Forestry Green Print

Forest Industry Workforce Requirements

Green Triangle Region: 2006 ~ 2011

May 2008

This document combines two draft reports referred to as the Forestry Green Print reports prepared for the Limestone Coast Regional Development Board and *South Australia Regions at Works* to provide an understanding of the future workforce requirements and training needs of the Forest Industry in the Green Triangle Region .

This work was undertaken by FITNET, TAFESA and the Green Triangle Regional Plantation Committee.

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EXECUTIVE SUMMARY

The forest industry is a well established and major economic contributor in the Green Triangle Region with over 338,000 ha of plantations providing $778 million to Gross Regional Product and employing, directly and indirectly, about 8,500 (GTRPC 2006).

In the period 2009-2014, the volume of wood being harvested in the region will increase from about 4.6 million tonnes to about 8 million tonnes, with the hardwood, or Blue Gum, plantations coming on stream (LCRDB 2004). This will require a rapid expansion in the workforce requirements for the region.

FITNET, the Forest Industry Training Network, in partnership with the Limestone Coast Regional Development Board and South Australia Regions at Work have surveyed and analysed of the current workforce and the anticipated workforce demands across the forest industry for the following sectors for the Green Triangle Region out to 2011:

- Forest Growing and Management,
- Forest Harvesting,
- Haulage,
- Sawmilling and Processing, including maintenance,
- Engineered Wood Products,
- Pulp & Paper,
- Timber Sales, and
- Wood Panels

This report identifies potentially 891 to 1,007 new employment positions directly in the forest industry in the coming years. In addition to new positions there will also be, at this time, an undefined number of indirect jobs created as a consequence. Based on another study, the number of additional jobs may be of a similar order has those created directly by the forest industry. This additional population may also have impacts on future planning and development.

This report also identifies a number of issues that will need support, direction and vision from educators, trainers, government and the forest industry to expand the region's capacity to accommodate the coming demands. These include:

- Increasing the region's capacity to expand the workforce which is trained and qualified to meet the demands of the forest industry in the Green Triangle Region. This will require a whole of industry collaborative approach to planning, funding and implementation.
- Highlighting the opportunities for employment in the Green Triangle Region for a predicted additional workforce across all sectors of the forest industry
- With partners, identifying the impacts of an expanding workforce will have on local government, education, service industries, health, infrastructure and community services.

FITNET has advanced some programs to raise the awareness of employment and career opportunities within the forest industry, and is seeking further support from interested partners to:

- Take leadership in the expansion of training and educational facilities in the region,
- Expand the forestry industry training capacity of the region,
- Encourage the participation of the industry in school industry awareness programs through work experience, traineeships and assistance with school careers counsellors,
- Support the *VET in Schools* program for prospective employees, and

- Develop a collaborative regional strategy and action plan to address workforce training, recruitment and retention.

FITNET believes that a whole of industry collaborative approach will maintain and enhance the reputation of the Green Triangle's forest industry as leaders in innovation, training, education and economic importance to the region and country.

FOREWORD

Employment, education, skills and training

Acknowledgement of skills shortages in the Green Triangle Region is widely recognised. Skilled and professional employees have been recruited into the industry from across Australia and internationally. FITNET has developed, in conjunction with local industry and schools, a Vocational Education and Training in Schools program for secondary students at Certificate 1 level. FITNET also sponsors and supports industry awareness for secondary school students. The *VET in Schools* program for year 9-12 students includes industry tours for prospective students, teachers and career counsellors.

This initiative was recognised with second place in the South Australia VET in Schools Excellence Awards in 2007. Several students who have undertaken this program have been immediately employed or begun traineeships or apprenticeships.

On a professional level, Southern Cross University has been running the Bachelor of Applied Science (Forestry) in Mount Gambier and the Green Triangle Region since 2006.
FITNET was also instrumental in developing a collaboration with the forest industry, schools, employment agencies and government agencies in raising the awareness of employment and career opportunities through *A Cut Above,* a careers information magazine. The success of *A Cut Above* has seen it be adopted and modified at a national level by ForestWorks. Locally, a second edition was released in March 2008.

This report combines two surveys including survey methodology, analysis of the results and predictions of the potential employment requirements across the industry. One of the major industry drivers is the Blue Gum sector which will expand from the current growing and management phase to include the harvesting of trees and haulage of wood chips, nearly doubling the amount of wood coming from the region's plantations and creating a major workforce demand.
The results from this report can assist in providing a basis for the future planning by industry and government to tackle future employment education, skills, training and recruitment needs in the Green Triangle Region.

