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Industry Development Strategy for the Western Australian Hardwood Timber Industry

Prepared for:

Department of Conservation and Land Management

And

Department of Agriculture, Fisheries and Forestry - Australia

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1. EXECUTIVE SUMMARY

In May 1999 the State and Federal Governments signed a 20-year Regional Forest Agreement (RFA) that proposed new areas of reserve and a phased reduction of resource supply to sustainable levels by 2004. In July 1999 the State Government further reduced the volume of karri available from 2004 to one quarter of current contract amounts.

A $38.5 million Forest Industry Structural Adjustment Package (FISAP) was provided by both governments as part of the RFA with some of these funds allocated to the provision of grants and interest rate subsidies to the native forest timber industry for installation of value adding equipment and new technology, expansion of local manufacturing and to provide assistance with marketing.

This consultancy aims to develop an industry development strategy for the native hardwood timber industry as a basis for recommending actions which will best utilise the funds available.

Current industry structure

Western Australia's native forests species are significantly different from other Australian eucalypt timbers with the dark colour and consistent grain pattern of jarrah and karri being the most distinctive. Softwood resources are used primarily in structural applications, while the native hardwoods are increasingly used in appearance products. Extensive areas of hardwood plantation are currently being established for export pulpwood markets.

The hardwood sawmilling industry is characterised by a number of small mills, together with a few large processors. One company owns four of the largest jarrah sawmills along with the largest karri sawmill and processed 50% of the log intake in 1999.

Following completion of the current forest management plan in 1994, new 10 year contracts were negotiated between the Western Australian Government and the native timber industry which included a commitment to add value to minimum proportions of the sawn timber outputs from jarrah sawlogs. A number of processors have now made significant investments in kiln drying and equipment for further manufacture of high value products.

Markets for these products have been successfully developed and the basis for a significant secondary industry has now emerged which produces outdoor furniture, high value indoor furniture, joinery and flooring products.

Similar opportunities for value adding are possible with karri, however several proposals to invest in value adding of karri have been abandoned as a result of the decision to reduce available supply after the RFA.

Woodchip exports have developed based on native hardwood but increasing volumes of hardwood plantation woodchips are now being exported and these are expected to substitute for native chips as large volumes come on stream over the next 5-10 years. This substitution is a significant issue for the industry as residue markets are critical to the success of native forest management and processing operations.

Market trends

Historically green structural hardwood has been used extensively in Australia for framing, roofing timbers and wooden floor construction. However softwood and engineered wood products are replacing hardwoods in these applications with increasing volumes of hardwood now being used in higher value markets.

Until recently the market has required defect free timber for flooring and furniture applications but a number of manufacturers are now successfully promoting products that contain desirable "features".

While the majority of sawn timber produced in Western Australia is consumed in the Australian market, a number of international trends could impact on future consumption of native Western Australian hardwoods. These include:

- declining native hardwood resources;
- increasing use of plantation timber;
- increased use of engineered wood products; and
- growing demand for certification of wood products.

Industry SWOT Analysis

Strengths	Weaknesses
▪ Unique wood characteristics ▪ Sustainable forest management ▪ Industry knowledge and history ▪ Recent investment in value adding of jarrah ▪ Growth of the furniture sector	▪ Sovereign risk ▪ Overcapacity resulting from resource restrictions ▪ Declining market for native woodchip exports ▪ Stumpage pricing systems ▪ Value adding progress with karri and marri ▪ Lack of technical training opportunities
Opportunities	**Threats**
▪ Improved utilisation of the available resource ▪ Increased domestic value adding ▪ Clustered development ▪ Improved public support ▪ Substitution for other hardwoods ▪ Development of export markets ▪ Integration with plantation timbers	▪ Resource supply ▪ Availability of a skilled work force ▪ Substitution from plantation timbers

Issues for strategic development

Four key issues have been identified which must form the basis of any future strategy:

1. The strategy must recognise the changing nature of the resource base. The future resource supplying jarrah sawmills is expected to be similar to recent years but with some reduction in log size and quality expected as harvest shifts towards lower rainfall areas to the east.

   The karri resource of the next twenty years will be based on a significantly larger proportion of small sawlogs and will only be of sufficient quantity to supply 50% of the current processing capacity at the Pemberton sawmill.

2. As a result of the reduced harvest volumes, the industry strategy must focus on improving productivity and efficiency in order to utilise existing capacity and continue to supply and grow the markets that have been developed over recent years.

3. There is considerable uncertainty within the forest sector resulting from recent changes to forest policy and this has extended to financial institutions and other investors who are currently unwilling to invest capital in the industry without security of supply. This is a major issue to overcome if the industry is to attract the investment and market support necessary to realise

its potential.

The forest industry must now demonstrate a clear understanding that it has privileged access to a public resource which carries an obligation to utilise the forest in a manner that will maximise the return to the Western Australian public. Any future strategy must consequently maximise both the market and regional development opportunities that provide such a return.

4. Any development must be within the constraints of market demand for the products produced.

Industry strategy and recommendations for FISAP funding

Despite the extent of the changes there are opportunities for the industry to move forward on the basis of two strategic platforms:

- industry must develop technology and products which maximise the yield from the forest and encourage a philosophy of 'doing more with less'; and
- joint government/industry initiatives must be implemented to regain public confidence in the forest industry by generating local jobs and producing products that highlight the unique resource available from Western Australia's native forests.

Each of the strategies can be pursued by identifying the opportunities available and then establishing the necessary policy and economic incentives to maximise the opportunity (Table 1).

Table 1. Industry strategies, opportunities and actions

Strategy	Opportunity	Industry actions	Government funding priorities
Improve productivity and efficiency	▪ Improve utilisation of the forest resource ▪ Improve efficiency and quality of processing operations	▪ Further investigate whole bole logging ▪ Invest in mechanical harvesting technology ▪ Invest in new sawmilling technology ▪ Merge to reduce the number of small sawmills ▪ Invest in new manufacturing processes that improve wood recovery and wood quality ▪ Continue to develop markets and processes for engineered wood products and feature grade furniture ▪ Develop strategic partnerships through both horizontal and vertical integration ▪ Investigate opportunities to utilise residues from forest and processing operations	▪ Proposals that 'do more with less' ▪ Development of mills capable of processing short logs and secondary processes which handle short lengths of timber ▪ Joint venture proposals ▪ Refine locally based technical research and development ▪ Industry clustering around the resource base and existing capacity

Strategy	Opportunity	Joint Government/Industry initiatives
Encourage resource security through strategic industry development	▪ Develop public support for the industry ▪ Increase local value adding ▪ Promote regional development ▪ Development of new markets	▪ Promote the furniture industry and other high value applications through market development and design incentives ▪ Promote industry training and education ▪ Market research for products which will extend the use of the available resource ▪ Promote the development of an acceptable certification standard

2. INTRODUCTION

The Western Australia Regional Forest Agreement (RFA) sets out a basis for supplying sustainable volumes of native hardwood from publicly owned forests in the south west of Western Australia. The Agreement was signed by both Commonwealth and State Governments in May 1999 but State native forest policy was then amended by the Western Australian Government in July of the same year with the announcement of further cutbacks in the overall supply of karri logs and an agreement to reduce the export of native woodchips. In summary, the following sawlog volumes are available to the forest industry from 2004:

Jarrah	286,000 m^3/annum
Marri	80,000 m^3/annum[1]
Karri	50,000 m^3/annum

A $38.5 million Forest Industry Structural Adjustment Package (FISAP) was provided by both governments as part of the RFA with the funds allocated to three areas:

- the provision of grants and interest rate subsidies to the native forest timber industry for installation of value adding equipment and new technology, expansion of local manufacturing and to provide assistance with marketing;
- business exit assistance for mills and associated businesses; and
- assistance for timber industry workers who may be impacted by RFA outcomes.

This consultancy aims to develop an industry development strategy for the native hardwood timber industry. The consultancy will then recommend actions which will best utilise the funds available for industry development in the context of this strategy and assist industry to become more competitive and sustainable in the long term.

Recommendations are based on a review of the RFA, other relevant background reports and government statements, together with a series of meetings with industry members and associations (see Appendix C).

[1] Based on current utilisation standards

3. CURRENT INDUSTRY STRUCTURE

The Western Australian forest sector is spread throughout the south west region of Western Australia with a focus on regional locations such as Manjimup, Pemberton, Yarloop and Nannup. A relatively large number of sawmills operate throughout the region with mills committed to jarrah the most dominant.

Western Australia's native forests species are significantly different from other Australian eucalypt timbers with the dark colour and consistent grain pattern of jarrah and karri being the most distinctive. Softwood resources are used primarily in structural applications, while the native hardwoods are increasingly used in appearance products. Extensive areas of hardwood plantation are currently being established for export pulpwood markets.

3.1 Native forest management

There are approximately 2.5 million hectares of publicly managed native forest in the south west of Western Australia. Following completion of the Western Australian RFA in May 1999, the total area of conservation reserves in the region was increased by 12% to over one million hectares.

The primary native timber species harvested in Western Australia are jarrah, karri and marri. The majority of the native harvest is from publicly owned forests currently managed by the Department of Conservation & Land Management (CALM), with less than 5 percent being supplied from private resources. Table 2 outlines past, current and proposed future sawlog harvest levels from public land in Western Australia.

Jarrah (*Eucalyptus marginata*) occurs extensively throughout the south west and represents the major component of the available sawlog allocation to industry. Its distinctive red colour makes it a prized timber in high value applications such as furniture, joinery and flooring. Pulp yields from jarrah residues are poor and it is virtually impossible to bleach, making it unsuitable for use in pulp and paper or most wood-based panels. Residues can however be used for the manufacture of high quality charcoal suitable for industrial use.

Table 2. Actual and projected native sawlog harvests – Western Australia

	Actual (m^3)[1.]		Available (m^3)	
	1996/1997	1998/1999	2000 – 2003 [2.]	Beyond 2004 [3.]
Jarrah	466,757	350,104	324,000	286,000
Karri	190,429	226,098	186,000	50,000
Marri	7,232	10,268	78,000	80,000
Total sawlogs	**664,418**	**586,470**	**588,000**	**416,000**

Source: 1.CALM (1997,1999),
2. Regional Forest Agreement (1999),
3. Western Australian Government Media Release (July 1999)

Karri (*E. diversicolor*) occurs in high rainfall areas to the south of the forest estate. Timber from mature forests is a red colour and has high strength properties while younger regrowth forests produce a timber which is lighter in appearance. Karri has traditionally been used for construction purposes and its use in added value applications is not as well developed as jarrah. This reflects an earlier industry decision to focus initial added value investment on jarrah. However the processing characteristics and properties of karri are highly rated and it has uses in indoor furniture, flooring and other high value markets. Karri is the preferred native species in Western Australia for pulp and paper manufacture.

Marri (*Corymbia calophylla*) is a less versatile timber and is relatively difficult to dry and finish. It has a distinctive grain pattern and colours that are highly valued in feature grade furniture and flooring. Internal defects such as "kino" veins are common, and in some instances these are being used as features in furniture manufacture. The wood is comparatively light in colour and, in restricted quantities, is suitable for use in MDF and particleboard. Marri pulp bleaches to a reasonable brightness.

Minor volumes of other species are potentially available such as wandoo (*Eucalyptus wandoo)*, blackbutt (*Eucalyptus patens)* and sheoak *(Allocasuarina fraseriana).* While the volumes of these species are not large, and could not on their own sustain the demands of a world scale processing plant, they provide a valuable complement to the major species of jarrah and karri, particularly in value added applications such as furniture and flooring.

3.2 Plantation forests

The plantation resources of Western Australia consist of both softwood plantations (*Pinus radiata* and *P. pinaster*) and hardwood (*Eucalyptus globulus*). There are currently around 93,000 hectares of pine plantations

and over 130,000 hectares of hardwood plantations (Table 3).

