

Impacts of forestry sector growth on the Nelson and Marlborough transport industry

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ABSTRACT

This paper reports on a study to estimate changes to the size and composition of the transport sector required to meet the demand from a rapidly increasing wood harvest in the Nelson-Marlborough region. The current status of the forestry and transport industries in the region is reviewed. Harvest levels for the years 1996 and 2000 are forecast together with estimates of the resulting flows of logs and processed wood products. Implications of the increased forestry activity for the transportation sector are described in terms of truck requirements for Nelson-Marlborough and barge requirements for the Marlborough Sounds.

INTRODUCTION

The Nelson-Marlborough region has (as at 1991) a total plantation forest resource of about 130,000 ha (C. Perry, pers. comm.). There are about 90,000 ha in Nelson and 40,000 ha in Marlborough. (For the purposes of this study Rai Forest is entirely included in Nelson.) The forests vary greatly in size and are scattered throughout the region, including the Marlborough Sounds. They provide the raw material for the local sawmilling industry and a medium density fibreboard (MDF) plant as well as material for export as logs or chips.

The region's transport industry, comprising mainly road haulage, shipping and to a lesser extent barging, and rail, plays a pivotal role in the movement of forest products between forest, processing plants, and markets. Future transportation demand arises from the rapidly increasing wood supply and the widely dispersed nature of the forests relative to each other and to the processing plants.

The total harvest from the forest estate was about 1.1 million m³ in 1991. Total wood supply from Nelson-Marlborough forests is expected to increase to about 1.9 million m³ by the year 2000. The purpose of this study was to estimate the effects of this increased output from the region's forest sector on the size and composition of the local transport sector and thereby provide input to transport planning.

Relationships between woodflow and transport infrastructure in the Nelson-Marlborough Region have been examined in several earlier studies (Baird and Whyte, undated; Duckworth, 1988; Handiside and Lee, 1984; McDermott and Associates, 1981; Ministry of Works and Development, 1981; Aldwell and Turbitt 1991). These reports focus on port development at Nelson and Picton, sector modelling, transport infrastructure issues, and broad forestry sector wood flow projections and their implications for the regional economy.

The main difference between this study and those of the past is the focus on the projected increased demand on transport industry capacity rather than on projected woodflows over specified routes. Survey data collected from forestry and transport firms in the region have been used to identify current and future

processing capacity in the forestry sector and to estimate the present and future capacity of transport firms carrying logs and other wood products.

METHOD

Nelson-Marlborough was chosen for this analysis because it is one of the first regions in New Zealand that will experience a substantial increase in wood volume during the 1990s.

The study period was from 1991 to 2000, with 1991 being the base year. This is the period when the most rapid increase in wood supply is likely to occur. Data and estimates of future transport needs are provided for 1991, 1992, 1996 and 2000.

The study was based on material from separate surveys of the forest growing, wood processing and transport industries and from published sources (Department of Statistics, 1992; Neumann, 1992). After visiting the region early in 1992 to discuss the study with industry and with local and central government, a mail survey of transport operators and forestry and forest products firms was conducted.

Forest growers

Major forest owners in the Nelson-Marlborough region were surveyed to determine their current level of cut and their future harvesting intentions. All these forest owners provided a return for:

- * total harvest volume for each forest (actual for 1991, planned for 1992, 1996 and 2000)
- * an indication of the likely proportion of sawlogs and chiplogs
- * the destination of each forest's harvest in 1991 and the likely destinations in the future
- * major transport routes.

Forest processing industry

Reliable responses were received from 12 wood processing plant owners (97% of production capacity) and from the log export operators at Port Nelson and Port Marlborough (Picton). This survey provided data on:

- * Log input and product output tonnages
- * Current and planned processing capacity
- * Product destination by tonnage.

Transport industry

The transport industry survey included rail, port, barging and road haulage firms and provided data, where relevant, on:

- * Current capacity dedicated to forest products haulage
- * Under-utilised capacity
- * Operating hours and annual distance
- * Annual forest products haulage on specified routes
- * Routes, lead distances and travel times.

