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by

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Introduction

As part of the economic analyses being undertaken for implementing a Regional Forest Agreement (RFA) in Western Australia, ABARE conducted a survey of native hardwood sawmills operating in the south west region of that state. The aim of the survey was to provide an accurate assessment of the economic circumstances underlying the competitiveness and value of the Western Australian hardwood sawmilling industry. This information has also been used in the evaluation of economic impacts of changing log supplies arising from alternative forest reserve scenarios. Details of the RFA process undertaken in Western Australia are provided in Commonwealth and Western Australian Regional Forest Agreement (RFA) Steering Committee 1998a and 1998b.

A brief description of the Western Australian timber industry and the results of the survey are presented in this paper. Data were collected for the 1995-96 financial year, the latest year for which information was available at the time of the survey.

The forest region

The south west forest RFA region covers approximately 4.26 million hectares of Western Australia (map 1). Almost 44 per cent of this area (1.87 million hectares) is private land, which is mostly cleared and is used for a range of agricultural pursuits including dairy, beef cattle and sheep grazing, horticulture, viticulture, orchards and tree plantations. The public land, which comprises 56 per cent of the region (2.38 million hectares), is covered mostly by native forest and some tree plantations.

Public land which is managed for conservation purposes (national parks, conservation parks and nature reserves) is unavailable for timber harvesting and totals 745 000 hectares (31 per cent of public land). There are also informal reserves within state forests which are unavailable for timber production. These informal reserves include river and stream reserves, travel route reserves and diverse ecotype zones (reserves around rock outcrops, wetlands and woodland communities), and they occupy a further 314 900 hectares (13 per cent of public land). The total area of public land available for timber production is 1.204 million hectares, or 50 per cent of public land. The remaining land includes Commonwealth land, vacant Crown land and Crown reserves (table 1).

Location of the timber industry

The timber industry in Western Australia has developed around the native hardwoods unique to the south west region, although plantations are becoming an increasingly important part of the industry (box 1). Hardwood sawmills are distributed widely throughout the region. The location of the major sawmill and timber processing centres and RFA boundaries are provided in map 1. A significant volume of timber is processed at mills outside the RFA boundary in Perth, Bunbury and Busselton. However, these mills were included in the survey because they source their logs from the RFA region.

