Technical report 184

Forestry, jobs and spending: Forest industry employment and expenditure in Tasmania, 2005-2006

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Public report

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Executive Summary

Tasmania'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 Tasmanian 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 Tasmania can help inform these discussions. This report details results of a survey of employment and expenditure by the plantation and native forest industries in Tasmania. The primary aims of the survey were to estimate the number of people who depend directly on the forest industry for employment, and the spatial distribution of jobs and expenditure.

Data was 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:

- Seven industrial forest growers
- 48 wood and paper processors, operating a total of 64 processing sites
- 437 contractors, consultants and nurseries, and
- 18 other businesses and organisations involved in representing, advising, or regulating the forest industry.

Overall, 100 per cent of industrial forest growers, 40 per cent of processors (including all large and 50 per cent of medium sized processors), 41.6 per cent of contractors, consultants and nurseries, and 39 per cent of other organisations completed the survey. Follow up phone contact provided information from a further 50 per cent of processors.

Table E1 summarises key results of the survey. An estimated 6,300 people were employed in the forest industry on average over 2005-06, with 5,870 full-time equivalent employees. This represented 3.08 per cent of Tasmania's employed labour force in August 2006.

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

Forest industry workers often work in several locations during any one year. People working for forest growers spent between 22 per cent to 47 per cent of their time working in LGAs other than the one their office was located in, while employees of processors spent 11 per cent, and contractors and consultants 33.6 per cent 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 61 per cent and 65 per cent of work time spent working in LGAs other than that where their office was located.

In general, the forest industry has a higher proportion of full-time employment (74 per cent) than the Tasmanian workforce as a whole (64.6 per cent), and a lower proportion of part-time and casual employment (26 per cent) than the Tasmanian average of 35.4 per cent.

Table E1: Statistics on employment and spending by the Tasmanian forest industry in 2005-06

Employment/spending characteristic	Findings	
Employment in the Tasmanian forest industry, 2005-06:	People:	6300
	Full-time equivalent:	5870
Proportion of employment in different forest industry sectors:	Industrial forest growers:	11.7 %
	Combined growers/processors[1]:	10.9 %
	Processors:	38.7 %
	Contractors, consultants and nurseries:	38.7 %
Proportion employed in native forest, hardwood plantation and softwood plantation sector:	Native forest:	68.3 %
	Hardwood plantation:	7.7 %
	Softwood plantation:	24 %
	Note: This assumes survey respondents were not biased towards a particular sector.	
Proportion of forest industry employees working full-time, part-time and casual:	Full-time:	74 %
	Part-time:	12 %
	Casual:	14 %
Staff turnover (voluntary and involuntary):	Total (median):	9.5 %
Proportion of male and female workers:	Forest industry workforce - male:	88.4 %
	Tasmanian workforce - male:	53.1 %
	Forest industry workforce - female:	11.6 %
	Tasmanian workers – female:	46.9 %
Age of forest industry workers:	Median age group of forestry workers:	40-44
	Median age group of Tas workforce:	45-54
Total expenditure by the forest industry: (A range is given rather than a single figure to reflect uncertainty in the estimate)	Growers & processors:	$940-1020 million
	Contractors, consultants and nurseries:	$480-580 million
	Total:	$1420-1600 million
Location of expenditure: (Local LGAs refers to local government areas in which business located, or adjacent to business LGA)	Growers & processors:	34 % in local LGAs
		43 % in non-local LGAs
		23 % outside Tas
	Contractors, consultants, nurseries:	73 % in local LGAs
		22 % in non-local LGAs
		5 % outside Tas

[1]Some Tasmanian 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.

Median staff turnover was 9.5 per cent. It is not possible to compare this to any average rate of turnover across other industries, due to differences in measurement of turnover between this survey and estimates of turnover from other sources.

Forest industry workers are predominantly male, with 88.4 per cent of all workers male and 11.6 per cent female (compared to 53.1 per cent male and 46.9 per cent female workers in the Tasmanian 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 Tasmanian workforce, with a higher proportion of workers aged 25-44 than the Tasmanian average and fewer aged 45 years and over. Casual workers are typically younger than full-time and part-time workers.

Total expenditure by the Tasmanian forest industry in 2005-06 is estimated to be between $1420-1600 million. Of this growers and processors make up $940-1020 million and contractors, consultants and nurseries $480-580 million.

For growers and processors, 34 per cent of known expenditure took place in local and adjacent LGAs, 43 per cent in other Tasmanian LGAs, and 23 per cent outside Tasmania.

Contractors and consultants on average undertook 50 per cent of their business expenditure in the same LGA their business is located in, a further 23 per cent in LGAs immediately adjacent to their office LGA, and 22 per cent in other Tasmanian LGAs. Only 5 per cent of expenditure occurred outside Tasmania.

From Table E2 it can be seen that approximately 41 per cent of employment and expenditure by the forest industry occur in the NRM North region, while 33 per cent of employment and 23 per cent of expenditure occurred in the NRM South region, 24 per cent of employment and 16 per cent of expenditure in the NRM Cradle Coast region, and the remainder outside Tasmania.

Table E2: Employment and expenditure by NRM region

NRM Region	Estimated employment in forest industry	Estimated forest industry expenditure in this region
NRM Cradle Coast	1,520 people	$210-260 million
NRM North	2,620 people	$540-660 million
NRM South	2,085 people	$310-380 million
Outside Tasmania	45 people[1]	$250-310 million

[1]refers to workers directly supported by Tasmanian native forest and/or plantation-based activities.

Table E3 on the next pages 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 Derwent Valley (32 per cent), Dorset (23 per cent), Kentish (19 per cent), Central Highlands (13 per cent), Huon Valley (9 per cent), Georgetown (9 per cent), Glamorgan-Spring Bay (9 per cent) and Circular Head (8 per cent). In other LGAs, less than 6 per cent of the workforce was employed in the forest industry in 2005-06.

Table E3: Tasmanian forest industry employment by local government area, 2005-06

Local government area/s	Number of forest industry businesses located in LGA/s	Est. forest industry employees in LGA	per cent of LGA/s workforce employed in forest industry
Break O'Day	11	70 people	4.3 %
Burnie	46	538 people	5.2 %
Central Coast	25	134 people	2.7 %
Central Highlands	24	84 people	12.9 %
Circular Head	27	263 people	7.5 %
Derwent Valley (New Norfolk)	10	695 people	32.3 %
Devonport, Latrobe, West Tamar	10	471 people	2.8 %
Dorset	30	583 people	22.8 %
Georgetown	6	229 people	8.8 %
Glamorgan-Spring Bay	19	126 people	8.5 %
Hobart and surrounds	85	766 people	1.2 %
Huon Valley	23	326 people	8.9 %
Kentish	47	255 people	19.4 %
Launceston	83	1151 people	3.5 %
Meander Valley	25	56 people	1.2 %
Northern Midlands	25	204 people	5.7 %
Sorell & Tasman	9	35 people	1.3 %
Southern Midlands	12	54 people	5.2 %
Waratah-Wynyard	15	153 people	4.8 %
West Coast	7	38 people	1.9 %
Other Australia	5	45 people	N/A

The *Forest Industry Survey* estimate of 6,300 people employed in the forest industry is higher than the Australian Bureau of Statistics (ABS) estimate of 5460 people for the same time period because the ABS does not include some types of contractors in their estimates. The estimate is lower than the 10,760 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) may not have identified what proportion of people working for a business were engaged in forest industry activities versus worked in other industries. 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 4.5 per cent over 1996-2001, and 2.5 per cent over 2001-2006. However, ABS data exclude some types of contractors, and therefore some of this decline may have involved a shift in employment to the contracting sector, particularly increased used of silvicultural and roading contractors.

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

Tasmania'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 Tasmanian 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 Tasmania can help inform these discussions, by generating data to help 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 common 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 Tasmania, 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, and
- 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 Tasmania in November-December 2006, and
- Review of literature on social and economic impacts of forestry.

The discussion groups were held in Launceston, Scottsdale, Wynyard, Campbelltown, Bothwell, Hobart, Huonville, Nubeena. A total of 42 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. Participant's statements about issues related to forest industry jobs and spending, and overall economic and social impact, 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 Australia[1]. 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? and
- What types of jobs are generated by the forest industry – e.g. how many are full-time versus part-time or casual?

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[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 good data over time on forest industry employment and spending at the local scale. However, as the following section explains, currently available data does 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 is currently available from the following sources:

- Australian Bureau of Statistics,
- ABARE *Forest and Wood Products Statistics,* and
- '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).

However, 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 estimates do not accurately reflect the total employment in the contracting sector; and other than ABS data there is no consistent time series data of employment 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 does not differentiate between the plantation and native forest sectors, and many contractors who depend on the forest industry for a living are likely to be excluded from the 'forestry services' sector and instead 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 their *Manufacturing Survey.* These are produced to a regional scale every five years, but data is not produced at the local government area scale.

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

- 1,775 people were employed in forestry and logging activities (this includes those who harvest trees but not those who transport logs to mills),
- 3,406 people were employed in wood and paper manufacturing, and
- 277 people were employed in providing services to forestry.

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 reafforestation, 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 to be left out of this category, due to operating across more than one industry, or not being identified as undertaking the services defined as included in the category. It is therefore highly likely to underestimate total employment in 'services to forestry.'

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 some information from State agencies, and
- 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 above is that ABARE produce data to the State scale and not smaller local and regional areas.

'One-off' studies

Various 'one-off' studies in recent years have studied employment in plantation and native forestry (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 has 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 across the different studies.

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 FAFPESC (2004) based on a survey of forest industry businesses across Australia in 2002-03. FAFPESC data 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 10,760 people were employed in the Tasmanian forest industry in 2002-03. This estimate is considerably higher than ABS *CPH* estimates in either 2001 or 2006. The reasons for these differences are investigated in the discussion section of this report.

Conclusions: the need for a new survey

The review of information needs and availability highlighted that currently available information on forest industry employment and spending does not answer many commonly asked questions about the industry. 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 Tasmania. The methods used are briefly described in this section. A detailed description is included in Appendix 1, and copies of the questionnaires are provided in Appendix 2.

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 then pre-tested and revised before the survey was distributed to ensure that each questions could be easily answered by different types of forest industry business. 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 (see Appendix 2 for the full questionnaires):

- 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 categories (for growers/processors more categories were included to ensure double counting could be excluded when summing expenditure through the chain of production), and
- Expenditure by local government area.

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 direct dependence on the forest industry was 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' - Businesses which 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 into forestry areas, and
- ‘Others’ - 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.

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. For example, businesses that use paper to print newspapers were not included, as the primary purpose is producing newspapers, not paper products,
- 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,
- Non-industrial private forest (NIPF) growers. While in 2001 it was estimated there were over 1,600 NIPF growers (Jennings and Putten 2006), many of whom undertaken farm forestry activities as part of a farm enterprise, the resources available for the survey did not enable these growers to be surveyed, and
- Activities beyond ‘mill door’ including transport of finished products to market, except where that market involves another stage in wood or paper processing.

All businesses that fell within the groups listed above identified and sent surveys. The census frame was developed through extensive consultation and research to identify a comprehensive list of Tasmanian forest industry businesses falling into the categories listed above.

The census frame successfully identified all industrial growers and processors. However, did not successfully identify all contracting businesses, as several contracting business were identified which were not contactable, and six contractors who had not been identified in the sample frame contacted the researchers during the survey to request a survey be sent to them. There is therefore likely to be an undercount of contracting employment in the survey results, although that undercount is likely to be a small proportion of total employment (most likely <5 per cent).

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 per cent 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.

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 are 'growers' and which 'processors',
- Contractors and others, split into:
    - Silvicultural contractors,
    - Harvest and haulage contractors,
    - Nurseries and seed/seedling suppliers,
    - Consultants/expert advice, and
    - Industry representation.

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

- Native forestry,
- Plantations, split where possible into:
    - Hardwood plantations (usually *Eucalyptus nitens* or *E. globulus*), and
    - Softwood plantations (usually *Pinus radiata*).

Tasmanian regions referred to in this report

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

- Tasmania: All types of data are reported for the whole State,
- NRM regions: Some data is reported separately for the NRM North, NRM Cradle Coast and NRM South regions, and
- Local government areas: Where possible, data is 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:
    - Break O'Day,
    - Burnie,
    - Central Coast,
    - Central Highlands,
    - Circular Head,
    - Derwent Valley,
    - Devonport, Latrobe and West Tamar,
    - Dorset,
    - Georgetown,
    - Glamorgan-Spring Bay,
    - Hobart and surrounds (including the LGAs of Brighton, Clarence, Glenorchy, Hobart, Kingborough),
    - Huon Valley,
    - Kentish,
    - Launceston,
    - Meander Valley,
    - Northern Midlands,
    - Sorell and Tasman,
    - Southern Midlands,
    - Waratah-Wynyard, and
    - West Coast.

No data are reported for Flinders or King Island as no forest industry employment or spending was reported in these locations.

Figure 1 shows Tasmanian LGAs individually, and can be used to identify the locations of the different LGAs/LGA groups.

In addition, some employment and spending occurred outside Tasmania. This is referred to as 'Other Australia'.

Figure 1: Tasmanian Local Government Areas, 2006

How many Tasmanian forest industry businesses are there?

This section describes the number of businesses operating in the Tasmanian forest industry in 2006, representing the census frame for the survey. Table 1 summarises the number of forestry businesses identified as operating in Tasmania in August 2006, and key characteristics of these businesses.

The following businesses made up the census frame:

- **Seven industrial forest 'growers' (plantation and native forest managers):** Seven growers were identified who operate as an 'industrial grower' – i.e. a business solely dedicated to managing native forest and/or growing plantations. Of these, three are also processors; and five operate primarily or 100 per cent in the plantation sector. All but 2 growers focus primarily or exclusively on growing plantations (defined as having >95 per cent of their business dependent on plantation growing). The other two growers manage both native forest and plantations,
- **48 processors operating 64 processing sites:** The number of processors operating in Tasmania is changing rapidly. Several of the businesses initially identified had closed during recent years or merged to form a single business. Several processors operate processing facilities on multiple sites, with a total of 64 operating sites identified. Approx. 25 per cent of processors process plantation timber, while almost 90 per cent process native forest timber. Some processors, e.g. woodchip and pulp and paper mills, process both plantation and native forest-sourced wood,
- **437 contractors, consultants and nurseries:** Contractors and consultants include silvicultural contractors, harvest and haulage contractors, consultants providing expert advice, nurseries and seed supplies. 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. This indicated that up to 50 per cent of contracting firms worked in both the plantation and native forest sector, while approx. 30 per cent concentrated exclusively on the plantation sector and approx. 20 per cent operated exclusively in the native forest sector. There has been a recent decline in the number of businesses operating exclusively in the native forest sector, with several businesses who had worked in this sector indicating they had ceased work in the forest industry in the last two years, and
- **18 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. 18 of these were identified. All these organisations undertook activities in both the native forest and plantation sectors.

As stated in the previous section, non-industrial private forest growers and firewood cutters and sellers, while an important part of the industry, were not included in the survey due to lack of resources to adequately survey these two groups.

Table 1: Estimated size of the forest industry in Tasmania, August 2006, excluding non-industrial forest growers and firewood cutters/sellers

Type of business	Total Number of businesses (number of office/site locations)	What percent operation in the plantation sector?[3]	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.	7 businesses with a total of 14 office/site locations	100 %	29 %	Small: 43 % Med: 43 % Large: 14 %
		Note: All growers operated in the plantation sector; 29 per cent managed both native forest and plantations and none operated solely in the native forest sector		
Processor[2] Business undertaking processing including seasoning, drying, sawing, woodchipping, pulp and paper production	48 businesses with a total of 64 office/site locations	24 %	88 %	Small: 70 % Med: 18 % Large: 12 %
		Note: Some processors use both plantation and native forest inputs; therefore the total adds up to more than 100 per cent		
Contractors & consultants Business undertaking contracting and consulting activities involving forestry-specific activities, up to mill door	437 businesses It was not possible to accurately estimate total number of office/site locations	77 %	72 %	Small: 87 % Med: 12-13 % Large: 0-1 %
		Note: Figures based on characteristics of survey respondents, rather than knowledge of whole census frame. Many contractors work in both plantation and native forest sector; therefore total adds up to more than 100 per cent.		[Based on characteristics of survey respondents]
Other Industry representative groups, regulatory authorities, research groups	18 businesses with a total of 19 office/site locations	100 %	100 %	Small: 89 % Med: 11 % Large: 0 %
Total	512 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 per cent of growers are plantation growers, and 29 per cent 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 Tasmanian 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, and
- 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, 42 per cent of the businesses and organisations surveyed responded to the survey. Response rates varied by sector, with growers more likely to respond than other groups; and by business size, with large and medium sized businesses more likely to respond than small businesses. The 42 per cent response rate therefore includes data for substantially more than 42 per cent of all forest industry employment, because of the high response rate from large and medium sized businesses.

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 (ABS 2007, Australian Chamber of Commerce and Industry 2007):

- Small businesses: 1-19 employees (includes owner-operator enterprises),
- Medium businesses: 20-99 employees, and
- Large businesses: 100+ employees.

Industrial growers:

- 100 per cent of native forest and plantation growers responded to the survey, although only basic details about total employment were identified for two growers.

Processors:

- Forty percent of processors (19 businesses) initially responded to the survey. This included 83 per cent of processors who utilise plantation timber and 34 per cent of native forest processors. All large processors, 50 per cent of medium sized processors, and 29 per cent of small processors responded to the survey. As some large and medium sized processors had multiple sites, the response rate based on total number of processing sites was 53 per cent, with data on 35 of the 64 identified processing sites provided in survey returns from the 19 businesses who responded to the survey, and

- Non-responding processors were followed up with a phone call in which they were asked to identify which sector they operated in (native forest or plantation), and how many people they employ. This successfully gathered data from a further 25 processors, with only 4 small processors providing no data for the survey.

Contractors and consultants:

- Surveys were completed by 41.6 per cent of contractors and consultants (this group includes nurseries). This was made up of an initial 22.4 per cent response rate to the full-length survey, with another 19.2 per cent responding to the shorter 'mini survey' sent to encourage further response. Of the respondents, 87 per cent had small businesses, 12 per cent medium and 1 per cent large businesses,
- Consultation with forest industry experts indicated that medium and large contracting businesses were more likely to respond to the survey than small businesses, with the majority of known large contracting businesses responding to the survey, and at least 60 per cent of known medium sized contracting firms, and
- Approximately 50 per cent of contracting firms indicated they worked in both the plantation and native forest sector, while approx. 30 per cent concentrated exclusively on the plantation sector and approx. 20 per cent operated exclusively in the native forest sector.