Transport operations owned by or operated from forestry or wood processing firms were included in the transport sector survey. Reliable responses were received from 15 road transport

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firms/operators; from the only barge operator hauling logs; from both major ports in the region; and from NZ Rail. The 15 road transport responses related to 47 logging trucks, 22 trucks capable of hauling woodchips (although only about 10 are doing so at present), and 64 trucks (90 trailers) hauling other wood products (medium density fibreboard, sawn wood, posts, poles and sawdust or bark). Total forest products haulage capability in the region is unknown because of the diversity of freight capability attributable to any one vehicle and because of short-term entry into the local market by outside operators. However, on the basis of data supplied by forestry companies it is estimated that there are about 89 logging trucks operating in the region. This suggests that the survey covered 53% of this target group.

Estimating future transport needs

Transport demand was estimated as a function of mean lead distance and tonnes of forest products available (including logs). This approach was adopted because transport demand, measured in terms of truck equivalents, is expected to change not only as forest products flows change but also as lead distance changes. Transport demand in tonne km were then converted to logging truck and forest product truck equivalents by using the following conversion factors:

One full-time logging truck equivalent

= 27 tonnes * 35,000 km

= 945,000 tonne km

One full-time forest products truck equivalent

= 27 tonnes * 25,000 km

= 675,000 tonne km

The conversion factors were calculated assuming a full load of 27 tonnes (throughout this report m³ and tonnes are used interchangeably for logs – a 1:1 conversion is assumed). Analysis of survey data indicated that logging trucks in the region averaged 35,000 km loaded (data from 47 trucks), and that those vehicles hauling processed products averaged 25,000 km (loaded) per annum (data from 37 trucks). It should be noted that in the case of forest products haulage, vehicles are rarely dedicated solely to hauling forest products, except in the case of woodchips and MDF. It is probable that as wood products output increases, and there is sufficient volume to justify dedicated vehicles, the mean loaded distance travelled will also increase.

THE REGION'S FORESTRY AND TRANSPORT SECTORS: COMPOSITION AND STRUCTURE

Forestry Sector

The region's plantation forests comprise 130,000 ha (1991 estimate). Tasman Forestry and Baigent Forests Division are the largest forest owners with 61,000 and 28,000 ha respectively. ITT Rayonier (NZ Timberlands at the time of the survey) owns about 5000 ha of forest while Nelson Pine Industries has 3500 ha. Local authorities (Marlborough Forestry Corporation, Nelson City Council, Tasman District Council) own a total of 6000 ha. Small private forest ownership is estimated to be 9000 ha in Nelson and 18,000 ha in Marlborough. This accounts for a substantial proportion of the resource, particularly in Marlborough.

There are more than 15 sawmills in the region. They range widely in capacity with the largest being Baigents sawmill at



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Eves Valley. There are also a number of post and pole producers.

The sole reconstituted wood manufacturer in the region is the Nelson Pine Industries MDF plant near Richmond which has two MDF lines. Baigents operate a log-chipping plant at Eves Valley.

The two largest plants (Baigents sawmill and Nelson Pine Industries' MDF mill) produce approximately 70% (by weight in 1991) of the region's processed wood products of about 640,000 tonnes (including woodchips).

Transport Sector

The region's transport sector is dominated by road transport, two export ports at Nelson and Picton and the rail-ferry link from Picton to Wellington. There is no rail link to Nelson. Prior to deregulation of the transport sector a "notional railway" operating between Marlborough and Nelson permitted road transport firms in the region to operate beyond specified range constraints imposed on other routes. The Marlborough Sounds are serviced by a network of (mainly) unsealed secondary roads and by barges.

The great majority of transport firms (81%) are small operators with 187 firms having fewer than six employees. In 1991, only 18 firms were recorded as being involved solely in logging haulage (Table 1). All of these are located in the Nelson area (Table 2). Care should be used in interpreting these data as many transport firms classified in the general freight category also operate logging trucks as part of the business. In addition there are others that are owned and operated as part of wood-processing businesses. The survey conducted for this study recorded 89 logging trucks working in the region; 60 from Nelson, 15 from Blenheim and 14 operating from the West Coast.

