

TIRES

Timber Industry Road Evaluation Study



Funding Needs Analysis of local roads servicing the Timber Industry of North East Victoria: 2006-2010

Preparation facilitated through the co-operation of Local & State Government and Forest Industry

by



THE REGIONAL DEVELOPMENT COMPANY PTY LTD
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1. Executive Summary

1.1. Summary

The North East region timber industry is a major National and State employer and generator of export earnings, employing directly in the North East region over 2,000 people and with a value of product of \$300 million. These products are utilised in the domestic building industry, paper production and for export. The flow on effects of this economic activity are significant. There is employment of an additional 2,000 people with total economic flow on to service industries of \$300 million.

The industry places significant demands on road infrastructure. Cost effective access to the plantations is critical in ensuring that the transformation of the raw material into highly value added products takes place in the most economical way. Up to 15% of finished product cost is incurred through raw material cartage. By reducing transportation costs, there is an overall improvement in competitiveness of north east forest based industries facilitating further export and job creation.

Timber industry road needs are not necessarily more significant than other sectors, but rather involve the use of roads in more remote areas, consequently requiring a continuing need for a special category of road funding.

Over the last decade funding amounting to approximately \$10 million and directed to roads identified in Timber Industry Road Evaluation Study 1995.

1.2. Conclusions

Key findings:

- 1.2.1. The industry has delivered on the growth in jobs and investment predicted 10 years ago.
- 1.2.2. Forest products is now the second most important agribusiness in the region on a gross value of production basis.
- 1.2.3. The industry has helped local government obtain about \$10 million in road funding enabling upgrading of many local roads. As a result, the NE TIRES process has meant industry and local government have a constructive dialogue on local road issues.
- 1.2.4. The industry is small in export, but big in import replacement with regional production of panels and paper/newsprint.
- 1.2.5. The maturing private resource is a key component (10%) of supply for regional processors that are now supply constrained due to HVP sales to NSW processors.
- 1.2.6. Private resource ready for harvesting over the next 5 years occurs mainly in 3 local government areas – Mansfield, Murrindindi and Towong.



- 1.2.7. The private resource needs roads upgraded, just as the State, now HVP resource did ten years ago.
- 1.2.8. Infrastructure investment is also needed to encourage expansion of timber plantations to a level capable of supporting world class manufacturing facilities. If the private resource is not commercially harvested, then a negative signal goes to investors deciding whether to continue in the industry by replanting or whether to establish new plantations. Local roads will then remain in poor condition.
- 1.2.9. Woodflows from plantations and native forest in the region are expected to exceed 1.5 million tonnes per annum.
- 1.2.10. Sustained industry competitiveness supported by the local road network requires annual investment of approximately \$5 million. Funding requirements by local government area over the next 5 years are as follows:

Local Government Authority	Timber Road Funding Required
Alpine	\$2,343,258
Benalla	\$2,450,000
Indigo	\$1,995,154
Mansfield	\$449,900
Mitchell	\$150,000
Murrindindi	\$12,234,980
Strathbogie	\$2,810,000
Towong	\$2,752,800
Wangaratta	\$490,000
TOTAL	\$25,676,092



2. Background

2.1. Introduction

In 1995/96, the Victorian Plantations Corporation led the development of two road usage studies, the Softwood Industry North East (SINE) and Timber Industry Road Evaluation Studies (TIRES) that resulted in the industry securing ongoing funding under the Better Roads Victoria program from State and Local Government sources to upgrade local roads to the level required by industry. The initial plans had a 5-10 year horizon.

The TIRES study was funded by councils and industry with a major matching grant from the State development agency, then Business Victoria, now Regional Development Victoria.

A major strength of the process was the development of a joint industry, Shire and State agency committee to manage the annual funding applications and ensure that industry needs were met. This committee, NE Tires, is still in operation. It is chaired by Local Government. Since the inception of NE TIRES, the region has received funding resulting in improvement to many council roads. At the same time, North East Region VicRoads has secured funding to improve major regional cartage routes that form the network, such as the Snow Road.

TIRES went statewide as a study and a strategy in 1999/2000. However no new source of State funds was secured, and the existing pool of funds is now stretched across 4 regions, leaving the North East with a declining source of funds, and with the result that some areas are not funded at all.

An internal report was prepared by VicRoads North East region in 2003/4 to review the regional outcomes and identify new road requirements.

The North East region is also considering preparation of an overall industry transport needs analysis and strategy to cope with the expansion of the road freight task due to the location of major new logistics and manufacturing facilities in the region at Bamawartha.

The new plan will be prepared under the strategic direction of NE TIRES committee, supported by PNE and VicRoads management.

This project is fundamental to the work of PNE, a committee funded by the Federal and State Governments' 2020 plantation programs to increase the plantation area in the North East region.

The current PNE Strategic Plan commits PNE to work with landowners, stakeholders, local government and the community to promote the region as a location for investment in the plantation industry, and to improve the acceptance of private forestry with communities and Local Government.

2.2. Scope of the Study

The study area (i.e. the Plantations North East Region) comprises the Shires of Towong, Indigo, Alpine, Benalla, Mansfield, Wangaratta, Strathbogie, Murrindindi and Mitchell, in North East Victoria (Figure 1). It covers about 15% of the area of Victoria extending from the Murray River in the north, the Goulburn



irrigation area in the west, the outer Melbourne metropolitan area in the south and the Victorian Alps in the east.

The population of the study area is 279,122 persons (ABS, 2001). The average rate of population growth was 0.6% for the period 1995 to 2000 compared with 0.4% for areas outside the Melbourne Metropolitan Statistical District and 1.1% for all of Victoria (ABS, 2001). The major population centres are Wangaratta (15,527), Benalla (8,582) and Seymour (6,294).

Cities and towns in the study area with strong links to the timber industry include Wangaratta, Benalla, Alexandra (1,859 persons), Myrtleford (2,705), Mansfield (2,526), Corryong (1,215) and Mt Beauty (1,649). (Department of Infrastructure, 1999).

The study area has a relatively diverse and broad economic base with agriculture (grazing, cropping, dairying, viticulture and horticulture), timber (native forests, plantations), tourism and manufacturing all making significant contributions.

The plantation and native forest resources in the study area support a diverse range of businesses involved in growing, harvesting, transporting and primary processing of sawlogs and residual or pulp logs. A number of businesses also process sawn timber and other timber products, produced from within and/or outside the study area, for further processing and manufacturing. There is limited vertical integration across the various sectors (i.e. growing, harvesting, primary processing and secondary processing) and consequently, the timber industry in the study area comprises a relatively large number of firms whose operations are limited to specific sectors of the industry. The majority of these firms are small to medium sized family-owned companies.

Industry restructuring, the development of export markets and increased efficiency in the transport sector have all contributed to logs and sawn timber being transported over considerable distances. Logs produced in the study area are 'exported' to other locations for processing, while logs and sawn timber produced elsewhere are also 'imported' into the study area for primary and/or secondary processing.

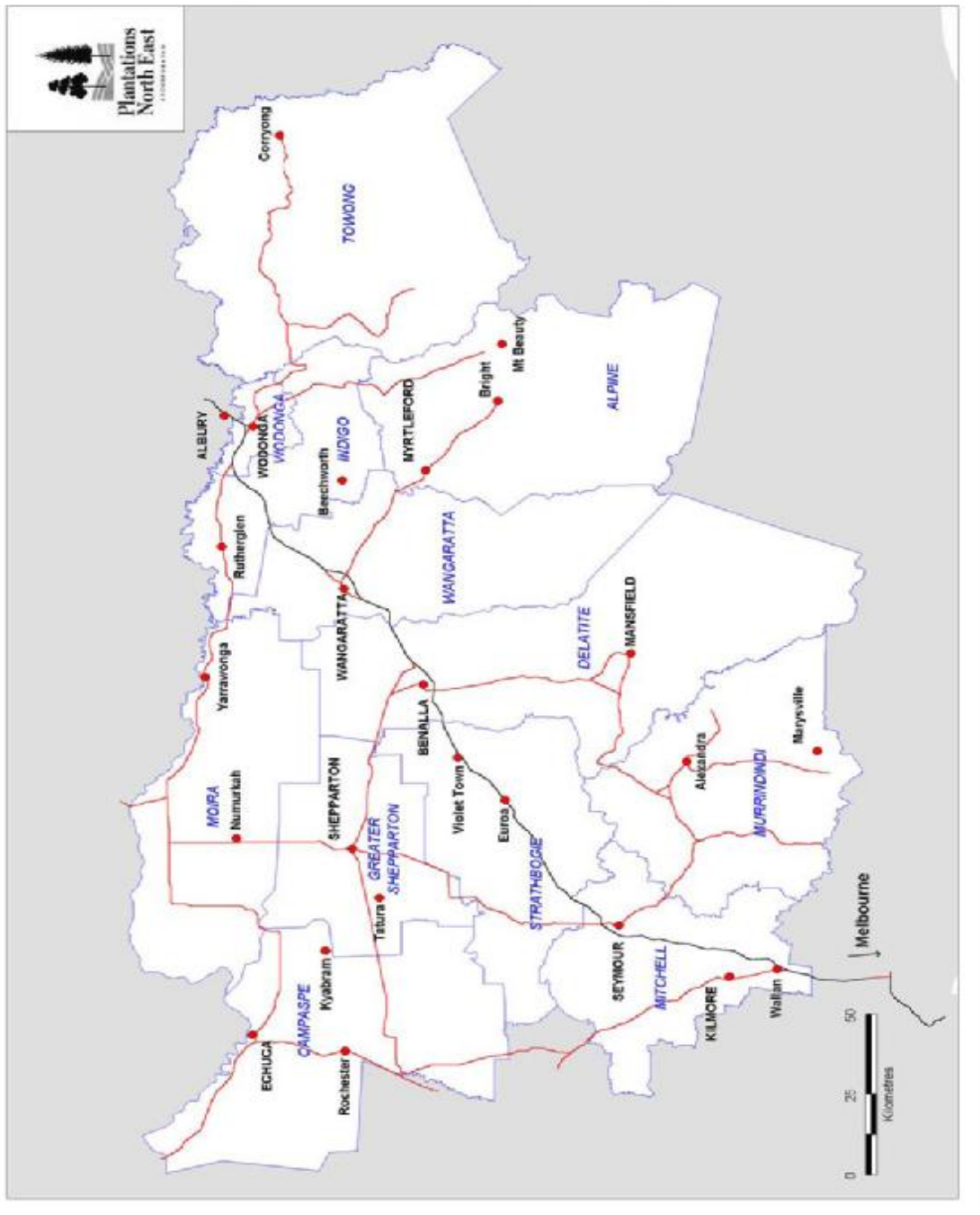
2.3. Methodology

- Reviewing existing NE TIRES roading plans and reports
- Review plantation expansion plans and relevant socio economic studies
- Reviewing the plantations established and projected that would produce logs for harvest 2006 - 2015 for the study area
- Identifying the road network required to service the plantations.
- Preparing a broad scale road development, upgrade and maintenance plan for the industry
- Link that plan to the development of plans for road upgrades to service other industry, especially tourism, and rural living expansion over the period.
- Consider and recommend best value road improvement projects that meet the timber industry requirements.
- Where these are not covered by other road improvement plans, prepare costing and funding scenarios for the working group



- Prepare a report on the TBL impacts of the specific plans; in particular identify any black spot or local road safety issues.
- Prepare a draft final report, recommendations and industry road usage maps.