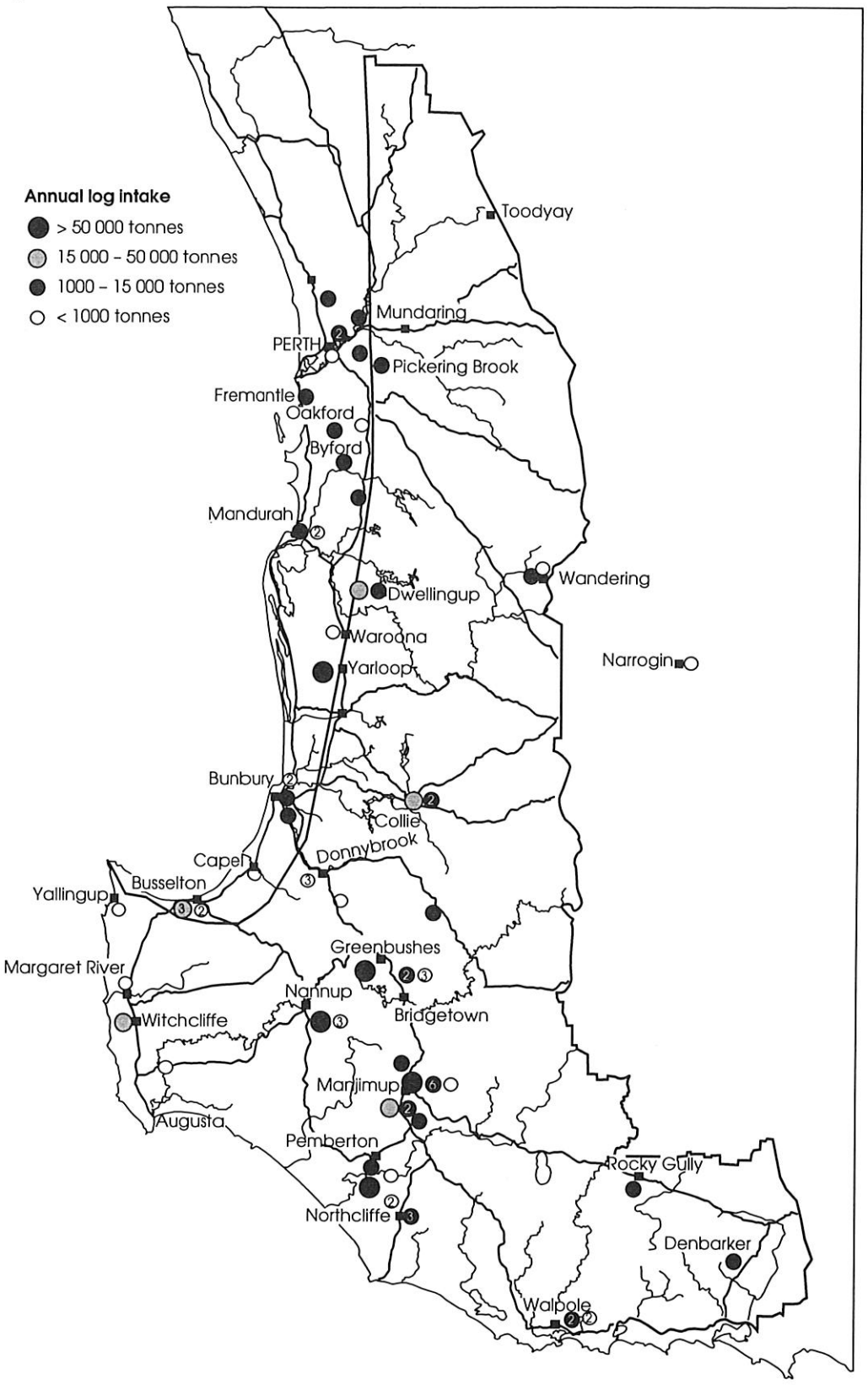
The native hardwood sector

The major native hardwood species harvested include jarrah (*E. marginata*), which is increasingly being used for high value furniture and decorative mouldings; karri (*Eucalyptus diversicolor*), which is

1 Peter Connell and Cas Johnson are from ABARE while Martin Rayner and Terry Jones are from the Department of Conservation and Land Management, Western Australia.

1 Comprehensive Regional Assessment

Major hardwood sawmills



1 Land tenure within the RFA region

Land category	Area	%
CALM managed land a		
Formal reserves	745 500	18
Informal reserves	314 900	7
Remaining state forest	1 204 300	28
Total CALM managed a	2 264 700	53
Other public land		
Commonwealth land	16 300	0.3
Vacant Crown land, pastoral lease, CALM and misc. reserves	29 600	0.7
Crown reserves	77 300	2
Total other public land	123 200	3
Private property	1 868 500	44
Total area of RFA region	4 256 400	100

a CALM = Department of Conservation and Land Management.
Source: Commonwealth and Western Australian Regional Forest Agreement (RFA) Steering Committee 1998a.

mainly used as a structural timber but is increasingly being targeted for furniture, flooring and decking; and marri (*Corymbia calophylla*), which is used for furniture and woodchips. Minor species harvested include Western Australian blackbutt (*E. patens*) and wandoo (*E. wandoo*) — both of which are used for structural timber, furniture and fence posts — and sheoak (*Casuarina fraserana*), which is principally used for outdoor and indoor furniture.

Log supply

Details of hardwood log production in 1995-96 are provided in table 4. State forests are managed on a sustainable yield basis, with the quantity of native hardwood logs harvested each year constrained within the overall growth capacity of the forest. In 1993, the Meagher Committee evaluated the level of sustainable harvest from the jarrah and karri forests. The annual sustainable timber resource to be made available for allocation during the period 1 January 1994 to 31 December 2003 was then determined by the Minister for the Environment on 16 August 1993 (table 5).

Regardless of the RFA outcomes, the availability of first grade and second grade jarrah sawlogs is currently under review. Changes to harvesting practices and milling technologies are expected to result in improved timber recovery rates from high

Box 1: The plantations sector

Softwood and hardwood plantation timbers are important contributors to total wood production in Western Australia. In addition to plantations within the RFA area, large areas of plantations have been established outside the RFA area. Softwood plantations of two main species, radiata pine (*Pinus radiata*) and maritime pine (*Pinus pinaster*), account for a third of total wood harvested annually. In recent years blue gum (*Eucalyptus globulus*) has been established in plantations and will contribute to a significant proportion of the annual harvest in future decades.