J Kellas

Dr. John Kellas
Chair, FITNET
April 2008

1. INTRODUCTION

Plantation forestry is a long established feature of the Green Triangle Region of South East South Australia and South West Victoria. The first plantations were traditionally softwood *(Pinus radiata)* and has lead to the establishment of about 174,000 hectares across the region (GTRPC Unpubl. 2008). It has also resulted in a substantial milling and processing industry to utilise the wood grown in these plantations. Consequently opportunities for investment, employment and services have developed around this sector.

Since the 1990s there has also been a rapid expansion with additional areas planted to hardwood, predominantly Blue Gum *(Eucalytpus globulus)*, which is primarily destined for export as wood chips. By 2007, the area of Blue Gum plantations had grown to approximately 164,000 hectares across the region (GTRPC Unpubl. 2008), with additional areas established in other parts of western Victoria and on Kangaroo Island.

The driving force for this most recent expansion has been the national policy, *Plantations for Australia: The 2020 Vision*, released by the Federal and State Governments in 1996. *Vision2020* aspires to treble Australia's plantation estate to 3 million hectares by the year 2020 with long term sustainable and profitable plantations using significant private sector investment. The premise being to expand an industry that can operate in the global marketplace, be internationally competitive, commercially oriented, market driven and market focused. The other benefits include returning trees to the landscape which will also significantly benefit the environment and reducing the current annual national trade deficit of approximately $2 billion in wood, pulp and paper products. Since the release of *Vision2020*, nearly 800,000 hectares has been planted nationally, predominantly on previously cleared agricultural land.

1.1. Why the Green Triangle Region

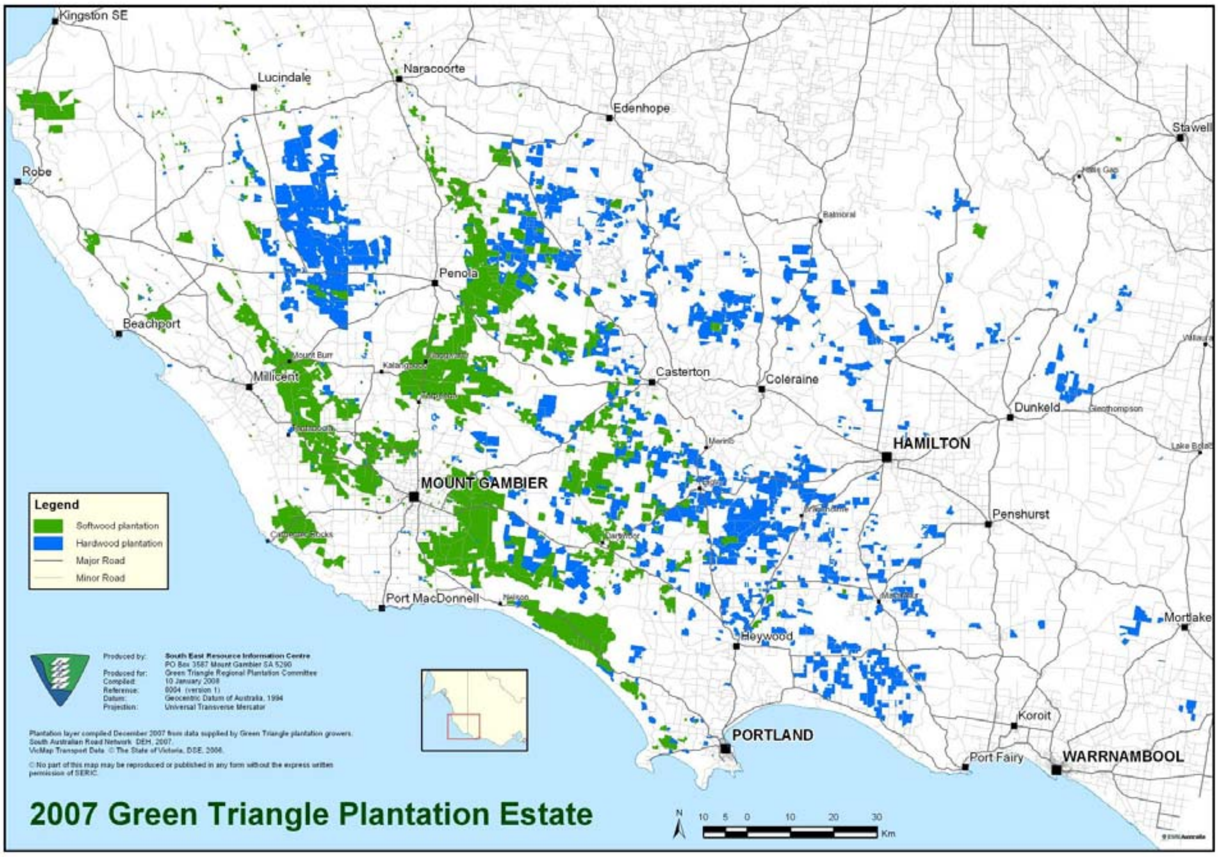
The climate, soils and environment make the Green Triangle Region one of the prime areas in Australia for plantation development and growth. The softwood sector makes the Green Triangle the largest wood fibre producing region in Australia with about 17% of Australia's softwood plantings.

