

Technical report 189
**Forestry, jobs and spending:
Forest industry employment and
expenditure in Western Australia,
2005–2006**

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Public report

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Executive summary

Western Australia's forest industries are experiencing ongoing change, as is the forest industry across Australia. Factors such as changing technology, expansion of eucalypt plantations, and changed access to native forests are changing the number and types of jobs created by the industry. There is often debate about the impacts of these changes on local regions: which regions depend most on the forest industry? how are changes to the industry affecting these regions?

Robust data on the employment and spending generated by the forest industry in Western Australia (WA) can help inform these discussions. This report details results of a survey of employment and expenditure by the plantation and native forest industries in the southern half of WA, where the majority of forest industry workers are located. The primary aims of the survey were to estimate the number of people who depend directly on the forest industry for employment, and to estimate the spatial distribution of jobs and expenditure.

Data were gathered via a survey of all forest industry businesses engaged in growing and managing native forest and plantations; wood and paper processing; contracting services including harvest and haulage contractors, silvicultural contractors, nurseries supplying seed and seedlings, and consultants providing expert advice; industry representative organisations; and regulatory authorities. The survey did not include firewood cutters and sellers, non-industrial private forest growers (farm foresters), or activities beyond the stage of producing wood and paper products.

The survey was sent to:

- 11 industrial forest growers
- 69 wood and paper processors, operating a total of 73 processing sites
- 238 contractors, consultants and nurseries
- 12 other businesses and organisations involved in representing, advising, or regulating the forest industry.

Overall, 82% of industrial forest growers, 32% of processors, 51% of contractors, consultants and nurseries, and 42% of other organisations completed the survey. Follow-up phone contact provided information from a further 20% of processors.

Table E1 summarises key results of the survey. An estimated 5,570 people were employed in the forest industry on average over 2005–06, with 5,090 full-time equivalent employees. This represented 0.65% of Western Australia's employed labour force in August 2006. Of these, between 47–52% are based in the native forest sector, 35–38% in the plantation sector, and for 13–15% of workers the sector they work in could not be identified, or involved an unspecified mix of plantation and native forest activity.

The majority of forest industry workers live either in the same local government area (LGA) that their place of employment is located in, or an adjacent LGA.

Table E1: Key statistics on employment and spending by the WA forest industry in 2005–06

Employment/spending characteristic	Findings	
Employment in the WA forest industry, 2005–06:	People:	5,570
	Full-time equivalent:	5,090
Proportion of employment in different forest industry sectors:	Industrial forest growers:	3.1%
	Combined growers/processors ¹ :	3.9%
	Processors:	62.7%
	Contractors, consultants and nurseries:	30.3%
Proportion employed in native forest, hardwood plantation and softwood plantation sector:	Native forest:	47–54%
	Hardwood plantation:	19–23%
	Softwood plantation:	24–28%
	Other plantation unspecified:	1–3%
	<i>Note: This assumes survey respondents were not biased towards a particular sector.</i>	
Proportion of forest industry employees working in full-time, part-time and casual positions:	Full-time:	75%
	Part-time:	6%
	Casual:	19%
Staff turnover (voluntary and involuntary):	Average (mean):	17%
Proportion of male and female workers:	Forest industry workforce – male:	81.5%
	WA workforce – male:	54.8%
	Forest industry workforce – female:	18.5%
	WA workers – female:	45.2%
Age of forest industry workers:	Median age group of forestry workers:	35–44
	Median age group of WA workforce:	35–44
	Forest industry workers were younger on average than the WA workforce, with more forest industry workers aged under 45 than were aged under 45 for the total workforce.	
Total expenditure by the forest industry: (a range is given rather than a single figure to reflect uncertainty in the estimate)	Growers & processors:	\$460–660 million
	Contractors, consultants and nurseries:	\$340–410 million
	Total:	\$790–1,060 million
	Note: Figures exclude transfers within the industry	
Location of expenditure: (LGAs refers to local government areas in which business located, or adjacent to business LGA)	Growers:	29% in local & adjacent LGAs
		58% in other WA LGAs
		13% outside WA
	Processors*:	80% in local & adjacent LGAs
		19% in other WA LGAs
		1% outside WA
Contractors:	74% in local & adjacent LGAs	
	23% in other WA LGAs	
	3% outside WA	
*Information is biased towards smaller processors.		

¹Some WA forestry businesses undertake both growing and processing activities. These have been split wherever possible to identify how much employment is generated by growing versus processing. However, in some cases it was not possible to do this; in these cases employment was identified as falling across both sectors.

Forest industry workers often work in several locations during any one year. People working for forest growers spent between 25% and 40% of their time working in LGAs other than the one their office was located in, while employees of processors spent 8%, and contractors and consultants 55% of their work time outside their office LGA. Contractors undertaking harvest and haulage and silvicultural activities spent

the highest proportion of their work time away from their office, with 82% and 64% of work time spent working in LGAs other than where their office was located.

The forest industry has a higher proportion of full-time employment (75%) than the WA workforce as a whole (68.3%), and a lower proportion of part-time and casual employment (25%) than the WA average of 31.7%.

Average staff turnover was 17%. This was slightly lower than the 21.2% of WA workers the Australian Bureau of Statistics (ABS) identified had ceased a job at some point in the 12 months to February 2006. The figures are not directly comparable, however.

Forest industry workers are predominantly male, with 81.5% of all workers male and 18.5% female (compared to 54.8% male and 45.2% female workers in the WA workforce in 2006). Female employees make up a greater proportion of part-time and casual workers than full-time workers.

Forest industry workers are younger than the average for the WA workforce, with a higher proportion of workers aged less than 45 than the WA average and fewer aged 45 years and over. Casual workers are typically younger than full/part-time workers.

Total expenditure by the WA forest industry in 2005–06 is estimated to be between \$790–1,060 million. Of this growers and processors make up \$460–660 million (excluding payments made to contractors and for log/wood inputs) and contractors, consultants and nurseries \$340–410 million.

For growers, 29% of known expenditure took place in local government areas (LGAs) in which the business was based or adjacent to it, 58% in other WA LGAs, and 13% outside WA. Processors indicated a high proportion of local/adjacent LGA spending – 80% – but this figure should be treated with caution as mostly small processors responded to this question, so the data are not representative of larger processors. Contractors and consultants on average undertook 74% of their business expenditure in the LGA their business is located in or those adjacent to it, and 23% in other WA LGAs. Only 3% of expenditure occurred outside WA.

From Table E2 it can be seen that approximately 48% of employment and expenditure by the forest industry occur in the Peel/Perth region. This is largely due to many processors being based in this region. Over one-third of workers are based in the South West, and 15% in the Great Southern. The majority of those working in the native forest sectors are located in the Peel/Perth and South West, while those working in the plantation sector are spread across all regions.

Table E2: Employment by WA region

Region	Estimated total employment in forest industry	% in native forest sector	% in plantation sector	% unknown/mixed sector
Great Southern	844 (15% of total)	3%	96%	1%
Goldfields-Esperance	50 (1% of total)	3%	96%	1%
Peel/Perth	2,684 (48% of total)	35%	41%	24%
South West	2,005 (36% of total)	48%	50%	2%
Wheatbelt	33 (0.5% of total)	20%	80%	

Table E3 summarises the total number of forestry businesses and forest industry employees in different LGAs, as well as the overall proportion of the workforce employed in the forest industry. The local government areas with the highest proportion of their workforce employed in the forest industry are Nannup (18%), Manjimup (13.6%), Plantagenet/Denmark (8.4%), Bridgetown-Greenbushes (7.9%), Dardanup and Donnybrook-Balingup (6.0%), and Albany (4.3%). In other LGAs, less than 4% of the workforce was employed in the forest industry in 2005–06.

Table E3: WA forest industry employment by local government area, 2005–06

Local government area/s	Number of forest industry businesses located in LGAs	Est. forest industry employees in LGA (persons)	% of LGAs workforce employed in forest industry
Albany	75	526 people	4.3%
Augusta-Margaret River	13	50 people	1.1%
Boddington, Murray, Waroona	6	27 people	0.4%
Boyup Brook	7	7 people	1.0%
Bridgetown-Greenbushes	12	120 people	7.9%
Bunbury	34	625 people	3.3%
Busselton, Capel	13	83 people	0.7%
Collie	14	120 people	2.7%
Cranbrook, Kojonup, Katanning	8	15 people	0.4%
Dardanup, Donnybrook-Balingup	10	218 people	6.0%
Esperance, Ravensthorpe	14	45 people	0.6%
Harvey	5	159 people	3.4%
Manjimup	52	542 people	13.6%
Nannup	5	81 people	18.2%
Perth, Fremantle	53	1,309 people	0.2%
Plantagenet, Denmark	19	303 people	8.4%
Other LGAs in study region	6	18 people	0.1%

The *Forest Industry Survey* estimate of 5,570 people employed in the forest industry is slightly higher than the ABS estimate of 5,552 people for the same time period, for two reasons. Many contractors included in the *Forest Industry Survey* are not classified as being in the forest industry by the ABS, increasing *Forest Industry Survey* estimates compared to the ABS; however, the ABS estimated more people to be employed in wood and paper processing than the *Forest Industry Survey*.

The *Forest Industry Survey* estimate is lower than the 14,012 estimated by FAFPESC in 2002-03 (FAFPESC 2004), because FAFPESC: (a) had a broader definition of the forest industry which included many types of businesses – such as retail sellers of wood products – not included in the *Forest Industry Survey*; (b) used a direct ratio approach to estimating total employment which may have overestimated employment, and (c) was undertaken in 2002–03 when employment in the forest industry was likely to be up to 8% higher, and are figures for all of WA, rather than southern WA. The *Forest Industry Survey* estimates are based on a robust methodology for estimating total employment from the survey responses received.

The *Forest Industry Survey* has only been undertaken once, and so does not provide a measure of how employment in the forest industry has changed over time. The only source of data on forest industry employment over time is the Australian Bureau of Statistics (ABS) *Census of Population and Housing*. Overall, ABS data indicate that employment in the growing, harvest and haulage, and processing sectors fell 8.5% over 2001–06. This is largely the result of a decrease in native forest-based employment, as government policies implemented during this period reduced forest industry access to publicly owned native forest areas. During this same period, the employment based on the hardwood (blue gum) plantation resource grew substantially in the Great Southern region, with data from a previous study by Schirmer *et al.* (2005) together with the data provided in this report indicating that forest industry employment in this region, which is largely dependent on hardwood plantations, grew 55% between 2001–02 and 2005–06, from 263 to 844 people.

This survey provides data for a single point in time. A second survey of the forest industry is planned for late 2008, and a further survey in 2010. These will enable improved identification of changes in forest industry employment and spending over time.

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Introduction

Western Australia's forest industries are experiencing ongoing change. Factors such as changing technology, expansion of eucalypt plantations, and changed access to native forests are changing the number and types of jobs created by the industry. There is often debate about the impacts of these changes on local regions: which regions depend most on the forest industry? how are changes to the industry affecting these regions?

Robust data on the employment and spending generated by the forest industry in Western Australia (WA) can help inform these discussions, by helping answer questions such as:

- How many new jobs are generated by expansion of the plantation industry?
- Where are forest industry jobs located?
- If commercial harvest is reduced in native forests, what are the implications for jobs and spending in local and regional economies?

While these questions appear relatively simple to answer, completing claims about employment and spending by forest industries are common. Current data on employment and spending by Australia's forest industries is limited, and often doesn't allow important questions about the forest industry to be answered.

This report details the results of a survey of employment and expenditure by the plantation and native forest industries of the southern half of WA, undertaken in 2006. The *Forest Industry Survey* was designed to gather information that can answer commonly asked questions about forest industry employment and spending. The survey will be repeated in 2008, 2010 and 2012, to provide time series data on employment and spending in the forest industry over time.

The aim of the survey was twofold:

- to estimate the number of people who depend directly on the forest industry for employment, and the spatial distribution of jobs and expenditure
- to develop improved methodology for estimating employment.

This report details the type of information needed on employment and spending, methods used, survey frame and response rate, and results of the survey.

Information needs and availability

What information is needed on forest industry employment and spending?

The information needed about forest industry employment and spending was identified through:

- undertaking a series of discussion groups in WA in November–December 2006
- review of literature on social and economic impacts of forestry.

Discussion groups were held in Kojonup, Manjimup, Moora, Esperance, Mt Barker, Margaret River, Boyup Brook and Harve, with a further two interviews conducted more spontaneously in Greenbushes and Porongurup. A total of 56 people participated. At each discussion group, participants were asked to discuss the social and economic changes they had observed occurring in their region, focusing particularly on land use change, the impacts of different types of forestry, and what they valued about living in the region. Participants' statements about issues related to forest industry jobs and spending, and overall economic and social impacts of forestry-related activities, were analysed to identify what types of information are needed on forestry employment and spending.

Similarly, the review of literature involved review of several recent key studies which examined social and economic impacts of the forest industry in Australia¹. The review focused on identifying common perceptions and common questions asked about forestry employment and spending.

The results of the discussion groups and literature review indicate that the following questions are commonly asked about forest industry employment and spending:

- How many jobs are generated by the forest industry, and how is this changing over time?
- How many jobs does the plantation industry generate compared to alternative rural land uses?
- Where are forestry jobs located – in local towns or regional centres?
- Where does the spending of the forest industry go – in particular, how much spending occurs in different local government areas?
- How dependent are different local regions on the forest industry?
- How many jobs are generated by the native forest versus the plantation sector of the forest industry?
- What types of jobs are generated by the forest industry – eg how many are full-time versus part-time or casual?

¹ The following reports were reviewed: Barlow and Cocklin (2003), CIE 2005, CFPLM 1989, Dwyer Leslie and Powell (1995), Hayter (2003), Kelly and Lymon (2000), Lane (1997), Margules Groome Poyry (1995), MBAC Consulting (2005a,b), Petheram *et al.* (2000), Pickworth (2005), Prospect Consulting (2002), Schirmer (2002), Schirmer *et al.* (2005a,b), Spencer and Jellinek (1995), SPIS (1990), Tonts and Black (2003), Tonts *et al.* (2001), URS Forestry (2003, 2004).

These questions require robust time series data on forest industry employment and spending at the local scale. However, as the following section explains, currently available data do not provide answers to many of the questions listed above.

What information is currently available on forest industry employment and spending?

Data on forest industry employment and spending are currently available from the following sources:

- Australian Bureau of Statistics
- ABARE *Forest and Wood Products Statistics*
- ‘one-off’ studies of employment and spending, including several recent surveys of forestry employment in defined regions within Australia, and the FAFPESC national survey of forestry employment in 2002–03 (FAFPESC 2004).

These different sources of information all have limitations, and none answer all the questions listed on the previous page. Most do not differentiate between the native forest and plantation sectors, many do not accurately reflect the total employment in the contracting sector and, other than ABS data, no consistent time series data are currently produced.

Each source of data is described briefly below, focusing on the nature of the information produced and its limitations.

Australian Bureau of Statistics

The most detailed time series data on forest industry employment currently available are collected by the Australian Bureau of Statistics (ABS). Every five years, the ABS undertakes the *Census of Population and Housing* (CPH). The CPH includes collection of data on employment by industry and occupation.

Data from the CPH are published to a small scale, with forest industry employment data available for individual local government areas. However, ABS data do not differentiate between the plantation and native forest sectors, and many contractors who depend on the forest industry for a living are not included in the forestry classification, instead being classified as belonging to other industries such as the transport industry.

Data on wood and paper products manufacturing are also collected by the ABS through its *Manufacturing Survey*. These are produced to a regional scale every five years, but data are not produced at the local government area scale.

In August 2006, the ABS *CPH* identified that in southern WA:

- 842 people were employed in forestry and logging activities (this includes those who harvest trees but not those who transport logs to mills), while a total of 892 people were employed in forestry and logging across all of WA
- 4,461 people were employed in wood and paper manufacturing, and 4,499 across all of WA
- 249 people were employed in providing services to forestry across all of WA, with almost all of these employed in southern WA.

The latter category is defined as including people who are ‘mainly engaged in providing support services to forestry. Services include silvicultural services, such as planting, pruning and thinning trees, forest reforestation, forest plantation conservation or maintenance’. It excludes wild animal and aerial pest control and forest fire fighting services, and excludes those consultants or contractors who supply services to both the forest and other industries. There is high potential for some forestry contractors who are defined as included in this category to be left out, as many operate across more than one industry, or may not be identified as undertaking the services defined as included in the category. It is therefore highly likely to underestimate total employment in ‘services to forestry’. In addition, log transport haulage businesses are classified in the road freight transport industry, and are not included in ABS estimates of forest industry related employment.

It can be seen that, based on ABS estimates, over 98% of forest industry employment in WA is based in the study region surveyed for this report.

Table 1 compares ABS estimates of employment in forestry and logging, and wood and paper product manufacturing, in 2001 and 2006.

Table 1: ABS forest industry employment figures for Western Australia, 2001 and 2006

Forestry sector	Number of people employed in Western Australia	
	2001	2006
Forestry and logging	1,457 people	892 people
Wood and paper product manufacturing	4,432 people	4,499 people

Data source: ABS *Census of Population and Housing*, 2001, 2006

Based on ABS data, it appears that employment in the forestry and logging sector fell substantially over 2001 to 2006, while employment in wood and paper product manufacturing increased slightly.

ABARE Forest and Wood Product Statistics

The Australian Bureau of Agricultural and Resource Economics (ABARE) produces the quarterly report *Forest and Wood Product Statistics* (FWPS). The FWPS includes data on:

- total employment in forestry at national and State scale, drawing on data from the ABS supplemented by information from State agencies
- volume and value of forest products at national and State scale.

Some distinction is made between the native forest and plantation industries in the data produced. The key limitation of the data in answering the questions identified earlier is that ABARE produce data to the State scale, and not at the smaller scales necessary to answer many questions commonly asked about forest industry employment and spending.

'One-off' studies

Various 'one-off' studies have studied employment in plantation and native forestry in recent years (see for example FAFPESC 2004, MBAC Consulting 2005a,b; Petheram *et al.* 2000; Prospect Consulting 2002; Schirmer *et al.* 2005a,b; URS Forestry 2003, 2004).

The data produced in these studies have varied. Some have distinguished between the native forest and plantation sectors, while others have not; some have included data on expenditure or gross value of production, while others have not. The methods used to estimate employment and spending have varied.

As these studies have all been undertaken only once, they do not provide a useful basis for understanding how forest industries are changing over time.

The most commonly cited 'one-off' study in recent years has been the estimates of employment generated by the Forestry and Forest Products Employment and Skills Company (FAFPESC) based on a survey of forest industry businesses across Australia in 2002–03 (FAFPESC 2004). FAFPESC did not differentiate between the plantation and native forest sectors, and produced data primarily at the State scale, although it was possible to estimate employment for smaller regions within each State.

FAFPESC estimated that 14,012 people were employed in the WA forest industry in 2002–03. This estimate is considerably higher than ABS *CPH* estimates in either 2001 or 2006, with the total of 5,640 people reported by ABS in 2006 equating to just 40% of the total number of people estimated by FAFPESC. The reasons for these differences are investigated in the discussion section of this report.

Conclusions: need for a new survey

The review of information needs and availability highlighted that currently available information is not sufficient to answer many commonly asked questions about forest industry employment and spending. In particular, currently available data do not provide robust data on employment in the native forest versus plantation sectors, often underestimate employment in the contracting sector, and rarely provide information on employment at the local scale.

There is therefore a need for a survey which addresses these information gaps, and uses a consistent and replicable approach to surveying the industry. The next section describes the methods used to undertake the *Forest Industry Survey*.

Methods

The *Forest Industry Survey* gathered data using a mail questionnaire sent to all businesses directly dependent on the forest industry in the southern half of WA. The study region is outlined below, followed by a brief description of the methods used for the survey. A detailed description of methods is provided in Appendix 1, and copies of the questionnaires are provided in Appendix 2.

Study region

This study reports on forest industry employment and spending in the region shown in Figure 1, and in the Shire of Esperance (Esperance is not shown in Figure 1, and is located adjacent to Ravensthorpe on its eastern boundary).

This study region was chosen in consultation with forest industry representatives, as it includes the majority of the forest industry in WA, with the exception of the sandalwood industry operating in parts of northern WA, and some smaller-scale farm forestry occurring in areas outside the study region. It includes the region in which blue gum (*Eucalyptus globulus*) plantation expansion has occurred in recent years, and in which the majority of WA's softwood plantations are located, as well as the region in which most commercial native forest logging occurs.

Throughout the report, the study region is referred to as 'southern WA'.

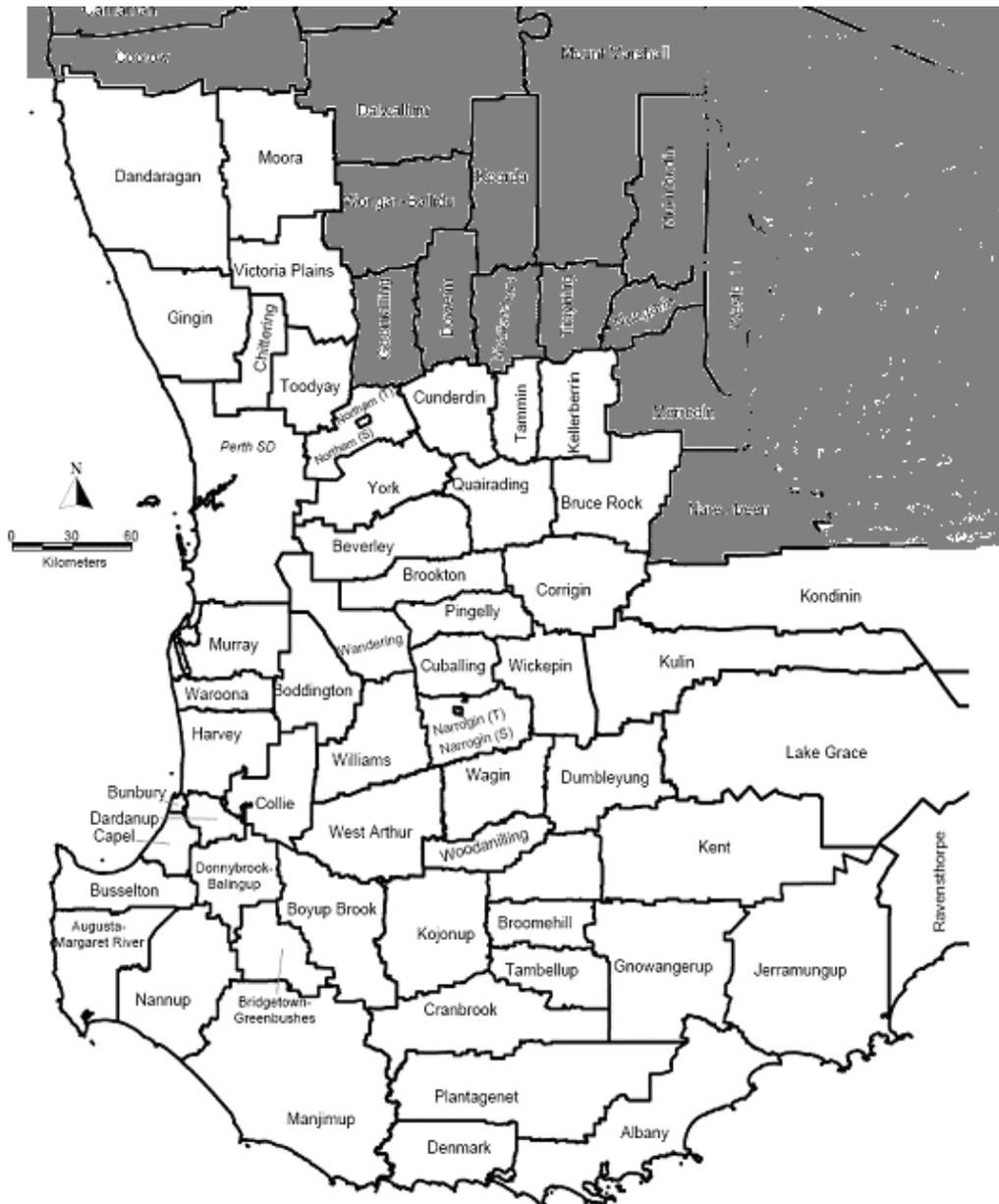


Figure 1: Region included in the survey, showing all regions surveyed except Esperance

Questionnaire design

The questionnaire needed to gather data that could answer the questions identified in the ‘information needs and availability’ section of this report. Questions were designed to do this, and were pre-tested and revised before the survey was distributed, to ensure that questions could be easily answered by different types of forest industry businesses. Two surveys were designed with slightly different questions: one for forest industry growers and processors, and one for contractors and consultants.

The final questionnaires included questions on the following topics:

- location and nature of business, including the type and extent of forest industry related work undertaken during financial year 2005–06
- number of people the business employed during 2005–06 by employment status (full-time, part-time, casual), type of work undertaken (e.g. harvesting, administration, plantation management), and turnover in employment
- demographic characteristics of employees, including gender, age and qualifications
- local government area in which forest industry workers live and work
- total capital value, debt, revenue and expenditure by the business in 2005–06, and expenditure by category. More categories were included for growers/processors, to ensure double counting could be excluded when summing expenditure through the chain of production
- expenditure by local government area.

See Appendix 2 for copies of the questionnaires.

Who was included in the survey?

The goal of this study is to identify the extent of direct livelihood dependence on the forest industry. It was therefore important to include all businesses which depend on the forest industry for their livelihood. A restricted definition of dependence was utilised, in which those directly dependent on the forest industry were defined as *all employees of any business undertaking activities specific to the forest industry*. Under this definition, the following groups were included in the sample:

- ‘growers’ – industrial forest growers who manage native forest or plantations for wood production
- ‘processors’ – processing facilities which process logs into wood products and secondary products. Direct dependence ends where wood products are mixed with other materials such as plastics and cloth in the process of making end products
- ‘harvest and haulage contractors’ – businesses which harvest and transport logs to processors
- ‘nurseries and seed/seedling suppliers’ – nurseries growing seedlings for planting in commercial forestry activities and seed collectors
- ‘silvicultural and roading contractors’ – businesses who prepare ground for planting, plant seedlings, undertake infill planting, and undertake other silvicultural activities, and businesses which maintain, build, and upgrade/rehabilitate roads for forestry purposes
- ‘others’ – other businesses dependent on the forest industry including industry lobby groups, associations, government regulators who have staff whose job is to oversee and regulate industry, and researchers focussed full-time on forestry research.

All businesses that fell within the groups listed above were identified and were sent surveys. The census frame was developed through extensive consultation and research

to identify a comprehensive list of WA forest industry businesses falling into the categories listed above.

Businesses *not* included in the survey were:

- contractors who provided services not specific to the forest industry
- processors who utilise wood and paper products to make products for a purpose other than wood and paper production: eg businesses that use paper to print newspapers were not included, as the primary purpose is producing newspapers, not paper products
- activities beyond ‘mill door’ – including transport of finished products to market, except where that market involves another stage in wood or paper processing.

Some types of business eligible to be included could not be surveyed. These were:

- non-industrial private forest (NIPF) growers – defined as small growers establishing and managing trees for commercial wood production as an owner-operator enterprise. It was not possible to identify a large number of NIPFs, and the resources available for the survey did not enable these growers to be surveyed
- firewood cutters – while this is an important sector, it is very difficult to survey, and practical difficulties and funding constraints meant only a small number were surveyed, and most of these also undertook other types of wood processing
- wooden structural component manufacturing – this type of wood manufacturing, in which wood products are used to construct wooden structural components such as wooden joinery for kitchens, doors, and other housing wooden components, is undertaken by a number of businesses principally centred in and around Perth. It was difficult to identify all the businesses involved in this sector and survey resources did not permit this sector to be adequately surveyed. Because of this, ABS data are used for this sector, and always presented separately in the report with clear labelling to identify that the data came from a different source to the survey being reported here

The census frame successfully identified all industrial growers and processors, and the large majority (90%+) of contractors operating in the plantation sector. However, it is likely to have undercounted native forest contracting businesses, as it was more difficult to identify these businesses compared to others. Based on analysing total expenditure on contracting reported by growers and processors operating in the native forest sector, it is estimated that the sample frame excluded a maximum of 20% of native forest contractors.

Survey delivery

The *Forest Industry Survey* questionnaire was delivered by mail, with a range of methods used to increase response rate (described in Appendix 1). These broadly followed the ‘Dillman’ approach (Dillman 2007). After poor response from contractors, a shorter version of the contractor survey (the ‘mini’ survey) was developed and distributed, and successfully encouraged higher response. One grower and a number of processors who did not respond to the original survey were followed up by phone to identify the total number of people they employed in 2006.

Estimating total employment

As a 100% response rate was not achieved from all types of forest industry business, it was necessary to develop appropriate methods for estimating total employment in the forest industry based on the survey responses received. The methods used are described throughout the results as estimates are reported, and in Appendix 1.

Terminology used to refer to the forest industry

Throughout this report, the forest industry is analysed both as a whole, and by individual sector. When looking at forest industry sectors, two classifications are used.

The first splits the industry into sectors based on the type of work undertaken. Data are reported for:

- growers
- processors
- ‘growers and processors’ – While in most cases it was possible to identify how many employees worked in growing and how many in processing for businesses which undertake both activities, in some cases it was not. This category reports data where it was not possible to identify what proportion of workers in a business were ‘growers’ and which ‘processors’
- contractors and others, split into:
 - silvicultural contractors
 - harvest and haulage contractors
 - nurseries and seed/seedling suppliers
 - consultants/expert advice
 - industry representation.

