation) is registered proprietor of the Forestry Right (as that term is defined in the Deed of Participation) as trustee for the members of the Partnership pursuant to clause 7 of the Deed of Participation

NOW THEREFORE THIS DEED WITNESSETH that in consideration of the sum of $[ ] paid to the Vendor by the Purchaser (the receipt whereof is hereby acknowledged) the Vendor doth hereby transfer to the Purchaser all his, her or its right, title, estate and interest as the registered proprietor of [ ] units in the Partnership as aforesaid together with the Vendor's right, title and interest in all the assets of the Partnership relating thereto including, without limitation, the Vendor's interest in the Forestry Right (as that term is defined in the Deed of Participation) relating thereto and the Vendor hereby covenants with the Purchaser that she, he or it has up to the date hereof paid all monies and observed and performed all covenants, conditions and agreements contained and implied in the Deed of Participation and will keep indemnified the Purchaser from all actions, claims and demands under the Deed of Participation and the Purchaser hereby covenants with the Partners, the Manager and the Statutory Supervisor that he or she or it will at all times and in the manner therein described be bound by and observe, perform and keep all the covenants, conditions and agreements contained and implied in the Deed of Participation and covenants as if he, she or it had been an original signatory thereto. The Purchaser acknowledges that:

(i) he, she or it is jointly and severally liable for all debts and liabilities of the Partnership (howsoever or whensoever arising or incurred) and that there is no limit on that liability; and

(ii) that the units transferred to the Purchaser are taken subject to all existing liabilities of the Partnership.

The Purchaser hereby ratifies and confirms all the powers and authorities conferred upon the Manager (as that term is defined in the Deed of Participation) of the Partnership pursuant to the Deed of Participation and all acts, matters and things done by the Manager pursuant to or in exercise of those powers and authorities prior to the date hereof. The Purchaser hereby appoints the Statutory Supervisor (as that term is defined in the Deed of Participation) to be his/her or its true and lawful attorney (hereinafter referred to as "Attorney") to act on behalf of the Purchaser to execute or cause to be executed in the Purchaser's name and on the Purchaser's behalf, any deed, document or writing necessary to effect or complete the transfer of the units in the Partnership to the Purchaser or to transfer any interest or right to any asset of the Partnership, or to assume any existing liability of the Partnership as the Attorney may think proper and expedient and which the Purchaser could lawfully do or cause to be done if acting personally and declares that no person or corporation dealing with the Attorney shall be concerned to see or enquire as to the propriety or expediency of any act, deed or matter which the Attorney may do or purport to agree to do or perform in the Purchaser's name by virtue of this deed and the Purchaser hereby agrees to ratify and confirm.

IN WITNESS WHEREOF these presents have been executed the day, month and year first hereinbefore written.

SIGNED by the said

as Vendor in
the presence of:

SIGNED by the said

as Purchaser in
the presence of:

THIRD SCHEDULE

The Persons who are to be party to this Deed are:

Name

Address/Occupation

No. of Participatory Securities

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FORESTRY LIMITED

15. Application Form

APPLICATION FORM AND
POWER OF ATTORNEY
GREENPLAN FORESTRY
LIMITED
C/- Kidd Falconer & Co.
Chartered Accountants
P O Box 61
TE KUITI

Greenplan Prospectus No2 dated 22 August 1994

1. INVESTMENT DETAILS

Surname (the "Applicant")
(Mr/Mrs/Miss/Ms) _____

First Names
(1) _____

(2) _____

Address _____

Occupation _____

Telephone:
After hours _____

Business _____ Fax _____

IRD Number _____

Number of units: _____ unit(s) of $6,000 each. Date _____

PAYMENT METHOD (tick one)

☐ one payment $600 per unit now and one payment of $5,400 for the balance of the subscription price on 7 December 1994;

☐ one initial payment of $600 per unit and two payments of $2,700 per unit on 7 December 1994 and 7 May 1995.

☐ one initial payment of $600 per unit now, one payment of $2,700 per unit on 7 December 1994 and twelve monthly payments of $225 per month for twelve months from 7 January 1995 to 7 December 1995;

A cheque for the initial payment of $600, made payable to "PGG Trust Limited - Greenplan Account" and crossed "not negotiable" is attached.
I/We apply for the number of Greenplan Forestry unit(s) of $6,000 each indicated above on the terms and conditions set out in paragraph 2 below. I/We agree to pay for those units in the manner indicated above and appoint PGG Trust Limited my/our attorney on the terms set out in paragraph 3 below.