TABLE 1 – Size Distribution and Number of Enterprises in the region's transport sector in March 1991

	Persons engaged by size group (Number of Enterprises)					Total
	0-5	6-9	10-49	50-99	100+	
Log Haulage	15	0	3	0	0	18
Freight transport	97	10	12	1	0	120
All other transport & storage	75	8	10	0	0	93
Total	187	18	25	1	0	231

Source: Department of Statistics, Business Directory, 1991

TABLE 2 – Geographic distribution of transport and forestry activity units in the Nelson-Marlborough region (March 1991)

	Neln City TLA*	Tasman TLA	Marlb/Kaik	Total
	Number of enterprises			
Forestry	12	32	34	78
Logging	9	33	5	47
Sawmills	5	17	8	30
Other wood products	0	4	1	5
Log haulage	1	17	—	18
Freight transport	36	43	39	118
Other transport & storage	40	14	39	93

Source: Department of Statistics, Business Directory, 1991

* Territorial Local Authority

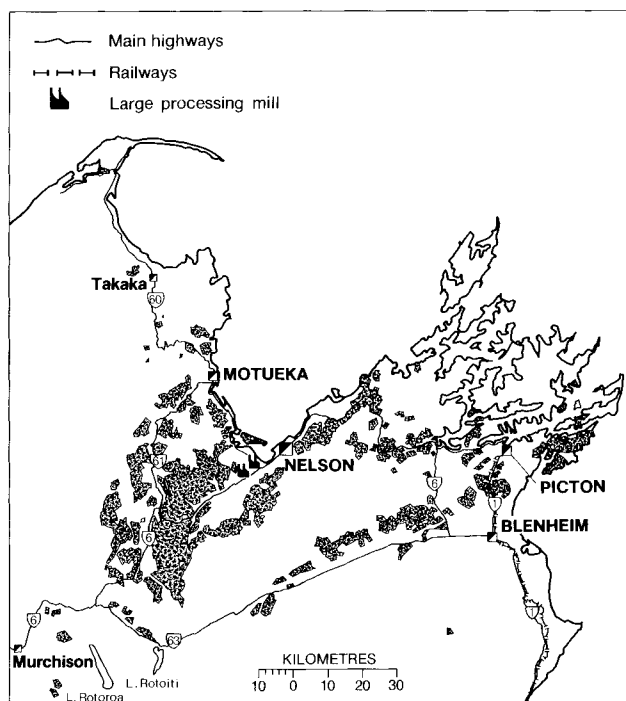
Haulage Distances

Major forests and the two largest wood products mills are shown in Figure 1 together with main highways and the Picton-

Christchurch railway line. Although the forests are scattered, the largest forest-growing areas are located within 85 km of Nelson. A similar situation applies in Marlborough. Lead distances between the majority of forests and the ports of Nelson and Picton are between 20 and 80 km compared with 90 to 125 km in the Central North Island. It should be noted, however, that some of the forests are large and irregular in shape. Distances travelled within forests can vary markedly, depending on the relative positions of the forest entry/exit points and the logging site.

In the Marlborough Sounds, barging and roading distances range from 18 km to about 100 km.

FIGURE 1 – Plantation forest distribution in Nelson-Marlborough



RESULTS

1. Future harvest levels

The actual volume harvested in 1991 and future harvesting intentions for 1992, 1996 and 2000 were obtained for all forests under large company or local body ownership (i.e. Tasman Forestry, Baigent Forests, Timberlands NZ (forests now owned by ITT Rayonier), Nelson Pine Industries, Marlborough Forestry Corporation, Nelson City Council, Tasman District Council).

Separate estimates were made for the small private (i.e. not large company or local authority ownership) resource. The Ministry of Forestry (MOF) provided estimates for the Nelson region based on felling between ages 21 and 25 with clearfell harvests of 350-400 m³/ha. Estimates for the Marlborough region were derived from MOF area reports assuming a clearfelling age of 28 for intensively tended stands (424 m³/ha) and 24 for minimum tended stands (420 m³/ha). Harvest estimates for the small private resource are given in Table 3.

The increase in the small private forest harvest is indicative only. Although there is a large resource particularly in Marlborough, which will provide a substantial increase in future harvest volumes, the timing depends on individual owners' decisions and cannot be forecast with any certainty. Nevertheless, results from

this study indicate the potential for a sustainable annual harvest of over 300,000 m³/ha from small private forests in the Marlborough region from around the year 2000.