The second splits the industry into sectors based on the type of trees being managed, with the following sectors reported on separately:

- native forestry
- plantations, split where possible into:
 - hardwood plantations (usually *E. globulus*)
 - softwood plantations (usually *Pinus radiata* or *P. pinaster*).

Western Australian regions referred to in this report

This report provides information on forest industry employment for the following regions:

- southern WA: all types of data are reported for the study region as a whole
- NRM regions: some data are reported separately for the following regions: the Great Southern, South West, Goldfields-Esperance, and Peel/Perth region. See Appendix 3 for definitions of which local government areas surveyed are located in each of these regions
- local government areas: where possible, data are provided by local government area (LGA). However, small numbers of survey respondents in some LGAs meant it was not possible to report information for each individual LGA. The LGAs/LGA groups for which data are reported are:
 - Albany
 - Augusta-Margaret River
 - Boddington, Murray & Waroona
 - Boyup Brook
 - Bridgetown-Greenbushes
 - Bunbury
 - Busselton and Capel
 - Collie
 - Cranbrook, Kojonup and Katanning
 - Cuballing, Gingin, Moora, Narrogin, Wagin and York
 - Dardanup and Donnybrook-Balingup
 - Esperance
 - Harvey
 - Manjimup
 - Nannup
 - Perth, Fremantle and surrounds
 - Plantagenet and Denmark
 - Outside WA.

Figure 1 showed the WA LGAs included in the study region, and can be used to identify the locations of the different LGAs/LGA groups.

In addition, some employment and spending occurred outside WA. This is referred to as ‘Other Australia’.

How many WA forest industry businesses are there?

This section describes the number of businesses operating in the WA forest industry in 2006, representing the census frame for the survey. Table 2 summarises the number of forestry businesses identified as operating in WA in August 2006, and key characteristics of these businesses.

The following businesses made up the census frame:

To identify a sample frame for the survey, a detailed list of WA forest industry-dependent businesses was developed, as described in the methods section. This section describes what is known about the industry as a whole, and the robustness of the sample frame developed – in other words, the extent to which it is possible to be confident that all forestry businesses were identified for the survey.

Table 2 summarises the number of forestry businesses identified as operating in WA in August 2006, and what is known about characteristics of these businesses. The following are important to note about this sample frame:

- **How many businesses operate in the forest industry?**
 - **11 industrial forest growers (plantation and native forest managers):** Seven large and medium-sized industrial forest growing businesses were identified who operate as a formal business, and four small businesses. Of the seven larger growers, five are also processors, with most managing woodchip mills processing plantation timber from their estate; six grow plantations and do not manage native forest estate for harvest.
 - **Many non-industrial private forest growers:** Small private growers of native forests and plantations were not specifically sampled in the survey, as it is difficult to identify a useful sample of small growers. A total of nine were sent surveys, however, in an attempt to gather some information about the employment generated by a typical small grower.
 - **69 processors and exporters:** A total of 59 processors and exporters undertaking sawmilling, post and pole production, moulding, woodchipping, paperboard/container production, woodchip export and log export were identified. In addition, 10 businesses undertaking a combination of firewood and fence post production were identified. There would be many more firewood producers in WA than those identified but it was not possible to accurately estimate the total number of firewood producers and no attempt was made to do so, as the survey did not aim to include all firewood production. Of the 69 processors and exporters identified, three focussed solely on export of logs or woodchips, 46 operated solely in the native forest sector, three in the softwood sector, five processed blue gum plantation logs, and two used either a mix of plantation and native forest timber, or other sources such as recycled wood fibre. The source of inputs for the remaining 10 small processors is unknown but most likely to be native forest, as these remaining businesses were all small businesses producing products typically using native forest timber.

- **Wooden structural component manufacturing:** In addition to the processors identified above, a number of firms undertake wooden structural component manufacturing.
- **238 contractors and consultants:** 281 contracting and consulting businesses were identified in the initial sample frame. However, several businesses operated under multiple names, no longer operated in the forest sector, or had been mistakenly identified as operating in the forest sector. After these were taken into account, the sample frame was reduced to 238. It is likely that this sample frame included almost all contractors working in the plantation sector, as all major plantation growing and harvesting firms provided lists of contractors they had utilised during 2005–06. The sample frame is likely to underestimate contractors working in the native forest sector (with up to 20% of native forest contractors excluded), as some organisations did not provide any information on contractors they had utilised during 2005–06, and not all contractors list their businesses in public directories.
- **10 others:** Other organisations with employees dependent on the forestry sector included forest industry representative bodies, including those representing workers, government regulatory and policy departments/agencies, and research groups. 10 of these were identified.
- **How many work in the native forest and plantation sectors?**
 - **Industrial growers:** Of the seven large growers, six grow plantations and do not manage native forest estate for harvest and one manages native forest. The four small industrial growers all grow plantation forest.
 - **Non-industrial private forest growers (NIPFs):** It was not possible to estimate what proportion of NIPFs manage native forest and/or plantations.
 - **Processors and exporters:** Of the 69 processors and exporters identified:
 - three processed softwood plantation sourced timber
 - five processed blue gum plantation sourced timber
 - 46 processed native forest timber (of these, 28 produced sawlogs/featurewood and other solidwood products; two harvested native forest burls for craftwood; ten produced fence posts, and often also firewood. The products produced by the remaining ten were not identified.)
 - three exported logs from plantation and native forest sources
 - two processors used both plantation and native forest inputs, or a combination of inputs including recycled fibre
 - the source of inputs was unknown for the remaining ten processors, but most are likely to utilise native forest timber.

Overall, when analysing processors by business size:

- of plantation processors, 30% were small, 40% medium and 30% large businesses, with all large businesses processing softwood
 - of native forest processors, 78.3% were small, 17.4% medium and 4.3% large businesses
 - of those processors whose wood sources were unknown or were known to come from a mix of native forest and plantation sources, 62.5% were small, 25% medium and 12.5% large businesses. In general, plantation-based processors tend to be larger businesses than most native forest processors, while small processors are concentrated in the native forest sector.
- **Contractors and consultants:** It was not possible to identify definitively how many contractors work in the native forest and plantation sectors. Instead, this was determined by examining the characteristics of businesses that responded to the survey, and through a small random sample of 20 non-responding businesses to check for sample bias. The small random sample and survey responses were very similar. Approximately 10% of respondents worked exclusively in the native forest sector; 20% in both the plantation and native forest sectors, and 70% in the plantation sector. This distribution likely reflects lack of identification of some native forest contractors in the process of identifying contractors. Because of this, expenditure on contracting firms by growers and processors was analysed to estimate likely distribution of contractors. This analysis confirmed that around 10% of contractors are likely to work in the native forest sector; this is likely to be the result of a rapid decrease over recent years, as a result of changes in policy regarding access to native forest resources by the forest industry.
- **Others:** The other organisations identified all worked across both the native forest and plantation sectors, although five worked primarily in the plantation sector.
- **How accurate is the sample frame?**
 - **Industrial growers:** Very accurate. All industrial growers were identified.
 - **Processors:** Very accurate for plantation processors, with all processors identified. Highly accurate for native forest processors, although it is possible that some small processors who undertake secondary processing were not identified.
 - **Contractors and consultants:** The sample frame for contractors and consultants was more difficult to generate than for other sectors. It is likely to be accurate to within $\pm 5\%$ for the plantation sector, as all large plantation growers and processors provided lists of contractors utilised during 2005–06 on which to base the survey. It is likely to undercount native forest-based contractors by up to 20%, however, as fewer businesses utilising these contractors provided lists of contractors.
 - **Others:** Very accurate.

Table 2: Estimated size of the forest industry in Western Australia in August 2006, excluding non-industrial forest growers and small firewood cutters and sellers

Type of business	Total Number of businesses (number of office/site locations)	What percentage operate in the plantation sector? ³	What percentage operate in the native forest sector	Size of business ⁴ Small <20 employees Med 20–99 employees Large 100+ employees
Industrial grower ¹ Defined as a business involving in growing plantations and managing native forest.	11 businesses with a total of 27 office/site locations	100%	9%	Small: 45.5% Med: 45.5% Large: 9.1%
Processor ² Business undertaking processing including seasoning, drying, sawing, woodchipping, pulp and paper production	69 businesses with a total of 73 office/site locations	16%, operating 15% of sites	84%, operating 85% of sites	Small: 71.0% Med: 20.3% Large: 8.7%
Contractors & consultants Business undertaking contracting and consulting activities involving forestry-specific activities, up to mill door	238 + unknown number of additional native forest sector businesses, with up to 40 further businesses possible. <i>(It was not possible to estimate number of office/site locations)</i>	88%	Unknown	Small: 90.5% Med: 8.5-9% Large: 0.5-1% <i>[Based on characteristics of survey respondents, consultation with industry experts]</i>
Other Industry representative groups, regulatory authorities, research groups	12 businesses with a total of 12 office/site locations	100%	100%	Small: 83.3% Med: 8.3% Large: 8.3%
Total	330 businesses, organisations and government agencies			

¹ Does not include non-industrial private forest growers. Three growers also process and are included in processor category as well.

² Some processing businesses operate more than one facility, so total number of processing plants (given in brackets) is higher.

³ All industrial growers managed plantations; some also managed native forest. Therefore 100% of growers are plantation growers, and 29% native forest growers.

⁴ Businesses were identified as small, medium or large based on the number of employees undertaking forestry-related activities. Some large businesses have only a small proportion of forestry-related activity, and have been classed as ‘small’ businesses as they have less than 20 employees undertaking work dependent on WA forests and plantations.

Survey response rate

This section details response rates to the survey. Response rates are analysed in several important ways, with response rate analysed by:

- forest industry sector (native forest, plantation)
- business size
- location
- question.

A more detailed description of response rates, including tables showing response rate by specific sector, location and question, is provided in Appendix 1.

Overall response rate

Overall, 46% of the businesses and organisations surveyed responded to the survey. Response rates varied by sector, with growers more likely to respond than other groups. Response rates also varied by business size, with large and medium businesses more likely than small businesses to respond in the growing and contracting sectors, while in the processing sector there was equal non-response from businesses of all sizes.

Response rate by sector and business size

Businesses were classified into the growing, processing and contracting sectors, and into small, medium and large businesses, defined as:

- small businesses: 1–19 employees (includes owner-operator enterprises)
- medium businesses: 20–99 employees
- large businesses: 100+ employees (ABS 2007, Australian Chamber of Commerce and Industry 2007).

Response rates from different sectors are detailed below:

- Industrial growers: 100% of large growers returned surveys, and two of the four smaller industrial growers. The responses included 93% of office locations of plantation growers, a useful measure of the total coverage of the plantation sector. Basic information was accessed about the remaining two growers, enabling estimation of employment for all industrial growers.
- Four of nine NIPFs (44%) returned surveys. All NIPFs were small businesses, and usually involved an owner-operator only.
- Processors: Overall, 32% responded to the survey, with much higher response from plantation processors (78%) than native forest processors (30%). All hardwood plantation processors responded, and 33% of softwood processors. Information was able to be obtained for the remaining softwood processors via phone and publicly available information, enabling accurate estimation of employment for all plantation processors. Within the native forest sector, 33% of small native forest processors, 13% of medium-size processors, and 50% of large processors responded to the survey. It was possible to estimate total employment for all large and some medium-sized native forest processors using publicly

available information; estimates of business size were made for all remaining non-responding processors with the assistance of informed industry members with good knowledge of the processing sector.

- Contractors and consultants: 51% overall response rate. This comprised an initial 30.3% response rate to the full-length survey, with another 21% responding to the shorter ‘mini survey’ sent to encourage further response. Of the respondents, 90.5% had small businesses, 9% medium and 1% large businesses. A small random survey by phone of 20 non-respondent businesses indicated this is representative of the structure of the contracting sector overall. Approximately 10% of respondents worked exclusively in the native forest sector; 20% in both the plantation and native forest sectors, and 70% in the plantation sector.
- Others dependent on the forest industry: 42% response rate.

Overall, the survey achieved a very high response from growers and plantation processors, a good response rate from contracting businesses, and a low response rate from native forest-based processors.

A very high response rate was achieved from the plantation sector, enabling estimation of total employment in this sector with a high degree of accuracy.

This means it is possible to estimate total employment in the plantation based on the data received. If some large growers and processors had not responded to the survey, extrapolating the data to the whole of the industry would not have been possible.

The greatest caution is needed when using data on native forest processing and contracting to infer total employment in this sector. For this reason, a range of estimates are given when estimating total employment in native forestry, reflecting the uncertainty of the data that results from having less information about the overall nature of this sector.

Response rate by location

Appendix 1 provides a detailed table of response rates by location. Overall, the response rate from businesses in individual LGAs ranged from 17% to 77%, with response rate for most LGAs between 30% and 60%.

Response rate to survey questions

The response rate to individual questions varied (see Appendix 1). Questions which achieved a very high response rate were:

- total employment over 2005–06 and in August 2006
- percentage of activities in native forest, hardwood plantation and softwood plantation sectors
- number of people employed by forest industry sector
- gender of employees
- area in which people live and work
- age groups of workers
- staff turnover
- total business expenditure.

High valid response rates to the above categories of questions means it is possible to report with a high degree of confidence on characteristics of the WA forest industry relating to these aspects of employment in 2006.

Questions which achieved a lower response rate were:

- Indigenous employees – many businesses found it difficult to answer this question, and the responses were not robust enough to analyse and present data in this report
- qualifications – low response rates and lack of knowledge about qualifications of staff mean that the responses to this question could not be analysed
- information about business activity, value and expenditure – response rates varied but were generally low, so that only limited analysis of data was possible. The data can be analysed to provide typical profiles of spending and business activity, but not estimates for the industry as a whole.
- expenditure by location – the response rate to this question was very low from growers and processors, but high from contractors, consultants and other organisations. Limited analysis of responses was possible.

Results

Results of the survey are reported in the following sections:

- Employment:
 - How many people depend on the southern WA forest industry for a living?
 - Where do employees live and work?
 - Where do people employed in the forest industry live?
 - Where do people employed in the forest industry work?
 - Employment by region
 - Characteristics of forest industry employees:
 - full-time, part-time and casual employment
 - staff turnover
 - gender
 - age distribution.
- Expenditure:
 - estimated total expenditure by the forest industry
 - expenditure by business type
 - location of expenditure.

Employment: how many people depend on the WA forest industry for a living?

An estimated 5,570² people were employed during 2005–06 in the southern WA forest industry. Table 3 summarises:

- estimated total persons employed in the industry (including all part-time and casual workers)
- estimated full-time equivalent³ employment for (a) 2005–06 financial year (average of minimum and maximum number of employees), and (b) August 2006.

Table 3: Estimated employment in the southern WA forest industry, 2005–06 and August 2006

Estimated total employment in the WA forest industry in 2005-06	Persons employed – 2005–06 average	Full-time equivalent employees – 2005–06 average	Full-time equivalent employees – August 2006
Industrial growers (excluding combined grower/processors)	172	131	146
Processors and exporters (excluding combined grower/processors)	2,145 (±5%) (range of 2,038–2,252)	2,080 (±5%) (range of 1,976–2,184)	2,080 (±5%) (range of 1,976–2,184)
Combined grower & processor (for businesses where employment could not be separated into the two sectors)	218	215	240
Wooden structural component manufacturing (ABS data, August 2006)	1,348 (Aug 2006)	1,307 (est.)	1,307 (est.)
Silviculture & roading contractors	415 (±5%)	305 (±5%)	346 (±5%)
Nursery & seed/seedling suppliers	254 (±5%)	144 (±5%)	150 (±5%)
Harvest & haulage contractors (includes haulage to mill only; also include contractors undertaking in-field chipping)	966 (±5%)	855 (±5%)	877 (±5%)
Other (including industry representation, regulation; likely an underestimate)	24 (+5–10%)	24 (+5–10%)	24 (+5–10%)
Contractors providing expert advice/consultancy (Likely an underestimate as few consultants based outside WA but working within WA included in responses)	28 (+5–10%)	28 (+5–10%)	27(+5–10%)
Total	5,570	5,089	5,197

² All estimates have been rounded to the nearest 10. While some estimates are presented with a range of estimates in Table 2, to reflect uncertainty due to not achieving 100% response to the survey, the figures quoted in the text use the ‘midpoint’ estimate.

³ Full-time equivalent employment refers to the total number of people who would work in the industry if all worked full-time. A person who works part-time is counted as a proportion of a full-time equivalent – for example, if a person works 2 days a week, they are counted as 0.4 full-time equivalent.

The 5,570 people estimated employed in the forest industry represented 0.65% of southern WA's employed labour force in August 2006⁴. When part-time and casual workers were taken into account, this equated to 5,090 full-time equivalent workers on average during 2005–06. In August 2006, a total of 5,197 full-time equivalent employees are estimated to have worked in the industry.

The largest sector of the industry is processing, employing over 3,500 people once combined growers/processors and wooden structural component manufacturing are taken into account, and using the midpoint of the estimated range of employment. This is followed by harvest and haulage contractors – over 950 people employed – and silvicultural and roading contractors. Industrial forest growers and those who combined growing and processing employed a total of 390 people.

These figures do not include non-industrial private forest growers (NIPFs). Of the four who responded to the survey, three indicated that the business involved a proportion of a single person's work time, while one indicated that a single person worked full-time in the business. Two indicated they engaged contractors to undertake work in their farm forest, and two did not provide any information on this. Unfortunately it is not possible to identify the extent of employment generated by NIPFs; however, the survey did include many of the contractors that would be engaged by NIPFs to undertake work in their farm forests.

The methodology used to estimate employment is detailed in the data analysis notes⁵

⁴ In August 2006, the LGAs included in the study region (referred to as 'southern WA') had a total employed labour force of 850,780 (Source: ABS 2006 *Census of Population and Housing*).

⁵ Data analysis notes:

a. All data reflect the number of employees reported to work in the forest industry and do not include employees whose work was not directly related to the growing, harvest, transport and processing of products from native forests and plantation forests. Where only a part of a business's activities took place in the forest industry, respondents were asked to indicate what proportion of their activities were dependent on the forest industry in 2005–06. This proportion was used to estimate the number of employees dependent on the forest industry, avoiding overestimation of forest industry employment.

b. Average figures are the average of data on minimum and maximum number of people employed during 2005–06.

c. A small proportion of respondents (approx. 15%) did not provide data on FTE employees as well as number of persons employed. Full-time equivalent numbers were estimated for businesses which did not answer questions about FTE, but did supply data on the total number of people employed. Estimates were based on data supplied on number of part-time and casual employees, with part-time employees working an average of 7.7 months per year and casual employees 5.0 months per year. Where a business did not identify numbers of part-time and casual employees, the total persons employed was multiplied by 0.815 as the ratio of FTE:persons was 0.815:1 on average across all respondents who did provide data.

d. Total employment was estimated from the responses provided using known information about (a) the total number of businesses operating in the forest industry, as described in the section on the sample frame for the survey, and (b) the number of small, medium and large businesses:

Employment: number employed in native forest and plantation sectors

The proportion of forest industry workers who worked in the native forest, softwood plantation, and hardwood plantation sectors is detailed in Tables 4 and 5.

Where the sector a person was employed in was not identified by the survey respondent, or the sector of a business which did not respond to the survey was not known, they have been placed in the ‘unknown’ category. In some cases a business worked in both the native forest and plantation sectors, and in some of these the business did not identify what percentage of activities took place in each sector, so it was not possible to split employment between the two sectors. In these cases the employment has been included in the ‘unknown/could not be split’ category.

Table 4 details the proportion of people employed in growing and processing who worked in the native forest and plantation sectors. In the growing and processing sectors, it was possible in most cases to estimate how much employment fell into the native forest and plantation sectors. Where a grower managed both native forestry and plantations, they were asked to identify the proportion of work time spent in each sector. Where a processing facility used inputs from both native forests and plantations, the proportion of employment based on each sector was calculated based on the ratio of inputs from each sector.

-
- i. Data for growers was adjusted to include employment by two small industrial growers who did not respond to the survey but for which basic employment data were obtained by phone or through publicly available information.
 - ii. Data for processors has been adjusted for the low response from small and medium-sized processors, with employment figures provided via phone and estimates of employment for non-responding businesses used to estimate total employment. Estimates of employment by non-responding businesses were made through consultation with industry experts who could comment on the size of different processors.
 - iii. Based on analysis of responses received from differently sized contracting businesses, and consultation with industry representatives to identify the likely number of medium and large contracting businesses, it appeared there was a representative response rate from differently sized contracting businesses – around 50% of small, medium and large businesses responded, with no clear bias to response from businesses that were larger or smaller. Contractor estimates were therefore multiplied by 1.96 to estimate total employment based on the 51% response rate.
 - iv. ‘Other’ businesses which include government regulatory authorities were conservatively estimated. Responses were received from 42% of respondents, but may have been biased to small organisations. As the total employment of non-responders was not able to be estimated, responses were multiplied by 2.38 to estimate total employment; this is likely to underestimate total employment in this sector.
 - v. Full-time equivalent employment in ‘wooden structural component manufacturing’ was estimated assuming that a similar proportion of employees in this sector work full-time and part-time as in the rest of the processing sector, with 97% of employees therefore assumed to work full-time.

Because information on employment in the wooden structural component manufacturing sector was drawn from ABS data, which do not differentiate between plantation and native-forest based employment, it is not possible to identify the proportion of employment in each sector for this part of the industry.

Overall, Table 4 shows that, based on analysis of all businesses, including both those who responded to the survey and those who did not respond using imputed estimates of employment, 49.6% of employment in growing and processing was based on native forests in 2006, 36.5% on plantations, and 14.0% was unknown or unable to be split between native forest and plantation sectors. Given that there is some uncertainty about the total employment in the native forest sector, as a result of low response rates from this sector, this may vary somewhat, and it is most accurate to state that between:

- 47% and 52% of growing and processing employment is based on native forest resources
- 35% and 38% is based on plantation resources, with between 14–15% based on hardwood plantations and the remainder working in the softwood plantation sector
- 13% and 15% is based on either a mix of inputs, or unknown inputs.

Table 4: Employment in native forest and plantation sectors – growers and processors

	Native forest (% of persons)	Hardwood plantations (% of persons)	Softwood plantations (% of persons)	Unspecified plantation (% of persons)	Unknown/ could not be split (% of persons)
Industrial growers	24%	40% (some also in 'combined grower/processor category)	Included in 'unspecified plantation' category	36%	0%
Processors/exporters, combined grower/processors¹	51.4%	10.2%	23.4%	0%	15.0%
Wooden structural component manufacturing			Unknown		100%
Total – growing and processing	49.6%	12.2%	21.9%	2.4%	14.0%

¹Combined grower/processors primarily operated in the hardwood plantation sector, and their processing activities primarily involved woodchipping and export.

The proportion of different types of contractors, consultants and other businesses and agencies employed in the native forest and plantation sectors is shown in Table 5.

There is considerably less certainty about contractors and consultants, as many did not provide data on which sector they worked in, or they worked across both sectors and did not indicate what proportion of their activities fell into each. Because of this, it is

important to represent the likely proportions of contractors working in each sector using a range. Therefore the likely proportion of employment falling into different sectors is presented in Table 5 as a range equal to plus and minus five per cent of the exact proportion observed in survey responses, to ensure that uncertainty in estimates is appropriately reflected.

Table 5: Employment in native forest and plantation sectors – contractors, consultants and others

	Native forest (% of persons)	Hardwood plantation (% of persons)	Softwood plantation (% of persons)	Unknown/could not be split (% of persons)
Silviculture & roading contractors	2.3–2.5% (avg 2.4%)	45.1–49.9% (avg 47.5%)	5.4–6.0% (avg 5.7%)	44.4% of responses
Nursery & seed/seedling suppliers	5.9–6.5% (avg 6.2%)	79.3–87.7% (avg 83.5% ¹)		10.3% of responses
Harvest & haulage contractors (includes haulage to mill only)	12.2–13.4% (avg 12.8%)	18.8–20.8% (avg 19.8%)	17.4–19.2% (avg 18.3%)	49.1% of responses
Contractors providing expert advice/ consultancy services	9.0–10.0% (avg 9.5%)	28.4–31.4% (avg 29.9% ¹)		60.6% of responses
Other groups	<i>Note: Most representative bodies represent groups from all sectors, so it is not possible to separate employees by sector</i>			100% of responses
Total (% of persons)	Avg 9.0%	Avg 32.2%	Avg 15.1%	43.6% of responses
¹ Figures have been merged across the two plantation categories to preserve confidentiality				

Assuming that those who are unable to be classified into a sector are not biased towards a particular sector, across all types of business (growers, processors, contractors and others):

- approximately 51% of WA forest industry workers are employed in the native forest sector, with the figure highly likely to fall between 47–54% after uncertainty due to low survey response rates is taken into account
- approximately 49% of WA forest industry workers are employed in the plantation sector (with the figure highly likely to fall between 46% and 52%), with approximately 21% working in hardwood plantations, 26% in softwood plantations, and 2% in unknown or other types of plantations.

Where are forestry businesses located?

Figure 2 shows the location of all forest industry businesses identified in southern WA, whether or not they responded to the survey.

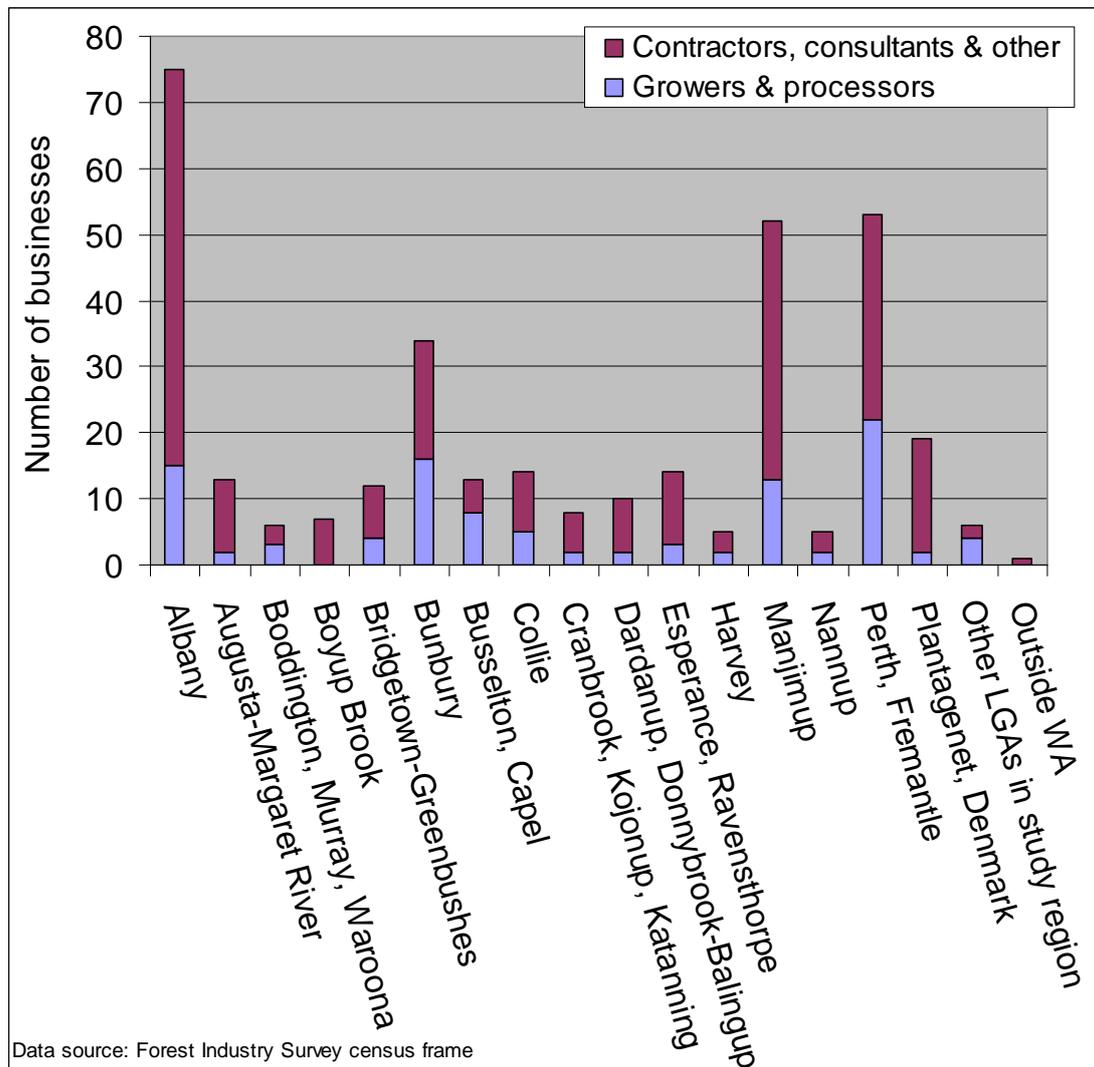


Figure 2: Location of forest industry businesses in southern WA, based on census frame developed for the survey

Figure 3 identifies the percentage of all forest industry office locations across southern WA located in each local region.

The five LGAs with the most forest industry businesses located within them are Albany, Perth/Fremantle, Manjimup, Bunbury and Plantagenet/Denmark. Perth would have some additional businesses, with the majority of wooden structural component manufacturers in WA located in and around Perth and Fremantle.