National plantation data are updated annually by the Bureau of Rural Sciences via the National Plantation Inventory (BRS 2007).

While the hardwood sector is relatively recent and still developing, it too is a significant component of the national estate, representing approximately 19% of national hardwood plantings.

The following maps shows the location of the Green Triangle Region and distribution of the plantations across the Green Triangle Region.


Study Area
TATIARA
Bordertown
KINGSTON
WEST WIMMERA
Kingston SE
Naracoorte
NARACOORTE LUCINDALE
Edenhope
ROBE
Robe
Penola
WATTLE RANGE
Millicent
Casterton
SOUTHERN GRAMPIANS
Hamilton
MOUNT GAMBIER
GRANT
Mount Gambier
GLENELG
Dartmoor
MOYNE
Portland
WARRNAMBOOL
Warrnambool
GIS Supplied by ESRI AU
Produced by SERIC 3101 - 28 June 2004


2007 Green Triangle Plantation Estate
Legend
Softwood plantation
Hardwood plantation
Major Road
Minor Road
Kingston SE
Lucindale
Naracoorte
Edenhope
Stawell
Robe
Penola
Beachport
Millicent
Casterton
Coleraine
Dunkeld
HAMILTON
MOUNT GAMBIER
Penshurst
Port MacDonnell
Heywood
Mortlake
Koroit
PORTLAND
Port Fairy
WARRNAMBOOL
10 5 0 10 20 30
Km

The estimated plantation area in the Green Triangle Region at the end of 2007 was:

	South Australia	Victoria	Total (ha)
Hardwood	41,437	122,736	164,173
Softwood	107,703	66,710	174,413
Total	149,140	189,446	338,586

Source: Green Triangle Regional Plantation Committee, 2008 (Unpublished data).

It is estimated that the annual hardwood planting for the rest of the decade will be approximately 5-10,000 hectares with only small incremental increases in softwood plantings. Further plantings are likely to decline as growers begin to replant harvested areas and by continued competition for land from other industries such as dairying, viticulture and cropping. It is feasible that the plantation estate area may eventually reach 350-400,000 ha, split equally between softwood and hardwood.

1.2. Regional Economic Value[1]

A recent report released by the Green Triangle Regional Plantation Committee and ForestrySA showed the economic contribution (Gross Regional Product) of the forest industry in the Green Triangle Region for 2003/04 was about $778 million, in a total economy of $4.9 billion (Econsearch 2005, GTRPC 2006).
The following table describes the direct and indirect contribution of the forest industry to the region and its relative place within the primary industries. Of these values, the forest industry contributes 30% of total primary industries GRP and 23% of employment, coming off a land base of about 10% for the region.

Table 1.The economic and employment contribution impact of the forest industry in SE SA, SW Vic and the Green Triangle Region, 2003/04.

	Contribution to GRP ($m) [a]			Employment (no. jobs) [b]		
	SE SA [c]	SW Vic	Green Triangle	SE SA [c]	SW Vic	Green Triangle
Direct						
Forestry	98	16	114	614	215	829
Wood & Paper	368	32	401	3,052	297	3,354
Indirect (flow on)	197	49	263	3,416	882	4,582
Total forest industry	**664**	**97**	**778**	**7,082**	**1394**	**8,765**
Total Region Economy	2,488	2,416	4,905	34,130	38,643	72,773
% Forest industry	**27%**	**4%**	**16%**	**21%**	**4%**	**12%**
Regional Primary industries	1,517	1,053	2,626	20,087	17,750	38,878
% Forest industry	44%	9%	30%	35%	8%	23%

Note: Totals may contain rounding.
[a] GRP impacts are a measure of contribution to gross regional product. Estimates are in 2003/04 dollars.
[b] Employment impacts are a measured in terms of the number of full-time and part-time jobs.
[c] The relative contribution of the forest industry in SE SA would appear to have declined in response to growth in other sectors over time (30 per cent of GRP in 1995/96 and 28 per cent in 1998/99; 26 per cent of employment in 1995/96 and 24 per cent in 1998/99). This could be as a result growth in other sectors of the regional economy (e.g. tourism and the ownership of dwellings), although the possibility that indirect impacts were overestimated for the years 1995/96 and 1998/99 also needs to be taken into account.
Source: Green Triangle Regional Plantation Committee, ForestrySA, EconSearch Pty. Ltd.

[1] Green Triangle Regional Plantation Committee (2006), *Forestry in the Green Triangle Economic + Employment Contributions*.