By the end of 1997 over 80 000 hectares of *Eucalyptus globulus* had been established in Western Australia. The majority of the plantings have been established since the late 1980s with a general intent to manage the stands on short rotations to produce woodchips. Preliminary woodflow forecasts by the Bureau of Resource Sciences (BRS) published in 1997 suggest that the volumes available from hardwood plantations will increase rapidly from around 2000 (table 3).

Because chiplog rotations run for around 10–15 years, the supply forecasts from 2010 are necessarily speculative because the plantations to supply these volumes have yet to be established. Although these forecasts incorporate owners' plans for expansion of the forest estate, the actual rates achieved beyond 2010 may be higher or lower than those shown in table 3 depending on (among other things) changes in market expectations over time. Moreover, a significant proportion of the resource is already committed under long term contracts with overseas investors. A change in silvicultural practices, such as an increased emphasis on sawlog production, would also affect future woodflows.

Projected increases in softwood production are more modest, including an expected extension of pine tree plantings over the next decade as part of a soil salinity control program.

2 Plantation log production, 1995-96

	Crown land	Private property	Total
	m^3	m^3	m^3
Sawlogs and veneer logs			
Hardwood			
Globulus	376	207	583
Mallet	487		487
Muellerana	57		57
Softwood	264 989	45 192	310 181
Total sawlogs	265 909	45 399	311 308
Non-sawlog material			
Hardwood			
Chiplogs	13 492	30 001	43 493
Industrial wood	24	129	153
Other	347		347
Softwood			
Industrial wood	291 947	143 224	435 171
Pine rounds	7 357	22 730	30 087
Total non-sawlog	313 167	196 084	509 251
Total all logs	579 076	241 483	820 559

Source: Department of Conservation and Land Management 1996.

grade logs and to lead to increased use of lower grade jarrah logs in value added niche markets. Such strategies may enable the production of greater volumes of sawn jarrah material after 2003 than is currently expected, based on existing investments in milling equipment. The availability of karri and marri logs beyond 2003 is expected to remain unchanged from current levels.

Legislative controls

Forestry operations are controlled by legislation (*Conservation and Land Management Act 1984*) when they occur on public land, or where the Department of Conservation and Land Management (CALM) is in charge of the operation. CALM oversees the implementation of the legislation which considers environmental impacts, harvesting practices, log specifications and safety standards.

Log allocation policy

CALM regulates the supply of native forest logs from Crown land to sawmills by offering contracts of sale. The system of allocation aims to provide equity, security of access to the resource through ten-year contracts of sale, and maintenance of a free market environment by regularly letting tenders for a proportion of the available resource (Department of Conservation and Land Management 1994).

The log allocation system supports small mills which contribute to rural economies, create market competition and process a large proportion of second grade and lower quality logs. Under these arrangements, smaller mills which had access to mainly

3 Plantation production forecasts ('000 m^3 a year)

	1995 –99	2000 –04	2005 –09	2010 –14	2015 –19
Hardwood	223	1233	1507	2658	3407
Softwood					
Pulpwood	333	377	276	238	274
Sawlogs	313	436	1005	677	676

Note: See box 1 for a discussion of why supply projections from 2010 are necessarily speculative.
Source: Bureau of Resource Sciences 1997.

4 Native hardwood log production, 1995-96

	Crown land	Private property	Total
	m^3	m^3	m^3
Sawlog timber a			
Jarrah	453 424	3 827	457 251
Karri	213 421	4 672	218 093
Marri	9 667	2 694	12 361
Blackbutt	1 432	38	1 470
Wandoo	880	230	1 110
Sheoak	1 653	91	1 744
Other	124	17	141
Total sawlogs	680 601	11 569	692 170
Non-sawlog material			
Native hardwood			
Chiplogs	653 717	89 103	742 820
Industrial wood	10 476	3 293	13 769
Other b	9 935	1 914	11 849
Total non-sawlogs	674 128	94 310	768 438
Total all logs	1 354 729	105 879	1 460 608

a Sawlog timber from all sources including veneer, but not including chiplogs, particleboard, industrial wood, firewood, fencing material, poles, piles and minor forest products.
b Includes poles, bridge timbers, burls, chopping logs, mining timbers, pegging logs and fencing material.
Source: Department of Conservation and Land Management 1996.

5 Annual timber allocation available, January 1994–December 2003

Species	Sustainable yield gross bole volume m^3/year	Log product yields m^3/year: First grade sawlogs	First and second grade sawlogs	Other logs
Jarrah	1 360 000		490 000	870 000
Karri	417 000	214 000		203 00
Marri	559 000			

Source: Department of Conservation and Land Management 1994.

second grade logs supplemented by 10 per cent first grade sawlogs have had their first grade allocations lifted to 20 per cent. Box 2 outlines the allocation system.