TABLE 3 – Estimated harvest from small private forests

	Volume in 000 m ³	
	Nelson	Marlborough
1991	75	70
1992	70	110
1996	110	110
2000	160	300

TABLE 4 – Log supply (all species) (Volumes in 000 m³)

	Nelson*			Marlborough			Combined		
	Sawlog	Chiplog	Total	Sawlog	Chiplog	Total	Sawlog	Chiplog	Total
1991	650	360	1010	65	37	102	715	397	1112
1992	730	334	1064	93	49	142	823	383	1206
1996	844	340	1184	136	68	204	980	408	1388
2000	1022	358	1380	383	143	526	1405	501	1906

* Includes all of Rai Forest

Expected harvest volumes by log category for the whole region are given in Table 4. These indicate:

- A relatively constant chiplog supply in spite of a 37% increase in the Nelson total harvest over the period 1991-2000. This reflects the changing nature of the resource being harvested with an increasing proportion of intensively managed stands.
- An increase of more than 400% in the Marlborough harvest during the study period. Over half of this increase will come from the small private resource.
- A 71% increase in total log supply between 1991 and 2000. Although the percentage increase from Marlborough is more dramatic than that from Nelson, the change in absolute volume is similar (Marlborough 424,000 m³, Nelson 370,000 m³). Nelson will continue to be the larger supplier with approximately 72% of the region's log production in 2000. On this basis it is likely that transport and wood processing in the Nelson area will continue to dominate the activity of the wider region.

Radiata pine is the dominant species in the log supply. Douglas fir log supply is expected to reduce from 120,000 m³ to 80,000 m³ between 1991 and 2000.

2. Scenario for estimation of log flows

Log processing firms in the region were surveyed to determine their expansion plans and log input requirements. From these plans and the potential log supply a base case future processing scenario was developed:

- Sawmill log demand will increase over the period 1991-2000 from 474,000 m³ to 543,000 m³ in Nelson, and from 64,000 m³ to 91,000 m³ in Marlborough.
- The Gladstone peeler plant on the West Coast will continue to receive 6000 m³ of peeler logs from Nelson.
- Surplus sawlogs will be exported.
- A third MDF line or equivalent residue-using plant will be commissioned in Nelson by 1996 increasing wood demand to about 600,000 m³.

- Surplus chiplogs will be exported as chips from Nelson and as logs from Picton.

This scenario is one of many possible alternatives for forest industry development in the region. It does not allow for entry of new operators. It represents a strategy of limited expansion in the local processing industry, especially in Marlborough, when compared with that proposed by Aldwell and Turbitt (1991).

The stated harvest intentions of forest growers were matched up with this processing scenario in order to estimate log flows (Table 5).

TABLE 5 – Estimated log flows (000 m³)

		Log destination						
Source	Nelson Port Saw logs	Nelson Saw- mills	Nelson Chip- logs	Picton Port Saw- logs	Picton Port Chip- logs	Marl. Saw- mills	Glad- stone Peeler	Total
1991								
Nelson	151	474	360			19	6	1010
Marlborough			33	20	4	45		102
West Coast			11					11
Total	151	474	404	20	4	64	6	1123
1992								
Nelson	231	474	334			19	6	1064
Marlborough			30	45	19	48		142
West Coast			12					12
Total	231	474	376	45	19	67	6	1218
1996								
Nelson	303	525	340			10	6	1184
Marlborough			35	69	33	67		204
West Coast			12					12
Total	303	525	387	69	33	77	6	1400
2000								
Nelson	423	543	358	40		10	6	1380
Marlborough			35	302	108	81		526
West Coast			12					12
Total	423	543	405	342	108	91	6	1918

Complementary to the flow of logs in the region is the flow of sawmill chips. This represents the alternative source of raw material for the residue-using industry in the region. Estimates of the future supply of sawmill chips are given in Table 6.

TABLE 6 – Sawmill chip supply

	(000 t green)
1991	184
1992	193
1996	200
2000	200

Indications from Tables 5 and 6 can be summarised as follows:

- The sawlog supply to Nelson sawmills is likely to come from the Nelson region.
- Some of the log supply to Marlborough sawmills is likely to continue to come from the Nelson region (which includes forests around Rai).