1.3. Current Processing

A long established softwood or Pine processing industry is located across the region. Wood is processed into sawn timber, panel products, laminated veneer lumber, pulp logs and wood chips. Approximately 4.0 million tonnes of wood is delivered to processing plants annually. While the major processing is undertaken in South Australia, there are significant facilities in Victoria at Dartmoor, Portland and Colac. The processed output generates approximately 5-6 million tonnes of freight movements, which is routinely transported by road in and around the region for further processing or transported to other regions for domestic consumption, predominantly in Melbourne and Adelaide.
In addition, direct forest operations and mill residues also produce approximately 1.2 million tonnes per year of wood chip for export out of the region via the Port of Portland. Note that there is also some wood pulp (45,000 tonnes per year) imported through the Port for processing into paper products by Kimberly-Clark Australia at Millicent.

During 2006 export of Blue Gum wood chip commenced through the Port of Portland by MCA Afforestation Pty. Ltd. and South West Fibre Pty. Ltd. as part of the Green Triangle Tree Farm Project which was established in the mid 1990s. The level of exports reached 200,000 tonnes in 2007, with a target of 300,000 tonnes in 2008.

1.4. Current Employment

Analysis of direct employment from the Econsearch study for the Green Triangle Plantation Committee and ForestrySA indicated that the plantation forestry sector directly employed about 830 and the wood and paper processing employed about 3,350. The current annual volume of wood harvested within the region is approximately 4.6 million tonnes and represents a basis for estimating future employment needs when harvesting of the Blue Gum plantations commences in about 2009, when an estimated extra 3.7 million tonnes becomes available on an annual basis on the period 2009-2014.

1.5. Future production and sustainability

Two recent studies in the Green Triangle Region have predicted wood flow into the future. The *Limestone Coast Plantation Timber 2005 and beyond*[2] predicted that sustainable annual wood production at between 5 and 8 million tonnes to 2039. A second study by the Green Triangle Regional Plantation Committee, *Future wood flows across the Green Triangle Region*[3], indicated that an annual harvest of potentially more than 3.7 million tonnes of Blue Gum wood chips during the period 2009-2014 (GTRPC 2005). However, because of plantation age class structure, the likely longer term average harvest may be of the order of 3 million tonnes per year.

1.6. Future employment needs and skills

Factors common in most rural and regional areas of Australia show the population declining and affecting ageing demographics associated with the movement to cities, urban fringes and the coastal strip. These movements have a potential impact on new developments and investments in rural areas.

In the Green Triangle Region, with the estimated wood volume likely to nearly double in the next five years, strategies must be developed to maintain and increase the employment resources of the region. To develop a better understanding of current and likely future employment and skills needs, FITNET in conjunction with the South Australian Government's initiative, *South Australia Regions at Works*, TAFESA and other partners has undertaken two workforce development surveys of the forestry and wood processing sectors with the objectives of determining current employment statistics, current skills sets and an estimate of

[2] Limestone Coast Regional Development Board (2004), *Limestone Coast Plantation Timber 2005 and beyond*.

[3] Green Triangle Regional Plantation Committee (2005), *Future wood flows across the Green Triangle Region*.

future regional employment and skills needed for the industry within a five year time scale. The first survey included Forest Growing and Management, Forest Harvesting, Haulage from the forest, Sawmilling and Processing and was reported to a public seminar in 2006 (FITNET 2006. The second survey was undertaken in 2007 to include the Pulp and Paper, Timber Sales, Wood Panel and Engineered Wood Product sectors. This report combines the results of both surveys.

The surveys collected information, at an individual business level, on training procedures, workforce retention methods, management of an ageing workforce, recruitment processes, small business planning, succession planning and opportunities for growth and expansion.

2. PROJECT MANAGEMENT

The project has been funded jointly by FITNET, the *South Australia Regions at Works* initiative and the Limestone Coast Regional Development Board, with in-kind contributions by Auspine, Green Triangle Regional Plantation Committee Inc. and TAFESA.

The project was overseen by FITNET, utilising the diverse knowledge, skills and expertise within FITNET, TAFESA, the Limestone Coast Area Consultative Committee, the Limestone Coast Regional Development Board, the Logging Investigation and Training Association, L.V. Dohnt & Co. Pty. Ltd., *South Australia Regions at Works,* Auspine Ltd and the Green Triangle Regional Plantation Committee.

The Advisory Group engaged Colin Kavooris as the project officer to undertake the consultation, stakeholder workshops, survey design, data collection and preliminary analysis for Stage 1 and FITNET commissioned The Green Triangle Regional Plantation Committee to undertake the data collection and analysis of the second Stage.