Others dependent on the forest industry:

- Of other businesses and agencies sent surveys, 39 per cent responded to the survey.

Overall, the survey achieved a very high response from large businesses in the forest industry, a high response from medium sized businesses, and a lower response from small businesses. This means it is possible to estimate total employment based on the data received and knowledge of business size.

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 36 per cent to 80 per cent, with response rate for most LGAs between 36 per cent and 50 per cent.

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,
- Percent of activities in native forest, hardwood plantation and softwood plantation sectors,
- Number of people employed by forest industry sector,
- Gender of employees,

- Age groups, and
- Area in which people live and work.

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 Tasmanian 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 responses to this question were not robust enough to analyse,
- Staff turnover – While not as many businesses answered this question as other questions, the responses enabled some analysis of staff turnover,
- Qualifications – Low response rates overall, and a reported lack of knowledge of qualifications of staff by most forestry businesses, mean that the responses to this question could not be analysed, and
- Expenditure and business activity – response rates were low, but still enabled some estimation of total expenditure by the industry at the State and NRM region scales.

Results

Results of the survey are reported in the following sections:

- Employment:
  - How many people depend on the Tasmanian 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?
  - Characteristics of forest industry employees:
    - Full-time, part-time and casual employment,
    - Staff turnover,
    - Gender, and
    - Age distribution.

- Expenditure:
  - Estimated total expenditure by the forest industry,
  - Expenditure by business type, and
  - Location of expenditure.

- Employment and expenditure by NRM region.

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

An estimated 6,300[2] people were employed during 2005-06 in the forest industry. This represented 3.08 per cent of Tasmania's employed labour force in August 2006[3].

When part-time and casual workers were taken into account, this equated to 5,870 full-time equivalent workers. In August 2006, a total of 5,870 people are estimated to have worked in the industry.

The largest sector of the industry is processing, with over 3,100 people employed in processing (including those employed in firms engaged in both growing and processing). This is followed by harvest and haulage contractors – over 900 people employed – and silvicultural and roading contractors. Industrial forest growers employed 700 people, equating to approx. 650 fulltime equivalent employees.

Table 2 summarises:

- Estimated total persons employed in the industry (including all part-time and casual workers), and
- Estimated full-time equivalent[4] employment for (a) 2005-06 financial year (average of minimum and maximum number of employees), and (b) August 2006.

Table 2: Estimated total employment in the Tasmanian forest industry, 2005-06 and August 2006

Estimated total employment in Tasmanian forest industry in 2005-2006	Persons employed – 2005-06 average	Full-time equivalent employees – 2005-06 average	Full-time equivalent employees – August 2006
Industrial growers	700 people	660 people	640 people
Processors	2,500 people	2,420 people	2,270 people
Combined grower & processor (for businesses where employment could not be separated into the two sectors)	620 people	620 people	620 people
Silviculture & roading contractors	950 people	820 people	860 people
Nursery & seed/seedling suppliers	80 people	50 people	60 people
Harvest & haulage contractors (includes haulage to mill only)	1,020 people	930 people	910 people
Industry representation	40 people	40 people	40 people
Contractors providing expert advice/consultancy	390 people	340 people	470 people
Total	6,296 people	5,866 people	5,869 people

[2] All estimates have been rounded to the nearest 10.

[3] In August 2006, Tasmania had a total labour force of 219,159 people of which 6.58 per cent were unemployed. The employed labour force therefore totalled 204,738 (Source: ABS 2006 *Census of Population and Housing).*

[4] 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 methodology used to estimate total employment is detailed in the data analysis notes[5].

[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 per cent) 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 8.2 months per year and casual employees 6.4 months per year. Where a business did not identify numbers of part-time and casual employees, the total persons employed was multiplied by 0.88 as the ratio of FTE:persons was 0.88:1 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:

i. Data for growers has not been adjusted, as data was provided by all industrial growers.

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. It was assumed all large-sized contracting businesses and 80 per cent of medium-sized contracting businesses had returned surveys, so data for the contracting sector were adjusted assuming that almost all non-respondents were small businesses. This approach was deliberately conservative to avoid overestimation of employment.

Employment: number employed in native forest and plantation sectors

Tables 3 and 4 provide data on the proportion of forest industry workers who worked in native forest, softwood plantation, and hardwood plantation sectors.

Where the sector a person was employed in was not identified by the survey respondent, or the sector a business which did not respond to the survey was not known, they have been placed in the 'unknown' category. In many cases a business worked in both the native forest and plantation sectors, and in some of these the business did not identify what percent 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 3 outlines what proportion of people employed in the growing and processing sectors worked in 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.

Overall, Table 3 shows that in 2006, 70 per cent of employment in growing and processing was based on native forests, 27 per cent on plantations, and 3 per cent was unknown or unable to be split between native forest and plantation sectors.

Table 3: Employment in native forest and plantation sectors – growers and processors

Estimated number of persons employed in Tasmanian forest industry in 2005-2006	Native forest persons	Hardwood plantation persons	Softwood plantation persons	Unknown/could not be split between native forest and plantation
Industrial growers	77 %	23[1] %		0 %
Processors & combined grower/ processors	69 %	27[1] %		4 %
Total – growing and processing (per cent)	70 %	6 %	21 %	3 %

[1]Figures have been merged across the two plantation categories to preserve confidentiality

Table 4 shows the proportion of different types of contractors, consultants and other businesses and agencies employed in the native forest and plantation sectors. 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.

Table 4: Employment in native forest and plantation sectors – contractors, consultants and others

Estimated number of persons employed in Tasmanian forest industry in 2005-2006	Native forest persons	Hardwood plantation persons	Softwood plantation persons	Unknown/could not be split between native forest and plantation
Silviculture & roading contractors	22 %	10[1] %		68 %
Nursery & seed/seedling suppliers	Unknown	Unknown		100 %
Harvest & haulage contractors (includes haulage to mill only)	12 %	38[1] %		50 %
Industry representation	Note: Most representative bodies represent groups from all sectors, so it is not possible to separate employees by sector			100
Contractors providing expert advice/ consultancy services	13 %	36[1] %		51 %
Total (per cent of persons)	19 %	7 %	15 %	59 %

[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):

- 68.3 per cent of Tasmanian forest industry workers are employed in the native forest sector, and
- 31.7 per cent of Tasmanian forest industry workers are employed in the plantation sector, with 7.7 per cent working in hardwood plantations and 24 per cent in softwood plantations.

Where are forestry businesses located?

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

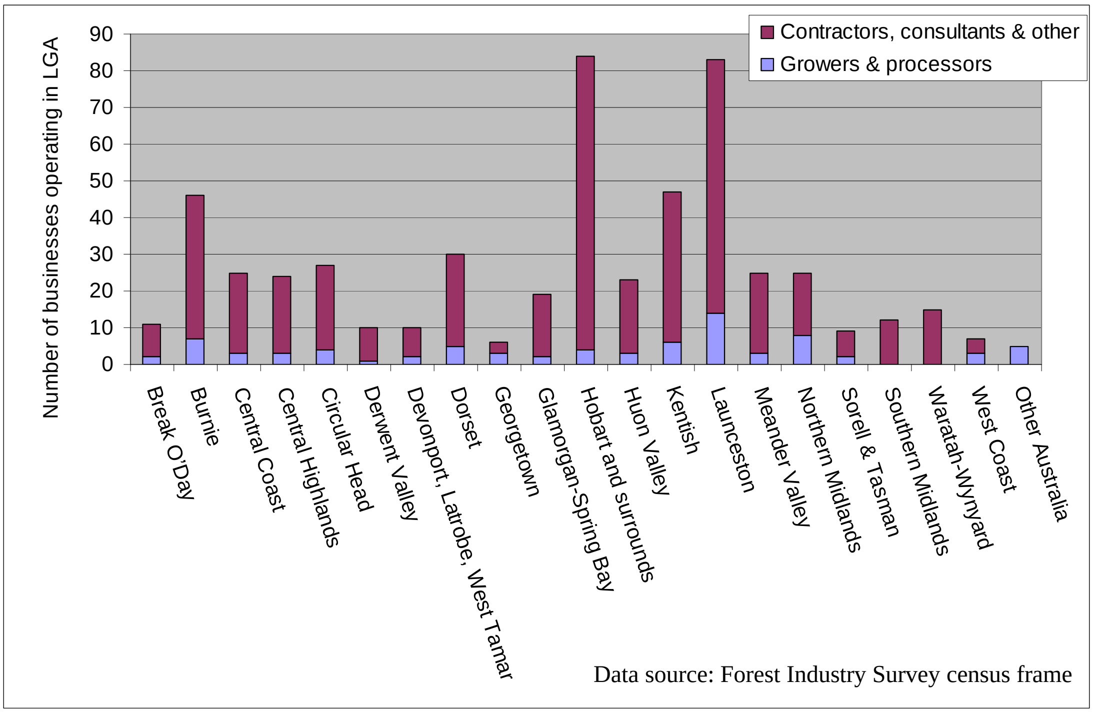

Figure 2: Location of forest industry businesses in Tasmania, based on census frame developed for the survey

Figure 3 identifies the percentage of all forest industry office locations across Tasmania located in each LGA.

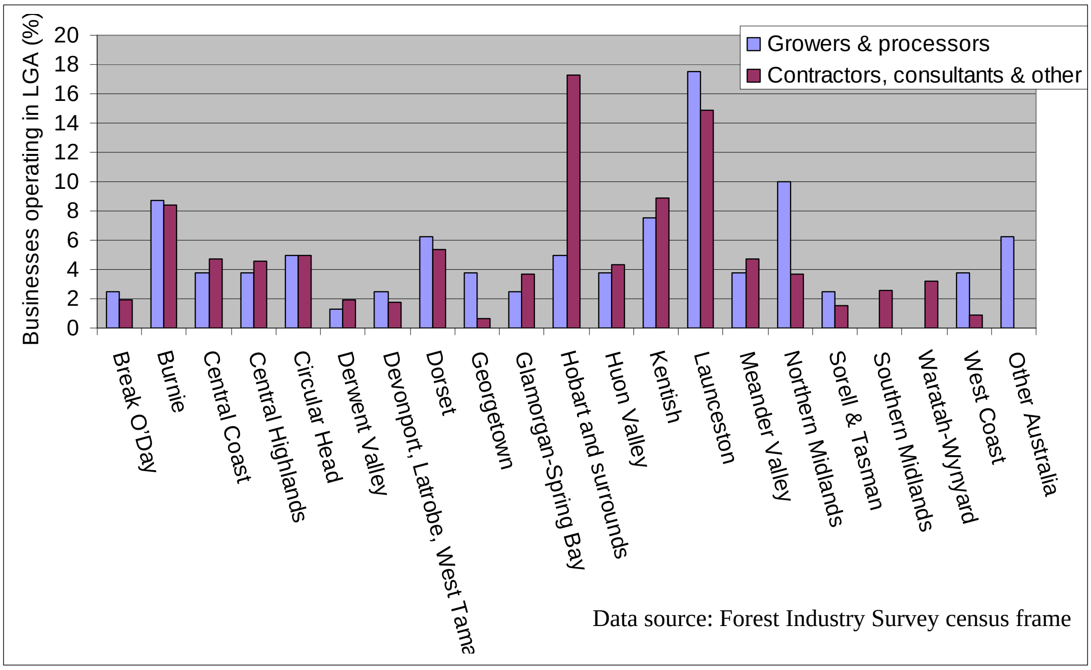

Figure 3: Percent of forest industry businesses in Tasmania located in different LGAs, based on sample frame developed for the survey

The five LGAs with the most forest industry businesses located within them are Launceston, Hobart, Kentish, Burnie and Dorset.

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 400. 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 LGAs. It locates employees in the LGA 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 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.

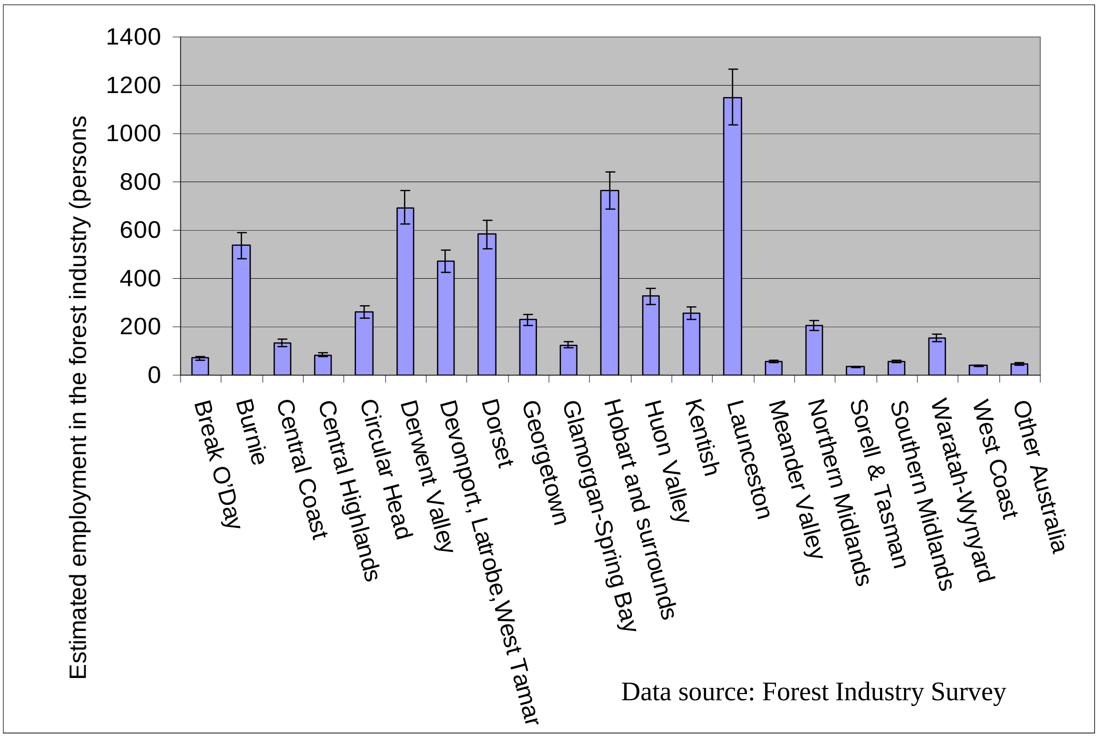

Figure 4: Estimated number of people employed in different Tasmanian LGAs

The process used to estimate total employment by location is described in the data analysis notes[6].

The five LGAs with the highest number of forestry workers were Launceston, Hobart and surrounds, Derwent Valley, Dorset, and Burnie. The LGAs with the highest number of forest industry employees are slightly different to those with the highest number of businesses (Launceston, Hobart, Kentish, Burnie and Dorset).

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[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 per cent 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.

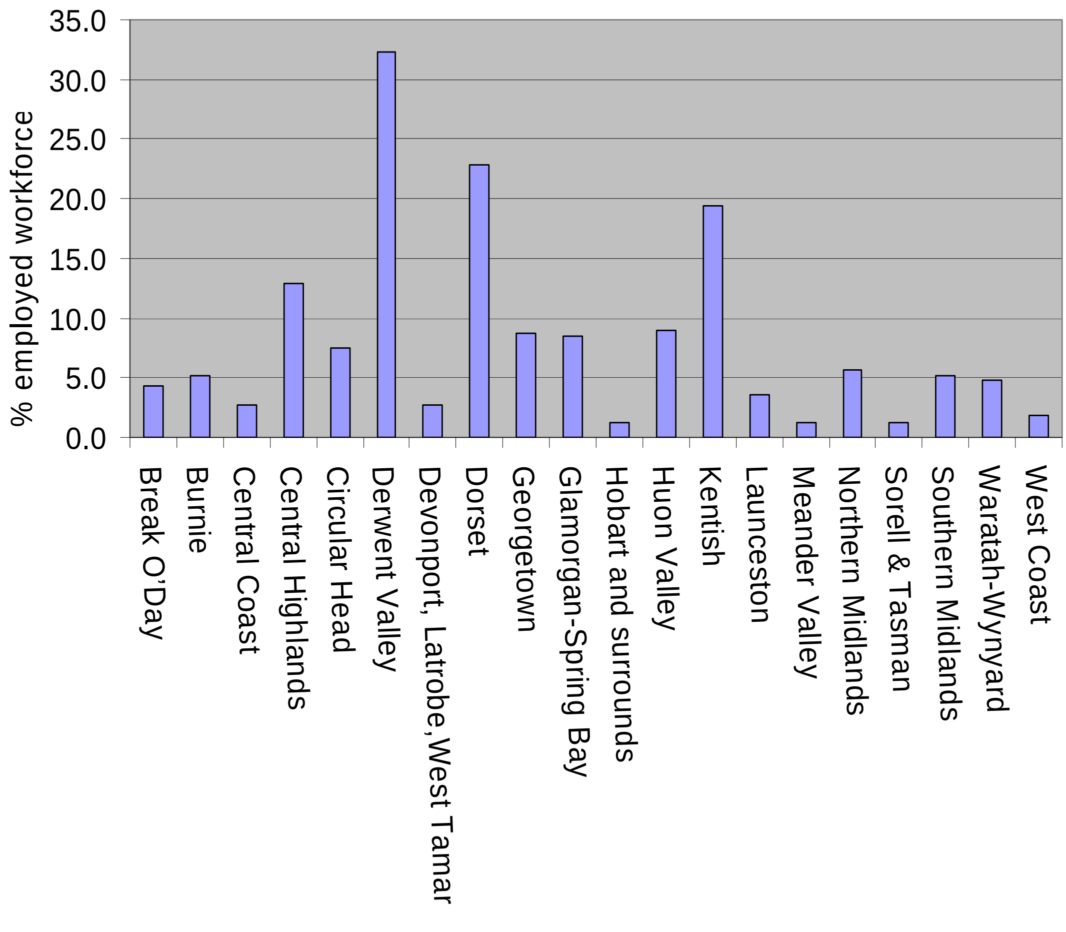
For example Kentish, while having a large number of small forestry businesses, had an estimated 250 people working in the forest industry, and therefore ranked 9th in terms of total number of forest industry workers but 3rd in terms of total number of businesses.