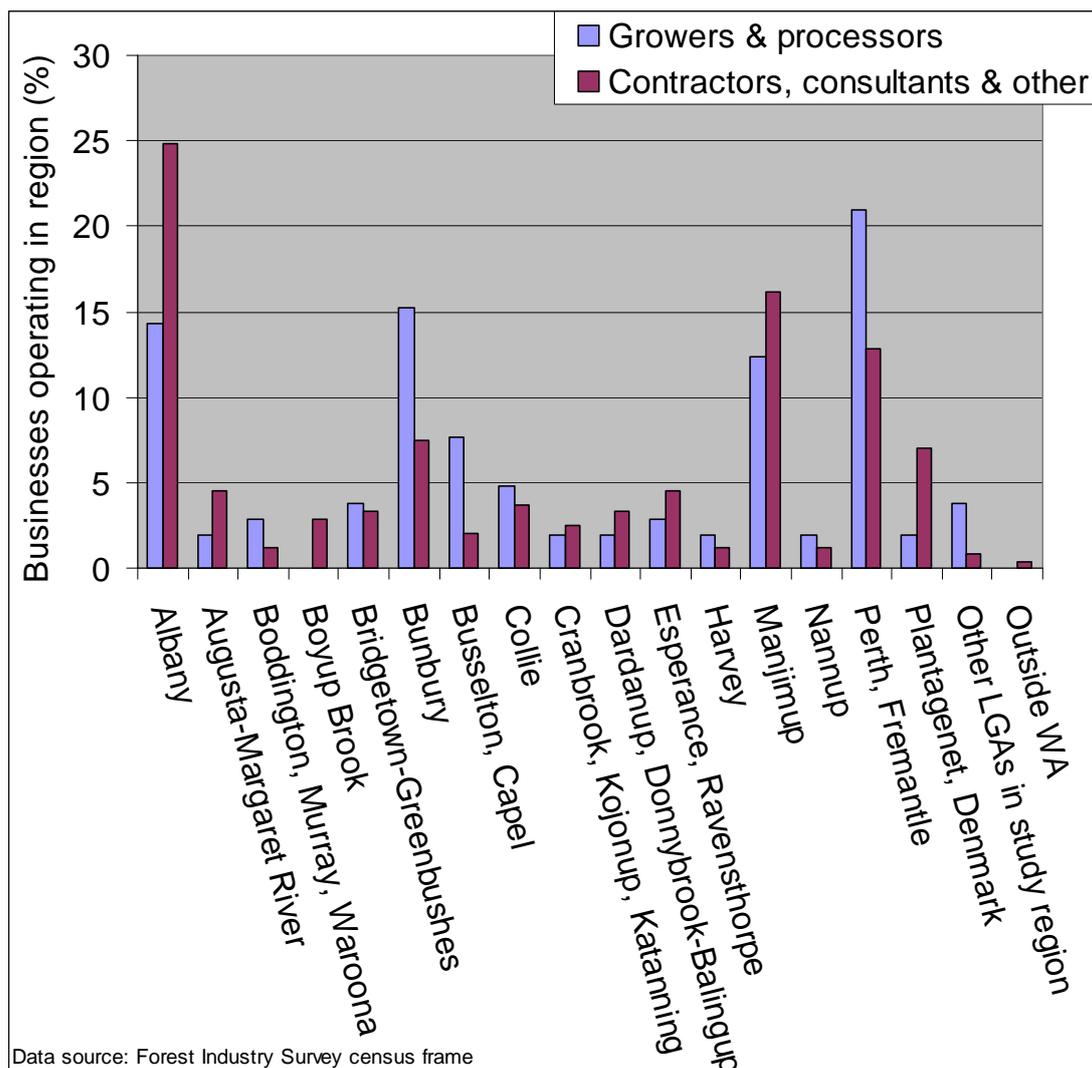


Figure 3: Percentage of forest industry businesses in southern WA located in different LGAs, based on sample frame developed for the survey

While the total number of businesses operating from each location is a useful figure, different forestry businesses have widely varying numbers of employees. The number of people employed at a single office location of a forestry business ranged from one person to over 200. Identifying the full impact of the forest industry on a location therefore requires identifying total employment rather than the total number of businesses based in each LGA.

Employment by office location

Figure 4 shows the estimated number of forest industry employees based in different local government areas (LGAs) within southern WA. It locates employees in the LGA/group of LGAs in which their business office is located (see ‘where do people in employed in the forest industry work’ to find out more about how much work time is typically spent in LGAs other than the one the business is based in). The error bars indicate the estimated level of confidence in the results, based on lower reliability of data on employment by contracting businesses and native forest processors.

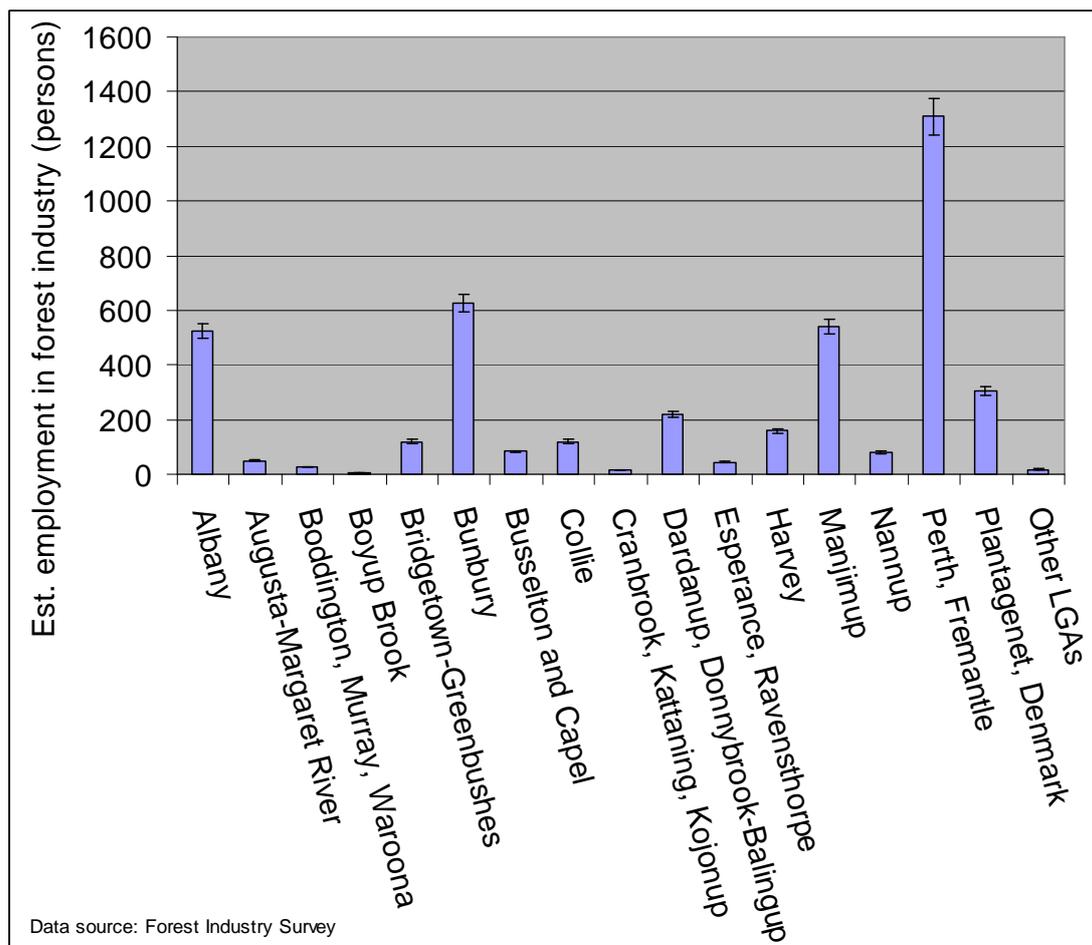


Figure 4: Estimated number of people employed in local regions of southern WA

The process used to estimate total employment by location is described in the data analysis notes⁶.

The five LGAs with the highest number of forestry workers were Perth/Fremantle, Bunbury, Manjimup, Albany, and Plantagenet/Denmark. While these are the same five LGAs that had the highest number of forest industry businesses, the order is slightly different – while Albany has a higher number of businesses than Perth/Fremantle, Bunbury and Manjimup, it has fewer workers in total than these regions. This is largely because many of the forest industry businesses based in Albany are smaller contracting businesses, whereas in Perth/Fremantle, Bunbury and Manjimup a higher proportion of businesses are of medium or large size.

⁶ Data analysis notes: The total estimate is based on:

(a) using industry expert’s estimates of total employment of processing businesses who did not respond to the survey to estimate the number of employees for processors who did not respond, as the size of non-responding processing businesses was known in all cases, and

(b) adjusting the total employment in contracting from respondents in an LGA by the response rate from that LGA, adjusted to account for the higher response rate from large businesses. For example, if 60% of contractors from an LGA responded to the survey, the estimate was assumed to be 1.67 times the employees reported, then adjusted to account for the over-representation of medium and large businesses in the survey respondents.

Proportion of workforce employed in the forest industry

While regions such as Perth/Fremantle and Bunbury have high numbers of forestry workers, they also have a large working population overall, and as such may not have a high dependence on the forest industry for employment.

In contrast, some LGAs with an apparently small number of forest industry workers may have a small workforce overall, and hence the local economy may be highly dependent on the forest industry.

To identify the proportion of the workforce dependent on the forest industry, the number of forest industry workers in different LGAs was calculated as a percentage of the employed workforce (based on ABS *Census of Population and Housing* data on total employed workforce by place of employment). This is shown in Figure 5.

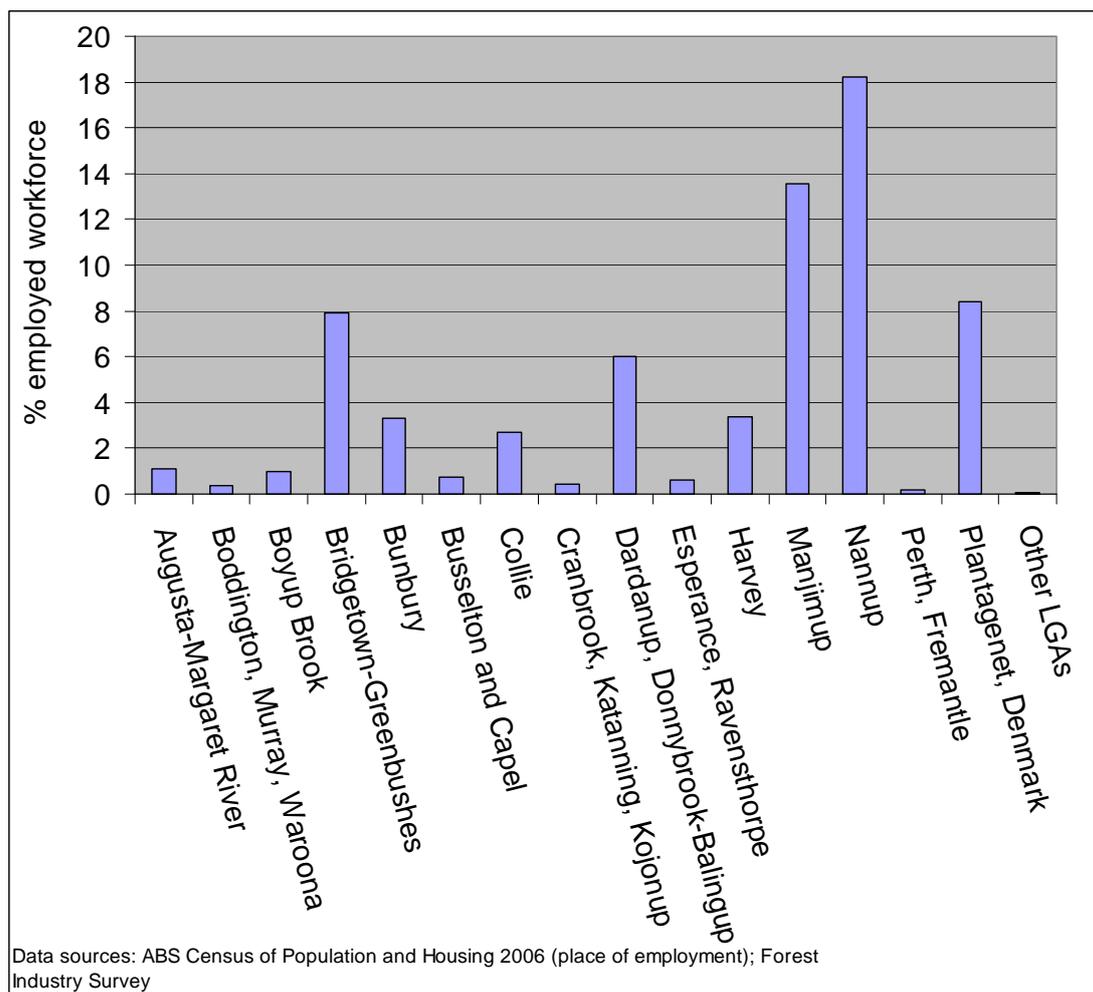


Figure 5: Percentage of employed workforce working in the forest industry, by local region August 2006

From Figure 5, it is apparent that dependence on the forest industry varies considerably in different local government areas, with anywhere from 0% to 18% of the employed workforce working in the forest industry in individual LGAs.

The LGAs which have the highest proportion of their workforce employed in the forest industry are:

- Nannup (18%)
- Manjimup (14%)
- Plantagenet and Denmark (8%)
- Bridgetown-Greenbushes (8%)
- Dardanup and Donnybrook-Balingup (6%)
- Albany (4%)
- Harvey (3%)
- Bunbury (3%)
- Collie (3%).

In all other LGAs, less than 3% of employment is directly dependent on the forest industry.

The local region with the highest number of forestry businesses is not highly dependent on the forest industry, with 0.2% of workers in Perth/Fremantle (the region including all suburbs of Perth) employed in the forest industry.

The LGAs with higher dependence on the forest industry include a mix of small rural regions and regional centres, all of which are located near large areas of plantation or commercially harvested native forest. These areas are more likely to experience impacts if there are changes to the forest industry.

The full impact of the industry, however, depends not only on where forest industry offices are located – it depends on where workers live and spend their wages, and on where they actually work, as only some of the expenditure and job-related activity generated by a forestry business will occur in the LGA in which that business is located.

Where do people employed in the forest industry live?

Knowing where forest industry workers live can assist in identifying the impacts of the forest industry, as a high proportion of wages are likely to be spent in a person's area of residence. To examine this, each business completing a survey was asked to identify which LGA/s their employees live in. Businesses with multiple offices provided details on where employees lived for each individual office location.

This question was answered by a majority of all types of respondents. However, businesses employing a large number of people were disproportionately less likely to respond to this question. Because of this, the residential LGA of employees was reported for only 23% of the total number of employees estimated to work in the forest industry in southern WA.

Table 6 summarises where employees lived compared to the location of the business office at which they are based.

The results indicate that the majority of forest industry workers (over 80% in most cases) live either in the same LGA in which their business office is located, or in an adjacent LGA. The main exception was in the region of Bunbury, Busselton, Capel,

Collie, Dardanup, Donnybrook-Balingup and Harvey, where a higher proportion of employees lived up to two LGAs away from their office location. This is most likely related to the small size of LGAs in this part of south-west WA, which means that it is possible to travel to work relatively easily while living in an LGA that doesn't border the one in which a business office is located.

There were two primary grouping of LGAs in which forest industry workers were likely to commute between LGAs to live and work:

- Albany, Cranbrook, Plantagenet, Denmark, Manjimup
- Bunbury, Busselton, Capel, Collie, Dardanup, Donnybrook-Balingup and Harvey.

While these were common 'clusters' within which employees live and work, there is also considerable movement of employees across these clusters. In particular, many businesses reported that some of their workers lived in Manjimup, with people living in Manjimup appearing particularly likely to commute some distance to work in the forest industry. In group interviews undertaken in 2006, the issue of commuting long distances to work was raised by participants at the Manjimup discussion, who reported that it was common for town residents to commute long distances for employment in a range of industries (not just the forest industry).

In Esperance, where data were provided for a majority of workers, 100% of workers employed in forest industry businesses located in Esperance were reported to live in Esperance. This is not surprising given the relative isolation of Esperance, located several hours drive from Perth and Albany as the nearest regional cities. Other workers were reported to live in Esperance but work for businesses whose head offices were located elsewhere, reflecting rapid plantation expansion in Esperance in recent years which has resulted in some forestry businesses expanding their operations to include work undertaken in Esperance.

Table 6: Proportion of employees living in same LGA as business office from which they work

Office location (response rate ¹)	Employees who live in LGA in which office located (%)	Employees who live in LGA adjacent to office LGA (%)	If employees live outside office LGA, where do they most commonly live? ²
Albany (62%)	86%	2%	Cranbrook, Manjimup, Esperance, Plantagenet
Augusta-Margaret River (28%)³	100%	N/A	N/A
Boyup Brook (68%)	75%	0%	Numbers too small to report
Bridgetown-Greenbushes (17%)	95%	5%	<i>Numbers too small to report</i>
Bunbury (31%)	52%	8%	Manjimup, Harvey, Donnybrook-Balingup, Dardanup, Busselton, Bridgetown-Greenbushes, Capel
Busselton and Capel (13%)	57%	0%	<i>Manjimup</i>
Collie (84%)	49%	1%	Brookton, Wandering, Esperance, other WA, international ⁴
Cranbrook, Katanning, Kojonup (41%)	100%	N/A	N/A
Dardanup, Donnybrook-Balingup (7%)	31%	19%	<i>Bunbury, Murray/Waroona</i>
Esperance, Ravensthorpe (71%)	100%	N/A	N/A
Harvey (11%)	67%	17%	<i>Bunbury, Murray/Waroona</i>
Manjimup (33%)	95%	3%	Bridgetown-Greenbushes, international
Nannup (38%)	42%	58%	Manjimup, Busselton, Bridgetown-Greenbushes
Perth, Fremantle (5%)	69%	<i>Not calculated due to difficulty of identifying boundaries</i>	<i>Albany, Boddington, Bunbury, Manjimup</i>
Plantagenet, Denmark (2%)	83%	17%	<i>Albany</i>
Other LGAs	Not able to be calculated due to the large number of other LGAs and small number of workers		

¹Response rate measured as % of employees for which data on LGA of resident provided.

²LGAs are only listed if >3 employees reported to live there, to ensure confidentiality of responses. Employees were reported to live in up to four more LGAs than listed in several cases, with 1-3 employees reported to live in each of the LGAs not listed.

³Where data are italicised, it indicates a low level of confidence in the representativeness of results, due to a low response rate to this question from businesses located in the LGA.

⁴In some cases, businesses had a head office from which they managed workers located some distance away. This meant that workers might live and work a long distance from the head office while still being managed from that office.

Where do people employed in the forest industry work?

Workers in the forest industry often travel long distances from an office or business base to work in native forests and plantations. To better identify where people work in relation to the location of their base office, forestry businesses were asked to identify which LGAs employees had worked during 2005–06.

This question was answered by a majority of all types of respondents who completed the ‘long’ version of the survey (growers, processors, contractors and other businesses). However, businesses employing a large number of people were disproportionately less likely to respond to this question. Because of this, the LGA in which employees had worked during 2005–06 was reported for only 33% of the total number of employees estimated to work in the forest industry in southern WA. This was a higher response rate than for the question on where employees live, however.

Data were analysed to identify whether growers, processors and contractors have different patterns in terms of where they work (shown in Table 7):

- **Growers:** Four growers responded in full to this question. The four businesses that responded reported that some employees predominantly work from the office (e.g. administrative staff), while foresters and field workers work in a wide range of LGAs, usually within 150km of the office within which they are based, but further away in some cases. On average, 60-75% of total employee time was spent in the office in which the business office was based, and 25-40% of employee time was spent working across the range of LGAs in which the forests the business managed were located. A single person working in this type of business worked in up to nine LGAs in any one year. Phone discussions with other growers indicate this is a typical pattern; two growers who did not complete this question reported that the question was difficult to answer as their employees spent a majority of their time working from the office, but also a significant amount of time visiting plantation sites in multiple LGAs.
- **Processors:** On average, 92% of employees working for processors work in the LGA in which the processing facility is based, while 8% of employees were reported to work across multiple LGAs. This sometimes reflected movement of employees between several processing sites owned by the one business, and in some cases included some transport or harvesting workers employed by a processing facility.
- **Contractors:** On average, 45% of contractor time was reported to be spent working in the LGA in which the business was located. This varied considerably by type of contracting business:
 - 18% of employee time was spent in the ‘home’ LGA in harvest and haulage businesses
 - 36% of employee time was spent in the home LGA for silvicultural contractors, while
 - other types of contractors, such as consultants, on average spent a higher percentage of work time in their home LGA.

Table 7: Proportion of work time spent in LGA in which office is located

Forest industry sector	Proportion of work in same LGA as office location	Proportion of work in LGAs other than where office located
Industrial growers and grower/processors (n=4) <i>Range given rather than average due to small number of respondents.</i>	60–75%	25–40%
Processors (n=18)	92%	8%
Contractors – all (n=60)	45%	55%
Contractors – harvest and haulage (n=8)	18%	82%
Contractors – silviculture (n=28)	36%	64%

Table 8 summarises the location of work reported across all types of respondents. The small number of respondents in some locations means it is not possible to identify how ‘typical’ the distribution of work locations is; the variability in where a business may work also makes it difficult to identify whether the data presented would represent a common pattern of work locations in years other than 2005–06. In most LGAs other than Esperance and Ravensthorpe, around 50-60% of employee time was spent in the LGA in which the business was located (although, as described above, this varied considerably by business type).

Table 8 does indicate that when employees undertake work outside the LGA in which their office is located, they commonly work within around 150km driving distance of the office location. However, workers are highly mobile, and particularly in the South West and Great Southern regions, workers from a business located in one LGA may undertake work activities in up to 10 LGAs surrounding the one in which their office is located.

Table 8: Proportion of employees working in same LGA as business office

Office location (response rate ¹)	% of work located in same LGA as office	% work located in LGA adjacent to office LGA	If employees live outside office LGA, where do they most commonly work? ²
Albany (90%)	39%	21%	Plantagenet, Denmark, Bridgetown-Greenbushes, Boyup Brook, Kojonup, Manjimup, Augusta-Margaret River, Bunbury, Cranbrook
Augusta-Margaret River (5%)³	100%	N/A	N/A
Boyup Brook (32%)	53%	13%	<i>Numbers too small to report</i>
Bridgetown-Greenbushes (18%)	99%	0%	<i>Numbers too small to report</i>
Bunbury (31%)	32%	11%	Nannup, Bridgetown-Greenbushes, Manjimup, Boyup Brook, West Arthur, Augusta-Margaret River, Capel, Collie, Dardanup, Donnybrook-Balingup, Harvey, Albany, Busselton
Busselton and Capel (8%)	73%	0%	<i>Numbers too small to report</i>
Collie (19%)	19%	1%	<i>Boddington, Esperance, Murray</i>
Cranbrook, Katanning, Kojonup (7%)	100%	N/A	N/A
Dardanup, Donnybrook-Balingup (3%)	3%	46%	<i>Boddington, Collie, Harvey, Murray</i>
Esperance, Ravensthorpe (50%)	98%	0%	Numbers too small to report
Harvey (96%)	11%	29%	Bunbury, Busselton, Collie, Dardanup, Perth, Murray, Nannup, West Arthur, Williams
Manjimup (47%)	68%	5%	Bunbury, Busselton, Bridgetown-Greenbushes, Collie, Harvey, Perth, other Australia
Nannup (45%)	20%	34%	Busselton, Augusta-Margaret River, Bunbury, Bridgetown-Greenbushes, Boyup Brook, Capel, Collie, Donnybrook, Manjimup, Perth, Murray/Waroona
Perth/Fremantle (3%)	58%	<i>Not calculated</i>	Albany, Boddington, Bunbury, Manjimup
Plantagenet, Denmark (0%)	N/A	N/A	N/A
Other LGAs	Not able to be calculated due to the large number of other LGAs and small number of workers		

¹Response rate measured as % of employees for which data on LGA of resident provided

²LGAs are only listed if >3 employees reported to work there, to ensure confidentiality of responses. Employees were reported to work in up to four more LGAs than listed in several cases, with 1–3 employees reported to work in each of the LGAs not listed.

³Where data are italicised, it indicates a low level of confidence in the representativeness of results, due to a low response rate from businesses located in the LGA to this question

Employment by region

Information in this report has to this point been presented for either (a) WA as a whole, or (b) for individual LGAs/groups of LGAs. This section provides employment and expenditure data for each of the following regions (see Appendix 3 for full definitions of each region):

- the Great Southern region, in which the forestry industry is primarily focused on hardwood plantations and mostly operates in the LGAs of Albany, Plantagenet, Kojonup, Cranbrook and Denmark
- the South West region, which has both native forest and plantation-based forest industry, and includes the following LGAs: Augusta-Margaret River, Boyup Brook, Bridgetown-Greenbushes, Bunbury, Busselton, Capel, Collie, Dardanup, Donnybrook-Balingup, Harvey, Manjimup, Nannup
- the Goldfields-Esperance region, in which the forestry industry is primarily focused on hardwood plantations and mostly operates in the LGAs of Esperance and Ravensthorpe
- the Peel and Perth regions, comprising the area of the greater cities of Perth and Fremantle, including all outlying suburbs, and the Peel region municipalities of Boddington, Mandurah, Murray, Serpentine Jarrahdale and Waroona
- the Wheatbelt region, which comprises 44 local government areas to the north and east of Perth, including the remaining LGAs included in the *Forest Industry Survey* study region. The primary forest industry activities undertaken in this region are the establishment of farm forestry/agroforestry on farms, with a range of types of trees established, including *Pinus pinaster*, eucalypt species, oil mallees, and others

Table 9 provides data on estimated employment by region.

Table 9: Employment and expenditure by region

Region	Estimated total employment in forest industry	% in native forest sector	% in hardwood plantation sector	% in softwood plantation sector	% unknown/mixed plantation and native forest
Great Southern	844	3%	94%	2%	1%
Goldfield-Esperance	50	3%	84%	12%	1%
Peel/Perth	2,684	35%	41% ¹		24%
South West	2,005	48%	34%	16%	2%
Wheatbelt	33	20%	80%		

¹Data on employment in the plantation sector could not be split between hardwood and softwood plantations for Perth due to lack of specific data.

The employment in the plantation and native forest sectors in different regions is shown in Figure 6.

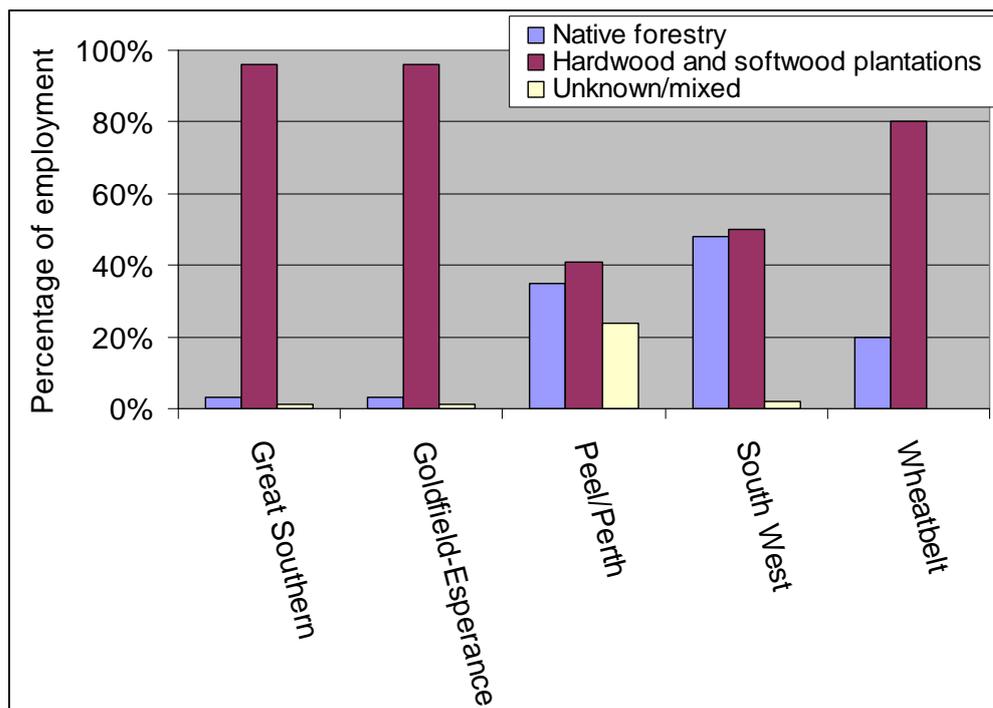


Figure 6: Employment in native forest and plantation sectors by region

The different regions have very different characteristics. While the Great Southern and Goldfield-Esperance forest industries are largely dependent on hardwood plantations, the South West and Peel/Perth industries depend on a mix of native forest and plantation sources. In the Wheatbelt, the small amount of employment has largely been classified as being dependent on plantation, as much of the forestry employment reported in this region involved establishment of vegetation on farms, sometimes involving planting of native species and sometimes exotic. As it generally involved the planting of trees (whether native or not), these activities have been classified as falling into the plantation sector.

The Great Southern region

It is possible to profile change in employment in the Great Southern region over a long period of time, using data reported by Schirmer *et al.* (2005a), who gathered data on employment in this region from 1991–92 to 2003–04.

Figure 7 identifies the total employment in the forest industry in the Great Southern region over time.

