



Report to:

FITEC

FOREST INDUSTRY TRAINING REQUIREMENTS TO 2011

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July 2008

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JEL Classification

L 73 Industry Studies; Forest Products

J24 Human Capital; Skills; Labour Productivity

BERL ref: 4602

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1 Summary

1.1 Executive Summary

The key findings from the Survey and review of the forest industry are:

- The industry places a high importance on most types of skills, especially applied technical skills and soft skills like people skills and leadership skills.
- Firms in the industry are committed to invest time and money in training staff to meet the future needs of the sectors.
- Rather surprisingly, given the difficult macroeconomic environment the industry operates in at present, a large share (37%) of **all** firms covering all sectors and regions said they are likely to expand in the next five years.
- Projections of additional employees needed by the sectors of the industry from 2008 to 2011 show that approximately 600 to 1,000 additional people will be needed each year due to industry growth, assuming current productivity. Investments and training underway could increase productivity and allow the industry to expand to 2011 with few more employees.
- Replacing employee turnover requires a further 4,000 people per year. If productivity increases this number could be 3,600 per year. Reducing employee turnover reduces induction training needed and allows training resource to be focussed on the existing workforce. Nevertheless the forest industry should target the 60,000 leaving school each year as potential recruits.
- A strong response to the BERL FITEC Survey 2008, representing probably 50% to 60% of the industry, indicates the forest industry has a strong set of businesses that are willing to contribute to FITEC's knowledge and assessment of the industry.
- There are some useful initiatives being implemented in some firms' training programmes including skills and training matrices for use by employer and employee in planning their complementary training needs and aspirations.
- The types and scope of training needed is changing as firms need to support their investment in changed production systems. This investment incorporates more automation and other innovation.

1.2 Important skills

Survey respondents clearly consider skills important to their business. They put considerable effort into prioritising the skills they believe are important to the success of their business. The findings are that the industry places a high importance on most types of skills, especially applied technical skills and soft skills like people skills and leadership skills. The balance of skills thought 'Most Important' varied in the different forest sectors. Silviculture and logging put high importance on driver licensing and occupational safety skills, followed by life skills and leadership skills. This ranking reflects the need for motivated, responsible people to lead relatively inexperienced teams in the forest.

The processing sector of solid wood; wood panels, pulp and paper; and furniture all gave the applied skills, namely machine operators and trade skills, the two highest rankings. After these came people and leadership skills. Many firms said that without basic people and life skills employees will not stay long enough in a role to get the most important ingredient required – experience. Once a person has work experience, they can be trained and acquire the necessary technical, trade and regulatory skills.

It is clear that in the main sectors of the forest industry there is an ongoing need for applied technical and soft skills. Beginning with foundation life and work skills at a more junior level; and progressing with communication, team work and leadership skills at all levels.

Although these types of skills are given the highest priority, there are still large numbers of businesses that think basic competencies like literacy and numeracy are important for their businesses. In fact, 64% of the Survey firms thought these skills were either 'Important' or 'Most Important' for their businesses' success in 2011.

1.3 Firms state a commitment to training

Our assessment of the present skills and training position is that there is a strong training culture in the forest industry and potential to do more. The sectors examined have approximately 14,000 people or just over 40 percent participating in training. We recognise that many of these people are not completing 20 credits or more and are not considered full-time trainees. However, they have been recruited into the training system, and therefore have the potential to be encouraged into further training.

Our positive assessment of the present skills and training position is reinforced by the findings from the Survey. Of the 511 firms that responded to this survey question, approximately 360 recorded that most of their staff had received formal training.

Firms across the industry are committed to training. In the Survey, 92 percent believe they need to invest time and/or money into training their employees to acquire the skills needed in the workplace.

The type of training needed by firms was predominantly skills for the job with 83% of all respondents indicating this. Within the main sectors this figure was 80% or above. National qualifications are seen to be needed by 65% of the firms. Within the forest-based sectors of silviculture, logging and transport over 70% of firms indicated the need for their business to invest in national qualifications. The main wood-based sectors of solid wood processing, pulp and paper, and furniture recorded 40% to 60%; and of the small response from the wood panels sector none saw a need for national qualifications.

The type of training firms need to invest in is training that provides their employees with applied technical and soft skills. Findings from the Survey indicate firms are identifying the skills they consider most important to the success of their business and creating training programmes to fill skill gaps. Firms believe training in these areas will increase productivity, reduce turnover and provide their employees with skills for the job. Towards 2011 firms will continue to invest in training as they incorporate more automation and other innovations into the production process, but a strong focus will continue to be on soft skills such as team leadership and people skills. The forest industry is a team work environment, and some firms have recognised that training people to improve their communication and people skills can help to reduce turnover.

FITEC provides forest industry employees with skills and qualifications through training programmes, modern apprenticeships, and traineeships. However, findings from the 2008 Survey indicate there is the potential for FITEC to further increase the productivity and skills of people within this industry through targeted qualifications, training programmes, and professional development.

1.4 Many firms are likely to expand

Rather surprisingly, given the difficult macroeconomic environment the industry operates in at present, a large share (37 percent) of all firms covering all sectors and regions said they are likely to expand in the next five years, and a small share (12 percent) said they are likely to contract.

The response by sectors is that in the wood-based sectors of solid wood; pulp, paper and tissue; and furniture about 50% or more of firms are likely to expand. The forest-based sectors are interesting because forest ownership, management, silviculture and logging all had a low share of the number of firms likely to expand, and/or a higher than average share of the firms likely to contract. However, in the combined logging and silviculture sector over

50% said they are likely to expand and just 7% that they are likely to contract. The implication of this finding could be that the larger combined businesses see some opportunity to expand, perhaps by absorbing the activities of others leaving the sector.

This picture was reinforced in the analysis by size of firm. The larger firms employing 16 or more employees generally had a higher percent than average of those firms likely to expand and/or a lower percent likely to contract and the smaller firms were the other way around. There was no discernible pattern of intentions by regions.

The indications are that there is a large share of firms in the main processing sectors and in the combined silviculture and logging sector around the country that are likely to expand in the next five years. While some firms may be expanding their markets and sales, others could be expanding by absorbing the activities of some firms that are likely to contract. This sort of change indicates a likely investment and increase in productivity as the firms achieve greater economies of scale.

Overall this is a positive prospect for the industry.

1.5 The industry may expand with few more employees

We have projected the number of additional employees needed in the sectors of the industry from 2006 to 2011. Firstly, we projected the increase in employment that would be generated by an increase in the size of the log-based sectors as a result of increased forest removals, i.e. greater log harvesting. We also projected expansion of the furniture and other wood products sector according to forecast growth in the relevant parts of the New Zealand economy. These projections show that approximately 600 to 1,000 additional people will be needed each year due to growth of the industry through to 2011, assuming employee productivity remains at its present level.

This projection contrasts a little with the employment intentions measured by the 2008 Survey, where firms said they would employ 18,400 in 2011, just 700 more than in 2008. The intention to expand is thus presumably by investing in more equipment and training to increase the productivity of the workforce.

We tested the effect of increasing productivity by an average of 10% by 2011, and found that total employment would actually decline by 800 over the three years if productivity increased by 10%. (This compares with an increase by 2,500 if productivity stayed the same.)

Given the employment intentions of the Survey firms; the productivity investments taking place; and the estimated labour force with a 10% productivity increase; it could well be that the total workforce in 2011 will be little larger than now.

1.6 The industry needs workers to cover employee turnover

The main need for additional employees between 2008 and 2011 will be to replace employee turnover in the existing workforce. Turnover can occur due to people leaving an industry or changing employer within an industry. When people change employer there is no skill loss to the industry, in fact we learnt from firms that the career paths in many of the sectors involved moving between firms and/or sectors to gain further experience. When people leave an industry skill losses occur.

We obtained information on employee turnover from a number of sources within the industry, and also the 2008 Survey asked respondents the percentage of their permanent employees who had worked for their workplace longer than two years. The average was 60% which implies that average turnover at the firm level was 20% per year. We would stress again that this is NOT a turnover rate for their sector or the forest industry, but only for the firms.

The Survey shows that a small number of firms in the forest industry had employee turnover close to 50 percent per annum, while approximately 100 firms had employee turnover of over 35 percent. More importantly it also illustrates that over one third of the firms surveyed had turnover of less than 10 percent per annum.

At the industry turnover rate assessed for each sector, and productivity remaining the same, the projections indicate the industry will need to attract about 4,000 people per annum through to 2011. If productivity is increased by 10%, this need declines to about 3,600 people per annum.

This number indicates the benefits to the industry if turnover is reduced. These 3,600 to 4,000 people need training if industry skills are to be maintained. If turnover is reduced, some of this training effort can be applied to upskilling people already in the industry to increase productivity.

While the industry may attract some people from other industries, the main source of people in the continuing tight labour market will be school leavers. The present and projected number of school leavers is 60,000 per year. Each year about 30,000 school leavers transition directly into tertiary training while a further 8,000 transition indirectly over the following year or so. This means that about 35% of school leavers could be attracted directly into employment, but the other 40,000 who transition into tertiary are motivated to complete ongoing training and should also be targeted by the forest industry.

The government has various strategies and schemes planned and in place that could assist the industry and FITEC to attract 18 to 25 year olds into the forest industry.

1.7 BERL FITEC Survey received a strong response

The 2008 National Skills Survey of Forest Related Industry conducted by BERL for FITEC was a two stage survey of the forest industry.

The first stage of the BERL 2008 Survey involved a broad survey of the forest industry to gain an understanding of the industry and training requirements. This survey was sent to firms in the forest industry by email and post, and firms responded by mail or online. A total of 516 usable responses were received, of which approximately 100 were online responses and over 400 were hard copy. These responses reasonably evenly covered industry sectors, sizes and types of businesses, and regions. As an indication of this regional coverage, the BERL 2008 Survey received at least 25 survey responses from each of the 10 regions surveyed. In turn, the 2006 APR review surveyed 49 businesses, 20 of which were in the Waikato and Bay of Plenty regions.

In the second stage of the Survey, BERL interviewed over 40 stakeholders in various sectors. Interviews were conducted in the Northland, Auckland, Central North Island, Taranaki/Wellington, Nelson/Marlborough, and West Coast/Canterbury regions. In many cases these interviews provided information on industry activity in other regions. Also, BERL drew on information from previous work in a number of regions, and details from the large representative sample in the first stage of the BERL 2008 Survey.

The fact that there was a strong response to the BERL 2008 Survey, representing probably 50% to 60% of the industry, indicates that the forest industry has a strong set of businesses that are willing to contribute to FITEC's knowledge and assessment of the industry. We can therefore be confident that the information obtained from the Survey is a sound base for planning for the future.

1.8 Initiatives and investment sees training changes

There are some imaginative initiatives being implemented in some firms' training programmes including skills and training matrices for use by employer and employee in planning their complementary training needs and aspirations. The fundamentally important aspect of these matrices is that they include formal training modules and recognise the experience gained by the employee in various roles, carrying out various tasks on-the-job.

These training initiatives also reflect how training needs are changing to support a firm's investment in improving production systems. This investment can be labour saving and may require employees to up-skill and develop specialist skills in the installation, operation and maintenance of these systems. The training framework will need to recognise this change and look at adding the appropriate unit standards.

In turn, if firms in the forest industry downsize they will also need to invest in training their remaining staff to ensure these employees have the right skills to operate the business.



2 New Zealand's forest industry sectors surveyed

2.1 Review objectives

FITEC is the Industry Training Organisation (ITO) for the forest industries. As well as taking a leadership role and representing the interests of the forest industries, FITEC matches the skill needs of the businesses it represents with the tertiary education requirements of its workforce.

As an ITO, FITEC sets the national standards and qualifications for occupations in forest planting, growing and harvesting, solid wood processing, wood panels manufacturing, and wood product manufacturing. As well as awarding national certificates, FITEC maintains a database of trainees and modern apprentices, and their learning records. As a result, FITEC plays an important role in identifying the skill and training requirements of people in the forest industries.

FITEC needs to satisfy stakeholder requirements and manage stakeholder expectations while continuing to deliver successful national standards and qualifications. This involves meeting the evidence-based assessments required by NZQA, TEC, and the MOE, as well as the needs and expectations of trainees, apprentices and industry stakeholders.

As a result, FITEC is in the process of compiling and implementing a comprehensive three year strategic plan. This plan will include a survey that assesses the likely skill and training requirements in the forest industries to 2011. This survey will also identify any skill shortages or skill gaps. As part of compiling and implementing this strategic plan, FITEC commissioned BERL to complete this survey and to project skill and training requirements in the forest industries to 2011.

Along with FITEC's three year strategic plan, the information provided in this report will help FITEC to identify who was employed in the forest industries in 2006¹, where they were employed, and their level of qualifications and training. It will also provide information on the demand for labour in the forest industries in 2011, what will influence this demand, and who will supply the labour.

This report will ensure FITEC continues to provide leadership in its own industries, due to identifying skill and training requirements, and becomes a leader among ITOs through ensuring a skilled and trained workforce for its industry.

¹ 2006 was chosen rather than 2007 because it was the year of the Statistics New Zealand Census of Population and so the maximum detail is available from official sources.

2.2 Employment, output and GDP in core forest sectors in 2006

According to the Statistics New Zealand 2006 Census, 43,755 people were employed in the forest industry sectors surveyed. This figure includes people who were employed in the sectors we are interested in as well as some sectors peripheral to our interests.

This survey and projection analysis focuses attention on the directly log-based employment such as forestry, harvesting and management as well as those employed in the various types of solid wood processing including wooden structural component manufacturing; the pulp, paper and tissues sector; and furniture manufacturing. These selected sectors had 35,007 employees as at March 2006, as recorded in the Census.²

Other estimates we have used as a cross-check are a 2003-04 Input-Output Table updated from 1996 figures, and an Input-output Table for 2006 developed from Statistics New Zealand source data by BERL and Infometrics. These two sources indicated respectively employment of about 33,000 FTEs in 2003-04 and for a lesser cover of sectors, about 31,250 FTEs in 2006. Employment count numbers of about 35,000 in the forest industry would be expected to imply something over 30,000 FTEs as the volume of labour.

The Input-Output table analyses allow us to derive very approximate estimates of the Gross Output (the same as turnover for a company), and the Gross Domestic Product (GDP) of the forest and wood industry. These estimates indicate that, in 2006, the Gross Output would have been about \$10 billion per annum and GDP something over \$3 billion per annum.

These 'scale' figures will allow us to see the fraction of the industry covered by the surveys.

2.3 Share of industry in 2008 Survey responses

The 2008 National Skills Survey of Forest Related Industry conducted by BERL for FITEC was circulated for web-based and hard copy response. A very good total of 516 usable responses were received, about 100 web-based and over 400 hard copy. These responses reasonably evenly covered the sectors of the industry, sizes and types of businesses, and regional location. These responses have been entered in an Access database and main tables of interest transferred to Excel spreadsheets.

At this stage it is useful to obtain an order-of-magnitude idea of the approximate share, or fraction of the industry, that the total survey responses represent. Firstly with employment, the Census data indicate that there were 35,000 employees in 2006. The Input-Output table

² The sectors included and excluded in the FITEC industry compared with the Statistics NZ industry are shown in Table 10-2 in the Appendices.

2006 indicated that there were about 30,000 FTEs in 2006, and Statistics New Zealand gave a mean employment level of about 33,000.

The survey of 516 businesses gave employment figures in nine size ranges. We have therefore been able to estimate the approximate employees of the survey sample (see section 3.5). Our estimates are that the 516 businesses had 17,750 permanent employees in 2008, and in the last twelve months employed 7,000 contract staff for an average of just over four months. This implies that there were about 25,000 people who, at some time, and for at least four months, had been working in the forest industry. This is about 70 percent of the number that were employed at Census time in March 2006.

Converting the contract staff to FTEs, we obtain an estimate that the survey firms employed a total of 20,250 FTEs, which is about two-thirds of the FTEs indicated in the 2006 Input-Output Table.

The Gross Output (or total turnover) of the forest sectors we are studying appears to be approximately \$10 billion per annum, going from the Input-output tables 2006, and the Statistics New Zealand Annual Enterprise Survey 2006.

The turnover by the respondents was given over six size classes, the largest being over \$51 million per annum. By our estimates, the 490 respondents with turnover up to \$50 million had a total turnover of approximately \$2 billion. The 25 respondents with turnover of \$51 million and over we believe had a total turnover in the range \$2.5 to \$4 billion, meaning the survey respondents had total turnover of \$4.5 to \$6 billion. This implies that the survey respondents accounted for 45 percent to 60 percent of industry turnover.

Generally this indicates that the survey respondents account for something over 50 percent of the industry taking all coefficients into account. This is a very high sample of the total industry, and we can therefore be confident that the information obtained from the survey is a sound base for planning for the future.

2.4 Regional distribution of Survey responses

The survey responses covered a large part of the total industry, and the respondents were well-distributed throughout the country. In the Survey, respondents were asked to identify the region where the workplace or business was located. This gave a useful initial indication of the location of 510 of the total 516 responding businesses.

Figure 2.1. Regional location of 510 responding businesses

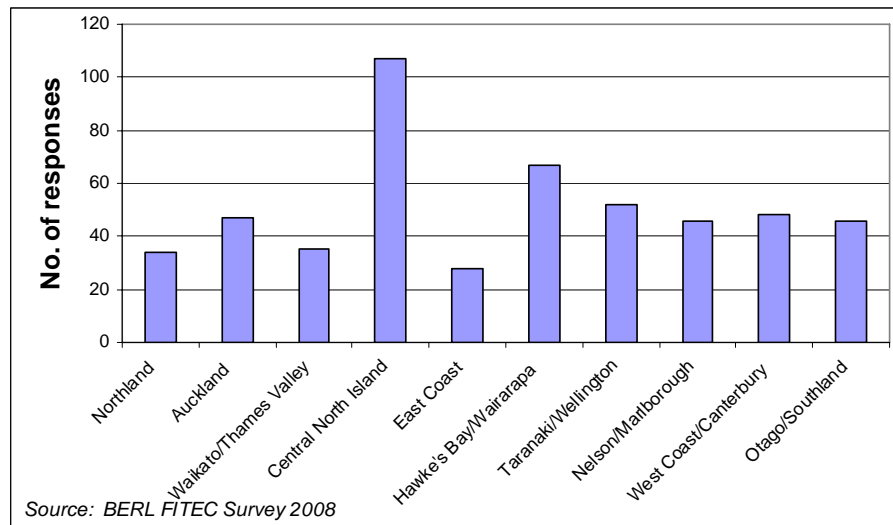


Figure 2.1 indicates that the Survey has gained responses from businesses covering all regions. We can therefore have confidence in the results from the survey overall and, to some extent, the regional breakdown when required.