Proportion of workforce employed in the forest industry

While LGAs such as Launceston and Hobart 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.



Data sources: ABS Census of Population and Housing 2006 (place of employment data); Forest Industry Survey

Figure 5: Percent of employed workforce who work in the forest industry, by LGA, August 2006

From Figure 5, it is apparent that dependence on the forest industry varies considerably in different local government areas, with anywhere from 1 per cent to 32 per cent of the employed workforce working in the forest industry.

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

- Derwent Valley (32 per cent),
- Dorset (23 per cent),
- Kentish (19 per cent),
- Central Highlands (13 per cent),
- Huon Valley (9 per cent),
- Georgetown (9 per cent),
- Glamorgan-Spring Bay (8.5 per cent), and
- Circular Head (7.5 per cent).

In all other LGAs, less than 6 per cent of employment is directly dependent on the forest industry.

The two LGAs with the highest number of forestry businesses are not those that are the most dependent on forestry for employment, with 1.1 per cent of Hobart workers and 3.4 per cent of Launceston workers employed in the forest industry.

This indicates that smaller, rural Tasmanian LGAs are more likely to be highly dependent on the forest industry for employment than LGAs with large urban populations. The LGAs with a high proportion of workforce in the forest industry 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 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 71 per cent of growers, 84 per cent of processors, and 89 per cent of the contractors who responded to the 'long' version of the survey. 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 51 per cent of the employees of those who responded to the survey.

Table 5 summarises where employees lived compared to the location of the business office at which they are based.

The results indicate that the large majority of forest industry workers (over 85 per cent 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 central northern Tasmania, where up to 20 per cent of employees lived up to two LGAs away from their office location. This is most likely related to the small size of LGAs such as Central Coast, Kentish and Latrobe, which mean 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 are five primary grouping of LGAs in which employees are likely to commute between LGAs to live and work:

- Circular Head, Waratah-Wynyard, Burnie and Central Coast,
- Kentish, Central Coast, Latrobe, Devonport,
- Dorset, Launceston, Break O'Day, Northern Midlands, West Tamar, Meander Valley,
- Central Highlands, Derwent Valley, and
- Hobart and surrounds, Huon Valley, Sorell and Tasman, Southern Midlands, links to Derwent Valley.

However, while these are common 'clusters' within which employees live and work, there is also some movement of employees across these clusters.

Table 5: Proportion of employees living in same LGA as business office from which they work

Office location (per cent response rate[1])	Employees who live in LGA in which office located	If employees live outside office LGA, where do they most commonly live?[2]
Break O'Day[3] (27 %)	*100 %*	*N/A*
Burnie (7 %)	*71 %*	*Waratah-Wynyard*
Central Coast (37 %)	43 %	Meander Valley, Burnie
Central Highlands & Derwent Valley (81 %)	41 %	Hobart and surrounds, Huon Valley
Circular Head (90 %)	98 %	Burnie
Devonport, Latrobe & West Tamar (11 %)	*45 %*	*Burnie, Break O'Day*
Dorset (15 %)	*87 %*	*Break O'Day, Launceston*
Georgetown (98 %)	46 %	Launceston, West Tamar, Meander Valley
Glamorgan-Spring Bay (80 %)	69 %	Hobart and surrounds, Sorell, Derwent Valley
Hobart and surrounds (32 %)	72 %	Sorell, Southern Midlands, Break O'Day, Derwent Valley
Huon Valley (6 %)	*83 %*	*Hobart and surrounds*
Kentish (10 %)	*50 %*	*Central Coast, Latrobe, Devonport*
Launceston (77 %)	62 %	Meander Valley, Northern Midlands, West Tamar, Dorset
Meander Valley (29 %)	*62 %*	*Derwent Valley, Central Highlands*
Northern Midlands (83 %)	37 %	Launceston, Meander Valley
Sorell & Tasman (0 %)	*Phone discussions indicate most employees live in Sorell, Tasman, and Hobart and surrounds*	
Southern Midlands	67 %	Hobart and surrounds
Waratah-Wynyard (93 %)	20 %	Burnie, Central Coast, Central Highlands
West Coast (88 %)	100 %	
Other Australia & unknown (100 %)	100 % reported to live outside Tasmania	

[1]Response rate measured as per cent of employees for which data on LGA of resident provided.

[2]LGAs 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.

[3]Where 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.

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 in which employees had in worked during 2005-06.

This question was answered by 42 per cent of growers, 84 per cent of processors, and 89 per cent of the contractors who responded to the 'long' version of the survey. 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 39 per cent of the employees of those who responded to the survey. This was a much lower response rate than for the question on where employees live, limiting the analysis possible[7].

Data were analysed to identify whether growers, processors and contractors have different patterns in terms of where they work (shown in Table 6):

- **Growers:** Three growers responded to this question. These three businesses 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 100km of the office within which they are based, but further away in some cases. On average, 53-78 per cent of total employee time was spent in the office in which the business office was based, and 22-47 per cent 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 seven LGAs in any one year. Phone discussions with other growers indicate this is a typical pattern,
- **Processors:** On average, 89 per cent of employees working for processors work in the LGA in which the processing facility is based. 11 per cent 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, and
- **Contractors:** On average, 66.4 per cent 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:
    - 39 per cent of employee time was spent in the 'home' LGA in harvest and haulage businesses,
    - 35 per cent 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.

[7] The lower response rate may be partly because (a) some businesses assumed it was known that their employees worked in the same LGA in which as office is located, particularly processors, and (b) for some growers and contractors who work in multiple LGAs, it is very difficult to identify the many locations in which employees have worked over the course of a year.

Table 6: 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 (n=3) Range given rather than average due to small number of respondents.	53-78 %	22-47 %
Processors (n=16)	89 %	11 %
Contractors – all (n=62)	66.4 %	33.6 %
Contractors – harvest and haulage (n=22)	39 %	61 %
Contractors – silviculture (n=20)	35 %	65 %

Table 7 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.

Table 7 does indicate that when employees undertake work outside the LGA in which their office is located, they commonly work within 100 km driving distance of the office location.

Businesses located in northern Tasmanian LGAs are most likely to undertake work in the north of Tasmania – for example, Central Coast businesses reported undertaking work in Meander Valley, Launceston and Burnie. Those located in Devonport, Latrobe and West Tamar reported working in all LGAs across the north coast and inland to Central Highlands, but rarely undertook work in Derwent Valley, Huon Valley, Sorell or Tasman.

Distance by road appears to influence where forest industry workers travel to work, particularly for contractors. Contractors located in Circular Head, Break O'Day and West Coast were more likely to report their work was undertaken primarily in the LGA in which they were located than those based in other locations. This may be because there is a longer driving distance from these LGAs to others.

Table 7: Proportion of employees working in same LGA as business office

Office location (per cent response rate[1])	Per cent of work located in same LGA as office	If employees live outside office LGA, where do they most commonly work?[2]
Break O'Day[3] (27 %)	*100 %*	*N/A*
Burnie (5 %)	*74 %*	*Waratah-Wynyard*
Central Coast (23 %)	*3 %*	*Meander Valley, Launceston, Burnie*
Central Highlands & Derwent Valley (79 %)	74 %	Hobart and surrounds
Circular Head (81 %)	100 %	N/A
Devonport, Latrobe & West Tamar (5 %)	*80 %*	*Break O'Day, Circular Head, Burnie, Central Coast*
Dorset (10 %)	*87 %*	*Break O'Day, Meander Valley*
Georgetown (57 %)	91 %	Dorset
Glamorgan-Spring Bay (28 %)	*0 %*	*Central Highlands, Hobart & surrounds, Sorell, Southern Midlands, Huon Valley*
Hobart and surrounds (32 %)	86 %	Break O'Day, several others with <2 employees reported
Huon Valley (4 %)	100 %	N/A
Kentish (7 %)	*27 %*	*Huon Valley, several others also reported*
Launceston (59 %)	79 %	Dorset, Meander Valley, Central Highlands
Meander Valley (29 %)	40 %	Derwent Valley, Devonport, Dorset, Launceston, Northern Midlands
Northern Midlands (64 %)	*13 %*	*Launceston*
Sorell & Tasman (0 %)	N/A	N/A
Southern Midlands (9 %)	100 %	N/A
Waratah-Wynyard (84 %)	Businesses indicated working largely in Burnie and Waratah-Wynyard, with some difficulty classifying locations due to same postcodes crossing both LGAs	
West Coast (88 %)	100 %	
Other Australia & unknown (100 %)	100 %	

[1]Response rate measured as per cent of employees for which data on LGA of resident provided

[2]LGAs 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.

[3]Where 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: characteristics of forest industry workers

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

- How many forest industry workers work full-time, part-time or are employed casually,
- Staff turnover rates,
- Gender of forest industry workers, and
- 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 to the broader workforce.

In August 2006, across all types of forest industry business, an average of 74 per cent of employees worked full-time, while 12 per cent worked part-time and 14 per cent as casual employees. On average:

- Part-time employees worked a total of 8.2 months a year, or 68 per cent of a full-time position, and
- Casual employees worked a total of 6.4 months a year, or 53 per cent of a full-time position.

Figure 6 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, processors and harvest and haulage contractors all typically employed over 80 per cent of their workforce as full-time employees,
- Silvicultural and roading contractors, and nursery and seed suppliers, generally employed less than 50 per cent of their workforce full-time, with the other half of employees employed on a part-time or casual basis.

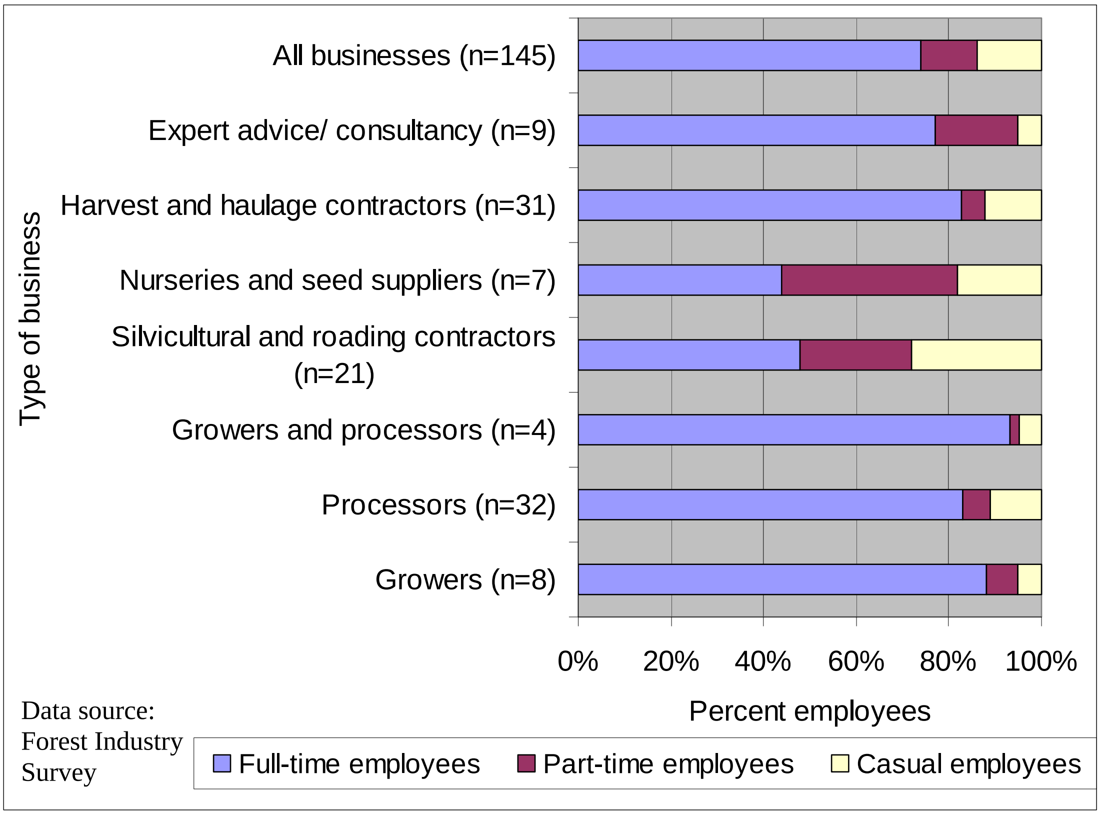


Figure 6: Proportion of employees working full-time, part-time and on a casual basis

Overall, workers in the forest industry are more likely to work full-time than the average working Tasmanian, and less likely to work part-time. This is shown in Figure 7, 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 (a) silvicultural and roading contractors, and (b) nurseries and seed suppliers, which have a higher rate of part-time employment than the Tasmanian average, and a lower rate of full-time employment. This is possibly due to the seasonal nature of the work carried out by these types of contractors.

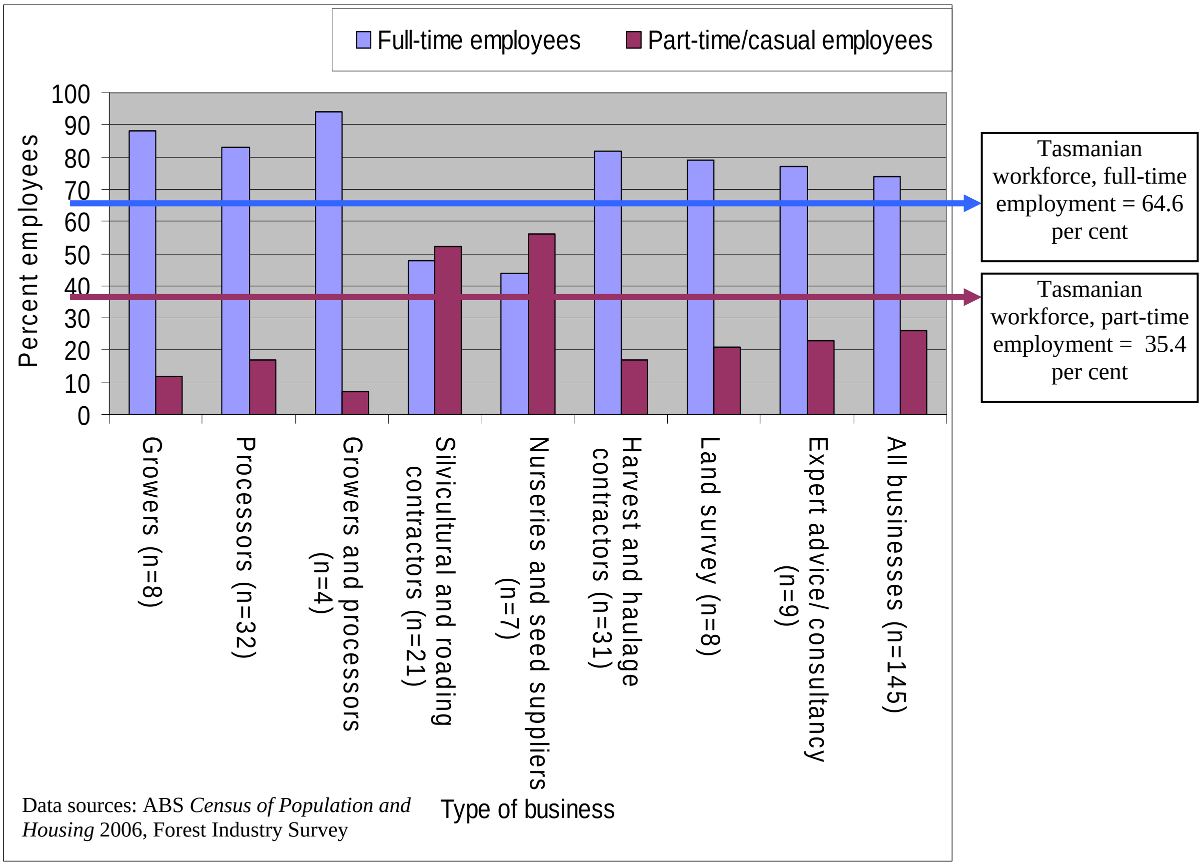


Figure 7: Full-time and part-time employment: comparison of forest industry to Tasmanian average

Table 8 provides further detail on the variance across individual businesses in the proportion of people employed on a full-time, part-time or casual basis. This provides an indication of how variable the nature of employment is across individual businesses – in some businesses, all employees work full-time whole in others large proportions have part-time or casual positions. While all growers and processors employed at least half their workforce full-time, variability was much higher in other types of businesses.

To better examine the variability in full-time, part-time and casual employment, Figures 8 to 12 detail the proportion of businesses for which full-time, part-time and casual employees made up different proportions of the workforce. In all cases, it was most common for part-time and casual employees to make up less than 20 per cent of the workforce, and for full-time employees to make up over 80 per cent of the workforce of a business.