Value adding

The encouragement of value adding of sawn timber has been a significant component of the 1987 timber strategy and the current Forest Management Plan. In addition, under existing contracts, purchasers of premium, first grade and second grade jarrah sawlogs were required to have converted at least 50 per cent of sawn green output into value added products by the end of 1996. A minimum of 30 per cent of this is required to have been kiln dried. The industry has had to expand its marketing and promotion activities to target the increasing volumes of kiln dried jarrah, karri and marri into high value appearance grade products such as furniture, flooring, mouldings, joinery and other products. The industry has also sought to identify markets for the fall down products, including for the products' use in 'natural feature grade' furniture.

Purchasers of premium, first grade and second grade karri sawlogs are required to 'develop appropriate technology and markets to maximise value added timber products' (Department of Conservation and Land Management 1994). As a result of the impacts of these contractual arrangements and other market changes, the use of green hardwood structural timber has declined in Western Australia (BIS Shrapnel 1998a).

Log pricing

The prices for sawlogs used in contracts of sale with sawmillers are variable and are based on current royalties (table 6), costs of production (including harvesting and log transport costs), a requirement for return on investment, and the need to promote value adding (Department of Conservation and Land Management 1994). A base log price

Box 2: Allocation of the timber resource

The following principles will be followed in allocation of timber resources.

Sawlog resource

- Contracts for premium, first grade and second grade sawlogs current on 31 December 1993 will be re-negotiated on the basis of new contracts with a ten-year term.
- Contracts for other grades of log timber current on 31 December 1993 may be re-negotiated for extended terms not to exceed ten years.
- Smaller mills which have access to mainly second grade sawlogs supplemented by 10 per cent first grade sawlogs will be allocated 20 per cent first grade sawlogs.
- Small sawmills will be encouraged to remain viable through longer term security of resource. It is recognised that most small mills tended to have short term security of log resource of lower quality, and that longer term security and a more attractive log mix are necessary to develop competitive value adding facilities.
- The commitment to value adding which has already been adopted, mainly by larger mills, will be further developed and extended to smaller mills.

Other resources

- Other log products, including fencing, poles, feature grade sawlogs and firewood, are sold at open tender or auction to meet market demand.
- CALM sells to Western Australian Chip and Pulp Company under a sale contract an amount of Marri and Karri chiplogs (not suitable for sawmilling or other special purposes) sufficient to produce 680 750 tonnes of green weight woodchips on a calendar year basis.

Source: Department of Conservation and Land Management 1994.

6 Schedule of gross hardwood royalties, 1 July 1997 a

Product type	Species	Gross royalty	
		Swan/Central forest region	Southern forest region
		$/m³	$/m³
Long poles (>12 metres length)	JBWKMU	95.49	79.91
Medium poles (6.1–12 metres)	JBWKMU	62.56	64.60
Premium sawlogs	JBWM	99.43	101.47
Premium sawlogs	KX		101.18
First grade sawlogs – 300 mm SED	KX		51.65
First grade sawlogs – 200 mm SED	KX		49.59
First grade sawlogs – 200 mm SED	JBW	40.08	42.12
Second grade sawlogs – 250 mm SED	JBW	29.62	31.66
Second grade sawlogs – 300 mm SED	KX		39.24
Third grade sawlogs	JBWKX	21.66	23.70
Fencing/chopping logs	JBWKX	29.64	31.68
Charcoal logs – green	JBWX	13.52	15.31
Charcoal logs – dry	JBWX	12.71	14.32
Residue logs – green	JBWX	12.43	14.43
Residue logs – dry	JBWX	11.59	13.20
Chiplogs (large, small and residue)	KMX	24.38	26.52
Craftwood	X	14.70	12.31

SED = Small end diameter. J = jarrah, K = karri, M = marri, B = blackbutt, W = wandoo, L = mallet, S = sheoak, U = muellerana, X = any other native species.
a Gross royalty includes base royalty, roading, inforest and administration charges.

structure exists for all log types according to species and grades; it is periodically adjusted considering an appropriate market based index number and a need to reflect the current value-adding opportunities for particular log grades. Sawmillers are required to pay the costs of harvesting and log transport from the forest to the sawmill gate.