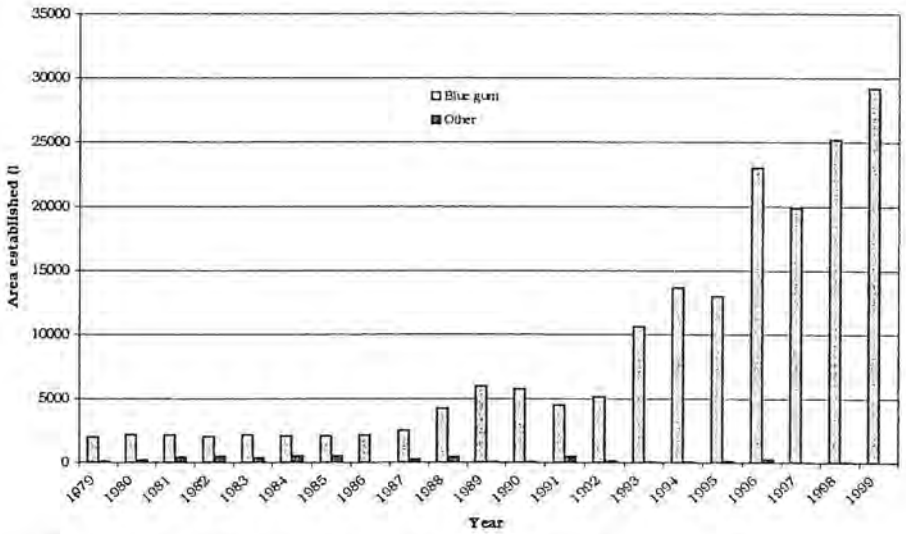
Table 3. Plantation areas in Western Australia 1999 estimates

	Hardwood (ha)	Softwood (ha)		Total (ha)
		P. radiata	*P. pinaster*	
Public	17,445	43,419	31,715	92,579
Private	112,665	17,975	455	131,095
Total	**130,110**	**61,394**	**32,170**	**223,764**

Source: Bureau of Resource Sciences (1999), CALM (1999), industry estimates

Most hardwood plantations have been established since the mid 1990's, and the rate of establishment has been accelerating in recent years. Approximately 20,000 hectares per year have been planted since 1996, with an estimated 28,000 hectares established in 1999 and around 30,000 hectares expected in 2000.

Figure 1 Hardwood plantation areas by planting years



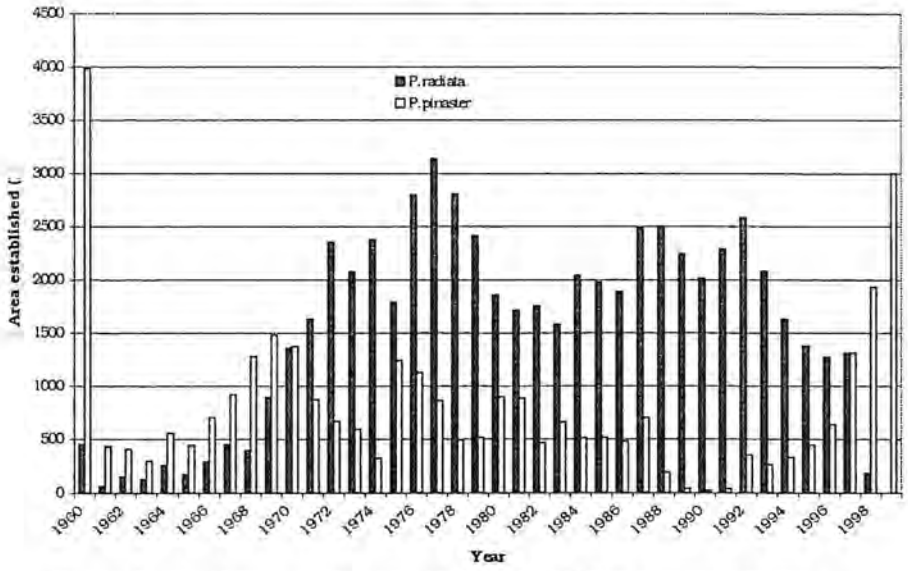
Source: Bureau of Resource Sciences (1999), CALM (1999), industry estimates

The expansion in hardwood plantations has been driven by overseas pulp and paper companies and tax-driven prospectus companies with almost all establishment geared towards the production of woodchips on a ten year rotation. While plantation hardwood can also be used for sawn timber production, a different silvicultural regime is required to that which is currently applied for the production of pulpwood. A rotation of at least 18-20 years is necessary for sawlog production with early pruning to increase the volume of clear timber. There are no major plantings in Western Australia currently grown for sawlog recovery.

The softwood resource has been established principally over the last 30 years (Figure 2), and is primarily focused on the production of sawn timber

for the construction sector. CALM owns approximately 75,000 ha of softwood plantations and private softwood plantations total around 20,000 ha. Both government and private establishment of softwood plantations (with the exception of the Maritime Pine program) slowed throughout the 1990s. This has raised some concerns within the industry over long term supplies. A recent review of wood supplies (FORPAC 1999) suggested that there is an inadequate buffer between committed volumes and projected wood supplies within economic haulage distances of processors.

Figure 2 Softwood plantation areas by planting years



Source: Bureau of Resource Sciences (1999), CALM (1999), industry estimates

3.3 Sawmilling and further processing

3.3.1 Hardwood sawmilling

Table 4 shows the number of sawmills according to log intake that were operating in 1999. It is clear that the industry is characterised by a number of small mills, together with a few large processors. Sotico (formerly Bunnings) owns four of the largest jarrah sawmills along with the largest karri sawmill and processed 50% of the log intake in 1999. The location of processing centres is shown in Appendix A.

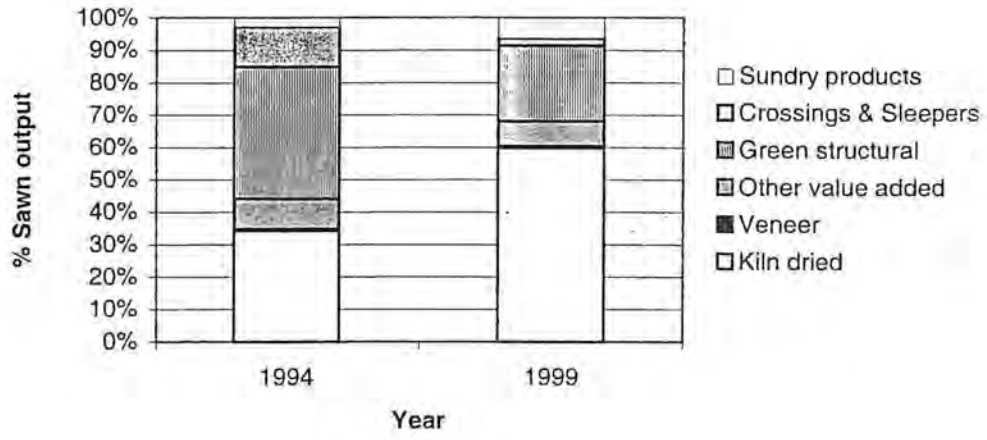
Table 4. Sawmills by log intake - 1999

Annual Log Intake (m^3)	Number of Sawmills Jarrah	Karri
> 50,000	1	1
25,000 – 50,000	3	1
10,000 - 25,000	5	2
5,000 – 10,000	7	2
< 5,000	39	18
Total	**55**	**24**

Source: CALM

Prompted by the contract conditions imposed in 1994, considerable investment has been initiated in grading, kiln drying, planing and further processing of jarrah over recent years. This investment has facilitated the production and sorting of select grades for allocation to a range of high value market uses. The sector has made a substantial shift away from the production of structural products to a focus on added value output over the previous five years (Figure 3). Further investment is now being made in the recovery of low-grade wood for further added value applications. Data provided to CALM from sawmills indicates that by 1999 the recovery of sawn timber from jarrah sawlogs had increased to 37% from 34% in 1994.

Figure 3 Jarrah sawn timber output 1994 and 1999



Source: CALM

While the larger companies have primarily led this shift, a number of smaller firms are also contributing to value adding or supplying sawn timber output directly to intermediate processors. A significant secondary industry has now emerged which produces outdoor furniture, high value indoor furniture, joinery and flooring products. This has added considerable new jobs to the forest sector and generated significant export and interstate sales. A summary of current product input and outputs from the jarrah sawmilling

industry is shown in Table 5.

Table 5. Estimated log intake and grade outputs from Western Australian jarrah sawmilling operations – 1999

	Log Grade					Quantity
	Premium	First	Second	Third	Total	(m^3)
Log Intake[1.]	1%	78%	17%	4%	100%	342,000
Recovery[1.]	52%	38%	35%	32%	37%	126,653
Veneer[1.]	2.0%	0.8%	0.0%	0.0%	0.6%	821
Appearance[1.]	24.0%	6.5%	2.0%	0.0%	5.7%	7,208
Kiln Dried						
- WA flooring[2.]	4.2%	4.1%	2.2%	1.2%	3.6%	4,588
- WA outdoor furniture[2.]	7.7%	7.4%	4.0%	2.2%	6.6%	8,411
- WA indoor furniture[2.]	4.2%	4.1%	2.2%	1.2%	3.6%	4,588
- WA joinery and other[2.]	17.5%	16.9%	9.0%	5.0%	15.1%	19,115
- interstate/export for flooring, furniture etc.[2.]	36.4%	35.1%	18.7%	10.4%	31.4%	39,759
Total Kiln Dried[1.]	70.0%	67.5%	36.0%	20.0%	60.4%	76,460
Crossings[1.]	0.0%	2.5%	2.0%	0.0%	2.3%	2,900
Other value added[1.]	2.0%	2.0%	1.0%	1.0%	1.8%	2,270
Structural[1.]	0.0%	16.0%	50.0%	70.0%	23.6%	29,951
Other low value[1.]	2.0%	4.7%	9.0%	9.0%	5.6%	7,043
	100.0%	100.0%	100.0%	100.0%	100%	126,653

Source: 1. Estimates based on CALM mill returns and log contract data
2. Industry data based on 63% of kiln dried output

A significant trade in dried lumber to eastern states and export markets has developed around the output of recent investment in drying and dressing. This trade should be viewed as a potential opportunity for the expansion of local manufacturing industries, which are capable of being competitive on the basis of export parity pricing.

The jarrah industry in year 2000 has developed in accordance with government policy but proposed reductions in log supply now impose a limit to further market growth. Resource cuts are expected to impact on the viability of many operations which may now have a surplus of sawmilling, drying and manufacturing capacity after 2004.

Investment in value adding has focused on jarrah through the 1990's and it has been widely acknowledged that similar opportunities are possible with karri. However, several proposals to invest in value adding of karri have been abandoned as a result of the decision to reduce available supply after the RFA. The dramatic impact of resource restrictions on the karri

sawmilling industry is illustrated later in this report.

3.3.2 Native residues

The two current static woodchip mills in Western Australia are Diamond Mill which is operated by Sotico and the Whittakers operation at Greenbushes. Diamond Mill primarily chips residue karri and marri logs, however for the last 5 years some *E. globulus* has also been chipped. The Whittakers chipping facility had not been operating for some time but is now being used to process plantation hardwoods for export.

Woodchip exports have historically been based on native hardwood but increasing volumes of plantation woodchips are being exported and these are expected to expand as large volumes come on stream over the next 5-10 years. It is predicted that plantation grown chips will progressively replace native forest woodchips (Table 6). This substitution is a significant issue for the industry as residue markets are critical to the success of native forest management and regeneration as well as the economic viability of sawmilling operations.