- Total Nelson chiplog supply is likely to remain almost constant. The supply of sawmill chips will remain constant, assuming a limited increase in local solid-wood processing. The demand for residues currently comes from the NPI MDF plant. It is assumed that the remainder of the Nelson supply of chiplogs and sawmill chips will be exported (as chips) in 1991 and 1992. The demand in 1996 and 2000 is assumed to be exclusively that for 3 MDF lines. Under this scenario the supply of residues is tight. All Nelson chiplogs and Nelson/Marlborough sawmill chips, together with chiplogs from Marlborough and the West Coast at about current levels, are required to meet this demand. Consequently it is assumed that there will be no chip exports from Nelson in these years. (It is possible that the Nelson residue supply could be eased by the downgrading of potential sawlogs; a greater flow of chiplogs from Marlborough; or a larger-than-anticipated increase in sawmilling capacity. Conversely, an increasing international demand for sawlogs with a subsequent reduction in sawlog specification could exacerbate the tight residue supply.)
- The 108,000 m³ of chiplogs, which were assumed to be exported through Picton in the year 2000, would be potentially available for local processing. The 423,000 m³ and 342,000 m³ of sawlogs assumed to be exported through Nelson and Picton respectively in the year 2000 could also be used in this way.

3. Wood product flows 1991-2000

Processed wood product flows are expected to increase by about 21%, from 634,000 tonnes in 1991 to an estimated 769,000 tonnes in 2000 (Table 7). The largest single increase in processing capacity is expected to occur in MDF. The 1991 and 1992 estimates of wood chip production include both sawmill chips and chips produced directly from chiplogs. The 1996 and 2000 estimates include only the production of sawmill chips. It is assumed that all chiplogs would be required as input to an expanded MDF industry from 1996 onwards.

The expected change in wood processing is based on the stated intentions of the present firms. Few indicated that they would increase capacity. However several sawmillers were prepared to increase from one shift to two when market conditions improved. New entrants to the local processing market would probably increase the processed tonnage shown in Table 7.

TABLE 7 – Estimated processed wood products output in Nelson-Marlborough (000 tonnes)

Product	1991	1992	1996	2000
Woodchips	263	275	200	200
Sawn timber	180	185	220	230
Other*	191	236	334	339
Total Processed products	634	696	754	769

* Includes posts and poles, MDF, sawdust and bark, and firewood. The merging of values for single products is necessary for reasons of confidentiality.

4. Transportation demand

(i) Logs

Nelson is expected to continue to provide the larger source of work for the logging transport industry (Table 8). However Marlborough District will experience a far greater percentage increase in demand (291%) than Nelson (43%).

As noted earlier, part of the Marlborough resource is located in the Marlborough Sounds. Log flow from the Sounds (excluding Linkwater forest area) is expected to increase from 50,000

tonnes per annum in 1992 to 110,000 tonnes per annum in the year 2000. This increased flow will come from barge points throughout the Sounds and will tend to be hauled over longer distances than at present (up to 100 km lead distance compared with 18 km in 1992), especially if they are taken to Picton, Nelson or possibly Wellington for export. Lead distances from many of the forest-based barge points are shorter to Havelock. Thus in the Sounds, demand is expected to increase from 900,000 tonne kilometres to about 6,600,000 tonne kilometres if the logs are barged to Picton (assuming an average lead distance of 60 km), or 2,200,000 tonne kilometres if they go to Havelock (assuming an average lead distance of 20 km). The latter option will require additional road haulage to processing plants or export ports. More, and possibly larger barges may be required for the longer distance operations although some material may be transported by road rather than barge. Lack of sufficient flat ground for log storage near the water is likely to be a limiting factor for barge size.

Log transport demand from the West Coast (for logs processed in the Nelson/Marlborough region) is expected to remain at a relatively low level (about 4.2 million tonne kilometres). The long lead distance is a major component of this value.