Log harvesting and transport

CALM is responsible for all logging and haulage operations on public land under contracts made between CALM and private companies. Logging and haulage may be contracted to one company as a single operation or to two independent companies. Logging operators undertake tree felling following the silviculture guidelines specified by CALM and apply hardwood log specifications to achieve maximum use from each fallen tree. Logging contractors, who are appointed through a competitive tender system, are able to harvest several log products (for example, sawlogs and chiplogs) from one tree and one area for sale to one or more buyers. Haulage contractors are responsible for loading and transporting logs from the landing to the mill under CALM's operational guidelines. These guidelines incorporate controls to minimise potential environmental impacts such as the spread of *Phytophthora cinnamomi* in jarrah forests.

Survey methods

For the purpose of the survey, a 'sawmill' was defined as any operation which obtained a hardwood log allocation. As a result woodchip, charcoal and firewood operators were included in the survey population. Some of the sawmills were located outside the RFA region (map 1), but these operators were included in the sample because they received their log allocation from within the RFA region.

The survey form contained a series of questions designed to assess the economic conditions underlying the long term competitiveness and value of the industry. The survey was conducted over two weeks

in August 1997, and was carried out using face-to-face interviews with sawmill owners or managers. Financial and physical data were collected for the 1995-96 financial year, the latest year for which complete records were available at the time of the survey.

All of the larger sawmill owners/managers were contacted as part of the economic survey, and a sample was drawn for the smaller operators. Questionnaires were completed for 47 of the 111 hardwood sawmills receiving forest logs from the Western Australian RFA region. The survey respondents accounted for approximately 86 per cent of the total logs from state forests received by the Western Australian sawmilling industry in 1995-96. The method used to expand the sample results to industry-wide estimates for the sawmill industry is outlined in box 3.

Data were also collected from Western Australia's two large users of chip and residue logs (the Bunnings's woodchip mill near Manjimup and the Simcoa charcoal plant at Kemerton). However, although these two mills process approximately one million cubic metres of hardwood logs and residues each year, including residues from other sawmills (that is, karri for woodchip production and jarrah for charcoal production), it has been necessary to exclude them from the following discussion to retain commercial confidentiality. The following discussion is therefore restricted to an analysis of mills processing sawlogs.

Key survey results

Results are presented for three mill size classifications according to annual log intake:

- small — less than 5000 cubic metres a year;
- medium — between 5001 and 15 000 cubic metres a year; and
- large — over 15 000 cubic metres a year.

It has not been possible to present mill data on a mill size by forest supply district basis, because the small number of mills in some of the regional mill size categories

Box 3: **Deriving total industry estimates for the Western Australian sawmilling industry**

Forty-two per cent (47 out of 111) of hardwood sawmills receiving sawlogs from the RFA region were surveyed. Estimates for the total Western Australian sawmilling industry were derived by weighting the replies of the survey respondents.

The sawmill population for 1995-96 was stratified according to their contract volumes with CALM and by the three CALM forest supply regions within the RFA area. The size of the initial populations and number of survey cooperators in each class are shown in the table.

Weights were calculated based on both the sawmill population and estimated average log intake of the sawmills at a stratum basis, and were applied to the survey results to estimate key variables for the total industry.

Survey results have not been presented under the same sample stratification, but rather under three groupings: less than 5000 tonnes, 5000 to 15,000 tonnes and greater than 15 000 tonnes. The small number of mills in some strata used to draw the sample could lead to high relative standard errors if these strata had been used to present results.

Total estimates for the Western Australian RFA region are supplied with a relative standard error (RSE). These errors are the standard errors of the estimates expressed as a percentage of the survey estimates. There is roughly a two in three chance that the survey estimate is within one standard error of the value that would have been obtained from the total population.

	Western Australian population			Survey cooperators		
Log intake by regions	**North**	**Central**	**South**	**North**	**Central**	**South**
Under 1000 m^3	11	26	10	2	6	3
1000–5000 m^3	12	9	10	4	4	5
5000–10000 m^3	4	5	8	2	2	6
Over 10000 m^3	3	9	4	2	7	2
Total	30	49	32	10	20	17

would have meant that it would have been possible to identify individual mills or companies.

Log intake and timber production

In 1995-96, sawmills purchased 812 000 cubic metres of native hardwood logs. The twelve largest mills purchased more than 70 per cent of all hardwood logs sold and produced 70 per cent of sawn timber production and 71 per cent of residue production. The 20 medium sized mills purchased 17 per cent of all available logs and produced 15 per cent of sawn timber production. The remaining 77 small mills purchased 13 per cent of the logs sold in 1995-96 and produced nearly 15 per cent of all sawn timber production.