Figure 2.1: Boundaries of the Study Area and Local Government Areas





3. Timber Resources

Plantations and native forest in the study area have provided the necessary resource base for the establishment and growth of industries harvesting and transporting logs, processing logs and timber products and transporting the products produced to various markets. Figure 3.1 shows the location of plantations and native forest in the study area.

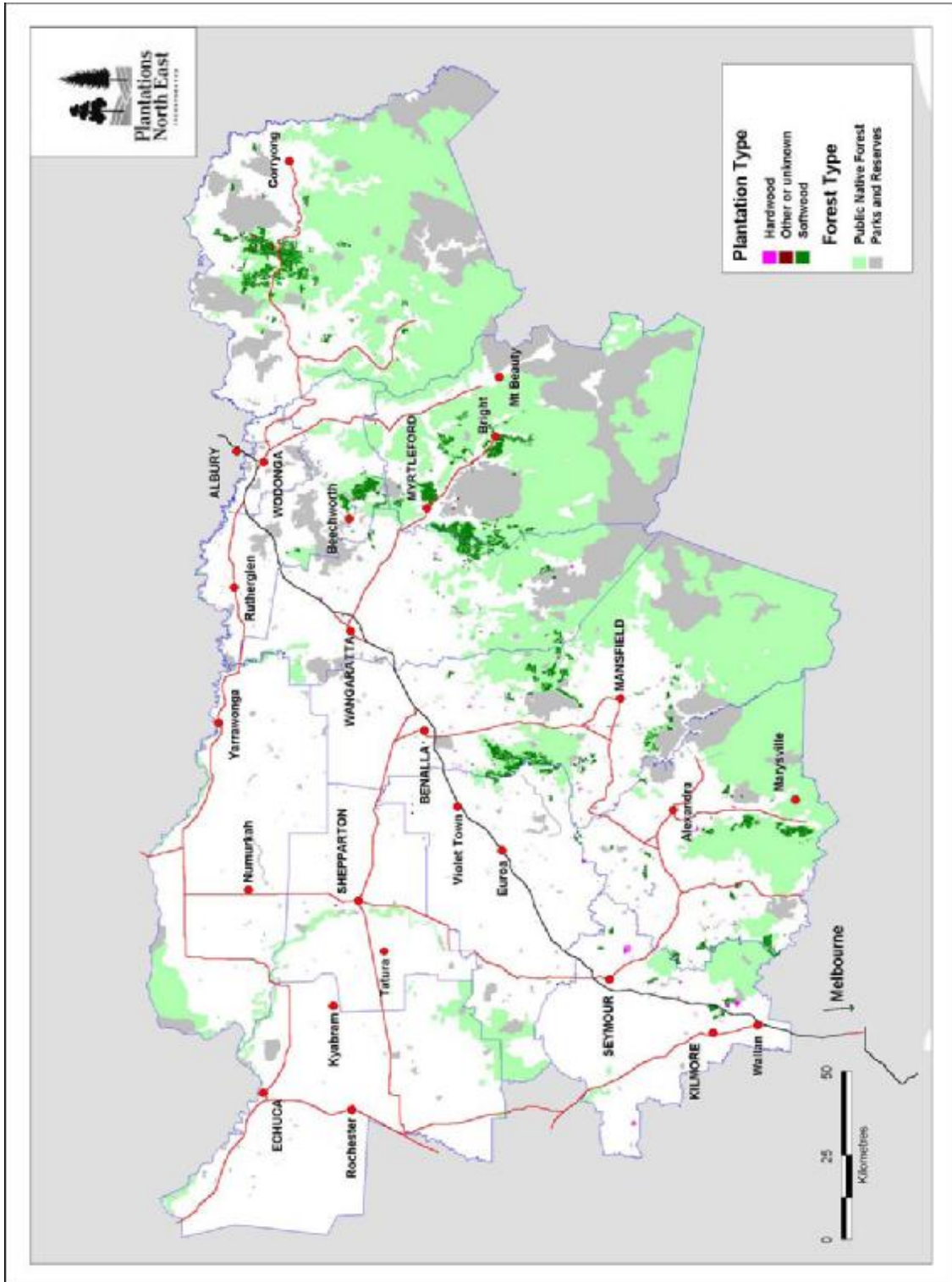
A recent study (PNE, 2001) has identified a total area of 64,468 ha of softwood plantation and 3,273 ha of hardwood plantation in the study area. Softwood planting commenced in the early 1900s and many of the original plantations have been harvested and replanted. Most of the hardwood planting has occurred since 1995.

In addition to the softwood and hardwood plantations, the study (PNE, 2001) identified a further 3,500 ha of plantation that could be classified as either softwood or hardwood. It is anticipated that much of this area comprises environmental plantings and that they are unlikely to make a significant contribution to the timber resources. Accordingly, this area has not been considered further in this report.

There is also over 1 million ha of State forest and 300,000 ha of privately owned native forest in the study area. The timber resources available from these forests and from the area's softwood and hardwood plantations are described in the following sections.



Figure 3.1: Location of Timber Resources





3.1. Softwood Plantations

3.1.1. Resource Description

The study area contains extensive areas of softwood plantation. These plantations which are predominantly radiata pine, provide the resources required for the establishment and operation of a number of major industries producing sawn timber, panel products and pulp and paper. These industries are located both within and outside the study area.

About 80% of the area of softwood plantation was planted by the State Government. The first plantings were carried out in the early 1900s to rehabilitate land that had been severely disturbed by gold mining. The rate of planting was increased in the late 1920s and the 1930s and then declined during the Second World War and in the immediate post war years. Large scale plantation extension resumed in 1962 and continued until about 1990. Most of the planting was undertaken on either Crown land carrying native forest or purchased freehold land.

Plantings commenced in the late 19th century to meet the projected requirement for softwood sawn timber and long fibre pulpwood, and to supplement supply from native hardwood forests. Initial plantings along the coast had varying success. Further plantations were established as funding became available.

The first plantations in the North East were on dredge tailings near Bright in 1916 and continued through the 1930's on areas degraded by gold mining. Plantings at Shelley/Koetong began in the early 1960's and at Benalla in 1964. There are now approximately 64,000 ha of exotic softwood plantations in the North East zone.

The Victorian Government's commitment to phase out clearing of native forest for softwood plantation establishment in 1987 (Government of Victoria, 1986) and community concern about the purchase of cleared private land for softwood planting led to the decline and ultimate cessation of softwood plantation expansion by the public sector.

The Victorian Government established the Victorian Plantations Corporation (VPC), in 1993, to commercially manage State timber plantations. In 1998 Hancock Victorian Plantations (HVP) Pty Ltd purchased Victoria's state-owned plantation assets including a perpetual lease on the land.

The Melbourne-based HVP is Australia's largest private plantation company and currently manages over 200,000 ha of softwood and hardwood plantations across Victoria.

The remaining 20% of the area of softwood plantation was established by a relatively large number of individuals and private companies with the bulk of the planting being undertaken between 1960 and 1990.

The total area of softwood plantation has not increased or decreased significantly over the last decade. However, the replanting of harvested areas with genetically improved planting stock and better establishment and tending techniques is expected to significantly increase growth rates and lead to increased log production.

The results of a recent inventory of softwood plantations commissioned by Plantations North East Inc. are summarised in Table 3.1.



Table 3.1: Areas and Age Class of Softwood Plantations in the Study Area						
Area of Plantation (ha)						
Age Class					Non productive	TOTAL AREA
0-11	12-21	22-31	32+	Unknown		
11,57	21,622	23,001	3,363	2,910	1,995	64,468

Table 3.2: Area of Plantations and Native Forest (ha)				
Municipality	Softwood Plantations	Hardwood Plantations	Native Forest	
			Public land	Private land
Alpine	14,818	83	386,500	23,200
Delatite	12,757	656	284,200	40,600
Indigo	4,590	63	43,300	19,900
Mitchell	2,162	917	47,800	30,000
Murrindindi	7,615	749	162,100	46,400
Strathbogie	1,005	67	25,900	26,800
Towong	16,545	146	416,500	55,500
Wangaratta	4,960	419	126,400	37,500
TOTAL	64,452	3100	1,492,700	279,900

The inventory identified approximately 64,500 ha of softwood plantation in the region, of which approximately 62,500 ha is productive plantation and 59,500 ha are of known age.

The softwood plantation resource is spread across the 8 Shires that comprise the study area, but is most concentrated in the Alpine, Delatite, and Towong Shires which account for approximately 70% of the total area of softwood plantation.

3.1.2. Forest Management

Radiata pine requires a minimum annual rainfall of approximately 750 mm. Rainfall and temperatures in North East Victoria are advantageous to growth but climatic extremes are harsher than desirable. The species reaches best development in climates where winter rainfall predominates. It is also susceptible to snow damage in areas 1,000 metres above sea level.

Plantations of radiata pine are managed under the following generalized regime.



Year	Activity	Yield
1	Plant, weed control	
4-8	Weed control, early thinning, fertilise	
12-15	First thin	100 tonne/ha (100% roundwood)
18-22	Second thin	80 t/ha (50% roundwood; 50% sawlog)
30-35	Clearfell	360 t/ha (20% roundwood; 80% sawlog)
31-36	Re-plant	

3.1.3. Current Operations

Current log production levels are substantial, as shown in Table 3.4, and dominated by HVP who produce about 95% of sawlogs and 97.5% of pulp logs harvested in the study area. In the financial year 2000–01 some 625,000 m³ of sawlogs and peeler logs and 339,000 tonnes of pulp logs were produced with an estimated stumpage value of \$23.0 million for sawlogs and peeler logs and \$4.4 million for pulp logs.

Product	Produced for Domestic Processing		Produced for Export*	TOTAL
	Within PNE region	Outside PNE region		
Sawlogs and peeler logs (m ³)	412,700	163,300	49,000	625,000
Pulp logs (tonnes)	144,500	64,500	130,000	339,000

*includes logs processed into export woodchips

Expenditure on the management of existing softwood plantations, maintenance of roads and other infrastructure, supervision of harvesting operations, and replanting harvested areas, amounts to an estimated \$9.0 million per annum. Contractors are used extensively for most plantation work and it is estimated that the softwood plantations provide 159 full-time jobs for employees and contractors other than logging contractors.