TABLE 8 – Change in Logging Haulage Demand 1991-2000

Year	Weighted average Distance (km)	Source			Total
		Nelson	Marlborough	West Coast	
			(000 tonne km)		
1991	53.8	49,246	7,308	3,850	60,404
1992	54.2	52,779	8,029	4,200	65,008
1996	52.1	56,046	12,745	4,200	72,991
2000	53.9	70,538	28,613	4,200	103,351

(ii) Processed product

Forestry sector respondents indicated that an increase of 800,000 tonnes in log availability would probably result in an increased processed wood products tonnage of 135,000 tonnes. The majority of this increase is likely to be transported within the Tasman District – Nelson City area (Table 9). Numbers of longer hauls to Christchurch and Picton (from Nelson) will continue to increase.

TABLE 9 – Estimated change in processed wood products flows from Nelson-Marlborough mills: 1991-2000 (000 tonnes)

Source	Nelson Mills				Marlborough Mills			
	1991	1992	1996	2000	1991	1992	1996	2000
Destination								
Nelson	521	575	621	620	16	18	20	25
Blenheim	8	8	9	9	10	11	12	15
Picton	27	28	30	35	1	2	3	4
Christchurch	46	48	52	52	3	4	4	5
West Coast	2	2	2	3	0	0	1	1
Total	604	661	714	719	30	35	40	50

Source: Survey of the stated intentions of forest owners and wood processing firms.

Note: Values for 1991 are actual as provided by survey respondents; all others are derived from estimates of future markets and processing capacity provided by survey respondents. These values reflect a minimum new processing scenario.

The effects of haul distance on wood products haulage demand are apparent from Table 10. The influence of distance is a major factor in the relative importance of Nelson and

Christchurch routes given that local Nelson tonnage is approximately ten times that going to Christchurch (Table 9). However demand, in terms of tonne km, on the Christchurch run is approximately twice that for local work in the Nelson area. Blenheim to Nelson is likely to become an increasingly important route if local sawmillers help meet the shortfall of woodchip supplies in Nelson.

TABLE 10 – Estimated demand for wood products haulage from Nelson – Marlborough wood processing mills: 1991-2000 (000 tonne km)

Source	Nelson Mills				Marlborough Mills			
	1991	1992	1996	2000	1991	1992	1996	2000
Destination								
Nelson*	10420	11500	12420	12400	2000	2250	2500	3125
Blenheim	938	938	1125	1157	100	110	120	150
Picton	4050	4200	4500	5250	28	56	84	112
Christchurch	19780	20640	22360	22330	936	1248	1248	1560
West Coast	743	743	743	891	0	0	1	1

Source: Survey of the stated intentions of forest owners and wood processors.

Note: * Includes Port Nelson

The weighted average distance for wood products haulage within the region is 30 km. When Christchurch and the West Coast are added this value increases to 60 km.

Increased log and wood products flows will result in increased demand for logging, woodchip and general freight vehicles (Table 11). Over the 10-year period demand for logging trucks is likely to increase from 64 to 109 truck equivalents and demand for vehicles to haul processed product and residues will increase from 58 to 70 truck equivalents. A critical factor in these estimates is the future pattern and relative location of processing plants. For example, an integrated sawmilling, chipping and MDF plant would reduce the need for road transport of sawmill residues.

Although the values in Table 11 are stated in terms of truck equivalents they reflect demand for all means of transport in the region including barging in the Sounds. A single index has been used to provide a simple method of indicating the change in demand.

TABLE 11 – Transport demand associated with the expected growth in wood products flows

Year	Output of forest (Logs and Processed Products) (000 tonnes)	Transport demand (Truck equivalents)		
		Logging	Other	Total
1991	1757	64	58	122
1992	1914	69	62	131
1996	2154	77	67	144
2000	2687	109	70	179

Source: Survey of Nelson – Marlborough forest products and transport industries.

Note: Other refers to transport of processed wood products.

IMPLICATIONS OF FOREST SECTOR GROWTH FOR NELSON-MARLBOROUGH TRANSPORT INDUSTRY

Under-utilised capacity in the current fleet is likely to absorb much of the increased demand associated with forest sector growth at least until 1996. The estimated 89 logging vehicles operating in the region in 1991 were meeting a transport demand for only 64 truck equivalents. This fleet size (operating at 72% of capacity in 1991) is sufficient to meet demand for 1992 and 1996. Similarly the demand for processed product haulage is



Log transport demand in Nelson/Marlborough is expected to increase from 64 to 109 truck equivalents between the years 1991 and 2000.

expected to largely be met, at least under a minimum processing scenario, by existing capacity.