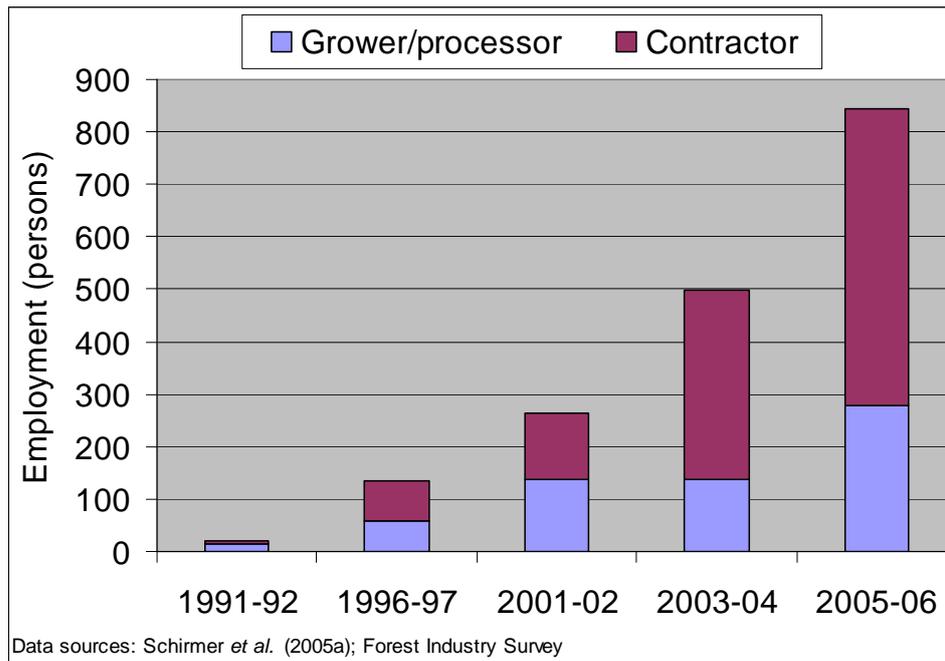


Figure 7: Employment in the forest industry in the Great Southern region, 1991–92 to 2005–06

From Figure 7, it is apparent that employment in the forest industry in the Great Southern region is growing rapidly. Figure 8 shows the average annual rate of change in employment over time. The high rate of growth between 1991–92 and 1996–97 reflects the very low total employment in 1991–92.

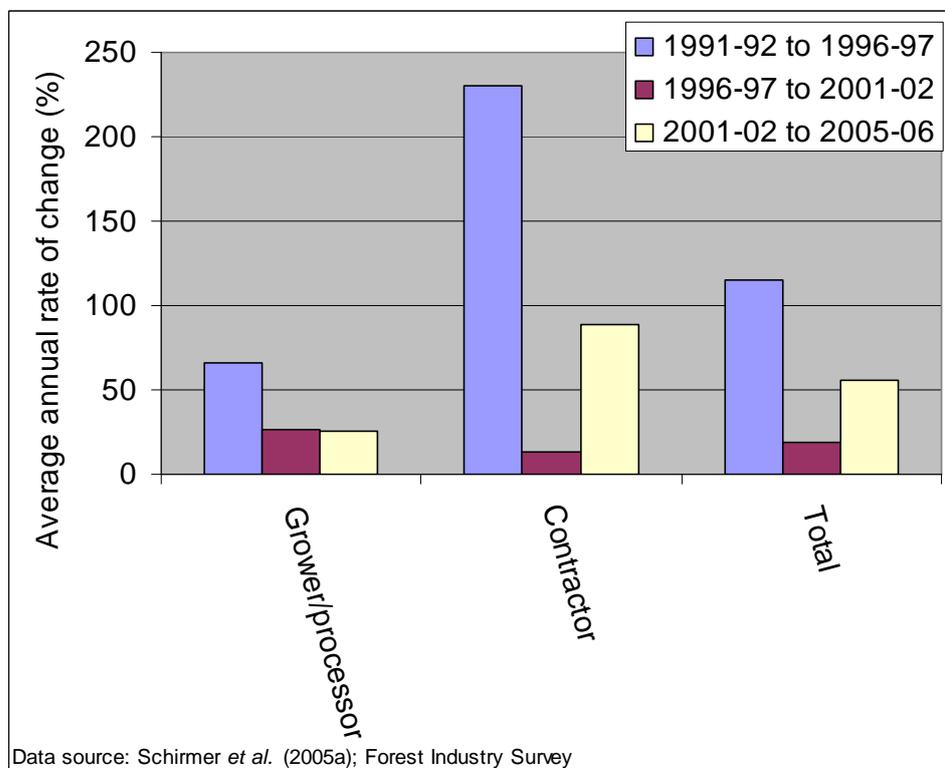


Figure 8: Average annual change in employment over time, Great Southern region

The rapid increase in employment since 2001–02 reflects the growth in harvesting of the hardwood plantation resource in the Great Southern region. The large majority of employment in the industry in this region is based on hardwood plantations. Almost all of these hardwood plantations (close to 100%) have been established since 1990. Harvesting of the hardwood, or ‘blue gum’, plantations began in 2001 and has expanded rapidly since. This has led to expansion of employment in the contracting sector – particularly in harvest and haulage contractors, and contractors engaged in processing logs into woodchips in the field; the growing sector, where more people are needed to manage harvesting operations; and the processing sector, with employment to date generated in the processing of logs into woodchips, and export of woodchips from the port.

Employment: characteristics of forest industry workers

This section describes key characteristics of forest industry workers, and how these compare to the WA workforce as a whole⁷. It examines:

- how many forest industry workers work full-time, part-time or are employed casually
- staff turnover rates
- gender of forest industry workers
- age distribution of forest industry workers.

Full-time, part-time and casual employment

Across Australia in recent decades there has been a shift away from full-time employment, with a growing proportion of the labour force employed part-time. The *Forest Industry Survey* asked respondents to identify the employment status of their workers to be able to compare the forest industry with the broader workforce.

In August 2006, across all types of forest industry business, an average of 75% of employees worked full-time, while 6% worked part-time and 19% as casual employees. On average:

- part-time employees worked a total of 7.7 months a year, or 64% of a full-time position
- casual employees worked a total of 5.0 months a year, or 42% of a full-time position.

⁷ Characteristics are compared to the WA workforce as a whole, rather than the southern WA workforce, as the southern WA workforce makes up a large proportion of the total workforce of the State, and using figures for the state as published by the ABS avoided potential for miscalculation when adding up data for the many small regions in southern WA which may have resulted from randomisation of numbers for small area data by the ABS.

Figure 9 summarises the workforce characteristics of different types of forest industry businesses. The distribution of full-time, part-time and casual employment varied depending on the type of business:

- growers and processors all typically employed over 90% of their workforce as full-time employees
- harvest and haulage contractors typically employed over 80% of their workforce as full-time employees
- silvicultural and roading contractors, and nursery and seed suppliers, generally employed less than 40% of their workforce full-time, with most employees employed on a part-time or casual basis.

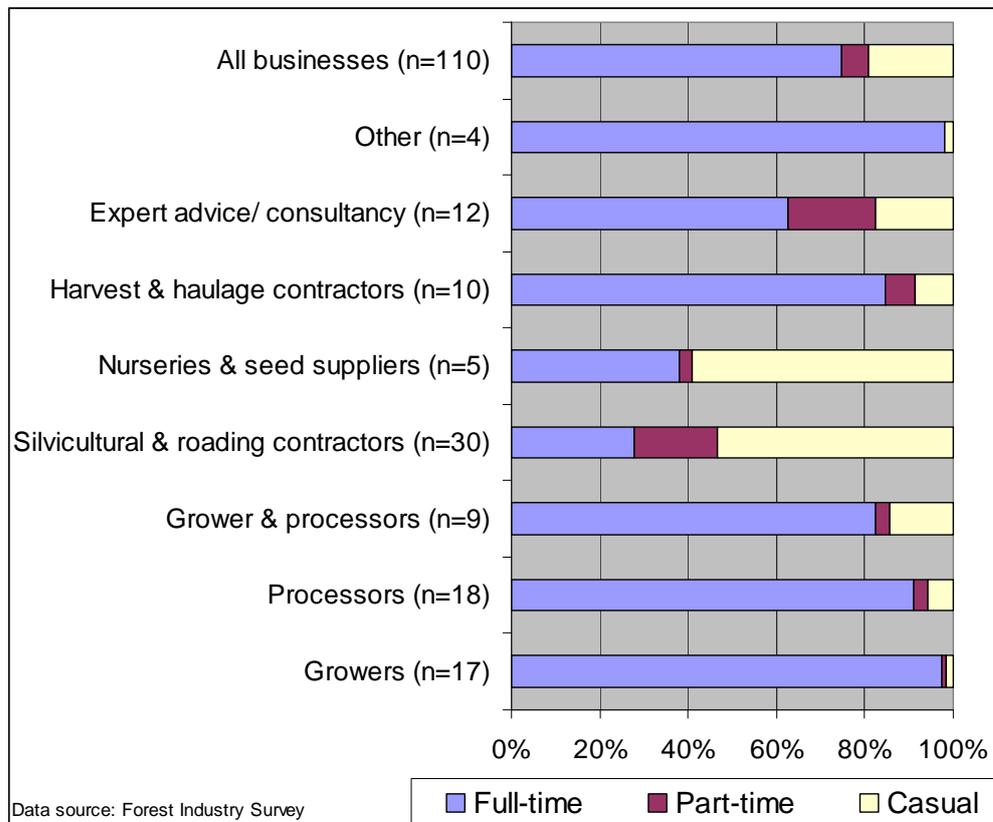


Figure 9: Proportion of employees working full-time, part-time and on a casual basis

Overall, workers in the forest industry are more likely to work full-time than the average working West Australian, and less likely to work part-time. This is shown in Figure 10, in which part-time and casual employment have been combined as ABS data do not differentiate between the two. The only exceptions to this trend are silvicultural and roading contractors, nurseries and seed suppliers, and consultants, who have a higher rate of part-time employment than the WA average, and a lower rate of full-time employment. This is possibly due to the seasonal nature of the work carried out by many of these types of contractors.

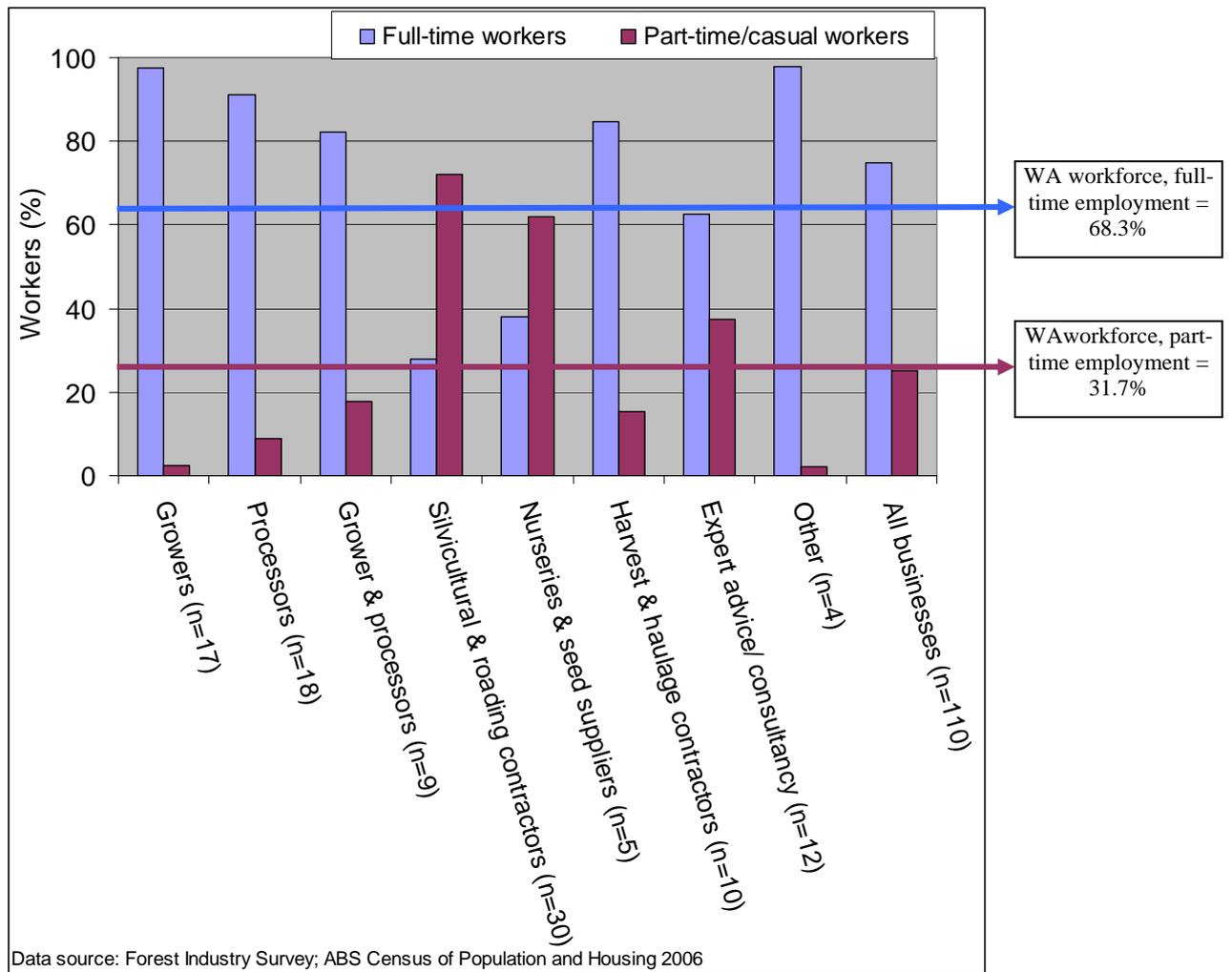


Figure 10: Full-time and part-time employment: comparison of forest industry to WA average

There was considerable variance in the proportion of people employed on a full-time, part-time or casual basis across individual businesses. In some businesses, all employees work full-time, while in others a large proportion of jobs are part-time or casual.

Staff turnover

Rate of staff turnover is often considered a useful measure of how attractive work is in a particular industry, and the level of investment a business has to make in training new staff. It is most useful as a measure when applied to staff appointed on a permanent basis, as casual staff typically have a high turnover rate which may not reflect their level of satisfaction with a particular job.

Staff turnover rates for different types of forest industry business in financial year 2005–06 were calculated using the following formula⁸:

$$\text{Turnover rate (\%)} = \frac{\text{Number of leavers over 2005–06}}{\text{Average staff employed during 2005–06}} \times 100$$

As businesses were not asked to identify why staff members left employment in the business, the turnover rates include both staff who left as a result of businesses involuntarily reducing their workforce, and staff leaving voluntarily.

Figure 11 shows the mean and median turnover rates identified in the forest industry survey for different business types. The mean turnover rate across all types of forestry business was 17%. The median was zero, as just over 50% of all respondents to this question indicated they had no turnover of staff during 2005–06.

It is difficult to identify whether this turnover rate is higher or lower than the average, as the only available comparison figures were measured in different ways to the turnover measure used for this survey.

The ABS *Labour Mobility Survey* identifies how many people who worked in the year prior to the survey had shifted jobs in the previous 12 months, providing a measure which, while not directly comparable to the turnover calculation used here, is the best benchmark of turnover available. In the 12 months to February 2006, 18.5% of all people who worked at some point in those 12 months ceased a job; the figure was 21.2% for Western Australia (ABS 2007). This is reasonably similar to the figure derived for this survey of an average 17% staff turnover, although the comparison can only be made broadly due to the differences in how turnover was estimated in the survey versus the labour mobility measure produced by the ABS.

The Australian Institute of Management (AIM) undertakes an annual *National Salary Survey* of Australian businesses which identifies voluntary staff turnover. In 2005–06, the voluntary staff turnover rate was 11.5% (AIM 2007). This figure is substantially lower than the ABS derived figure of 18.5% of workers having ceased a job; this is because the 18.5% figure includes all people who ceased a job for any reason, rather than only people who voluntarily left a job, as measured by the AIM survey.

Turnover rates can appear high for businesses who had a high number of staff for a small part of the year, all of whom then leave once seasonal work has finished. This means that the average number of staff during the year is low relative to the total number of people who left work at any point. This is evident for some types of business, particularly nurseries where a high proportion of the workforce is employed on a casual basis.

⁸ This calculation is a standard used for calculating turnover, see for example Lashley and Lincoln (2002).

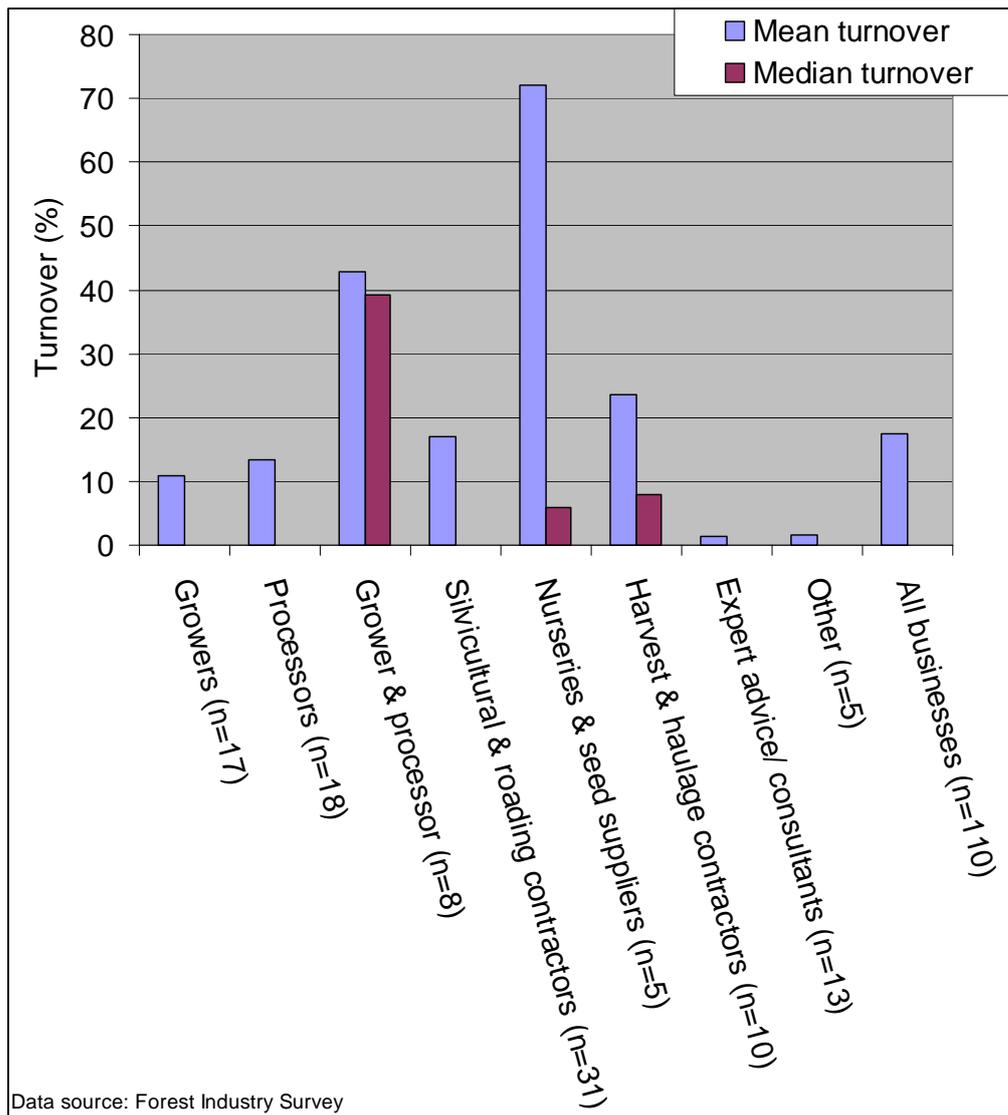


Figure 11: Staff turnover for different types of forest industry business

Turnover often varies by type of employment. Figure 12 shows turnover rates for full-time, part-time and casual employees. Figure 12 provides the mean turnover only, as the median was zero for each type of employment. As would be expected, mean and median turnover rates are lower for full-time staff than for casual staff. Very few businesses reported any turnover in part-time staff; however these data were based on a very small number of part-time workers, and so should be regarded as having low reliability.

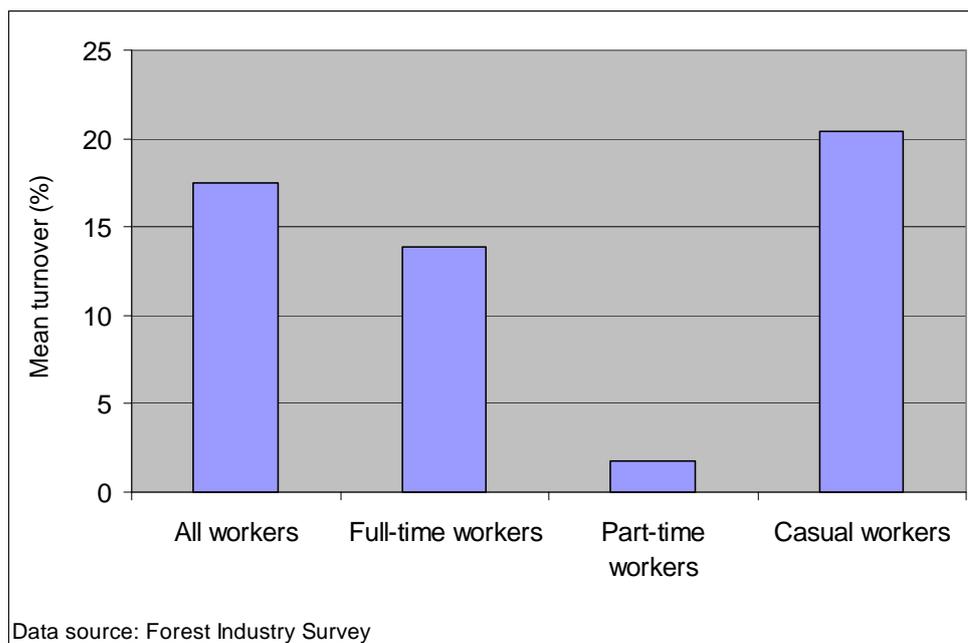


Figure 12: Staff turnover rates for full-time, part-time and casual workers (n=110)

Gender

The forest industry has a much higher proportion of male workers and lower proportion of female workers than the State average. In August 2006, 81.5% of forest industry workers were male and 18.5% female (n=125). This compares to 54.8% male and 45.2% female workers for WA as a whole (ABS *Census of Population and Housing* 2006).

The gender ratio of workers varied depending on whether they were employed full-time, part-time, or on a casual basis. As shown in Figure 13, while 18.5% of the forest industry workforce overall was female, 14.0% of full-time workers were female, compared to 32.6% of casual workers and 31.1% of the small number of part-time workers reported.

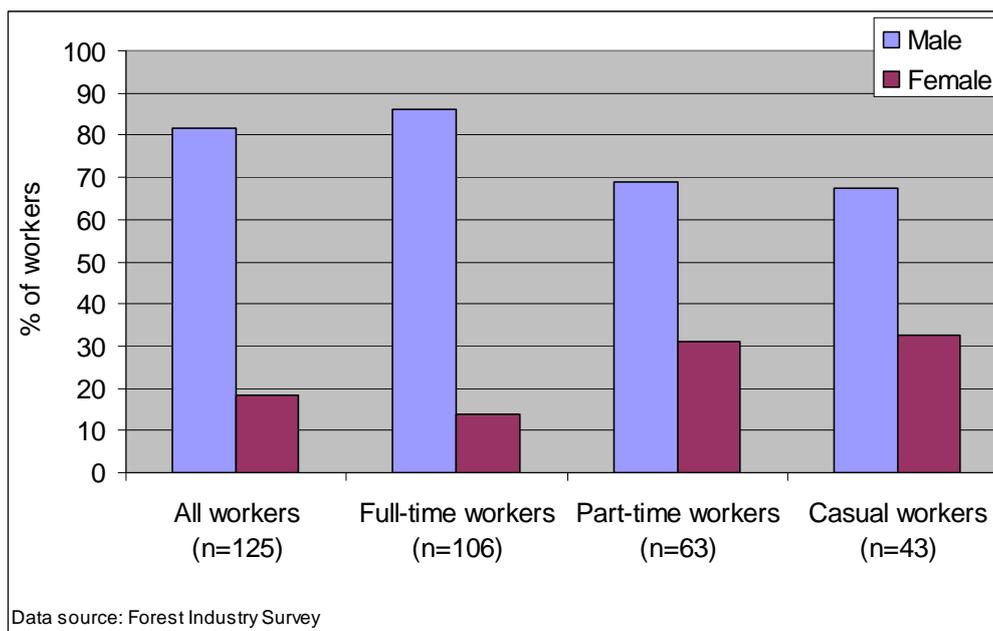


Figure 13: Gender of WA forest industry employees

Table 10 compares the gender and workforce status of forest industry employees to the WA average in August 2006.

Table 10: Gender of full-time and part-time/casual workers in the forest industry and WA

	Forest industry average (Data source: <i>Forest Industry Survey</i>)	WA average (Data source: <i>ABS 2006 Census of Population and Housing</i>)
Full-time males (% of total full-time employment)	86.0%	66.3%
Full-time females (% of total full-time employment)	14.0%	33.7%
Part-time and casual males (% of total part-time/casual employment)	67.7%	30.2%
Part-time and casual females (% of total part-time/casual employment)	32.3%	69.8%

Women represented a smaller proportion of the forest industry workforce than the WA average in both the full-time and part-time workforce, and males a larger proportion.

The gender of employees varied by type of business as well as by type of employment, as shown in Figure 14.

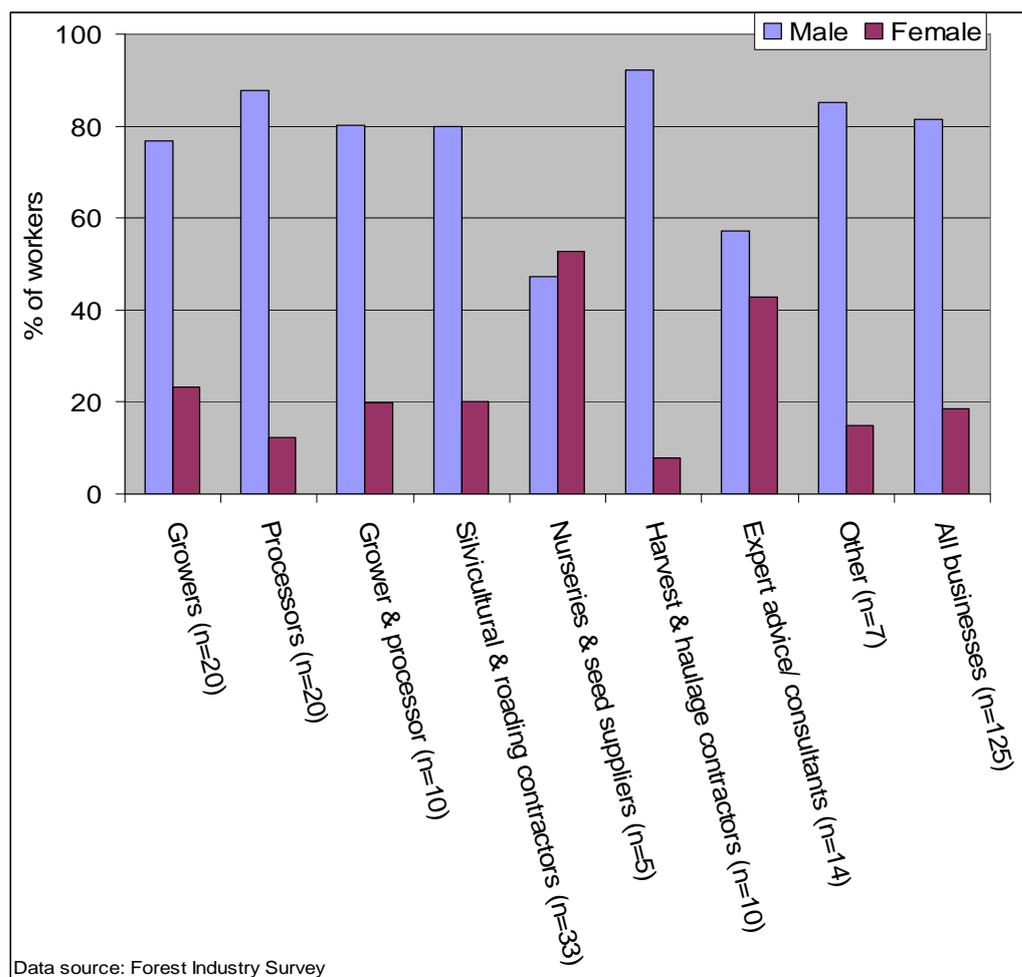


Figure 14: Employee gender by forest industry business type

The following types of businesses employed a higher proportion of women than the forest industry average:

- nurseries and seed suppliers (52.8% of employees were female)
- contractors providing expert advice/consultancy services (42.9% of employees were female)
- growers (23.3% of employees were female).

The following types of businesses employed a lower proportion of women than the forest industry average (women made up less than 18% of the workforce for both):

- processors (12.2% of employees were female)
- harvest and haulage contractors (7.7% of employees were female).

It is possible that there is some underestimation of female employment in the industry. In particular, women are often described as undertaking key roles in small family businesses which may be formally unpaid, such as book-keeping or business administration. It is possible that not all such employment was reported on survey forms by respondents. However, the extent of any undercount is not possible to estimate.

Age distribution

Figure 15 shows the age distribution of people working in the forest industry as a whole in August 2006. The median age group was 25 and under, and the large majority of employees were aged under 44 years.