Table 8: Variance in full-time, part-time and casual employment ratios in different businesses

Type of business	Average and range of people working on a full-time, part-time and casual basis, August 2006		
	Full-time employees	Part-time employees	Casual employees
Growers (n=8)	Average: 88 % Range: 75-97 %	Average: 7 % Range: 0-16 %	Average: 5 % Range: 0-14 %

Processors (n=32)	Average: 83 % Range: 50-100 %	Average: 6 % Range: 0-33 %	Average: 11 % Range: 0-50 %
Growers and processors (n=4)	Average: 94 % Range: 88-100 %	Average: 2 % Range: 0-4 %	Average: 5 % Range: 0-11 %
Silvicultural and roading contractors (n=21)	Average: 48 % Range: 0-100 %	Average: 24 % Range: 0-100 %	Average: 28 % Range: 0-100 %
Nurseries and seed suppliers (n=7)	Average: 44 % Range: 0-100 %	Average: 38 % Range: 0-100 %	Average: 18 % Range: 0-90 %
Harvest and haulage contractors (n=31)	Average: 82 % Range: 0-100 %	Average: 5 % Range: 0-100 %	Average: 12 % Range: 0-100 %
Land survey (n=8)	Average: 79 % Range: 0-100 %	Average: 0 % Range: 0-0 %	Average: 21 % Range: 0-100 %
Expert advice/ consultancy (n=9)	Average: 77 % Range: 0-100 %	Average: 18 % Range: 0-100 %	Average: 5 % Range: 0-29 %
All respondents (n=145)	Average: 74 % Range: 0-100 %	Average: 12 % Range: 0-100 %	Average: 14 % Range: 0-100 %

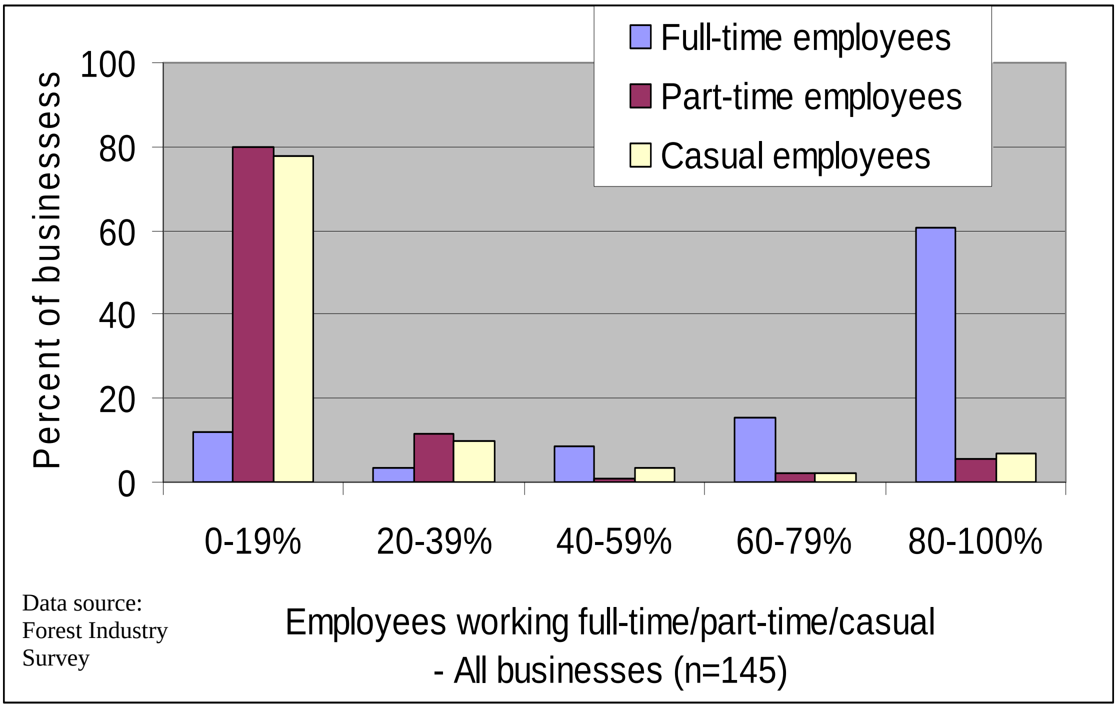


Figure 8: Proportion of employees working full-time/part-time/casual in all forest industry businesses

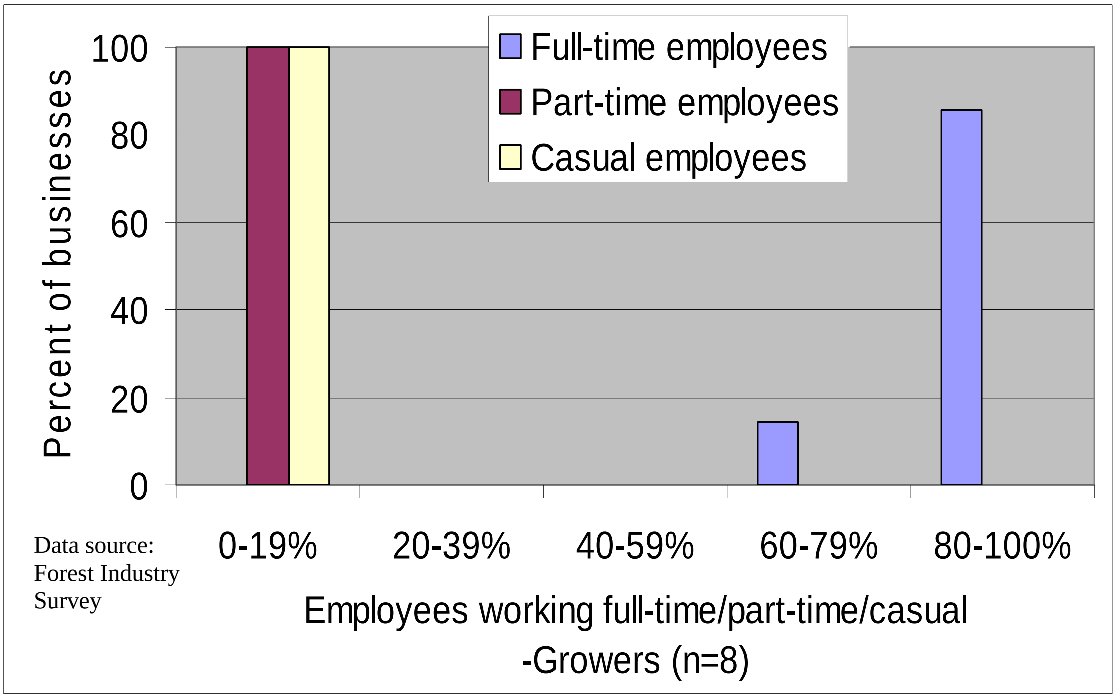


Figure 9: Proportion of employees working full-time/part-time/casual for industrial forest growers

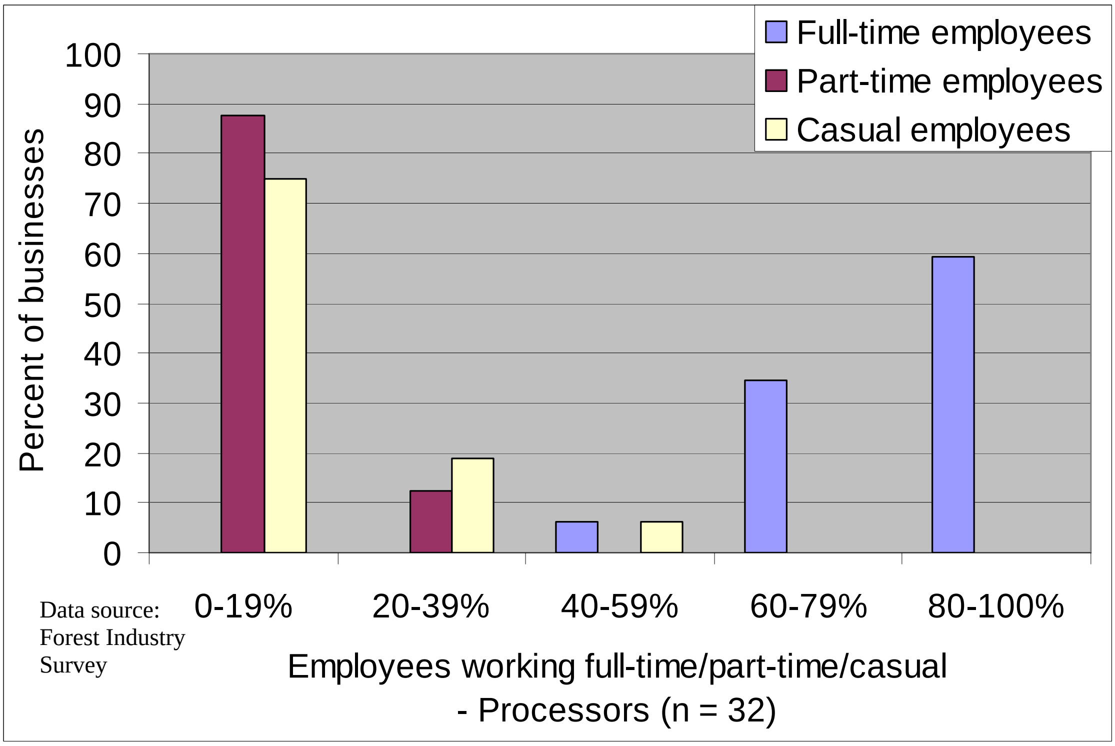


Figure 10: Proportion of employees working full-time/part-time/casual for wood and paper processors

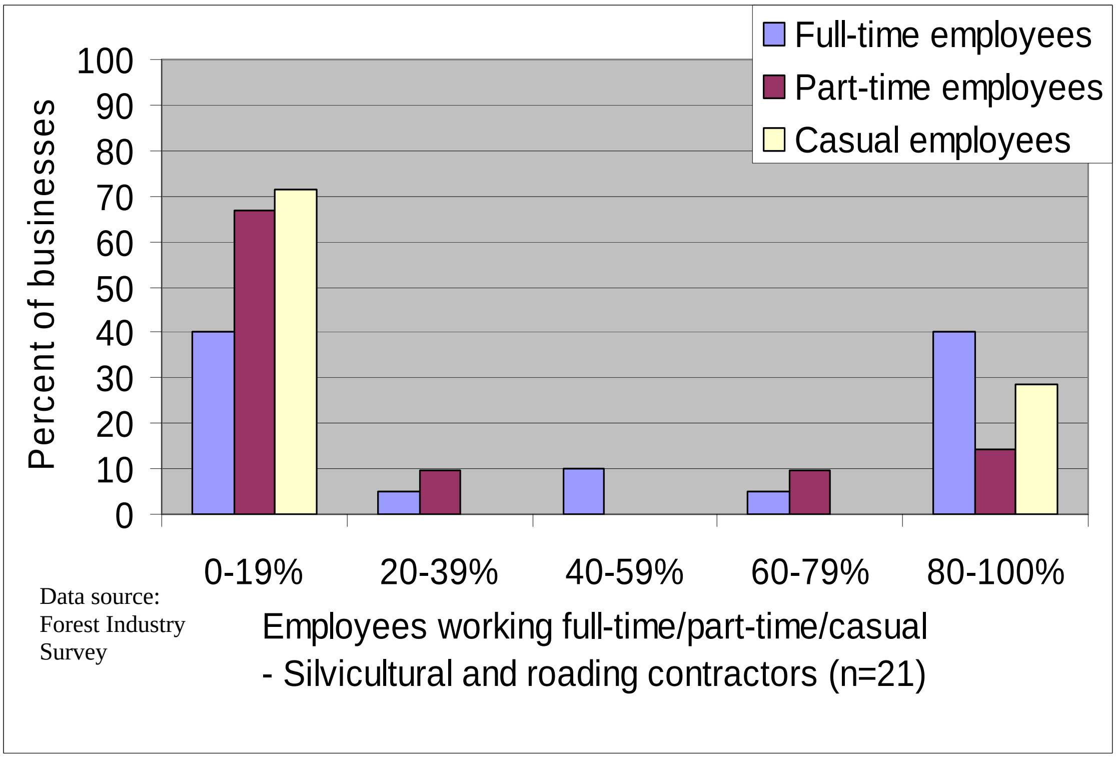


Figure 11: Proportion of employees working full-time/part-time/casual for silvicultural and roading contractors

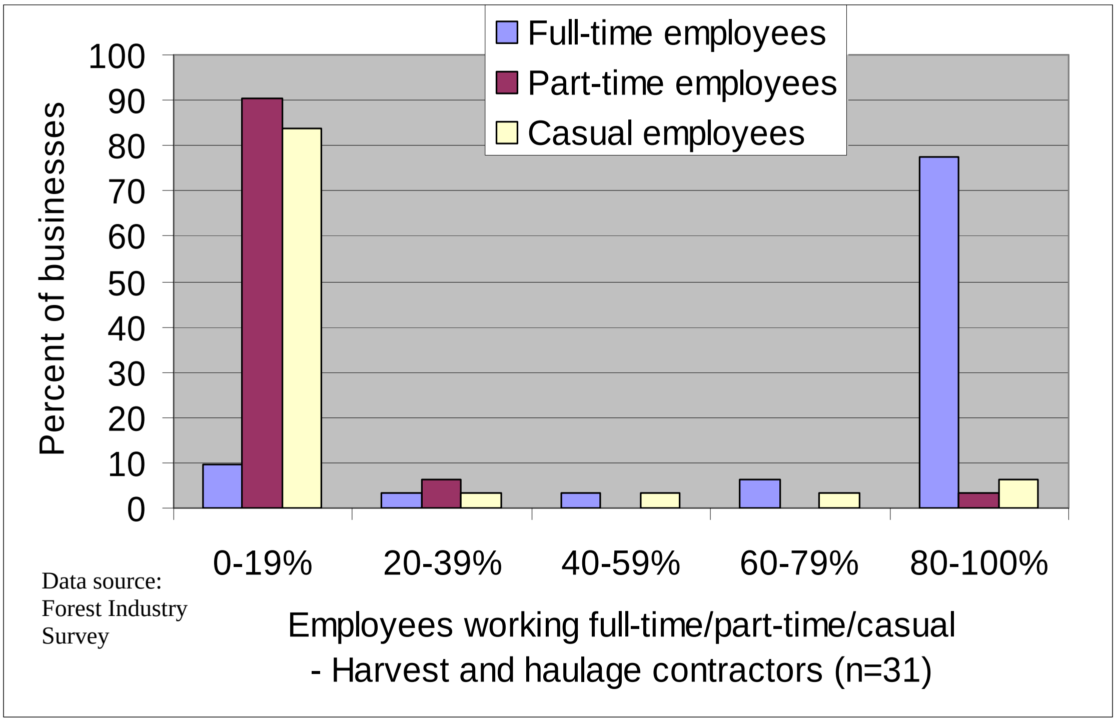


Figure 12: Proportion of employees working full-time/part-time/casual for harvest and haulage contractors

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 staffs 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 formula[8]:

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

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 13 shows the mean and median turnover rates identified in the forest industry survey for different business types. A small proportion of businesses had very high turnover rates due to stopping most/all of their business activities during 2005-06. The high rate of turnover in these businesses has skewed the mean relatively high. Because of this, the median is a better indicator of the average turnover rate than the mean.

The median turnover rate across all types of forestry business was 9.5 per cent, while the mean was 23 per cent. 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 per cent of all people who worked at some point in those 12 months ceased a job; the figure was 17.1 per cent for Tasmania (ABS 2007).

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 per cent (AIM 2007). This figure is substantially lower than the ABS derived figure of 18.5 per cent of workers having ceased a job; this is because the 18.5 per cent 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.

The high turnover rate for processors was influenced by the closure of some businesses, with three businesses who responded to this question having closed down most of their operations during 2005-06 so that a high number of staff was recorded as leaving. Turnover rates can also appear high for businesses that had a high number

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

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.

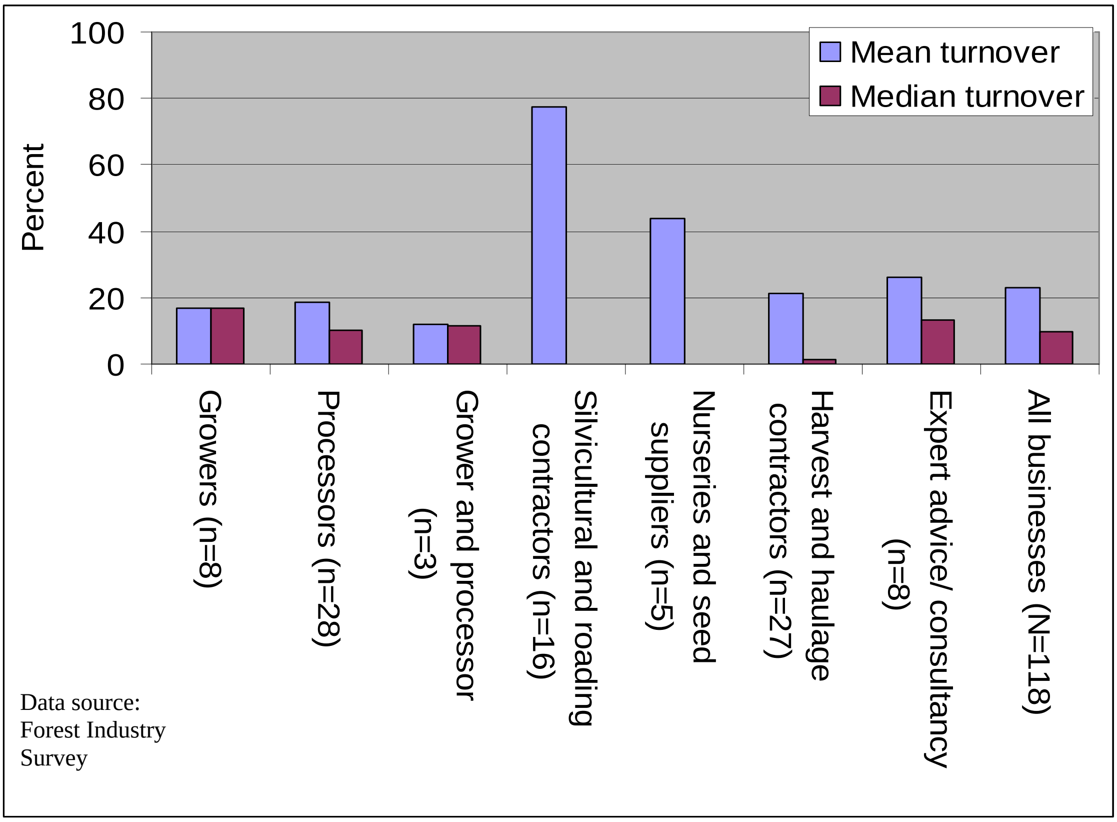
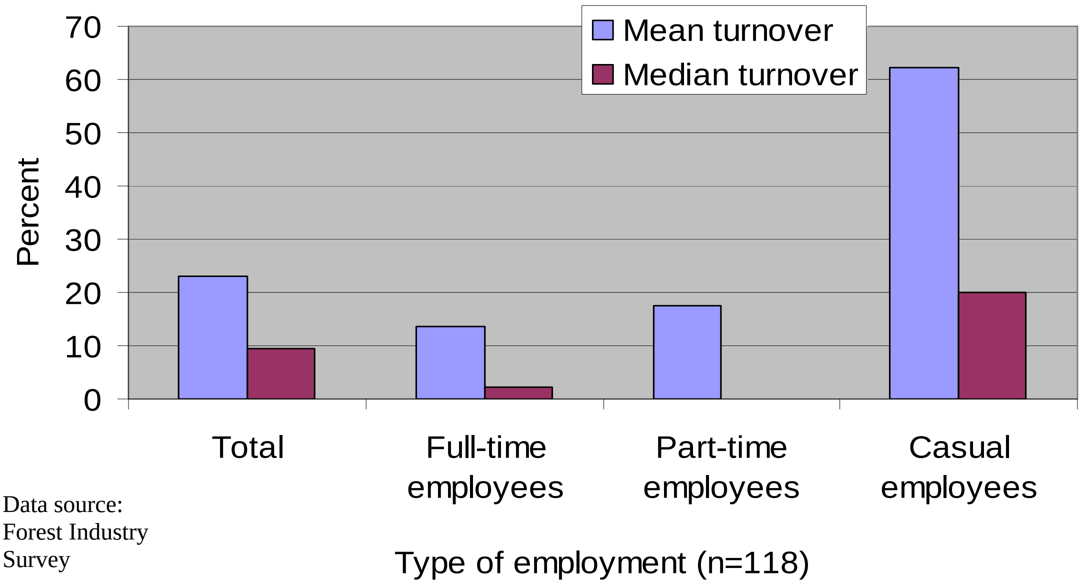


Figure 2: Staff turnover for different types of forest industry business

Turnover often varies by type of employment. Figure 14 shows turnover rates for full-time, part-time and casual employees. As would be expected, mean and median turnover rates are much lower for full-time staff and part-time staff than for casual staff.