2.5 Sectoral distribution of Survey responses

The 2008 National Skills Survey of Forest Related Industry conducted by BERL was well-distributed. As shown in the figure above, we received at least 25 survey responses from each of 10 regions. In turn, the 2006 APR review surveyed 49 businesses, 20 of which were in the Waikato and Bay of Plenty regions.

As well as examining the industry at a regional level, the 2006 APR review split the forest industry into the three sectors of forestry contractors, forest owners/managers, and solid wood processing and wood product manufacturing. In contrast, the BERL survey provided respondents with 11 sectors that they could choose from, and respondents were allowed to give multiple answers. As a result, the total number of sectors recorded was greater than the number of respondents. To analyse the sectors that responded to the Survey, we examined individual survey responses and allocated those businesses that had selected multiple sectors to a primary sector.

This breakdown is illustrated in the table below, which compares responses from the 2008 BERL Survey with the 2006 APR review.

Figure 2.2 Sector composition of Surveys 2006, 2008

Sector	2008 sample firms	2006 sample firms
Total	515	49
Forest management	18) 17
Forest ownership	11)
Silviculture	56)
Logging	129) 12
Logging and silviculture	27)
Solid Wood	93)
Wood panels	5) 20
Pulp, paper and tissue	7)
Furniture	75)
Transport etc	18) 0
Other	51)
None given	25)

Source: BERL FITEC Survey 2008; APR survey 2006

3 Employment characteristics of the sectors

This section outlines the employment characteristics of the forest industry sectors. It discusses employment levels, occupations, and employee turnover.

3.1 Forest industry sectors omitted from the study

The forest industry sectors included in the Statistics New Zealand figure of 43,755 employees and omitted from our selected sectors with 35,007 employees were the corrugated paperboard containers and other paper manufacture (2,268 employees); prefabricated wooden building manufacture (540 employees); and the downstream sectors wholesaling timber, furniture and paper products (5,940 employees).

3.2 Forest industry sectors studied

The details of the six forest industry sectors selected for the purposes of this research are:

- Forestry or harvesting, logging, and forestry support services like forest management.
- Solid wood processing, which includes log sawmilling, wood chipping, and timber re-sawing and dressing.
- Wood panels manufacturing, which includes veneer and plywood manufacturing, and reconstituted wood product manufacturing.
- Pulp and paper, which includes pulp, paper and paperboard manufacturing, sanitary paper product manufacturing, and other converted paper product manufacturing.
- Furniture, which includes wooden furniture and upholstered seat manufacturing.
- Other wood products manufacturing, which includes wooden structural fittings and components manufacturing, and other wood product manufacturing n.e.c. (not elsewhere classified).

3.3 Census 2006 employment by sector

The Census data for 2006 shows that the 35,007 people employed in these six sectors were distributed as in Table 3-1.

Table 3-1. Forest sector employment, 2006

Sector	Employees March 2006 Census
Forestry and harvesting	7,962
Processing and manufacturing	-
Solid wood processing	7,581
Panels	1,989
Pulp and paper	2,871
Furniture	5,712
Other manufacturing	8,892
Total processing and manufacturing	27,045
Total forestry and processing and manufacturing	35,007

Source: Statistics New Zealand, 2006 census

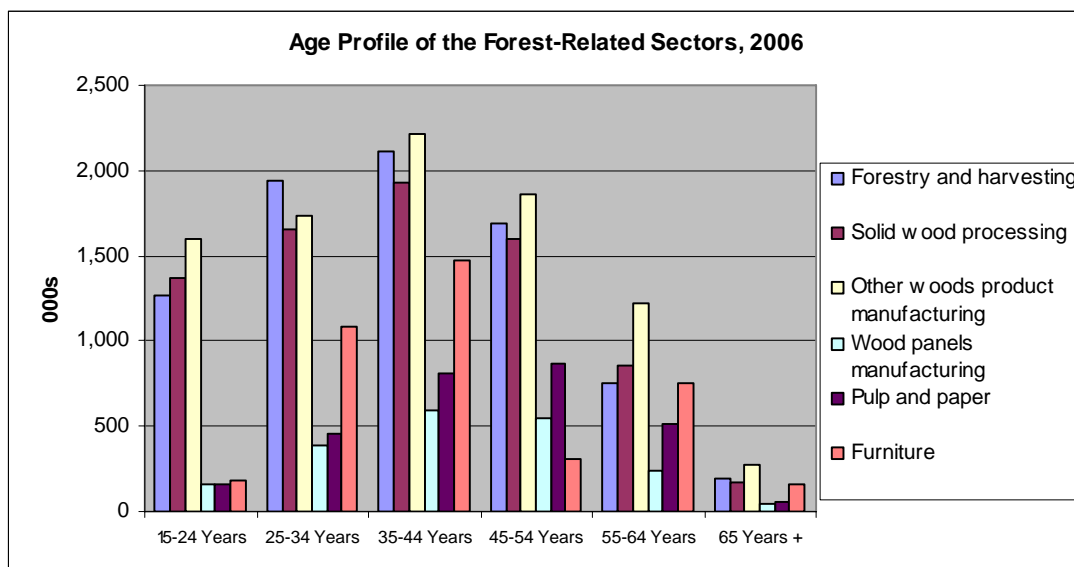
3.4 Census 2006 employment demographics

The Census data for 2006 also shows the demographics of people employed in the six sectors in the forest industry. Demographics, particular the age of people employed in the forest industry, will impact on skill and training requirements projecting forward to 2011.

Looking across the sectors it can be seen that the majority of males were employed in forestry and harvesting, solid wood processing, and other wood products manufacturing. In turn, the majority of females were employed in other wood products manufacturing, solid wood processing, and furniture.

In turn, the majority of people employed in the forest industry were aged between 35 and 44 years old. Examining the sectors in detail, forestry and harvesting and other wood products manufacturing recorded the largest number of 35 to 44 year olds.

Figure 3.1 Age Profile of the Forest Industry Sectors, 2006



Source: Statistics New Zealand, 2006 census

The age profile from the 2006 Census data indicates that the forestry and harvesting sector in general employed people who were slightly younger than the rest of the forest industry reflecting the physically demanding nature of jobs in this sector. The age profile also illustrates how younger people may enter and leave this sector, but for those who enjoy the work it is a stable career. This can be seen in the sizeable number of 45 to 54 year olds in this sector, who may be senior staff or harvesting contractors operating their own businesses.

In other wood products manufacturing, numbers were fairly evenly spread between the different age groups. However, this sector also employed the largest number of 15 to 24 year olds. In contrast, the pulp and paper sector had the largest number of people aged 35 years old and above.

The age profile of the furniture industry in 2006 indicates people are entering the industry and continuing to make a career of it. However, the decrease in the number of people in the industry after the age of 44 could indicate that people are entering other trades or industries rather than becoming self-employed and setting up their own business.

Projecting forward, this age profile indicates that the majority of people in the forest industry will be aged between 45 and 54 years old in 2011. In addition, projecting forward the majority of people in the forestry, and pulp, paper and paperboard manufacturing sectors will be aged between 45 and 64 years old, as the next largest age groups in these sectors after 45 to 54 year olds were 35 to 44 year olds. These industries have an ageing workforce and smaller numbers coming forward in each age group.

3.5 Survey 2008 employment by businesses

In the Survey, we split the forestry and harvesting sector into the industry sectors of forest ownership, forest management, silviculture and logging. In turn, solid wood processing and other wood products manufacturing was grouped together in the Survey as the solid wood sector.

Other sectors also provide support and services to the forest industry, such as professional, scientific and technical services, credit and finance, biosecurity, and transport, but due to research constraints these sectors have not been included in this project. However, when information has been readily available on these sectors it has been included in the discussion.

In the Survey the transport and 'other' sector categories attempted to capture people in businesses that support the forest industry. Businesses that recorded themselves in the 'other' category in the Survey included biosecurity and pest control, earthmoving and road building, training, equipment servicing, and equipment suppliers.

In the Survey, respondents recorded their employment levels in nine ranges namely 0 employees, 1-5 employees, 6-15; 16-30; 31-50; 51-100; 101-200; 201-300; and 300+ employees. By assuming the average to be the mid-point of each range we have estimated employment in 2008 in each sector. The difficult range to obtain an assumption for was the highest, namely 300+ employees. Eleven businesses were recorded in this range, and at least one of these is believed to have over 1,000 employees, so we think an assumption of an average of 400 employees per business is realistic, if not conservative. These assumptions applied to 507 of the 516 total responses that gave their employment figures. These businesses had an average of 35 employees, for total employees of the survey sample of 17,749 people.

Employment in the Survey was also recorded for permanent and contract employees. For contract employees, the average period of employment in the last 12 months was recorded. Using the same assumptions, it can be seen that of the 496 businesses that employed contractors an average of 14 contractors were employed for 4.3 months, which is an additional five FTEs. These businesses employed an estimated total of 7,059 contract employees in the last 12 months. The implication of this total is that about 24,800 people were employed at some time in the last 12 months by the survey businesses. This figure could be generally compared with the 35,007 figure recorded in the Census 2006, which would imply that the Survey captured the employers of 70 percent of employment in the industry.

3.5.1 Employment by sector Survey 2008

The table below shows the estimates for the total survey respondents in the first row, and then the estimates of total employment for each sector and the average employment per firm in the sector. The left hand side of the table is the permanent employees, and the right hand side the part-time and contract employees.

Table 3-2. Employment total and by sector from 2008 Survey

Sector	Firms	Employees (estimate)	Average	Firms	Contractors (estimate)	Average
All sectors	507	17,705	35	496	7,049	14
Forest ownership	11	503	46	11	1,186	108
Forest management	18	364	20	18	1,331	74
Silviculture	56	599	11	54	412	8
Logging	128	2,226	17	127	233	2
Logging and silviculture	27	473	18	27	1,389	51
Solid wood	92	5,327	58	92	868	9
Wood panels	5	375	75	5	29	6
Pulp, paper and tissue	7	1,762	252	7	293	42
Furniture	75	2,144	29	71	159	2
Transport etc.	18	1,057	59	18	131	7
Other	51	1,747	34	48	669	14
None given	19	1,131	59	18	350	15

Source: BERL FITEC Survey 2008

The table illustrates the comprehensiveness of the survey sample, and consequently the employment pattern shown is thought to be a sound representation of the industry.

What this information highlights is that, while the seasonal staff provide about one-eighth of the volume of labour required, the number of people who are seasonal or contract workers is over one third of the total people employed by the surveyed firms. The skills and training of these seasonal and contract staff is therefore a significant matter for the industry. We are aware from our interviews that training of the staff on large engineering contracts at major plants is of the highest standard, and that many harvesting and silvicultural contractors arrange training for their staff. We are also aware of the need for some basic, foundation work skills for many of the seasonal or contract workers especially those starting out on work in the forests.

Given that the Survey has information from over half of the industry, the profile of firm employment sizes in the sectors is likely to be relatively accurate.

3.6 Selected occupations in the forest industry in 2006

For the purposes of this research, BERL has focused on the following selected forest occupations. These occupation titles are used by Statistics New Zealand to classify

occupations in the forest sectors and are in the ANZSCO classification of occupations. Some of the occupation titles used by Statistics New Zealand do not match the occupation titles used in the industry. Where possible, we have used titles used by the industry, but we would recommend that FITEC work with Statistics New Zealand to improve the occupation titles and categories to better reflect skill and training requirements, and the tasks completed.

We have selected these occupations in consultation with FITEC, as the majority of people employed in the forest industry are employed within these categories.

Forestry worker In 2006, 3,228 forestry workers were employed in New Zealand, and this was the largest occupation in the forest industry. The majority of people in this occupation were employed in the forestry and logging sectors. The second largest area of employment was the forestry support services sector, employing 852 employees.³

Forestry production managers In 2006, 492 forestry production managers were employed in New Zealand, of which 279 (57 percent) worked in the forest industry. The majority of forestry production managers were employed in the forestry and logging sectors (117 employees). And a large proportion of forestry production managers were also employed in forestry support services (90 employees). Forestry production managers were also employed in solid wood processing and other wood product manufacturing in 2006 which illustrates that many of the businesses operate in a number of sectors.

Logging assistant Logging assistants was another large area of employment in the forest industry in 2006. Out of the 1,071 logging assistants employed in 2006, 687 of this number were employed in the forestry and logging sectors.

Logging plant operator In 2006, 324 logging plant operators were employed in New Zealand. Logging plant operators were predominantly employed in the forestry and logging sectors (192 employees).

Sawmill or timber yard workers Approximately 78 percent of all sawmill or timber yard workers in New Zealand worked in the forest industry in 2006. Sawmill or timber yard worker was the third largest occupation in the forest industry in 2006, with 2,400 employees. Of this number, the majority (2,025) were employed in the other wood product manufacturing

³ Forestry support services, within forest harvesting, is part of the broader Statistics New Zealand ANZSIC industry grouping 'Agriculture, Forestry, and Fishing Support Services'.

sector.⁴ The second largest area of employment for sawmill or timber yard workers was in downstream forest sectors such as wholesaling.

Wood processing machine operators In total, 2,931 wood processing machine operators were employed in New Zealand in 2006, of which 78 percent were employed in the forest industry. Wood processing machine operators were predominantly employed in other wood product manufacturing, and the forestry and logging sectors. Smaller numbers were employed in the furniture sector.

Wood machinists In the forest industry, other wood product manufacturing employed the majority of wood machinists in 2006, at 246 employees. In total, 65 percent of wood machinists were employed in the forest industry and others in furniture.

Wood and wood products factory workers Wood and wood products factory workers were also predominantly employed in other wood product manufacturing, with the second largest area of employment being furniture. Smaller numbers were employed across the remaining sectors.

Paper products machine operators In 2006, 243 paper products machine operators were employed in New Zealand, mainly in pulp and paper and other wood product manufacturing.

Paper and pulp mill workers Surprisingly there were only 135 people recorded as employed in this occupation in 2006, mainly employed in the pulp and paper industry. Clearly in the Census a majority of paper and pulp mill workers must have described their occupation in other terms.

Furniture finishers In 2006, 450 furniture finishers were employed in New Zealand, mostly in the furniture and other wood product manufacturing industries.

In addition, there is a wide range of occupations in the forest industry that provide support and services such as nursery growers and workers, heavy truck drivers, accountants, and engineers. Due to research constraints these occupations have not been included in this project but any increase in employment in the forest industry will impact on the demand for people in these occupations.

⁴ "Wood Product Manufacturing" is a Statistics New Zealand ANZSIC Level 2 industry grouping. This industry grouping includes sawn timber, panels, and other wood product manufacturing. To examine the selected occupations in more detail we have had to decrease the industry detail and this has been done by looking at the next level of industry groupings.

3.7 Employee turnover in the forest industry

One of the main needs for ongoing training is to replace people who leave an industry. Turnover can occur due to people leaving an industry or changing employer within an industry. When people leave an industry skill losses occur. If turnover is high due to people leaving an industry, more people will be needed and training or skill requirements will increase or change. Training or skill requirements change mainly as a result of people with previous work experience and existing skills and qualifications entering the industry along with new trainees.

Findings from our discussions in the forest industry indicate that people leave the forest sectors for a variety of reasons. These reasons include:

- Going overseas to work in a related industry such as the extractive industry in Australia.
- Working in a related industry in the same region or another region due to that industry offering more competitive salaries and working conditions. Some forest sectors are under pressure from expanding dairy industries, oil and gas industries in their region, and demand from Australia.
- Ownership changes and restructuring leading to the outsourcing of labour which may increase or reduce turnover depending on the contractor.
- People entering the industry to 'try it out' then moving on. This is predominantly younger people who are more mobile and do not have family or large financial commitments.

We have obtained information on employee turnover from a number of sources within the industry, and have measured the ratio of longer-term employees in the BERL 2008 Survey.

3.7.1 2006 Estimates of sector employee turnover

Employee turnover is an important issue for the forest industry yet it remains one of the least understood. There are a few estimates on the level of turnover within the various sectors and these figures from industry sources for 2006 provided a point of reference for the 2008 Survey.

Table 3-3. Estimated employee turnover 2006

Sector	Employee turnover 2006 estimate (% per annum)
Forestry and logging	18%
Solid wood	22%
Wood panels	10%
Pulp, paper & tissue	5%
Furniture	na

3.7.2 Response-based employee turnover estimates from the 2008 Survey

The 2008 Survey asked respondents the percentage of their permanent employees who had worked for their workplace longer than two years. This percentage provided an implied turnover rate for their business. We would stress at this point that this is NOT a turnover rate for their sector or the forest industry because the people who have left this firm in the last two years may have shifted to another firm in the same sector, or to another sector within the industry. We learnt from firms that the career paths in many of the sectors involved moving between firms and/or sectors to gain further experience. This was particularly so with people working in the forests for silvicultural and/or harvesting gangs. These people will often shift between employers to gain experience and/or promotion, to move from silvicultural work to harvesting, and later to move into the solid wood processing sector.

Of the 488 firms that answered this question in the Survey, 60 percent of their employees had worked for the business longer than two years and 40 percent had begun working for the businesses within the last two years. This implies that on average 20 percent of these employees started each year, and 20 percent left. Again, we would emphasise that these employees may have changed employer, but they may not have left the sector or the industry.

There are two other main findings from analysing the Survey responses. Firstly, the sectors fall into two groups for turnover, and secondly there are a small number of firms with high turnover per annum, and a large number of firms with low turnover per annum.

Table 3-4. Firms' employee retention and turnover

Sector	Firms	Share retained over 2 years	Implied turnover p.a.
Total	470	64%	18%
Forest owners	11	62%	19%
Forest managers	18	75%	12%
Silviculture	54	50%	25%
Logging	122	53%	23%
Silviculture and logging	25	66%	17%
Solid wood	92	62%	19%
Wood panels	4	82%	9%
Pulp, paper & tissue	7	77%	11%
Furniture	73	69%	16%
Transport	18	64%	18%
Other	46	57%	21%

Source: BERL FITEC Survey 2008

The margin for error in the two-year retention rate of 64% is +/- 4% (at 95% Confidence Intervals), which means it falls in the range 60% to 68%. The implied weighted average turnover therefore falls in the range 16% to 20%.

Within the sectors, silviculture and logging firms recorded turnover of 23-25% whereas those firms doing both silviculture and logging work recorded a lower turnover of 17%. Solid wood processing firms recorded turnover of 19%, while firms in the wood panels, pulp, paper and tissue, and furniture sectors recorded a lower average turnover of about 15% or less per annum.