3.2. Hardwood Plantations

3.2.1. Resource Description

Over the last five years, the area of hardwood plantation in the study area has been rapidly expanded with over 3,000 ha planted. The rate of expansion however appears to have lost impetus in the absence of further financial incentives from the Victorian Government and decisions to establish plantations for export woodchips closer to port facilities at Geelong.



Financial incentives from the Victorian Government to interested landowners resulted in the establishment of approximately 1,600 ha of eucalypt plantations during the three year period from 1996 to 1998. These plantations include a number of species, are relatively small in area and are widely dispersed throughout the study area.

Midway Pty Ltd and East Victorian Plantation Company of Australia Pty Ltd (EPFL) have also commenced blue gum planting programs over the last five years in the southern parts of the study area within reasonable distance from port facilities at Geelong.

The results of a recent inventory of hardwood plantations commissioned by Plantations North East Inc. are summarised in Table 3.5.

Locality	Area by Species and Age Class (ha)				Total Area (ha)
	Blue Gum	Shining Gum	Other Euc. Sp.	Unknown Species, Age	
	0-5 years	0-5 years	0-5 years		
PNE region	2,486	476	200	110	3,272

With the exception of 110 ha of unknown age or species all hardwood plantations were aged 5 years or less, and over 75% of the total area was planted with blue gum (*E. globulus*).

Plantations in the southern part of the region are mostly blue gum and have been established on sites receiving an annual rainfall of at least 700mm per annum. Most have been planted by Midway Pty Ltd and EPFL and are being managed on short rotations (10–12 years) for the production of export woodchips.

Plantations in the central and north eastern areas are mostly owned by private individuals and are distant from accessible port facilities. These plantations, which are mostly blue gum and shining gum (*E. nitens*), will probably be managed for sawlog production.

The other eucalypt species most commonly planted in the region have been Sydney blue gum (*E. saligna*), and flooded gum (*E. grandis*). These species have relatively high water requirements due to their high rates of growth and have generally been established on sites where there is plentiful supply of soil moisture from irrigation drainage, shallow groundwater or urban effluent disposal.

Sydney blue gum and flooded gum plantations in the study area are therefore generally owned by either private landowners in irrigation areas or water management authorities.

3.2.2. Current Operations

The current level of production from hardwood plantations is either very low or non-existent as few, if any, hardwood plantations are older than 5 years of age.

Of the 3,272 ha of hardwood plantation positively identified by the recent inventory, 3,162 ha (or about 96%) is aged 5 years or less. There is not expected to be any significant production from these plantations for at least 7–10 years or longer in the case of those being managed for sawlog production.



Expenditure on the expansion and management of hardwood plantations and maintenance of roads and other infrastructure, amounts to an estimated \$3.0 million per annum. Contractors are used extensively for most plantation work and it is estimated that the hardwood plantations provide the equivalent of 9 full-time jobs for employees and contractors.

3.3. Native Forest

3.3.1. Resource Description

The classification and description of forest types for timber production is based on the dominant commercial species present within individual forest stands. Native forests in the PNE region can be conveniently classified into the following four broad forest types:

- Ash species
- Mixed species
- River red gum
- Box-ironbark

The ash species forest type is Victoria's most valuable source of native hardwood. It consists mainly of tall forests of either mountain ash (*E. regnans*) or alpine ash (*E. delegatensis*). They occur on sheltered slopes and plateaus above an elevation of 300 m where precipitation generally exceeds 1200 mm per annum.

Ash forests predominantly comprise regrowth following severe wildfires, principally in 1939, or timber harvesting and are distributed widely across the PNE region. Mountain ash forests extend from Mt Disappointment along the Great Dividing Range to Lake Mountain and north to the headwaters of the Rubicon and Royston Rivers. Alpine ash forests are found at elevations generally exceeding 1,000 m and are distributed across the north-east highlands from the headwaters of the Rubicon and Royston Rivers in the west, to Mt Pinnibar in the east.

The mixed species forest type is the most extensive of the four broad forest types and occupies practically all the timbered country in the northern foothills of the Great Dividing Range. The forests vary greatly in mature height and species composition depending on elevation, slope, precipitation and aspect. Major tree species include messmate (*E. obliqua*), manna gum (*E. viminalis*) and narrow-leaf peppermint (*E. radiata*) on the higher slopes and narrow-leaf peppermint, broad-leaf peppermint (*E. dives*) and red stringybark (*E. macrorhyncha*) on the lower slopes.

Mixed species forests are a major source of sawlogs and many areas have been periodically logged over the last 150 years.

The red gum forest type consists of pure forests of river red gum (*E. camaldulensis*) in areas that are periodically flooded along the middle reaches of the Murray River, as well as the northern reaches of the Ovens and Goulburn Rivers. The Barmah Forest, which is the largest red gum forest in Victoria, is located in the PNE region.

The red gum forests have a long history of management for the production of sawn timber, railway sleepers, posts, piles and firewood.



The box-ironbark forest type is found on shallow stony soils on the dry northern slopes and plains. The principal species are red ironbark (*E. tricarpa*), grey box (*E. microcarpa*), red box (*E. polyanthemus*) and yellow gum (*E. leucoxyton*), which produce strong, durable and dense timber. These forests were heavily exploited during the gold mining era and the resulting regrowth has been periodically thinned for firewood, poles, sleepers and fencing timbers.

The total area of native forest and the area of each of the four broad forest types on both public and private land are shown in Table 3.6

Forest Type	Land Tenure		Total Area
	Public	Private*	
Ash species	254,700	800	255,500
Mixed species	1,090,300	182,700	1,273,000
River Red Gum	60,000	23,000	83,000
Box-ironbark	162,700	101,000	263,700
TOTALS	1,567,700	307,500	1,875,200

* includes 23,100 ha of leasehold

About 41% of the total area of the study area is native forest. A substantial proportion of the total area of native forest in the study area is either not available or not suitable for the production of timber.

About two-thirds of the area of native forest on public land in the study area is State forest and potentially available for timber harvesting. The balance is predominantly National Park, State Park or conservation reserve and is unavailable for timber harvesting.

State forest is managed for a range of uses including timber production, conservation of biodiversity, water quality and yield, recreation and tourism and the management of historic and cultural sites. The principal strategy for integrating these uses is the development of Forest Management Plans, which divide the State forest into the following three management zones:

- Special Protection Zone — managed for conservation
- Special Management Zone — managed to conserve specific features, while catering for sustainable timber production under certain conditions
- General Management Zone — managed for a range of uses and values, with sustainable timber production as a major use

The area available for sustained timber production, after taking account of Forest Management Plan zoning, harvesting exclusions due to the Code of Forest Practices for Timber Production and areas considered unproductive for sawlog production, varies between Forest Management Areas. It is generally about 20% of the total area of State forest and in the North East Forest Management Area, which accounts for three-quarters or more of the State forest in the study area, it is 21.5% (DNRE, 2001).



Data collected from log processors indicates that private native forest accounted for less than 0.5% of hardwood sawlogs and 0% of residual logs produced in the study area. Most privately owned native forest is on land that was formerly alienated for agriculture but was either not cleared or only partially cleared as steep slopes, shallow soils, high elevation/short growing seasons, presence of rock or other characteristics made it unsuitable or marginal for agricultural development. Consequently, most privately owned native forest is also unsuitable for commercial timber production.

Hardwood forests in north east Victoria have been used as a source of wood since early settlement. Forest locations and varieties used commercially are shown in Table 3.7.

Species	Locations
Peppermint/Stringybark	Stanley Plateau, Koetong Plateau, Tolmie Highlands, Strathbogie Ranges
Messmate	Tolmie Highlands, Strathbogie Ranges
Alpine Ash	Evans Creek Catchment, Tolmie Highlands near Archerton, Mt Big Ben, Eskdale Spur near Mt Wills, Tawonga, Cravensville
River Red Gum	Frontages of Murray, Ovens, Kiewa and Mitta Mitta Rivers, Reef Hills near Benalla
Box/Ironbark	Chiltern
Box/Stringybark	Dry slopes throughout north east Victoria

The contribution of hardwood forests to haulage of raw and finished products has been considered in the volume predictions used in this study. Volumes hauled on links have been assumed based on estimates of which forest areas service various processing plants.

3.3.2. Current Operations

Data in Table 3.8 shows that 162,500 m³ of sawlogs and 302,500 tonnes of residual logs were produced in 2000–01 from State forest in the study area. The vast majority of the sawlogs produced were processed in the study area while most residual logs were processed into pallet timber in Dandenong or export woodchips in Geelong.

Royalties and other payments to DNRE for logs produced in 2000–01 were \$6.84 million for sawlogs and \$3.26 million for residual logs.

Product	For Domestic Processing		For Export*	TOTAL
	Within PNE region	Outside PNE region		
Sawlogs (m ³)	155,400	7,100	0	162,500
Residual logs (tonnes)	7,100	20,000*	275,400	302,500

* It is estimated that 20,000 of the 295,400 tonnes of residual logs processed outside the study area are sawn for pallets while the balance are processed into woodchips for export markets.



The production of sawlogs and residual logs from privately owned native forest is, for all practical purposes, negligible. No owners of significant areas of private native forest with potential for timber production were identified.

Expenditure on the protection and management of State forest, maintenance of roads and other infrastructure, supervision of harvesting operations, and regenerating harvested areas, amounted to an estimated \$7.1 million in 2000–01 and provided 61 full-time jobs for employees and contractors other than logging contractors.

3.4. Log Harvesting and Carting

3.4.1. Softwood Logs

The harvesting and carting of logs from softwood plantations is undertaken throughout the year in the study area. This requires careful planning to ensure that harvesting and carting operations during the wetter months are carried out in areas with stable soils and accessed by adequately surfaced, well drained roads.

Ground-based harvesting systems are used to harvest about 85% of the logs produced with the balance being harvested by cable systems. Harvesting costs are substantially higher with cable systems and consequently their use is generally restricted to areas that are too steep for the safe and efficient operation of ground-based systems.

About 13 harvesting contractors harvest the total volume of softwood sawlogs and pulp logs produced during the 2000–01 financial year. A number of these contractors also carry out harvesting operations outside the region, particularly in southern NSW. Compared with native forests the higher log yields and more uniform log size in softwood plantations encourage greater mechanisation. In particular, plantation thinning operations are generally fully mechanised, although some final felling operations still have a manual falling component.

The longer harvesting season, and generally greater use of mechanised systems, enables the average productivity per employee to be substantially higher in softwood plantations than in native forests. Based on the data collected each employee engaged in ground-based harvesting operations produces about 10–13,000 tonnes per annum of logs. The average productivity per employee is significantly lower for cable systems.