Table 6. Actual and forecast wood chip exports from Bunbury Port by species

	Actual (gmt)			Forecast (gmt)			
	1996/97	1997/98	1998/99	2000/01	2001/02	2002/03	2003/04
Karri and marri chip logs and sawmill residue	755,448	732,951	608,935	525,000	400,000	310,000	310,000
E. globulus	35,249	38,481	61,724	375,000	600,000	825,000	1,000,000

Source: Wesfarmers

Future markets for native woodchips are also expected to be restricted by reductions in the availability of karri which has superior properties to marri in the production of pulp and paper. Approximately 225,000 tonnes of karri chip log and 500,000 tonnes of marri is currently produced from native forest operations. This is expected to decline to around 125,000 tonnes of karri and 480,000 tonnes of marri chip log by 2004.

Marri has previously been used in the production of reconstituted boards in Western Australia, however lighter coloured plantation hardwood and softwood are now available as a preferred input.

Jarrah residues are produced by both sawmill and forest operations. Mill residues have been estimated to be up to 210,000 tonnes of woodchip and 158,000 tonnes of other residues such as sawdust and shavings (BIS Schrapnel 1997). A further 750,000 tonnes of jarrah third grade log and

residue logs should also be sustainable (see section 6.1.1).

The primary market for jarrah residues is in the production of high quality silicon at the Simcoa plant in Kemerton which uses a mixture of forest residues and sawmill off cuts to manufacture charcoal. Jarrah produces a particularly high quality charcoal which promotes high silicon yields and lowers power consumption. Total input to the plant is approximately 150,000 tonnes of which 40% is mill residues and the balance is produced from forest residues. Bark is not desirable in the silicon smelting process and supply from sawmills is restricted to operations that are able to invest in debarking equipment.

Firewood also continues to be a significant use for forest and mill residues but other residue applications are currently limited. Trial shipments have been exported to Saudi Arabia for use in the process of manufacturing steel but this trade has not been continued. An industry is currently being developed to manufacture briquettes from jarrah sawdust and the clean burning properties of the timber offer some potential for the development of export markets to Europe.

3.3.3 Wood-based panels and veneer

Wood-based panel manufacture in Western Australia is primarily focused on softwood plantation timbers. Wesfi Ltd produces both particleboard and MDF. The MDF facility has a capacity of 120,000 cubic metres per annum and draws raw material from CALM's softwood plantations to the north and east of Perth. The particleboard plant utilises mainly softwood thinnings and sawmill residues and is currently operating at an annual capacity of around 200,000 cubic metres. Negotiations with investors for construction of an LVL mill based on the Gnangara pinaster plantations north of Perth have been continuing for some time.

Sotico has a small slicing operation capable of producing high quality sliced hardwood veneer which is used to process limited volumes of jarrah for use in the furniture and joinery market. At the present time only the Sotico mills recover flitches for production of veneer and there is potential to increase recovery from the wider industry.

4. MARKET TRENDS

4.1 International markets

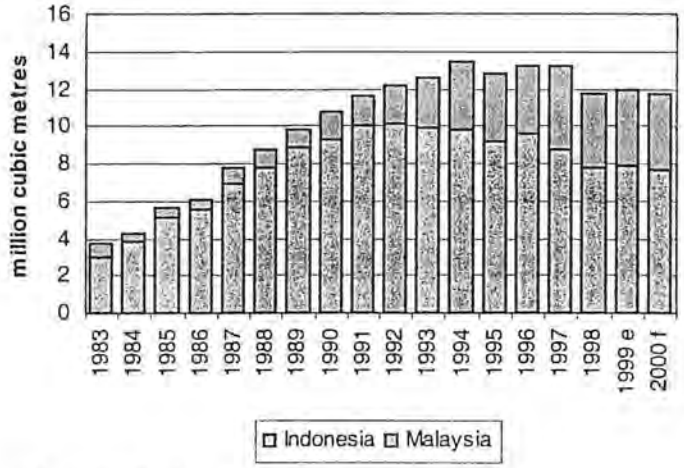
While the majority of sawn timber produced in Western Australia is consumed in the Australian market, a number of international trends could impact on future consumption of native Western Australian hardwoods. These include:

- declining native hardwood resources;
- increasing use of plantation timber;
- increased use of engineered wood products; and
- growing demand for certification of wood products.

4.1.1 Declining natural hardwood resources

South East Asian nations have historically been some of the largest suppliers of hardwood sawn timber and other wood products, derived from natural forests. However, declining raw material availability is reflected in lower levels of exports from those countries. Large quantities of plywood are produced in the region and the decline in production of this product can be used to demonstrate the reduction in available resource (Figure 4).

Figure 4 Plywood production – Indonesia & Malaysia, 1983-2000



Source: ABARE

4.1.2 Increasing use of plantation timber

Recent forecasts of global wood availability such as those by Wood Resources International (1998) suggest that there will be adequate supplies of wood fibre for at least the next decade and that demand will increasingly be met from plantation sources. However, most of these forecasts do not take account of the end products produced and the ability of plantations to meet the solid wood requirements of the market are not known. For

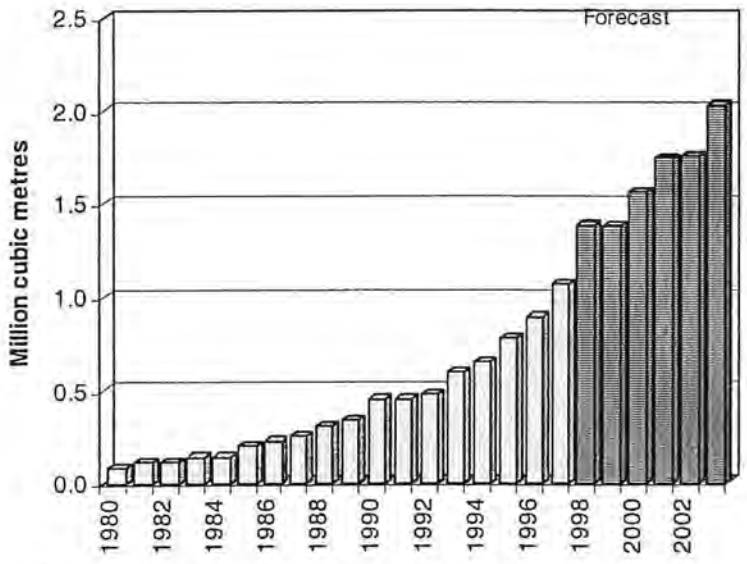
example, Australia's total harvest from plantations is forecast to increase by around 7 million cubic metres over the next 10 years but around 5 million cubic metres is being grown on short rotations for pulpwood. Western Australia has no significant areas of hardwood plantation which are being grown specifically for lumber.

Plantations in New Zealand are likely to have a significant impact on sawn timber consumption for structural purposes in Australia but do not provide a substitute for hardwood used in traditional styles of local furniture. New Zealand has long been a major supplier of softwood sawn timber to Australia, but rapidly expanding harvests over the next decade are likely to increase competitive pressures on pricing in many applications and increase pressure on producers in Eastern States to supply lumber to Western Australia.

4.1.3 Increased use of engineered wood products

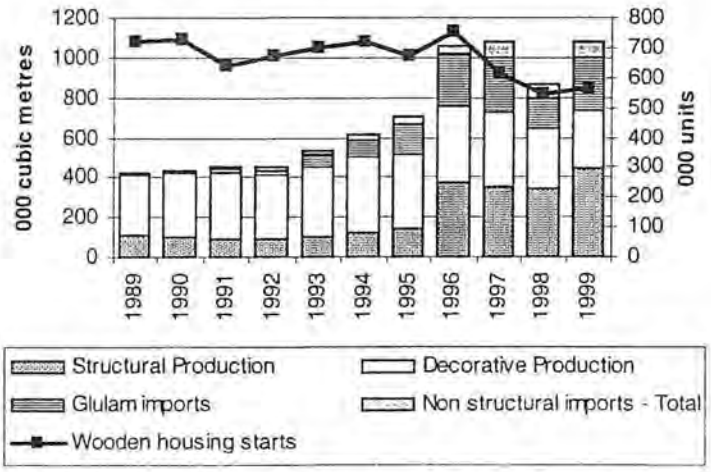
As the availability of large dimension timber from natural forests declines, technology has evolved to produce better quality products from poorer quality raw materials. Two prime examples are the increased use of laminated veneer lumber (LVL) and I-joists in the United States and the growing use of laminated wood products in Japan. The extent of this growth is shown in figures 5 and 6.

Figure 5 LVL production – North America, 1980-2003



Source: APA- Engineered Wood Association

Figure 6 Laminated wood products production, imports and housing starts – Japan, 1989-1999



Source: Japan Laminated Wood Products Association

4.1.4 Growing demands for certification of wood products

Internationally there are growing demands on manufacturers of wood products to provide evidence that they have come from sources that are managed in an environmentally sensitive manner. This often involves some form of certification such as that provided by the ISO 14000 series or the Forest Stewardship Council (FSC).

Increasingly it is the dominant retail chains that require certification in response to consumer demands. For example, the large building supplies chain B&Q in the United Kingdom requires FSC certification and Home Depot in the United States requires that wood products come from a environmentally well managed resource and is also considering mandatory FSC certification. Western Australian exporters will need to demonstrate compliance with an acceptable certification standard in order to retain and grow export sales.

The importance of certification to the native timber industry is demonstrated by the increase in sawn timber exports over recent years. Exports of hardwood timber from Western Australia totaled 7,400 m^3 in 1997/98 and increased to 13,000 m^3 in 1998/99 with current trends indicating a further increase for 1999/00 (ABARE). Western Australian furniture manufactures are also reporting an increasing demand for their products to be produced from certified forests in order to keep existing export customers in Europe and the United Kingdom.

4.2 Domestic hardwood markets

4.2.1 Sawn timber

Historically green structural hardwood has been used extensively in Australia for framing, roofing timbers and wooden floor construction. However softwood and engineered wood products are replacing hardwoods in these applications with increasing volumes of hardwood now being used in higher value applications.

Recent trends in flooring markets reflect this shift with native hardwoods being used in products such as tongue & groove strip flooring, parquetry and composite overlays for concrete and other floor surfaces. Until recently the market has required defect free timber for flooring applications but a number of flooring manufacturers have successfully promoted floors containing desirable "features". This timber is marketed under a number of brands, grades and descriptions with increasing success.

Table 7 shows that Australia's furniture industry is concentrated in NSW and Victoria with smaller sectors in Queensland and Western Australia. Despite the size of the industry relatively small volumes of native hardwood are used. Jarrah is the most widely used hardwood species, primarily due to the volume used in the production of outdoor furniture in Western Australia.