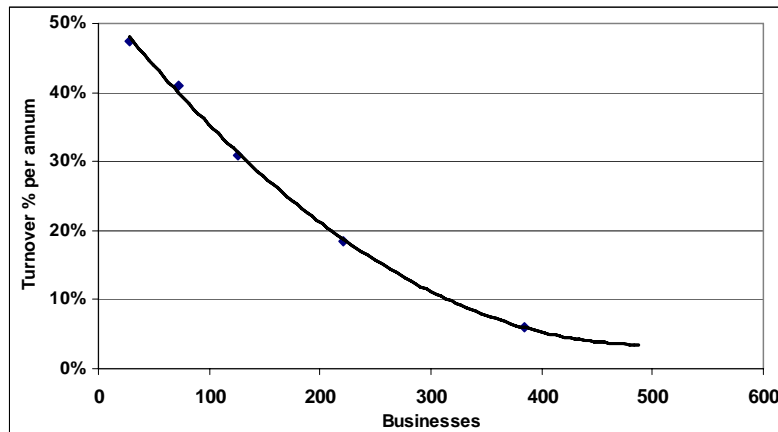
3.7.3 Retention rates by region

The retention rates, and thus implied turnover rates did not differ greatly between the regions and with these small sub-samples the differences are within the margin for error. The differences could also reflect the composition of employment by sector in each region.

3.7.4 Distribution of firms' turnover rates

The Survey responses indicated the retention rates, or the share of permanent employees who had worked for a firm for more that two years in five ranges. Using these five retention ranges we were able to plot the distribution of turnover at the mid-point of each range. The graph below illustrates this.

Figure 3.2. Turnover rates of businesses in Survey 2008



It shows that a small number of firms in the forest industry had employee turnover close to 50 percent per annum, while approximately 100 firms had employee turnover of over 35 percent. More importantly it also illustrates that over one third of the firms surveyed had turnover of less than 10 percent per annum. The line fitted to this data implies that the 488th business in the distribution had employee turnover of just 2.35 percent per annum.

3.7.5 Sector opinion on employee turnover

According to industry sources, turnover in the pulp, paper and tissue sector is approximately two to five percent. Most of this turnover is due to the outsourcing of maintenance work, and this work is going to contractors who are still associated with the sector. However, one industry player reported that turnover among core pulp workers has climbed to about 10 percent at present. This group of workers are very highly paid, but an ageing workforce means many are retiring from the demanding long shifts.

Employee turnover in the solid wood processing sector we believe usually falls between 15 and 18 percent, and in some physically demanding areas, like the sorting table, turnover can be as high as 30 percent. To counter this, some firms are introducing training and skills matrices and changing their team structures. These firms are achieving turnover rates well below five percent.

Turnover in the wood panels industry was approximately 17 percent in 2006. However, this figure is reasonable high and the industry believes that turnover is usually around eight percent. Many believe this turnover has occurred due to the employment drives of other expanding industries. For example, in the Southland region the wood panels sector is competing with other large employers such as Tiwai Aluminium Smelter, Fonterra, and Solid Energy.

The furniture sector has a reasonably stable workforce. However, over the last two years turnover has increased due to older family firms closing. The sector believes this trend is temporary, and that turnover will decrease. Any turnover that does occur is predominantly among 16 to 25 year olds who enter the sector to 'try it out' before changing career.

3.7.6 Assessed employee turnover 2008 by sector

Taking account of the turnover recorded by firms in each sector, and by a broad range of industry opinion on the differences between turnover at the firm level compared with at sector and industry, we assess the industry turnover experienced in each sector to be approximately as shown in the table.

Table 3-5. Assessed employee turnover by sector

Sector	Employee turnover	
	2006 estimate (% per annum)	2008 assessment (% per annum)
Forestry and logging	18%	18%
Solid wood	22%	12%
Wood panels	10%	8%
Pulp, paper & tissue	5%	5%
Furniture	na	5%

The relevance to the training needs is that whereas there is assessed to be 25 percent turnover in the silviculture sector (about 500 per annum) requiring training in basic work skills for that number, many will move on to logging and of the 15 percent turnover assessed for logging (about 750 per annum.) many will come from silviculture, and so need training mainly in specific logging skills. There may also be some of the assessed 12 percent recruits into solid wood (about 1,000 per annum.) who have come from logging. These would have general work skills for the industry, but require the set of skills needed to move through the promotion chain in the solid wood operation.

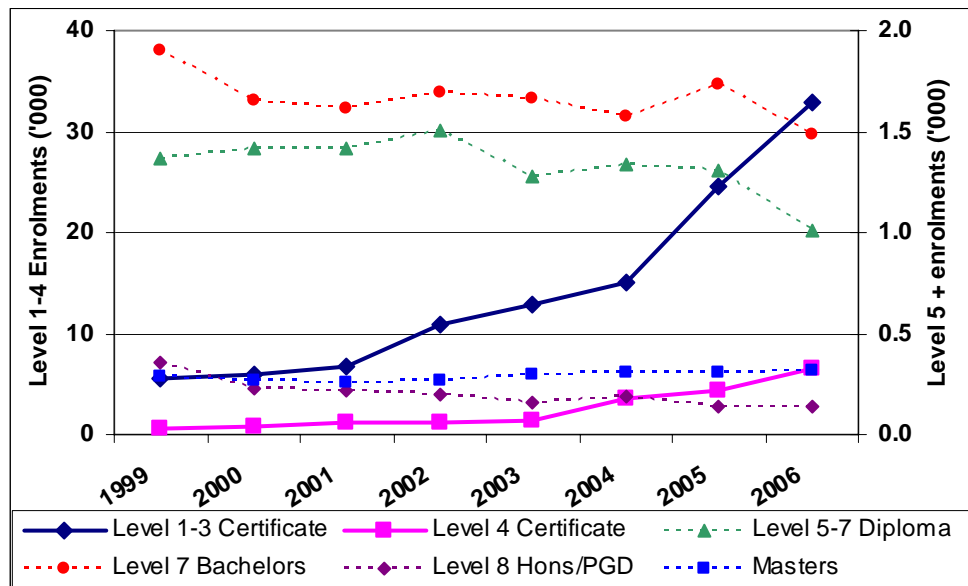
4 Training and skills in the forest industry

This section outlines the present situation of training, qualifications and skills in the forest industry.

4.1.1 Official data on training 1999-2006

The Ministry of Education uses a classification system called the New Zealand Standard Classification of Education (NZSCED) to record education statistics covering broad areas of study. The NZSCED broad field of study classification for forestry is Agriculture, Environmental and Related Studies.⁵ Data from the Ministry of Education between 1999 and 2006 shows that the number of people completing Level 1 to 4 certificates in this field of study has grown rapidly while the number of people completing qualifications above Level 5 has remained fairly stable.

Figure 4.1. Enrolment in Agriculture, Environmental and Related Studies by qualification level, 1999-2006



Source: Ministry of Education, Education Counts, Tertiary Education Statistics

The official data on tertiary training does not provide detailed information on the supply of qualified people into the forest industries. Instead it shows strong growth in the number of people completing Level 1 to 3 Certificates, and an increase in the number of people completing Level 4 Certificates in the broad field of study that includes forest industry skills.

⁵ According to NZSCED, Agriculture, Environment and Related Studies is the study of the theory and practice of growing, gathering, reproducing and caring for plants and animals. It also includes the study of the interaction between people and the environment and the application of scientific knowledge to the environment to protect it from further deterioration.

4.1.2 Training offered by tertiary training providers

The official data on tertiary training does provide some information on training providers and where students are studying, but again this information is limited as not all studies within the NZSCED classification of Agriculture, Environmental and Related Studies are completing forestry related training or qualifications.

The majority of university students completing studies in Agriculture, Environmental and Related Studies according to the Ministry of Education went to Massey, Lincoln and Canterbury Universities in 2006. Massey University offers a Bachelor of Applied Science in Forestry, Lincoln University offers a Bachelor of Commerce in Forestry, and Canterbury University offers a Bachelor of Forestry Science in their School of Forestry.

It is beyond the scope of this research to discuss the training provided by tertiary training providers. However, survey respondents have provided some information on the type of courses they offer as a training provider, the destination of graduates, the training they would like providers to offer, and the type of courses their employees attend,

For example, there is a high demand for timber machinist training. Waiariki Institute of Technology offers this training at a variety of levels and encourages students to complete training through to higher levels. In addition, Waiariki works with other training providers such as Canterbury and Waikato University to encourage students who are doing Diplomas in Forestry Management to do degrees, and for degree students to do forestry as part of their science or business qualification.

Another example is pre-employment training using polytechnics. Some firms will send their employees to health and safety training at a local polytechnic before they start work.

The Survey has created an opportunity for FITEC to work with tertiary training providers to influence student numbers, training programmes and content, and graduate destinations.

4.2 Skills and training in the forest industry to 2008

FITEC provides forest industry employees with skills and completed qualifications through training programmes, modern apprenticeships, and traineeships. During 2006 alone FITEC facilitated the completion of 1,973 qualifications for levels 2 to 5. However, findings from the 2008 Survey indicate there is the potential for FITEC to further increase the productivity and skills of people within this industry through targeted qualifications, training programmes, and professional development.

4.2.1 Modern apprenticeships

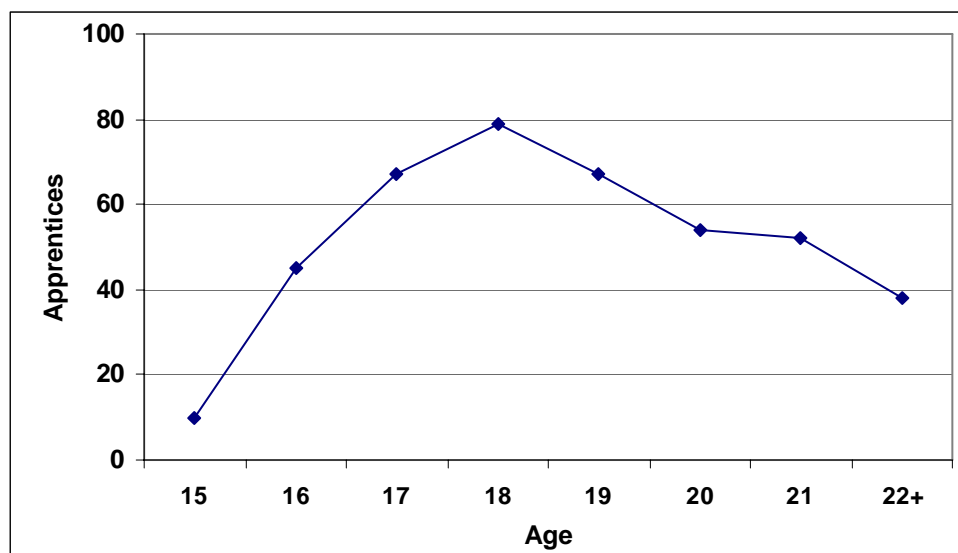
To be eligible for a modern apprenticeship you must be aged between 16 and 21. According to TEC figures for 2006, 47 percent of modern apprentices in New Zealand were aged 17 to 18 years old, 91 percent were male, and 77 percent were European.

In 2006, FITEC recorded that 412 people were completing modern apprenticeships in the forest industry. This was 4.4 percent of all modern apprentices in the Modern Apprenticeship Scheme. The majority of modern apprentices in the forest industry in 2006 were male, 17 to 19 years old, and European New Zealand/New Zealanders.

While the forest industry had a small number of female modern apprentices in 2006, 24 in total, the proportion of Maori female modern apprentices was one of the highest in the Modern Apprenticeship Scheme.

There is some room for people older than 21 year olds to become modern apprentices but in most industries this number is small. The forest industry had the second largest number of modern apprentices over the age of 22 years old. The only other industry with modern apprentices over this age was the horticulture industry.

Figure 4.2. Forest industry modern apprentices by age, 2006



Source: TEC

The number of Maori completing modern apprenticeships in the forest industry is growing. In 2006, 44 percent of male modern apprentices in the forest industry were Maori while 87.5 percent of female modern apprentices were Maori.

4.2.2 Trainees

In 2005, there were 13,466 trainees in the forest industry, in 2006 this number dropped to 12,472.⁶ The sectors with most trainees are the forestry and the solid wood sectors, though there is a good spread across all sectors.

Table 4-1. Forest industry trainees by sector, 2005-2006

Sector	2005	2006
Forestry and logging	7,083	6,574
Solid wood	3,125	2,887
Wood panels	956	890
Pulp, paper & tissue	1,027	926
Furniture	648	508
Biosecurity	513	498
Credit & finance	113	173
Total Trainees	13,465	12,454

Source: FITEC

By comparing FITEC data with Census data on the total number of people with qualifications in each sector (discussed in detail in the next section) we can obtain some indication of the number of trainees per person employed in a sector. The numbers in the table below are an indication, as coverage may differ between the two sources. For example, combining this information indicates that for every 100 people in the forestry and logging sector there are 104 trainees. There are two possible sources of error. Firstly, the total number of people in this sector as measured in the Census qualifications data is less than the number employed in the sector. Secondly, some trainees may indicate they are from the forestry sector when they are employed in another part of the industry.

⁶ The difference between trainee numbers is due to the classification of trainees, as some trainees are counted but are not assigned to a sector. We have only included those trainees assigned to a sector in our tables.

Table 4-2. The number of trainees per 100 people employed in a sector, 2006

Sector	Trainee numbers		Employment 2006	Trainees per 100 employed
	2005	2006		
Forestry and logging	7,083	6,574	6,339	104
Solid wood	3,125	2,887	6,747	43
Wood panels	956	890	1,569	57
Pulp, paper & tissue	1,027	926	3,720	25
Furniture	648	508	4,500	11
Biosecurity	513	498		
Credit & finance	113	173		
Total	13,465	12,454	34,893	36

Source: FITEC and Statistics NZ Census 2006

Nevertheless, the data indicates there is already a strong training culture in the forestry and logging, wood panels manufacturing and solid wood processing sectors.

The pulp and paper sector shows a smaller involvement in training, and this could perhaps be expected in a sector that has long been characterised by an ageing workforce. Although, this is changing as survey respondents in this sector indicate a considerable effort is being made in some workplaces to increase productivity through integrated training systems. These workplaces are experiencing the complementary benefits of experienced and less experienced people working together as a team, as integrated training systems mean employees have training and qualifications at a variety of levels

The low number of trainees per 100 people employed in the furniture sector could also reflect an older workforce and low turnover among highly skilled people. There is the potential in this sector for more training to be offered to younger people, focussing particularly on foundation work skills, to reduce turnover in this age group.

4.2.3 Trainee demographics

Looking at the demographics of trainees, of the 13,466 trainees in 2005, 9 percent or 1,115 were female. In 2006, the number of female trainees in the forest industry had increased slightly to 10 percent or 1,126.

In terms of ethnic groups, in 2005 44 percent of trainees identified themselves as European/Pakeha, 33.5 percent as Maori, and five percent as Pasifika. In 2006, the number of trainees who identified themselves as European/Pakeha increased slightly to 45 percent while the number of trainees who identified themselves as Maori had also grown slightly to 34 percent. The number of Pasifika trainees remained stable at five percent.

4.3 Qualifications in the forest industry in 2006

This section discusses the level of formal qualifications and training that people in the forest industry have gained through training on and off the job. Information for this section has been gathered from the Statistics New Zealand 2006 census and FITEC.

When we examine qualifications in the sectors, the majority of people in the forestry sectors in 2006 had no qualifications, followed by a number with Level 1 Certificates.

Table 4-3. Level of qualifications in the forest sectors 2006

	No Qualification	Level 1 Certificate	Level 2 Certificate	Level 3 Certificate	Level 4 Certificate	Total
Forestry and logging	2,517	1,317	825	786	894	6,339
Solid wood	3,009	1,275	762	762	939	6,747
Wood panels	600	276	213	123	357	1,569
Pulp, paper & tissue	1,320	720	477	318	885	3,720
Furniture	1,275	879	669	315	1,362	4,500
Other wood product manufact'g	2,130	1,578	1,098	633	2,229	7,668
Downstream industries	1,236	1,113	903	564	534	4,350
Total	12,087	7,158	4,947	3,501	7,200	34,893
Share (%)	35%	21%	14%	10%	21%	100%

Source: Statistics NZ Census 2006

The two exceptions to this situation are the furniture and pulp and paper sectors. In wooden furniture and upholstered seat manufacturing the largest group of people, 1,362 had Level 4 Certificates. However, even in this sector 55 percent of people had Level 3 qualifications or less and 22 percent of employees, or 1,275, had no qualifications. In pulp, paper and paperboard manufacturing, the largest group of people had Level 4 Certificates. In this sector 48 percent of people had Level 3 qualifications or less while 20 percent had no qualifications.

Table 4-4. Profile of qualifications in forest sectors 2006

	No Qualification	Level 1 Certificate	Level 2 Certificate	Level 3 Certificate	Level 4 Certificate
Forestry and logging	40%	21%	13%	12%	14%
Solid wood	45%	19%	11%	11%	14%
Wood panels	38%	18%	14%	8%	23%
Pulp, paper & tissue	35%	19%	13%	9%	24%
Furniture	28%	20%	15%	7%	30%
Other wood product manufact'g	28%	21%	14%	8%	29%
Downstream industries	28%	26%	21%	13%	12%
Total	35%	21%	14%	10%	21%

Source: Statistics NZ Census 2006

The solid wood processing sector had the largest number of people with no qualifications in 2006, with 2,454 employees with no qualifications and 1,014 people with Level 1 Certificates.

41 percent of people in this sector had no qualifications and 73 percent had Level 3 qualifications or less.

The second largest group of people with no qualifications were employed in the wooden structural fittings and components manufacturing sector, at 1,380 employees. However, this is not the largest group of people with qualifications in this sector. The majority of people in this sector have Level 4 Certificates, 1,884 employees.

A large number of employees in the logging sector had no qualifications, 1,146 employees, with the second largest group in this sector those with Level 1 Certificates, at 555 employees.

We should note that people in these sectors may have no qualifications as in whole certificates. They may have prior learning, work or life experience that enables them to be deemed competent in nationally recognised unit standards. A number of businesses are also using a team culture to encourage older and experienced employees to gain up-to-date qualifications.

4.4 Qualifications by occupation

When we examine qualifications within occupations, the majority of people in 2006 had no qualifications, followed by a number of those with Level 1 Certificates.

As shown in the table below, the largest number of people with no qualifications in 2006 were sawmill or timber yard workers. Within this occupation the second largest group in terms of qualifications was people with Level 1 Certificates. Sawmill or timber yard worker was the largest occupation examined in the forest industry. The majority of people employed in this occupation worked in the wood product manufacturing industry, which was also the largest forest sector examined.