Separate contractors generally carry out the carting of softwood logs from the plantation to the processing facilities. There are fewer cartage contractors than harvesting contractors and the two largest handle over 50% of the total volume of logs produced in the study area. The number of trucks required and the productivity per employee varies with a number of factors including the average cartage distance from the plantations to processing plants and whether the areas being harvested and plants being supplied are accessible to B-doubles.

From the available data it is estimated that harvesting and carting the 625,000 m³ of sawlogs and 339,000 tonnes of pulp logs produced from softwood plantations in the study area and processed by firms located both within and outside the study area provides the following economic benefits.



Activity	Direct Employment	Gross Turnover
Log harvesting	90	\$13.8 million
Log carting	80	\$12.1 million
TOTAL	170	\$25.9 million

In 2000–01 about 56,400 m³ of logs from outside the region (mainly southern NSW) were processed by industries in the study area. As contractors producing and transporting sawlogs from outside the study area also live outside the region, the income and jobs attributable to the production, harvesting and carting of these logs has not been included in the assessment of the economic significance of the timber industry in the region.

3.4.2. Hardwood Logs

Most logging contractors in native hardwood forests are small businesses operating one or two logging crews. Operations are concentrated over late spring, summer and autumn and are generally limited to about 6 to 9 months of the year. A typical harvesting crew comprises 4 persons who are responsible for:

- construction of in-coupe roads and log landings
- felling and heading the trees to be harvested
- shifting the tree lengths from the stump to a landing
- merchandising the tree lengths into various products and grades of product
- removal of bark from the logs
- grading the sawlogs
- loading the logs for delivery to specified processing plants
- undertaking all post-logging rehabilitation works specified in the Forest Coupe Plan

Generally, two log trucks are required to service each crew. Although some harvesting contractors own and operate their own trucks, log cartage contractors who are either owner-drivers or small fleet (2 to 3 trucks) operators are also widely used.

Practically all log harvesting and log cartage contractors operating in native hardwood forests in the study area are engaged by sawlog processors or GCH Harvesting Pty Ltd, which is owned by sawlog processors.

GCH Harvesting Pty Ltd (GCH) is responsible for managing the harvesting and delivery of all sawlogs and residual logs in the Central Forest Management Area (FMA) and all ash logs and some mixed species logs in the Benalla/Mansfield FMA. GCH directly employs 4 persons to manage its contracting operations and a further 116 persons are employed in contracting.

To harvest these logs GCH has 11 harvesting contractors who operate a total of 14 crews to harvest (i.e. fall, snig, de-bark, merchandise, grade and load) sawlogs and residual logs. The harvesting contractors are typically small enterprises operating 3–4 man crews comprising the contractor and 2 or 3 employees or sub-contractors. Three of the 14 crews operate mechanical felling equipment. The total number of persons engaged in harvesting is 64.



To deliver the harvested logs, GCH has engaged 20 cartage contractors (including 3 who are also harvesting contractors) who operate a total of 28 trucks. Most trucks are jinker or skel configurations although there are also 4 Mini B Doubles and 2 Quad Dogs. GCH also engages additional cartage contractors on a casual basis to handle high production levels. The total number of persons including casuals engaged in log haulage is 52.

The harvesting of the balance of the sawlogs and residual logs produced in the PNE region (about 60–70,000 m³ per annum) is arranged by sawmilling companies such as Mt Beauty Timbers, Corryong Timbers, Ryan & McNulty, Whitlands' Sawmill, Risstrom and Sons and Murray River Sawmills.

It is estimated that the harvesting and carting of sawlogs and residual logs produced from native forest in the study area and processed by firms located both within and outside the study area provides the following economic benefits.

Activity	Direct Employment	Gross Turnover
Log harvesting	80	\$10.2 million
Log carting	60	\$8.0 million
TOTAL	140	\$18.2 million

In 2000–01 about 14,000 m³ and 11,000 m³ of sawlogs produced in other parts of Victoria and in southern NSW respectively were processed by sawmills located in the study area. As contractors producing and carting sawlogs from outside the study area also live outside the region the income and jobs, attributable to the production, harvesting and carting of these logs has not been included in the assessment of the economic significance of the timber industry in the region.

3.5. Harvesting Volume Forecasts

3.5.1. Softwood Logs

Years	Sawlog/Veneerlog	Roundwood	Total
2006 -2007	634,000	430,000	1,066,006
2008 - 2017	714,000	442,000	1,158,009

The major sawlog processors are located at Myrtleford and Tumbarumba. Roundwood processors are situated at Albury, Myrtleford, Benalla and Wangaratta.

3.5.2. Hardwood Logs

Annual volume is predicted to be 100,000 tonnes of D+ sawlog and 10,000 tonnes round wood produced each year.



3.6. Processing Industry Development

The softwood industry has expanded its plantation resource uptake from 795,000 tonnes in 1996 to 1,200,000 tonnes estimated for 2006. Increased sales to existing processors Monsbent, Carter Holt Harvey, Hyne & Son and Alpine MDF have been features of this expansion. The primary processing industries in each Shire are set out in Table 3.12.

Table 3.12: Primary Processing Industries in each Municipality				
Municipality	Type of Industry			
	Hardwood Sawmilling	Softwood Sawmilling	Roundwood Preservation	Panel Products
Alpine	Mt Beauty Timber Industries	Carter Holt Harvey	P. Cames P/L	Carter Holt Harvey
Benalla	Ryan & McNulty P/L, DSM Sawmills, The Stakeman	D & R Henderson P/L	Benalla Timber Products	Monsbent P/L
Indigo	—	—	—	—
Mitchell	McCormack Timbers	—	—	—
Murrindindi	J L Gould Sawmills, Alex Demby Timber, Neville Smith Timber Industries	G B Sawmills	—	—
Strathbogie	—	—	Hume Timbers	—
Towong	Timbers P/L, Spot Pallet Supplies	—	Permalast Timbers	—
Wangaratta	Whitlands' Sawmill	B & D Murphy	—	Dominance Industries

About two-thirds of the volume of softwood sawlogs and less than half the volume of softwood pulp logs produced are processed by plants located in the study area. The table shows that processing plants are located in six Shires with the largest, Carter Holt Harvey Limited, D & R Henderson/Monsbent and Dominance Industries, being located in the Alpine, Benalla and Wangaratta Shires respectively.

Over 95% of the volume of hardwood sawlogs and less than 5% of the volume of hardwood residual logs are processed by plants in the study area. Hardwood sawmills are generally much smaller than softwood sawmills and are generally focused on producing particular products such as unseasoned hardwood, kiln dried (KD) ash, red gum, etc.



3.7. Future Development

3.7.1. Softwood Plantations

The age class distribution of the existing plantations (see Table 3.1) and the relatively small proportion of total log production obtained from the smaller growers (about 4% of total production) suggest that there is potential for log production to be increased in the future.

On the other hand the magnitude of future increases in log production is likely to be limited by the replanting of the remaining 983 ha of the Delatite plantation with native species (PNE, 2002) and the possible conversion of up to 2,800 ha of softwood plantation owned by Midway Pty Ltd to hardwood plantation.

In assessing the benefits of expanding the area of plantations in the study area it has been assumed that:

- the current difficulties experienced by small plantation owners in marketing logs will be overcome by increased demand for both sawlogs and pulp logs
- all existing plantations will be commercially managed for sawlog production
- production from the current area of softwood plantation will be increased from 625,000 m³ to 800,000 m³ per annum for sawlogs and from 339,000 tonnes to 400,000 tonnes per annum for pulpwood

The increased production would be insufficient to support major expansion of the existing softwood processing industries and/or the development of internationally competitive new industries in the study area. Expansion of the area of softwood plantations is required to provide the significant increase in log resources needed to provide opportunities for existing industries to grow and remain internationally competitive and to attract new industries.

Approximately 0.8 million ha of farmland in the study area has the capability to support commercially viable softwood plantations with growth rates of at least 16 m³/ha/annum. This comprises areas mostly located east of the Hume Freeway that receive an annual rainfall of more than 700 mm (PNE, 2002).

After applying a range of socio-economic factors to this nominally suitable land base, Margules Poyry (1999) concluded that a realistic area of a further 100,000 ha of softwood plantations could be developed in the Wangaratta-Benalla-Mansfield (WBM) 'triangle', and the Wodonga area, to service domestic processors. An increase in the softwood plantation base of this magnitude could lead to a major expansion of the existing sawmilling industry and attract additional panel manufacturing to the WBM triangle (Margules Poyry, 1999).

Approximately 290,000 ha of cleared freehold land has a net present value (NPV) for softwood plantation use of \$1,500 per hectare or greater and is economically suitable for softwood plantation development (PNE, 2002). The proportion of this area that is available for softwood plantation development will be influenced by other variables including the net present value of existing or alternative land uses and the preferences of individual property owners.

3.7.2. Hardwood Plantations

Future production of timber from the hardwood plantations in the study area will be determined by the management objectives of the owners and the rate of future plantation extension.



Plantations established by EPFL and Midway Pty Ltd (currently 1550 ha) are being managed on short rotations of 10–12 years for pulpwood production while the plantations established by the FFORNE Hardwood Growers Co-Op (approximately 1600 ha) are managed for sawlog production. Although some of the FFORNE plantations may also produce pulpwood from early thinnings, most are distant from woodchip export facilities and accordingly, are expected to be thinned non-commercially at a young age (4–5 years). Early non-commercial thinning reduces stocking and provides growing space for the best trees to grow more quickly to sawlog size classes. These plantations even with the benefit of early non-commercial thinning are not expected to be ready for final harvesting until at least 2020.

There is potential to greatly expand the area of hardwood plantations. Borschmann (1998) concluded that approximately 1.1 million ha of farmland in the region has the capability to support commercially viable hardwood plantations growing at rates of at least 16 m³/ha/annum.

This comprises areas mostly located east of the Hume Freeway extending from the upper Murray catchment in the north to the upper Goulburn catchment in the south that receive an annual rainfall of more than 700 mm. It also includes approximately 280,000 ha of irrigated farmland in the Shepparton, Moira, and Campaspe Shires.

After applying a range of socio-economic factors to this nominally suitable land base, Margules Poyry (1999) concluded that a realistic area of 40,000 ha of eucalypt plantations could be developed in the Seymour and Shepparton regions. These plantations could produce either export pulpwood, if they are located within an economic distance from port facilities at Geelong, or small solid wood products.

Approximately 10,000 ha of cleared freehold land has a net present value (NPV) of \$1,500 per hectare or greater for hardwood plantations managed to produce pulp logs (PNE, 2002). This estimate and that by Margules Poyry indicates that distance from port facilities is likely to be a major constraint on the expansion of hardwood plantations in the study area.