Table 7. Sawn timber consumption by furniture manufacturers by state - Australia, 1999

	NSW	Vic	Qld	SA	WA	**Total Australia**
			Cubic metres			
Hardwood						
Jarrah	-	1,603	80	279	11,553	**13,515**
Tasmanian Oak	797	4,521	3,784	30	2,171	**11,301**
Victorian Ash	1,145	4,491	2,021	-	1,115	**8,772**
Other Australian	946	3,007	4,550	587	560	**9,651**
Imported tropical	40	667	2,708	617	329	**4,361**
Total	2,928	14,289	13,143	1,513	15,728	**47,600**
Softwood						
Radiata Pine	73,424	108,105	73,703	6,532	27,940	**289,703**
Other softwoods	13,980	1,424	3,087	119	-	**18,610**
Total	87,404	109,529	76,790	6,651	27,940	**308,313**
Other	8,882	1,026	6,641	1,703	1,673	**19,924**
Grand Total	**99,213**	**124,843**	**96,574**	**9,868**	**45,340**	**375,838**

Source: BIS Shrapnel Forestry Group (1999)

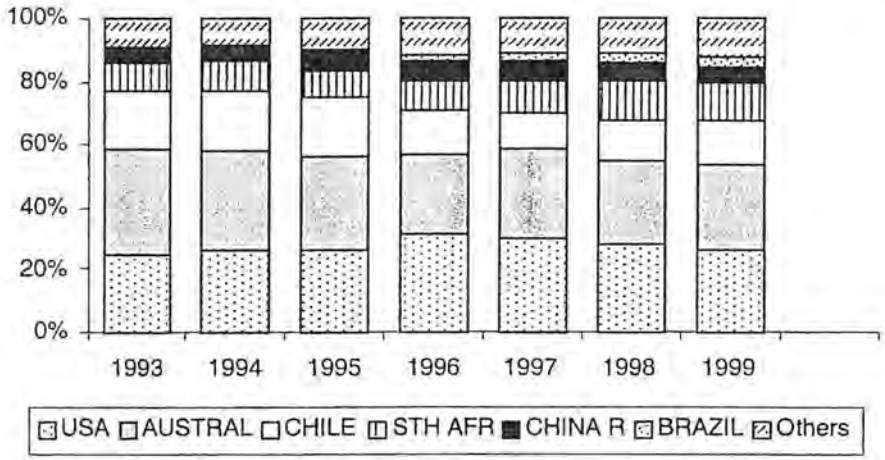
There are several manufacturers producing high value indoor furniture in Western Australia and in eastern states. While these companies are comparatively small they convert the timber into a product that equates to timber price equivalent of around $3,500 per cubic metre compared to input costs of around $1,400 per cubic metre for prime grade sawn timber.

The colours and features of Western Australian Hardwoods also place them in high demand as joinery timbers.

4.2.2 Woodchip exports

Figure 7 shows hardwood chip imports by Japan over the previous 8 years. The data show that Australia's market share of chip imports declined during the 1990's. This trend is not unexpected as federal export licences have capped the availability of native chip logs over recent years. It remains to be seen how this market share will vary as RFA's have now removed native chip export restrictions in several states. However, recent trends (see Table 6) indicate that any market opportunities are more likely to favour the expanding plantation fibre resource than native chip.

Figure 7 Hardwood chip imports – Japan, 1993-2000

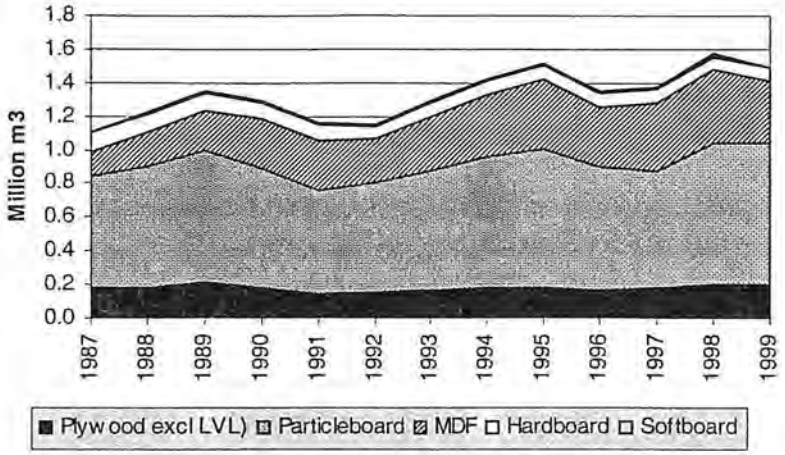


Source: Japan Paper Association (2000)

4.2.3 Plywood, LVL and veneer

While wood-based panel consumption has increased over the last 10 to 15 years, consumption of plywood has remained comparatively stable at between 150,000 and 200,000 cubic metres, and its share of the panel market has declined. Most of the increase in wood based panels consumption has been due to the growth in usage of MDF (Figure 8).

Figure 8 Wood-based panels apparent consumption, Australia, 1987-1999

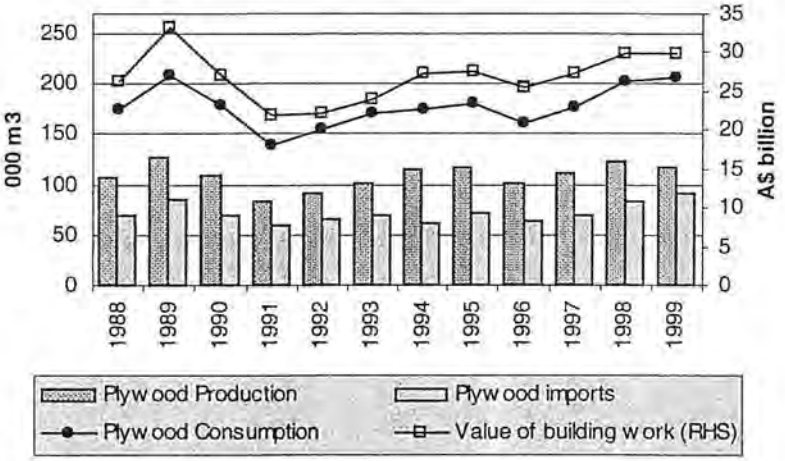


Note: Plywood consumption does not include LVL
Source: ABARE

Plywood

Production of plywood has also been relatively stable, between 100,000 and 150,000 cubic metres. Both production and consumption have been closely related to construction activity in both the residential and non-residential sectors (Figure 9).

Figure 9 Australian plywood consumption, production & imports and value of building, 1988-1999



Note: Does not include LVL
Source: ABARE

Given the lack of penetration against other panels and the close relationship with the construction market it seems unlikely that the size of the domestic market will increase dramatically in the near future.

Laminated veneer lumber (LVL)

Production of LVL has increased 300% over the past decade. Annual worldwide consumption was 350,000 cubic metres in 1987 and jumped to 1.76 million cubic metres by 1998. Throughout this time growth in US markets has been running at around 15 per cent per annum and industry commentators expect this rate of increase (Pine Magazine, 2000).

In Australia LVL is primarily used in construction applications requiring high strength and stiffness ratings. These include roof rafters and floor joists. Increasingly LVL is replacing large dimension hardwood in these applications. Use in concrete formwork is also a comparatively large and growing market. Scaffold planking is another important end use for LVL.

Consumption of LVL in Australia has increased significantly since 1987 when the first plant was established in South Australia. While small volumes of fixed length LVL are produced in various plywood plants in Australia, the South Australian mill remains the only one dedicated to LVL production.

Sliced veneer

Imports of sliced veneer into Australia total approximately 3,000 to 6,000 cubic metres per annum, and are valued at between $8 million and $12 million. Imported veneers are primarily hardwoods, either tropical species from South East Asia and Africa, or temperate hardwoods from North America and Europe. Table 8 indicates the unit value of sliced veneer which is clearly higher than most alternative uses.

Table 8. Unit value of imported sliced veneer Australia 1993-99

Source Country	1993	1994	1995	1996	1997	1998	1999$_{fe}$
				A$/m^3 (c.i.f)			
MALAYSIA	$1,620	$1,523	$3,056	$4,208	$4,866	$6,235	$4,834
GERMANY	$2,968	$4,210	$5,593	$5,216	$3,934	$3,973	$4,231
SOUTH AFRICA	$2,413	$3,222	$2,682	n.a.	$2,564	$2,999	$2,322
GHANA	$1,670	$1,317	$1,549	$1,295	$1,479	$1,510	$1,648
SINGAPORE	$2,918	$2,356	$3,196	$4,584	$2,631	$3,535	$4,176
NEW ZEALAND	$1,511	$1,895	$2,050	$2,005	$1,383	$699	$1,732
UK	$2,457	n.a.	$2,238	$5,880	$4,992	$3,802	$3,569
USA	$3,178	$3,368	$4,367	$3,090	$3,190	$3,551	$3,857
Average all countries	$2,514	$2,269	$3,156	$2,728	$1,809	$2,384	$2,873

E=estimate
Source: BIS Schrapnel data

Annual production of sliced veneer in Australia is believed to be between 5,000 and 8,000 cubic metres, though this is not entirely native hardwoods with imported species also processed.

Consumption of sliced veneer is closely linked to the furniture industry and those timber species that are utilised in furniture manufacture are also in demand as veneer. Jarrah is one of the most widely used species along with Tasmanian oak, Victorian ash, Sydney blue gum, hoop pine and brushbox. There appears to be significant potential for import replacement within Australia if recovery of veneer can be increased.

4.3 Implications of market trends

The development of the Western Australian native hardwood industry over recent years has been logical in the context of broader market trends. The growth of the softwood plantation sector and the development of technology to manufacture high strength, structural wood products from low value timbers has created competition for native hardwoods used in structural applications.

The native hardwoods are generally superior to softwood in respect to structural performance, however softwoods can be cost effectively engineered into products such as LVL to offset this advantage. There are likely to be opportunities for hardwood - softwood combinations in future.

At the same time, the availability of native forest resources is declining. This presents an opportunity to develop uses that maximise value from the unique features of the Western Australian resource in furniture, flooring and joinery products. Products that are based on a combination of plantation and native resource, such as composite flooring, will enable a limited resource to be stretched further. This development must be undertaken while also satisfying the needs of an increasingly environmentally aware consumer.

Competition from hardwood plantations in residue markets will continue to be problematic for the industry. However, plantation development may also create an opportunity if the resource base reaches a scale which justifies the development of a domestic residue processing industry based on products such as Oriented Strand Board (OSB) or pulp and paper.

Hardwood plantation timbers may also be used to produce veneers for use in specialist furniture and joinery applications if specific pruning regimes are adopted.

5. INDUSTRY SWOT ANALYSIS

A brief analysis of the strengths and weaknesses of the current industry, along with identification of opportunities and threats to future development is presented in this section of the report. This provides the basis for identifying the issues that must be addressed in a future industry strategy.

5.1 Strengths

Wood characteristics

Jarrah, karri and marri each have special characteristics that serve to differentiate them from alternative hardwoods such as colour, grain, durability and stability.

Sustainability

Several studies over recent years have clearly demonstrated that the native forests of Western Australia have been managed in a manner that ensures they can supply log volumes to industry in perpetuity.

Industry knowledge

The industry has a long history of processing native hardwoods and has demonstrated a capacity to adapt to changing supply and market conditions over time. It is characterised by long careers and a history of family involvement that often includes several generations.

Recent investment

Contract conditions in 1994 required jarrah sawmills to add value to a minimum proportion of output through kiln drying or selection for appearance grade applications. This requirement increased the rate of investment in pre-dryers, kilns and grading to the extent that some first grade jarrah sawmills are now putting over 80% of the sawmill output into value added products and the jarrah industry is averaging around 60%.

Growth of the furniture sector

The increase in availability of premium grade, dry timber has lead to an expansion of the outdoor furniture sector based around the special characteristics of jarrah. The sector is now developing export markets and new ways to use lower grade wood in its products. This secondary industry has the potential to improve returns throughout the processing chain by utilising greater volumes and realising higher returns per cubic metre.

5.2 Weaknesses

Sovereign risk

Politically motivated decisions to reduce supply have created a desperate investment climate in which neither companies nor lending institutions are willing to support the sector without specific government guarantees.

Overcapacity

After changes to harvest volumes in 2004 the installed sawmilling capacity will be considerably greater than available supply. This will impact on the efficiency of many operations. The recent investment in kiln drying capacity is likely to exceed the available resource in the short term.

Residue markets

All native forest operations are dependent on the availability of residue markets to reduce the unit costs associated with forest management and regeneration. Few opportunities are currently available to sell residues domestically and both importers and the State Government are currently discouraging native woodchip exports in favour of plantation hardwoods. This is likely to result in both forest management issues and higher mill door prices for products produced from the forest.

This will impact on both jarrah and karri operations as marri forest residues are produced from operations in both forest types and make up the greater proportion of current woodchip exports.