Table 4-5. Level of qualifications in specific forest industries occupations, 2006

	No Qualification	Level 1 Certificate	Level 2 Certificate	Level 3 Certificate	Level 4 Certificate
Forestry Production Manager	87	45	45	69	66
Forest Scientist	111	84	48	75	51
Furniture Finisher	132	63	48	15	114
Wood Machinist	186	72	66	21	87
Wood Turner	18	6	6	0	18
Wood Machinist and other Wood Trades Workers nec	12	9	6	6	9
Paper Products Machine Operator	75	33	21	12	36
Wood Processing Machine Operator	1,122	504	249	213	420
Paper and Pulp Mill Worker	141	51	30	27	39
Logging Plant Operator	48	15	12	9	30
Sawmill or Timber Yard Worker	1,449	534	327	165	219
Wood and Wood Products Factory Worker	369	132	72	48	75
Forestry Worker	1,203	540	300	303	291
Logging Assistant	354	189	114	123	117
Tree Faller	93	48	18	21	45
Farm, Forestry and Garden Workers nec	87	57	48	24	36

Source: Statistics New Zealand, 2006 census

The occupation of forestry worker had the second largest number of people with no qualifications. Within this occupation the next largest group in terms of qualifications were those with Level 1 Certificates. Forestry workers were predominantly employed in the forestry and logging sectors, and this was the largest occupation within these sectors. These sectors have an ageing workforce, with the majority of employees over 35 years old. This could account for the low number of people with no qualifications or less than Level 3 qualifications. However, the number of young Maori employed as forestry workers is growing and this group may be a target market for training and professional development.

There are signs of increasing qualifications in most occupations, or at least the potential to increase the qualifications level. For some main occupations, namely wood processing machine operators, forestry workers and sawmill or timber yard workers there are more people with level 1 to Level 3 qualifications, that can all potentially staircase up to the level 4 qualifications. The fact that there are already relatively large numbers with Level 4 qualifications indicates that this process is probably already underway.

Businesses visited in the survey have said that one of the main needs especially in the solid wood sector and pulp and paper going forward will be to upskill the wood processing machine operators to transition to the electronic process controls.

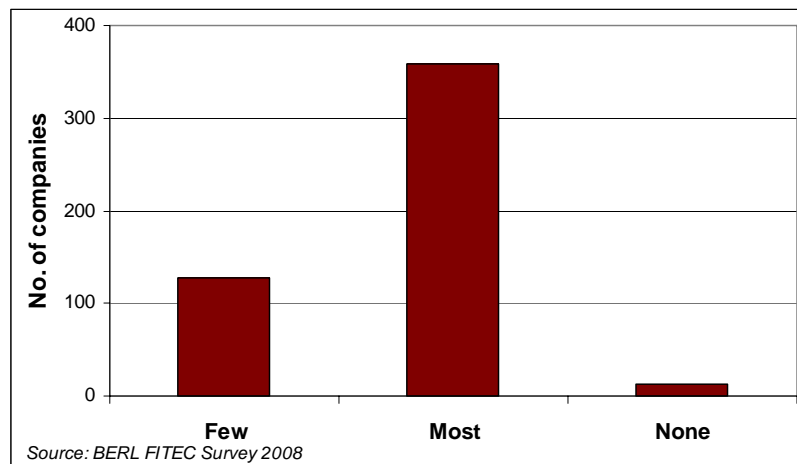
4.5 Assessment of present skills position

As discussed in Section 3.8, our assessment from examining the information on trainees and modern apprentices supplied by FITEC is positive. The relevant industry sectors have approximately 35,000 employees and of this number approximately 14,000 or just over 40 percent are participating in training. We recognise that many of these trainees are not

completing 20 credits or more and are not considered full-time trainees. However, these trainees have been recruited into the training system, and therefore have the potential to be encouraged into further training.

Our positive assessment of FITEC's present skills and training position is reinforced by the findings from the Survey. Of the 511 firms that responded to this survey question, approximately 360 recorded that most of their staff had received formal training. As shown in Figure 4.3, only a small number of businesses had employees with no formal training.

Figure 4.3. Employees with Formal Training 2008



While the survey does not ask where employees received their formal training, it is a positive sign for the forest industry that a large number of employees in the industry have received formal training. This is particularly reassuring for the industry given the large amount of on-the-job training that occurs where new employees are trained by existing employees.

However, the Survey has also highlighted issues around completion of training and qualifications, and the relevance of training and/or qualifications to occupations. These issues are explored further in the next section.

5 Industry training outlook

This describes the skills that are important to the forest industry and its sectors now and looking forward to 2011. It also considers the industry's commitment to training now, and the types of training that the firms need now and in future.

5.1 Skills important to the forest industry

In the BERL 2008 Survey, firms were asked to nominate the skill types they considered 'Most important', 'Important', 'Somewhat important' and 'Least important' to support their workplace/business now and in 2011. The Survey listed eight skill types in a relatively random order. These skills were:

- Core skills (numeracy, literacy)
- People skills (communication, team work, problem-solving, life skills)
- Regulatory skills (health and safety, driver's licence)
- Computer skills (computer skills, IT skills)
- Technical skills (specialist skills related to a technical position such as machine operators)
- Trades skills (specialist skills used by an advanced operator or specialised tradesperson)
- Professional skills (specialised skills used by a professional)
- Leadership skills (demonstrating leadership at any level).

In analysing these skills we grouped them into three main classes:

- *Basic competencies*: Core skills (literacy and numeracy) and computer skills.
- *Applied skills*: Technical skills, trade skills, regulatory skills, and professional skills.
- *Soft skills*: People skills and leadership skills.

Survey respondents clearly consider skills important to their business. Of the 516 survey respondents, 92 percent listed all eight skills. And each respondent classed over five skills

as 'Most important' or 'Important' to support their workplace/business, and only two skills as being 'Somewhat important' or 'Least important'.

5.1.1 Skills important to the forest industry in 2008

Analysing what firms considered 'Most important', 'Important', 'Somewhat important' and 'Least important' to support their workplace/business in 2008, survey respondents listed a large numbers of skills as 'Most important' or 'Important'. Of the total 516 survey responses to this question, on average each listed 2.4 skills as being 'Most important', 2.8 skills as being 'Important', and just 1.2 skills as being 'Somewhat important' and 0.9 skills as 'Least important'.

In 2008, technical and people skills are the most important skills needed to support a business in the forest industry. Leadership, regulatory and core skills are considered important, while computer skills are the least important.

Table 5-1. Importance of skill types, 2008

Skills types	Most important	Important	Somewhat important	Least important
<i>Basic competencies</i>				
Core skills (literacy, numeracy)	115	200	105	48
Computer skills	36	124	128	175
<i>Applied skills</i>				
Technical skills (e.g. machine operator)	240	152	45	35
Trade skills (advanced e.g. a trade)	199	162	63	52
Regulatory skills (Osh, driving)	196	207	70	10
Professional skills (specialist)	109	164	90	94
<i>'Soft skills'</i>				
People skills (team work, life skills)	205	222	51	11
Leadership skills (at any level)	162	234	66	15

Source: BERL FITEC Survey 2008

To provide a less complex interpretation of these opinions, we have compared the skills based on the proportion of the survey respondents who rated them 'Most important'. We have also compared the skills by weighting the rank of importance (Most important =4; Important =2; Somewhat important =1; and Least important =0). The results of this weighting are shown below in Table 5-2.

Table 5-2. Ranking of important skills, 2008

Skills types	Most important Rank	Weighted Rank
<i>Basic competencies</i>		
Core skills	6	6
Computer skills	8	8
<i>Applied skills</i>		
Technical skills	1	1=
Trade skills	3	4=
Regulatory skills	4	3
Professional skills	7	7
<i>'Soft skills'</i>		
People skills	2	1=
Leadership skills	5	4=

Source: BERL FITEC Survey 2008

The weighted approach did not change the rankings much from the 'Most important' approach. However, it did bring people skills up the rankings from second, to first equal with technical skills. Regulatory skills increased one rank to third, and leadership skills also increased one rank to be fourth equal with trade skills.

Firms that responded to the Survey gave the lowest overall priority to basic competencies, including computer skills. However, 329 (or 64 percent) of the 516 firms that responded to this question said that core skills such as literacy and numeracy were either 'Important' or 'Most Important' to support their workplace in 2008.

Many said that without basic people and life skills employees do not stay long enough to get the most important ingredient – experience. Once employees have work experience, they can be trained and gain the technical, trade and regulatory skills needed for their role. This picture is borne out in the rankings, with technical and people skills ranked the highest followed by the 'teachable' trade and regulatory skills, and the increasingly important leadership skills, which complement people skills.

Professional skills rank low in the list. This could be because smaller businesses would not necessarily employ professionals as part of their staff and may assume these skills will be available as needed.

5.1.2 Skills important to the forest sectors in 2008

The ranking of skills by importance was estimated for each of the forest sectors. The forest ownership and forest management sectors ranked skills similarly, and since the sample numbers were not large we have combined this information. The wood panels and pulp,

paper and tissue sectors also ranked their skills similarly so we have also combined these sectors.

The table below illustrates the rankings given to skill types by the forest-based sectors.

Table 5-3 Skills rankings for forest-based sectors

Sector	Forest ownership & management		Silviculture		Logging		Logging and silviculture	
	Most importnt	Weighted importce	Most importnt	Weighted importce	Most importnt	Weighted importce	Most importnt	Weighted importce
<i>Basic competencies</i>								
Core skills (literacy, numeracy)	2	2	7	7	7	7		
Computer skills	7=	7	8	8	8	8		
<i>Applied skills</i>								
Technical skills (e.g. machine operator)	5=	5	5=	6	1	1	4	3
Trade skills (advanced e.g. a trade)	7=	8	4	4	3	4		
Regulatory skills (Osh, driving)	4	4	1	1	2	2	2	2
Professional skills (specialist)	5=	6	5=	5	6	6		
<i>Soft skills'</i>								
People skills (team work, life skills)	1	1	2	3	4	3	1	1
Leadership skills (at any level)	3	3	3	2	5	5	3	4

Source: BERL FITEC Survey 2008

Survey respondents have indicated the importance of all skills in the forest industry. However, firms within each sector have also emphasised particular skill types that are important to support their workplace. What these skills are depends on what sector of the industry a firm was responding from.

In the silviculture sector, regulatory and leadership skills were considered the most important skills for employees to have to support a workplace in 2008. Employees working in silviculture crews need a driver's licence to get to the skid site or forest, and should be aware of health and safety issues. Similarly in the logging sector, technical and regulatory skills were considered the most important skills to support a workplace due to the need to safely operate and drive machinery.

Survey respondents in both of these sectors emphasised the need for crew members to be competent and understand the process of what they are doing, and from there, it is easier to teach them the skills required for the job.

People and leadership skills were considered important in the silviculture sector, but were not given as high a ranking in the logging sector. However, when these sectors are combined people skills is the most important skill needed to support a workplace. Harvesting and silviculture crews work as a team, and survey respondents emphasised the importance of members of a crew getting along and working together. These comments were often linked back to people understanding the work process and the impact of absenteeism on the team as well as production. Leadership skills were also considered

important for leading a small team of people in the forest, knowing where to go for additional support or help, and motivating the crew and helping them with their self-motivation.

In the forest ownership and management sector, people and leadership, and core skills were again emphasised. Survey respondents in this sector are forest owners and managers actively involved in the process. These respondents indicated the need for people and leadership skills to work with customers and associated industries such as pest control and transport, employ harvesting and silviculture crews, and manage the sale of logs.

This second table illustrates the skills rankings for the wood-based sectors and services contained in the 'Other' sector. We have omitted the transport sector from this table because only two skill types were given overwhelming importance and these were regulatory (undoubtedly driver's licence) and technical skills.

Table 5-4 Skills ranking for wood-based sectors

Sector	Solid wood		Wood panels, pulp & paper		Furniture		Other	
	Most important	Weighted importance	Most important	Weighted importance	Most important	Weighted importance	Most important	Weighted importance
<i>Basic competencies</i>								
Core skills (literacy, numeracy)	6	6	5=	6	4	4	5	5
Computer skills	8	8	8	7	8	8	8	8
<i>Applied skills</i>								
Technical skills (e.g. machine operator)	1	1	1	1	2	2	2	2
Trade skills (advanced e.g. a trade)	2	3	2	2	1	1	6	7
Regulatory skills (Osh, driving)	5	5	5=	5	6	6	3	3
Professional skills (specialist)	7	7	5=	8	7	7	4	6
<i>Soft skills'</i>								
People skills (team work, life skills)	3	2	3=	4	3	3	1	1
Leadership skills (at any level)	4	4	3=	3	5	5	7	4

Source: BERL FITEC Survey 2008

In the wood-based sectors, the skill rankings were also very uniform. In these sectors, technical and trade skills were considered the most important skills but again an emphasis was placed on the soft skills.

Survey respondents reiterated the need for technical skills and experience as well as the ability to problem solve. Problem-solving was considered particularly important in the solid wood processing and wood panels sectors as operators are required to anticipate or prevent problems, or solve production problems as they occur.

Employees in the wood-based sectors may do shift work. In these workplaces, working as a team and providing leadership were considered important skills. Other people skills considered important in the wood-based sectors include being able to communicate with people, lead by example, and show initiative.

While trade and technical skills were considered the most important in the furniture sector, people skills were also highly ranked. People in the furniture sector may work in small teams

or large factory environments. Being able to work as a team was considered important no matter what size firm you were employed in. Many furniture businesses use a buddy or mentor system to train their apprentices or trainees. In these workplaces, people skills were important as the apprentice or trainee was often working one-on-one with another tradesperson.

5.1.3 Qualitative opinions on skills in 2008

Survey respondents have indicated that a variety of skills are needed in the forest industry in 2008. In general, literacy and numeracy skills are important for measuring and reading plans, as is mechanical aptitude and the ability to maintain machinery. Manual skills are important in many forest industry sectors and this is unlikely to change between now and 2011 despite changes in technology. However, computer skills will become more important as sawmills and plants become more automated.

The following illustrates skill requirements that have been emphasised by a sector in the course of this research.

Harvesting Forest harvesting contractors require experience and knowledge of the forest industry, as well as management skills to run their business.

Junior staff members need to be physically fit and have a driver's license. As they progress, computer and numeracy skills become more important.

Senior forest mensuration workers need people skills as they work in a two person team but they also need to motivate junior team members to complete their diploma and further training.

Machine operating Machine operators need basic computer skills to read screens and monitor what is going on. Team leaders require communication and team-work skills, as machine operators often work in teams.

Furniture and Upholstery Technical drawing, basic maths, common sense, communication and people skills were listed as skills needed to work in the furniture industry.

Furniture companies may be small and specialise in furniture repairs and upholstery. Upholstery work is often specialised one-off work. People working in these firms need to be multi-skilled in terms of being able to cut, sew and apply the upholstery. Often, to sustain the business, these employees will move into retail such as drapery and Manchester and will also require customer and client relation skills.

In furniture manufacturing companies, people tend to work in one area rather than move throughout the factory and are therefore required to have set skills. Computers and machines are used to shape and cut furniture components as well as apply veneer. People involved in machining require machine operating skills, which in some factories can involve CNC machine operating skills. Operating the machine is a semi-skilled occupation, but programming the machine is skilled. While machining staff do not require computer skills, the ability to understand the machine and be able to maintain it when there are faults is important.

People who assemble furniture for manufacturing companies often have cabinet-making skills, particularly if the factory assembles their furniture prior to dispatching it.

5.1.4 Skills important to the forest industry in 2011

Overall, survey respondents believed skills were even more important in 2011. Again, respondents listed a large number of skills, especially in the categories of higher importance.

Of the 516 businesses who responded to this question, on average each listed 5.6 skills of higher importance (2.9 skills as 'Most important', and 2.7 skills as 'Important'), and just 1.5 skills as 'Somewhat important' or 'Least important'.

There were nuance changes in the importance of some skill types compared to 2008 rankings. In the ranking analysis, core skills and computer skills continued to be ranked near the bottom, but there was a significant increase in the number of firms who considered computer skills important in 2011.

Increasingly, all of the applied skills were seen as 'Most important'. And a larger number of businesses thought soft skills would be 'Most important' rather than just 'Important' in 2011.

Table 5-5. Importance of skill types, 2011

Skills types	Most important	Important	Somewhat important	Least important
<i>Basic competencies</i>				
Core skills (literacy, numeracy)	125	204	84	35
Computer skills	67	180	98	101
<i>Applied skills</i>				
Technical skills (e.g. machine operator)	262	138	38	24
Trade skills (advanced e.g. a trade)	225	152	48	36
Regulatory skills (Osh, driving)	215	190	52	8
Professional skills (specialist)	135	152	67	78
<i>'Soft skills'</i>				
People skills (team work, life skills)	234	200	35	6
Leadership skills (at any level)	213	197	40	16

Source: BERL FITEC Survey 2008

The ranking of the 'Most important' skills for 2011 are mainly the same as the ranking of the 'Most important' for the present, with the exception that professional skills are seen as 'More important' than Core skills in the future.

The weighted rankings are also substantially the same for 2011 as they are for the present.

Table 5-6. Ranking of important skills, 2011

Skills types	Most important Rank	Weighted Rank
<i>Basic competencies</i>		
Core skills	7	6
Computer skills	8	8
<i>Applied skills</i>		
Technical skills	1	1=
Trade skills	3	5
Regulatory skills	4=	3=
Professional skills	6	7
<i>'Soft skills'</i>		
People skills	2	1=
Leadership skills	4=	3=

Source: BERL FITEC Survey 2008

In 2011, higher importance is being placed on applied and soft skills. However, a large number of businesses believe basic competencies like literacy and numeracy are important for their business now and in 2011. In fact, 329 businesses in the Survey felt that these core competencies would be 'Most important' or 'Important' for their businesses success in 2011. This is 64 percent of all businesses, so the need for these skills is well recognised, though not of such high priority at present as the other classes of skills.

5.1.5 Qualitative opinions on skills in 2011

Looking towards 2011, firms in the forest industry have indicated the need to move towards more of a small team environment in the workplace. This will occur as businesses increase productivity by investing in equipment and machinery and reduce staff numbers.

In this environment, the key skills will be the ability to multi-task, think ahead, and solve problems. Soft skills, such as communication skills, people management and conflict management, will also become very important. Communication skills in particular will focus on the ability to listen and talk to customers and/or other team members, and interact and work together as a team to complete tasks. These skills, unlike technical skills, are difficult to teach.