2.1. Industry based stakeholder workshops

Key regional organisations were identified as stakeholders, having strategic understandings of various aspects of the forest industry in the Green Triangle Region. The following stakeholder organisations identified were:

- The Green Triangle Regional Plantation Committee,
- The Logging Investigation and Training Association,
- The Log Hauliers Association, and
- The Hoo Hoo Club.

Consultations with these stakeholders were designed to raise awareness of the project and to have these organisations encourage participation and support by their members in the subsequent survey.
These consultations were conducted by the Stage 1 Project Officer as a series of workshops to identify strategic employment needs and barriers as input to developing a questionnaire and survey form to collect data from individual employers across those sectors of the forest industry to be surveyed.

2.2. Current and future employment needs of the current industry

Using the issues raised in the stakeholder workshops, a survey methodology of the current and anticipated employment needs of the current industry, a survey/questionnaire was developed to obtain the information sought.

3. DATA COLLECTION

A survey form was developed to collate information from individual enterprises and is available on request from FITNET. Forms were distributed by post and participating employers participated in face to face interviews.

3.1. The questionnaires

The basis of the project was a survey of enterprises to determine the structure, skills, qualifications, the turnover rate and age demographics of their current workforce and to ascertain their anticipated employment needs in five years time.

The surveys engaged the following sectors of the industry in the Green Triangle Region:

- Forest Growing and Management,
- Harvesting,
- Haulage from the forest,
- Sawmilling and Processing,
- Pulp and Paper,
- Timber Sales,
- Wood Panels and
- Engineered Product.

The questions were designed to ascertain the following:

- Workforce planning, recruitment and training,
- Number of current employees, including trainees and apprentices,
- Levels of licensing, qualifications or skills required,
- Knowledge of training options,
- Employee turnover,
- Average employee age, and
- Number of employees anticipated in five years time, including replacement of ageing workforce.

3.1.1. Employers surveyed

The survey was also designed to capture information specific to various sectors within the forest industry and was conducted in two stages.

The first stage included:

- Forest Growing and Management,
- Forest Harvesting,
- Haulage from the forest,
- Sawmilling and Processing, including maintenance.

And the second stage included:

- Pulp and Paper,
- Timber Sales,
- Wood Panel, and
- Engineered Wood Products.

3.2. Processing and safeguarding completed questionnaires

As the questionnaires were completed in a face to face interview, the responses were considered comprehensive and complete.

The data were recorded electronically and the completed questionnaires have been stored securely with FITNET. The name of the survey respondent was separated from the statistical return and stored in a separate location to enhance the security of the data storage arrangements.

In addition, based on the anticipated increase in wood harvesting that will result from the commencement of harvesting of newly developed Blue Gum plantation estate over the next five years, some modelling and prediction was also undertaken to compare the anticipated employment needs of existing employers with predictions of employment needs for the anticipated total volume of wood to be harvested and processed.

3.3. Responses

3.3.1. Stage 1

A summary of the extent of responses to the survey is provided in the Table 2.

While the response rate (74%) was high, it should be noted that the response rate for the harvesting and haulage sector was only 53%. However it was estimated that the survey responses received represented about 60% and 80% of the employment in the Forest Harvesting and Haulage sectors, respectively, thus the data would provide indicative predictive information for future workforce demands, based on current internal business planning. The FITNET believes that the overall survey captured the majority of the major operators across the industry for the sectors participating.

Table 2. Workforce development survey respondents

Total number of organisations contacted		39
Respondents by sector		
Forest growing and management	8	
Forest harvesting and haulage	8	
Sawmilling and processing	13	29
Non-respondents by sector		
Forest growing and management	1	
Forest harvesting and haulage	7	
Sawmilling and processing	2	10

3.3.2. Stage 2

Of 14 surveys forwarded, two were not returned, one enterprise was not directly engaged in the sectors being surveyed and one enterprise combined their data for two sectors. As a result, ten survey forms were analysed.

4. SURVEY RESULTS

4.1. Stage 1

The interview process for the survey was conducted during the period November 2005 to January 2006 and the data were recorded electronically following each interview.

4.1.1. Industry Overview

The data (Table 3) indicate that the current workforce for the forestry sectors surveyed in the Green Triangle Region is about 1940 full time positions with another 230 part time or casual positions. These numbers while less than reported in the Econsearch survey for 2003/04, do not include the Pulp and Paper, Merchandising, Wood Panel and Engineered Wood Product sectors which also operate in the Green Triangle Region.

The employment in the Forest Growing and Management and Forest Harvesting sectors approximates that of the Econsearch survey, differences possibly relate to differences in survey methodology (interview versus written responses) and the level of detail sought.

Table 3. Employment in various sectors of the forestry industry in the Green Triangle Region. January 2006.