Data source: Forest Industry Survey

Figure 3: Staff turnover rates for full-time, part-time and casual workers

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, 88.4 per cent of forest industry workers were male and 11.6 per cent female (n=146). This compares to 53.1 per cent male and 46.9 per cent female workers for Tasmania as a whole (ABS *Census of Population and Housing* 2006).

The gender ratio of employees varied depending on whether they were employed full-time, part-time, or on a casual basis. As shown in Figure 15, while 11.6 per cent of the forest industry workforce overall was female, only 8.3 per cent of full-time workers were female, compared to 17.5 per cent of casual workers and 57.6 per cent of the small number of part-time workers reported.

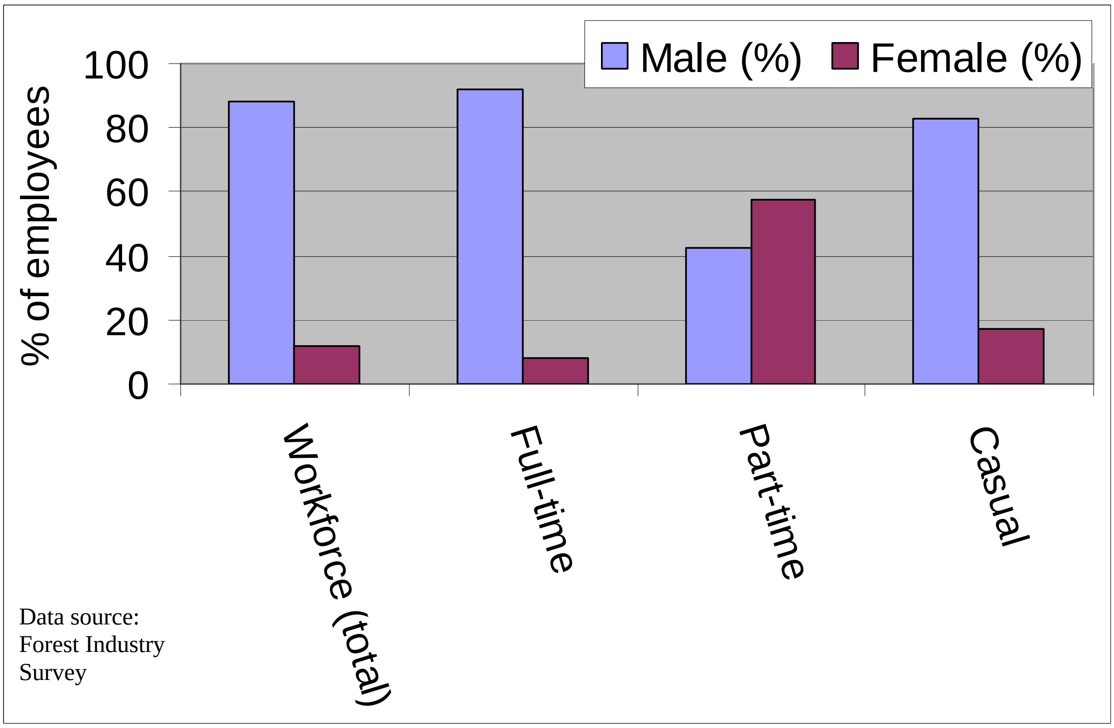


Figure 4: Gender of Tasmanian forest industry employees

Table 9 compares the gender and workforce status of forest industry employees to the Tasmanian average in August 2006.

Table 9: Comparison of gender of full-time and part-time/casual workers in the forest industry and Tasmania as a whole

	Forest industry average (Data source: Forest Industry Survey)	Tasmanian average (Data source:ABS 2006 *Census of Population and Housing*)
Full-time males (% of total full-time employment)	91.7 %	65.9 %
Full-time females (% of total full-time employment)	8.3 %	34.1 %
Part-time and casual males (% of total part-time/casual employment)	75.3 %	30.2 %
Part-time and casual females (% of total part-time/casual employment)	24.7 %	69.8 %

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

The gender of employees varied by the type of business, as well as by the type of employment, as shown in Figure 16.

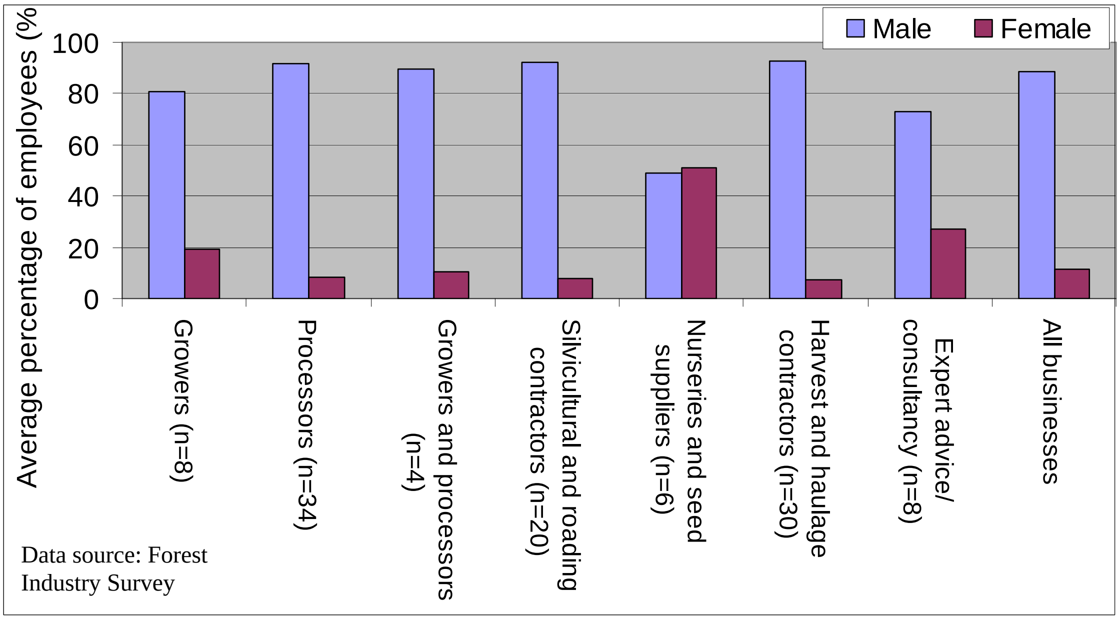


Figure 56: Employee gender by forest industry business type

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

- Nurseries and seed suppliers, with females making up 50.8 per cent of employees, and
- Growers (19 per cent female employment) and contractors providing expert advice/consultancy services (26.9 per cent).

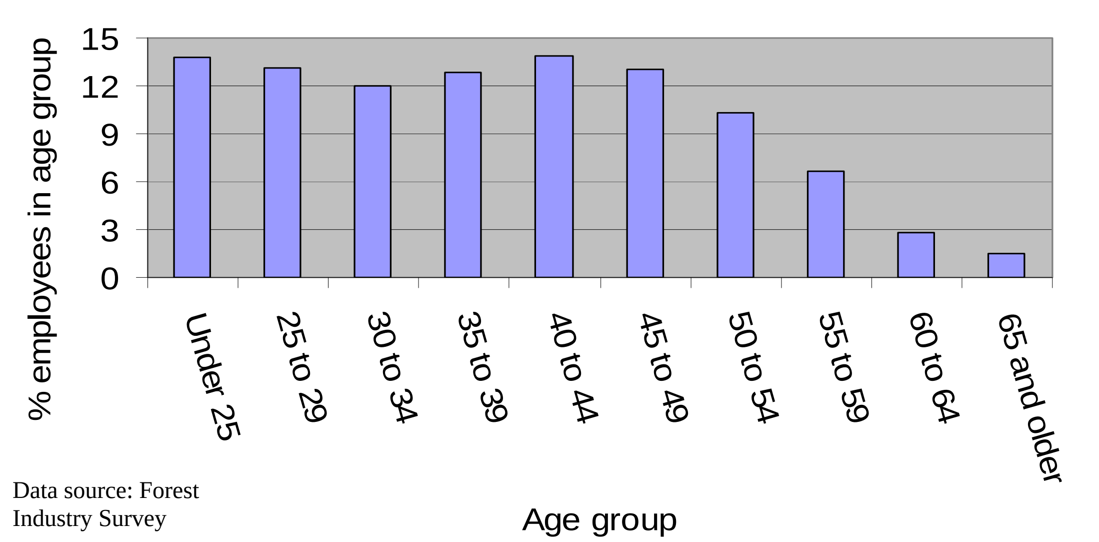
The following types of businesses employed a lower proportion of women than the forest industry average (women made up less than 10 per cent of the workforce for all three):

- Processors,
- Silvicultural contractors, and
- Harvest and haulage contractors.

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

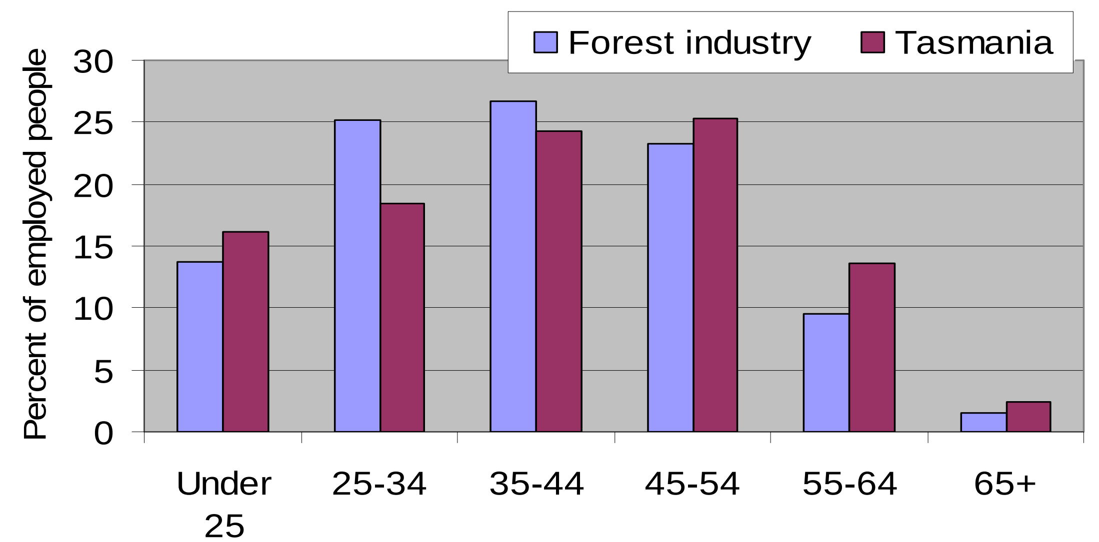
Figure 17 shows the age distribution of people working in the forest industry as a whole in August 2006. The median age group was 40-44, and the large majority of employees were aged under 50 years, with a relatively even distribution of employees across all age groups up to the 50-54 age group.



Data source: Forest Industry Survey

Figure 6: Age distribution of forest industry workers, August 2006 (n=141)

Figure 18 compares the age distribution of those in the forest industry with that for Tasmania as a whole in August 2006. Overall, workers in the forest industry are younger than those in Tasmania as a whole, with a higher proportion of workers aged 25-44 than the Tasmanian average, and fewer aged 45 years and over. However, the forest industry had a slightly lower proportion of workers aged under 25 than the State average.



Data sources: ABS *Census of Population and Housing* 2006; Forest Industry Survey

Figure 7: Comparison of age distribution of employed people in the forest industry and Tasmania as a whole

The age distribution of employees varied considerably by type of forest industry business. Figure 19 shows the age distribution of workers employed by growers, processors, and contractors/consultants. Quite different patterns are apparent, with:

- Growers employing mostly people aged 35-54, and fewer people aged under 34 compared to processors and contractors/consultants
- Processors employing a higher proportion of people aged under 34 than others, with almost 50 per cent of workers aged under 34, and
- Contractors and consultants employing a high proportion of people aged 29 or less, with 23 per cent under 25 years of age.

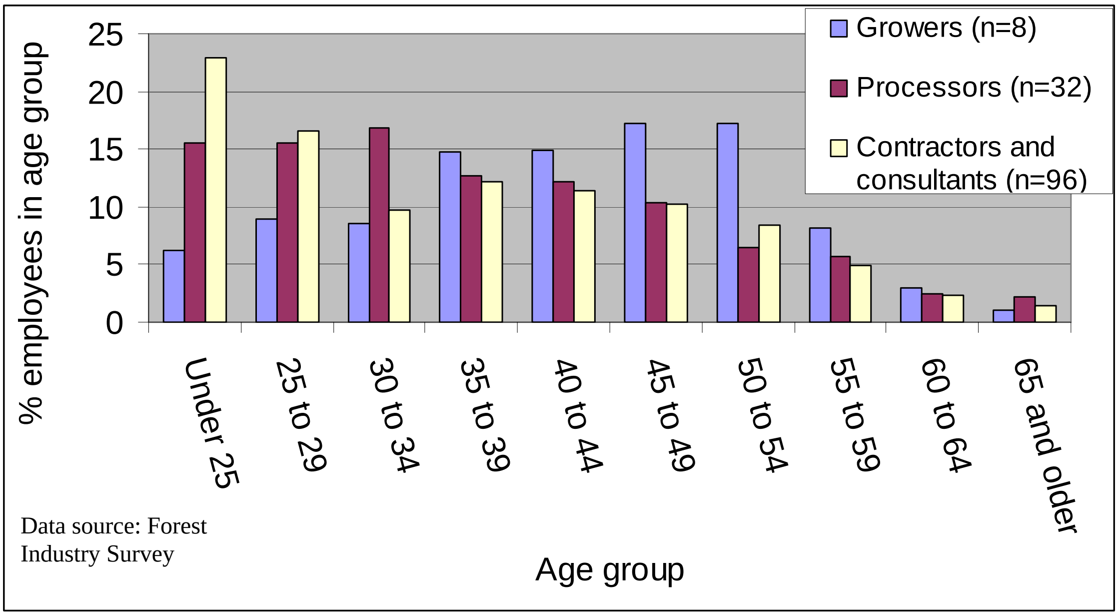


Figure 8: Age distribution of forest industry workers employed in growing, processing and contracting/consulting businesses

When different types of contracting business are examined (Figure 20), differences in age distribution of each type of contractor are apparent. Silvicultural and roading contractors are more likely to employ people aged under 25 than other types of contractor.

Harvest and haulage contractors employ fewer people aged under 30 than other types of contractors, and are typically aged 30-49 years.

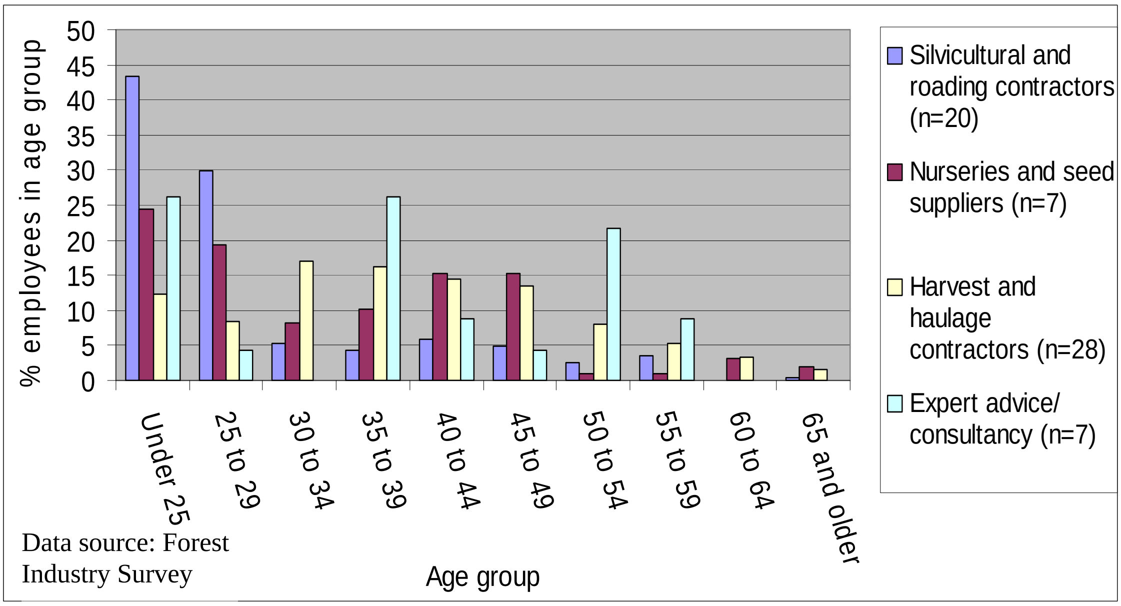


Figure 20: Age distribution of forest industry workers employed in different types of contracting businesses

The age of workers also varied by whether they were working full-time, part-time, or on a casual basis (Figure 21). The median age group was 40-44 for full-time workers, 35-39 for part-time workers, and under 25 for casual workers.

A much higher proportion of casual workers (59.6 per cent) were aged under 30 than full-time or part-time workers, and only 24.9 per cent of casual workers were aged over 40

Full-time and part-time workers had a reasonably similar age distribution, with the exception that part-time workers were slightly more likely to be aged over 50 than full-time workers, and less likely to be aged under 34.