Leadership skills will also become more important as small teams will require team leaders. Often within teams, individuals will be expected to be responsible for a particular area such as health and safety, training or quality.

Machine operators Skill requirements for machine operators will remain the same between now and 2011. Basic mechanical or electrical understanding will continue to be useful for understanding how things work, fault-finding, trouble-shooting, and quality control. And machine operators will need to be able to look at the big picture and have a general understanding of how things work.

Regulator skills will remain important. Training will need to be both off-site prior to starting work and then completed on the job, often in a buddy training system.

Furniture manufacturing People and leadership skills will remain important in the furniture sector, but the level of skill needed in this area in 2011 will vary depending on the size of the business.

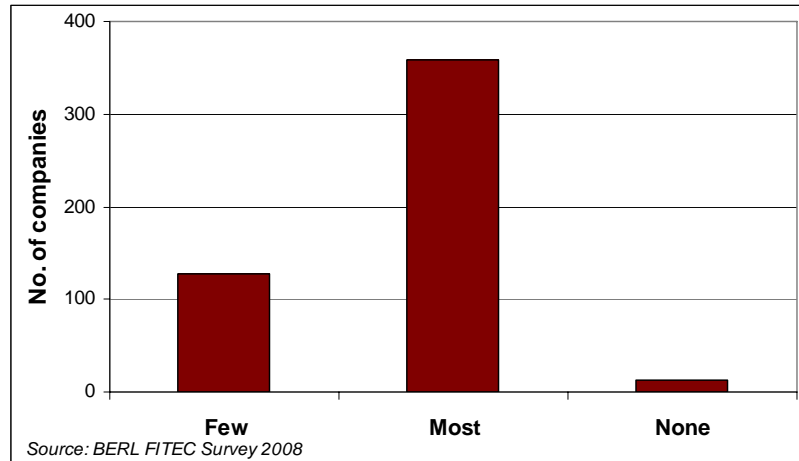
In a large factory environment, where team leaders work with staff everyday, people and leadership skills will be required to work on the factory floor with staff as well as when interacting with management. In smaller factories and workshops, team leaders or supervisors will continue to need leadership skills to manage a small team, as well as small business management skills.

5.2 The forest industry's commitment to training

A commitment to training in all sectors of the industry has been observed in our interviews and recorded in the 2008 Survey. In fact, most of the parameters measured in the Survey have had very similar responses across the sectors.

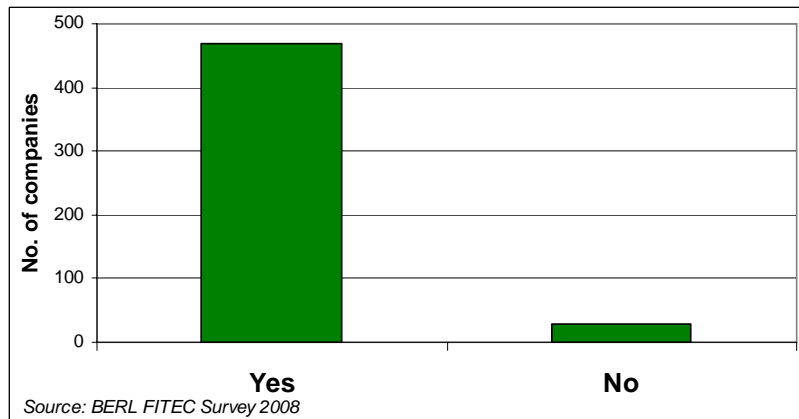
To the question of the present extent of formally trained staff, of the 498 Survey respondents, 70 percent said most employees have had formal training, 27.5 percent said few employees have had formal training, and only 2.5 percent said no employees have had formal training. This is shown graphically in Figure 5.1.

Figure 5.1. Employees with formal training, 2008



To the question asking whether firms believe they need to invest time or money in training their employees or staff to acquire the skills needed by their workplace, of the 497 respondents 92 percent replied 'Yes', and only 8 percent replied 'No'. This is shown graphically in Figure 5.2.

Figure 5.2. Companies' recognised need to invest in training



5.2.1 Commitment to training by the forest industry sectors

The incidence of firms that said most employees had formal training varied little across the sectors, but the share of firms that recognised the need for training was very high in all sectors.

Table 5-7 Share of sectors' firms committed to training

Sector	Most employees have formal training	Recognise need to invest in training
Forest ownership	91%	100%
Forest management	78%	89%
Silviculture	80%	88%
Logging	83%	87%
Logging and Silviculture	81%	96%
Solid Wood	35%	94%
Wood panels	60%	100%
Pulp, paper and tissue	71%	100%
Furniture	69%	97%
Transport etc.	61%	94%
Other	76%	92%
All Sectors	70%	92%

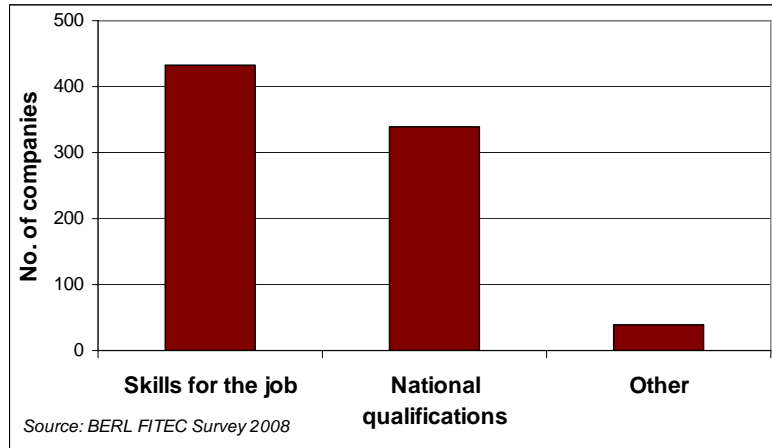
Source: BERL FITEC Survey 2008

Firms that responded to this survey question from the solid wood processing sector indicated that only 35 percent of their employees had formal training. This is well below the average of 70 percent recorded across all sectors. However, 94 percent of the firms in the solid wood processing sector recognised the need to invest in training, which is two percent higher than the average.

5.2.2 Types of training needed

Firms in the forest industry are committed to obtaining two main types of skills for their staff, namely skills for the job and national qualifications. Of the 499 firms that responded to this question, 84 percent said in the future they need to invest in skills for the job, while 66 percent said they need to invest in national qualifications, and 8 percent said they need to invest in other training. This is shown graphically in Figure 5.3 below.

Figure 5.3. Types of training needed



It is clear from Survey responses that firms are committed to investing in training, and that they have a strong awareness of a need to invest in skills for the job and national qualifications. The figures for all the sectors are in Table 3-1 Table 5-8 below.

Table 5-8 Share of sectors' firms needed main skill types

Sector	Firms need Skills for the Job	Firms need National Qualifications
Forest ownership	91%	55%
Forest management	67%	56%
Silviculture	80%	73%
Logging	84%	70%
Logging and Silviculture	93%	70%
Solid Wood	89%	53%
Wood panels	100%	0%
Pulp, paper and tissue	100%	43%
Furniture	84%	61%
Transport etc.	83%	83%
Other	71%	75%
All Sectors	83%	65%

Source: BERL FITEC Survey 2008

This picture was similar across most main sectors with an awareness of the need for skills for the job at 85 percent or above for some sectors, and the need for national qualifications at over 70 percent for silviculture and logging.

5.3 Industry training programmes

The commitment of the forest industry to training and qualifications is also illustrated in the wide range of training programmes that firms operate in their workplaces. These training programmes vary in complexity from buddy systems where an experienced worker guides

and works with an apprentice or trainee, through to skills and training matrices that outline an employee's training programme over a 10 year period.

Large companies in the forest industry such as in the solid wood processing, and pulp, paper and tissue sectors use a matrix to determine the skill and training requirements of their employees. The fundamentally important aspect of these matrices is that they include formal training modules and recognise the experience gained by the employee in various roles, carrying out various tasks on-the-job.

The matrix is accessed by the staff member and their employer, and the employee uses the matrix to plot their skill and training requirements. This allows the employer and the employee to see where training needs are, where an employee's knowledge is getting ahead of or out of balance with their practical experience, as well as allowing the employer or team leader to ensure they have the balance of skills necessary for their team. This can indicate where specific people require upskilling. The skills and training matrix is also used in performance reviews.

Most people who start on the skills and training matrix have been employed for three to six months prior to starting this training programme. Also, when the employee reaches a certain point in their training they are expected to become a trainer themselves, as they will likely have a good knowledge of the area they are working in. This allows people who are highly skilled operators to demonstrate their ability.

Most employers we spoke to using the skill and training matrix attempt to promote staff from within their team to be team leaders. They also attempt to train staff in more than one area to improve efficiency, and to compensate for when people are away, on leave, or completing overtime. This has become particularly important with a move to five weeks annual leave.

The skills and training matrix can also allow people in the mill, plant or factory to understand the materials they are working with and get an introduction to the other trades they are working alongside. It specifically allows employees to voice their ongoing skill needs and take responsibility for their skills development. This can help them in their career planning, allow them to make the right career choice, and increase productivity through increasing their skill level.

The matrix can include soft skills and competencies. It would seem to be practicable to develop templates or rubrics of skills training matrices for some of the main sizes and types of businesses in the forest industry sectors.

5.4 Skill and training requirements towards 2011

A publication by the Ministry of Education entitled “Advanced trade, technical and professional qualifications” discusses the impact of changing technology on the demand for advanced skills and knowledge. This publication notes that, “while new technologies can be labour saving, they require employees to redevelop their skills and they create increased demand for specialist skills in the installation, operation and maintenance of the technology.”⁷

While there will be no great change in training requirements within the solid wood processing sector, more technology will be used in sawmills. This will create a need for more people in technical roles due to an increase in the use of scanners and Programmable Logic Controllers (PLCs) to cut closer tolerances and reduce waste. The training framework will need to recognise and look at adding unit standards from other trades such as electrical and mechanical into the FITEC national certificates.

Machine operators in all sectors of the forest industry will require technical skills for fault finding, particularly as more machines are operated using PLC programmes. Machine operators will also need to have basic mechanical engineering skills to care for the machinery and equipment, and to make minor repairs and adjustments.

Machine operators working in harvesting crews will require more mechanical skills as harvesting contractors invest in more machinery and decrease the number of people they require on the ground. Investment in machinery will increase with an increase in harvesting.

Forest mensuration will grow as an area of employment in the forest industry as forest owners require their services for valuation and insurance purposes, and increasingly independent carbon assessment for carbon monitoring. The skill requirements for people in junior roles are not expected to change markedly during this period, but people employed in senior roles may require more of an ecology background and a greater scientific knowledge due to collecting samples for laboratory testing. They will also require more technical skills as the amount of field work decreases and remote sensing increases.

In turn, if firms in the forest industry downsize they will also need to invest in training their remaining staff to ensure these employees have the right skills to operate the business.

⁷ Ministry of Education. “Advanced trade, technical and professional qualifications: Identifying demand”. April 2008.

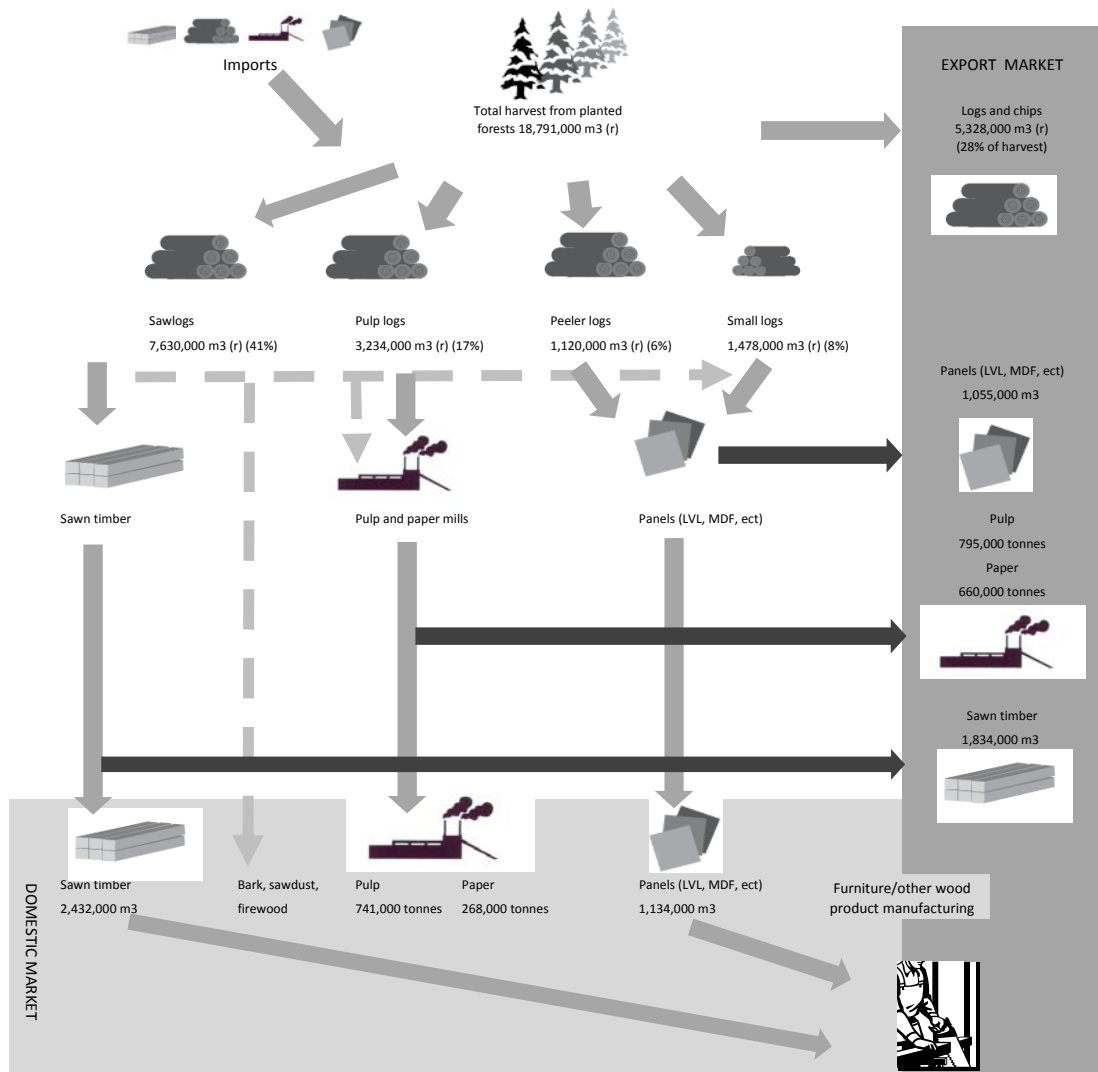
6 Forest Industry Production Sectors

This section outlines the present dynamics of the forest sectors, the macroeconomic environment that the industry faces, and the business intentions of the firms in each sector. These business intentions include whether or not they intend expanding their firm and their employment.

6.1 Dynamics in forest sectors

New Zealand has about 1.8 million hectares of plantation forests. As indicated in Figure 6.1, in 2006 one third of New Zealand's logs were exported as logs, one third of our logs went to sawmills and plywood mills, and the final third went to the pulp, paper and reconstituted panel industries.

Figure 6.1. Wood flow in the New Zealand forest industries, 2006



6.1.1 *Forest harvesting*

Over the last eight years the total harvest from New Zealand's plantation forests has increased from 10 to 17 million cubic metres. In 2006, the total harvest was approximately 18 million cubic metres. This growth in the volume of wood harvested is expected to continue through till 2011 according to the age profile of New Zealand's forests.

The amount of land planted in forest varies yearly, and there are constraints on the amount of land that can be planted in forestry due to finite space. Provisional estimates of forest planting for 2006 from the Ministry of Agriculture and Forestry (MAF) indicated that the amount of harvested areas replanted was approximately 26,000 hectares, while the amount of new forest land planted in the winter of 2006 was 5,000 hectares.⁸

Historically, forest replanting has increased over time with an increase in the volume of wood harvested. However, this changed in 2005 due to reduced harvest levels. And as a result, the amount of seedlings sold in 2006 was 14 percent lower than the total sold in 2005.⁹

A reduction in forest replanting is not an issue in 2006 but it could influence the demand for labour and skill/training requirements in 2011. Forest management companies and forest owners are replanting areas that are being harvested but very little new planting is occurring.

The volume of wood harvested in New Zealand is influenced by prevailing market conditions such as the exchange rate, international log prices, and the demand for timber for housing; the decisions of forest owners; the age of forests and the amount of wood available to harvest; and land conversion.

The trend has been to export one third of New Zealand's logs as logs. The extent to which this continues will influence projections of employment as well as where people are employed, and skill and training requirements. Fluctuating international log prices, high shipping costs, the exchange rate, and the decreasing demand for timber in the United States and Australia has seen forest owners processing their logs for the domestic market rather than exporting.

Owners' harvesting intentions The intentions of forest owners are similar to those detailed in the MAF wood availability forecasts where large forest owners will continue to harvest to cutting plans. Some regions will see an increase in harvesting during the period that this

⁸ MAF gathered this information from surveys of community forestry tree nurseries conducted in November 2006. From this survey they then estimated the total areas of planting by species or species group. These are residual values where total planting – replanting = new planting.

⁹ Ministry of Agriculture and Forestry. www.maf.govt.nz.

report covers. These regions are Northland, the East Coast, Marlborough, and parts of the Central North Island. This increase in harvesting will impact on the skill and training requirements in these regions. In other regions, harvesting is expected to remain stable but the harvesting intentions of small forest owners will impact on this forecast. The number of small forest owners is large and for many their harvesting intentions are based on whether or not they can achieve their price expectations for the logs. The harvesting intentions of small forest owners in regions such as Otago-Southland, Canterbury, Marlborough, and the Lower North Island will influence the demand for harvesting and silviculture contractors and could create skill shortages in these regions, particularly at times of high log prices.

Owners' land conversion intentions According to MAF, one third of forests harvested in 2006 were not replanted as the land was converted to farming, particularly dairy farming. This land conversion can be seen in areas such as the central North Island and Canterbury, where the land is more suitable for conversion. However, there are areas where the land is more suitable for forestry such as Marlborough.

6.1.2 Solid Wood Processing

The largest concentration of solid wood processing is in the central North Island where most mature forest plantations are located. However, there are other processing 'clusters' in regions such as Nelson, Marlborough, Canterbury, Hawke's Bay, Northland and in the Southern South Island.