Over 96 per cent of the total mill sawlog intake in 1995-96 came from state forests located within the Western Australian RFA region. The remaining sawlogs used by mills were sourced from either private forests or forests located outside the RFA region.

Timber production and market outlets

Sawmillers were asked for details of output produced, both timber and waste, from their milling operations. Timber and waste production by species and type of timber produced by all mills in 1995-96 are shown in table 8. Jarrah logs comprised 71.1 per cent of logs processed followed by karri at 27.8 per cent, marri at 0.8 per cent and other logs at 0.3 per cent.

The total timber recovery for jarrah sawlogs was 35 per cent, while karri sawlogs achieved 43 per cent. There was a notable difference in the type of timber produced. Approximately 19 per cent of jarrah logs were processed into veneer and kiln dried timber compared with only 3 per cent for karri logs. A much higher percentage of karri logs (40 per cent), compared with jarrah logs (17 per cent), were processed up to the unseasoned timber stage. Approximately 53 per cent of timber produced from jarrah logs was processed through to the seasoned timber and veneer stage, compared with 8 per cent of karri timber.

More recently the value adding industry has exceeded its contractual requirements, which has required capital investment, changing markets and production details and staff training by the industry.

A little over 19 per cent of karri sawlogs, in the form of sawmill residues, were subsequently processed into woodchips. Approximately 19 per cent of jarrah logs, again from sawmill residues, were used in a chip and block form for use in charcoal manufacturing.

The market positioning of Western Australian hardwoods has changed significantly (as demonstrated in BIS

7 Log intake and timber production and sales, 1995-96 a

		Sawmill log intake		
	Unit	<5000 m^3	5000–15000 m^3	>15000 m^3
Average per mill				
Total log purchases	m^3	1 367 (24)	6 840 (11)	46 568 (12)
Sawn timber production	m^3	556 (24)	2 254 (9)	16 843 (12)
Sawn timber sales	m^3	490 (25)	2 919 (19) b	15 740 (14)
Residue production	m^3	792 (29)	3 956 (14)	28 259 (11)
Residue sales	m^3	688 (31)	2 643 (25)	19 146 (10)
Total hardwood sawmilling industry				
Total log purchases	'000 m^3	105.3	135.6	571.3
Sawn timber production	'000 m^3	42.9	44.7	206.6
Residue production	'000 m^3	61.0	78.4	346.7
Sawn timber recovery rate	%	41.3	36.3	37.3
Number of mills	no.	77	20	12

a Estimates based on sawmill survey. Figures in parentheses are RSEs for the estimates. b Sawn timber sales exceed sawn timber production. This is possible when there are significant sales from previous years' stocks.

8 Sawlog timber production, by species and type, 1995-96 a

	Total	Jarrah	Karri	Marri	Other
	%	%	%	%	%
Veneer					
Face	0.3	0.5	0.0	0.0	0.0
Back	0.0	0.0	0.0	0.0	0.4
Seasoned sawn timber					
Appearance – prime	6.9	8.7	2.4	0.6	0.0
Appearance – standard	4.2	5.7	0.1	3.6	25.9
Structural	1.8	2.4	0.4	0.0	11.4
Further processed	1.0	1.2	0.5	0.0	0.0
Unseasoned timber					
Appearance grade	2.2	2.4	1.5	0.0	5.4
Scantling/other structural	17.0	9.9	35.6	1.6	10.0
Palings/pallets	2.3	2.3	2.1	11.1	0.0
Other sawn timber	2.1	2.2	0.5	42.5	0.0
Residues and waste					
Slabbage for on-selling	0.5	0.0	1.8	0.0	0.1
Woodchips, char chips	18.7	18.7	19.2	0.5	1.0
Firewood	9.8	12.7	2.1	23.8	0.0
Fines	3.7	2.6	6.6	0.0	0.0
Sawdust	14.2	13.9	15.0	14.7	23.5
Others (waste)	15.4	16.7	12.3	1.6	22.2
Sawlog processed ('000 m^3) a	780	555	217	6	2

a Sawlog includes a small volume of logs for purposes other than the production of sawntimber (for example, firewood), but excludes the significant volume of residue logs processed by the Bunnings woodchip mill and the Simcoa charcoal plant.