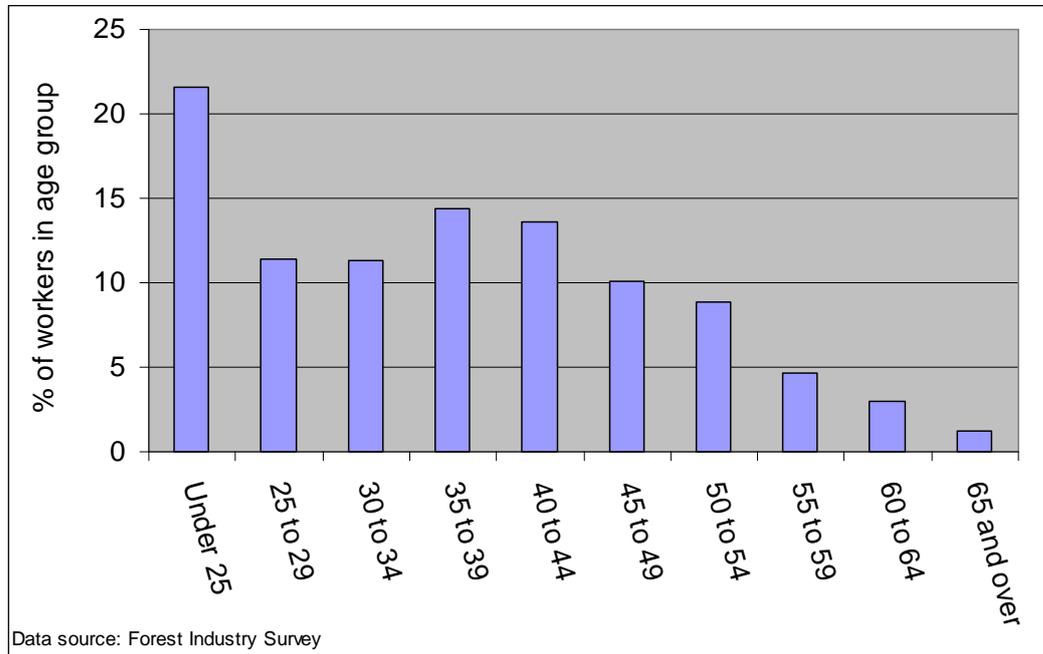


Figure 15: Age distribution of forest industry workers, August 2006 (n=105)

Figure 16 compares the age distribution of those in the forest industry with that for WA as a whole in August 2006. Overall, workers in the forest industry are younger than those in WA as a whole, with a higher proportion of workers aged 25–44 than the WA average, and fewer aged 45 years and over.

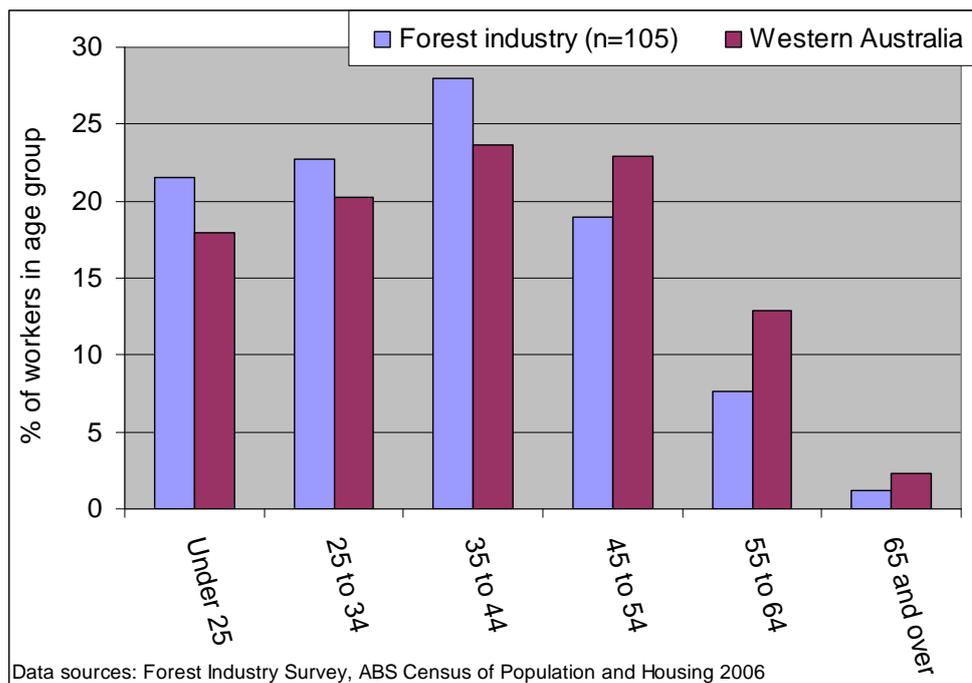


Figure 16: Comparison of age distribution of employed people in the forest industry and WA

The age distribution of employees varied considerably by type of forest industry business. Figure 17 shows the age distribution of workers employed by growers, processors, and contractors/consultants. Quite different patterns are apparent, with:

- growers employing mostly people aged 25–44, and fewer people aged under 34 compared to contractors/consultants
- processors employing a higher proportion of people aged over 34 than others, with 60% of workers aged 35 and over compared to 60% of growers and 45% of contractors
- businesses which combined growing and processing activities having a relatively young age profile, particularly in the under 25 age category
- contractors and consultants having a high proportion of workers aged under 25, with 31% of workers falling into this category.

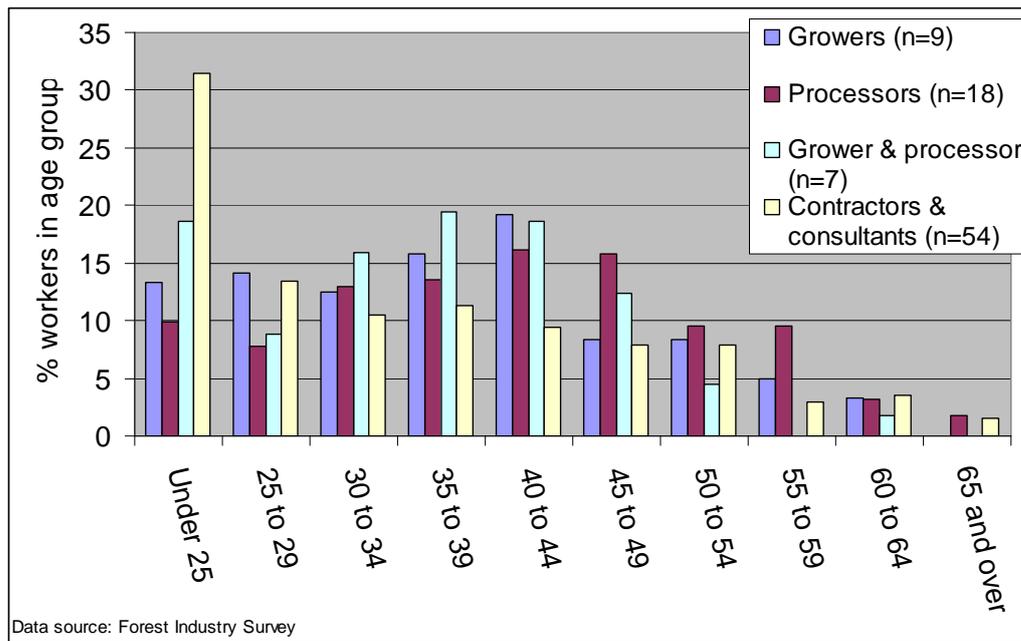


Figure 17: Age distribution of forest industry workers employed in growing, processing and contracting/consulting businesses

When different types of contracting business are examined (Figure 18), differences in age distribution of each type of contractor are apparent. Silvicultural and roading contractors and nurseries and seedling suppliers employ a much higher proportion of people aged under 25 than other types of contractor.

Harvest and haulage contractors employ fewer people aged under 30 than these types of contractors, and are typically aged under 49 years, with a wide distribution of ages in this group.

Consultants providing expert advice employed fewer people aged under 25, and more people aged over 55, than other businesses in the ‘contractors and consultants’ group.

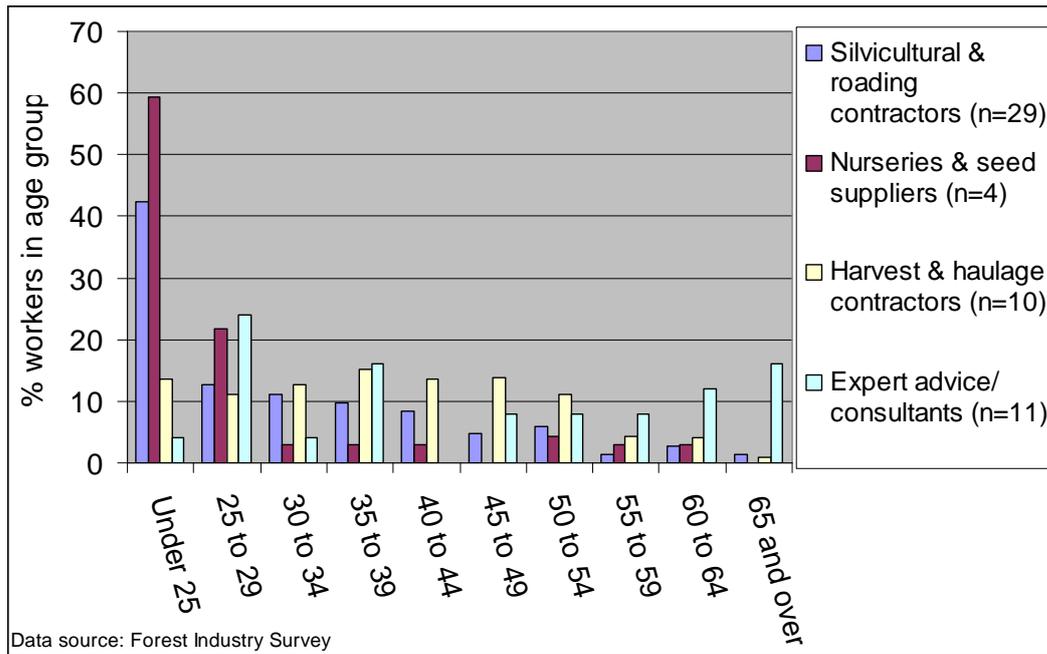


Figure 18: Age distribution of forest industry workers employed in different types of contracting businesses

The age of workers also varied by whether they were working full-time, part-time, or on a casual basis (Figure 19). The median age group was 30–34 for full-time workers, and under 25 for part-time and casual workers.

The majority (52%) of casual workers were aged under 25, compared to 20% of full-time and 17% of part-time workers. Part-time workers were much more likely to be aged over 50 than full-time or casual workers.

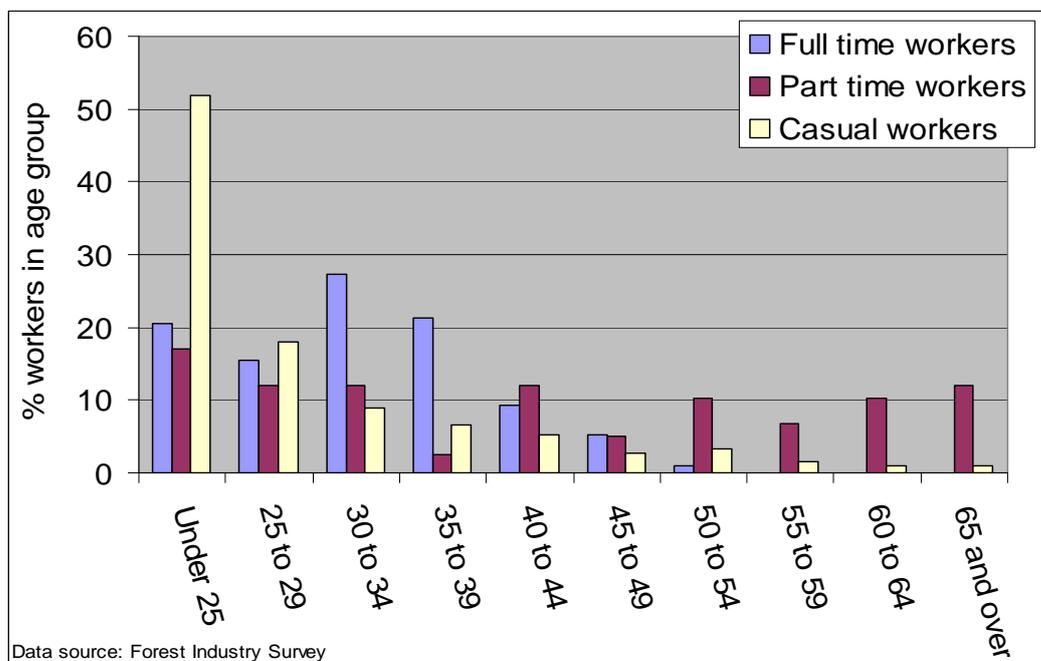


Figure 19: Age distribution of forest industry workers by employment status

Expenditure

This section estimates total forest industry expenditure, and expenditure characteristics of different types of forest industry business. Measuring expenditure by the industry provides an indication of the impact of the industry on the rest of the economy.

‘Expenditure’ refers to spending by forest industry businesses up to a defined point in the chain of production, excluding transfers within the industry up to that point to avoid double counting of spending.

In this case, expenditure was measured up to the point at which finished goods were produced by wood and paper product manufacturers. It includes all expenditure incurred in the process of growing, harvesting, transport of logs to processors, and processing. The following figures have had transfers between forest industry sectors removed: grower and processor expenditure does not include payments made to contractors (as this is reflected in contractor expenditure), or payments for log inputs made by processors to growers.

The survey asked questions about the total value of production, but these received fewer responses than questions about expenditure. Therefore the gross value of production (GVP) of the forest industry was not calculated. GVP is, however, related to expenditure, with GVP usually equal to expenditure plus profits. The total GVP of the forest industry to the point of finished wood and paper products leaving the mill door is therefore likely to be higher than the total expenditure to this point.

Questions about expenditure were answered by fewer survey respondents than questions about employment. Of growers and processors, 74% of respondents answered basic questions about their WA forest industry business activity and values in 2005–06. However, some large employers did not answer these questions. Those who did respond employed only 22.4% of the total number of people estimated to be employed in growing and processing businesses in total, representing a fairly small sample on which to base estimates of total expenditure. For this reason, estimates of expenditure by growers and processors are presented with a wide range to reflect the likely range within which the estimate falls.

Of contracting and consulting businesses, 72.1% of respondents provided basic information on expenditure. Those who responded employed 42.0% of the total number of people estimated to be employed in contracting and consulting businesses in total, representing a good sample on which to base estimates of total expenditure.

The survey also asked businesses to identify how much they spent in different locations. A lower response rate was achieved to this question than other expenditure questions. As a result, it is not possible to estimate total expenditure by individual LGA, but it is possible to profile the typical spending patterns of different businesses.

A high response rate was achieved from hardwood plantation businesses, making it possible to profile expenditure by this sector in more detail than for the native forest and softwood sectors.

Estimated total expenditure

Table 11 shows estimated total expenditure by the WA forest industry in 2005–06⁹. The total expenditure by the forest industry as a whole, including growers, processors and contractors, excluding transfer payments between sectors, is estimated at \$790–\$1,060 million.

It was not possible to identify the forest industry’s contribution to Gross State Product, as the value of goods produced was not identified for enough forestry businesses to calculate value added across the industry.

Table 11: Estimated total expenditure by the WA forest industry in 2005–06⁹

Forest industry sector	Est. total expenditure 2005–06 (\$million)²
Growers and processors ¹	\$460–660 million ³
Contractors and consultants	\$340–410 million
Total	\$790–1,060 million

¹Excludes payments to contractors, and transfers between growing and processing sector.

² Figures have been rounded to the nearest \$10 million.

³Figures are given as a range rather than an average to reflect uncertainty in the estimate, due to the relatively low number of businesses providing expenditure data. The range of expenditure estimates was plus/minute 10% for all types of businesses except processors, where it is given as plus/minus 20% due to the very low response rate to expenditure questions from this sector.

⁹ Notes on derivation of estimates in Table 10:

- Grower and processor data was estimated based on total expenditure by growers and processors, less transfer payments between growers and processors for inputs such as logs, and less payments to contractors.
- Total expenditure by growers and combined grower/processors was estimated based on proportion of employees represented in the sample. This approach was not appropriate for processing employment, however. The group which had the lowest response rate for expenditure data were processors. Fourteen processors provided expenditure data; these represented 13.5% of processing employment (excluding wooden structural component manufacturing). The responses received indicate that different types of processors have very different expenditure patterns per employees. Small sawmills spend considerably less per employees than large processors, or small and medium processors using high-tech machinery. Responses were skewed towards those who spend less per employee than the average. Total expenditure for processing employment was therefore estimated by identifying typical expenditure per employee for different types of processors, based on the responses received, and multiplying this by the total number of employees identified for that type of processor. The types of processors identified were: plantation processors of all sizes (typically spending, after payments for inputs and contractors were excluded, between \$100,000–140,000 per employees), small and medium native forest processors (typically spending \$60,000–\$100,000 per employee after payments for inputs and to contractors were excluded), and large native forest processors (average of \$100,000–\$120,000 per employee).
- Total expenditure by contractors estimated based on proportion of employees represented in the sample. As businesses who answered this question employed 66.4% of all those estimated to be employed in contracting and consulting for the forest industry, total expenditure was multiplied by 1.506 to estimate total expenditure.
- The range of expenditure is given as +/-10% as this is the probable variability in estimation based on the variation in expenditure between similar types of business, and assessments respondents were asked to make of the robustness of the data they provided.
- Estimates were rounded to the nearest \$10 million.

It was not possible to break expenditure down by sector for the native forest and softwood sectors, as not enough responses were received to make this viable. The businesses that provided expenditure data did, however, employ 64.9% of the total number of people estimated to be work in the hardwood plantation growing and processing sectors, and 37.3% of contractors estimated to work in this sector. It was therefore possible to make an estimate of total expenditure by the hardwood plantation sector, as shown in Table 12. The total estimated expenditure by this sector is between \$115–140 million, which represents between 13.2–14.6% of total estimated expenditure by the forest industry in WA. This is consistent with the employment estimates, in which employment in the hardwood plantation sector, excluding those whose sector of employment is unknown, is likely to be approximately 14.5% of total employment in the WA forest industry.

Table 12: Estimated total expenditure by the WA hardwood plantation industry in 2005–06⁹

Forest industry sector	Est. total expenditure 2005–06²
Growers and processors ¹	\$55–65 million ³
Contractors and consultants	\$60–70 million
Total	\$115–140 million

¹Excludes payments to contractors, and transfers between growing and processing sector.

² Figures have been rounded to the nearest \$5 million.

³Figures are given as a range rather than an average to reflect uncertainty in the estimate, due to the relatively low number of businesses providing expenditure data. The range of expenditure estimates was plus/minute 10% for all types of businesses except processors, where it is given as plus/minus 20% due to the very low response rate to expenditure questions from this sector.

Expenditure by business type

Figure 20 shows the typical breakdown of expenditure by different types of forest industry business. Wages and salaries make up a large proportion of expenditure for some types of business, particularly consultants and contractors engaged in providing expert advice, nurseries and seed suppliers, and silvicultural and roading contractors. Capital expenditure as a proportion of total expenditure was highest for harvest and haulage contractors, who have high business capital costs. Log/wood inputs were reported to be one of the largest costs for processors.

Almost 80% of expenditure by growers was reported to be spent on contractors, representing a large proportion of expenditure.

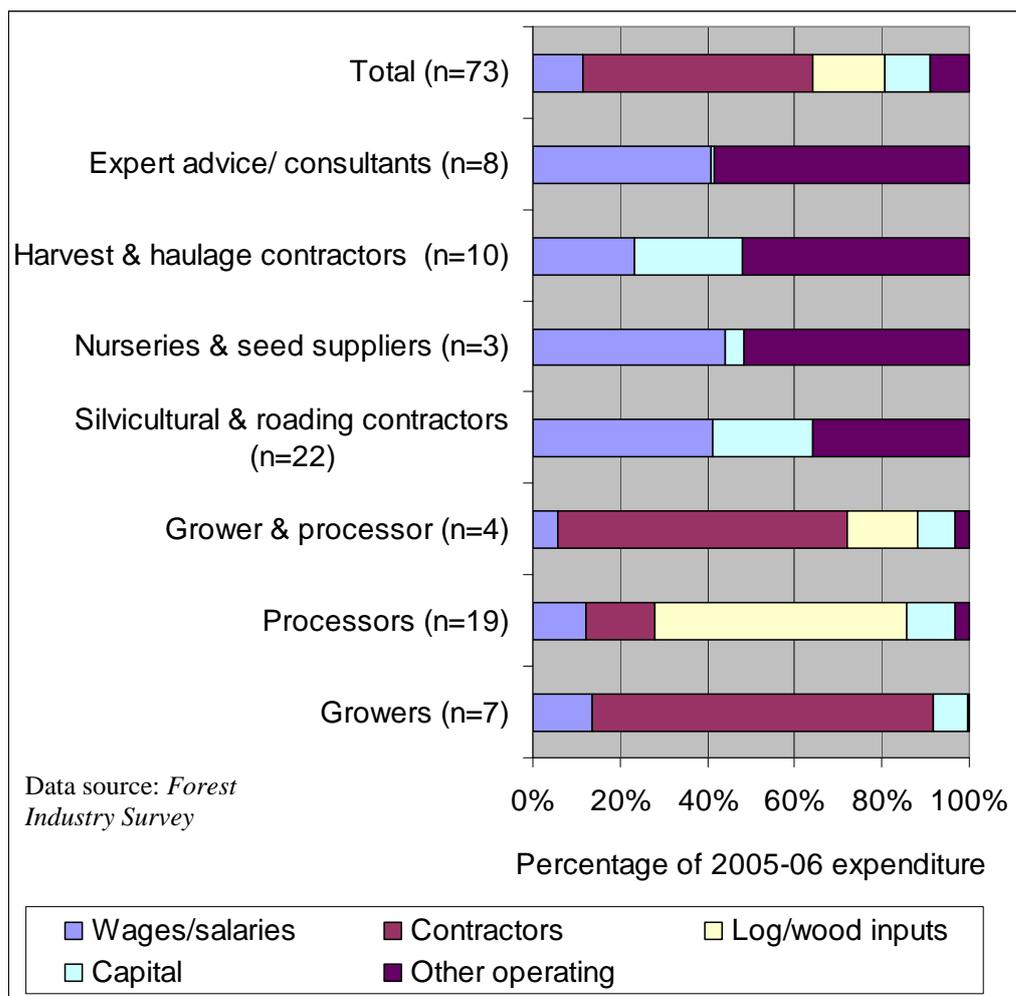


Figure 20: Average expenditure breakdown for different types of forestry business

Location of expenditure

Figure 21 shows the typical spatial distribution of spending reported by different types of forest industry business.

Contractors and consultants on average undertook 66% of their business expenditure in the same LGA their business is located in, approx. 8% in LGAs immediately adjacent to that LGA, and 23% in other WA LGAs. A small proportion of expenditure by contractors (3%) took place outside WA.

For growers and processors, the location of a large proportion of spending was not identified, largely because it can be difficult to classify the location of expenditure for expenses such as purchase of electricity, or of supplies such as fuel which may be purchased from a single company which has several individual locations. The data in Figure 21 represent location of spending where location could be identified, and exclude the spending for which location could not be identified.

Where the location of grower and processor spending was known:

- 29% of spending by growers and businesses undertaking both growing and processing took place in local and adjacent LGAs, 58% in other WA LGAs, and 13% outside WA
- 68% of spending by processors took place in local LGAs, 12% in adjacent LGAs, 19% in other WA LGAs, and 1% outside WA. This may reflect a bias in response towards smaller processors, with few large processors responding to the survey.

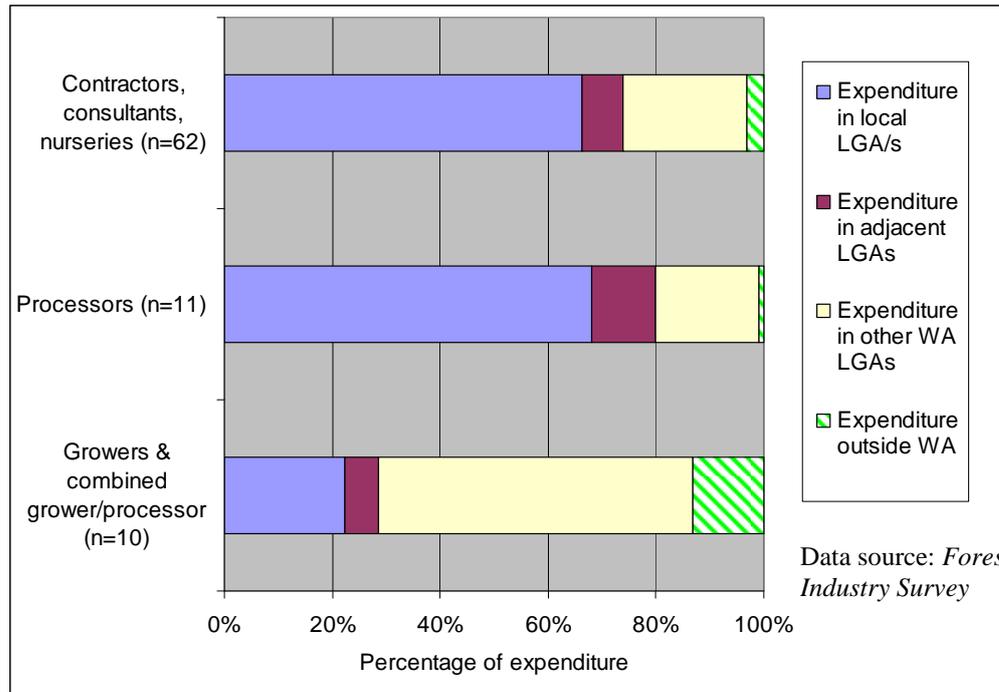


Figure 21: Location of expenditure by business type: growers, processors and contractors

Figure 22 shows the typical spatial distribution of spending reported by different types of contractors and consultants. Most types of contracting and consulting businesses had similar patterns of spending, with the exception of nurseries and seed suppliers, who reported a slightly lower proportion of total expenditure in their local LGA than other types of businesses.

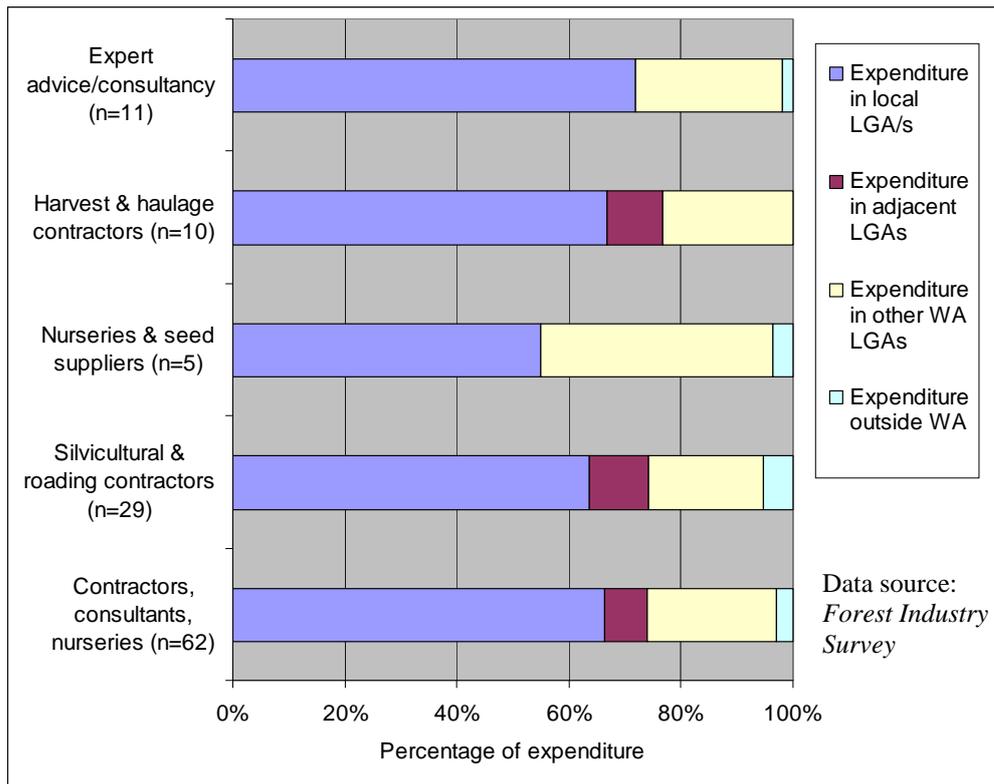


Figure 22: Location of expenditure by business type: contractors and consultants

The location of expenditure also partly depended on where forestry businesses were based. The location of expenditure for businesses based in different LGAs is shown in Figure 23. Only those LGAs for which more than three businesses provided expenditure data by location are shown.

Businesses which were based in remote locations (Esperance), or in regional centres with a large concentration of forestry businesses (Albany, Bridgetown-Greenbushes, Manjimup and to a lesser extent Bunbury) reported a much higher proportion of local expenditure than other businesses. Businesses located in small LGAs without large towns, and in areas in which there were few forestry businesses, typically reported a smaller proportion of local spending, and a higher proportion of spending in LGAs some distance from their business base.