After 1996 additional capacity will be required. However a proportion of the increased demand will be met by barge and rail transport. Around 2-6% of the total regional demand for log transport could be met by barging in the year 2000. In addition, rail is a likely option for the transportation of processed prod-



Barging, which met about 1% of the region's log transport needs in 1992, could be required to meet 2 to 6% of the region's demand (and 8 to 23% of Marlborough's) by the year 2000.



ucts to Canterbury. Rail transport capacity is not currently under pressure. Comment from New Zealand Rail Ltd suggests that increased flows from Nelson-Marlborough can be readily accommodated for long hauls to Christchurch.

Competitiveness of local firms will be a key factor in determining whether increased transportation business remains in the region. The Nelson-Marlborough transport market is exposed to entry of under-utilised capacity from outside the region. For example, long-haul runs to Canterbury and even local haulage contracts may be won by Canterbury firms. Backhauling of processed product will increase the likelihood of external firms participating in the local market.

INTER-REGIONAL LOG FLOWS

The movement of small quantities of logs in both directions between the West Coast and Nelson has been noted in this study. However other flows of logs, both into and out of the Nelson-Marlborough region, are possible.

Increased processing capacity in the new Canterbury Timber Products MDF line which is to be commissioned in early 1994 may result in transport of wood chips or chiplogs to Canterbury for further processing. Conversely there is a possibility of logs from Canterbury forests being transported into the Nelson-Marlborough region. These possibilities illustrate that the Nelson-Marlborough forestry sector is linked to the national scene as far as log supply and demand is concerned.

Other possible inter-regional flows that have been considered by various parties include the barging of logs from Wanganui to Nelson, the barging of logs from Marlborough to Wellington and the transportation of chiplogs to the Bay of Plenty. Because of the long lead distances and associated costs these inter-regional flows are only likely to occur when there are severe local shortages of raw material.

SUMMARY

- Total forest harvest in the Nelson-Marlborough region is forecast to increase from 1.1 to 1.9 million m³ over the period 1991 to 2000. This forecast is based on harvesting intentions of large companies and local bodies together with estimates for the small private resource. Although the increase is more dramatic in Marlborough than in Nelson in percentage terms, it is similar in absolute terms (Marlborough 424,000 m³, Nelson 370,000 m³). Nelson will continue to be the larger producer with approximately 72% of the region's log production. On this basis it is likely that the Nelson area will dominate the region's transport and wood processing activity.
- Although the Nelson total harvest is expected to increase by 37% over the period 1991-2000 the chiplog supply stays relatively constant. This reflects the changing nature of stands being harvested.
- The Marlborough harvest is expected to increase by over 400% during the study period. Over half of this increase will come from small private forests.
- Average log haul distances in the region are expected to stay at current levels.
- The increase in log volumes harvested will result in an increase in log transport requirements from 64 truck equivalents in 1991 to 109 truck equivalents in 2000.
- The associated increase in transportation demand for processed forest products will increase from 58 to 70 truck equivalents under the base scenario of limited additional domestic processing.

- A substantial proportion of the additional transport demand can be met by the existing under-utilised transport industry.

Postscript – actual harvest in 1992

Results presented for 1992 were based on harvesting intentions when the survey was carried out early in 1992. Actual results for 1992 which are now available estimate a total harvest from Nelson-Marlborough of 1,256,000 m³ (C. Perry, pers. comm.) which is 4% higher than the survey estimate of 1,206,000 m³.

The major source of this discrepancy was an increased demand for sawlog exports from Nelson (277,000 m³ compared to the forecast of 231,000 m³). The impact of this on road transport demand would be to increase logging truck requirements from 69 (Table 11) to 72.

The variance of actual harvest from stated intentions in 1992 underscores the fact that the estimates in this paper are intentions at a particular point in time and subject to revision. The Nelson-Marlborough wood supply forecasts done by Turland et al (1993) for a sequence of alternative scenarios indicate the possible range of future harvest levels.

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