9 Sales of sawlog timber and products, by market, 1995-96

	Western Australia	Interstate	Export	Total sales
	%	%	%	m^3
Veneer	0.0	94.7	5.3	2 556
Seasoned sawn timber				
Appearance – prime	63.0	24.6	12.4	52 592
Appearance – standard	60.1	32.8	7.1	22 939
Structural	83.6	9.6	6.9	13 711
Further processed	93.1	0.8	6.1	3 892
Unseasoned timber				
Appearance grade	67.4	24.6	8.0	17 757
Scantling/other structural	88.4	6.5	5.0	126 667
Palings/pallets	100.0	0.0	0.0	15 469
Other sawn timber	79.1	20.9	0.0	77 317
Residues and waste				
Slabbage	100.0	0.0	0.0	4 010
Woodchips	61.8	0.0	38.2	79 134
Firewood	100.0	0.0	0.0	71 668
Fines	100.0	0.0	0.0	15 547
Sawdust	100.0	0.0	0.0	174 048

Shrapnel 1998b). These industries are still in their infancy but have experienced rapid growth, with the supply of kiln dried material having become more available and with extensive marketing campaigns being conducted in Western Australia, Australia and export markets. Their industry turnover in 1998 was forecast to be $58 million using 16 000 cubic metres of jarrah timber and involving total direct employment of 535 (BIS Shrapnel 1998b).

Surveyed mills also provided details of the markets to which their timber and other products were sold in 1995-96. Details of sales of timber and residue products to Western Australia, interstate and export markets are provided in table 9. Local industries were the major markets for timber, taking 66 per cent of all seasoned timber and 85 per cent of unseasoned timber. Interstate markets took 95 per cent of veneer production, 23 per cent of seasoned timber and 12 per cent of unseasoned timber. Export markets took 10 per cent of direct seasoned timber sales.

Financial profile

The total gross value of production for the hardwood sawmilling industry in the Western Australian RFA region was an estimated $163.4 million in 1995-96. It is estimated that labor costs for the sawmilling industry totaled over $39.8 million, just over one third of the estimated total operating costs of $117.6 million.

The gross operating surplus (calculated by subtracting mill operating costs, excluding capital costs, from the gross value of production) for the hardwood sawmilling industry in the RFA region was an estimated $45.7 million in 1995-96 (table 10).

For some mills, the expenditure and receipt items collected included outlays associated with products other than their own sawn timber production. These other items included the purchase of softwood timbers (for on-selling), the sale of some building hardware and the sale of products which have undergone further manufacturing. These items were excluded where they could be separately identified.

The twelve large sawmills in the RFA region accounted for 70 per cent of the total gross value of production, incurred 71 per cent of mill operating costs and earned just over 71 per cent of total gross operating surplus. The middle sized mill group produced just over 16 per cent of the gross value of production and earned 19 per cent of the total gross operating surplus. The small mills produced nearly 14 per cent of the total gross value of production but earned only 10 per cent of the total gross operating surplus.

Capital investment in the RFA region sawmills was estimated to be $4.9 million during 1995-96. Only 44 per cent occurred in the larger sawmills, while the mills with log intake of less than 5000 cubic metres of log accounted for 41 per cent.

The surveyed mills provided estimates of the replacement capital value of mill and land. Some mill operators acknowledged that their estimates were based on incomplete information. As a result, the averages reported in table 10 should be read in that context. Nevertheless the small mills which had the smallest average capital value per mill had much higher average capital value per cubic metre of log purchased (nearly $260). The medium and large sized mills had values of $68 and $80 a cubic metre of log purchased respectively.

Employment

It was estimated that the sawn timber mills employed a total of 1338 people in 1995-96 (excluding the labor provided by owner/operators, which was a significant factor in the smaller mills.) The total wages bill was estimated at $40 million. Approximately 88 per cent of these employees were full time workers, with labor inputs varying from single family enterprises to mills with more than 100 full time employees (table 11).

The majority of sawmill industry employment was concentrated in sawmills with a large processing capacity, with the twelve largest mills paying 66 per cent of industry labor costs. The small sized mills were more labor intensive per cubic metre of log purchased, averaging labor costs of $62 a cubic metre of log purchase. The medium sized mills averaged $43, while the larger mills averaged labor costs of $49 a cubic metre of log purchase. As would be expected, the small mills tended to use more owner/operator, family and casual labor.