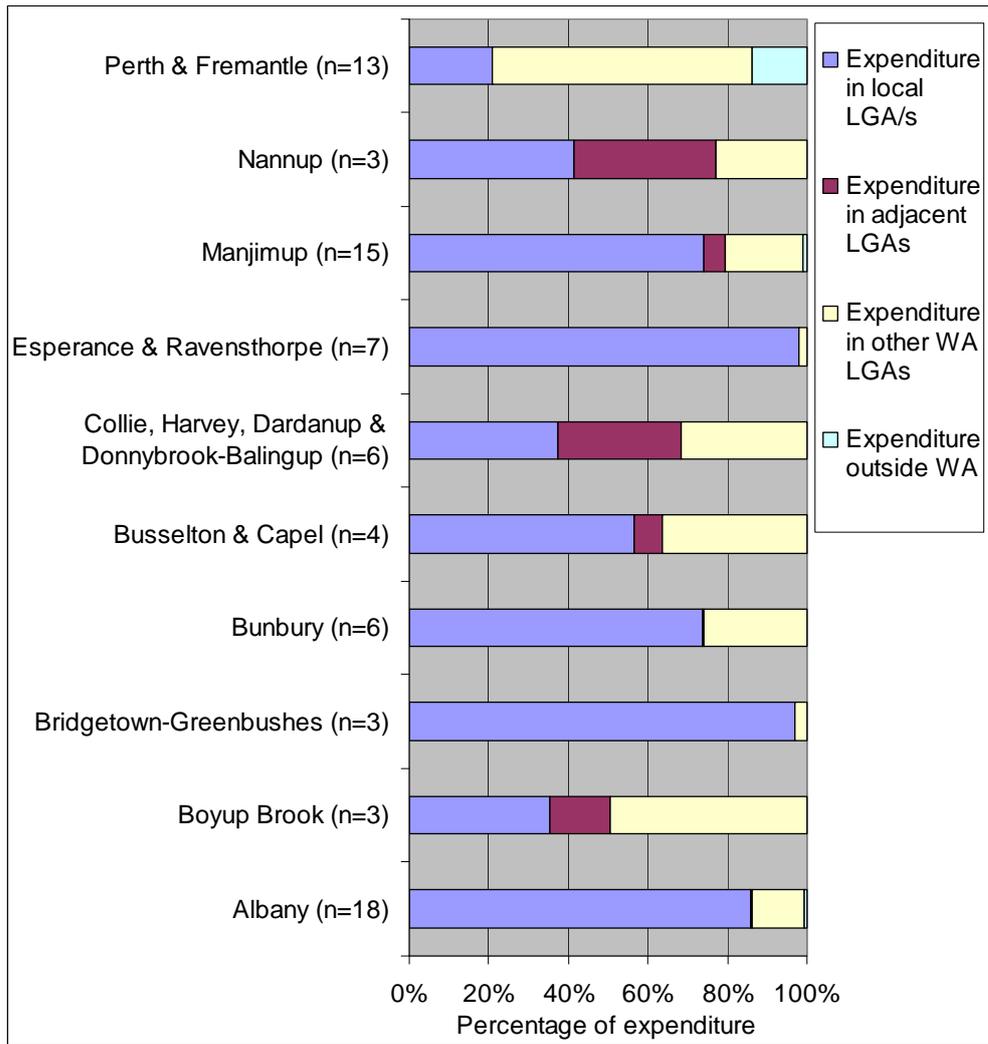


Figure 23: Location of expenditure for businesses based in different LGAs

Discussion

The results of this survey have identified some key statistics on employment and spending by the forest industry in WA. This section discusses:

- how the estimates produced compare to other estimates of forest industry employment in WA
- how employment has changed over time
- the nature and structure of the industry
- comparing characteristics of the forest industry workforce to the WA average
- the contribution of the forest industry to WA communities and the WA economy.

Comparing different WA forest industry employment statistics

In recent years, three separate estimates of WA forest industry employment have been made:

- the *Forest Industry Survey* results documented in this report estimate employment of 5,570 people in 2005–06
- the Australian Bureau of Statistics (ABS) recorded 5,552 people as employed in the forestry and logging, services to forestry, and wood and paper product manufacturing industries in the 2006 *Census of Population and Housing*
- in 2002–03, FAFPESC undertook the *Forest and Wood Products Industry Workforce and Industry Data Collection Survey* and estimated a total of 14,012 people were employed in the WA forest industry.

Clearly, these three sources have quite different figures. Table 13 compares the estimates of WA forest industry employment from these different sources, highlighting the definitions of the forest industry each used, and describing key differences in the methodologies used to estimate total employment.

Three factors are likely to have contributed to the differences in estimates:

- differences in geographic region and timing of data collection
- differences in definitions of the forest industry
- difficulty classifying workers into industries
- differences in methods used to estimate total employment
- different times at which information was measured.

Differences in geographic regions contribute to differences in the total employment estimated. The FAFPESC survey covered all of WA, while the ABS and *Forest Industry Survey* figures are for southern WA only. While southern WA includes the majority of the forest industry, this would still mean FAFPESC estimates are higher than the others. In addition, the FAFPESC survey is based on 2002–03 data. ABS estimates indicate that employment in the WA forest industry fell by 8.5% between 2001 and 2006. The FAFPESC estimate is therefore likely to be higher than the other

estimates, as data were collected at a point in time when total employment in the forest industry was higher.

The three estimates are based on different definitions of what types of businesses should be considered part of the forest industry.

The *Forest Industry Survey* included more contractors who depend on the forest industry than are captured in the ABS definitions of ‘services to the forest industry’, and this is the primary reason for differences in estimates between the two. In particular, some silvicultural and roading contractors are unlikely to be included in ABS figures. The ABS may also include some non-industrial private growers in their estimates of ‘forestry and logging’ employment, whereas the *Forest Industry Survey* does not. The FAFPESC survey included people employed in timber merchandising in their estimate of total employment; the ABS and *Forest Industry Survey* did not. This accounts for part, but not all, of the difference in estimates between the FAFPESC study and other estimates.

ABS estimates of forestry and logging included considerably more people employed in pulp, paper and paperboard production than were identified in the *Forest Industry Survey*. After consultation with businesses involved in this type of production, it appears possible some people who work for these companies may have been misclassified in ABS estimates as being located in the pulp, paper and paperboard industry, when in fact they are employed in other activities the relevant companies engage in. This results from difficulty classifying workers, with some businesses undertaking a range of activities within and outside the forest industry.

The three estimates are also based on different approaches to estimating total employment numbers based on responses received to surveys/census. The FAFPESC survey achieved a 32% response rate in WA, and the total employment reported by respondents was multiplied by 3.125 to estimate total numbers employed.

In the *Forest Industry Survey*, however, the size of non-responding growers and processors was estimated individually, as the responses were biased towards particular business sizes. In addition, as responses from contractors were biased to larger businesses, a conservative approach was used to identifying total employment in this sector based on the same responses received. This resulted in a more conservative estimate for the *Forest Industry Survey* than that developed by FAFPESC.

It is probable that FAFPESC survey responses were somewhat biased towards large businesses, so that using a direct ratio approach to estimating total employment resulted in an over-estimation of WA forest industry employment. This, combined with collecting data at a period when it is likely more people worked in the industry overall, covering the entire State, and including employment in timber merchandising, explains much of the difference in estimates.

ABS numbers are based on a census and so require no multiplication to achieve an estimated total. However, they do rely on identifying the industry a person is based on from the response given on the census form. Some people do not respond to questions about their industry of employment; it can also be difficult for the ABS to classify people into their industry of employment if a person is employed by a company which undertakes activities in both the forestry and other industries.

The estimates produced in this report are relatively conservative, based on identifying that non-responding businesses were mostly small to medium-sized businesses. They

are more likely to under- rather than over-estimate employment in the WA forest industry. The relative closeness to ABS estimates, which are based on a census of all WA households indicates that they are robust and also highlights that it is essential to include forestry contractors when estimating employment, as employment in several types of forestry contracting work appears to be underestimated in ABS data.

Table 13: Comparison of WA forest industry employment estimates from different sources

Data source	Total number of businesses	Forestry and logging ¹	Wood & paper manufacturing	Services to forestry	Merchandising ²	Total	Reasons for differences between this and other estimates
Forest Industry Survey (2005–06)	330 excluding wooden structural component manufacturers	1,238	3,611	721	Not measured	5,570	Some of those classified in ‘services to forestry’ and ‘forestry and logging’ would be included in the ABS category ‘wood and paper product manufacturing’ despite being contractors. This partly explains why estimates of processing employment are lower in the Forest Industry Survey (FIS) than in ABS estimates. In addition, ABS estimates of forestry and logging included considerably more people employed in pulp, paper and paperboard production than were identified in the Forest Industry Survey, possibly due to misclassification. The FIS estimates were also deliberately conservative to avoid overstating direct employment in the forest industry. The ABS data do not include some types of contractors who provide silvicultural and transport services; this is why the FIS estimate for ‘services to forestry’ and ‘forestry and logging’ is considerably higher than the ABS estimate.
ABS 2006 Census of Population and Housing (August 2006)	N/A	842	4,461	249	Not measured	5,552	The ABS does not classify some types of silvicultural and transport contractors as being included in the forest industry. Therefore ABS estimates of ‘services to forestry’ and ‘forestry and logging’ are lower than for other estimates.
FAFPESC Forest and Wood Products Industry Workforce and Industry Data Collection Survey (2002–03)	540	1,190	5,636	407	2,223	14,012 (includes 4,556 workers not classified into an industry sector)	FAFPESC used a direct ratio to calculate total employment based on the survey responses. Survey responses may have been biased towards larger businesses, meaning the estimated total is skewed upwards. FAFPESC did not ask businesses to indicate what percentage of their employees worked in the forest industry. As some businesses work across multiple industries, not solely in forestry, this may have led to overestimation of forest industry jobs. FAFPESC estimates include employment in the ‘timber merchandising sector’; other estimates do not. FAFPESC data are from 2002–03, when employment was higher.

¹This category includes ‘growers’ and ‘harvest and haulage contractors’ as defined in this report, although ABS figures would exclude many haulage contractors

²Wholesale and retail sales of wood and paper products

Change in forest industry employment over time

The *Forest Industry Survey* has only been undertaken once, and so does not provide a measure of how employment in the forest industry has changed over time. The only source of data on employment over time is the Australian Bureau of Statistics (ABS) *Census of Population and Housing*. While the ABS employment figures represent a subset of total employment in the forest industry – they exclude many contractors working in the forest industry – they provide an indication of change in employment over time.

Overall, ABS data indicate that employment in the growing, harvest and haulage, and processing sectors fell 8.5% over 2001–06. This decline is most likely largely related to decline in native forest-based forest industry activities, as data for the Great Southern region indicate rapid growth in the industry based on hardwood plantations. In the native forest sector, the period 2001–06 was the period in which policies implemented by the WA government resulted in reduced access to native forest for harvesting. This is likely to have resulted in loss of employment in this sector.

The *Forest Industry Survey* will be repeated in 2008 and 2010 to provide a more detailed understanding of how forest industry employment is changing over time.

Nature and structure of the WA forest industry

The WA forest industry is commonly perceived to consist of a small number of large businesses. It is in fact very diverse, with the growing, processing and contracting sectors consisting of a mix of small, medium and large businesses.

Small and medium-sized businesses employ a high proportion of the total forest industry workforce, with approximately 26% of all employees working in small businesses, 42% in medium-sized firms and 32% in large businesses with over 100 employees.

In the ‘growing’ sector, WA’s industrial growers are predominantly small and medium-sized businesses in terms of number of employees, with only one large business with over 100 employees. These growers utilise contractors to undertake a large part of the silvicultural, harvest and haulage activities in the native forest and plantations they manage. There are also an unknown number of small non-industrial private growers of native forest and plantations, who were not included in this survey. The growing sector is therefore dominated by a small number of large and medium-sized businesses, and a large number of small enterprises.

The processing sector is similarly diverse, but is dominated by small businesses, with 71% of the 69 processors identified employing less than 20 people, while 20.3% employ 20–99 employees and 8.7% over 100 employees. Of the 48 businesses identified, 12% had over 100 employees, 18% between 20 and 100 employees, and 70% operated small businesses with less than 20 employees. This excludes wooden structural component manufacturers.

Contracting and consulting businesses are predominantly small businesses. There are, however, more medium and large-sized contracting businesses than may be expected, with 16.6% of all businesses having more than 20 employees, and 8.3% having more than 100 employees.

A large proportion of total direct employment in the forest industry is located in the contracting and consulting sector, with 30.3% of employment located within this sector. It is essential to include the range of contractors who provide forestry-specific services in any survey of the forest industry. These contractors undertake a range of roles. While harvesting and haulage contractors are well recognised as depending on the forest industry for their employment, a large number of contractors are employed undertaking roading and silvicultural activities (approximately 415).

As there has been a reported shift to increasing use of contractors over time in many parts of the forest industry, it is essential that contractors be included in all surveys aiming to identify the employment and spending generated by the forest industry.

Comparing the forest industry workforce to the WA workforce

Workers in the WA forest industry are different in many ways from the ‘average’ employed member of the WA workforce. Key differences include that, when compared to the WA workforce overall, forest industry workers:

- were more likely to work full time – 75% of forest industry jobs were full-time positions versus 68.3% of jobs in WA as a whole
- were less likely to work on a part-time or casual basis – 25% of forest industry jobs were part-time or casual versus 31.7% of jobs in WA as a whole
- were more likely to be male – 81.5% of forest industry workers were male compared to 54.8% of the WA workforce
- were more likely to be aged under 45, and less likely to be aged 45–64, than was average for the overall WA workforce. Forest industry workers are therefore on average younger than the ‘average’ WA worker.

While the workforce profile of individual businesses varied considerably, it is apparent that the forest industry does have some key demographic differences. In particular, the dominance of male employees is evident, and the prevalence of full-time work.

As further surveys are undertaken it will be possible to identify if the forest industry workforce is changing in ways similar to the overall labour force – *eg*, it will be possible to identify if female participation in the forestry workforce is increasing or decreasing; if the workforce is ageing; and if there is any change in the proportion of full-time, part-time and casual jobs available.

Contribution of the forest industry to WA communities and economy

Overall, an estimated 0.65% of the WA workforce in August 2006 worked in the forest industry. This varied considerably by region, with some WA regions highly dependent on forestry employment and spending, and others less so. The local government areas with the highest proportion of employment dependent on the forest industry – Nannup, Manjimup, Plantagenet/Denmark, and Bridgetown-Greenbushes, all with 8% or more of the workforce working in the forest industry – were typically rural LGAs, as are Dardanup and Donnybrook-Balingup with 6% of the workforce dependent on the industry. The high proportion of employment dependent on forestry indicates these LGAs are more vulnerable to experiencing impacts of changes in forest industry employment.

Other areas with a high number of forestry employees, such as Albany, Bunbury and Harvey, are regional cities with a higher population, such that they have a lower dependence on the forest industry, although in Albany over 4% of the workforce were directly employed in the forest industry in 2005–06.

The majority of both employment and spending by the forest industry occurs in the Perth/Peel region, largely because of the high number of wood and paper processors based in this region. The South West has over 2,000 people working in the forest industry, and includes the majority of employment in the native forest industry. In other regions, there is less employment, but it is almost exclusively dependent on plantation forestry, with the Great Southern and Goldfields-Esperance forest industries predominantly based on hardwood plantations established in the last 10–15 years.

Expenditure patterns vary considerably by business type. The majority of expenditure by WA forestry businesses occurred within WA, particularly for contractors and consultants. Only growers and combined grower/processors reported undertaking more than 10% of their expenditure outside WA.

The spending impacts of growers and processors are distributed widely across the State, with over 60% of spending occurring in the LGA in which the business was located or in adjacent LGAs, and the majority of the remaining spending in other LGAs within WA.

Approximately 40% of forest industry expenditure is undertaken by the contracting sector and 60% by growers and processors (excluding transfers between these sectors). The highly localised nature of spending by contractors means a high proportion of spending occurs in the LGA in which forestry businesses are located, although these businesses may often undertake work across a number of LGAs in which only a limited percentage of their total expenditure occurs.

Overall, the forest industry contributes significantly to WA communities and the WA economy. The extent to which different parts of WA depend on the industry varies widely, however, with some local government areas – particularly in the South West region – having high dependence on forest industry employment and spending, while others have a more diverse economy in which only a small proportion of activity derives from the industry.

Conclusions and further research

This survey provides data on the number of people who depended on the WA forest industry for employment in 2005–06. The measure of ‘direct dependence’ used in this report differs from the methods commonly used to classify people into a specific industry. Definitions of what constitutes the forest industry have varied in previous surveys. Many have surveyed only the growing and processing sector; others have surveyed all businesses up to and including hardware stores that sell wood products. The definition used for this study was selected as the most appropriate way of identifying the number of people who would be directly affected by any change – positive or negative – affecting businesses which aim to produce commercial wood and paper products.

The figures on employment and spending based on this definition differ from those produced by the Australian Bureau of Statistic (ABS). This primarily reflects that the ABS classify some workers who work solely in the forest industry as belonging to other industries – *eg*, log transport workers may be classified in the transport industry. It is therefore expected that estimates of employment in this report would be higher than estimates produced by the ABS, and the differences in figures are not the result of inconsistency in method, but of differences in definition.

The data in this report are particularly useful for identifying the number of people who could potentially be directly affected by changes to the native forest and plantation industries in the short-term. Whether or not a person is employed in a forestry-specific task, if they work for a forestry business in any capacity and that business is affected by a change such as expansion of plantation estate, or reductions in volume of native forest harvesting, they will be affected by the change.

This survey provides data for a single point in time. A second survey of the forest industry is planned for late 2008, and a further survey in 2010. These will enable identification of changes in forest industry employment and spending over time.

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Appendix 1: Methods

This study was based on a mail survey of businesses directly dependent on the forest industry in the southern half of Western Australia (WA). This section contains a detailed description of the design of the questionnaire, development of a sample frame, survey delivery, the response rate achieved, and the method used to estimate total employment and expenditure generated by the industry from the responses received.

Questionnaire

Questionnaire design process

The questionnaire was designed in several stages:

- a list of proposed topics was developed based on review of media and public discussion about forestry and jobs
- the list of topics was discussed with representatives of the forest industry in WA, to identify how to best design questionnaires that could be easily answered by different types of forest industry business. Based on the advice received, a decision was made to send two questionnaires – one to forest industry growers and processors; and a related questionnaire with fewer questions to contracting businesses
- the final list of topics was developed into a set of survey questions
- the draft questionnaire was sent to a range of forest industry members for comment and redrafted
- 12 members of the industry were asked to test the revised questionnaire.
- after feedback and final revisions, the questionnaire was finalised.

Questionnaire topics

The final questionnaire included questions on the following topics (copies of the full questionnaires are provided in Appendix 2):

- location and nature of business, including the type and extent of forest industry related work undertaken during financial year 2005–06
- number of people employed during 2005–06 by employment status (full-time, part-time, casual), type of work undertaken (e.g. harvesting, administration, plantation management), and turnover in employment
- demographic characteristics of employees including gender, age and qualifications
- local government area in which employees live and work
- total capital value, debt, revenue and expenditure by the business in 2005–06, and expenditure by categories (for growers/processors more categories were included to ensure double counting could be excluded when summing expenditure through the chain of production)
- expenditure by local government area.

Sample frame and sampling approach – why a census was used

When designing a survey of the forest industry, the first question to ask is how the boundaries of the industry will be defined – in other words, what is the sample frame? The second decision is how many businesses within the sample frame to survey – should a sample be taken, or a census of all businesses?

Forest industry sectors included in the study

How should the forest industry be defined? What businesses should be considered to form part of the industry, and which should be considered as servicing the industry, but not as part of it?

The ‘Australia and New Zealand Standard Industrial Classification’ (ANZSIC) (ABS 2007) is commonly used to define who falls into particular industries. ANZSIC classifies people as belonging to a particular industry based on the type of work they undertake. Because of this, people who are dependent on the forest industry for their employment may undertake work which is classified as being in a different industry. For example, drivers of log trucks are typically highly dependent on the forest industry – the equipment they have invested in is specifically designed for use in forestry and they often form part of a business which harvests and transports logs. In the ANZSIC classification, they are generally classified as part of the road freight transport industry, as their principal work task is transport.

The goal of this study is to identify the extent of direct livelihood dependence on the forest industry. It was therefore important to include businesses which depend on the forest industry for their livelihood, whether or not they are classified by ANZSIC as within the forest and wood products industries.

However, the concept of dependence creates difficulties in defining the boundaries of the type of businesses which should be included in the study. What does ‘dependence’ mean?

A restricted definition of dependence was utilised, in which those directly dependent on the forest industry were defined as *all employees of businesses undertaking activities specific to the forest industry*. All employees of these businesses were considered to be directly dependent on the forest industry, whether or not the tasks they undertook for that business were specific to the industry. For example, an accountant employed full time by a forestry business is currently dependent on the forest industry for their livelihood, even though accountancy is not a skill specific to the forest industry. Where businesses undertake both forestry-specific and other activities, only the proportion of their activities undertaken in the forest sector are considered to be directly dependent on the forestry industry.

Under this definition, the following types of business are clearly included:

- businesses which manage native forest or plantations for wood production
- businesses which harvest and transport logs to processors
- processing facilities which process logs into wood products and secondary products. Direct dependence ends where wood products are mixed with other materials such as plastics and cloth in the process of making end products.
- nurseries growing seedlings for planting in commercial forestry activities

- businesses who engage in preparing ground for planting, planting seedlings, infill planting, and various silvicultural activities
- other businesses dependent on the forest industry including industry lobby groups, associations, government regulators who have staff whose job is to oversight and regulate industry, and researchers focussed full-time on forestry research.

It was not always simple to identify which activities should be considered specific to the forest industry and which should not. For example, ground preparation occurs for many agricultural crops; however, some ground preparation contractors specialise in preparing soil for tree planting and hence could be considered specific to the industry. Businesses which were *not* included under this definition were:

- Contractors who provided services not specific to the forest industry. This included electricians, fencing contractors, and others.
- Activities beyond ‘mill door’ including transport of finished products to market, except where that market involves another stage in wood or paper processing.
- Processors who utilise wood and paper products to make products for a purpose other than wood and paper production. One difficulty was identifying whether furniture makers should be included, as many utilise both timber and other products in making furniture, while others solely utilise wood. Those who solely utilise wood were included in the survey.

Using this definition, a sample frame of relevant businesses eligible for surveying could be identified. However, the following groups who would be eligible to be included in the survey under the definition described above were not included:

- Firewood cutters and sellers. While this is an important sector, it is very difficult to survey, and practical difficulties and funding constraints meant it was necessary to leave this group out of the survey, although 10 of the processors included in the sample frame did undertake some firewood collection and sale.
- Non-industrial private forest growers (NIPFs). NIPFs are small private growers of native forests and plantations, usually individuals who grow trees as part of an owner-operator business, e.g. through growing farm forests on part of an agricultural property. While clearly a group who are partly or wholly dependent on the industry for their livelihood, it was not possible to (a) identify the extent of this group, as there are no robust estimates of the total number of NIPFs in WA, (b) identify contact details for many NIPFs, or (c) if contact details were accessible, survey the large number of small growers involved with the resources available. A small sample of nine was included in the survey to identify key characteristics of these growers.
- Wooden structural component manufacturing. This type of wood manufacturing – in which wood products are used to construct wooden structural components, e.g. wooden joinery for kitchens, doors, and other housing wooden components – is undertaken by a number of businesses, principally centred in and around Perth. It was difficult to identify all the businesses involved in this sector and survey resources did not permit this sector to be adequately surveyed. Because of this, ABS data are used for this sector, and always presented separately in the report

with clear labelling to identify that the data came from a different source to the survey being reported here.

This means that the data presented in this report do not include all people dependent on the forest industry, but would include the large majority.

Sample or census? Why a census was chosen

Two options are possible when undertaking a survey: to survey a sample of the people/businesses relevant to the survey, or to undertake a census approach in which all of those eligible are included in the survey. A census approach was used in this study for several reasons.

Firstly, a low response rate was expected from some parts of the industry, particularly the contracting sector. Delivering a survey to all possible businesses ensured the best possible response rate. It also enabled analysis of bias in responses, and identification of strategies to address this. The latter will improve methodology for subsequent surveys in which a sample, rather than census, approach is used.

Secondly, sampling was impractical for some forest industry sectors. There are a relatively small number of growers and processors in the forest industry in WA (eg, there are less than 10 large plantation growers). These growers and processors vary significantly in size and business structure. It was not possible to representatively sample these two forest industry sectors given the small and diverse nature of the businesses involved. A census approach was therefore essential if employment and spending were to be estimated with reasonable accuracy.

In the contracting sector, it was not possible to identify a representative sample, as not enough was known about the differences in business type and size to select an appropriate sample. Undertaking a census will assist in identifying samples for future surveys, as the data collected will enable improved understanding of the structure of the contracting sector and, therefore, how it can be sampled.

It may be possible to design an appropriate sampling strategy in future for the contracting sector; however, it is necessary to survey most if not all growers and processors in future surveys due to the diversity of businesses involved, and the small total number of businesses in some parts of the forest industry.

Identifying forestry businesses in Western Australia

A census frame was developed by:

- Identifying all major forest growers and processors in WA and contacting them individually to discuss the survey and ask for their assistance. The majority responded to this and provided assistance.
- Asking growers and processors to send the researchers lists of the contracting businesses they utilised during 2005–06 to help identify a sample frame of contracting businesses to be surveyed. Lists were provided by all large plantation growers, and by a small number of processors.
- Searching the online White Pages and Yellow Pages directories for businesses with any of the following words in their business name: forestry, plantation, log, tree, harvest, logging, silviculture, pine, eucalypt. The businesses identified were then reviewed to exclude businesses not in the forest industry.

- Identifying government agencies, researchers and representative organisations involved in forest industry related activities.

Lists of businesses were then collated and overlaps removed, before finalisation of the sample frame for survey.

The sample frame is described in detail when survey response rates are discussed.

Sample frame: development and robustness

Table 2 in the main report summarises the number of forestry businesses identified as operating in southern WA in August 2006, and key characteristics of these businesses. This section provides more detail on the sample frame. The following key business sectors were identified:

- **11 industrial forest growers (plantation and native forest managers):** Seven large growers were identified who operate as a formal business, and four smaller businesses. Of the seven large growers, five are also processors, with most managing woodchip mills processing plantation timber from their estate; and six grow plantations and do not manage native forest estate for harvest.
- **Many non-industrial private forest growers:** Small private growers of native forests and plantations were not specifically sampled in the survey, as it is difficult to identify a useful sample of small growers. A total of nine were surveyed, however, providing some information on the employment generated by a typical small grower.
- **69 processors and exporters:** A total of 59 processors and exporters undertaking sawmilling, post and pole production, woodchipping, woodchip export and log export were identified. In addition, 10 businesses undertaking a combination of firewood and fence post production were identified. There would be many more firewood producers in WA than those identified but it was not possible to accurately estimate the total number of firewood producers and no attempt was made to do so, as the survey did not aim to include all firewood production. Of the 68 processors and exporters identified, three focussed solely on export of logs or woodchips, 46 operated solely in the native forest sector, three in the softwood sector, five processed blue gum plantation logs, and one processed both plantation and native forest timber. The source of inputs for 10 small processors is unknown but most likely to be native forest, as these remaining businesses were all small businesses producing products typically using native forest timber.
- **Wooden structural component manufacturers.** Employment in this sector was estimated from ABS data, as described earlier.
- **238 contractors and consultants:** 281 contracting and consulting businesses were identified in the initial sample frame. However, several businesses operated under multiple names, no longer operated in the forest sector, or had been mistakenly identified as operating in the forest sector. After these were taken into account, the sample frame was reduced to 238. It is likely that this sample frame included all contractors working in the plantation sector, as all major plantation growing and harvesting firms provided lists of contractors they had utilised during 2005–06. It may underestimate contractors working in the native forest sector, as some organisations did not provide any information on contractors they had

utilised during 2005–06, and not all contractors listed their businesses in public directories.

- **10 others:** Other organisations with employees dependent on the forestry sector included forest industry representative bodies, including those representing workers; government regulatory and policy departments/agencies; and research groups. Ten of these were identified.

When identifying the sample frame, an attempt was made to identify how many businesses operate in the native forest versus plantation sectors of the forest industry:

- **Industrial growers:** Of the seven large growers, six grow plantations and do not manage native forest estate for harvest, and one manages both plantations and native forest. The four small industrial growers all grow plantation forest.
- **Non-industrial private forest growers (NIPFs):** It was not possible to estimate what proportion of NIPFs manage native forest and/or plantations.
- **Processors and exporters:** Of the 69 processors and exporters identified:
 - three processed softwood plantation sourced timber
 - five processed bluegum plantation sourced timber
 - 46 processed native forest timber. Of these, 28 produced sawlogs/featurewood and other solidwood products; two harvested native forest burls for craftwood; 10 produced fence posts (and often also firewood). The products produced by the remaining 10 were not identified
 - three exported logs from plantation and native forest sources
 - two processors used either a mix of plantation and native forest inputs, or other inputs such as recycled fibre
 - the source of inputs was unknown for the remaining 10 processors, but most are likely to utilise native forest timber.
- **Contractors and consultants:** It was not possible to identify definitively how many contractors work in the native forest vs plantation sector. Instead, this was determined by examining the characteristics of businesses that responded to the survey, and through a small random sample of 20 non-responding businesses to check for sample bias. The small random sample and survey responses were very similar. Approximately 10% of respondents worked exclusively in the native forest sector; 20% in both the plantation and native forest sectors, and 70% in the plantation sector. This distribution likely reflects lack of identification of some native forest contractors in the process of identifying contractors. Because of this, expenditure on contracting firms by growers and processors was analysed to estimate likely distribution of contractors. This analysis confirmed that around 10% of contractors are likely to work in the native forest sector; this is likely to represent a rapid decrease over the proportion only a few years ago, as a result of changes in policy regarding access to native forest resources by the forest industry.
- **Others:** The other organisations identified all worked across both the native forest and plantation sectors, although five worked primarily in the plantation sector.