Sector	Full time	Casual	Seasonal	Total
Forest growing and management	368	130	57	555
Harvesting	157	1	1	159
Haulage	185	4	0	189
Sawmilling and processing	831	37	0	868
Maintenance				
Field	199	0	0	199
Mechanical	158	0	0	158
Electrical	41	0	0	41
Totals	1939	172	58	2169

4.1.2. Age, turnover and future workforce expansion

Table 4 presents survey data for the workforce average age, annual turnover and the predicted increase in the workforce across the forest industry for the sectors surveyed in 2011.

Table 4 Full time workforce average age: annual turnover and predicted additional requirements by 2011 for various sectors of the forestry industry in the Green Triangle Region, January 2006.

Sector	Average Age	Annual Turnover	Additional Workforce required 2011
Forest growing and management	38	66	72
Harvesting	37	19	46
Haulage	42	26	65
Sawmilling and processing	40	199	341
Maintenance			
Field	45	21	56
Mechanical	48	21	42
Electrical	37	0	14
Totals		352	636

The survey also indicated several other features:

- The average age in the Forest Growing and Management and Forest Harvesting sectors and in the electrical maintenance area was under forty, while it was over 40 in the other sectors. An ageing workforce may require additional consideration,
- Annual turnover in full time employment across the industry was quite significant, being approximately 16% with the greatest level of turnover (24%) occurring in the sawmilling and processing sector. The survey did not determine if this turnover was related to employees moving between regional employers or leaving the industry,
- Future workforce needs of the employers surveyed, indicated that there would be a demand for at least an additional 636 employees across the sectors surveyed. Part of this is in response to replacing an ageing workforce, especially in the sawmilling and

processing sector and in the maintenance areas and to a lesser extent in the haulage sector,

- There will be an increasing expansion of the workforce in the Forest Growing, and Management sector as the sector continues to expand the area under plantations and also begins to replant existing plantations as the Blue Gum harvest proceeds,
- Also as the Blue Gum harvesting comes on stream, so there will be a significant increase in workforce requirement for the Forest Harvesting and Haulage of the wood beginning in 2009.

4.2. Stage 2

The postal and interview process for the survey was conducted during the period April to July 2007 and the data were recorded electronically.

4.2.1. Industry Overview

The data (Table 5) indicated that the current workforce for the forestry sectors surveyed in the Green Triangle Region in Stage 2 is about 1,140 full time positions with another 30 part time or casual positions; about half the numbers involved in the Forest Growing and Management, Forest Harvesting, Haulage, Sawmilling and Processing sectors surveyed in Stage 1.

Table 5. Employment in various sectors of the forestry industry in the Green Triangle Region. July 2007.

Sector	Full time	Casual	Seasonal	Total
Engineered wood products	335	13	1	349
Pulp & Paper	525	0	0	525
Timber Sales	105	10	0	115
Wood panels	173	7	0	180
Totals	1,138	30	1	1,169

4.2.2. Age, turnover and future workforce expansion

Table 6 presents survey data for the workforce average age, annual turnover and the predicted increase in the workforce across the forest industry for the sectors surveyed in 2011.

Table 6. Full time workforce average age: annual turnover and predicted additional requirements by 2011 for various sectors of the forestry industry in the Green Triangle Region, July 2007.

Sector	Average Age	Annual Turnover	Additional Workforce required 2011
Engineered Wood Products	41.3	54	8
Pulp & Paper	43.3	16	20
Timber Sales	38.4	17	22
Wood Panels	44.1	25.7	16
Totals		112.6	66

The Stage 2 survey also indicated several other features:

- The average age in the Timber Sales sector was under forty, but it was over 40 in the other sectors. An ageing workforce may require additional consideration,
- Annual turnover in full time employment across the industry in the Pulp and Paper, Timber Sales, Wood Panel, and Engineered Wood Products sectors was 10%, but varied between 3% and 16% across individual sectors. These levels of turnover are considerably less than that noted in the first part of the project, where the average

turnover was approximately 16% with the greatest level of turnover (24%) occurring in the Sawmilling and Processing sector.

- Future workforce needs of the employers surveyed, indicated that there would be only a marginal increase in additional employment above current levels (66), due in part to the mature nature of the sectors surveyed and the limited possibilities for expansion due to limited additional Pine wood supply

4.3. Qualifications and training requirements

4.3.1. Stage 1

All sectors surveyed require significant numbers of suitably skilled employees possessing the necessary skills (Table 7). While businesses in the Forest Growing and Management sector tended to recruit from within their own organisations, the Forest Harvesting and Haulage sectors tended to recruit employees from external sources.

The Sawmilling and Processing sector has lesser requirement for qualified and skilled workforce and recruited equally from within their own businesses and from external sources. This sector does have a significant number of positions which involved unskilled manual labour. This sector also had considerable employment turnover.