The majority of sawmills in New Zealand produce less than 20,000 cubic metres, and sawmilling ownership falls into three broad groups:

- Large, vertically integrated businesses that supply mainly commodity and export markets.
- Small to medium-sized privately owned businesses that provide niche market products.
- Foreign-owned sawmills that focus on a narrow range of products and markets.

The yield recovery of saw logs is 20 percent chip, 7 percent sawdust which is burnt on-site for energy, and 55 percent conversion to timber. Scanners within mills have increased the yield recovery of saw logs.

Some of the major players in this sector include Juken New Zealand Limited, CHH Wood Products, Blue Mountain Lumber, Nelson Forests, Westco Lagan, Red Stag, and Tenon.

6.1.3 Wood Panels Manufacturing

Wood panels manufacturing covers a range of activities, mainly producing composite and laminated products. Composite panels include medium density fibreboard (MDF) and particle board, and laminated manufacturing includes veneer, plywood and laminated veneer lumber (LVL). Similar to solid wood processing, there are processing clusters in regions such as Nelson, Canterbury, Northland, and the East Coast.

Growth within this sector has varied with plywood and veneer production trebling over the last 10 years while reconstituted boards has grown more slowly.

Some of the major players in this industry include Juken New Zealand Limited, Nelson Pine Industries, CHH Wood Products and Pinepanels, Laminex Group, and Gunns Veneers.

6.1.4 Pulp, Paper and Tissue Manufacturing

The pulp, paper and tissue mills are concentrated in the Central North Island where the mature plantation forests are located. Major players in this industry include Norske Skog, CHH Pulp and Paper, Pan Pac, Winstone Pulp International, and SCA Tissue.

The raw material comes from the residuals from solid wood processing as well as lower quality pulp logs. A significant volume is from sawmill chip, and on average 20 percent of all saw logs goes into pulp, panels and chips. There is also increasing volumes of papers re-cycled as fibre in pulp mills in New Zealand and the amount of imported pulp used in New Zealand pulp and paper mills is increasing. Blending virgin fibre with re-cycled and imported fibre is one way the mills can reduce costs.

6.1.5 Furniture

Furniture companies are predominantly based in the main centres of Auckland, Wellington and Christchurch, but there are clusters in other areas such as the Central North Island and Otago. These businesses are predominantly of two types, medium to large sized businesses that operate in a factory environment and mass-produce furniture or smaller furniture companies that do furniture finishing, upholstery, or make pieces to order. Many small to medium-sized furniture businesses offer complementary services such as retail curtains and drapes, or fabrics. Some furniture businesses work closely with interior designers or other industries such as the marine industry to produce custom-made furniture.

6.2 Macro considerations and prospects

The New Zealand forest industry is very largely based on plantation forestry mainly of two species *Pinus radiata* (*radiata*) and Douglas fir that have a 'normal' rotation length of about

30 to 50 years, though harvesting can be brought forward even to 20 years or less when macroeconomic conditions encourage owners to bring forward their cashflow. For this reason the macroeconomic conditions can have very far-reaching impacts on the operation of the integrated forest and wood industry. These conditions will also strongly influence the long-term investment being made, not only in the development of improved processing and manufacturing plants, but even the re-planting of the plantation forest itself.

The prospects of the forest industry are very much dependent on external macroeconomic factors and conditions.

6.2.1 International factors affecting the NZ forest industry

Some of the international factors affecting the New Zealand forest industry are trends in commodity prices; shifts in significant costs like shipping and energy; market preferences for wood products; and the world labour market.

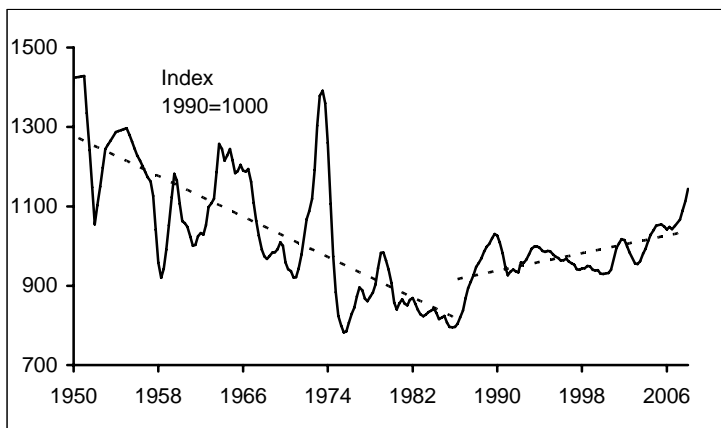
Trends in commodity prices Historically, the real (inflation adjusted) price of commodities has been in long-term decline whereas the prices of manufactured goods have increased as real wages have grown. Since the mid-1980s this trend has changed. With the addition to the world manufacturing labour force of large populations with lower real incomes, and with increases in manufacturing productivity especially due to electronic advances, this trend has reversed for two main reasons. Firstly, the real price of manufactured goods has declined and volume of demand has increased. This has stimulated a positive increase in the demand for resources and commodities to produce these manufactured goods. The main international player driving this change has been China, and more recently India.

The overall effect on New Zealand is best illustrated by the shift in the trend of the Merchandise Terms of Trade. What this measures is the relative volume of our merchandise exports needed to purchase a given volume of merchandise imports. Since our exports are largely commodities and our imports are largely manufactured goods, the Index of the Merchandise Terms of Trade for New Zealand gives a good indication of the trends in international commodity prices relative to international prices of manufactured goods. We have plotted the movements in New Zealand Merchandise Terms of Trade Index from 1950 to the present.

The Index has quite wide fluctuations over time often brought about by specific events like the oil shocks, the wool price shock of 1967 etc. Nevertheless, there was a strong underlying trend downwards from 1950 to the mid-1980s. Since then the amplitude of the fluctuations appears to have moderated, and there is a relatively strong underlying trend upwards continuing through to the present. The implication of this is that in the longer term

we should expect the real prices for our commodity exports to at least hold to their present levels, and in fact be more likely to increase.

Figure 6.2 New Zealand's Merchandise Terms of Trade Index



Source: Statistics NZ, BERL

Over short periods, and for particular commodities there are clearly declines in the Terms of Trade, but as an underlying factor we would expect wood and wood products to experience a trend increase in prices in future.

Cost of shipping/transport The flow of export logs can be influenced by shipping rates, particularly in recent years when world shipping has been concentrated largely in transporting raw materials to China and India, and manufactured goods away from there. Also in some areas shipping logs is inefficient or uneconomic and can be a constraint on log export. However, the domestic processing industry is not set up to take these logs because most sawmills are set up for larger rather than smaller logs.

Over short periods, and for particular commodities, there are clearly declines in the Terms of Trade; but as an underlying factor we would expect wood and wood products to experience a trend increase in prices in future.

Cost of shipping/transport The flow of export logs can be influenced by shipping rates. In recent years world shipping has largely concentrated on transporting raw materials to China and India, and taking manufactured goods away from these ports. In some areas of New Zealand shipping logs is inefficient or uneconomic and can be a constraint on log exports. However, the domestic processing industry is not set up to take these logs as most sawmills are set up for larger rather than smaller logs.

Cost of energy Energy prices are rising strongly at present, and while this rate of increase can be expected to moderate, energy costs are likely to continue to trend upwards over time.

Some parts of the forest industry have high energy requirements, including the pulp and paper and wood panels sectors. The forest industry is aware of this, and has been increasing energy efficiencies and diverting to lower cost sources for some years. At present it is estimated that wood residues provide 50 to 55 percent of the forest industries energy consumption, while electricity provides 25 percent and gas, coal and oil provides the rest. The use of wood residues for energy should not incur a liability for carbon tax because the wood being used is sustainably produced.

High energy prices could seriously impact on the pulp and paper industry; however, New Zealand mills are beginning to use geothermal steam instead of boilers to reduce costs. Industry opinion is that energy costs could combine with other factors to put pressure on one of the major pulp mills, but there is also a possibility that the mill could be used to produce low emission wood pellets for home heating. By definition the price of these pellets will rise with general energy prices and so could be a 'natural hedge' for this activity.

We expect energy prices to be a continuing pressure in the forest industry. However, productivity moves already made, planned or underway mean energy costs are not expected to significantly hamper the industry.

Market preference and sustainability As markets for our wood products have grown so has environmental consciousness. Customers increasingly require that forest products are from sustainable forests. This behaviour has grown since a move was initiated by UK retail chains some years ago. The potential for markets or distributors to decline non-certified product has led to many solid wood processors buying logs only from FSC certified forests. These processors believe that the demand from customers for this certification will grow over the next five years. This applies to solid wood as well as pulp and paper producers whose customers are requesting that the source of their fibre is from FSC certified forests. This could have a big impact with consumers over the next five years, but for now most look for the paper product that costs the least.

Within businesses recycling is becoming more important. For example, paper mills recycle all their containers and packaging material, and furniture manufacturing companies sell their sawdust and wood off-cuts, some of which goes to pellet manufacturing.

World labour market The competitive world labour market for people with the skills required by the forest industry is a macroeconomic factor already being felt. The high demand for raw materials in China and India directly impacts on the demand for heavy equipment operators by the Australian mines, especially those in Western Australia. The intensity of the competition may ease a little for the next year or two as the world economy slows, but the high international demand for skills is expected to continue.

6.2.2 *New Zealand monetary policies*

The single area of public policy that has had a major effect on the forest industry in New Zealand since the corporatisation and privatisation in the late 1980s is the operation of monetary policy. It would be possible to write a tome on this subject, but suffice it to say that the monetary policy operation chosen for New Zealand adopts the (almost) exclusive objective of targeting inflation. This appears to over-ride all other considerations including maintaining the integrity of the whole financial sector; and encouraging investment in New Zealand's productive industries, especially the export industries.

The main primary impacts of the present operation of monetary policy are higher interest rates than other comparative countries, and wide fluctuations in New Zealand's currency exchange rates. Because of the high interest rates, the exchange rates are generally higher than the market optimal for growth of the New Zealand economy.

Some of the indirect impacts include attraction of high rates of competitive imports due to the high exchange rates, and high interest rates attracting inflows of large amounts of short-term funds that increases the rate of Private Sector Credit expansion above that necessary for operating the growing economy. The excess credit can cause high levels of consumption and low saving; increased asset prices such as land including farms and forests; and credit being advanced to sub-optimal, higher-risk uses. The latter has from time-to-time resulted in collapses in the financial sector and a disincentive to saving and investment.

The fluctuating exchange rate effect is particularly deleterious to the forest industry because of the long-term investment needed in both forests and processing plants. The effect on agriculture and forestry has been well-expressed by a former Deputy-Governor of the Reserve Bank, now Director-General of the Ministry of Agriculture and Forestry, Murray Sherwin, in a 2007 address entitled *Agriculture and Forestry in New Zealand: From Transition to Transformation*.

There are factors about New Zealand- our isolation and our relatively small size, in particular – that I think have a substantial bearing on our productivity conundrums. Due to our small domestic market any agricultural or forestry firm wishing to achieve real scale, perhaps to fully exploit new intellectual property or an innovative business model or product, quickly faces the need to enter international markets- this usually requires substantial capital investment. To achieve real scale, and to develop the sorts of high-skill, high-income jobs we need to support the first world lifestyle to which we aspire, we need to increase capital intensity – that is capital employed per employee.

Capital intensity runs into a couple of hurdles – persistently high real interest rates, and an exchange rate with a seven to nine year cycle (from peak to peak) and an uncomfortably high

peak. That sits very awkwardly with the sorts of investment horizons typically encountered in considering large scale investment decisions.

Agribusiness and forestry owners operate in an environment of uncertainty of supply due to variability in production and weather patterns, and of revenue due to international commodity prices and exchange rates. By its very nature manufacturing, whether for agricultural production and export, or forestry, has high start-up capital requirements. The outcome, I think, is a risk profile on large scale capital investments that can be pretty discouraging for the potential investor

This quote indicates that the bureaucracy is presumably well aware (and has been for some years) of the costs to industry and the economy of our present operation of monetary policy. There have been no indications of recommendations for change, and there is also no indication that any of the main political groups in New Zealand are intending to consider change in this area.

For these reasons, the forest industry must expect the distortions to continue, and must plan to be flexible in order to be resilient to the fluctuations in the macroeconomy.

6.2.3 Other policies

There is a wide range of existing and proposed policies in New Zealand that can have positive and negative impacts on the forest industry. However, this report is fundamentally an assessment of training and skill needs for the forest industry and cannot carry out Regulatory Impact Analyses of all of these policies.

Some policies which are relevant include the various Free Trade Agreements, such as that with China; the move for the Government to initiate and encourage investment in trunk infrastructure including road, rail, coastal shipping, and broadband; the Emissions Trading Scheme; and the exploration of compensation for productive losses due to the RMA.

Many of these policies can have positive and negative impacts on sectors of the forest industry. However, the industry has been resilient in the past to fluctuations caused by New Zealand dismantling trade barriers and exchange rates. Therefore, we do not expect the impacts of any of these policies to be any greater.

6.2.4 Maori participation in the forest industry

Another factor that could change the nature of the industry in future years is the rapidly growing Maori ownership and investment in forests and the forest industry. The particular group of Maori who have participated in the forest industry are mainly members of FoMA, the

Federation of Maori Authorities (inc). These members are the Trusts and Incorporations that own the large Maori land blocks.

As such these Authorities have been involved in large-scale corporate primary production for many years, and more recently in some processing. They include Mangatu Blocks with many sheep stations in Gisborne/East Coast; Pouakani Trust in dairying and forestry in the Mangakino area; Lake Taupo Forests and others. Because of their attachment to land these Maori groups can be expected to be long-term owners, and because they have corporate experience, they can be expected to look for the best land use, processing and marketing.

Particularly as their role in the CNI forests grows, Maori can be expected to be a positive influence in the forest industry. It remains to be seen if they will strongly pursue training of their people presently involved in the industry.

6.3 Prospects for the industry

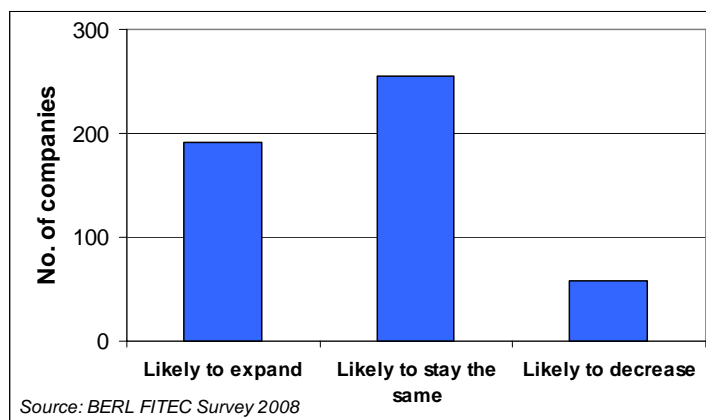
This study obtained information on the intentions of the industry through the broad-based Survey 2008 as well as in-depth discussions with a range of players around the regions and in industry organisations. This section provides a summary of the main findings on the prospects for the industry, covering intentions to expand, decrease or stay the same sized business, and the intention to expand employment.

We also discuss general intentions in relation to investment in increased productivity in sectors of the industry.

6.3.1 *Business intentions for next five years*

The general public perception of the industry tends to be rather negative at present given some of the macro considerations and factors. Therefore, it is somewhat surprising that in the BERL 2008 Survey of the 505 businesses who responded to this question, 37 percent said they are likely to expand between now and 2011. A further 51 percent said they are likely to stay the same, and only 12 percent said they are likely to decrease. This implies a net number expanding of 27 percent of the respondents. This intention to expand is consistent with the high proportion of respondents who are committed to investing in skills training in the future, and many of our interviews. Certainly, some firms are intending to increase throughput by increasing productivity, so they will not necessarily require more staff.

Figure 6.3 Business plan intentions next five years



It is important to now explore the nature of the firms likely to expand and of those likely to contract in size.

6.3.2 Business intentions by sectors

In total there were five sectors where the share of firms likely to expand was greater than the average 37 percent and/or the share of firms likely to contract in size was less than the average 12 percent. These sectors (in descending order of expansion intentions) were the large solid wood sector; pulp, paper and tissue; combined logging and silviculture firms; the large furniture sector; and 'Other' firms (including training and services).

Table 6.1 Firms' business intentions by sector

Sector	Number of firms	Firms likely to expand	Firms likely to contract
Forest ownership	11	18%	27%
Forest management	18	28%	11%
Silviculture	56	21%	29%
Logging	129	14%	19%
Logging and silviculture	27	56%	7%
Solid wood	93	60%	3%
Pulp, paper and tissue	7	57%	0%
Furniture	75	48%	1%
Transport etc	18	28%	6%
Other	51	51%	8%
All firms	485	37%	12%

Source: BERL FITEC Survey 2008

As discussed previously a number of firms were expanding, generally to increase productivity, and the pulp mills expect to continue steady incremental growth of their capacity by a relatively small amount annually. Respondents also discussed their firm expanding and

generating economies of scale as some of the less efficient businesses are likely to move out of the industry.

There is an interesting contrast between the single-sector firms involved in only silviculture or logging, and those firms involved in both silviculture and logging. The single-sector firms are only about half as likely to expand as the average, and about twice as likely to contract as the average. Perhaps this is understandable given the high exchange rate and uncertainties around harvesting and re-planting discouraging owners, especially the small-forest owners, from these activities at this time. The firms involved in both silviculture and logging are 50 percent more likely to expand, and about half as likely to contract as the average firm in the industry. This could well indicate some 'rationalisation' amongst these firms.

On the other hand, the solid wood processing and furniture sectors had a high net share of the businesses likely to expand. This is more positive than perhaps we may have expected, with some players feeling competition from cheap imports, but this expansion intention is widely-based.

Rather surprisingly seven of the 12 respondents in the pulp, paper and tissue sector also said that they are likely to expand. The large players in this industry are continuing to obtain incremental increases in productivity from year-to-year and presumably this is enabling them to expand, though presumably not in major expansion projects.

6.3.3 Business intentions by firm size

Taking the number of employees as a measure of a firm's size, we find that in general the share of firms employing 16 or more people who are likely to expand in the next five years is greater than the average for the industry. The one exception to this is the relatively small size class of the 101 to 200 employees. The large number of firms employing 6 to 15 people are somewhat less likely to expand and more likely to contract than the average, whereas those firms employing one to five people are about average in their intentions.

Table 6.2 Firms' business intentions by employment

Permanent employees	Number of firms	Firms likely to expand	Firms likely to contract
0 employees	18	17%	22%
1-5 employees	128	34%	13%
6-15 employees	163	25%	14%
16-30 employees	70	47%	11%
31-50 employees	49	57%	2%
51-100 employees	45	60%	4%
101-200 employees	15	33%	13%
201-300 employees	8	63%	13%
300+ employees	11	45%	9%
All firms	507	37%	11%

Source: BERL FITEC Survey 2008

The overall picture is that a large number of firms employing 16 to 100 people are likely to expand in the next five years. This expansion could be achieved by absorbing some of the activities of the smaller firms.