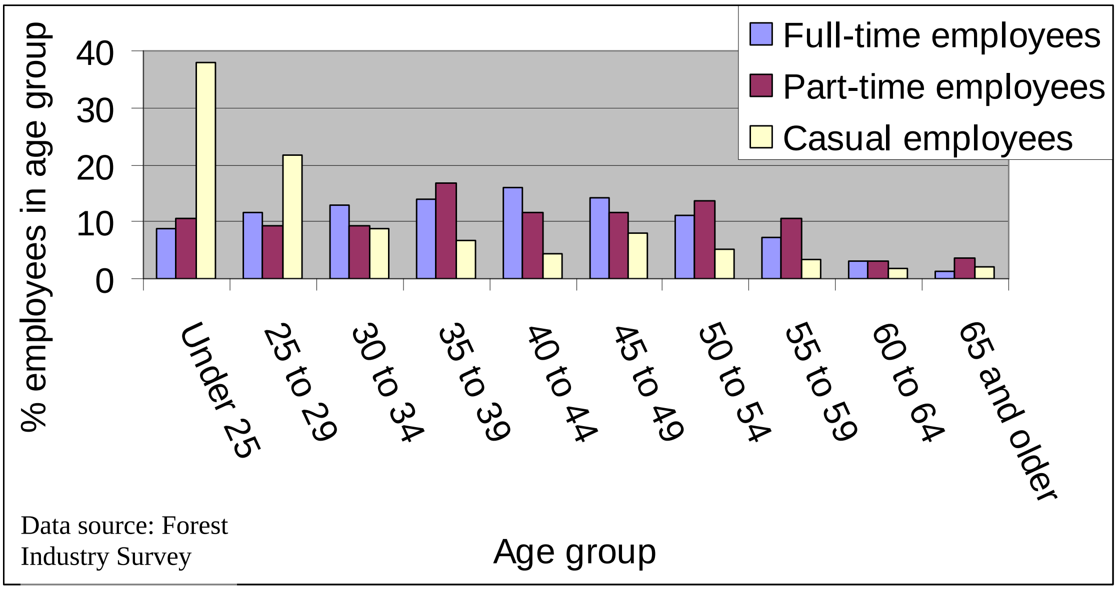


Figure 9: Age distribution of forest industry workers by employment status

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, 54 per cent of respondents answered basic questions about their Tasmanian forest industry business activity and values in 2005-06. Those who did respond employed 41.3 per cent of the total number of people estimated to be employed in growing and processing businesses in total, representing a reasonable sample on which to base estimates of total expenditure.

Of contracting and consulting businesses, 67 per cent of respondents provided basic information on expenditure, and 40 per cent more detailed information. Those who responded employed 66.4 per cent 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. Total expenditure has also been estimated by NRM region (see ‘Employment and expenditure by NRM region’ section).

Many businesses that operate in both the native forest and plantation sector did not provide data on how much of their expenditure occurred in each sector. As a result, it is not possible to identify how much expenditure occurs in the native forest versus plantation sectors.

Estimated total expenditure

Table 10 shows estimated total expenditure by the Tasmanian forest industry in 2005-06[9]. The total expenditure by the forest industry as a whole, including growers, processors and contractors, excluding transfer payments between sectors, is estimated at $1.42-$1.60 billion.

This figure, as stated earlier, provides some indication of the gross value of production of the industry, as GVP is broadly equivalent to spending plus profits.

The expenditure by the forest industry would need to be calculated as value added to inputs used at the start of the chain of production to identify the exact contribution of the forest industry to Gross State Product (which in Tasmanian was $18.842 billion in 2005-06). Gross State Product is calculated as:

> The total value added in production in the State economy in a year. Broadly, it equals the total value of goods and services produced less the cost of goods and services used in the production process. (Department of Treasury and Finance 2006: 266)

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 10: Estimated total expenditure by the Tasmanian forest industry in 2005-06[7]

Forest industry sector	Estimated total expenditure 2005-06 ($ million)
Growers and processors[1]	$940-1020[2] million
Contractors and consultants	$480-580 million
Total	$1420-1600 million

[1]Excludes payments to contractors, and transfers between growing and processing sector.
[2]Figures 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.

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[9] Notes on derivation of estimates in Table 10:

- Grower and processor data 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 processors estimated based on proportion of employees represented in the sample. As businesses who answered this question employed 41.3 per cent of all those estimated to be employed by growers and processors, the total expenditure was multiplied by 2.421 to estimate total expenditure.
- Total expenditure by contractors estimated based on proportion of employees represented in the sample. As businesses who answered this question employed 66.4 per cent 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 per cent 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.

Expenditure by business type

Figure 22 shows the typical breakdown of expenditure by different types of forest industry business[10]. Wages and salaries make up a large proportion of expenditure for some types of business, particularly consultants and contractors engaged in providing expert advice. Capital expenditure as a proportion of total expenditure was highest for harvest and haulage contractors, who have high business capital costs.

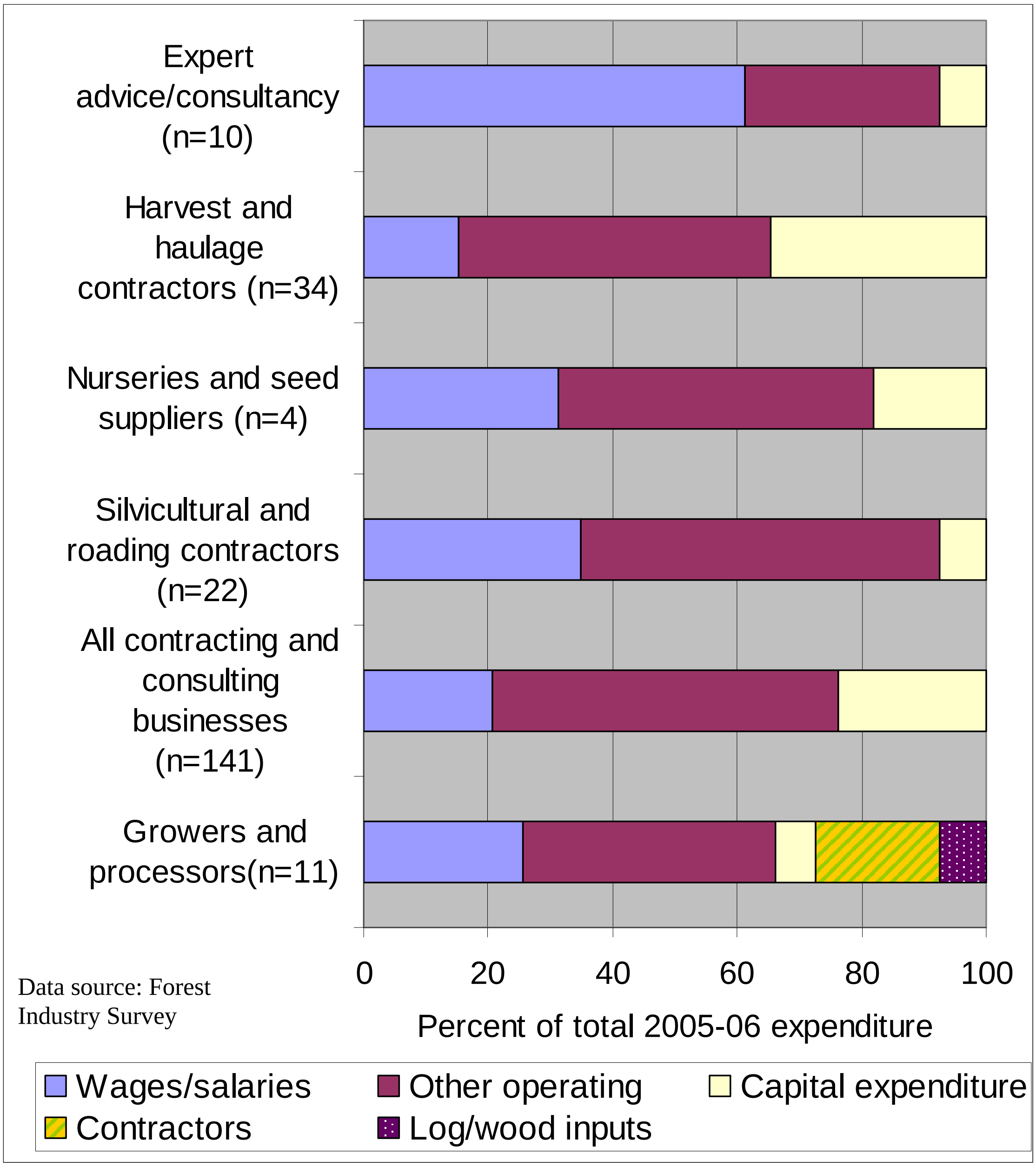


Figure 10: Average expenditure breakdown for different types of forestry business

[10] Growers and processors are presented as a single category due to low numbers of grower respondents which meant the groups were combined to preserve confidentiality of individual businesses.

Location of expenditure

Figure 23 shows the typical spatial distribution of spending reported by different types of forest industry business.

Contractors and consultants on average undertook 50 per cent of their business expenditure in the same LGA their business is located in, approx. 23 per cent in LGAs immediately adjacent to that LGA, and 22 per cent in other Tasmanian LGAs. A small proportion of expenditure by contractors (5 per cent) took place outside Tasmania.

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.

Where the location of grower and processor spending was known, 34 per cent of spending took place in local and adjacent LGAs, 43 per cent in other Tasmanian LGAs, and 23 per cent outside Tasmania.

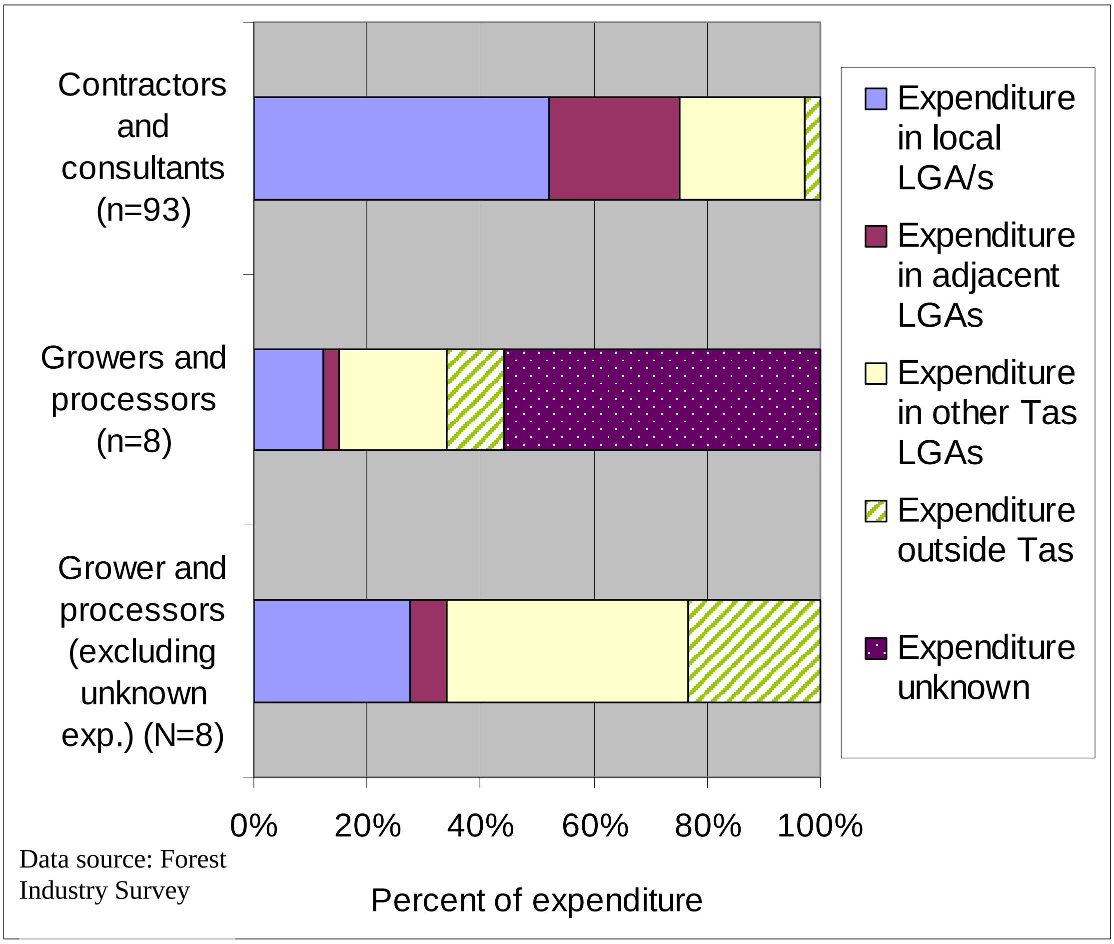


Figure 23: Location of expenditure by business type: growers, processors and contractors

Figure 24 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 have a higher proportion of total expenditure in their local LGA than other types of businesses.

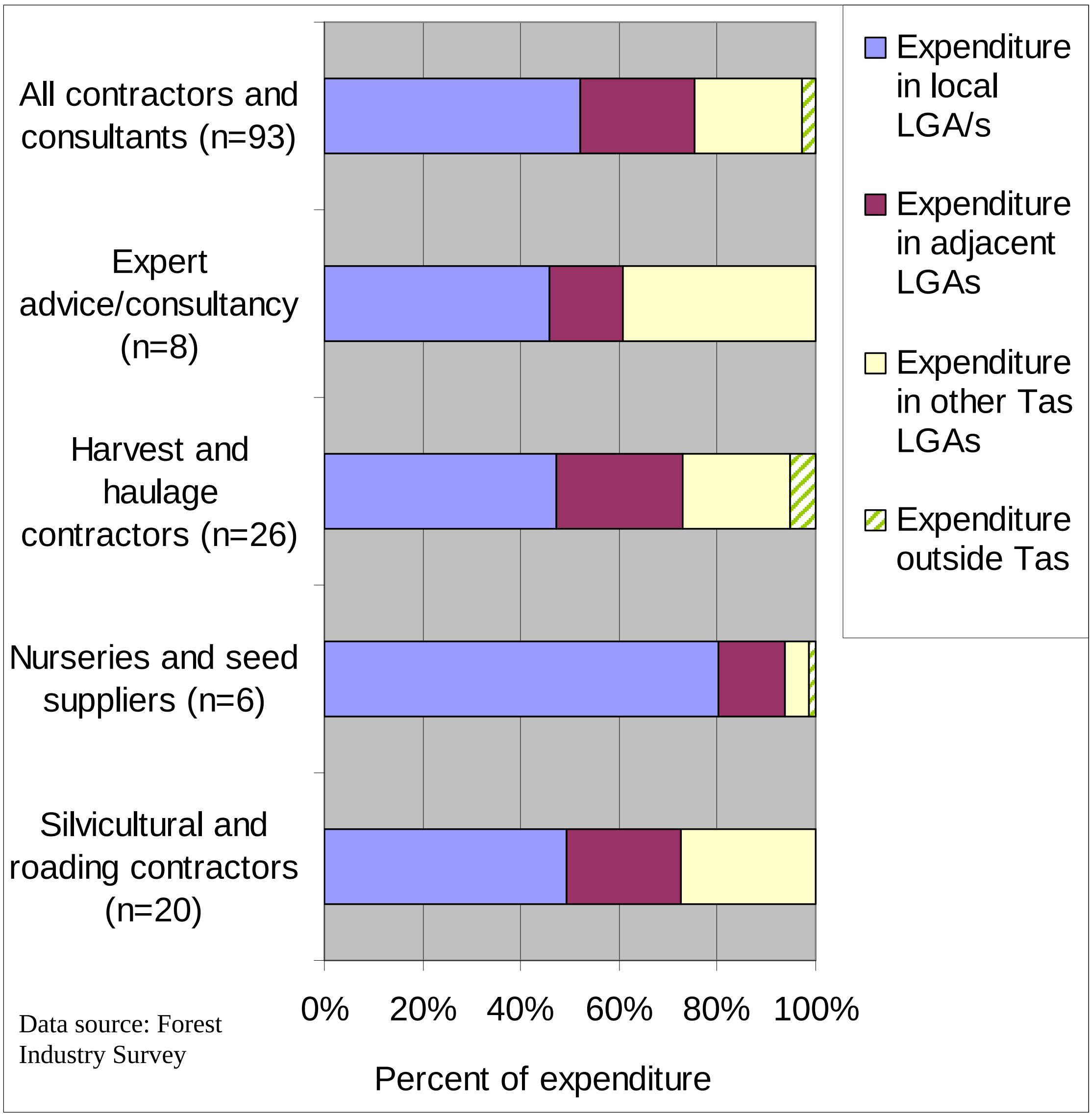


Figure 11: Location of expenditure by business type: contractors and consultants

Employment and expenditure by NRM region

Data in this report has to this point been presented for either (a) Tasmania as a whole, or (b) for individual LGAs/groups of LGAs. This section provides employment and expenditure data for each of Tasmania's three natural resource management (NRM) regions:

- NRM Cradle Coast, comprising the following LGAs: Burnie, Central Coast, Circular Head, Devonport, Kentish, Latrobe, Waratah-Wynyard, and West Coast,
- NRM North, comprising Break O'Day, Dorset, Georgetown, Launceston, Meander Valley, Northern Midlands and West Tamar, and
- NRM South, comprising Brighton, Central Highlands, Clarence Derwent Valley, Glamorgan-Spring Bay, Glenorchy, Hobart, Huon Valley, Kingborough, Sorell, Southern Midlands and Tasman.

Table 11 provides data on estimated employment and expenditure by NRM region. The ranges given are greater than for the estimate of expenditure for Tasmania as a whole, as fewer respondents provided data on expenditure by location than provided data on total expenditure irrespective of location.