Pricing systems

All long term native forest contracts allow the Executive Director of CALM to review stumpage prices at his discretion. This has resulted in increases to log prices that have exceeded CPI over the current contracts and a further review is about to be initiated. Recent price adjustments have not been linked to market factors and the uncertainty associated with pricing is a deterrent to future investment.

Value adding in karri and marri

While value adding initiatives for jarrah have been successful over recent years, similar development has been slow to take place for both marri and karri. Development of value adding technologies for both species involves some significant technical challenges.

Slow move to value adding by some participants

Although the greater proportion of the jarrah sawmilling industry has made a huge shift in both culture and investment towards added value uses, there are a small number in the industry who have not embraced this change and

continue to produce large volumes of structural timbers. For those that were slower to make investments in the 90's, the recent strength of the market for building materials, in conjunction with uncertainty over resource availability, has not been conducive to any new investment in value added technology or markets.

Training

There are currently no tertiary institutions in Western Australia that offer technical training specific to the forest industry. Forestry and post-graduate timber industry training is restricted to the eastern states of Australia.

5.3 Opportunities

Improved utilisation of the forest resource

With current technology deployed by the sawmilling sector only between 35 percent and 40 percent of the bole log in the jarrah forest is supplied as sawlog with the balance used as firewood or in the production of charcoal. Under an improved investment climate, there are opportunities to better utilise the available resource and provide a higher volume of product to the secondary processing sector.

Improved recovery of lumber

Investments in technology such as optimising dockers together with more efficient grading practices will add to the available supply of quality wood for use in high end applications.

Increased value adding in Western Australia

A substantial volume of dried lumber is currently sold outside Western Australia, which could be available to support future value added investment within the State to supply eastern states and export markets. This can only occur if the domestic market has the ability to pay export parity prices.

Clustered development

The primary processing industry is currently located in smaller regional locations while manufacturers tend to be located in Perth or larger regional centres. Such a structure is not optimal for encouraging efficient use of the resource or for minimising transport costs and there is an opportunity to develop a manufacturing industry in proximity to existing sawmills. This would enable the issues associated with utilising and marketing lower grade products from both the forest and sawmill to be investigated on a joint basis, as well as establishing opportunities to improve service support to the sector.

Improved public support

The industry could improve its public perception by being more pro-active in disseminating information on its performance in job creation and value adding and also by demonstrating the importance of sustainable harvesting practice in contributing to the future health and growth of the indigenous hardwood forests.

Substitution for other hardwoods

There is an opportunity for both jarrah and karri to substitute declining supplies of South East Asian and South American dark red hardwoods. These include dark red meranti, merbau, nyatoh, and mahogany. There is also potential to capture market share from North American hardwoods such as red oak.

Integration with the hardwood plantation sector

The emerging hardwood plantation industry may lead to the development of large scale operations such as a pulp mill or reconstituted board plant which is focused on hardwood fibre. Such an operation would also provide a market opportunity for native forest residues.

Sawlogs produced from plantation operations may also provide the scale economies required by sawmills to efficiently process small sawlogs from native forest thinning operations.

Export markets

Over recent years the industry has identified the potential to develop export markets for a number of products. Although strong markets for board products can have an adverse impact on Western Australian based manufacturers, the opportunity to sell finished products such as flooring or furniture will benefit the whole industry.

5.4 Threats

Resource supply

Potential further cut backs in supply remain the most significant threat to the sector.

Availability of a skilled workforce

As the industry has become the focus of negative publicity it has become increasingly difficult to attract skilled employees seeking a long term career in the timber industry.

Substitution from plantation grown timbers

Increasing use of plantation timbers threatens three key areas of the native industry:

- the furniture sector faces competition from plantation grown teak and other tropical hardwoods;
- woodchip exports are threatened by the increasing availability of short rotation plantation hardwoods; and
- structural markets continue to meet competition from plantation softwoods and engineered products.

6. ISSUES FOR STRATEGIC DEVELOPMENT

The previous decade has seen significant investment in new technology and value added processes that have supported the development of markets for high value products such as outdoor furniture and flooring. The resource base supplying these industries has now been significantly reduced and the current need for an industry strategy is the result of an imperative to 'do more with less' through improvements in productivity and efficiency.

Similarly, while the timber industry faces a number of threats such as competition from alternative products, other concerns are significantly outweighed by the sovereign risk associated with resource security in the current political climate. The need to address these two primary issues – efficiency and resource security – in the context of future resource availability and market constraints must form the basis of any industry strategy.

6.1 Future resource availability

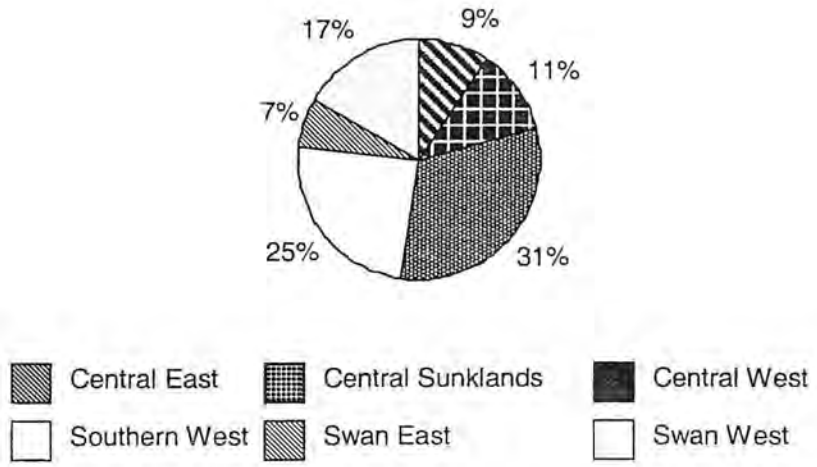
6.1.1 Jarrah sawlogs

Figure 10 shows the location of jarrah harvesting operations over the next ten years by CALM administrative regions and sub-regions based on expected log quality. A map of these regions is shown in Appendix B. The eastern sub-regions reflect low rainfall areas (< 900 mm per annum) which have traditionally yielded lower grades of wood. Western regions yield a high quality timber product while the Sunklands produces a mixed grade of log and is difficult to stratify on quality.

A similar breakdown of regional log supply on an annual basis can be used to project sawlog volumes by grade over the next ten years (Figure 11).

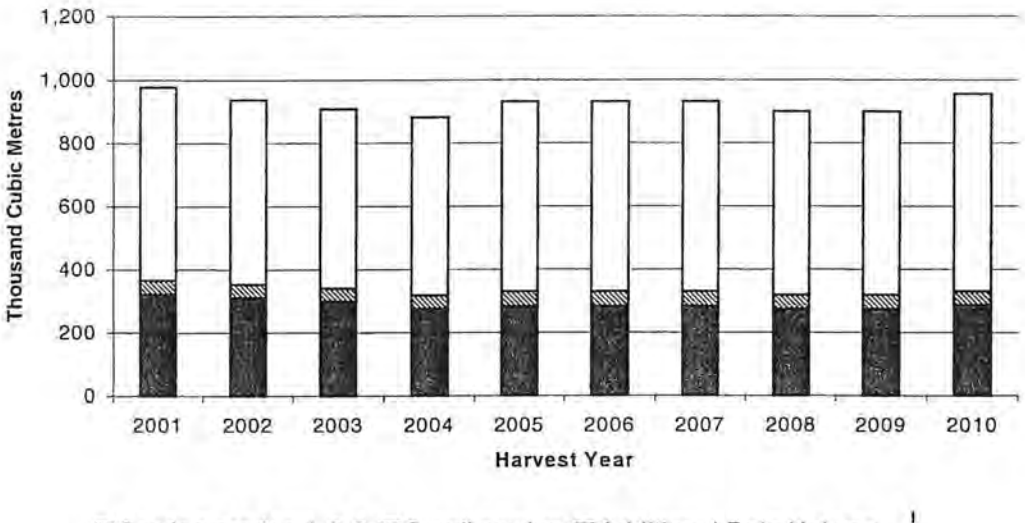
It is expected that the proportion of first to second grade logs will be similar to recent years, however CALM officers expect log size to decline within these grades as the harvest shifts towards lower rainfall areas to the east.

Figure 10 Regional Harvest Plan for Jarrah Sawlogs – 2001 - 2010



Source: CALM

Figure 11 Jarrah log production by grade – 2001 - 2010



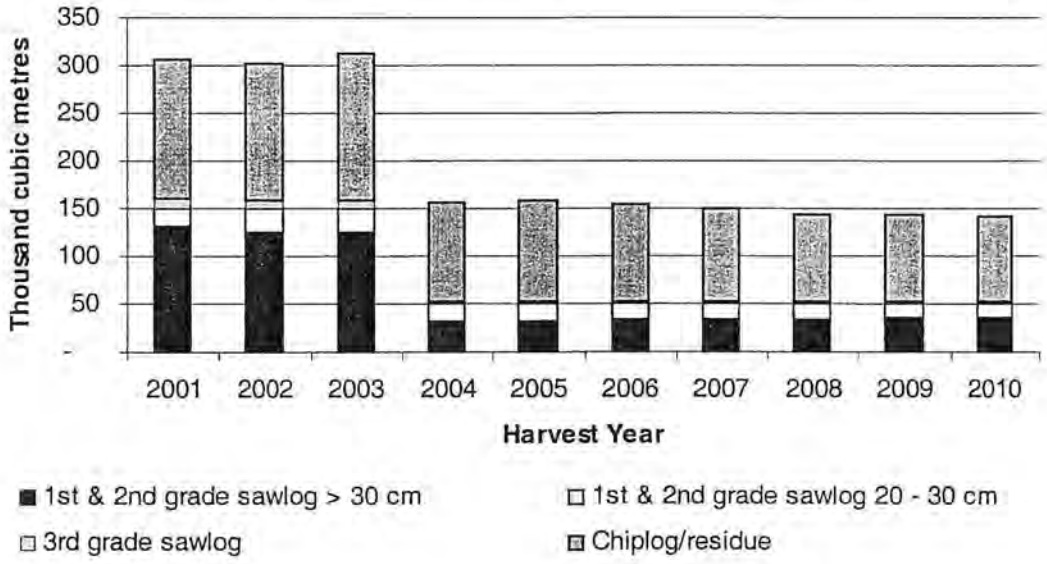
Source: CALM

1 The additional bole volume category is a composite of log sizes and quality. It is an estimate of the residue quality log material from which 3rd grade logs are presently selected but the majority of this resource is currently used for low value end uses such as charcoal production or firewood. It includes a variety of log sizes including small dimension tree boles, long butts and low quality tops.

6.1.2 Karri sawlogs

Figure 12 shows projected harvest volumes for karri logs over the next 10 years. The chart highlights changes made to the RFA by the State Government in July 1999 that resulted in restrictions on the harvest of old growth forest. Volume reductions are primarily from larger size classes, leaving approximately one third of future available volumes in the 20-30 cm diameter category. Figure 13 clearly demonstrates the reason behind this change in log size with harvest restrictions being predominately in mature, previously cut forest classes.