3.7.3. Native Forest

The Department of Sustainability and Environment has completed a major review of sawlog harvesting rates in all Forest Management Areas. The results of this review and decisions on the renewal of existing licences have determined future reduced levels of hardwood sawlog production from public land.



4. Road Network Analysis

4.1. Existing Road Network

North East Victorian forests are necessarily situated in areas where rainfall is relatively high. The terrain is often steep and road needs for other than timber have not led to the development of a network of high quality roads.

The road network servicing these areas crosses mountainous terrain and river plains. As a result of the topography, climate, drainage and water tables the roads are relatively expensive to construct and maintain.

The existing road network was developed to provide local access and to service low density grazing, dairy farming, tobacco growing, tourism and recreational activities and relatively low volume, scattered hardwood logging.

Harvesting and haulage are generally year round activities in most plantations, subject to guidelines and conditions established under the Code of Forest Practices and Zone Prescriptions. Extreme conditions can result in some closures of operations for a number of days.

Pavements are generally in excess of 40 years old and were constructed for much lower axle loads and volumes than experienced today. Typical log haulage and general transport trucks in the 1940's and 1950's were rigid 12 tonne capacity. Trucks now range up to 42.5 tonne gross for semi-trailers and 62.5 tonne gross for B-doubles.

Increased loads now allowed for in haulage vehicles has increased the equivalent axle loading per unit weight carried by about 35% resulting in an increase in the design pavement thickness and cost for new works.

The network's condition is variable. Sections generally located between the arterial and in-forest networks have older and/or lower strength pavements and are not coping adequately with the existing haulage volumes.

Historically, logging equipment could only work in dry times as wet conditions bogged plant. Now harvesting machinery can work in all seasons. Haulage of only small quantities over low standard roads in wet conditions can have significant adverse effects.

An appropriate road network to service the needs of plantations should be planned and funded. Hancock Victorian Plantations has an annual program of developing plantation roads to provide access within forests to the primary network.

Many of the local and plantation roads also service local and tourist traffic needs. In such cases access is provided, but not with a high standard of road.

The primary focus of the report is on those roads which are not adequately funded under existing programs. These roads are most often located between the arterial and in-forest networks.



4.2. Road Upgrading Needs

The need to update road links has been derived from local government analysis of need relative to road condition, forecast timber haulage volumes by road (Appendix 7.1) and an understanding of other road traffic demands. Estimates of the cost of proposed works have been provided by road authorities for routes under their control and detailed in Appendix 7.2

There are definite benefits to the whole community in developing an appropriate road network – safety, access, etc. Forest roads planning also influence other areas of road development and provide additional benefits.



5. Economic Analysis

The timber industry is a value added industry with aspects of export of product and import replacement. International competitiveness is enhanced by management of costs. There is a need to reduce haulage costs by providing an adequate road infrastructure to support industry competitiveness.

5.1. Timber Industry Economics

This section is intended only to give a descriptive treatment of some of the more easily demonstrated economic benefits accruing from the industry for comparison with the costs of proposed upgrading works.

Economic benefits from industry are evident in:

- direct employment generated
- value of output produced
- flow on effects to other sectors of the regional economy

5.1.1. Employment

The timber industry contributes to regional employment through participation in the various sub-sectors of the industry. In addition, expenditure by the industry, and by those directly employed by it, creates indirect jobs in the study area. This is brought about by an increasing demand for a wide range of services, including engineering services, fuel, government services (eg schools), accommodation and household goods and services.

Data on direct employment associated with the timber growing, harvesting and carting logs in the study area and primary processing industries, both in and outside the study area together with estimates of the number of persons employed transporting finished products, is shown in Table 5.1.



Sector	Category	Direct Employment		
		North East	Elsewhere	Total
Softwood Plantations	Management	159	Not est.*	159
	Logging, log carting	170	Not est.*	170
	Sawmilling	430	160	590
	Panel products	300	Not est.*	300
	Preservation timbers	23	Not est.*	23
	Pulp and paper	0	39	39
	Product transport	60	15	75
	Woodchip export	0	8	8
	Log export	0	7	7
	SUB-TOTAL		1,142	229
Hardwood plantations	Management	9	Not est.*	9
Native Forest	Management	61	Not est.*	61
	Logging, log carting	140	Not est.*	140
	Sawmilling	343	26	369
	Product transport	22	1	23
	Woodchip export	0	20	20
	SUB-TOTAL		566	47
TOTAL		1,717	276	1,993

The timber industry in the study area makes a significant contribution to the economy by directly providing 1993 full-time jobs including 1,717 jobs within the study area. Jobs in the timber industry are not uniformly distributed across the region and are generally associated with the presence of processing industries. Accordingly, the timber industry accounts for a higher proportion of total employment in Myrtleford, Benalla, Wangaratta, Alexandra, Mt Beauty and Corryong than elsewhere.

5.1.2. Value of Output

The estimated total value of goods produced from softwood plantations and native hardwood forests in the study area is shown in Table 5.2.



Location of Processing Facilities	Sector		Total
	Plantation Softwood	Native Forest	
North East	183.3	62.7	246.0
Within Australia	225.4	71.0	296.4

The estimates assume that:

- all logs produced in the study area will be transported by firms located in the study area
- all products produced by primary industries in the study area will be transported by firms located in the study area
- all logs or timber products 'imported' into the study area for processing will be transported by firms from outside the study area
- no benefits, excluding production harvesting and log carting, are derived by the study area from log processing or export operations located outside the study area

Although most goods produced by the timber industry in the study area are for domestic consumption, there are significant exports of both highly processed (MDF, particleboard, kiln dried hardwood) and semi or unprocessed (softwood and hardwood chips from sawmill residues and logs, softwood logs) products. In 2000–01 the total value of exports was \$80.5 million or some 27% of the total value of goods produced. Australia's exports of forest products in 2000–01 had a total value of \$1,810.6 million (ABARE, 2001). The study area therefore contributed about 4.5% of the total value of Australia's exports of forest products.

The value of goods produced by secondary processing industries in the study area has not been included in the above estimates. These industries also make an important contribution by injecting over \$22 million in wages and salaries alone into the local economy.

There is a lack of vertical integration between primary and secondary processing industries in the study area and alternative supplies of sawn timber and panel products are available outside the study area at a competitive cost. Consequently, it would be misleading to directly attribute the existence of secondary processing industries, and the economic activity they generate, to available supplies of timber from within the study area.

5.1.3. Flow on Effects

Industries also contribute indirectly to employment and the total employment attributable to a particular industry is therefore usually much larger than direct employment. Quantifying indirect employment is more difficult than quantifying direct employment and is usually undertaken by applying an appropriate multiplier.

Multipliers are commonly derived from input-output models. They are produced for various attributes including gross output, value-added, household income and employment and for each attribute there are various 'types' depending on whether the multiplier relates to direct effects, production induced effects, consumption induced effects, the total effect across all industries in the economy, etc. Multipliers that estimate the total effect across all industries in the economy are referred to as 'Type 2' multipliers.



A great deal of work is required in data collection and processing and there are considerable delays before the multipliers are released. Apart from timeliness, other significant problems associated with the determination of appropriate multipliers include:

- differences between the structure of the national and regional economies limiting the application of multipliers derived from nation-wide input-output models
- the particular industry (i.e. the timber industry in this instance) may not match the ANZSIC classification used by the ABS

Notwithstanding these limitations, 'Type 2' employment multipliers have been used in studies of the timber industry in Victoria and NSW (PNE, 2002) as shown in Table 5.3.

Industry Sector	Type 2 Employment Multiplier
Forestry	1.84
Logging	1.94
Hardwood milling (net)	1.87
Softwood milling (net)	2.12
Export woodchipping	2.29
Wood panel products & paper	3.93

In the absence of more detailed regional studies it was decided to use an employment multiplier of 2 for all sectors of the timber industry in the study area.

Therefore, the total (direct and indirect) employment attributable to the timber industry in the study area is as follows:

	In the Study Area	In all Areas
Direct employment	1,717	1,993
Indirect employment	1,717	1,993
TOTAL EMPLOYMENT	3,434	3,986

The above estimates exclude all employment in secondary processing industries, which would contribute at least a further 1,500 direct and indirect full-time jobs in the study area.



5.2. Comparison of Timber Industry Economic Importance to other Regional Production

5.2.1. Introduction

The study area is large and diverse and can be broadly classified into the following regions:

- North-East Victoria, comprising Strathbogie, Benalla, Mansfield, Wangaratta, Alpine, Indigo, Wodonga and Towong local government areas (LGA's)
- Central Highlands comprising Murrindindi and Mitchell LGA's

These regions differ significantly with respect to agricultural production, manufacturing, tourism and timber production.

Published information is available for gross value of production and employment for industries in some of the above regions. However, comparisons between timber industry businesses are not directly quantifiable due to the lack of detailed published data for the entire study area, and the aggregation of agriculture, forestry and fishing into a single industry sector.

5.2.2. Gross Value of Production Comparisons

Published data is available for the gross value of production (GVP) for all industries, and for defined industry categories (eg agriculture, forestry and fishing and tourism and hospitality) for each LGA in the study area. This data is presented in Table 5.5.

The GVP of agriculture, forestry and fishing accounts for a significant, but variable proportion of the total GVP in almost all LGA's over the study area. On a regional-basis agriculture, forestry and fishing accounts for 18% and 19% of the total GVP in the Central Highlands and North-East regions respectively. There are also marked differences in the contribution that agriculture, forestry and fishing makes to the total GVP of LGA's in the study area, ranging from 47% for the Shire of Towong to 11% for the Shire of Mitchell.

Local Government Area	Agriculture, Forestry & Fishing	Tourism and Hospitality	All Industries
Alpine	52.8	23.7	251.5
Delatite	61.6	15.8	365.5
Indigo	51.7	7.8	323.0
Strathbogie	49.0	3.5	152.9
Towong	60.0	4.5	127.8
Wangaratta	64.1	7.6	548.7
Murrindindi	53.9	14.2	161.5
Mitchell	38.3	3.6	347.2
TOTAL	431.4	80.7	2278.1



The timber industry, excluding secondary processing, contributes around 18% of the GVP of agriculture, forestry and fishing and around 4.5 % of the total GVP in the study area (PNE, 2002).

Because of the inherent diversity of the physical and economic resources of the study area, the contribution of the timber industry to the economy varies across regions and LGA's. There are limited timber resources in the Goulburn Valley and forestry is not a major contributor to the GVP of the region. The situation is different in the North-East and Central Highlands regions which are principal areas for softwood production and processing, and hardwood production and processing respectively.

Although further analysis of the contribution of the timber industry to the GVP of all regions/LGA's would be desirable, this appears to have only been undertaken in the North-East.

5.2.3. Gross Value of Production Comparisons

The North-East Agribusiness Forum undertook a comprehensive survey of agricultural production in the North East region (defined as the Shires of Delatite, Wangaratta, Indigo, Alpine and Towong) as part of the development of long-term strategies to optimise opportunities for growth in the agricultural sector.