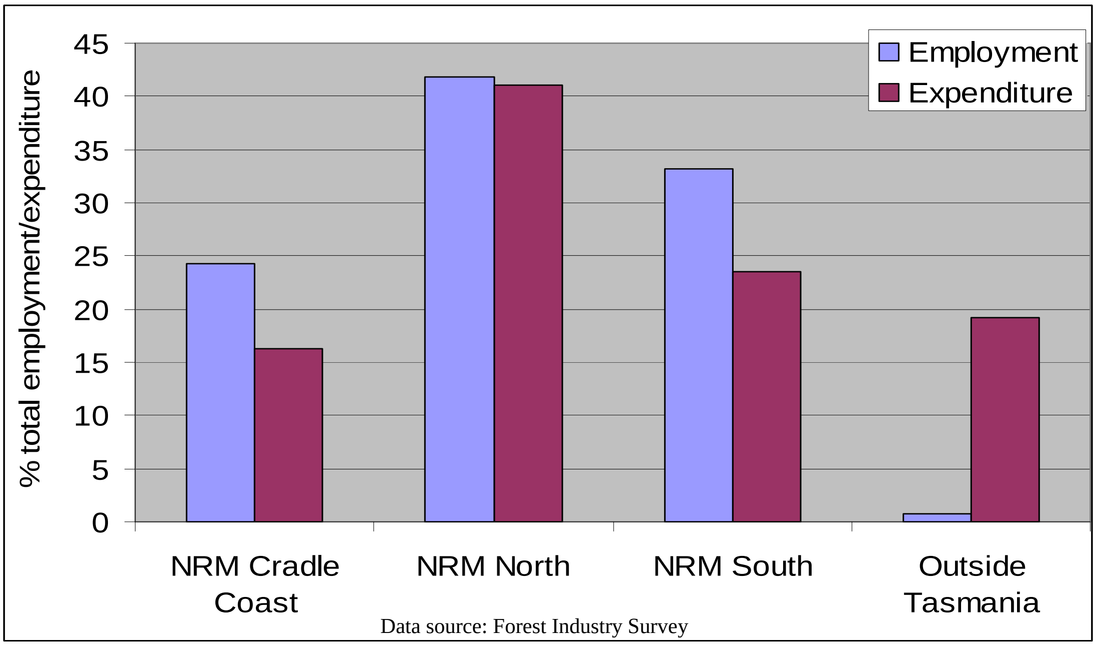
Table 11: Employment and expenditure by Tasmanian NRM region

NRM Region	Estimated total employment in forest industry (persons)	Percentage of employment in native forest sector	Percentage of employment in plantation sector	Estimated forest industry expenditure in this region (million)
NRM Cradle Coast	1520 people	78.5%	21.5%	$210-260 million
NRM North	2620 people	59.6%	40.4%	$540-660 million
NRM South	2085 people	68.6%	31.4%	$310-380 million
Outside Tasmania	45 people			$250-310 million

Figure 25 shows the percentage of total employment and total expenditure in each NRM region. Expenditure and employment by the forest industry is highest in the NRM North region, followed by NRM South and NRM Cradle Coast.

Overall, approximately:

- 41 per cent of employment and expenditure by the forest industry occur in the NRM North region,
- 33 per cent of employment and 23 per cent of expenditure occurred in the NRM South region,
- 24 per cent of employment and 16 per cent of expenditure occurred in the NRM Cradle Coast region, and
- the remainder of employment and expenditure was located outside Tasmania.



Data source: Forest Industry Survey

Figure 25: Proportion of total employment and expenditure by NRM region

Discussion

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

- How the estimates produced compare to other estimates of forest industry employment in Tasmania,
- How employment has changed over time,
- The nature and structure of the industry, particularly the contracting sector,
- Comparing characteristics of the forest industry workforce to the Tasmanian average, and
- The contribution of the forest industry to Tasmanian communities and the Tasmanian economy.

Comparing different Tasmanian forestry employment statistics

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

- The *Forest Industry Survey* results documented in this report estimate employment of 6300 people in 2005-06
- The Australian Bureau of Statistics (ABS) recorded 5,458 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*, and
- In 2002-03, FAFPESC undertook the *Forest and Wood Products Industry Workforce and Industry Data Collection Survey* and estimated a total of 10,760 people were employed in the Tasmanian forest industry.

Clearly, these three sources have quite different figures. Table 12 compares the estimates of Tasmanian 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 definitions of the forest industry,
- Differences in methods used to estimate total employment, and
- Different times at which information was measured.

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, and
- 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.

Table 12: Comparison of 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)	510	1,829	3,090	1,377	Not measured	6,300	Some of those classified in 'services to forestry' would be included in the ABS category 'wood and paper product manufacturing' despite being contractors. This explains why estimates of processing employment are lower in the Forest Industry Survey (FIS) than in ABS estimates. 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' is considerably higher than the ABS estimate.
ABS 2006 *Census of Population and Housing* (August 2006)	N/A	1,775	3,406	277	Not measured	5,458	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. The ABS would include a limited number of NIPFs growers, as they would only be included if they wrote on their census form that they worked in the forest industry, and many would not consider forestry their primary business.
FAFPESC *Forest and Wood Products Industry Workforce and Industry Data Collection Survey* (2002-03)	444	3,365	5,340	Included in estimates for other categories	2,055	10,760	FAFPESC used a direct ratio to calculate total employment based on the 42 per cent response rate, multiplying responses by 2.38 to estimate total employment. 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 many 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 drawn from the period 2002-03. Total employment in the industry may have been higher in 2002-03 than in 2006.

[1]This category includes 'growers' and 'harvest and haulage contractors' as defined in this report, although ABS figures would exclude many haulage contractors
[2]Wholesale and retail sales of wood and paper products

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 42 per cent response rate and multiplied the total employment reported by respondents by 2.38 to estimate total numbers employed.

In the *Forest Industry Survey,* however, sample responses were biased towards larger businesses, and as those who did not respond were typically smaller businesses, a smaller adjustment was used based on estimation of how many non-respondents were small, medium and large businesses. 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 similarly biased towards large businesses, so that using a direct ratio approach to estimating total employment resulted in an over-estimation of Tasmanian forest industry employment.

Additionally, FAFPESC did not ask businesses to identify what proportion of their work was in the forest industry. In the *Forest Industry Survey* this question was asked, and it was found that many contractors, particularly in the silvicultural sector and consultancy, work in both forestry and other industries. *Forest Industry Survey* figures were adjusted so they reflected only employment in the forest industry by the businesses surveyed. FAFPESC figures may overestimate employment in the industry as they did not use this process.

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.

Finally, the FAFPESC survey collected data over 2002-03, and it is possible that overall employment numbers in the forest industry in Tasmania were higher in that year than in 2005-06, although this would explain only part of the difference in the estimates of employment.

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 Tasmanian forest industry. The relative closeness to ABS estimates, which are based on a census of all Tasmanian 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.

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 4.5 per cent over 1996-2001, and 2.5 per cent over 2001-2006.

Some of this decline may have involved a shift in employment to the contracting sector, particularly increased used of silvicultural and roading contractors, rather than representing an overall decline in total forest industry employment, although it is not possible to be certain about this.

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 Tasmanian forest industry

The Tasmanian 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 businesses employ a high proportion of the total forest industry workforce, with approximately 27 per cent of all employees working in small businesses, 29 per cent in medium sized firms and 44 per cent in large businesses with over 100 employees.

In the ‘growing’ sector, seven industrial growers manage a large proportion of Tasmania’s native forest and plantation estate. However, there are also up to 1,600 small non-industrial private growers of native forest and plantations, who were not included in this survey (Jennings and Putten 2006). 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. Of the 48 businesses identified, 12 per cent had over 100 employees, 18 per cent between 20 and 100 employees, and 70 per cent operated small businesses with less than 20 employees.

Contracting and consulting businesses are predominantly small businesses. There are, however, more medium and large sized contracting businesses than may be expected, with 13 per cent of all businesses having more than 20 employees and some of these 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 38.7 per cent of employment occurring in these areas – the same amount as is generated in the processing 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, almost as many contractors are employed undertaking roading and silvicultural activities (approximately 950) as undertake harvest and haulage (approximately 1020); and there are up to 400 people providing expert advice and consultancy services to the industry.

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 Tasmanian workforce

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

- Were more likely to work full time – 74 per cent of forest industry jobs were full-time positions versus 64.6 per cent of jobs in Tasmania as a whole,
- Were less likely to work on a part-time or casual basis – 26 per cent of forest industry jobs were part-time or casual versus 25.4 per cent of jobs in Tasmania as a whole,
- Were more likely to be male – 88.4 per cent of forest industry workers were male compared to 53.1 per cent of the Tasmanian workforce, and
- Were more likely to be aged between 25-44, and less likely to be aged 45-64, than was average for the overall Tasmanian workforce. Forest industry workers are therefore on average younger than the 'average' Tasmanian worker, although the forest industry had a slightly lower proportion of people aged under 25 than the Tasmanian average.

While the workforce profile of individual businesses varied considerably, it is apparent that the forest industry does have some key differences in terms of demographic characteristics. 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 – for example, 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 Tasmanian communities and economy

Overall, an estimated 3.08 per cent of Tasmania's workforce in August 2006 worked in the forest industry. This varied considerably by region, with some Tasmanian 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 - Derwent Valley (NRM South), Dorset (NRM North), Kentish (NRM Cradle Coast) and Central Highlands (NRM South), all with over 13 per cent of the workforce working in the forest industry - were typically rural LGAs. The high proportion of employment dependent on forestry indicates these LGAs are more vulnerable to experiencing impacts of changes in forest industry employment.

The majority of both employment and spending by the forest industry occurs in the NRM North region. However, the individual LGAs which depend most highly on forest employment are not largely located in this region, and it is important to recognise that while the majority of employment is located in NRM North, LGAs which may be highly vulnerable to change in the forest industry are located in all three NRM regions.

Expenditure patterns vary considerably by business type. The majority of expenditure by Tasmanian forestry businesses occurred within Tasmania, particularly for contractors and consultants, who on average spent only 5 per cent of total expenditure outside Tasmania, while approximately 23 per cent of total expenditure by growers and processors occurred outside Tasmania.

The spending impacts of growers and processors are distributed widely across the State, with 34 per cent of spending occurring in the LGA in which the business was located, or in adjacent LGAs, and 43 per cent in other LGAs within Tasmania. Expenditure by contracting and consulting firms was more localised, with 73 per cent of spending taking place in the LGA in or immediately adjacent to the LGA in which the business was located. Approximately 1/3 of forest industry expenditure is undertaken by the contracting sector and 2/3 by growers and processors (excluding transfers between these sectors). Therefore while a majority of spending by the Tasmanian forest industry takes place in Tasmania, the spending is not always highly localised to LGAs near where a business office is located.

Overall, the forest industry contributes significantly to Tasmanian communities and the Tasmanian economy. The extent to which different parts of Tasmania depend on the industry varies widely, however, with some local government areas 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 Tasmanian 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 – for example, 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 Tasmania. 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 groups of representatives of the forest industry in Tasmania to identify what to best design questionnaires that could be easily answered by different forest industry businesses. 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, and
- 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), and
- 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 a 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 transport industry, as their principle 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 direct dependence on the forest industry was defined as *all employees of any business undertaking activities specific to the forest industry*. The employees of that business 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. 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 groups 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 prepare ground for planting, plant seedlings, undertake infill planting, and undertake silvicultural activities, and
- 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 ground preparation contractors often specialise in preparing soil for tree planting and hence were 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, and
- 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.

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

- 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,
- Non-industrial private forest growers. Small private growers of native forests and plantations were not included in the survey as resources did not permit adequate survey of these growers. In 2001, there were over 1,600 such growers in Tasmania (Jennings and Putten 2006), and
- Activities beyond 'mill door' including transport of finished products to market, except where that market involves another stage in wood or paper processing.

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 contractor 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 in most forest industry sectors. There are a relatively small number of growers and processors in the forest industry in Tasmania (for example, 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 unless more was known about them – which required a survey. A census approach was essential if employment and spending were to be estimated with reasonable accuracy.

In the contracting sector, it was also impossible 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.

Identifying forestry businesses in Tasmania

A census frame was developed by:

- Identifying all major forest growers and processors in Tasmania and contacting them personally to discuss the survey and ask for their assistance. This identification was assisted by peak forest industry bodies in the State, particularly the Forest and Forest Industries Council (FFIC), Forest Industries Association of Tasmania (FIAT), and Tasmanian Country Sawmillers Federation (TCSF). 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 identify the contracting businesses to be surveyed. Lists were provided by all large plantation growers, and by a small number of processors,
- Asking the Tasmanian Forest Contractors Association to provide lists of members,
- Searching the White Pages and Yellow Pages online 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 clearly not in the forest industry, and
- 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. In general, the frame could be confidently said to include:

- All business-based 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 per cent; excluded processors would largely consist of ‘mobile milling’ small enterprises),
- The large majority of contractors engaged in harvest, haulage to mill, forestry nurseries, planting contractors (at least 90 per cent),
- A majority of other contractors including those undertaking firebreak maintenance, fire fighting, ground preparation, and other forestry-specific contracting (confidence is lower that 90 per cent 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 Tasmania, and some of those located outside the study regions 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, and
- Some researchers working in the forest sector, but not all.

The sample frame **excludes:**

- Non-industrial private forest growers, 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, it was not possible to (a) identify the extent of this group, or contact details for many within it; (b) survey the large number of small growers involved with the resources available. Additionally, it is likely that some, possibly a large part, of expenditure by these growers will be captured as the survey included the contractors they engage to undertake forestry related work on their properties, and
- businesses which transport wood and paper products from mills to market places.

The sample frame developed was reasonably robust. All forest and plantation growers and processors were identified and surveyed. However, it is possible the survey undercounted the total number of contracting businesses, as several contracting business were identified which were uncontactable, and six contractors who had not been identified in the sample frame contacted the researchers during the survey to request a survey be sent to them. It is unlikely this undercount exceeded 5 per cent.

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, and
- Face to face surveys are much 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 in each State, 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 two times,
- 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, and
- 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 had occurred.

A free call phone number was provided which survey recipients could call to request assistance in completing the survey. Approximately 80 calls were received on the free call number.

This survey approach broadly followed the 'Dillman' approach of multiple reminders (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 per cent response rate from forest industry businesses, it was necessary to develop a consistent method for estimating total employment in the forest industry. The methods used varied by sector, and have been described throughout the report as results were presented. The general approach used was:

- Industrial forest growers: All growers provided at least basic data on employment; therefore no estimation required to calculate total employment. The characteristics of employees were profiled based on detailed surveys 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 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 respondents were then analysed, and a bias towards higher response from large processors identified. 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 to estimate employment for processing businesses that did not respond to the survey.
- Contractors: Data on locations of all 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 average employment for a small firm assumed to be the average employment for each non-respondent.

Sample frame: development and robustness

Table 1 in the main report summarises the number of forestry businesses identified as operating in Tasmania 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:

- **Seven 'industrial forest growers' (plantation and native forest managers):** Seven growers were identified who operate as an 'industrial grower' – i.e. a business solely dedicated to managing native forest and/or growing plantations. Of these, three are also processors; and five operate primarily or 100 per cent in the plantation sector,
- **Non-industrial private forest growers:** Small private growers of native forests and plantations were not included in the survey. In 2001, there were over 1,600 such growers in Tasmania (Jennings and Putten 2006),
- **48 processors operating 64 processing sites:** The number of processors operating in Tasmania is changing rapidly. Fifty seven businesses undertaking wood seasoning and processing (including sawmilling, woodchipping, moulding and dressing, pulp and paper production) were initially identified; this was reduced to 50 after removing processors who had closed during recent years or merged to form a single business. Some processors operate processing facilities on multiple sites, with a total of 64 operating sites identified,
- **437 contractors and consultants:** 594 contracting and consulting businesses were identified in the initial sample frame. However, several businesses operated under multiple names. After these were taken into account, the sample frame was reduced to 496. Of these, a further 59 businesses contacted researchers indicating they had either stopped work in the forest industry before July 2005, or that they were not a forest industry business. The final sample frame was therefore 437 contracting businesses, and
- **18 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. 18 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:** All but 2 growers focus primarily or exclusively on growing plantations (defined as having >95 per cent of their business dependent on plantation growing). The other two growers manage both native forest and plantations,
- **Processors:** Approx. 25 per cent of processors process plantation timber, while almost 90 per cent process native forest timber. Some processors, e.g. woodchip and pulp and paper mills, process both plantation and native forest-sourced wood,
- **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 reasonably similar. Approximately 50 per cent of contracting firms indicated they

worked in both the plantation and native forest sector, while approx. 30 per cent concentrated exclusively on the plantation sector and approx. 20 per cent operated exclusively in the native forest sector. There has been a recent decline in the number of businesses operating exclusively in the native forest sector, with several businesses who had worked in this sector indicating they had ceased work in the forest industry in the last two years, and

- **Others:** The other organisations identified all worked across both the native forest and plantation sectors.

Once the sample frame was identified, it was analysed to identify how accurate it is likely to be:

- **Industrial growers:** Very accurate. All industrial growers were identified,
- **Processors:** Highly accurate. All major processors were identified. There is a possibility that some small mobile sawmillers were not included in the sample frame; this would represent <1 per cent of employment in this sector,
- **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 +/-5 per cent, although it is not possible to place a precise figure on this. The multiple methods used to identify businesses ensured that any business which contracted to a large grower or processor, listed in online or phone directories, or was a member of an organisation such as the Tasmanian Forest Contractors Association, was included, and this is likely to incorporate 90 per cent+ of businesses. The high rate of business turnover means that some non-respondents were likely businesses which had recently closed, and
- **Others:** Very accurate.

Survey response rate

Overall, 42 per cent 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, and
- 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 20-99 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 circumstances[11], 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 associations, who advised on the overall size of their member businesses, 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 approx. ¼ 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
- medium sized businesses were accurately identified in almost all except at the 'smaller' end of medium, and
- small business had been defined accurately other than a small number being mis-classified as 'medium'.

There is therefore a reasonable degree of confidence that the classification of 'small', 'medium' and 'large' business 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.

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

Table A1: Overall response rates to the Tasmanian Forest Industry Survey

Type of business	Total response rate Number of businesses (number of office/site locations)	Plantation sector* per cent of businesses (per cent of office/site locations)	Native forest sector** per cent of businesses (per cent of office/site locations)	Response rate by business size*** Small <20 employees Med 20-99 employees Large 100+ employees
Industrial grower* Defined as a business involving in growing plantations and managing native forest.	100 %	100 %	100 %	Small: 100 % Med: 100 % Large: 100 %
Processor**** Business undertaking processing including seasoning, drying, sawing, woodchipping, pulp and paper production	39 % (53 % of processing sites) Note: an additional 50 % provided basic information via phone when contacted	83 %	34 %	Small: 29 % Med: 50 % Large: 100 %
Contractors & consultants Business undertaking contracting and consulting activities involving forestry-specific activities, up to mill door	41.6 %	Overall response rate from each sector was estimated at 37-47 per cent, with a more accurate estimate not possible due to lack of information on characteristics of the sample frame. For this reason, estimates of total contractor employment in Tasmania by sector are given as a range rather than a single figure through this report.		
Other Industry representative groups, regulatory authorities, research groups	39 %	39 %	39 %	Small: 38 % Med: 50 % Large: N/A
Total	Overall 42 % response rate			

* Does not include non-industrial private growers (farm foresters). Three growers also process and are included in processor category as well.