Once the sample frame was identified, it was analysed to identify how accurate it is likely to be. In general, the frame could be confidently said to include:

- all industrial forest growers (both plantation growers and native forest managers)
- all medium and large wood and paper processors
- the large majority of small-sized wood processors (at least 90%; excluded processors would largely consist of small ‘mobile milling’ enterprises)
- the large majority of contractors engaged in harvest, haulage to mill, forestry nurseries, and tree planting in the plantation sector (at least 90%), and a majority of native forest sector contractors undertaking these activities (at least 80%)
- a majority of other contractors including those undertaking firebreak maintenance, fire fighting, ground preparation, and other forestry-specific contracting (confidence is lower than 90% of these were included in the sample frame, particularly as many businesses of this type undertake work in both the forestry and other industries)
- a majority of forestry consultants (there is lower confidence that all forestry consultants have been captured in the sample frame, as many consultants undertake work across Australia rather than focusing on only WA, and some of those located outside the study region but undertaking some work within it are likely to have been excluded)
- all government departments responsible for regulation and oversight of the industry
- all industry representative groups
- some researchers working in the forest sector, but not all.

As described earlier, the sample frame excludes:

- non-industrial private forest growers. However, it is likely that some (possibly a large proportion) of the expenditure by these growers was captured in the survey as it did include the contractors many NIPFs typically engage to undertake forestry related work on their properties. A small number of these growers (nine) were surveyed to identify the typical amount of employment generated by a non-industrial private grower
- businesses which transport wood and paper products from mills to market places
- firewood cutters, although a small number were included in the survey
- structural wooden component manufacturers, with ABS data used as a proxy for this group.

The sample frame developed was reasonably robust. All forest and plantation growers and processors were identified and surveyed. However, it is probable that the survey undercounted the total number of contracting businesses in the native forest sector, with several contracting business identified who were uncontactable, and fewer native forestry-based growers and processors providing lists of contractors compared to those in the plantation sector.

Survey delivery

The questionnaire was delivered by mail, with a range of methods used to increase response rate. Mail survey was used rather than other approaches as:

- Questions about expenditure often cannot be answered rapidly over the phone, as business records need to be consulted. This makes mail more appropriate than phone survey for this type of questionnaire.
- Face-to-face surveys are more expensive than mail surveys. The funding available did not permit the use of face-to-face surveys, although some limited site visits were possible.

The survey delivery process involved:

- Sending a pre-survey personalised, hand-signed letter explaining the survey would be delivered in approximately two weeks, and explaining its purpose.
- Sending the questionnaire together with a letter of support signed by key members of the forest industry, an information sheet, and a document providing more detailed definitions of key terms and explanation of how to complete some parts of the questionnaire which were potentially complex.
- Sending a fortnightly reminder card to non-respondents twice.
- Sending a second copy of the survey.
- Phoning non-respondents and offering them the opportunity to complete the survey with the assistance of a researcher who would visit them to assist. (A small number of businesses took up this offer.)
- Sending a ‘mini survey’ which asked only a small number of the questions in the original questionnaire (Appendix 2). This was sent to people who had not responded to the initial survey after the two reminder cards, additional survey copy and phone call.

A free-call phone number was provided which survey recipients could call to request assistance in completing the survey. Approximately 50 calls were received on the free-call number from survey recipients.

This survey approach broadly followed the ‘Dillman’ approach for survey delivery, with some modifications (Dillman 2007). The use of multiple reminders, together with personalised addressing of survey envelopes and letters, has been shown to substantially increase response rates in a range of situations (Dillman 2007). Response rates were highest in the week after the first reminder was posted, some increase occurred after phone calls, and the ‘mini survey’ achieved a good response from businesses which to date had not responded to the survey.

Methods used to estimate total employment

As it was not possible to achieve a 100% response rate from forest industry businesses, it was necessary to develop an appropriate approach to estimate total employment in the forest industry based on the responses received. The methods used varied by sector, and are described throughout the report as results are presented. The general approach used was:

- **Industrial forest growers:** All growers provided at least basic data on employment; therefore no estimation was required to calculate total employment. The characteristics of employees in this sector were profiled based on the survey responses received.
- **Processors:** Response bias was identified by asking industry experts to fill in a table in which all forest processors were listed. Experts were asked to identify whether each business was small, medium or large, and to provide any more detailed estimate of employment if they had knowledge of the total number of employees working for a particular processor. The characteristics of processors that responded to the survey were then analysed. Total employment in the processing sector was then calculated by identifying the average employment by small, medium and large processors who had responded to the survey; and using this average plus the data supplied on size of businesses by industry experts, and information available publicly about some non-responding businesses, to estimate employment for processing businesses that did not respond to the survey. For one sector (wood and structural component manufacturing), ABS data were used to estimate employment, as described previously.
- **Contractors:** The location of all identified contracting businesses was known. Average employment for different types of contracting business was calculated from the responses received. Analysis of response bias indicated large contracting firms were more likely to respond to the survey than small firms. Total employment was then calculated by assuming non-respondents were almost all small firms, with the employment for each non-respondent assumed to be equivalent to the average employment for a small contracting firm (calculated based on survey responses).
- **Native forest contractors:** As stated earlier, the sample frame of native forest contractors is believed to undercount the total number of contractors. Therefore the final estimates of total employment in the native forest contracting sector are given as a range to reflect the uncertainty of this estimate.

Survey response rate

Overall, 46% of the businesses and organisations surveyed responded to the survey. This section details response rates by:

- forest industry sector (native forest, plantation)
- business size
- location
- question.

Response rate by sector and business size

This section identifies how many native forest and plantation businesses responded to the survey, and what proportion of small, medium and large businesses responded.

The classification of businesses into ‘small’, ‘medium’ and ‘large’ can be problematic, as it is difficult to identify a logical point at which businesses should be said to shift from one category to another. Most classifications are based on number of employees in the business, although some also use criteria such as the nature of

business ownership and decision making, turnover, and measures of size specific to a particular industry (Forsaith and Hall 2001). In Australia in recent years, a typical convention has been to classify small businesses as those with less than 20 employees (including owner-operators), medium businesses as those with 2,099 employees, and large businesses as those with 100+ employees (ABS 2007, Australian Chamber of Commerce and Industry 2007). While differing measures are used in some circumstances¹⁰, this convention was used for this study, as it suits the distribution of sizes of businesses in the forest industry, and is consistent with that currently used by a range of groups including the Australian Chamber of Commerce and Industry and ABS.

As many businesses in the sample frame as possible were broadly classified as ‘small’, ‘medium’ and ‘large’ businesses. This was achieved with the assistance of industry experts, who advised on the overall size of the forestry businesses they were familiar with, and some growers and processors who advised on their estimates of the size of the contracting businesses they had utilised during 2005–06.

The estimates provided by these organisations covered all growers and processors but only approximately one in seven of the contracting businesses included in the sample frame. They were later checked against the employment figures reported in survey returns. Where a business had been broadly classified as small, medium or large using the process described above, and also returned a survey, it was found that:

- large businesses had been accurately identified in all cases except one where a large business was misclassified as ‘medium’
- medium-sized businesses were accurately identified in almost all cases except two where a medium-sized business was classified as ‘large’
- small businesses had been defined accurately.

There is therefore a reasonable degree of confidence that the classification of ‘small’, ‘medium’ and ‘large’ businesses achieved for the sample frame can be used as a basis for examining potential sample bias in the survey responses received.

Table A1 provides details on the overall response rate to the survey.

The overall response rates achieved were:

- Industrial growers: 100% of large growers returned surveys, and two of the four smaller industrial growers. The responses included 93% of office locations of plantation growers, a useful measure of the total coverage of the plantation sector. Basic information was accessed about the remaining two growers, enabling estimation of employment for all industrial growers.
- Four of nine NIPFs (44%) returned surveys. All NIPFs were small businesses, usually involving an owner-operator only.
- Processors: Overall, 32% responded to the survey, with much higher response from plantation processors (78%) than native forest processors (30%). All hardwood plantation processors responded, and 33% of softwood processors. Information was able to be obtained for the remaining softwood processors via

¹⁰ For example, the ABS defines a large business as one with 200 or more employees in some cases (ABS 2005).

phone and publicly available information, enabling accurate estimation of employment for all plantation processors. Within the native forest sector, 33% of small native forest processors, 13% of medium-size processors, and 50% of large processors responded to the survey. It was possible to estimate total employment for all large and some medium-sized native forest processors using publicly available information; estimates of business size were made for all remaining non-responding processors with the assistance of informed industry members with good knowledge of the processing sector.

- Contractors and consultants: 51% overall response rate. This was made up of an initial 30.3% response rate to the full-length survey, with another 21% responding to the shorter ‘mini survey’ sent to encourage further response. Of the respondents, 90.5% had small businesses, 9% medium and 1% large businesses. A small random survey by phone of 20 non-respondent businesses indicated this is representative of the structure of the contracting sector overall. Approximately 10% of respondents worked exclusively in the native forest sector; 20% in both the plantation and native forest sectors, and 70% in the plantation sector.
- Others dependant on the forest industry: 42% response rate.

Overall, the survey achieved a very high response from growers and plantation processors, a good response rate from contracting businesses, and a low response rate from native forest-based processors.

A high response rate was achieved from the plantation sector, and it was possible to access basic data on employment for non-responding businesses using phone contact and publicly available information to enable estimation of total employment in this sector with a high degree of accuracy.

This means it is possible to estimate total employment in the plantation sector based on the data received. If some large growers and processors had not responded to the survey, extrapolating the data to the whole of the industry would not have been possible.

Greater caution is needed when using survey responses from native forest processors and contractors to estimate total employment in this sector, due to the lower response rate from these groups compared to those in the plantation sector. For this reason, a range of estimates are given when estimating total employment in native forestry, reflecting the uncertainty resulting from low response rates in this sector.

Table A1: Overall response rates to the WA *Forest Industry Survey*

Type of business	Total response rate¹ Number of businesses (number of office/site locations)	Plantation sector % of businesses (% of office/site locations)	Native forest sector % of businesses (% of office/site locations)	Unknown sector	Response rate by business size Small <20 employees Med 20–99 employees Large 100+ employees
Industrial grower Defined as a business involved in growing plantations and managing native forest	82% (93%) Responses received from all large growers and two of four smaller growers; employment able to be estimated for remaining growers using data already available	82% (93%)	100% (100%)	N/A	Small: 100% Med: 100% Large: 100%
Processors and exporters Business undertaking processing including seasoning, drying, sawing, woodchipping, pulp and paper production	32% (31%) Additional information on employment for four large processors who did not respond to the survey enabled good estimation of total employment	78% (78%) Basic data obtained for all non-responding businesses.	30% (30%)	10%	Small: 38.5% Med: 41.7% Large: 40.0%
Contractors & consultants Business undertaking contracting and consulting activities involving forestry-specific activities, up to mill door	51%	Overall response rate was estimated at 51%, with an estimate of response by sector and business size not given here due to lack of information on characteristics of the sample frame. For this reason, estimates of total contractor employment in WA by sector are given as a range rather than a single figure in this report.			
Other Industry representative groups, regulatory authorities, research groups	42%	42%	42%	N/A	Small: 40% Med/large: 50% Response rates for med/large businesses not reported separately to ensure confidentiality of respondents
Total	Overall 46% response rate				

¹Response rate refers to the number of businesses who returned surveys. Basic information was obtained from some non-responding businesses by phone, and so information was received for a higher number of businesses than indicated here. This information was usually only data on total number of people employed, and so not considered a full response to the survey and not included in the response rate.

Response rate by location

Table A2 identifies the sample frame and response rate by location. For growers and processors, the sample frame and response rate by location is based on analysis of individual sites at which businesses are located, rather than by number of businesses. This is because several growers and processors operate multiple offices or processing sites, and an accurate analysis of response by location must be based on office locations. The large majority of contractors, consultants and other organisations operate from a single office only, and so these are analysed on the location of the business rather than individual office locations.

Where an LGA was identified as containing only a small number of businesses, that LGA was grouped with other contiguous LGAs to ensure confidentiality of responses. This grouping enables reporting of employment while ensuring that data from at least three survey respondents is included, to reduce potential for identification of details about individual businesses.

Table A2: Response rate by location

Local government area/region	Total number of forestry business sites/offices in LGA/s	Response rate ¹
Albany	75	49.3%
Augusta-Margaret River	13	30.8%
Boddington, Murray & Waroona	6	16.7%
Boyup Brook	7	57.0%
Bridgetown-Greenbushes	12	41.7%
Bunbury	34	55.9%
Busselton and Capel	14	42.9%
Collie	14	42.9%
Cranbrook, Kojonup and Katanning	8	62.5%
Cuballing, Gingin, Moora, Narrogin, Wagin and York	6	33.3%
Dardanup and Donnybrook-Balingup	10	50.0%
Esperance, Ravensthorpe	14	71.4%
Harvey	6	66.7%
Manjimup	54	48.1%
Nannup	5	60.0%
Perth, Fremantle and surrounds	52	50.0%
Plantagenet and Denmark	17	35.3%
Other LGAs in study region (a number of other LGAs were included as they may have some commercial tree plantings, but no forestry businesses were identified as being located in them)	0	N/A
Outside WA	1	100%

¹Response rate refers to the number of businesses who returned surveys. Basic information was obtained from some non-responding businesses by phone, and so information was received for a higher number of businesses than indicated here. This information was usually only data on total number of people employed, and so not considered a full response to the survey and not included in the response rate.

Response rate to survey questions

Table A3 provides a summary of the overall response rate to different sections of the survey by those who responded to the survey at all. The figure given excludes invalid responses to each section, and indicates the percentage of respondents who answered different sets of questions.

Table A3: Response rate by survey topic

Question	Growers & processors¹	Contractors & others²
Information about your business, total employment over 2005–06/Office location and forest industry activities	100%	95%
Percentage of activities in native forest, hardwood plantation and softwood plantation sectors	100% growers 95% processors	49% ²
Number of people employed by forest industry sector	100% industrial growers 75% NIPFs 86% processors	N/A
Number of individuals employed in Aug 2006	100%	56% ²
Gender of employees	100% industrial growers 25% NIPFs 90% processors	53% ²
Indigenous employees	61% growers (all types) 50% processors	26% ²
Staff turnover	89% industrial growers 25% NIPFs 73% processors	36% ²
Age groups	67% industrial growers 25% NIPFs 82% processors	48% ²
Qualifications	56% growers 41% processors	43% ²
Area in which employees live and work	90% industrial growers 50% NIPFs 91% processors	57% ²
Information about your WA business activity and value in 2005–06: Expenditure	66%	70%
Information about your WA business activity and value in 2005–06: Other	54–66% Response varied by question; 54% answered all questions in this category	36–46% ² Response varied by question; 36% answered all questions
Expenditure by category	37%	N/A
Expenditure by location	34%	50% ²

¹ As some respondents provided information for both growing and processing activities on their survey, the two categories are combined here.

² Of the total responses to the contractor/consultant/other survey, 59% responded to the long version of the survey, and 41% to the ‘mini survey’ sent to encourage greater response. Where a response rate has a ‘²’ against it, this indicates the question was not asked on the ‘mini survey’; in these cases, a response rate of 59% would indicate that all those who were asked the question on the long survey answered it.

The response rate to individual questions varied. Questions which achieved a very high response rate were:

- total employment over 2005–06 and in August 2006
- percentage of activities in native forest, hardwood plantation and softwood plantation sectors
- number of people employed by forest industry sector
- gender of employees
- area in which people live and work
- age groups of workers – although this had a lower response rate from industrial growers than the questions above
- staff turnover – while not as many contracting and consulting businesses answered this question compared to other questions, the responses enable development of a profile of staff turnover
- total business expenditure – while response rates were lower than for questions about employment, a high enough response was achieved to provide useful data for analysis of typical expenditure profiles for different business types, particularly in the plantation sector where response rates were approximately 82% for growers and processors (compared to 66% for all growers and processors).

High valid response rates to the above categories of questions means it is possible to report with a high degree of confidence on characteristics of the WA forest industry relating to these aspects of employment in 2006.

Questions which achieved a lower response rate were:

- Indigenous employees – many businesses found it difficult to answer this question, and the responses were not robust enough to analyse and present data in this report
- qualifications – low response rates and lack of knowledge about qualifications of staff mean that the responses to this question could not be analysed
- information about businesses' WA activity and value in 2005–06 – response rates varied but were generally low; so the data can be analysed to provide typical profiles of spending and business activity, but not estimates for the industry as a whole
- expenditure by category – as above
- expenditure by location – the response rate to this question was very low from growers and processors, but high from contractors, consultants and other organisations. The responses can be usefully used to develop a profile of typical patterns of expenditure, but are not robust enough to be used to estimate total expenditure by location based on the responses received.

Appendix 2: Questionnaires

This Appendix contains copies of the questionnaires used for the *Forest Industry Survey*. Three questionnaires were sent out:

- grower and processor questionnaire – asking detailed questions enabling separation of expenditure on contractors and transfers between sectors
- contractor questionnaire – a shorter questionnaire as contractors did not need to provide as detailed data as growers and processors
- ‘Mini survey’ – sent to non-responding contractors to encourage further response.

(1) Survey sent to growers and processors

WESTERN AUSTRALIA

FOREST INDUSTRY SURVEY – 2006

What is this survey?

This survey has been sent to you as your business has been identified as undertaking work in the forest industry. The following pages contain questions about (a) your business, (b) employment by your business, and (c) expenditure by your business, during 2005–06. For more information about the survey, who is undertaking it, and how confidentiality of the data you provide is being ensured, please see the accompanying Information Sheet sent to you with the survey.

Who should complete the survey?

If your business or organisation **has** undertaken work in or for the forest industry since June 2005, *please complete the survey*.

If you **haven't** undertaken any work in the forest industry since June 2005, you don't need to complete the survey – but we ask you that write your business/organisation name below, and send the survey form back so we know that you should be taken off our survey list. This will ensure you don't receive further correspondence from us:

Name of business: _____

Instructions for completing the survey

Please complete those parts of the survey that are relevant to your business. The accompanying 'terms and definitions' documents has been provided to assist you to complete the survey.

If you choose not to complete some questions on the survey, we would appreciate you still completing the rest of the questionnaire and returning it – simply leave those questions you choose not to answer blank.

Please complete the survey in the next **four weeks** and return it in the pre-stamped envelope provided, or alternatively fax it to us on (02) 6125 0746 (c/o Jacki Schirmer).

If you need assistance completing the survey, please contact the research team:

Ph: **1800 981 499** (this number is a freecall from most landlines in Australia)

Mob: 0428 254 948

Email: jacki.schirmer@anu.edu.au

PART 1: INFORMATION ABOUT YOUR BUSINESS

This section of the survey asks for background information about your business.

Business/organisation name:	Name: <input type="text"/>
ABN:	ABN: <input type="text"/>
Number of office locations in Western Australia	Number of office locations: <input type="text"/>
Town/postcode of each office location:	
Office 1:	Town: <input type="text"/> Postcode: <input type="text"/>
Office 2:	Town: <input type="text"/> Postcode: <input type="text"/>
Office 3:	Town: <input type="text"/> Postcode: <input type="text"/>
Office 4:	Town: <input type="text"/> Postcode: <input type="text"/>
Office 5:	Town: <input type="text"/> Postcode: <input type="text"/>
If you have more than 5 office locations, please list additional office locations below or attach an additional sheet detailing their locations.	

» Please continue to Part 2 (Employment) and Part 3 (Expenditure) of the survey.

PART 2: EMPLOYMENT & ACTIVITY BY OFFICE LOCATION

Part 2 of the survey asks for information about employment at each of your office locations. If you have only one office location, please fill in the following questions once. If you have multiple office locations, please complete Part 2 for each office location (we have enclosed multiple copies of Part 2 for businesses with more than one office location – please contact us if not enough copies are included).

2a. Office location & forest industry activities

Office location	Town: _____ Postcode: _____
Total number of people employed at this office between July 1 2005 and June 30 2006 (2005–06): If the number of people employed varied during the year, indicate the minimum and maximum number employed at any point of the year.	Number of individuals: Minimum: _____ Maximum: _____
For forest/plantation growers: What was the total area of plantation/ native forest managed from this office in 2005–2006?	Number of full-time equivalent employees¹: Minimum: _____ Maximum: _____
	Hardwood plantation: _____ ha
	Softwood plantation: _____ ha
	Native forest: _____ ha (refers to native forest managed for timber production)
For forest/plantation growers: What area of <u>harvesting</u> was managed from this office in 2005–06?	Hardwood plantation: _____ ha
	Softwood plantation: _____ ha
	Native forest: _____ ha
For plantation growers: What area of <u>establishment</u> was managed from this office in 2005–06?	First rotation (1R), hardwood plantation: _____ ha
	First rotation (1R) – softwood plantation: _____ ha
	Replanting (2R/3R) – hardwood pln: _____ ha
	Replanting (2R/3R) – softwood pln: _____ ha
For processors/ exporters: What type of processing/export do you undertake? (tick all that apply)	Log export: <input type="checkbox"/> Export of chips/timber: <input type="checkbox"/>
	Sawmilling: <input type="checkbox"/> Pulp/paper production: <input type="checkbox"/>
	Woodchipping: <input type="checkbox"/> Moulding/dressing: <input type="checkbox"/>
	Other (pls. describe): _____
For processors/ exporters: What volume of logs did you use as inputs to processing, or export, during 2005–06?	Volume processing inputs: _____ m ³ (include logs & other wood inputs)
	Volume of logs exported: _____ m ³
For processors: What volume of product did you produce during 2005–06?	Volume: _____ m ³ /tonnes (circle applicable)

¹ To calculate 'Full-time equivalent' (FTE) employees, include the proportion of a full-time job worked by employees. If an employee works 2.5 days/week, this = 0.5 FTE. A full-time employee = 1 FTE.

2b. Number of people employed by forest industry sector, 2005–06

During 2005–06, how many employees undertook the following types of work? ¹	Total full-time equivalent employees ²	Number of full-time (FT), part-time (PT) and casual (Cas) staff ³	What number of employees have the following as their highest formal qualification ⁴ ?	% employed in <u>hardwood</u> <u>plantation</u> sector	% employed in <u>softwood</u> <u>plantation</u> sector
Establishing/growing/managing plantation and/or native forest ⁵	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Harvesting	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Haulage of logs to mill	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Export of logs or wood products	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Processing of wood products	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Haulage of processed products from mill	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Administration/finance	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Senior management (people who manage those who undertake the tasks listed above)	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
Other (please describe):	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %
TOTAL NUMBER OF STAFF	Min: _____ Max: _____	FT: _____ PT: _____ Cas: _____	HSC: ___ C/D: ___ UNI: ___	_____ %	_____ %

¹Please include the minimum and maximum number of staff during the year if numbers varied. If an employee worked in more than one sector – e.g. half in harvest and half in haulage – include them as 0.5 in each.

²Please give figure as a full-time equivalent (FTE). A full-time employee = 1 FTE. If an employee was part-time and worked 2.5 days a week, they would be 0.5 FTE.

³Include highest number of staff employed during the year. For example, if you employed 4 full-time staff for part of the year and expanded to 6 staff for the rest of the year, please enter '6' in the FT category.

⁴HSC = high school certificate, C/D = certificate or diploma beyond high school, UNI = tertiary qualification

⁵Includes land survey, ground preparation, planting, silvicultural activities such as weed and pest control.

2c. Employee characteristics

IN AUGUST 2006¹:	Full-time employees		Part-time employees		Casual/seasonal employees			
... how many individuals were employed at this office? For part-time and casual/seasonal employees, please indicate how many months they were employed on average over 2005–06.	Number:	<input type="text"/>	Number:	<input type="text"/>	Number:	<input type="text"/>		
			Avg. months:	<input type="text"/>	Avg. months:	<input type="text"/>		
... how many men and women were employed?	Male (no.):	<input type="text"/>	Male (no.):	<input type="text"/>	Male (no.):	<input type="text"/>		
	Female (no.):	<input type="text"/>	Female (no.):	<input type="text"/>	Female (no.):	<input type="text"/>		
... how many Aboriginal and Torres Strait Islanders were employed?	Number:	<input type="text"/>	Number:	<input type="text"/>	Number:	<input type="text"/>		
... how much turnover was there in office staff in the previous 12 months? (indicate how many <i>new</i> people came to work in the business, and how many existing staff <i>left</i> employment with your business, during the year)	No. new staff:	<input type="text"/>	No. new staff:	<input type="text"/>	No. new staff:	<input type="text"/>		
	No. staff who left:	<input type="text"/>	No. staff who left:	<input type="text"/>	No. staff who left:	<input type="text"/>		
... how many of your employees fell into each of the following age groups?	<25	<input type="text"/>	45-49	<input type="text"/>	<25	<input type="text"/>	45-49	<input type="text"/>
	25-29	<input type="text"/>	50-54	<input type="text"/>	25-29	<input type="text"/>	50-54	<input type="text"/>
	30-34	<input type="text"/>	55-59	<input type="text"/>	30-34	<input type="text"/>	55-59	<input type="text"/>
	35-39	<input type="text"/>	60-64	<input type="text"/>	35-39	<input type="text"/>	60-64	<input type="text"/>
	40-44	<input type="text"/>	65+	<input type="text"/>	40-44	<input type="text"/>	65+	<input type="text"/>

¹ Provide figures for August 8th if possible; otherwise provide figures based on your average employment at any point of time over the month

2d. Area in which employees live and work

Please list the number of employees from this office who *lived* and *undertook work-related activities* in each local government area listed below during 2005–06 (note that sometimes a group of LGAs is listed). **Only fill in information for the LGAs in which your employees lived and worked – leave the others blank.**

A work related activity means that the employee/s, as part of their work, travelled to this area to undertake work activities.

Your answers to this question will help us identify the extent to which different local government areas receive social and economic benefit from the forest industry through having resident forest industry workers, and through the spending of wages and salaries received in the industry.

Local government area/s If you are not sure whether an employees has lived or worked in a particular LGA, refer to the 'definitions and locations' guide.	No. of employees from this office who <i>lived</i> in LGA/s in 2005–06	No. of employees from this office who undertook <i>work-related activities</i> in LGA/s in 2005–06
Albany	No: <input type="text"/>	No: <input type="text"/>
Augusta-Margaret River	No: <input type="text"/>	No: <input type="text"/>
Beverly, Brookton, Wandering	No: <input type="text"/>	No: <input type="text"/>
Boddington	No: <input type="text"/>	No: <input type="text"/>
Boyup Brook	No: <input type="text"/>	No: <input type="text"/>
Bridgetown-Greenbushes	No: <input type="text"/>	No: <input type="text"/>
Broomehill, Gnowangerup & Tambellup	No: <input type="text"/>	No: <input type="text"/>
Bruce Rock, Cunderdin, Corrigin, Kellerberrin, Quairading & Tammin	No: <input type="text"/>	No: <input type="text"/>
Bunbury	No: <input type="text"/>	No: <input type="text"/>
Busselton	No: <input type="text"/>	No: <input type="text"/>
Capel	No: <input type="text"/>	No: <input type="text"/>
Chittering, Toodyay & Victoria Plains	No: <input type="text"/>	No: <input type="text"/>
Collie	No: <input type="text"/>	No: <input type="text"/>
Cranbrook	No: <input type="text"/>	No: <input type="text"/>
Cuballing, Narrogin, Pingelly, Wagin, Wickepin, & Woodanilling	No: <input type="text"/>	No: <input type="text"/>
Dandaragan & Moora	No: <input type="text"/>	No: <input type="text"/>
Dardanup	No: <input type="text"/>	No: <input type="text"/>
Denmark	No: <input type="text"/>	No: <input type="text"/>
Donnybrook-Balingup	No: <input type="text"/>	No: <input type="text"/>
Dumbleyung, Kent, Kondinin, Kulin & Lake Grace	No: <input type="text"/>	No: <input type="text"/>

⇒ Table continues over page

PART 2: EMPLOYMENT & BUSINESS ACTIVITY BY OFFICE LOCATION

Local government area/s If you are not sure whether an employees has lived or worked in a particular LGA, refer to the 'definitions and locations' guide.	No. of employees from this office who <i>lived</i> in LGA/s in 2005–06	No. of employees from this office who undertook <i>work-related activities</i> in LGA/s in 2005–06
Esperance	No: <input type="text"/>	No: <input type="text"/>
Gingin	No: <input type="text"/>	No: <input type="text"/>
Harvey	No: <input type="text"/>	No: <input type="text"/>
Jerramungup	No: <input type="text"/>	No: <input type="text"/>
Katanning	No: <input type="text"/>	No: <input type="text"/>
Kojonup	No: <input type="text"/>	No: <input type="text"/>
Manjimup	No: <input type="text"/>	No: <input type="text"/>
Murray and Waroona	No: <input type="text"/>	No: <input type="text"/>
Nannup	No: <input type="text"/>	No: <input type="text"/>
Perth, Fremantle and suburbs	No: <input type="text"/>	No: <input type="text"/>
Plantagenet	No: <input type="text"/>	No: <input type="text"/>
Ravensthorpe	No: <input type="text"/>	No: <input type="text"/>
West Arthur	No: <input type="text"/>	No: <input type="text"/>
Williams	No: <input type="text"/>	No: <input type="text"/>
Other WA	No: <input type="text"/>	No: <input type="text"/>
Other Australia	No: <input type="text"/>	No: <input type="text"/>
International	No: <input type="text"/>	No: <input type="text"/>
Don't know/Unsure	No: <input type="text"/>	No: <input type="text"/>

PART 3: EXPENDITURE BY YOUR BUSINESS

Part 3 of the survey asks about expenditure by your business. **You only need to complete Part 3 once for all of your Western Australian business activities (it should not be completed for each office location).** Part 3 has three sections. The first asks you to define the financial year on which you are providing information and general information about your business's total value and turnover during this year. The second asks about your organisation's *total* expenditure on activities in Western Australia over financial year 2005–06. The third asks you to detail the *location* of expenditure in Western Australia during the same period.