The GVP of agriculture (and forestry) to the North-East region including the processing of agricultural commodities produced in the region was estimated to be \$795 million. The contributions from the various sectors are shown in Table 5.6.

Industry	GVP \$million	% of GVP
Timber	232.0	29.2
Livestock	227.0	28.6
Dairy	145.5	18.3
Wine	118.0	14.9
Other Horticulture	23.7	3.0
Tobacco	22.9	2.9
Grain and seed	12.5	1.6
Wool and fleece	11.1	1.4
Honey	1.0	0.1
Aquaculture	1.0	0.1
TOTAL	794.7	100.0

The diversity of agricultural production was seen as a key asset with the major industries being timber, livestock-beef, dairying and wine. The GVP for timber was estimated to be \$213 million for softwood and \$18.5 million for hardwood. The major softwood processing industries, account for a large proportion of the GVP in the Shires of Delatite, Alpine and Wangaratta.



5.2.4. Summary

The timber industry makes a significant contribution to the economy of the study area and in particular to the North-East and Central Highlands regions.

5.3. Timber Industry Social Impact

5.3.1. Introduction

The softwood plantations and native forests in the study area provide a substantial and secure resource base for the progressive development of the processing and service industries described in earlier chapters of this report. The timber resources and associated industry provide secure employment opportunities and contribute to development of stable communities with strong levels of community attachment.

The existence of a well established resource and primary processing infrastructure has the potential to ensure that the study area obtains the maximum socio-economic benefit from future plantation expansion.

5.3.2. Secure Employment

Secure and sustainable employment usually results from the development of industry infrastructure. This can alleviate the issues relating to employment uncertainty with its subsequent flow-on effects such as the loss of local business and the relocation of youth from the area, which are a concern to people living in rural communities.

Accordingly, the creation of jobs and the provision of stable employment opportunities is arguably the most significant social benefit attributable to the timber industry in the study area.

It was estimated in section 5.1, that the timber industry in the study area directly employs 1,993 persons and indirectly provides employment for a further 1,993 persons through the stimulus given to the broader economy.

The social assessment undertaken as part of the preparation of the North East Victoria RFA (VicRFASC, 1998) provided the following profile of forest industry employees:

'An examination of profiles of forest industry employees, indicates that the majority are employed on a full-time basis (88.2%) and have worked within the industry for an average of 13.2 years and for their current employer for an average of 10.6 years. Many employees (45.9%) have not worked in other industries, and 38.7 % have had to relocate to retain their employment within the industry. The majority have a high school education or have attained TAFE/trade certificates.

The average age of a forest industry employee is 40, and over 50% are married and the average family size is three. In terms of community attachment, employees have resided within their respective communities for a considerable period of time (average of 17 years), and participate in about 2 community groups on average. Forty-one per cent own their own homes outright, 29 per cent are paying mortgages, and 29 per cent rent their accommodation.'



The social assessment for the North East Victoria RFA suggests that residents exhibit a strong level of attachment to the area, have a highly developed sense of community, and a generally good social infrastructure. Whilst this can be attributed to a range of factors, the provision of stable employment by the timber industry is particularly important in communities such as Alexandra, Benalla, Corryong, Mt Beauty, Myrtleford and Wangaratta.

As well as providing major social benefits, timber industry employment also provides substantial indirect benefits to government. Without it, the Commonwealth Government would obtain less revenue from personal income tax and would have to provide unemployment benefits. There would also be greater demands placed on the social and community services provided by all levels of government.

If unemployment increased by the number of persons currently employed growing, harvesting and processing timber from the study area (i.e. 1,991 persons) the cost to government would be about \$35 million per annum in terms of social welfare benefits and \$10 million per annum in income tax forgone.

5.3.3. Community Benefits

The plantations and forests in the study area and their dependent industries play a significant role in the maintenance of social infrastructure, retention of local businesses and reducing the relocation of youth from rural and regional communities through:

- providing both direct and indirect employment
- increasing the range of skills, including managerial skills, in the community
- attracting government funding for infrastructure provision (eg roads), training and skills development, plantation development (eg the initial Farm Forestry Loan Scheme and the FFORNE hardwood plantation project) and industry development
- developing synergies with other regional industries such as agriculture and horticulture (eg backloading of fertiliser to Corryong)
- providing growth opportunities that can reduce the impact of structural change (eg the timber industry has played a major role in expanding the manufacturing base in Benalla and offsetting reductions in the public sector workforce)

Training and skills development relevant to the timber industry are also significant grant recipients via the Wodonga and Goulburn Ovens Institutes of TAFE, and the National Skills Training Centres at both localities. The benefits arising from these grants are available to others in the wider community and are not restricted to the timber industry and its employees.

Community support for industry development can also play an important role in attracting investment. When Dominance Industries announced the decision to build the MDF plant at Wangaratta, they praised local community groups for supporting the project and inferred that such local factors were important in choosing Wangaratta.

As well as providing the resource base for the development of competitive processing industries, plantation development can also provide a range of positive environmental outcomes such as carbon sequestration from the atmosphere, lower water tables, and salinity control, which benefit the community.



6. Bibliography

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TIRES (1995) Timber Industry Road Evaluation Study



7. Appendices

7.1. Timber Haulage Volumes

7.1.1. Hancock Victorian Plantations

Road	Shire	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	Total
Back Germantown	Alpine	693	0	4,414	0	2,101	7,208
Back Porepunkah	Alpine	1,572	2,485	4,414	993	3,050	12,513
Back Stanley	Alpine	9,599	8,295	0	28,608	20,972	67,474
Bakers Gully	Alpine	8,771	582	0	24,692	5,085	39,130
Blades	Alpine	11,997	0	0	0	0	11,997
Buckland Valley Road (GAR-Egglestons)	Alpine	31,803	9,983	8,296	32,838	30,318	113,238
Buffalo River 5(Dam-BW)	Alpine	51,842	86,789	38,801	65,802	69,029	312,264
Buffalo River 6 (BW-RR)	Alpine	28,345	0	0	0	0	28,345
Buffalo Whitfield 1 (BR-2.7)	Alpine	24,253	92,931	49,087	71,399	99,004	336,674
Buffalo Whitfield 2 (BR2.7-7.5)	Alpine	755	27,802	12,977	38,393	91,872	171,800
Carboor Buffalo Dam 1 (BW-4.7)	Alpine	24,253	92,931	49,087	71,399	99,004	336,674
Carrolls 1 (HV-6.4)	Alpine	16,137	46,280	73,847	37,049	47,068	220,381
Carrolls 2 (HV6.4-MY)	Alpine	9,714	43,264	68,077	25,804	47,068	193,926
Churchill	Alpine	8,771	582	0	24,692	5,085	39,130
Coronation	Alpine	8,771	582	0	24,692	5,085	39,130
Egglestons Lane (BV-0.3)	Alpine	31,803	9,983	8,296	32,838	30,318	113,238
Egglestons Lane (BV0.3-1.1)	Alpine	31,803	9,983	8,296	32,838	30,318	113,238
Farrelly (BV-0.1)	Alpine	31,803	9,983	8,296	32,838	30,318	113,238
Farrelly (BV0.1-1.3)	Alpine	31,803	9,983	8,296	32,838	30,318	113,238
Gillett	Alpine	12,053	22,653	60,668	16,549	0	111,924
Havilah Road	Alpine	10,108	88,200	0	0	0	98,307
McLees Lane (0-1.5)	Alpine	23,454	31,574	17,447	28,341	10,788	111,604
Merriang Sth	Alpine	37,196	6,836	10,550	14,189	41,133	109,904
Morgans Creek	Alpine	0	0	36,470	30,887	105,436	172,793
Morrison (MY-0.9)	Alpine	0	2,352	57,109	37,022	25,474	121,957
Morrison (MY0.9-1.7)	Alpine	0	2,352	57,109	37,022	25,474	121,957
Mystic Lane	Alpine	8,771	582	0	24,692	5,085	39,130
One Mile Creek Road (Bar-0.2)	Alpine	6,257	6,254	0	0	0	12,512
One Mile Creek Road(GAR-Bar)	Alpine	6,257	6,254	0	0	0	12,512
Ortlipp	Alpine	10,108	88,200	0	0	0	98,307
Railway Ave	Alpine	8,771	582	0	24,692	5,085	39,130
Running Creek	Alpine	23,454	31,574	17,447	48,916	10,788	132,179
Running Creek Kankoonah 1 (MC-G)	Alpine	12,053	22,653	60,668	16,549	0	111,924
Running Creek Kankoonah 2 (HV-MC)	Alpine	12,053	22,653	97,138	47,436	105,436	284,717
Stackey Gully	Alpine	7,815	582	0	20,511	4,178	33,085
Station	Alpine	8,771	582	0	24,692	5,085	39,130
Yarrabulla	Alpine	0	1,194	0	0	0	1,194
Crowes	Benalla	0	12,692	0	0	0	12,692
Ethel (L-1.9)	Benalla	116,886	92,202	103,992	57,238	62,496	432,814
Ethel (L1.9-2.2)	Benalla	116,886	92,202	103,992	57,238	62,496	432,814
Lima 1 (MHwy3.9-7.8)	Benalla	52,650	52,839	72,967	133,414	100,521	412,391
Lima 2 (Mhwy-3.9)	Benalla	169,536	145,041	176,959	190,652	163,017	845,205
Old Tolmie 1,2 (West)	Benalla	52,492	85,541	8,504	12,378	38,655	197,570