6.3.4 Business intentions by regions

Completing the picture of business plan intentions over the next five years we have analysed the responses by region. Here the pattern is much less distinct than it is for either the intentions by sector or by firm size. In fact the share of firms likely to expand in each region all fall in the range 28% to 53% of firms in the region, around the average of 37%. The share of firms likely to contract for all regions falls in the range 4% to 17%, around the average of 11%. It is likely that the small sub-samples involved in most if not all of these regions would fall within the margin for error.

Auckland and the Central North Island are two regions where the share of firms likely to expand is higher than the average. In turn, the share of firms likely to contract in these regions is lower than the average. Hawke's Bay firms are somewhat less likely to expand and more likely to contract in the next five years.

Table 6.3 Firms' business intentions by region

Region	Number of firms	Firms likely to expand	Firms likely to contract
Northland	34	32%	15%
Auckland	47	53%	4%
Waikato/Thames Valley	35	37%	14%
Central North Island	107	37%	4%
East Coast	28	39%	14%
Hawke's Bay/Wairarapa	67	28%	15%
Taranaki/Wellington	52	35%	15%
Nelson/Marlborough	46	37%	17%
West Coast/Canterbury	48	38%	10%
Otago/Southland	46	41%	15%
All firms	510	37%	11%

Source: BERL FITEC Survey 2008

6.3.5 Pattern of firms' business intentions

To repeat our first impression, given the unconducive, if not obstructive macro environment, it is surprising that a considerable number of firms in the forest industry are likely to expand in the next five years.

The indication from the analyses of firms' business intentions is that the sector of operation and the size of the firm determine whether a firm is likely to expand, contract or stay the same size over the next five years. It does not seem that firms in any particular regions are strongly expansionary or contractionary.

We have analysed the responses by region by sector, but in that format the number in most of the sub-samples is too small as to be unreliable. However following through on the main regional differences we find that in the CNI it is the combined silviculture and logging firms, and the solid wood firms where there are reasonable samples and they are more likely to expand. In Auckland region there are reasonable samples of solid wood firms and furniture firms and a high share of those is likely to expand. Also in Wellington/Taranaki and in Canterbury/West Coast there is a reasonable sample of furniture firms of which a high share is likely to expand. (The share of furniture firms likely to expand is greater than 40 percent in all regions.) In the Hawke's bay region the silviculture and logging sectors are negative and wood processing sectors more positive.

The indications are that there is a large share of firms in the main processing sectors and in the combined silviculture and logging sector around the country that are likely to expand in the next five years. While some may be expanding their markets and sales, others could be

expanding by absorbing the activities of some of the firms likely to contract. This sort of change indicates a likely investment and increase in productivity as the firms achieve greater economies of scale.

Overall this is a positive prospect for the industry.

6.3.6 *Employment intentions to 2011*

The Survey asked businesses how many permanent employees, and how many contract or seasonal staff the workplace or business expected to employ in 2011. We analysed these responses in the same way we did for present employment, as described in section 3.2 above. We had estimated that the survey respondents employ about 17,700 permanent employees and 7,050 contract or seasonal staff at present, for a total people employed of 24,800. On the same basis we estimate that the respondents expect to employ about 18,400 permanent employees and about 6,000 contract or seasonal staff for a total of 24,400 people employed in 2011.

Of permanent staff this is about a 4% increase on the 2008 employment numbers. This is a relatively small increase especially given the large share of firms who are likely to expand in the next five years.

The implication is that many of these firms must be intending to expand their output by investing in equipment and training to increase the productivity of the workforce.

6.3.7 *Productivity intentions to 2011*

We have outlined the commitment to investing in training to increase productivity by 2011. We also received stated intentions to invest in equipment to improve productivity and other quality aspects, in most of the processing industries, and also in servicing sectors like forest mensuration.

Solid wood processing facilities have the capacity to increase their productivity through adding more shifts and investing in machinery, equipment, and their plant. Of the businesses likely to expand, 40 were based in the Central North Island, and many in the solid wood sector. Of those businesses spoken to there is a broad range investment in machinery and equipment intended and it consists mainly of CNC machines, planers, and kilns. Many businesses had already invested in or were in the process of investing in their boiler system as companies move from manned boilers to automated boilers.

A key element in the solid wood sector is the difficulty of obtaining and retaining staff on the sorting table. One solution to this is automating that function.

One industry source is of the strong opinion that the solid wood industry in New Zealand needs to automate many functions and greatly increase the productivity per person per annum. Where some sources indicated average sawmill productivity of about 400 m³ per person per day, and more efficient mills up to 700m³ per person per day, the strong opinion was that productivity could be lifted to 1,200 to 1,500m³ per person per day. This is a trebling of present productivities, and would imply larger mills with annual throughput of about 150,000 m³ per year compared with many present mills' throughput of about 30,000 m³ per year.

There are apparently opportunities for increasing productivity in a number of sectors and most of these require the employees, especially machine operators to obtain proficiency in a higher skill set in order to 'guide' the effective operation of the automated machine, rather than to 'operate' it. Modifying training systems will be at least as important and integral to the change as investing in the automated equipment.

Whether this productivity and training transformation can take place will depend in great measure as to whether product prices are strong enough and exchange rates stable enough to allow the businesses to make the significant long-term investments. In fact the conclusion we come to is similar to that of Murray Sherwin, Director-General of Ministry of Agriculture and Forestry namely that the macroeconomic environment of the forestry industry in New Zealand at present creates.. *a risk profile on large scale capital investments that can be pretty discouraging for the potential investor.* We do not expect the expansion intentions to result in major investments to increase productivity in the near future.

7 Forest industry labour demand in 2011

We have generated a base scenario to test estimates of the forest industry demand for labour to 2011. This first projection focuses on the forest removals and export of logs with little if any increase in the capacity of processing and manufacturing except for that necessary to supply expansion of the domestic market. This is essentially the scenario based on log removals as projected in the MAF SONZAF projections

A second projection has been discussed with a number of industry players, and will be based around a better macro-environment for increased investment in processing and manufacturing.

7.1 Baseline Scenario: Increased production exported as logs

This export-driven projection is based on the assumption that wood harvest and export volumes will increase, and domestic consumption increases will mainly be in the derived manufacturing industries of furniture and other wood manufacturing.

This projection includes projected employment in log-based industries such as forest harvests and solid wood as well as projected employment growth in those other derived industries.

The latest Situation and Outlook for New Zealand Agriculture and Forestry (SONZAF) produced by MAF provides projections on the level of export volumes. The actual export volumes for the 2006 and 2007 March years and the forecast export volumes for the years ended March 2008 to 2011¹⁰ are shown in Table 7.1. These numbers were derived from MAF's SONZAF forecast that was updated in August 2007.

Table 7.1 MAF SONZAF export volumes, actual and forecast, 2006-2011

Year to 31 March		Actual					Forecast
		2006	2007	2008	2009	2010	2011
Logs and chips	Export volume (000 m ³)	5,753	6,532	6,798	7,089	7,394	7,713
Timber	Export volume (000 m ³)	1,818	1,939	1,939	1,969	2,008	2,048
Panels	Export volume (000 m ³)	1,125	994	1,021	1,053	1,093	1,143
Pulp	Export volume (000 t)	854	810	815	815	815	814
Paper	Export volume (000 t)	682	521	507	506	506	506

Source: MAF, SONZAF 2007

While not explicitly forecasting it, MAF assumes the amount of wood available for harvest will increase over the forecast period. MAF also assumes this increase in the total harvest will

¹⁰ Many of the base numbers for the 2006 year are actual values rather than forecast or estimated values.

be exported, mostly in the form of logs, due to the low level of investment in processing and manufacturing facilities.

The table above illustrates that export growth over the forecast period is focused on logs and chips, and timber exports. Log and chip exports are forecast to increase by 1,181,000m³ between 2007 and 2011, after increasing by 779,000m³ between 2006 and 2007. Timber exports are forecast to increase by 109,000m³ between 2007 and 2011.

Panel exports are forecast to record strong growth compared to 2007 export levels, but the volume of exports in 2011 is more consistent with 2006 export volumes. This drop in export volumes between 2006 and 2007 was due in part to a fire that damaged a production line in a mill.

Pulp export volumes are forecast to remain flat due to plants already operating at capacity. In contrast, paper export volumes are forecast to fall over the forecast period due to a change in the product mix of New Zealand's paper exports, and the closure of a paper line in July 2006.

7.1.1 Assumptions

This export-driven forecast makes two assumptions. Firstly, this forecast assumes there are no major changes in the ownership of forests over the forecast period. There have already been some changes in ownership in recent months and this could affect the share of wood processed. And previous examples have shown that changes in forest ownership can lead to changes in harvest intentions. For example, a new owner may buy forests and increase the harvest of logs (particularly younger trees) to improve their cash flow or to reduce debt.

Secondly, this forecast assumes there are no major investments in wood processing facilities over the forecast period. This assumption also assumes that the forest industries are utilising their current capacity.

Industry sources have indicated there is some capacity in the sawn timber industry for a second shift to be added should the demand and economics of such an increase in output/production make sense. We have also noted above some intentions to invest to increase productivity especially in the solid wood sector. This scenario is therefore seen in that context as a conservative 'Do Nothing' scenario.

7.2 Domestic consumption and wood harvests

To determine harvest levels to 2011 an assumption was made about supplying the growth in domestic consumption. It is assumed that the solid wood requirements for furniture and

other manufactured products will come from the existing and expanding flows from the solid wood and panels sectors.

Adding export volumes and domestic consumption figures together provides total production volumes for the forest industries that are driven by wood flow. Total production figures can then be combined with MAF conversion factors and other industry information to convert these production volumes into roundwood equivalents. Roundwood equivalent totals show the harvest levels required to meet production volumes.¹¹

The table below illustrates the results of combining MAF's export volume forecasts with our assumptions about domestic consumption. It shows the actual volumes for the 2006 and 2007 March years, and the forecasts for 2008 to 2011.

Table 7.2 Wood flow projections 2006-2011

Forest sector Woodflow - year ended March	base year 2006	actual 2007	2008	projected 2009	2010	2011
Forestry and harvesting (000m3)	18,800	19,800	20,700	21,000	21,400	21,900
Solid wood (000m3)	4,300	4,300	4,400	4,400	4,400	4,500
Pulp (000 tonnes)	1,600	1,500	1,500	1,500	1,500	1,500
Paper (000 tonnes)	900	800	800	800	800	800
Panel products (000m3)	2,200	2,100	2,200	2,300	2,340	2,390

As shown in Table 7.2, the volume of roundwood harvested between 2007 and 2011 is projected to grow by 2.1 million m³. This represents an increase of approximately 11% on the 2007 harvest, and a 3.1 million m³ increase on the 2006 harvest. From the rounded figures presented in this table it can also be seen that most of this increase in harvest is projected to flow into logs and woodchips, with small increases in sawn timber and panel products.

7.3 Employment per unit of production

To translate the projected changes in harvest and production levels to changes in employment we have used the ratio of employment to production volumes in the March 2006 year.¹² Table 7.3 shows the number of units of output per employee for those forest industries where production is driven by wood flows.

¹¹ We tested the conversions on the actual 2006 and 2007 production volumes to confirm that our approach achieved the correct results.

¹² Employee counts from the March 2006 year have been used as this is the latest census information available from Statistics New Zealand.

Table 7.3 Employment per unit of production, 2006

Sector	Employees March 2006		
	census	volume	units per employee
Forestry and harvesting	8,000	18,800,000 m3 (r)	2,350 m3
Solid wood	7,500	4,300,000 m3	570 m3
Panels	2,000	2,200,000 m3	1,100 m3
Pulp	1,900	2,500,000 tonnes	1,300 tonnes

The ability of an industry to produce more outputs using fewer inputs such as labour and capital is known as a productivity increase. MAF has derived a productivity index for the New Zealand agriculture and forestry sectors for the year ended 31 March 1988 to the year ended 31 March 2006.¹³ This index shows the forestry and logging industries had an annual average growth of 2.2 percent over the 1988 to 2006 period. The wood and paper manufacturing industries recorded 0.00 percent annual average growth over the same period.¹⁴ These latter figures do not fit well with information supplied by major processing and manufacturing sectors. However these productivity rates have been included in the base employment projections.

7.4 Employment projections

Table 4 shows log-based industry employment in 2006, from the 2006 Census, and projected employment between 2007 and 2011 for the sectors directly dependent on log volumes. These figures were obtained by combining the projected changes in wood harvest volumes, the ratio of employees to production volumes, and productivity changes.

Employment in the base year for furniture and other wood manufacturing sectors was also obtained from the 2006 Census. Employment projections for these industries in the near-term namely to 2011 will be largely determined by the nature and extent of the present slowdown and recovery in the economy. In this dynamic situation, the CGE model, based on a medium-term scenario is of limited practical use. We have therefore projected forward for the next four years using the BERL forecasts for the relevant sectors of the economy, namely private consumption, private investment with some influence from the public investment increases in infrastructure.

¹³ [http://www.maf.govt.nz/mafnet/rural-nz/statistics-and-forecasts/sonzaf/2007/Annex Table 5 Productivity trends in sectors and the wider economy in New Zealand.xls](http://www.maf.govt.nz/mafnet/rural-nz/statistics-and-forecasts/sonzaf/2007/Annex%20Table%205%20Productivity%20trends%20in%20sectors%20and%20the%20wider%20economy%20in%20New%20Zealand.xls)

¹⁴ By comparison, during the same period the agriculture sector had productivity growth averaging 2.2 percent per year.

Table 7.4 Employment projections 2006- 2011

Forest sector Employment - year ended March	base year		projected			
	2006	2007	2008	2009	2010	2011
Forestry and harvesting	8,000	8,240	8,610	8,740	8,900	9,110
Solid wood	7,500	7,540	7,700	7,700	7,700	7,900
Pulp	1,200	1,150	1,150	1,150	1,150	1,150
Paper	700	610	610	610	610	600
Panel products	2,000	1,900	2,000	2,000	2,100	2,170
Log-based employment sub total	19,400	19,440	20,070	20,200	20,460	20,930
Furniture	5,700	5,700	5,700	5,877	6,053	6,230
Other wood product manufacturing	9,400	9,400	9,400	9,776	10,152	10,528
Total forest sectors	34,500	34,540	35,170	35,852	36,665	37,688
<i>Change</i>			630	682	813	1,023

Log-based employment in the forest industries is projected to increase to 20,900 employees in 2011. This is an overall increase of 1,460 employees, or 7%, since 2006. This increase is projected to occur over the same period as a 17 percent increase in wood harvests.

The largest increase in employment is projected to be in forest harvesting, where an extra 1,110 employees will be required between 2006 and 2011. This is a 12 percent increase in the number of employees in this industry in 2006.

Employment in the pulp and paper industries is projected to reduce a little between 2006 and 2011. This fall is due to a reduction in production volumes.

Both furniture and other wood manufacturing are both projected to have increased employment due to recovery and expansion of the domestic market, especially that driven by public and private investment

Projected changes in the volume of wood harvested and employment in the forest industries will impact on a number of other industries. While not quantified in this report, changes in the amount of wood harvested and forest industry employment will impact on associated service industries such as credit and finance, transport, and government agencies such as MAF who complete biosecurity work for the forest industries. These industries may also have to increase job numbers to handle the increased volumes.

7.5 Employee turnover

This report has investigated employee turnover by means of the Survey 2008 and discussion with a range of industry players. Our assessed level of employee turnover in each of the forest sectors is given in 3.7.6 above.

We have applied these turnover rates to the sector employment projections and thus estimated projections of turnover by sector to 2011.

The forestry and harvesting, and solid wood sectors are assessed to have the highest turnover rates and the greatest need to employ new employees. Together these sectors are expected to account for 60 percent of the employee turnover in the forest industry by 2011.

Table 7.5 Projected employee turnover 2006 - 2011

Forest sector employment turnover - year ended March	base year		projected			
	2006	2007	2008	2009	2010	2011
Forestry and harvesting	1,440	1,480	1,550	1,570	1,600	1,640
Solid wood	905	905	926	926	926	947
Pulp	60	58	58	58	58	58
Paper	40	31	31	31	31	31
Panel products	160	153	160	167	170	174
Furniture	285	285	285	294	303	312
Other wood product manufacturing	940	940	940	978	1,015	1,053
Total employee turnover	3,830	3,851	3,950	4,023	4,103	4,214

Employee turnover requirements of the pulp and paper industries are projected to remain fairly stable until 2011 as incremental productivity increases will balance the increase in turnover due to retirements in the ageing workforce.

7.6 Total employment requirements

By combining employment projections with the number of employees required to replace turnover the total number of employees required in each of the forest industries between 2006 and 2011 can be estimated.

Table 7.6 Projected employment requirements 2006 - 2011

Additions needed to employment - year ended March	base year		projected			
	2006	2007	2008	2009	2010	2011
Forestry and harvesting	8,000	1,720	1,920	1,700	1,760	1,850
Solid wood	7,500	945	1,086	926	926	1,147
Pulp	1,200	8	58	58	58	58
Paper	700	-59	31	31	31	21
Panel products	2,000	53	260	167	270	244
Furniture	5,700	285	285	471	479	488
Other forestry products	9,400	940	940	1,354	1,391	1,429
Total additions to employment	34,500	3,892	4,580	4,706	4,916	5,237

The projected expansion in the various sectors in the forest industry implies additional employment of 600 to 1,000 more employees per year. Of significance to the industry is that

the additional 4,000 employees required per year are necessary because of employee turnover.

7.7 Changes if productivity increases

There are a number of indications from the survey, from discussions with industry leaders and from consideration of the macroeconomic environment for the sector in the next three to five years that draws us to the conclusion that it is very unlikely that there will be widespread and major investments that increase productivity in the forest sectors. Nevertheless investment and incremental improvements continue, and we expect that these could result in the next three or four years in an increase in labour productivity by 10% over the period.

There are a range of drivers of productivity change. In logging, mechanisation has been used to replace labour where there have been high labour costs or labour shortages. However, these machines are constrained by the terrain where logging takes place. In the solid wood sector scanners and other automated processes are giving major increases in productivity. In the furniture sectors, CNC machines have replaced skilled labouring some factories.

We have therefore re-run our employment projections allowing for this 10% productivity increase in all sectors.