This Application Form and Power of Attorney have been signed by the Applicant on the above date and in the presence of:

Applicant's signature _____

_____

Witness' signature _____

Witness' Occupation _____

Witness' Address _____

CUT ALONG DOTTED LINE

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FORESTRY LIMITED

2. INVESTMENT TERMS

2.1 This application is made on the terms and conditions set out in the Prospectus dated 22 August 1994. The Applicant acknowledges that he/she has read the Deed of Participation which forms part of the Prospectus and agrees to be bound by its terms and conditions.

2.2 The Applicant acknowledges that:

(a) Personal Information provided to Greenplan Forestry Limited ("Greenplan") whether contained in this application or otherwise obtained is provided and may be held, used or disclosed by Greenplan to enable this application to be processed and the securities applied for allotted, to enable the Partnership of which the Applicant becomes a member to be administered, to comply with all statutory and legal requirements and generally carry on business, to enable Greenplan to communicate with the Applicant, whether in connection with the business of the Partnership or otherwise, and to enable Greenplan to provide or have provided to the Applicant advice and information concerning future investments, financial services or products that Greenplan believes may be of interest or benefit;

(b) that the Personal Information provided in this application is collected by Greenplan Forestry Limited and will beheld by Greenplan, Kidd Falconer & Co, P O Box 61, Te Kuiti (as Securities Registrar) and PGG Trust Limited;

(c) that failure to provide any information requested in this application may prejudice or preclude Greenplan's ability to allot the security applied for;

(d) that the Applicant has the right under the Privacy Act 1993 to obtain access to and request correction of all personal information held by Greenplan concerning the Applicant.

3. POWER OF ATTORNEY

3.1 The Applicant hereby appoints PGG Trust Limited, a duly incorporated company having its registered office at Christchurch, to be his/her true and lawful attorney (hereinafter referred to as "the Attorney") to act for, in name on behalf of the Applicant in:

(i) the execution of one of four Deeds of Participation dated 22 August 1994 pursuant to which the applicant is to become a partner(s) of any one of four partnerships known as Greenplan (Arapito 1995) Forest Partnership No. 9 to 12, being Partnerships formed pursuant to the provisions of the Partnership Act 1908;

(ii) the execution and/or entry into and/or performance of any act, deed, matter or thing of whatsoever kind or nature pertaining to the completion of the Deed of Participation so as to comply with the laws of New Zealand, as fully and effectually as the Applicant could do if personally present with unrestricted power hereunder at the absolute discretion of the Attorney but limited solely to the business of the Partnership.

3.2 The Applicant declares that the authorities set out in clause 3.1 shall enable the Attorney without reference to the Applicant to execute or cause to be executed for, in the name of and on behalf of the Applicant any other deed, document or writing necessary to give effect to the foregoing authorities as the Attorney may think proper and expedient and which the Applicant could lawfully do or cause to be done if acting personally.

3.3 The Applicant declares also that no person or corporation dealing with the Attorney shall be concerned to see or enquire as to the propriety or expediency of any act, deed, matter or thing which the Attorney may do or purport to agree to do or perform in the Applicant's name pursuant to the Power of Attorney and the Applicant hereby agrees to allow, ratify and confirm whatever is done by the Attorney under this Power of Attorney.

Have you:

- completed all details in section 1 of the application form?
- completed the full name of the person(s) applying for the units? Units purchased by trusts should be completed in the names of the Trustees (not in the name of the Trust) and the IRD number of the Trust used. Applications by existing companies should be signed by two directors of the company. If you intend to form a company to own the units, the application should be completed in your own name and your IRD number used. You can transfer that unit to your company once it is incorporated.
- enclosed a cheque for $600 payable to "PGG Trust Limited - Greenplan Account" crossed Not Negotiable?
- indicated the requirement payment option?
- completed your IRD number?
- signed and dated the Application Form and Power of Attorney and had your signature witnessed by an independent adult witness? If you require assistance in completing the application, contact Greenplan - 07 878 6730.

Remember

- the closing date for applications is 7 December 1994. Applications received after this date will be accepted only if Greenplan elects to extend the closing date.

GREENPLAN
FORESTRY LIMITED

Greenplan Forestry Limited
P.O. Box 24
Te Kuiti

Telephone 07 878 6730
Facsimile 07 878 7861