Road	Shire	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	Total
Old Tolmie 3 (East TT0.5-2.4)	Benalla	10,102	64,305	39,219	0	0	113,627
Old Tolmie/Bronds 3 (East TT-0.5)	Benalla	10,102	64,305	39,219	0	0	113,627
Police Track 1 (L-4.2)	Benalla	52,650	52,839	72,967	133,414	100,521	412,391
Police Track 2 (L4.2-8.1)	Benalla	52,650	52,839	72,967	133,414	100,521	412,391
Police Track 3 (L8.1-BD)	Benalla	52,650	52,839	72,967	133,414	100,521	412,391
Spring Creek 4a (TT1.6-6.5)	Benalla	53,781	11,051	80,603	0	31,984	177,419
Spring Creek 4b (TT-1.6)	Benalla	53,781	11,051	80,603	0	31,984	177,419
Tiger Hill (TT-4.9)	Benalla	0	0	0	0	76,419	76,419
Barwidgee Gap	Indigo	0	928	0	1,420	1,117	3,465
Bruarong	Indigo	0	1,834	0	0	0	1,834
Elgin Street	Indigo	14,649	45,203	22,389	0	11,043	93,284
Flagstaff (SM-CS)	Indigo	0	0	0	43,586	10,768	54,354
High Street 1 (E-J)	Indigo	14,649	45,203	22,389	0	11,043	93,284
High Street 2 (J-C)	Indigo	14,649	13,845	4,348	0	1,394	34,235
Hillsborough	Indigo	0	37,325	22,700	0	3,774	63,800
Junction	Indigo	0	31,357	18,042	0	9,649	59,049
Mason Road	Indigo	34,417	840	5,554	11,819	12,744	65,374
Mellish (0-0.65)	Indigo	37,497	84,296	50,644	54,326	34,501	261,264
Mt Stanley Road (S-3.5)	Indigo	0	37,325	22,700	0	3,774	63,800
Mt Stanley Road (S3.5-4.8)	Indigo	0	37,325	22,700	0	3,774	63,800
Osbourne's Flat Road 1	Indigo	16,107	44,691	79,208	54,339	68,916	263,262
Osbourne's Flat Road 2	Indigo	16,107	44,691	79,208	54,339	68,916	263,262
Osbourne's Flat Road 3	Indigo	16,107	44,691	79,208	54,339	68,916	263,262
Pine	Indigo	0	0	0	0	1,514	1,514
Red Hill (E-2.0)	Indigo	14,649	45,203	22,389	0	11,043	93,284
Red Hill (E2.0-2.8)	Indigo	14,649	45,203	22,389	0	11,043	93,284
Six Mile Road (MS-F)	Indigo	0	0	0	43,586	10,768	54,354
Twist Creek 1	Indigo	14,649	45,203	22,389	0	11,043	93,284
Twist Creek 2	Indigo	14,649	45,203	22,389	0	11,043	93,284
Piries-Goughs Bay	Mansfield	81,918	95,655	87,995	21,162	0	286,730
Spring Creek 1 (MW-0.1)	Mansfield	42,186	0	0	36,300	0	78,486
Spring Creek 2 (TT8.6-14.3)	Mansfield	7,621	0	80,603	0	31,984	120,208
Spring Creek 3 (TT6.5-8.6)	Mansfield	7,621	0	80,603	0	31,984	120,208
Walshs	Mansfield	81,918	95,655	87,995	21,162	0	286,730
Walshs	Mansfield	81,918	95,655	87,995	21,162	0	286,730
Andersons Lane (0.86-0.99)	Murrindindi	70,000	70,000	40,000	30,000	30,000	240,000
Crystal Creek Road	Murrindindi	10,280	30,280	10,280	280	280	51,400
Dyes Lane (12.2-12.5)	Murrindindi	26,925	16,925	26,925	16,925	16,925	104,625
Glendale Road	Murrindindi	1,400	21,400	11,400	2,400	1,400	38,000
Watsons Road (2.09-3.42)	Murrindindi	30,000	10,000	10,000	0	0	50,000
Whanregarwen Road	Murrindindi	10,280	30,280	10,280	280	280	51,400
Chapmans	Strathbogie	71,731	61,280	103,992	55,162	28,506	320,671
James	Strathbogie	71,731	61,280	103,992	55,162	28,506	320,671
Mt Piper	Strathbogie	0	0	0	19,197	0	19,197
Old Bonnedoon 1 (BD-2.0MtP)	Strathbogie	0	0	0	19,197	0	19,197
Old Bonnedoon 2 (E6-B)	Strathbogie	13,454	25,858	0	0	0	39,312
Tames Road (B-McD)	Strathbogie	13,454	25,858	0	0	0	39,312
Wilkinsons	Strathbogie	71,731	61,280	103,992	55,162	28,506	320,671
Avondale Gardens	Towong	16,900	16,900	0	0	0	33,800
Avondale Road	Towong	92,304	93,440	46,052	77,897	15,347	325,041
Burrowye Koetong Rd (Mid)2	Towong	11,744	3,767	39,252	13,889	74,379	143,031
Burrowye Koetong Rd (Nth)3	Towong	0	0	0	0	8,353	8,353



Road	Shire	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	Total
Burrowye Koetong Rd (Sth)1	Towong	11,744	62,796	107,242	13,889	124,390	320,062
Burtens Road	Towong	5,332	0	11,437	0	0	16,769
D,DF link,F Rd	Towong	41,471	26,384	7,700	20,090	13,212	108,857
GuysForest (0-1.7)	Towong	5,332	0	11,437	0	0	16,769
Hempenstalls 1 (MVHwy-0.7)	Towong	20,016	7,193	17,789	0	0	44,998
Lucyvale	Towong	60,803	0	0	22,569	0	83,372
Mt Alfred	Towong	5,332	0	11,437	0	0	16,769
Perkins (L-4.3)	Towong	60,803	0	0	22,569	0	83,372
Perkins (L4.3-8.6)	Towong	60,803	0	0	22,569	0	83,372
Stockyard Creek Road	Towong	0	0	13,543	0	0	13,543
Sullivans	Towong	2,873	0	0	0	0	2,873
Boggy Creek	Wangaratta	0	2,246	0	0	0	2,246
Bowmans	Wangaratta	0	0	6,235	0	0	6,235
Bussell	Wangaratta	80,644	56,960	38,506	38,234	33,657	248,001
Carboor Buffalo Dam 2 (BW4.7-11.7)	Wangaratta	24,253	92,931	49,087	71,399	99,004	336,674
Carboor Everton	Wangaratta	80,644	56,960	38,506	38,234	33,657	248,001

7.1.2. Vicforests

Road	Shire	2005/06	2006/07	2007/08	2008/09	2009/10	Total
Buckland Valley Road	Alpine	39,544	34,823	29,193	14,515	38,962	157,037
Exton Road	Benalla	6,925	6,925	6,925	6,925	6,925	34,625
Barjag Road	Benalla	2,987	2,987	2,987	2,987	2,987	14,935
Tolmie Tatong Road	Benalla	11,948	11,948	11,948	11,948	11,948	59,740
Mt Stirling Road	Mansfield	8,961	8,961	8,961	8,961	8,961	44,805
Carters Road	Mansfield	8,961	8,961	8,961	8,961	8,961	44,805
Doughty Road	Mansfield	14,935	14,935	14,935	14,935	14,935	74,675
Jamieson Road	Mansfield	8,961	8,961	8,961	8,961	8,961	44,805
Circuit Road	Mansfield	8,961	8,961	8,961	8,961	8,961	44,805
Nth Mount Road	Mitchell	2,000	2,000	2,000	2,000	2,000	10,000
Sunday Creek Road	Mitchell	1,200	1,200	1,200	1,200	1,200	6,000
Ennis Road 2	Mitchell	800	800	800	800	800	4,000
Spraggs Road (1.9-2.7)	Murrindindi	20,775	20,775	20,775	20,775	20,775	103,875
Andersons Lane (0.86-0.99)	Murrindindi	23,575	23,575	23,575	23,575	23,575	117,875
Acheron Way	Murrindindi	100,800	100,800	100,800	100,800	100,800	504,000
Snobs Creek Road	Murrindindi	37,500	37,500	37,500	37,500	37,500	187,500
Lyell Street (M/ville)(0.53-0.63)	Murrindindi	11,200	11,200	11,200	11,200	11,200	56,000
Old Melbourne Road (0-0.2)	Murrindindi	11,200	11,200	11,200	11,200	11,200	56,000
Mt Margaret Road	Murrindindi	28,659	28,650	28,650	28,650	28,650	143,259
Blue Rubicon Road	Murrindindi	81,250	81,250	81,250	81,250	81,250	406,250
Woods Rt Road	Murrindindi	67,200	67,200	67,200	67,200	67,200	336,000
Falls Road	Murrindindi	11,200	11,200	11,200	11,200	11,200	56,000
Murrindindi Road	Murrindindi	35,700	35,700	35,700	35,700	35,700	178,500
Healesville Kinglake Road	Murrindindi	47,783	47,783	47,783	47,783	47,783	238,915
Old Murrindindi Road	Murrindindi	20,000	20,000	20,000	20,000	20,000	100,000
Glendale Road	Murrindindi	1,400	21,400	11,400	2,400	1,400	38,000
Crystal Creek Road	Murrindindi	10,280	30,280	10,280	280	280	51,400
Dyes Lane (12.2-12.5)	Murrindindi	26,925	16,925	26,925	16,925	16,925	104,625
Limestone Road	Murrindindi	1,400	1,400	1,400	1,400	1,400	7,000
Banbury/Jackson/Myles Rd	Murrindindi	8,120	8,120	8,120	8,120	8,120	40,600



Road	Shire	2005/06	2006/07	2007/08	2008/09	2009/10	Total
Omeo Highway	Towong	100,000	100,000	16,000	16,000	16,000	248,000
Corryong Benambra Road	Towong	25,000	25,000	15,000	15,000	15,000	95,000
Thowgla Road	Towong	6,000	6,000	6,000	6,000	6,000	30,000
Avondale Road	Towong	85,141	106,920	75,852	72,478	20,766	361,157
Tallangatta Valley Road	Towong	25,000	25,000	15,000	15,000	15,000	95,000

7.1.3. Private Plantations

Road	Shire	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	Total
Off Tallangalook - Dry Creek Rd	Mansfield							54,400
Off Dry Creek Rd - Hell Hole Tk	Mansfield							67,250
Wood's Point Rd - Ashwins Rd	Mansfield							113,100
Maintengoon Road	Murrindindi	0	0	0	13,000		25,000	38,000
Spaniaks Road	Murrindindi	0			0		20,500	41,000
Highlands Road	Murrindindi	0			0		20,500	41,000
Dropmore Molesworth Road	Murrindindi	0			0		20,500	41,000
Springs Road	Murrindindi	0			0		20,500	41,000
Top Road	Murrindindi	0			0		20,500	41,000
Ruffy Road	Murrindindi	0			0		20,500	41,000
Logmore Road	Murrindindi	0			0		20,500	41,000
Creightons Creek Road	Murrindindi	0			0		20,500	41,000
Clarks Road	Murrindindi						4,800	19,200
Rennies lane	Murrindindi	7,000	7,000	7,000	7,000			28,000
Frees Lane	Murrindindi	6,000	6,000	6,000	6,000		11,250	69,000
Penny's Lane	Murrindindi		4,200	4,200	4,200	4,200		16,800
Creighton Road	Murrindindi							0
Crystal Creek Road	Murrindindi	10,280	30,280	10,280	280	280		51,400
Web-Wares Rd	Murrindindi						13,500	54,000
Break O'Day Rd	Murrindindi						10,000	10,000
Sinclairs Rd	Murrindindi					11,250	10,000	31,250
Dick's Rd, off Crystal Ck Rd	Murrindindi		10,700	10,000				20,700
Nicholsons Rd	Murrindindi		15,000	15,000	15,000	15,000		60,000
Spring Valley Rd, Guttridge Rd	Murrindindi		11,000	10,000				21,000