Figure 12 Karri log production by grade – 2001 - 2010

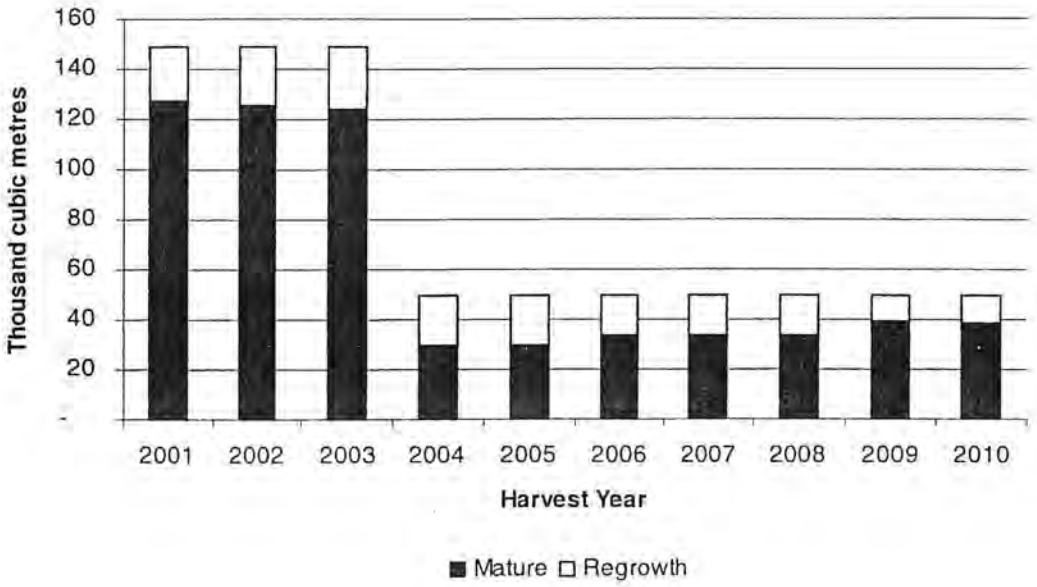


Source: CALM

The impact of this change on the karri sawmilling industry can be demonstrated by considering the capacity of the Sotico mill at Pemberton which currently has a log intake of 100,000 cubic metres, of which 80,000 cubic metres is in the > 30 cm diameter class. This one sawmill has the capacity to process almost twice the future available volume of karri sawlog however it is not adequately equipped to economically process the smaller log sizes that will be available.

The rapidly changing nature of the resource is a critical issue for industry development. The regrowth karri is not only smaller, but the younger wood is also less stable when drying for high value products and does not have the dark red colours which differentiates it from competitive products.

Figure 13 Karri 1st & 2nd grade sawlog production by forest type 2001 - 2010



Source: CALM

6.2 Market constraints

With a reduced resource base it will still be necessary to develop strong interstate and export markets to minimise the impact of domestic housing cycles and the ongoing substitution in structural markets. Development of these markets will be assisted by the distinctive characteristics of Western Australia's native forest species which are significantly different from other Australian eucalypt timbers.

These unique characteristics will provide manufacturers with a comparative advantage when marketing products against other Australian hardwood species but the industry still faces competition from other dark red hardwoods such as meranti, merbau, nyatoh, mahogany and red oak.

As the supply of most of these alternative species are also in decline there is a significant opportunity to identify market niches that will provide a high value return to the industry. The extent to which the industry is able to develop these markets will be dependent upon the ability of manufacturers to understand the market, produce the right products at an acceptable quality and ensure continuity of supply. The furniture sector has recently shown the importance of adapting designs to suit the culture of the target market.

6.3 Productivity and efficiency

As a result of the reduced harvest volumes future industry strategies must focus on improving productivity and efficiency in order to utilise existing capacity and continue to supply and grow the markets that have been developed over recent years.

6.3.1 Recovery from the forest

The additional jarrah bole volume presents an opportunity for industry to partially offset reductions in harvest volumes of first and second grade sawlogs if financially viable methods of utilising this resource can be developed. CALM recently completed a number of "whole bole" trials whereby a new log grade was specified that included logs with both first and second grade qualities along with a portion of the additional bole. The bole logs were delivered to sawmills which attempted to utilise the logs on site.

Results of the trials are not yet available, however most mills struggled to utilise the whole log because the available equipment was not able to process the short log lengths produced on the landing. This created inefficiencies in the transporting and processing of lower grade products.

Bole logging is generally accepted as being one way forward to improve utilisation from the forest. An alternative option endorsed by a number of industry players is to merchandise the bole on the forest landing or at centrally located merchandising yards for distribution to specialist mills that have capacity to maximise recovery from specific grades and sizes and to develop markets for the short lumber recovered. Such a strategy is dependent on the construction of strategically placed sawmills that could specialise in the sawing and recovery of short logs.

Native harvesting operations are also becoming increasingly focused on thinnings and selection cutting in regrowth forests. As this transition takes place traditional methods are being replaced with technology such as mechanical harvesting that is better able to handle the smaller log sizes from regrowth forest.

6.3.2 Processing and manufacture

The reduced supply of sawlogs from public forests will naturally flow through to the output of high quality lumber and those processors which have invested in the development of high value markets face the challenge of maintaining market share.

An analysis of installed drying capacity demonstrates this issue. CALM mill returns show that the industry dried 76,000 cubic metres of jarrah from the

logs taken into the sawmills during 1999. This was also accompanied by a large reduction in stocks of strip lumber, indicating that the actual amount dried would have been higher than indicated by the mill returns alone. Based on an expected annual harvest volume of 286,000 cubic metres from 2004, and a sawn recovery of 37%, the industry currently has capacity to dry and market at least 72% of the future sawn output. This compares to a present rate of 60%.

The industry has previously been focused on increasing the overall capacity to value add through kiln drying and it is possible that almost 100% of timber recovered from the forest will be dried in the future. However manufacturing processes and high value markets must first be developed for the portion of lower quality wood that is not currently dried. In the short term it is no longer appropriate to continue the focus on kiln drying and investment funds should now be concentrated on developing the processes and markets that will require a greater proportion of kiln dried product in the future.

The challenge is now to utilise the already installed capacity to maintain supply to current customers by improving yield from a diminished supply base.

6.4 Resource security and industry development

In July 1999 an extended campaign against the forest industry resulted in significant changes to volumes available under the RFA. As a result of this decision there is considerable uncertainty within the forest sector and this has extended to financial institutions and other investors who are currently unwilling to invest capital in the industry without security of supply. This is a major issue to overcome if the industry is to attract the investment and market support necessary to realise its potential.

The forest industry must now demonstrate a clear understanding that it has privileged access to a public resource which carries an obligation to utilise the forest in a manner that will maximise the return to the Western Australian public. Any future strategy must consequently maximise both the market and regional development opportunities that provide such a return.

6.4.1 Market development

The industry must continue to establish niche markets that focus on utilising the unique characteristics of the native species. Such an approach would support price premiums for locally produced furniture and flooring and would assist local users to match export parity prices. A focus on high value markets is also likely to correspond with end products that the public perceive as being acceptable use of the State's native forest resources.

The industry must also focus on improving ways to dispose of the lower grade wood that results from all sawmilling operations. Development of specialist niche markets and the use of emerging commercial platforms such as electronic trading need to be considered to ensure these products can recover the best possible market prices.

6.4.2 Regional development

The forest industry has traditionally been the focus of many regional locations in the south west of Western Australia. The reduced resource base poses a significant threat to ongoing regional development which may be partly addressed through a strategy which encourages the establishment of clustered development around primary sawmilling and drying capacity in certain regions. Such development is also conducive to facilitating the growth of new processes that utilise the bi-products associated with recovering solid wood.

7. INDUSTRY STRATEGY

The following industry strategy provides a basis for industry to develop by addressing the key issues that face the forestry sector.

7.1 Productivity and efficiency

7.1.1 Forest utilisation

The processing and logging industry must be committed to working with CALM to continuously improve forest management practices in the areas designated for timber production. The industry must aim for 100% fibre utilisation of the trees harvested from the forest. While the imposed limit on log supply will in itself provide an incentive to recover premium grades as well as upgrading low-grade product, concepts such as whole bole logging must also be investigated further.

Further investment in mechanical harvesting technology will reduce the safety risks associated with traditional logging operations and provide some of the efficiencies necessary for the industry to be cost competitive with the changing nature of the resource.

7.1.2 Processing and manufacture

The jarrah sawmilling sector has already made considerable advances towards improving the recovery of products that can be utilised in further value added processes. These advances have required investment in kiln drying, however with a reduction in available volumes the need to further increase drying capacity is not justified in the short term. The future focus on value adding must be based on improving efficiencies through industry rationalisation and investment in plant and equipment that is able to process a changing resource base.

Rationalisation

Horizontal and vertical rationalisation of current industry players should be encouraged. The large number of small mills within the sawmilling industry provides a significant opportunity to improve efficiency by merging operations to make better use of the installed capacity. There is previous evidence of the positive impacts associated with larger primary processing facilities through the role that larger mills have played in initiating and leading the investment in modern drying and processing needs over the last decade. Larger mills have also supported close relationships with the growing local manufacturing base.

There is also an opportunity for stronger relationships and/or joint ventures between sawmills and locally based companies producing specialist products.

The future industry is likely to be characterised by a number of larger sawmills supplying Jarrah to high end users with a limited number of smaller mills specialising in the recovery of lower quality and short logs. A limited number of smaller specialist mills will be involved in the processing of marri and karri logs.

Improvements in efficiency

Increasing the capacity of facilities which process traditional log grades is not warranted with a reduced resource base and the primary processing industry must now put an emphasis on 'achieving more with less'. Recovery of the available resource can be improved through a greater emphasis on product grading and investment in technology such as:

- band sawing to improve green recovery;
- improved drying recovery through the construction of storage facilities and specialist handling equipment;
- improved cutting patterns; and
- infrastructure to economically handle short logs and short lengths of timber.

There is a specific opportunity to build a sawmill capable of handling short or lower grade logs adjacent to the Simcoa plant at the Kemerton industrial estate (20 km north of Bunbury). This location provides an opportunity to merchandise logs for sawn timber while providing cost effective disposal of residues. The estate is also well located with respect to the log resource. Such a mill could specialise in producing short lengths of wood for use in the furniture industry from logs that are currently left behind in forest operations

Integration with the plantation Sector

The sector must be committed to developing and integrating plantation hardwoods alongside the use of indigenous hardwoods. This would provide a basis to encourage the conversion of existing plantation chip wood regimes to recover sawlogs and provide benefits from the use of such wood in combination with the unique properties of the indigenous hardwoods. This would further enhance Western Australia's capacity to develop a long-term industry based on the forestry sector.

In terms of sawn timber processing, this must be considered a longer term strategy as very few hardwood plantations are currently being managed for

solid wood recovery and there is little prospect of significant plantation hardwood sawlog supply in Western Australia for at least 18 – 25 years. However, there are immediate opportunities to convert native forest harvesting equipment that is now under utilised because of reductions in supply to harvest pulpwood from hardwood plantations.

Growth of the plantation sector may also assist in the establishment of markets for native forest residues if a resource base capable of supporting a pulp mill can be established in the South West.

Clusters

There are benefits in relocating existing manufacturing industries or new investment in close proximity to the existing sawmilling and drying capacity. This will not only increase efficiencies and promote regional development but will encourage a shared responsibility for improving utilisation between the primary processor and manufacturer.

Appropriate locations for clustered development can be determined through an analysis of:

- forecast regional harvest locations (Figure 10) in conjunction with CALM administrative regions (Appendix B);
- existing capacity (Appendix A); and
- priorities for regional development.

In considering these factors, five locations stand out as being suitable for clustered development:

- ***Manjimup*** is the logical location for processing resource from the Southern Region because of the existing sawmilling and drying capacity;
- ***Nannup*** is well located with respect to the sunklands resource and is the focus of a current initiative to develop the existing mill;
- ***Greenbushes*** also has existing capacity and is well located with respect to the Central Region. It is also the subject of a current initiative to redevelop the Whittakers mill site;
- ***Yarloop*** has an existing mill and pre-drier capacity. It is strategically placed to economically draw jarrah logs from both the Central and Southern Regions;
- ***Mundijong*** is well positioned to accept logs from throughout the Swan Region and has existing capacity to mill both jarrah and marri. The new freeway extension will provide direct access to the Perth market.