10 Financial performance of the Western Australian RFA region hardwood sawmilling industry, by size of sawlog intake, 1995-96 a

	Unit	Sawlog intake <5000 m³	5000–15000 m³	>15000 m³
Average per mill				
Gross receipts – sawn timber b	$'000	262.2 (33)	1 205.3 (14)	8 685.2 (14)
Gross receipts – sawmill residues	$'000	14.8 (25)	29.0 (22)	625.0 (31)
Gross mill receipts c	$'000	290.7 (19)	1 351.7 (16)	9 310.2 (14)
Labor costs (wages and salaries paid, including family)	$'000	84.6 (30)	294.4 (11)	2 284.4 (14)
Total royalties (excluding felling, freight and administration)	$'000	36 8 (28)	203 1 (10)	1 687.2 (13)
Total log purchase costs	$'000	80.3 (28)	428.2 (9)	2 998.7 (12)
Other costs	$'000	65.1 (22)	190.2 (12)	1 383.3 (25)
Total operating costs d	$'000	232.2 (26)	912.8 (8)	6 656.4 (14)
Gross operating surplus	$'000	58.5 (62)	438.9 (35)	2 653.8 (28)
Replacement value of mill and land	$'000	354.4 (33)	462.1 (17)	3 749.2 (31)
Average per log purchased				
Gross mill receipts c	$/m³	213 (19)	198 (16)	200 (14)
Total operating costs d	$/m³	170 (26)	133 (8)	143 (14)
Gross operating surplus	$/m³	43 (62)	64 (35)	57 (28)
Total hardwood sawmilling industry				
Gross mill receipts c	$m	22.4	26.8	114.2
Total royalties (excluding felling, freight and administration)	$m	2.8	4.0	20.7
Total operating costs d	$m	17.9	18.1	81.7
Net mill income (gross mill income minus total operating costs)	$m	4.5	8.7	32.6
Replacement value of mill and land	$m	27.3	9.2	46.0
Number of mills	no.	77	20	12

a Estimates based on sawmill survey. Figures in parentheses are RSEs for the estimates. b Sawn timber sales exceed sawn timber production. This is possible where there are significant sales from previous years' stocks. c Includes some receipts for other products sold by the mill, but not produced by the mill. d Operating costs include labour costs, wood purchasing and delivery costs, repairs and maintenance, depreciation and interest payments.

11 Employment in the Western Australian RFA region hardwood sawmilling industry, by size of sawmill log intake, 1995-96 a

	Unit	Sawlog intake < 5000 m³	5000–15000 m³	>15000 m³
Average per mill				
Employment – full time	no.	1.8 (30)	9.6 (12)	64.2 (13)
Employment – other	no.	1.3 (24)	1.2 (43)	1.8 (44)
Total hardwood sawmilling industry				
Employment – full time	no.	139	190	857
Employment – other	no.	104	26	22
Number of mills	no.	77	20	12

a Estimates based on sawmill survey. Figures in parentheses are RSEs for the estimates.

Summary

The bulk of the logs purchased by the Western Australian native hardwood sawmill industry in 1995-96 went to twelve sawmills who had sawlog allocations in excess of 15 000 cubic metres a year. These sawmills, who comprised 11 per cent of total sawmill numbers, purchased 70 per cent of all logs delivered to mills and were responsible for 70 per cent of the gross value of production of the industry.

The sawmills with the lowest log intake (less than 5000 cubic metres a year) had the highest gross receipts per cubic metre of log intake at $213 a cubic metre. The average gross receipts per cubic metre of log intake for the medium sized sawmills (average log intake of between 5000 and 15 000 cubic metres a year) and the large sawmills were $198 a cubic metre and $200 a cubic metre respectively. However, the small mills had the highest average operating costs per cubic metre of log intake. As a result, the average gross operating surplus per cubic metre for the small mills was $43 a cubic metre compared with $64 for the medium sized mills and $57 for the large mills.

Reflecting the commitment to value adding among sawmillers with jarrah log licenses, 52 per cent of all jarrah timber sold was processed beyond the rough sawn stage. Eight per cent of karri sales was sold as seasoned timber. The local market was the major outlet for native hardwood timber, with 79 per cent being directed to this market, 16 per cent going to interstate markets and 5 per cent going to export markets. However, for veneer and seasoned timber, 65 per cent was sold locally, 25 per cent went interstate and 10 per cent went to export markets.

Total employment in the native hardwood sawmill industry was 1338 in 1995-96 (excluding owner operators). Sixty-five per cent of all labor employed were from the twelve largest mills, with 16 per cent from the medium sized mills and 18 per cent from the smallest mills. However, these data tend to understate total labor use in the small mills because owner/operator labor has not been included. The owner/operator labor is a much more important component of total labor use in small mills.

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