3a Definition of financial year

Please answer the questions in this part of the survey for the period 1st July 2005 to 30th June 2006 if possible. If this is not possible, please indicate the annual period your 2005–06 financial year data is based on below:

Date	Month	Year	to	Date	Month	Year
		2005				2006

3b. Information about your Western Australian forest industry business activity and value in 2005–06

The following questions ask information about your business value, revenue and expenditure in financial year 2005–06. Please provide data only for that part of your business involving the Western Australian forest industry.

In financial year 2005–06, what was...	
... the total capital value of your business (at the end of financial year):	\$ <input style="width: 80%;" type="text"/>
... the total debt owed by your business (at the end of the financial year):	\$ <input style="width: 80%;" type="text"/>
... the total revenue earned by your business:	\$ <input style="width: 80%;" type="text"/>
... total expenditure by your business:	\$ <input style="width: 80%;" type="text"/>
... net profit/loss made by your business:	\$ <input style="width: 80%;" type="text"/>

3c. Total expenditure on WA forest industry activities in 2005–06

Expenditure category	Expenditure (\$)	% hardwood plantations	% softwood plantations
For definitions of categories, see the 'Definitions and locations' guide sent to you with the survey	Total expenditure by your business related to your Western Australian activities	Indicate proportion of expenditure on hardwood/softwood plantation sectors	
Wages/salaries Include all employees whose work was dependent on your WA activities, even if they were located outside WA.	\$ _____	_____ %	_____ %
Site preparation contractors	\$ _____	_____ %	_____ %
Planting contractors	\$ _____	_____ %	_____ %
Nurseries	\$ _____	_____ %	_____ %
Weed control contractors	\$ _____	_____ %	_____ %
Insect control contractors	\$ _____	_____ %	_____ %
Game control contractors	\$ _____	_____ %	_____ %
Silvicultural contractor (e.g. pruning, thinning)	\$ _____	_____ %	_____ %
Consultants	\$ _____	_____ %	_____ %
Harvest and log haulage contractors	\$ _____	_____ %	_____ %
Haulage contractors – from mill	\$ _____	_____ %	_____ %
Roading contractors	\$ _____	_____ %	_____ %
Saw doctors/contractors undertaking maintenance/repair work	\$ _____	_____ %	_____ %
Payments to other contractors: _____	\$ _____	_____ %	_____ %
Payments for logs, woodchips, residues or other wood inputs processed by your business¹	\$ _____	_____ %	_____ %
Local government rates	\$ _____	_____ %	_____ %
Taxes other than local govt rates	\$ _____	_____ %	_____ %
Other operating expenditure (exclude the payments already listed above)	\$ _____	_____ %	_____ %
Capital expenditure	\$ _____	_____ %	_____ %
Total expenditure If you are a processor, please indicate if you included/ excluded expenditure on log/wood inputs to your mill/s in your total expenditure figure. <input type="checkbox"/> Included <input type="checkbox"/> Excluded	\$ _____	_____ %	_____ %

¹Leave blank if necessary for confidentiality reasons. If you choose to provide this information it will not be published as a separate category in any project reports, but will be used to remove any double counting in calculation of total impacts of the forest sector through the growing and processing sectors.

3d. Location of expenditure in financial year 2005–06

Question 3d asks about the location of your expenditure in financial year 2005–06. Your responses to this question will help us identify the extent to which different local government areas receive economic benefit from the forest industry. It can be difficult to identify where business expenditure occurred. For this reason, we ask that if you can't calculate exactly where business expenditure occurred, you still provide an estimate – but let us know that it is an estimate by ticking the appropriate box below. Note that the table below continues on the next page.

3d(a). The responses given in the Question 3d(b) table are (please tick one):

- Based on an exact calculation of location of expenditure:
- Based on an estimate (believed to be highly accurate e.g. to within 5%):
- Based on an estimate accurate to within about 10%:
- Based on an estimate accurate to within about 20%:

3d(b). Location of expenditure in financial year 2005–06

Local government area – Western Australia	Expenditure on contractors	Operating expenditure	Capital expenditure
Refer to <i>Definitions and Locations</i> guide if you are not sure whether you undertook activities in a particular area	The location of contractor payments should be based on the location of their office (e.g. address to which payments sent), <i>not</i> on where contractors undertook work	Exclude wages/salaries, expenditure on contractors, and (for processors) expenditure on wood inputs.	
Albany	\$ _____	\$ _____	\$ _____
Augusta-Margaret River	\$ _____	\$ _____	\$ _____
Beverly, Brookton, Wandering	\$ _____	\$ _____	\$ _____
Boddington	\$ _____	\$ _____	\$ _____
Boyup Brook	\$ _____	\$ _____	\$ _____
Bridgetown-Greenbushes	\$ _____	\$ _____	\$ _____
Broomehill, Gnowangerup & Tambellup	\$ _____	\$ _____	\$ _____
Bruce Rock, Cunderdin, Corrigin, Kellerberrin, Quairading & Tammin	\$ _____	\$ _____	\$ _____
Bunbury	\$ _____	\$ _____	\$ _____
Busselton	\$ _____	\$ _____	\$ _____
Capel	\$ _____	\$ _____	\$ _____
Chittering, Toodyay & Victoria Plains	\$ _____	\$ _____	\$ _____
Collie	\$ _____	\$ _____	\$ _____

Local government area – Western Australia	Expenditure on contractors	Operating expenditure	Capital expenditure
Refer to <i>Definitions and Locations</i> guide if you are not sure whether you undertook activities in a particular area	The location of contractor payments should be based on the location of their office (e.g. address to which payments sent), <i>not</i> on where contractors undertook work	Exclude wages/salaries, expenditure on contractors, and (for processors) expenditure on wood inputs.	
Cranbrook	\$ _____	\$ _____	\$ _____
Cuballing, Narrogin, Pingelly, Wagin, Wickepin, & Woodanilling	\$ _____	\$ _____	\$ _____
Dandaragan & Moora	\$ _____	\$ _____	\$ _____
Dardanup	\$ _____	\$ _____	\$ _____
Denmark	\$ _____	\$ _____	\$ _____
Donnybrook-Balingup	\$ _____	\$ _____	\$ _____
Dumbleyung, Kent, Kondinin, Kulin & Lake Grace	\$ _____	\$ _____	\$ _____
Esperance	\$ _____	\$ _____	\$ _____
Gingin	\$ _____	\$ _____	\$ _____
Harvey	\$ _____	\$ _____	\$ _____
Jerramungup	\$ _____	\$ _____	\$ _____
Katanning	\$ _____	\$ _____	\$ _____
Kojonup	\$ _____	\$ _____	\$ _____
Manjimup	\$ _____	\$ _____	\$ _____
Murray and Waroona	\$ _____	\$ _____	\$ _____
Nannup	\$ _____	\$ _____	\$ _____
Perth, Fremantle and suburbs	\$ _____	\$ _____	\$ _____
Plantagenet	\$ _____	\$ _____	\$ _____
Ravensthorpe	\$ _____	\$ _____	\$ _____
West Arthur	\$ _____	\$ _____	\$ _____
Williams	\$ _____	\$ _____	\$ _____
Other WA	\$ _____	\$ _____	\$ _____
Other Australia	\$ _____	\$ _____	\$ _____
International	\$ _____	\$ _____	\$ _____
Don't know/Unsure	\$ _____	\$ _____	\$ _____

Thank you for completing the survey – the time you have spent is greatly appreciated. Please return the completed survey in the pre-paid envelope provided, or alternatively fax it to (02) 6125 0746 (c/o Jacki Schirmer). You will be posted a summary of the study results once the data has been analysed.

(2) Survey sent to contractors

**WESTERN AUSTRALIAN
FOREST INDUSTRY SURVEY – 2006**

What is this survey?

This survey has been sent to you as your business has been identified as undertaking work in the forest industry. The following pages contain questions about (a) your business, (b) employment by your business, and (c) expenditure by your business, during 2005–06. For more information about the survey, who is undertaking it, and how confidentiality of the data you provide is being ensured, please see the accompanying Information Sheet sent to you with the survey.

Who should complete the survey?

If your business or organisation **has** undertaken work in or for the forest industry since June 2005, *please complete the survey*.

If you **haven't** undertaken any work in the forest industry since June 2005, you don't need to complete the survey – but we ask you that write your business/organisation name below, and send the survey form back so we know that you should be taken off our survey list. This will ensure you don't receive further correspondence from us:

Name of business: _____

Instructions for completing the survey

Please complete those parts of the survey that are relevant to your business. The accompanying 'terms and definitions' documents has been provided to assist you to complete the survey.

If you choose not to complete some questions on the survey, we would appreciate you still completing the rest of the questionnaire and returning it – simply leave those questions you choose not to answer blank.

Please complete the survey in the next **four weeks** and return it in the pre-stamped envelope provided, or alternatively fax it to us on (02) 6125 0746 (c/o Jacki Schirmer).

If you need assistance completing the survey, please contact the research team:

Ph: **1800 981 499** (this number is a freecall from most landlines in Australia)

Mob: 0428 254 948

Email: jacki.schirmer@anu.edu.au

PART 1: INFORMATION ABOUT YOUR BUSINESS

Business/organisation name:	Name: _____																																																												
ABN:	ABN: _____																																																												
Number of office locations in Western Australia	Number of office locations: _____																																																												
Main office location	Town: _____ Postcode: _ _ _ _																																																												
Number of people employed between July 1 2005 and June 30 2006 (2005–06):	<u>Number of individuals:</u> Minimum: _____ Maximum: _____																																																												
Indicate the smallest number employed at any point of the year, and the maximum.	<u>Number of full-time equivalent employees¹:</u> Minimum: _____ Maximum: _____																																																												
What types of forest/plantation services does your business provide (tick all that apply)	<table border="0"> <tr> <td>Seedling supply:</td> <td><input type="checkbox"/></td> <td>Seed supply:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Site preparation:</td> <td><input type="checkbox"/></td> <td>Land survey:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Insect control (ground)</td> <td><input type="checkbox"/></td> <td>Fertilising:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Insect control (aerial):</td> <td><input type="checkbox"/></td> <td>Weed control:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Planting services:</td> <td><input type="checkbox"/></td> <td>Fencing:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Firebreak maintenance</td> <td><input type="checkbox"/></td> <td>Game control:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Harvesting:</td> <td><input type="checkbox"/></td> <td>Haulage to mill:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Roading:</td> <td><input type="checkbox"/></td> <td>Haulage from mill:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Mill/equipment maintenance:</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Expert advice (e.g. consultant):</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Industry development (e.g. PFDC):</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Industry or related association:</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Research services:</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Other (please describe below):</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td></td> <td>_____</td> <td></td> <td></td> </tr> </table>	Seedling supply:	<input type="checkbox"/>	Seed supply:	<input type="checkbox"/>	Site preparation:	<input type="checkbox"/>	Land survey:	<input type="checkbox"/>	Insect control (ground)	<input type="checkbox"/>	Fertilising:	<input type="checkbox"/>	Insect control (aerial):	<input type="checkbox"/>	Weed control:	<input type="checkbox"/>	Planting services:	<input type="checkbox"/>	Fencing:	<input type="checkbox"/>	Firebreak maintenance	<input type="checkbox"/>	Game control:	<input type="checkbox"/>	Harvesting:	<input type="checkbox"/>	Haulage to mill:	<input type="checkbox"/>	Roading:	<input type="checkbox"/>	Haulage from mill:	<input type="checkbox"/>	Mill/equipment maintenance:	<input type="checkbox"/>			Expert advice (e.g. consultant):	<input type="checkbox"/>			Industry development (e.g. PFDC):	<input type="checkbox"/>			Industry or related association:	<input type="checkbox"/>			Research services:	<input type="checkbox"/>			Other (please describe below):	<input type="checkbox"/>				_____		
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Other (please describe below):	<input type="checkbox"/>																																																												

In 2005–06, what % of your business activity was in the forest industry (by dollar value)?	% of business in forest industry: _____ %																																																												
In 2005–06, how much of your forest industry activity (by dollar value) was in the native forest, hardwood plantation, and softwood plantation sector?	<table border="0"> <tr> <td>Hardwood plantation:</td> <td>_____ %</td> </tr> <tr> <td>Softwood plantation:</td> <td>_____ %</td> </tr> <tr> <td>Native forest:</td> <td>_____ %</td> </tr> </table>	Hardwood plantation:	_____ %	Softwood plantation:	_____ %	Native forest:	_____ %																																																						
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Native forest:	_____ %																																																												

¹ To calculate 'Full-time equivalent' (FTE) employees, please count part-time employees by the proportion of time they work – e.g. if an employee works 2.5 days a week, this is 0.5 FTE. A full-time employee = 1 FTE.

PART 2: EMPLOYMENT BY YOUR BUSINESS

IN AUGUST 2006¹:	Full-time employees	Part-time employees	Casual/seasonal employees																																				
... how many individuals were employed by your business? <small>For part-time and casual/seasonal employees, please also indicate how many months they were employed on average during the previous year.</small>	Number: <input style="width: 50px;" type="text"/>	Number: <input style="width: 50px;" type="text"/> Avg. months: <input style="width: 50px;" type="text"/>	Number: <input style="width: 50px;" type="text"/> Avg. months: <input style="width: 50px;" type="text"/>																																				
... how many men and women were employed?	Male (no.): <input style="width: 50px;" type="text"/> Female (no.): <input style="width: 50px;" type="text"/>	Male (no.): <input style="width: 50px;" type="text"/> Female (no.): <input style="width: 50px;" type="text"/>	Male (no.): <input style="width: 50px;" type="text"/> Female (no.): <input style="width: 50px;" type="text"/>																																				
... how many Aboriginal and Torres Strait Islanders were employed?	Number: <input style="width: 50px;" type="text"/>	Number: <input style="width: 50px;" type="text"/>	Number: <input style="width: 50px;" type="text"/>																																				
... how much turnover was there in office staff in the previous 12 months? <small>(indicate how many <i>new</i> people came to work in the business, and how many existing staff <i>left</i> employment with your business, during the year)</small>	No. new staff: <input style="width: 50px;" type="text"/> No. staff who left: <input style="width: 50px;" type="text"/>	No. new staff: <input style="width: 50px;" type="text"/> No. staff who left: <input style="width: 50px;" type="text"/>	No. new staff: <input style="width: 50px;" type="text"/> No. staff who left: <input style="width: 50px;" type="text"/>																																				
... how many of your employees fell into each of the following age groups?	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><25 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">35-39 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">50-54 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td style="text-align: center;">25-29 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">40-44 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">55-59 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td style="text-align: center;">30-34 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">45-49 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">60-64 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td></td> <td style="text-align: center;">65+ <input style="width: 30px;" type="text"/></td> <td></td> </tr> </table>	<25 <input style="width: 30px;" type="text"/>	35-39 <input style="width: 30px;" type="text"/>	50-54 <input style="width: 30px;" type="text"/>	25-29 <input style="width: 30px;" type="text"/>	40-44 <input style="width: 30px;" type="text"/>	55-59 <input style="width: 30px;" type="text"/>	30-34 <input style="width: 30px;" type="text"/>	45-49 <input style="width: 30px;" type="text"/>	60-64 <input style="width: 30px;" type="text"/>		65+ <input style="width: 30px;" type="text"/>		<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><25 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">35-39 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">50-54 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td style="text-align: center;">25-29 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">40-44 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">55-59 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td style="text-align: center;">30-34 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">45-49 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">60-64 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td></td> <td style="text-align: center;">65+ <input style="width: 30px;" type="text"/></td> <td></td> </tr> </table>	<25 <input style="width: 30px;" type="text"/>	35-39 <input style="width: 30px;" type="text"/>	50-54 <input style="width: 30px;" type="text"/>	25-29 <input style="width: 30px;" type="text"/>	40-44 <input style="width: 30px;" type="text"/>	55-59 <input style="width: 30px;" type="text"/>	30-34 <input style="width: 30px;" type="text"/>	45-49 <input style="width: 30px;" type="text"/>	60-64 <input style="width: 30px;" type="text"/>		65+ <input style="width: 30px;" type="text"/>		<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><25 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">35-39 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">50-54 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td style="text-align: center;">25-29 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">40-44 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">55-59 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td style="text-align: center;">30-34 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">45-49 <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">60-64 <input style="width: 30px;" type="text"/></td> </tr> <tr> <td></td> <td style="text-align: center;">65+ <input style="width: 30px;" type="text"/></td> <td></td> </tr> </table>	<25 <input style="width: 30px;" type="text"/>	35-39 <input style="width: 30px;" type="text"/>	50-54 <input style="width: 30px;" type="text"/>	25-29 <input style="width: 30px;" type="text"/>	40-44 <input style="width: 30px;" type="text"/>	55-59 <input style="width: 30px;" type="text"/>	30-34 <input style="width: 30px;" type="text"/>	45-49 <input style="width: 30px;" type="text"/>	60-64 <input style="width: 30px;" type="text"/>		65+ <input style="width: 30px;" type="text"/>	
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	65+ <input style="width: 30px;" type="text"/>																																						
How many of your employees had high school (HSC), certificate/diploma (C/D) or tertiary qualifications (UNI) as their highest formal qualification?	HSC: <input style="width: 50px;" type="text"/> C/D: <input style="width: 50px;" type="text"/> UNI: <input style="width: 50px;" type="text"/>	HSC: <input style="width: 50px;" type="text"/> C/D: <input style="width: 50px;" type="text"/> UNI: <input style="width: 50px;" type="text"/>	HSC: <input style="width: 50px;" type="text"/> C/D: <input style="width: 50px;" type="text"/> UNI: <input style="width: 50px;" type="text"/>																																				

¹ Provide figures for August 8th if possible; otherwise provide figures based on your average employment at any point of time over the month.

PART 3: EXPENDITURE BY YOUR BUSINESS

Part 3 of the survey has three sections. The first asks for some general information about your business value and turnover. The second asks about your organisation's *total* expenditure on WA activities over financial year 2005–06. The third asks you to detail the *location* of expenditure during the same period. Please answer the questions in this part of the survey for the period **1st July 2005 to 30th June 2006** if possible. If this is not possible, please indicate the annual period your 2005–06 financial year data is based on below:

Date	Month	Year		Date	Month	Year
		2005	to			2006

3a. Information about your WA business activity and value in 2005–06

The following question asks for information about your total business value, revenue and expenditure in Western Australia in financial year 2005–06.

In financial year 2005–06, what was...

... the total capital value of your WA business (at the end of financial year):	\$ _____
... the total debt owed by your WA business (at the end of the financial year):	\$ _____
... the total revenue earned by your WA business:	\$ _____
... total expenditure by your WA business:	\$ _____

* Include total value of your business, including activity outside the forest sector (we will use the information you provided at the start of the survey to estimate forest industry-related activity)

3b. Total expenditure in 2005–06 on work undertaken in WA forest industry

Expenditure category	Expenditure (\$)	% hardwood plantation	% softwood plantation
For definitions of categories, see the 'Definitions and locations' guide sent to you with the survey	Total expenditure by your business related to your WA forest industry work	Indicate % expenditure involving work in hardwood plantations	Indicate % expenditure involving work in softwood plantations
Wages/salaries Include all employees whose work involved your WA forestry activities, even if they are located outside WA.	\$ _____	_____ %	_____ %
Local government rates	\$ _____	_____ %	_____ %
Taxes other than local govt rates	\$ _____	_____ %	_____ %
Other operating expenditure (exclude the payments already listed above)	\$ _____	_____ %	_____ %
Capital expenditure	\$ _____	_____ %	_____ %
Total expenditure	\$ _____	_____ %	_____ %

PART 4: LOCATION OF SPENDING & EMPLOYEES, 2005–06

This part of the questionnaire asks you to identify where money from your business was spent during 2005–06, and where your employees lived and worked. This will let us identify the extent to which different local government areas receive economic benefit from the forest industry.

It can be difficult to identify where business expenditure occurred. For this reason, we ask that if you can't calculate exactly where business expenditure occurred, you still provide an estimate – but let us know that it is an estimate by ticking the appropriate box below. Note that the table below continues on the next page.

4a. The responses given in the Question 4b table are (please tick one):

- Based on an exact calculation of location of expenditure:
- Based on an estimate (believed to be highly accurate e.g. to within 5%):
- Based on an estimate accurate to within about 10%:
- Based on an estimate accurate to within about 20%:

4b. Location of expenditure and employment

Please identify where your business expenditure occurred in Western Australia, and where your employees *lived* and undertook *work*. For many businesses, this will only involve a small number of the local government areas (LGAs) listed below. If you are not sure which LGA spending or employment occurred in, refer to the *Definitions and Locations* guide accompanying the survey, which provides a list of towns and postcodes located in each LGA to help you complete the table.

Local government area/s – Western Australia	% business expenditure in this region in 2005–06	No. of employees who <i>live</i> in LGA/s	No. of employees who undertook <i>work-related activities</i> in LGA/s in 2005–06, and number of months worked in this area on average by each employee	
Albany	_____ %	No: _____	No: _____	Avg months/employee: _____
Augusta-Margaret River	_____ %	No: _____	No: _____	Avg months/employee: _____
Beverly, Brookton, Wandering	_____ %	No: _____	No: _____	Avg months/employee: _____
Boddington	_____ %	No: _____	No: _____	Avg months/employee: _____
Boyup Brook	_____ %	No: _____	No: _____	Avg months/employee: _____
Bridgetown-Greenbushes	_____ %	No: _____	No: _____	Avg months/employee: _____
Broomehill, Gnowangerup & Tambellup	_____ %	No: _____	No: _____	Avg months/employee: _____
Bruce Rock, Cunderdin, Corrigin, Kellerberrin, Quairading & Tammin	_____ %	No: _____	No: _____	Avg months/employee: _____
Bunbury	_____ %	No: _____	No: _____	Avg months/employee: _____
Busselton	_____ %	No: _____	No: _____	Avg months/employee: _____
Capel	_____ %	No: _____	No: _____	Avg months/employee: _____
Chittering, Toodyay &	_____ %	No: _____	No: _____	Avg months/employee: _____

Table continues over page

Local government area/s – Western Australia	% business expenditure in this region in 2005–06	No. of employees who <i>live</i> in LGA/s	No. of employees who undertook <i>work- related activities</i> in LGA/s in 2005–06, and number of months worked in this area on average by each employee	
Victoria Plains				
Collie	_____ %	No: _____	No: _____	Avg months/employee: _____
Cranbrook	_____ %	No: _____	No: _____	Avg months/employee: _____
Cuballing, Narrogin, Pingelly, Wagin, Wickiepin, & Woodanilling	_____ %	No: _____	No: _____	Avg months/employee: _____
Dandaragan & Moora	_____ %	No: _____	No: _____	Avg months/employee: _____
Dardanup	_____ %	No: _____	No: _____	Avg months/employee: _____
Denmark	_____ %	No: _____	No: _____	Avg months/employee: _____
Donnybrook-Balingup	_____ %	No: _____	No: _____	Avg months/employee: _____
Dumbleyung, Kent, Kondinin, Kulin & Lake Grace	_____ %	No: _____	No: _____	Avg months/employee: _____
Esperance	_____ %	No: _____	No: _____	Avg months/employee: _____
Gingin	_____ %	No: _____	No: _____	Avg months/employee: _____
Harvey	_____ %	No: _____	No: _____	Avg months/employee: _____
Jerramungup	_____ %	No: _____	No: _____	Avg months/employee: _____
Katanning	_____ %	No: _____	No: _____	Avg months/employee: _____
Kojonup	_____ %	No: _____	No: _____	Avg months/employee: _____
Manjimup	_____ %	No: _____	No: _____	Avg months/employee: _____
Murray and Waroona	_____ %	No: _____	No: _____	Avg months/employee: _____
Nannup	_____ %	No: _____	No: _____	Avg months/employee: _____
Perth, Fremantle and suburbs	_____ %	No: _____	No: _____	Avg months/employee: _____
Plantagenet	_____ %	No: _____	No: _____	Avg months/employee: _____
Ravensthorpe	_____ %	No: _____	No: _____	Avg months/employee: _____
West Arthur	_____ %	No: _____	No: _____	Avg months/employee: _____
Williams	_____ %	No: _____	No: _____	Avg months/employee: _____
Other WA	_____ %	No: _____	No: _____	Avg months/employee: _____
Other Australia	_____ %	No: _____	No: _____	Avg months/employee: _____
International	_____ %	No: _____	No: _____	Avg months/employee: _____
Don't know/Unsure	_____ %	No: _____	No: _____	Avg months/employee: _____

Thank you for completing the survey – the time you have spent is greatly appreciated. Please return the completed survey in the pre-paid envelope provided, or alternatively fax it to (02) 6125 0746 (c/o Jacki Schirmer). You will be posted a summary of the study results once the data has been analysed.

(3) 'Mini' survey sent to non-respondent contractors

THE MINI FOREST INDUSTRY SURVEY

PLEASE COMPLETE AND RETURN THIS SURVEY

Please complete and return this survey if you did not complete the longer Forest Industry Survey posted to you in August. If you still have the August survey, we encourage you to still complete it, as the data it asks for enables us to analyse the forest industry and how it contributes to rural and regional communities in more depth than is possible from this shorter survey.

The questions below should take you only 5-10 minutes to complete. Return the completed survey in the stamped addressed envelope provided. Alternatively, you can fax it to 02 6125 0746 (c/o Jacki Schirmer).

Business name:	Name: _____
Business location:	Town/s: _____
Are you currently working in the forestry industry? (please circle one)	Yes No
If no, when did you last undertake work in the forest industry?	Date: _____

If you undertook work in the industry between 01/07/2005 and 30/06/2006, please answer the following questions:

What types of forest industry work does your business undertake? (please describe, e.g. harvest, haulage, tree planting, sawmilling)	Types of work: _____
What % of your business activities (by dollar value) involve work in the forest industry?	_____ %
How many people worked in your business on August 8th 2006? (including yourself if you are self employed)	Number of people: _____
What was the SMALLEST number of people employed at any one time during 01/07/2005 to 30/06/2006?	Number of people: _____
What was the HIGHEST number of people employed at any one time during 01/07/2005 to 30/06/2006?	Number of people: _____
What was your total business expenditure during 2005-06?	Total expenditure: \$ _____

Thank you for completing the 'mini' Forest Industry Survey.

Appendix 3: Definition of regions referred to in report

The data from the *Forest Industry Survey* is reported by region in this report. This Appendix defines which local government areas fall into different regions. The regions are identical to regional development regions as defined by the WA Department of Local Government and Regional Development.

For further information, and maps of the different regions, go to <http://www.dlgrd.wa.gov.au/Publications/StatInfo/RegionMaps.asp>.

In this report, the following regions are reported on separately:

- Great Southern region
- South West region
- Goldfields-Esperance
- Peel/Perth
- in some cases, data are provided for the Wheatbelt region.

The majority of forest industry activity occurs in the South West and Great Southern regions. In Goldfields/Esperance, forestry activity primarily occurs in one Shire, while the region as a whole extends over a much larger area. The Peel and Perth regions are reported together as the extent of forest industry employment in the Peel region was quite small and parts of the Peel region are becoming merged with urban areas of Perth. This region is reported together with the forest industry's activities situated in the greater city of Perth and Fremantle (which include all suburbs of Perth and Fremantle).

Very little information is provided separately for the Wheatbelt region as, while some forestry activity does occur in this region, it is small compared to forestry activity in other regions, and in some cases data for the region could not be reported separately in order to preserve confidentiality of the small number of survey respondents from this region.

The LGAs included in each region are defined below.

Great Southern region

The Great Southern region comprises the following LGAs:

- Albany
- Broomehill
- Cranbrook
- Denmark
- Gnowangerup
- Jerramungup
- Katanning
- Kent
- Kojonup
- Plantagenet
- Tambellup
- Woodanilling.

Most forest industry activity is located in the LGAs of Albany, Plantagenet, Cranbrook, Kojonup and Denmark, and the forest industry in this region is largely based on hardwood plantations.

South West region

The South West region comprises the following LGAs:

- Augusta-Margaret River
- Boyup Brook
- Bridgetown-Greenbushes
- Bunbury
- Busselton
- Capel
- Collie
- Dardanup
- Donnybrook-Balingup
- Harvey
- Manjimup
- Nannup.

The majority of WA's native forest-based forest industry is located in the South West region. There are also large areas of plantation in this region.

Goldfields-Esperance region

The Goldfields-Esperance region comprises the following LGAs:

- Coolgardie
- Dundas
- Esperance
- Kalgoorlie-Boulder
- Laverton
- Leonora
- Menzies
- Ngaanyatjarraku
- Ravensthorpe.

Other than some relatively small-scale firewood-gathering and craftwood-gathering activities, the forest industry activity in this region is located in Esperance and Ravensthorpe, and comprises hardwood plantations.

Peel and Perth regions

The Perth region comprises the area of the greater cities of Perth and Fremantle, including all outlying suburbs. The Peel region comprises the following municipalities:

- Boddington
- Mandurah
- Murray
- Serpentine Jarrahdale
- Waroona.

Wheatbelt region

The Wheatbelt region comprises all remaining LGAs included in the *Forest Industry Survey* study region (as defined in Figure 1 in the main report). It also extends beyond this to incorporate several LGAs not included in the *Forest Industry Survey* study region. The Wheatbelt region surrounds the north and east of Perth. It includes a total of 44 local government areas, and contains most of the grain-growing regions of Western Australia. The primary forest industry activities undertaken in this region are the establishment of farm forestry/agroforestry on farms, with a range of types of trees established, including *Pinus pinaster*, eucalypt species, oil mallees and others.