The community of ***Pemberton*** will be particularly affected by reductions in the supply of karri and has sawmilling capacity well beyond future resource

availability. Unfortunately high value manufacturing processes based on karri are not well developed and there are no immediate opportunities for clustered development that will utilise the existing work force. Support should be given to focus what remains of the karri sawmilling industry on this town.

7.2 Industry growth and development

The critical issue of resource security is best addressed through industry development strategies that take a joint government and industry approach towards improving public acceptance of the native forest industry.

7.2.1 Furniture industry

The combination of the unique appearance of jarrah, marri and karri together with design flair and marketing expertise could provide a competitive edge for sustaining exports of various furniture and related products. The market potential that can be achieved from Western Australia is minor compared to the global demand for top end product in the furniture and decorative market. Western Australian manufacturers of outdoor furniture have begun to establish an impressive record in exporting furniture to North America and Europe. Marketing initiatives that maximise such market potential must be encouraged.

7.2.2 Engineered Products

A strategy based on doing more with less is typified by the development of engineered wood products that use native hardwoods in association with other timbers. Floating floor panels that use a thin slice of jarrah, karri or marri in association with plantation softwood is an excellent example of a product which should be given both manufacturing and market support. Similarly, increased recovery of jarrah veneer used in conjunction with MDF in joinery or furniture products should also be promoted.

7.2.3 Certification

Certification is emerging as an important development for the native timber industry and is becoming a critical issue for companies developing export markets in some regions. For example, in Europe it is currently difficult to market products such as furniture, flooring or railway sleepers without Forest Stewardship Council (FSC) accreditation of forest management practices. Other markets have different requirements for certification. As Western Australian furniture exporters are currently developing markets in these regions, it is essential that accreditation of forest management and processing operations is given a high priority.

The Australian forest industry has elected to develop and market a programme based on ISO14001 and the development of an Australian Forestry Standard. Some markets have yet to indicate their acceptance of this process and a significant marketing effort is essential if market acceptance is to be achieved. Individual companies, trade associations and government all have an important role to play in developing and promoting this initiative. The development of alternative processes such as FSC should also be continuously evaluated to ensure that market access is maintained.

7.2.4 Residue utilisation

Other elements of the strategy aim to reduce the volume of residues from forest operations, however there will always be a large proportion of the resource that is not suited to high value applications. The characteristics of jarrah are such that it is unlikely to be used in any significant volume in reconstituted wood products or as wood chip exports. The continued use of jarrah residues as high quality charcoal in the production of silicon remains the best use of the large volumes available and any projects aiming to expand this industry should be encouraged.

Further encouragement should be given to newly established industries which produce briquettes for use in domestic fires and for export to Europe where these products command a premium because of their clean burning attributes. Other potential uses include activated charcoal and co-generation of power.

The anticipated decline in exports of marri and karri as woodchips has the potential to impact on the viability of the whole native timber industry. One potential use of these residues is as a supplement to plantation grown resource in a domestic pulp mill. Any future studies which examine the potential for a pulp mill in Western Australia based on plantation fibre should also be encouraged to consider the use of native residues that will arise as a result of continued sawlog production.

7.2.5 Training and education

The industry will only be able to meet the significant challenges that lie ahead if it is led by an educated and experienced work force. Management positions in the timber industry have traditionally been filled by highly skilled operations personnel who have had limited formal professional training. Some larger companies are currently filling this void through in-house training programs in conjunction with external course work, however the same opportunities are not available throughout the industry.

This issue is not restricted to primary processing and the manufacturing industry is becoming increasingly dependent on the ability of craftsmen to successfully expand their businesses and seek export opportunities.

Regional training and education are a vital aspect of supporting sector growth based on continued product development and meeting the demands of the market. A commitment to support education would contribute to a sector capable of achieving the highest dollar return for the resource. A well educated work force will also be better equipped to communicate the strengths of the industry to the general public.

7.2.6 Technical research and development

The future viability of the forest sector is dependent upon the continuous development of new products and the evaluation of new processing options. Locally based research and development which focuses on the production of both native and plantation wood products should be encouraged. Projects should be undertaken across all sectors of the industry with an emphasis placed on developing improvements in the efficiency of processes and product quality. Examples of projects which meet this criteria include:

- development of engineered products which utilise both native and plantation timbers;
- processing of small logs;
- handling and manufacturing processes for short lengths of timber;
- furniture manufacturing processes which use lower grade timbers; and
- drying processes for regrowth karri.

7.2.7 Market research and development

The diverse nature of the Western Australian forest sector is such that only a limited number of companies currently have the in-house resources or the profit base to undertake any substantial research into the opportunities for maximising exports. An industry approach to market development is recommended for projects that will enable all industry players to participate in understanding the market and export opportunities.

Priority should be given to markets which maximise the use of the resource such as feature grade products or composite flooring which incorporates a limited quantity of high value hardwood with lower quality timbers in the core and base.

Furniture industry

Western Australia has established a world-class outdoor furniture sector and produces a range of top end timber furniture based on native hardwoods.

This sector has the capacity to utilise boards that are currently exported and add maximum value to the available wood within Western Australia.

The furniture industry is strongly influenced by changes in fashion and is dependent on keeping abreast with trends and responding to customer demands. Leading edge design skills should be promoted within the industry by encouraging professional furniture designers to work with Western Australian manufacturers and focus on the demands of consumers in specific markets.

8. RECOMMENDATIONS FOR FISAP ASSISTANCE

The strategy outlined in the previous section requires a combination of government policy and financial support. This report focuses on the use of FISAP funding to assist the industry to move forward in a positive way following the reductions in available resource.

Broad guidelines for distribution of Industry Development Assistance have been established through government policy announcements and more detailed criteria are currently being developed through the draft document *WA FISAP - Industry Development Assistance Guidelines* (November 1999).

At the time of signing the Regional Forest Agreement the state and federal governments made statements regarding the FISAP funding, including specific mention of:

- the need for industry to adjust to new methods of log harvesting and distribution which have the overall objective of "doing more with less";
- the need to supply certainty to the timber;
- a priority to mills that are committed to supplying kiln-dried timber to locally based manufacturers; and
- an additional amount of $3 million to be contributed by the Western Australian government over the next five years to help use jarrah more efficiently through thinning of jarrah regrowth stands.

Subsequent to these announcements a Forest Industry Development and Adjustment Committee was established as a joint Commonwealth and State Government initiative to implement the FISAP program and establish Industry Development Assistance Guidelines. Separate guidelines were established to help businesses and workers deal with the adverse financial consequences directly caused by the Regional Forest Agreement.

The objective of the draft Industry Development Assistance Guidelines are to support initiatives which:

- take maximum advantage of domestic and international marketing opportunities;
- promote a responsible and sustainable native forest timber industry in Western Australia which is both efficient and internationally competitive; and
- create different or new employment opportunities.

Eligibility for the grants is restricted to businesses which are current participants in the Western Australian native forest industry or applicants proposing to participate in the industry who have a committed supply of native forest hardwood timber. Assistance can also be provided to timber

industry associations or organisations that are currently participating in the Western Australian native forest industry. A number of further broad eligibility criteria are listed for those applicants that meet the initial hurdles.

The following recommendations are made in accordance with the Industry Development Assistance Guidelines while also being cognisant of earlier commitments which link assistance to resource security and give priority to projects that improve utilisation from the forest and sawmills that have made a commitment to value adding.

8.1 Businesses

In keeping with the original objective of giving a priority to mills that are committed to both value adding and local processing, approximately 80% of the available funding should be provided to fund individual business proposals which meet specific criteria.

8.1.1 Funding priorities

Section 4.1 of the WA FISAP eligibility criteria set the minimum standard for any applications and it is further recommended that projects should be given priority in terms of their ability to meet the following key criteria:

Industry clustering

The centres of Manjimup, Greenbushes, Nannup, Yarloop, and Mundijong are recommended as regions in which industry development based on the jarrah resource should be encouraged. These centres have previously been the focus of significant investment in the industry and are centrally located with respect to the available resource.

An industry based on small log sizes should also be encouraged to develop on the Kemerton industrial estate.

Joint venture proposals

There are a number of current plans to establish joint venture operations involving sawmilling, drying, machining and merchandising. Such initiatives will encourage rationalisation while retaining existing employment through increased value adding.

Increasing utilisation and quality

Strategies which maximise utilisation at all levels of the conversion process and direct product to uses that demonstrate maximum added value in the finished product should be taken into account when determining suitability of

the proposals.

Understanding of the target market

Proposals to manufacture new products or develop new markets must demonstrate a clear understanding of the target market and outline the proposed strategy to build this market.

8.1.2 Industry sectors

As a general guideline, funding should be distributed over the three principal sectors as:

- sawmilling and secondary processing 50% of funding
- specialist processing and residue utilisation 20% of funding
- forest harvesting 10% of funding

The objective of this distribution is to facilitate the optimum recovery of available resource for the highest possible end uses while taking into account the relative impact of changes to the resource base on the various sectors. The distribution is recommended only as a guide and each proposal will need to be appraised in accordance with its commitment to the overall industry strategy.

Sawmilling and secondary processing

The majority of funding should be made available to the sawmilling and secondary processing sectors in order to facilitate investment in processes that will reduce the impact of future reductions in supply on existing businesses by focussing on improving yield and quality recovery.

Examples of possible investment include:

- upgrading saws to improve recovery by installing more efficient (e.g. reduced saw kerf) sawing capacity;
- modification of existing sawmills to recover short logs for upgrade to dried products;
- more efficient kiln drying facilities in association with dry storage and handling sheds; and
- sorting facilities to improve grade recovery.

Jarrah sawmilling is characterised by a large number of small processors that do not have the efficiencies of larger mills or the scale required to invest in new technology. Smaller mills should be encouraged to rationalise activities by prioritising funding to organisations that have successfully merged.

The karri sawmilling industry will be most affected by the changes in resource volume and quality. The town of Pemberton is particularly dependent on the karri resource and has a single large mill that is capable of efficiently processing sawlog volumes in excess of the projected availability from 2004. Support should be given to encourage rationalisation of existing capacity to the Pemberton site.

Support for the karri industry should include funding for research and development that aims to develop markets and value added processes for products derived from regrowth logs.

Specialist processing and residue utilisation

There has been a large increase in value adding capacity over the previous five years, particularly in kiln drying, and there are indications that reductions in the available resource may result in surplus capacity in some areas. The focus of value adding must now shift to specialist processing that will assist in the development of high value uses for solid timber by improving quality recovery or upgrading lower quality wood.

This change can be facilitated by funding projects such as:

- optimising dockers;
- specialist veneer recovery;
- specialist laminating equipment;.
- the production of flooring with an emphasis on laminating and recovering wood which was previously used in lower value applications; and
- investigation of alternative uses for lower grade and residue jarrah including activated carbon, briquettes, and energy production.

Forest harvesting

Further funding to individual businesses should be allocated to the logging sector in order to assist with the purchase of equipment necessary to harvest a resource base which will be increasingly dependent on regrowth forest. The funding should be available to projects which aim to maximise log recovery from trees harvested and to assist with the thinning of regrowth stands through the purchase of specialised mechanical harvesting equipment.

8.2 Industry development

Many of the issues currently being confronted by the industry are common to all participants and should be addressed at an industry level. It is therefore recommended that 20% of the total available funding for industry

development be allocated to projects that will assist with the development of the industry as a whole. This funding should facilitate a unified approach to industry development and assist in improving the sector's public profile. A number of specific areas where such an allocation could make a contribution to industry development are outlined below.

8.2.1 Technical research and development

A joint CALM and industry group should be established to review the research and development needs of the industry and funding should be made available to restructure the current research centre at Harvey. This restructure should include any necessary changes to operation in terms of management, equipment and personnel based on the recommendations of the group.