Table 7. Workforce requirements for training, qualifications and skills recognition for various sectors of the forestry industry in the Green Triangle Region, January 2006.

Sector	Qualifications or training required %	No qualifications required %	Not specified %
Forest growing and management	46	33	21
Harvesting & Haulage	85	0	15
Sawmilling and processing	49	35	16
Maintenance	60	13	27
Engineered wood products	51	17	31
Pulp & Paper	38	25	38
Timber Sales	31	26	43
Wood panels	67	0	33

4.3.2. Stage 2

All sectors surveyed require significant numbers of suitably skilled and trained employees possessing the necessary skills. Most enterprises undertook on the job training using in-house training systems including certified Workplace Training and Workplaces assessments, while others used external trainers and assessors.

Accessing training and assessment was not seen as difficult in the Green Triangle Region. All sectors utilised nationally recognised qualifications and training standards and used available Registered Training Organisations (RTOs). Some businesses are themselves RTOs.

5. PREDICTIONS AND MODELLING

Tables 4 and 6 presented the anticipated additional workforce required across the forest industry in the Green Triangle Region in 2011. In addition to the estimated 3,300 currently employed in the forest industry with about 700 new employees being needed. These predictions are generally based on the scale of current operations with some additional expansion, including replacement of an ageing workforce. However FITNET believed that there was a substantial under estimation of future workforce needs in the Forest Harvesting and Haulage sectors. Note that generally activity in these two sectors is undertaken by employers who are involved in both Forest Harvesting and Haulage.

As mentioned earlier, two recent reports have attempted to quantify future wood flows. The *Limestone Coast Plantation Timber 2005 and beyond* predicted that sustainable annual total wood production would be between 5 and 8 million tonnes to 2039 and a more specific study, *Future wood flows across the Green Triangle Region* analysed data from growers which indicated that the annual harvest of Blue Gum could be of the order of 3.7 million tonnes during the period 2009-2014. Currently about 4.6 million tonnes of Pine is harvested annually with a workforce of the order of 348 (Table 4). Even at a pro rata level, this would imply an additional workforce for these sectors of 280 compared with the 111 predicted by current employers in Table 4.

These differences may be attributable to a number of factors:

- Little or no experience in Blue Gum harvesting in the region,
- Only limited liaison between Blue Gum growers and the harvesting and haulage sectors at this time to establish needs and demands,
- Some growers investing in their own harvesting systems and yet to consult locally,
- Operators comfortable with current operations and not planning any major expansion,
- Limited capital resource for expanding into the Blue Gum sector, etc.

To better estimate the likely workforce demand in the harvesting and haulage sectors with the commencement of Blue Gum harvesting, the Advisory Group undertook a desk top study.

5.1. Forest Harvesting and Haulage sectors

The mode of operations for Blue Gum harvesting will be solely wood chip production. Harvesting operations may use in-field chipping or the movement of logs to centralised static chip mills for processing into wood chips or a combination of both. While the oft quoted annual operational capacity for harvesting machines in Pine is 100,000 tonnes, with smaller piece size and extra handling, the throughput for similar operations in Blue Gum may be less.

The desk top study was based on observational data from Western Australia and limited operational harvesting in the region.

Two scenarios, which will reflect the likely type of operations, were modelled. The first was the harvesting, forwarding, debarking and onsite chipping into road transport containers. The second scenario was harvesting, forwarding and the loading of logs on to road transport for delivery to a centralised, static wood chip mill. In both scenarios it was assumed that the final delivery point for the wood chips would be the Port of Portland.

Each scenario was modelled on annual harvesting capacity of 100,000 tonnes with a total regional harvest of 3 million tonnes or 3.7 million tonnes and various assumptions with respect to forwarder/skidder and chipper capacity, and haulage being based on an average distance of 100 kilometres using single trailers.

A third scenario using an annual harvesting/chipper capacity of 85,000 tonnes was also used based on a conservative production output.

Table 8 presents the predicted workforce requirements based on these scenarios.

Table 8. Predicted workforce requirements for harvesting and haulage of Blue Gum.

Scenario	Harvesting capacity (tonnes/year)	Predicted resource available (tonnes/year)	
		3,000,000	3,700,000
1. Infield chipping	100,000	300	370
2. Static Chipping Mill	100,000	330	407
3. Conservative infield chipping	85,000	338	416

The results of the modelling indicated that for an annual harvest of 3 million tonnes of Blue Gum there will be a requirement of between 300 and 338 additional employees and if the annual harvest is 3.7 million tonnes the numbers increase from 370 to 416 additional employees. These numbers are three to four times that predicted by the participants in the survey.

Meeting these needs will require considerable resources for recruitment and training within the harvesting and haulage sectors in the coming three years. It is unlikely that the region currently has the capacity to meet these needs.