** Some businesses in Tasmania are primarily plantation growers but also manage a small area of native forest. Where native forest-based activities are less than 5 per cent of business activities, they have been classified as a plantation grower.

*** 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 Tasmanian forests and plantations. This has been done to avoid artificially inflating the number of businesses dependent on Tasmanian forestry activities.

****Note that some processing businesses operate more than one facility, so total number of processing plants (given in brackets) is higher

Response rate by location

Table A2 identifies the sample frame and response rate by location. Where a local government area (LGA) contained only a small number of businesses, that LGA was grouped with other contiguous LGAs to ensure confidentiality of responses.

The sample frame and response rate for growers and processors is based on analysis of individual sites at which businesses are located, rather than 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.

Table A2: Response rate by location

Local government area/s	Total number of forest industry business sites/offices in LGA	Response rate
Break O'Day	11	36 %
Burnie	46	48 %
Central Coast	25	36 %
Central Highlands	24	42 %
Circular Head	27	56 %
Derwent Valley (New Norfolk)	9	33 %
Devonport, Latrobe & West Tamar	10	50 %
Dorset	30	60 %
Georgetown	6	83 %
Glamorgan-Spring Bay	19	58 %
Hobart and surrounds (inc. Brighton, Clarence, Glenorchy, Kingborough)	85	41 %
Huon Valley	23	43 %
Kentish	46	37 %
Launceston	82	45 %
Meander Valley	25	36 %
Northern Midlands	25	36 %
Sorell & Tasman	9	33 %
Southern Midlands	12	42 %
Waratah-Wynyard	15	27 %
West Coast	7	43 %
Other Australia	5	80 %
Unknown		3 responses

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 to different survey questions

Question	Growers & processors*	Contractors & others**
Information about your business, total employment over 2005-06/Office location and forest industry activities	100 %	96-99 %
Percent of activities in native forest, hardwood plantation and softwood plantation sectors	86 % growers 82 % processors	50 %**
Number of people employed by forest industry sector	71 % growers 89 % processors	N/A
No. individuals employed in Aug 2006	100 %	53 %**
Gender of employees	71 % growers 100 % processors	51 %**
Indigenous employees	46 %	28 %**
Staff turnover	77 %	39 %**
Age groups	71 % growers 95 % processors	51 %**
Qualifications	31 %	40 %**
Area in which employees live and work	71 % growers 84 % processors	48 %**
Information about your Tasmanian business activity and value in 2005-06 - Expenditure	54 %	67 %
Information about your Tasmanian business activity and value in 2005-06 - Other	46 %	40 %**
Expenditure by category	46 %	N/A
Expenditure by location	38 %	50 %**

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

** Of the total responses to the contractor/consultant/other survey, 54 per cent responded to the long version of the survey, and 46 per cent to the 'mini survey' sent to encourage greater response. Where a response rate has a ** against it, this indicates the question was not asked on the 'mini survey'; in these cases, a response rate of 54 per cent would indicate that all those who were asked the question on the long survey answered it.

Overall, 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,
- Percent of activities in native forest, hardwood plantation and softwood plantation sectors,
- Number of people employed by forest industry sector,
- Gender of employees,
- Age groups, and
- Area in which people live and work.

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 Tasmanian 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 can only be used with limited confidence,
- Staff turnover – While not as many businesses answered this question as other questions, the responses enabled some analysis of staff turnover,
- Qualifications – Low response rates overall, and a reported lack of knowledge of qualifications of staff by most forestry businesses, particularly large enterprises, mean that the responses to this question have not been analysed, as it was not possible to identify whether the few respondents who did provide data were typical of the industry as a whole,
- Total business expenditure, although a high enough response was achieved to provide useful data for analysis of typical expenditure profiles for different business types, with the exception of industrial growers, as less than three responses were received,
- Information about your Tasmanian business activity and value in 2005-06 – Other – as above,
- Expenditure by category – as above, and
- Expenditure by location – the response rate to this question was 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.

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, and
- 'Mini survey' sent to non-responding contractors to encourage further response.

(1) Survey sent to growers and processors

TASMANIAN 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:** ____________________
ABN:	**ABN:** ____________________
Number of office locations in Tasmania	**Number of office locations:** __________
Town/postcode of each office location:	
Office 1:	**Town:** __________ **Postcode:** _ _ _ _
Office 2:	**Town:** __________ **Postcode:** _ _ _ _
Office 3:	**Town:** __________ **Postcode:** _ _ _ _
Office 4:	**Town:** __________ **Postcode:** _ _ _ _
Office 5:	**Town:** __________ **Postcode:** _ _ _ _
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:** _____ **Number of full-time equivalent employees[1]:** **Minimum:** ______ **Maximum:** _____
For forest/plantation growers: **What was the total area of plantation/ native forest managed from this office in 2005-2006?**	**Hardwood plantation:** _______ **ha** **Softwood plantation:** _______ **ha** **Native forest:** _______ **ha** (refers to native forest managed for timber production)
For forest/plantation growers: **What area of harvesting was managed from this office in 2005-06?**	**Hardwood plantation:** _______ **ha** **Softwood plantation:** _______ **ha** **Native forest:** _______ **ha**
For plantation growers: **What area of plantation establishment 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:** ☐ **Export of chips/timber:** ☐ **Sawmilling:** ☐ **Pulp/paper production:** ☐ **Woodchipping:** ☐ **Moulding/dressing:** ☐ **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 hardwood plantation sector	% employed in softwood plantation 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: ___	______ %	______ %

[1] Please 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.

[2] Please 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.

[3] Include 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.

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

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

2c. Employee characteristics

IN AUGUST 2006[1]:	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:** ______	**Number:** ______ **Avg. months:** ______	**Number:** ______ **Avg. months:** ______
… how many men and women were employed?	**Male (no.):** ______ **Female (no.):** ______	**Male (no.):** ______ **Female (no.):** ______	**Male (no.):** ______ **Female (no.):** ______
… how many Aboriginal and Torres Strait Islanders were employed?	**Number:** ______	**Number:** ______	**Number:** ______
… how much turnover was there in office staff in the previous 12 months? (indicate how many *new* people came to work in the business, and how many existing staff *left* employment with your business, during the year)	**No. new staff:** _____ **No. staff who left:** _____	**No. new staff:** _____ **No. staff who left:** _____	**No. new staff:** _____ **No. staff who left:** _____
… how many of your employees fell into each of the following age groups?	<25 ☐ 45-49 ☐ 25-29 ☐ 50-54 ☐ 30-34 ☐ 55-59 ☐ 35-39 ☐ 60-64 ☐ 40-44 ☐ 65+ ☐	<25 ☐ 45-49 ☐ 25-29 ☐ 50-54 ☐ 30-34 ☐ 55-59 ☐ 35-39 ☐ 60-64 ☐ 40-44 ☐ 65+ ☐	<25 ☐ 45-49 ☐ 25-29 ☐ 50-54 ☐ 30-34 ☐ 55-59 ☐ 35-39 ☐ 60-64 ☐ 40-44 ☐ 65+ ☐

[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. **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.

Local government area If you are not sure what towns are located in a particular LGA, refer to the accompanying 'Definitions and Locations' guide.	**No. of employees from this office who *lived* in this LGA in 2005-06**	**No. of employees from this office who undertook *work-related activities* in this LGA in 2005-06**
Break O'Day	**No:** ___________	**No:** ___________
Burnie	**No:** ___________	**No:** ___________
Central Coast	**No:** ___________	**No:** ___________
Central Highlands	**No:** ___________	**No:** ___________
Circular Head	**No:** ___________	**No:** ___________
Derwent Valley (New Norfolk)	**No:** ___________	**No:** ___________
Devonport	**No:** ___________	**No:** ___________
Dorset	**No:** ___________	**No:** ___________
Georgetown	**No:** ___________	**No:** ___________
Glamorgan-Spring Bay	**No:** ___________	**No:** ___________
Hobart & surrounds (inc. Brighton, Clarence, Glenorchy)	**No:** ___________	**No:** ___________
Huon Valley	**No:** ___________	**No:** ___________
Kentish	**No:** ___________	**No:** ___________
Kingborough	**No:** ___________	**No:** ___________
Latrobe	**No:** ___________	**No:** ___________
Launceston	**No:** ___________	**No:** ___________
Meander Valley	**No:** ___________	**No:** ___________
Northern Midlands	**No:** ___________	**No:** ___________
Southern Midlands	**No:** ___________	**No:** ___________
Sorell	**No:** ___________	**No:** ___________
Tasman	**No:** ___________	**No:** ___________
Waratah-Wynyard	**No:** ___________	**No:** ___________
West Coast	**No:** ___________	**No:** ___________
West Tamar	**No:** ___________	**No:** ___________
Victoria	**No:** ___________	**No:** ___________
Other Australia	**No:** ___________	**No:** ___________
International	**No:** ___________	**No:** ___________

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 Tasmanian business activities (it does not need to 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 Tasmania over financial year 2005-06. The third asks you to detail the *location* of expenditure in Tasmania 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		Date	Month	Year
		2005	to			2006

3b. Information about your Tasmanian 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 Tasmanian forest industry.

In financial year 2005-06, what was…	
… the total capital value of your business (at the end of financial year):	$____________
… the total debt owed by your business (at the end of the financial year):	$____________
… the total revenue earned by your business:	$____________
… total expenditure by your business:	$____________
… net profit/loss made by your business:	$____________

3c. Total expenditure on Tasmanian forest industry activities in 2005-06

Expenditure category	Expenditure ($)	per cent hardwood plantations	per cent softwood plantation s
For definitions of categories, see the 'Definitions and locations' guide sent to you with the survey	Total expenditure by your business related to your Tasmanian activities	Indicate proportion of expenditure on hardwood/ softwood plantation sectors	
Wages/salaries Include all employees whose work was dependent on your Tasmanian activities, even if they were located outside Tasmania.	$________	____ %	____ %
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 business[1]	$________	____ %	____ %
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. ☐ Included ☐ Excluded	$________	____ %	____ %

[1]Leave 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 per cent): ☐

Based on an estimate accurate to within about 10 per cent: ☐

Based on an estimate accurate to within about 20 per cent: ☐

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

Local government area – Tasmania Refer to *Definitions and Locations* guide if you are not sure whether you undertook activities in a particular area	**Expenditure on contractors** The location of contractor payments should be based on the location of their office (e.g. address to which payments sent), *not* on where contractors undertook work	**Operating expenditure** Exclude wages/ salaries, expenditure on contractors, and (for processors) expenditure on wood inputs	**Capital expenditure**
Break O'Day	$________	$________	$________
Burnie	$________	$________	$________
Central Coast	$________	$________	$________
Central Highlands	$________	$________	$________
Circular Head	$________	$________	$________
Derwent Valley (New Norfolk)	$________	$________	$________
Devonport	$________	$________	$________
Dorset	$________	$________	$________
Georgetown	$________	$________	$________
Glamorgan-Spring Bay	$________	$________	$________
Hobart & surrounds (inc. Brighton, Clarence, Glenorchy)	$________	$________	$________

Table continues over page

Local government area – Tasmania Refer to *Definitions and Locations* guide if you are not sure whether you undertook activities in a particular area	**Expenditure on contractors** The location of contractor payments should be based on the location of their office (e.g. address to which payments sent), *not* on where contractors undertook work	**Operating expenditure** Exclude wages/ salaries, expenditure on contractors, and (for processors) expenditure on wood inputs	**Capital expenditure**
Huon Valley	$______________	$______________	$______________
Kentish	$______________	$______________	$______________
Kingborough	$______________	$______________	$______________
Latrobe	$______________	$______________	$______________
Launceston	$______________	$______________	$______________
Meander Valley	$______________	$______________	$______________
Northern Midlands	$______________	$______________	$______________
Southern Midlands	$______________	$______________	$______________
Sorell	$______________	$______________	$______________
Tasman	$______________	$______________	$______________
Waratah-Wynyard	$______________	$______________	$______________
West Coast	$______________	$______________	$______________
West Tamar	$______________	$______________	$______________
Victoria	$______________	$______________	$______________
Other Australia	$______________	$______________	$______________
International	$______________	$______________	$______________

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

TASMANIAN 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 Tasmania	**Number of office locations:** ____________
Main office location	**Town:** ____________ **Postcode:** _ _ _ _
Number of people employed between July 1 2005 and June 30 2006 (2005-06): Indicate the smallest number employed at any point of the year, and the maximum.	**Number of individuals:** **Minimum:** _____ **Maximum:** _____ **Number of full-time equivalent employees[1]:** **Minimum:** _____ **Maximum:** _____
What types of forest/ plantation services does your business provide (tick all that apply)	**Seedling supply:** ☐ **Seed supply:** ☐ **Site preparation:** ☐ **Land survey:** ☐ **Insect control (ground)** ☐ **Fertilising:** ☐ **Insect control (aerial):** ☐ **Weed control:** ☐ **Planting services:** ☐ **Fencing:** ☐ **Firebreak maintenance** ☐ **Game control:** ☐ **Harvesting:** ☐ **Haulage to mill:** ☐ **Roading:** ☐ **Haulage from mill:** ☐ **Mill/equipment maintenance:** ☐ **Expert advice (e.g. consultant):** ☐ **Industry development (e.g. PFDC):** ☐ **Industry or related association:** ☐ **Research services:** ☐ **Other (please describe below):** ☐ ______________________________
In 2005-06, what per cent 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?	**Hardwood plantation:** ____ **%** **Softwood plantation:** ____ **%** **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 2006[1]:	Full-time employees	Part-time employees	Casual/seasonal employees
… how many individuals were employed by your business? For part-time and casual/seasonal employees, please also indicate how many months they were employed on average during the previous year.	**Number:** ______	**Number:** ______ **Avg. months:** ______	**Number:** ______ **Avg. months:** ______
… how many men and women were employed?	**Male (no.):** ______ **Female (no.):** ______	**Male (no.):** ______ **Female (no.):** ______	**Male (no.):** ______ **Female (no.):** ______
… how many Aboriginal and Torres Strait Islanders were employed?	**Number:** ______	**Number:** ______	**Number:** ______
… how much turnover was there in office staff in the previous 12 months? (indicate how many *new* people came to work in the business, and how many existing staff *left* employment with your business, during the year)	**No. new staff:** ______ **No. staff who left:** ______	**No. new staff:** ______ **No. staff who left:** ______	**No. new staff:** ______ **No. staff who left:** ______
… how many of your employees fell into each of the following age groups?	**<25** ☐ **35-39** ☐ **50-54** ☐ **25-29** ☐ **40-44** ☐ **55-59** ☐ **30-34** ☐ **45-49** ☐ **60-64** ☐ **65+** ☐	**<25** ☐ **35-39** ☐ **50-54** ☐ **25-29** ☐ **40-44** ☐ **55-59** ☐ **30-34** ☐ **45-49** ☐ **60-64** ☐ **65+** ☐	**<25** ☐ **35-39** ☐ **50-54** ☐ **25-29** ☐ **40-44** ☐ **55-59** ☐ **30-34** ☐ **45-49** ☐ **60-64** ☐ **65+** ☐
How many of your employees had high school (HSC), certificate/diploma (C/D) or tertiary qualifications (UNI) as their highest formal qualification?	**HSC:** ______ **C/D:** ______ **UNI:** ______	**HSC:** ______ **C/D:** ______ **UNI:** ______	**HSC:** ______ **C/D:** ______ **UNI:** ______

[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 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 Tasmanian business activity and value in 2005-06

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

In financial year 2005-06, what was…	
… the total capital value of your Tas-based business (at the end of financial year):	$__________
… the total debt owed by your Tasmanian business (at the end of the financial year):	$__________
… the total revenue earned by your Tasmanian business:	$__________
… total expenditure by your Tasmanian 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 <u>work in Tasmanian forest industry</u>

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 Tas. 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 Tasmanian forestry activities, even if they are located outside Tasmania.	$__________	____ %	____ %
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 Tasmania, 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 – Tasmania	% of your business expenditure in this region in 2005-06	No. of employees who *live* in this LGA	No. of employees who undertook *work-related activities* in this LGA in 2005-06, and number of months worked in this area on average by each of these employees
Break O'Day	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Burnie	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Central Coast	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Central Highlands	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Circular Head	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Derwent Valley (New Norfolk)	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Devonport	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Dorset	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____
Georgetown	_______ %	**No:** ______	**No:** _____ **Avg months/employee:** _____

Table continues over page

Local government area – Tasmania	% of your business expenditure in this region in 2005-06	No. of employees who *live* in this LGA	No. of employees who undertook ***work-related activities*** in this LGA in 2005-06, and number of months worked in this area on average by each of these employees
Glamorgan-Spring Bay	________ %	No: ______	No: _____ Avg months/employee: _____
Hobart & surrounds (inc. Brighton, Clarence, Glenorchy)	________ %	No: ______	No: _____ Avg months/employee: _____
Huon Valley	________ %	No: ______	No: _____ Avg months/employee: _____
Kentish	________ %	No: ______	No: _____ Avg months/employee: _____
Kingborough	________ %	No: ______	No: _____ Avg months/employee: _____
Latrobe	________ %	No: ______	No: _____ Avg months/employee: _____
Launceston	________ %	No: ______	No: _____ Avg months/employee: _____
Meander Valley	________ %	No: ______	No: _____ Avg months/employee: _____
Northern Midlands	________ %	No: ______	No: _____ Avg months/employee: _____
Southern Midlands	________ %	No: ______	No: _____ Avg months/employee: _____
Sorell	________ %	No: ______	No: _____ Avg months/employee: _____
Tasman	________ %	No: ______	No: _____ Avg months/employee: _____
Waratah-Wynyard	________ %	No: ______	No: _____ Avg months/employee: _____
West Coast	________ %	No: ______	No: _____ Avg months/employee: _____
West Tamar	________ %	No: ______	No: _____ Avg months/employee: _____
Victoria	________ %	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) involves 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.