Funding will have the aim of developing a dedicated research facility which will support the momentum towards improving recovery and developing high value uses for native and plantation hardwoods as outlined in 7.2.6.

8.2.2 Improving forest utilisation

The importance of recovering all the available wood from the harvest is well appreciated by the industry and concern expressed over whole bole logging relates to the process not the concept. Previous attempts to improve utilisation have tended to pass the problem down the line rather than looking at how the sector can best take advantage of the additional wood.

Industry must increase its involvement in improving forest utilisation and it is recommended that an industry group co-ordinates further trials in collaboration with CALM. The trials should review methods of forest harvesting, transportation and sawmilling that are necessary to improve utilisation from the forest. Funding should be provided for investments which specifically aim to address this issue.

8.2.3 Industry training and education

Continued successful growth will require training specific to the timber industry through certificate or diploma courses. Training should cover disciplines such as business management, export marketing and product design along with technical courses which promote an understanding of wood properties and processing techniques.

Further development of craft skills should be encouraged, particularly in processes that utilise the natural features of lower grade wood in furniture or integrate plantation timbers into design. The Dwellingup School of Wood

currently plays an important role in this area and should be encouraged to expand in areas consistent with the strategy.

8.2.4 Market research and development

Funding is recommended for studies that will enable all industry players to participate in identifying new markets and export opportunities. Priority should be given to markets which maximise the use of the resource such as feature grade furniture or composite flooring which incorporates a limited quantity of high value hardwood with lower quality timbers in the core and base.

8.2.5 Furniture design programme

Funding should be made available to retain or commission leading furniture designers who will focus on the demands of consumers in specific markets.

It is also recognised that hardwood timbers are represented in floors, joinery and furniture in virtually every home and building in the State. This is an essential element of Western Australia and funding is recommended for a Heritage Design Award that would encourage the use of creative design in the States tourist facilities and Public Buildings.

8.2.6 Certification

Certification is considered essential to sustaining export development. The Forest Industries Federation (WA) and the Western Australian branch of the Australian Furniture Industry Association are the logical promoters of this process in association with CALM and the Forest Products Commission.

The ISO14001 process in association with the Australian Forest Standard should be continued along with investigation of alternative processes such as FSC to ensure ongoing market access. The Australian Forestry Standard needs to be urgently promoted overseas to ensure acceptance once accreditation is achieved.

8.2.7 Electronic trading

Several electronic trading platforms are currently used to facilitate sales within the forestry industry in a number of countries. The implementation of such a system within Western Australia would assist the industry to develop new markets and dispose of slow moving products and residues. A study should be funded to investigate how these systems might be applied in Western Australia.

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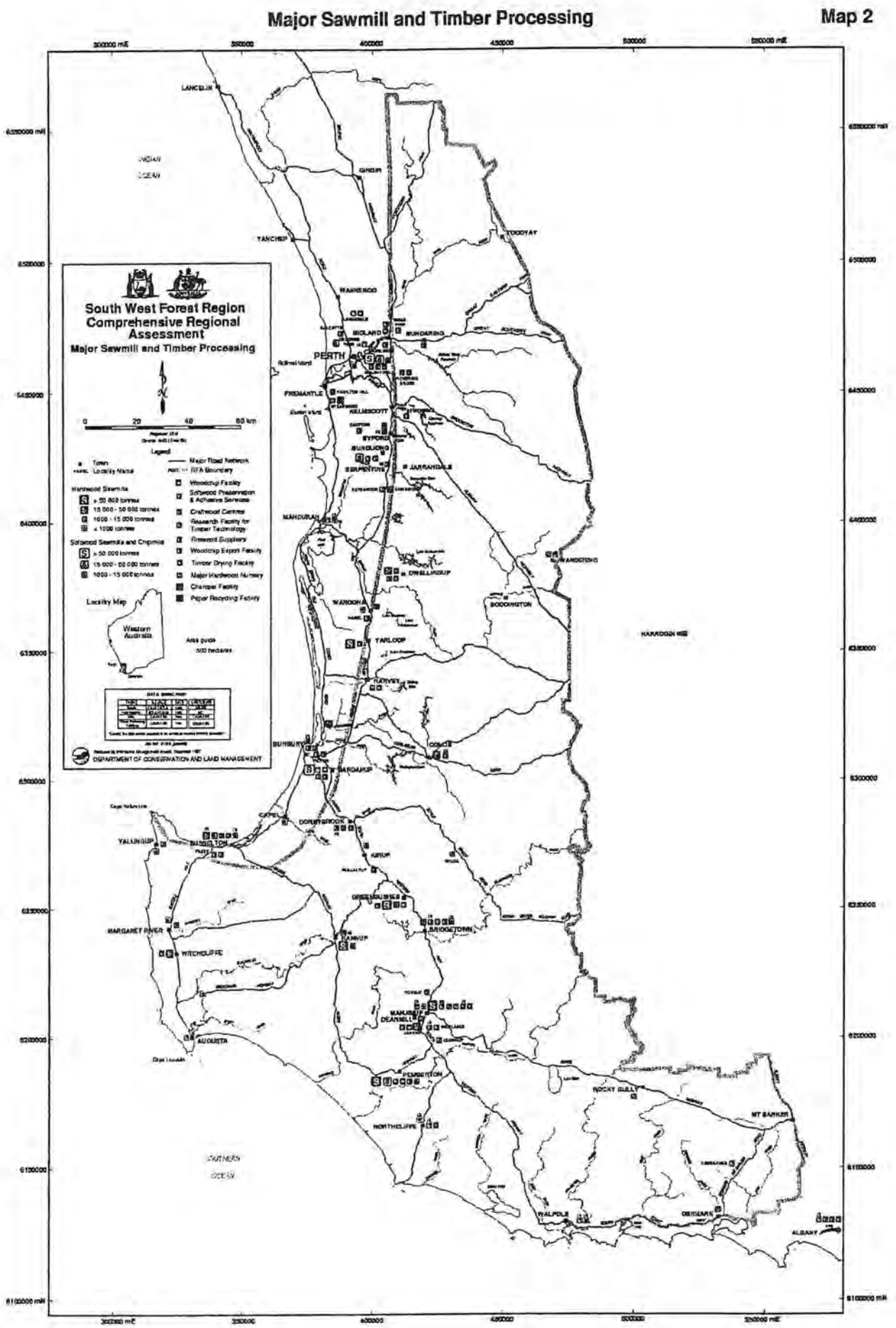
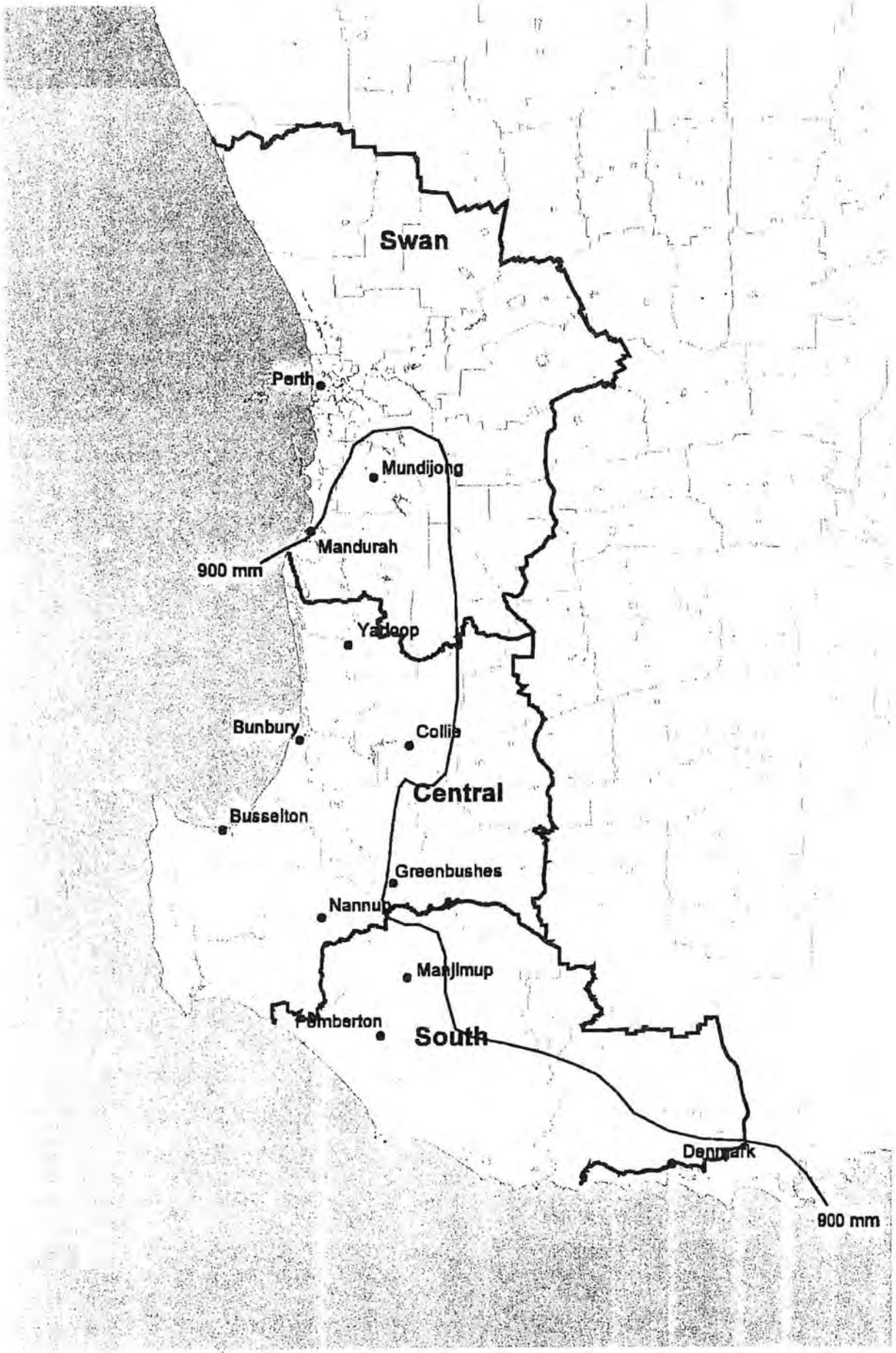
Appendix A: Current location of processing centres



Appendix B: CALM forest regions and 900 mm rainfall isohyet



Appendix C: Stakeholders consulted

Organisation	Representative
Auswest Timbers	Neville Dawson Gary Addison
Blue Leaf Pty Ltd	Trevor Richardson Geoff Bertolini
BVR Furniture	Les Brooker Michael Brooker
Clarecraft Industries	Bill Clare Neville Fenton
Colli and sons Pty Ltd	Caesar Colli
Department of Conservation and Land Management	Mike Buckton Ian Rotheram Graeme Siemon Grant Pronk
Forest Industries Federation Western Australia	Bob Pearce
Furnishing Industries Association of Australia - WA Branch	Ian Hearn
Glen Holst Furniture	Glen Holst
Harris Wood Machining	Ray Harris Paul Harris
Inglewood Products Group	Stefan Gosatti David Gosatti
Jamel Industries	Mal Princiotto
Jensen Jarrah	Max Jensen Rob Davis
McLean Recycling Industries	Gordon McLean
M & B Sales	John Aitken Paul Baldock
School of Wood	Alan Trevaskis
Simcoa Operations Pty Ltd	Jim Brosnan
Sotico Pty Ltd	Ron Adams Neville McDonald Robert Mills Murray Cassidy
South West Timber Supplies	Felix Dietri

Organisation	Representative
Stefanelli Sawmillers	Frank Doswaldo Joe Steffanelli
Technologic Pty Ltd	Peter Hickey Katherine Burnett Steve Carter
Westimber	Warren Coli