In addition to the need for investment in training capacity, the industry will also require a considerable capital investment in harvesting and haulage equipment of tens of millions of dollars.

6. TRAINING FACILITIES

Currently there are a number of Registered Training Organisations in the Green Triangle Region undertaking training in the forest industry, including several of the businesses surveyed. While there will be considerable demand by the Forest Growing and Management, Forest Harvesting, Haulage, Sawmilling and Processing sectors, especially with the commencement of the Blue Gum harvest, the sectors surveyed in this report, the Pulp and Paper, Timber Sales, Wood Panel and Engineered Product sectors, will not add further demand for capacity in the region.

In developing an awareness of the growing workforce demand, FITNET and its partners have commenced raising the profile of the forest industry within the region. The *A Cut Above* magazine, released in 2005, with a second edition being released in March 2008, outlines the array of employment and training options available across the industry. FITNET is also active in promoting the industry within the schools systems participating in careers information days, industry awareness activities, liaison with career counsellors and coordinating the *VET in Schools* program. At a professional level, Southern Cross University delivers the Degree in Applied Science (Forestry) in Mount Gambier to meet some of the demands in the forest growing and management sector, but has scope to service not only other sectors of the forestry industry but also other agencies involved in natural resource management.

7. INDIRECT EMPLOYMENT AND COMMUNITY

This project has identified a potential need for approximately 1,000 new positions within the forest industry, there has been no attempt to estimate the indirect impacts of these new jobs in other sectors of the economic of the Green Triangle Region. The Econsearch report prepared for the Green Triangle Regional Plantation Committee and ForestrySA used a multiplier of one to estimate the indirect employment generated by the forest industry, there is potentially a total of 2,000 new positions in the Green Triangle Region in the coming years.

If an additional 2,000 employment positions are to eventuate in the coming years, the associated increase in population considerable. The increased population will potentially have an impact on a number of service providers:

- Local Government with respect to town planning and services,
- State Governments with respect to education, health and community services,
- Utility provides with respect to energy, water and sewerage, and
- Retailers and manufacturers with respect to commercial shopping and meeting the demands of the additional population and industry expansion.

8. CONCLUSIONS

- With the Blue Gum plantations nearing their first harvest there will be a considerably increased demand for a trained and qualified workforce in the forest industry in the Green Triangle Region,
- It is predicted that the demands in the forest industry will require an additional workforce of the order 891 to 1007 across the following sectors:
  - Forest growing and management, 72,
  - Harvesting and haulage, 300 to 416 (depending on average annual harvest),
  - Sawmilling and processing, 341,
  - Maintenance, 112,
  - Pulp and Paper, 20,
  - Timber Sales, 22,
  - Wood Panels, 16, and
  - Engineered Wood Products, 8.
- The anticipated expansion in workforce demands will need to be associated with considerable capital investment equipment and maintenance capacity,
- There will also need to be a considerable expansion in the skills and training capacity for the forest industry within the region in the coming years. This will require a whole of industry approach to planning, funding and implementation,
- The associated increase in the workforce will also impact on local government, education, infrastructure and community services.
- The Pulp and Paper, Timber Sales, Wood Panel and Engineered Product sectors employ about 1150 people in the Green Triangle Region.
- The established and mature nature of these sectors will see only limited increase for new positions beyond the normal replacement of people who resign or retire over the next five years.
- While the there will be considerable employment opportunities and training demand in the Forest Growing and Management, Forest Harvesting, Haulage, Sawmilling and Processing sectors in coming years, there not be the same level of demand from the Pulp and Paper, Timber Sales, Wood Panel and Engineered Product sectors.
- Additional employment will bring additional indirect employment to service the expanding forest industry and will require forward planning by Local and State Governments and provide an opportunity other for commercial developments to service the increased population.

9. FUTURE DIRECTIONS

FITNET and its partners have developed and undertaken two surveys of employers and businesses in the Forest Growing and Management, Harvesting, Haulage from the forest, Sawmilling and Processing, Pulp and Paper, Timber Sales, Wood Panel and Engineered Product sectors within the Green Triangle Region. The Group believes that the way forward is challenging and requires a whole of industry collaborative approach to:

- Continue raising the awareness of employment and career opportunities within the forest industry,
- Support the training directions of FITNET,
- Encourage the participation of the industry in school industry awareness programs,

- Support the *VET in Schools* program for prospective employees,
- Support the forestry degree program conducted by Southern Cross University in Mount Gambier,
- Take leadership in the expansion of training and educational facilities in the region,
- Develop a regional strategy for workforce training, recruitment, retention and succession planning, and
- Continue to raise awareness for the strategic development of infrastructure, and other service sectors such as local government, education, health and commercial business opportunities.

10. ACKNOWLEDGEMENTS

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