7.2. Recommended Funding Programs

7.2.1. Alpine

Road	Est Cost	Notes
Buckland Valley Road (GAR-Egglestons)	\$507,840	No Winter Use. Was listed as "fire relief" for NRE only - now listed as local road with HVP/NRE use. No change. .
Buffalo River 6 (BW-RR)	\$127,000	\$100,000 Stabilisation work (2007/2008)(and \$27,000 increase in maintenance costs over three years.(2006/2007/2008)
Egglestons Lane (BV-0.3)	\$45,000	Sealing of gravel road to minimise maintenance costs and reduce dust issues for local residents.
Egglestons Lane (BV0.3-1.1)	\$120,000	Sealing of gravel road to minimise maintenance costs and reduce dust issues for local residents.
Havilah Road	\$265,000	Widen and Resurface (2006/2007) and Sealing between unsealed sections (2007/2008)
McLees Lane (0-1.5)	\$184,109	No change
Merriang Sth	\$180,000	\$45,000 for Stabilisation (2005/2006) and \$135,000 (2005,2006,2007,2008,2009) increase in ongoing maintenance
Morgans Creek	\$105,000	\$21,000 sealing of gravel road (2006/2007) and \$84,000 increase in ongoing maintenance
Running Creek	\$184,109	Maintenance
Running Creek Kankoonah 1 (MC-G)	\$81,000	Increase in ongoing maintenance costs (2005 - 2007)
Running Creek Kankoonah 2 (HV-MC)	\$81,000	Increase in ongoing maintenance costs (2005 - 2009)
Buckland Road (Egglestons onwards)	\$50,000	Increase in ongoing maintenance costs (2005 - 2009)
Happy Valley 2	\$35,000	Pavement strengthening by stabilisation previously considered (estimated at \$35k in 2004/05), but need to check section (was listed as one, now split into two: #30 and #212)
Happy Valley 3	\$35,000	Pavement strengthening by stabilisation previously considered (estimated at \$35k in 2004/05), but need to check section (was listed as one, now split into two: #30 and #212)
Bogong High Plain includes Simmond Ck	\$40,000	No Winter Use
Mountain Creek	\$303,200	No Winter Use
TOTAL	\$2,343,258	

7.2.2. Benalla

Road	Est Cost	Notes
Davies Road (west of Warrenbayne)	\$300,000	Widen pavement and seal to 6m width, including formation widening
Dobson Road (Warrenbayne to S-W road)	\$500,000	Widen pavement and seal to 6m width
Ethel (L1.9-2.2)	\$50,000	Prepare and seal gravel section
Jones 1 (TT-0.9)	\$500,000	Formation widening, gravel re-sheet and drainage works, including upgrade Tatong-Tolmie Road intersection
Lima 1 (MHwy3.9-7.8)	\$500,000	Widen pavement and seal to 6m width, including re-align 2 curves
Police Track 1 (L-4.2)	\$50,000	Construct 300m of guardrail on outside of curve to protect road users from drop
Spring Creek 4b (TT-1.6)	\$50,000	Reseal and major patching of pavement failures
Tiger Hill (TT-4.9)	\$200,000	Gravel re-sheeting and drainage works
Mitchells Road	\$300,000	Prepare and seal gravel section
TOTAL	\$2,450,000	



7.2.3. Indigo

Road	Est Cost	Notes
Mellish (0-0.65)	\$262,154	Widen pavement to 10 m, vertical alignment improvements at old rail crossing
Osbourne's Flat Road 1	\$800,000	Road deviation by constructing new road from Dedrang Road - Ben Valley Road Intersection.
Osbourne's Flat Road 2	\$800,000	Second phase of work to upgrade road to cater for heavy vehicles.
Osbourne's Flat Road 3	\$133,000	Widen existing bridge & approaches to better cater for safe use by heavy vehicles.
TOTAL	\$1,995,154	

7.2.4. Mansfield

Road	Est Cost	Notes
Hells Hole Creek	\$214,500	Road Widening, Resheeting, Intersection Widening
Dry Creek Road	\$235,400	Cut widening, Extend and widen seal, Guardrails, Signage, Spot widening
TOTAL	\$449,900	

7.2.5. Mitchell

Road	Est Cost	Notes
Ennis Road 1 (2.0-10.0)	\$50,000	Northern Area Bid. Some winter use. (2004/5: Resheet gravel pavement 8k, drainage, guideposts/signage, 3 curve widenings, passing bays - Northern area bid)
Landscape Road (0-10.0)	\$100,000	(2004/5: Seal eroded section 0.2k with 75mm asphalt, other improvements as per Ennis Rd - Northern Area Bid)
TOTAL	\$150,000	

7.2.6. Murrindindi

Road	Est Cost	Notes
Dyes Lane (12.2-12.5)	\$40,080	Resheet to a width of 5.5 m with 150 mm of class 3 rock form 1.0 m shoulder
Glendale Road	\$640,000	Extend seal (6.2 m wide) to edge of plantation
Andersons Lane (0.86-0.99)	\$32,400	Addition of pavement, drainage and pavement seal
Watsons Road (2.09-3.42)	\$266,400	Formation widening, associated drainage and pavement sealing
Whanregarwen Road	\$475,200	Widen seal to 6.2 m
Maintengoon Road	\$990,000	Extend formation and pavement to RCA Plantation - 6.2 m wide
Spaniaks Road	\$420,000	Extend formation and pavement to RCA Plantation - 6.2 m wide
Dropmore Molesworth Road	\$1,282,800	Upgrade road to 6.2 seal and replace bridge that has a 5 t load limit
Old Melbourne Road (0-0.2)	\$51,000	Intersection reconstruction formation and pavement widening and sealing 100m
Spraggs Road (1.9-2.7)	\$180,000	Sealing full width of road for a further 800m
Lyell Street (M/ville)(0.53-0.63)	\$30,600	Seal 100 metres of the road pavement
Snobs Creek Road	\$420,000	Formation widening, associated drainage and pavement sealing
Blue Rubicon Road	\$168,000	Formation widening, associated drainage and pavement sealing
Mt Margaret Road	\$1,085,000	Formation widening, associated drainage and pavement sealing
Murrindindi Road	\$100,000	Pavement Rehabilitation



Road	Est Cost	Notes
Old Murrindindi Road	\$240,000	Formation widening, associated drainage and pavement sealing
Limestone Road	\$720,000	Formation widening, associated drainage and pavement sealing
Banbury/Jackson/Myles Rd	\$560,000	Formation widening, associated drainage and pavement sealing
Clarks Road	\$520,000	Clarks Road upgraded to 6.2 m wide (seal for 1st 1 km)
Rennies lane	\$210,000	Upgraded to 6.2 m wide gravel
Frees Lane	\$720,000	Upgraded to 6.2 m wide seal - 1st 3.6 km
Penny's Lane	\$1,080,000	Upgraded to 6.2 m wide gravel - last 3 km sealed 6.2 m wide
Mior Lane /Yellow Creek	\$163,500	Best to upgrade Yellow Creek Road to 6.2 m wide(lower cost pre km) seal plus bridge replaced. May be possible to obtain access over private property to Maroondah Highway
Web-Wares	\$640,000	Upgraded to 6.2 m wide seal
Break O'Day	\$100,000	Pavement Rehabilitation
Sinclairs Lane	\$180,000	Upgraded to 6.2 m wide gravel
Whittlesea-Yea/Clarkes	\$520,000	Clarks Road upgraded to 6.2 m wide (seal for 1st 1 km)
Nicholsons	\$400,000	Upgraded to 6.2 m wide seal
TOTAL	\$12,234,980	

7.2.7. Strathbogie

Road	Est Cost	Notes
Old Bonnedoon 1 (BD-2.0MtP)	\$250,000	Thames Rd to Police Track
Old Bonnedoon 2 (MtP-E6))	\$400,000	Thames Rd to Police Track
Old Bonnedoon 2 (E6-B)	\$300,000	Thames Rd to Police Track
Tames Road (B-McD)	\$410,000	Reconstruction and culvert widening
Merton Strathbogie Road	\$250,000	
Harrys Creek Road (0-22.5)	\$600,000	Realignment, curve widening Stage 1 at the most dangerous curves
Harrys Creek Road (0-22.5)	\$600,000	Realignment, curve widening Stage 2 at dangerous curves
TOTAL	\$2,810,000	

7.2.8. Towong

Road	Est Cost	Proposal
Annandale-Cooks Road	\$50,000	Minor realignment and resheet
Avondale Road	\$15,000	Annual Maintenance
Benambra-Corryong Road (0-24.1)	\$150,700	Reconstruct failed sections by resheeting
Bramleys Road	\$30,000	Realign, Install major culvert and resheet
Burrowye Koetong Rd (Mid)2	\$4,000	Annual Maintenance
Burrowye Koetong Rd (Nth)3	\$60,000	Widen corners, resheet
Burrowye Koetong Rd (Sth)1	\$4,000	Annual Maintenance
Burtens Road	\$40,000	Widen and resheet
French-Wrights Road (0-3.5)	\$198,000	Widen and resheet gravel pavement with minor realignments
GuysForest (0-1.7)	\$143,000	Widen resheet gravel pavement realign intersection with Mt Alfred Road
Hempenstalls 1 (MVHwy-0.7)	\$20,000	Shire seal approach to MVH
Hindleton Road	\$125,400	Resheet 1.5 Km and replace bridge
Lucyvale	\$75,900	Widen seal 2.7 - 4.6 Km
Mt Alfred (0 - 1.5)	\$148,500	Widen and resheet first 1.5 Km
Mt Alfred (1.5 - 7.0)	\$250,000	Widen and resheet
Old Granya Road	\$60,000	Widen and resheet
Omeo Highway	\$122,400	



Road	Est Cost	Proposal
Omeo Highway	\$122,400	
Price Hills Road	\$80,000	Widen and resheet
Ranch Road	\$150,000	Widen and resheet
Ross Ln	\$352,800	Replace Bridge
Sandy Creek Road	\$150,000	Widen and resheet
Tallangatta Creek Road	\$150,700	Pavement reconstruction
Thowgla Road	\$210,000	Widen and resheet 4.0 Km
Wallaces 1 (BK-1.5)	\$40,000	Surfacing
TOTAL	\$2,752,800	

7.2.9. Wangaratta

Road	Estimated Cost	NOTES
Carboor Everton	\$317,000	(12.9-15.7,2004/5: Final seal stage 3)(10.9-12.2,15.7-16.9,2004/5: Final seal stage 4)(8.9-10.8,2004/5: Resheet to minimum depth 250mm and 5.8 wide some patching and guard rail)
King Valley Road	\$173,000	(2004/5: Replace U slabs and provide concrete overlay - 50% Council Contribution)
TOTAL	\$490,000	