Table 7.7 Employees needed 2008-2011 with productivity increased 10%

Additions needed to employment - year ended March	projected			
	2008	2009	2010	2011
Due to employment numbers	658	-317	-344	-149
Due to employee turnover	3,950	3,911	3,872	3,859
Total additions to employment	4,608	3,594	3,528	3,710

The increase in productivity by 10% has reduced the total number of additional people needed to enter the industry each year from the 4,500 to 5,000 estimated in the base case to a figure of around 3,700 per year, and those are to replace those leaving the industry. This means that if employee turnover could be further reduced, there could be effort concentrated on upskilling people already in the industry.

8 Overcoming employment and skill shortages

This section draws on information obtained from the forest industry and analysis of the BERL 2008 Survey to make suggestions on ways the industry, and in particular FITEC, can meet employment and skill needs through to 2011.

8.1 Attracting people to the industry

The forest industry will need to attract people to meet this growing need. The industry will need more skills, more training, and more people. An obvious source of this labour and skills are 18 to 25 year olds who are entering the workforce or transitioning between tertiary training and the workforce.

However, 18 to 25 year olds are the target market of all industries and tertiary training providers, and the forest industry is competing with other industries to attract and retain this group. Many employers within the forest industry have discussed employing 18 to 25 year olds and the problems they face with this age group. Opinion and employers' attitudes are divided towards this group.

8.1.1 *What about the 18 to 25 year olds?*

Attracting 18 to 25 year olds who are entering tertiary training, the workforce or transitioning between training and the workforce is a major marketing venture for all training providers and industries in New Zealand. This age group are physically fit and able, they are less experienced and therefore cheaper to employ, and many will enter an industry and spend most of their adulthood in the same role. Also, this age group provides an industry with fresh approaches, ideas, and new leadership.

Employers in the forest industry have indicated through interviews and the Survey that the most important things for their employees to have are a good work ethic, attention to detail, and a willingness to learn. Often they are not finding these attributes in 18 to 25 year olds. Many employers cite the need for people in this age group to have basic life skills as well as the foundation skills that have been mentioned in other sections of this report. Soft skills, such as people skills and life skills, are essential and many firms have recognised the need to provide training in this area to reduce turnover, particularly among 18 to 25 year olds. Also, some survey respondents are providing employees in this age group with the tools to cope with issues outside of work, such as budgeting, health and nutrition, relationship management, in an attempt to decrease absenteeism and turnover. This is similar to the foundation skills approach to recruitment mentioned in an earlier section.

Attracting 18 to 25 year olds who are entering tertiary training, the workforce or transitioning between training and the workforce is important for the forest industry, but this group also needs to be supported in the workplace through training in foundation and life skills. In addition, this approach of marketing the forest industry to 18 to 25 year olds also needs to be balanced by targeting people who are making career changes in their late 20s, the 28 to 35 year olds.

8.2 School leavers entering tertiary training

One source of labour for the forest industry is school leavers. In the three years 2008, 2009 and 2010 the total number of school leavers is projected to be about 61,000 per year, working from the cohorts in the present school rolls. This is relatively high, as the number of school leavers in the first five years of this decade was around 55,000 per year.

The question is, how many of these school leavers would be available to join the forest industry? An order-of-magnitude estimate comes from the 2004 data, where the transition behaviour from school to work and tertiary training was recorded. In that year, 51 percent of school leavers transitioned direct to tertiary training, and during the next year or so a further 13 percent transitioned indirectly to tertiary training.

This data can be interpreted in two ways. Firstly, approximately 35 percent of all school leavers could be attracted directly into employment (20,000 per year), and of this number the forest industry needs to target 5,000. A second interpretation is that about 40,000 school leavers per year transition directly or indirectly into tertiary training. This group of school leavers is motivated to complete ongoing training, and are a potential source for the forest industry to target. The forest industry could benefit from targeting all school leavers, rather than targeting just those who are attracted directly into employment, given the broad range of skills needed in forestry in 2011.

8.2.1 FITEC opportunities in Schools Plus policy

Schools Plus is a government policy that is currently being developed, and it should be in place by the end of 2011. The goal of Schools Plus is for every young person to be in "education, skills, or structured learning, relevant to their needs and abilities, until the age of 18. It is about building on the strengths of our current education system, aligning a range of services across government, and ensuring strong partnerships among all the parties

involved.”¹⁵ Education, skills or structured learning can be in a school, with a tertiary education provider or in the workplace.

To achieve the Schools Plus goal, the Government wants students to connect what they are doing at school with what they want to do for a career. Promoting the connection between learning at school and its relevance to the workplace will be important for FITEC. Many industry stakeholders expressed concern about the negative image the forestry industry had among students, parents, career influences, and careers advisors. It is here that the role FITEC plays in schools, with school careers advisers, and in promoting the industry as a career option will become very important.

8.2.2 FITEC opportunities in youth training schemes

FITEC currently offers foundation training and could further develop these programmes as part of the work they do with schools in Schools Plus and other schemes such as Young Apprenticeships. The Youth Apprenticeships Scheme will also be available in schools from 2011, to provide the link between secondary school, industry training, and Modern Apprenticeships. The Youth Apprenticeship Scheme will be different from the existing Modern Apprenticeship Scheme. It will allow students to enter apprenticeship training while at school whereas students enter the Modern Apprenticeship Scheme once they have left school and have entered the workplace.

There are programmes already in place in schools such as the Gateway programme that allows students to gain work experience in the industry. These should be positive experiences for the student, business and industry. FITEC could therefore work more with schools who are interested in doing work experience placements with local businesses, particularly in regions where the forest industry is growing.

FITEC has expressed an interest in encouraging more 18 to 25 year olds into the industry. To achieve this, FITEC could consider working closer with non-government organisations to support young people to take part in education and training. This could encourage youth to have the work readiness skills that employers in the forest industry are looking for and make youth aware of the opportunities in the forest industries. These organisations include Youth Transitions Services, Social Workers in Schools, and teen parent co-ordinators. Many forest industry employers mentioned the lack of motivation or skills among youth, and FITEC’s involvement in these initiatives may help to raise the work readiness skills of youth and their productivity.

¹⁵ Ministry of Education. ‘Schools Plus: Discussion Document’. 2008.

8.2.3 Working with careers advisors and influencers

FITEC could work more with school careers advisors and people who influence school leavers. This group is called influencers, and can include parents, wider family members, caregivers and family friends. Working with influencers could help FITEC raise the profile and image of the forest industry and make people more aware of the careers forestry offers, the career pathways, the training opportunities, and the transferable skills.

8.2.4 Working with schools

Many employers spoken to believe FITEC should play a greater role in promoting the industry in schools, and in particular recruiting students from secondary schools. This promotion could include the promotion of career paths within the forest industry and the promotion of the type of companies that people can work for in the industry such as large national and international companies. The forest industry is global and many employers believe this point, that training in this industry provides national and international opportunities, should be promoted with secondary school leavers.

Survey responses have indicated examples of forest sector firms successfully working with schools and students. For example, some trainees in the forest industry are school students who work one or two days a week for a firm. These trainees either approach a business or the business approaches the school looking for a suitable candidate. Many of these trainees make successful apprentices and tradespeople as they have learnt some of the basic experiences before they start working full-time. The transition from school to the workplace is also easier as the trainee knows what to expect from their employer and what is expected of them.

Although not working directly with schools, this suggestion could assist FITEC in their promotion of forestry careers with school leavers. FITEC could consider promoting the industry within the industry, where promotional materials are provided to employers to use when they are looking to employ new staff members. If employers are using word of mouth to recruit people they could use these promotional and career materials to pass onto the prospective employee through the friend or family member. As well as being an effective means of recruitment, word of mouth is also an effective means of promoting the industry and one that works well with youth. The industry can be sold to others, such as school leavers, through promotion by family members and friends. If your family member works in the industry you are more aware of the benefits of the industry and what the work involves.

8.3 Training to increase skills and qualifications

Employers in the forest industry are aware of the importance of training, and the skills and training their businesses require. This is reflected in the 92 percent of businesses who replied that they needed to invest time or money in training their employees, and in the range of skills they indicated. In addition, forest industry employees are aware of the advantages of training. While people complete training in their own time and are not paid extra for completing training, they are applying the knowledge they gain from this training to their current role and using it to progress within their company.

8.3.1 *The Tertiary Education Strategy 2007-2012*

The Tertiary Education Strategy 2007-2012 identifies several priority outcomes that are particularly relevant to FITEC. These priority outcomes are young people gaining qualifications at Level 4 and above by the age of 25, increasing the literacy, numeracy and language levels for the workforce, and increasing the number of people who have advanced trade, technical and professional qualifications to meet regional and national industry needs. These outcomes align closely with the areas identified as important by forest industry stakeholders in the completed surveys, and are areas where FITEC and the forest industry could excel.

8.3.2 *The New Zealand Skills Strategy*

The New Zealand Skills Strategy discussion paper released by the Skill New Zealand Tripartite Forum in April 2008 discusses the importance of skills and the need for a skills strategy to respond to skill shortages. Of particular importance to FITEC are the three main ways to address skill shortages outlined in this document. Results from the BERL 2008 Survey indicate how FITEC can enhance the relevance of training to upgrade the skills of the existing workforce, and improve the use of skills in the workplace through training, technology and raising productivity levels.

In addition, the strategy discusses a 'whole of firm' approach to skills that takes into account language, literacy and numeracy skills, soft skills, management and leadership skills, and technical skills. Results from the BERL 2008 Survey also indicate that many firms in the forest industry consider this approach essential. 84 percent of firms that responded to the question on the type of training they would invest in said they needed to invest in training that provided skills for the job. As mentioned in Section 4.1, technical and people skills are seen as the most important skills needed to support a workplace in 2008, while leadership, regulatory and core skills are considered important. The recruitment strategies and training programmes firms have in place to meet skill shortages also support this.

8.3.3 Upskilling existing forest industry employees

Existing employees within the forest industry are being trained to meet current and future skill requirements. Some survey respondents indicated that they intend increasing their throughput by increasing productivity, and they may not necessarily require more staff in 2011. These firms expect to achieve this increase in productivity through upskilling existing employees to meet any new skill requirements caused by changing technology or production methods.

Survey respondents have indicated the importance of all skills in the forest industry. As mentioned in earlier sections, what these skills are depends on what sector of the industry a firm was responding from. For example, in the silviculture sector driving skills and leadership skills were considered important or the most important skills for employees to have to support a workplace in 2008, while in the solid wood processing sector the most important or important skills needed were technical skills as well as life skills. Although, core skills such as literacy and numeracy were given a lower ranking in 2008, by 2011 core skills are considered important or the most important skills needed to support a workplace. Therefore, many firms are focussing on ensuring all employees have the core skills necessary to support their workplace and upskilling those who do not have these skills.

Training programmes, such as the buddy system and the skill and training matrix mentioned in an earlier section, are examples of upskilling that is already taking place within the industry. In the solid wood processing and wood panel sectors, upskilling is being achieved through on the job training. Machine operators in these sectors are learning how to operate machinery and work in different areas of the mill. These operators are also aware of production targets, and are being encouraged to staircase from their current qualification to advanced operator, team leader, supervisor, or project manager levels. In the forests, harvesting crew members are also learning all aspects of the harvesting process to increase harvesting efficiencies and log quality, and decrease health and safety issues.

8.3.4 Utilising existing experience with the forest industry

Existing experience within the forest industry could be utilised to meet future skill and training requirements. FITEC could use career marketing tools to encourage retention, career progression or a change of career direction within the forest industry. These tools could also be used to direct existing employees in the forest industry into occupations that are experiencing skill shortages.

Currently, firms are encouraging their staff to take their acquired skills, knowledge or training and work in another area within their sector or the wider industry. Although, not everyone

employed in the industry is interested in career progression, for those who have the motivation or drive there are opportunities and these should be promoted.

Examples of good career progression already occurring within the industry include businesses appointing project managers, team leaders or supervisors from within the firm rather than externally. Also, in firms where there are several experienced people in a team, people are taking lead roles within a particular area like health and safety rather than becoming supervisors.

Another example of this is machine operators becoming adult apprentices and moving into the trades. Also, forest mensuration and technical services firms often recruit their junior staff from the silviculture sector and their senior staff from the forestry diploma courses. Both groups see forest mensuration work as a good career stepping stone.

8.3.5 *Drawing on prior experiences of new entrants*

Qualitative opinions have also highlighted how firms are filling skill gaps by employing people with previous life and/or work experience rather than focusing solely on national qualifications.

People enter the forest industry by various pathways, and may or may not have formal qualifications and training. They may enter the forest sectors straight from school, from a training provider such as a polytechnic, private training establishment (PTE) or university, or from another industry and have prior qualifications, training and learning. Firms who are employing people with previous experience but no formal qualification believe it is important for FITEC to recognise previous life and/or work experience and find ways to integrate these skills and experience into qualifications.

Some large solid wood processing plants and pulp and paper manufacturers have used recruitment companies to employ temporary labour. This has proven to be successful as the people supplied by these agencies may be employed in qualified, semi-skilled or unskilled roles. Employers then have the option of employing this temporary labour on a more permanent basis.

The use of recruitment companies has helped many companies experiencing skill shortages find staff, and has allowed people looking for work to experience work in the industry prior to permanent employment. Employing people from recruitment companies also means new employees have done their site induction and know the safety rules related to the site.

Companies that provide forest mensuration and technical services employ university students during their summer holidays to provide them with work experience and encourage

them to work for the employer when they graduate. Also, some companies have international exchange programmes and some of the employees on these programmes are encouraged to immigrate to New Zealand.

8.3.6 Suggested training initiatives

There are signs that the number of people with qualifications in most occupations in the forest industry is increasing, or at least, the potential is there to increase qualification levels. Between now and 2011, there is the opportunity for FITEC to offer targeted qualifications, training programmes, and professional development.

The following are some suggestions that firms from the forest industry have made about training.

Employers in the forest industry are investing now in training their staff in the hard skills such as driving and technical skills but training gaps exist in the soft skills areas. In addition, once employees are enrolled in training programmes, employers in the forest industry are looking to add life skills such as budgeting, time management, nutrition and health, to these programmes. FITEC currently offers foundation training programmes, but survey respondents have indicated the need to offer more training in this area.

Training could also focus on encouraging senior experienced staff members to mentor junior team members to increase their skills and knowledge and therefore reduce the issues of senior team members leaving and taking their skills and knowledge with them. This group could receive further training on how to be a trainer or on-site assessor, and team leadership. Employers who are training their staff for career progression suggested that leadership particularly team leadership training could be offered and include unit standards on team leadership and project management.

Wairiki Institute of Technology is working with Canterbury University and Waikato University to encourage students who are doing Diplomas in Forestry Management to do degrees, and also degree students at Waikato University to do forestry as part of their BSc or a business qualification. This may be an area that FITEC may wish to get involved with, encouraging people who are entering tertiary training to include a forestry component in their science, management or engineering degree.

9 Conclusions

The main conclusions to be drawn from this Draft Report are as follows:

- The fact that there was a strong response to the BERL FITEC Survey 2008 representing probably 50% to 60% of the industry itself indicates that the forest industry has a strong set of businesses that are willing to contribute to FITEC's knowledge and assessment of the industry.
- The strong response to the survey has provided a detailed picture of the composition of the forest industry and its sectors.
- The present level of trainees has been approximately 12,000 to 13,000 per annum in recent years. This is a very strong training effort, representing about 40% of the employees in the industry.
- The industry has a strong training outlook, and places a high importance on most types of skills, especially applied technical skills and the 'soft skills' like people skills and leadership skills.
- The firms in the industry have indicated that most employees in the industry have some formal training, and the firms are committed to invest the time and money in training the staff for the future needs of the sectors.
- There are some imaginative initiatives being implemented in some firms' training programmes including skills and training matrices for use by employer and employee in planning their complementary training needs and aspirations.
- Projections of additional employees needed by the sectors of the industry from 2008 to 2011 show that approximately 1,000 additional people will be needed due to growth of the industry, and a further 4,000 to 5,000 people will be needed per year due to employee turnover in the workforce.
- This level of training is clearly not beyond the capacity of the industry as the present training level is some 12,000 plus per annum. However the existing workforce need a changing nature of training over this period to support the expected changes in production systems as they incorporate more automation and other innovations.

10 Appendix 1: Selected forest industries

For the purposes of this research, BERL has focused on the following forest industries.

Table 10-1 Statistics New Zealand ANZSIC classification number and industry title

ANZSIC	Industry Title
A030100	Forestry
A030200	Logging
A051000	Forestry Support Services
C141100	Log Sawmilling
C141200	Wood Chipping
C141300	Timber Resawing and Dressing
C149100	Prefabricated Wooden Building Manufacturing
C149200	Wood Structural Fittings and Components Manufacturing
C149300	Veneer and Plywood Manufacturing
C149400	Reconstituted Wood Product Manufacturing
C149900	Other Wood Product Manufacturing nec.
C151000	Pulp, Paper and Paperboard Manufacturing
C152100	Corrugated Paperboard and Paperboard Container Manufacturing
C152200	Paper Bag and Sack Manufacturing
C152300	Paper Stationery Manufacturing
C152400	Sanitary Paper Product Manufacturing
C152900	Other Converted Paper Product Manufacturing
C251100	Wooden Furniture and Upholstered Seat Manufacturing
F333100	Timber Wholesaling
F373100	Furniture and Floor Coverings Wholesaling
F376300	Paper Product Wholesaling

Table 10-2 Statistics New Zealand employment and FITEC employment 2006

Sector	Employees March 2006 census	FITEC Included	FITEC Excluded
Forestry and harvesting			
A030100 Forestry	2,451	2,451	
A030200 Logging	3,114	3,114	
A051000 Forestry Support Services	2,397	2,397	
Total forestry and harvesting	7,962	7,962	
Processing and manufacturing			
Solid wood processing			
C141100 Log Sawmilling	6,027	6,027	
C141200 Wood Chipping	24	24	
C141300 Timber Resawing and Dressing	1,530	1,530	
Solid wood processing	7,581	7,581	
Panels			
C149300 Veneer and Plywood Manufacturing	1,203	1,203	
C149400 Reconstituted Wood Product Manufacturing	786	786	
Panels	1,989	1,989	
Pulp and paper			
C151000 Pulp, Paper and Paperboard Manufacturing	1,905	1,905	
C152100 Corrugated Paperboard and Paperboard Container Manufacturing	1,494		1,494
C152200 Paper Bag and Sack Manufacturing	156		156
C152300 Paper Stationery Manufacturing	618		618
C152400 Sanitary Paper Product Manufacturing	384	384	
C152900 Other Converted Paper Product Manufacturing	582	582	
Pulp and paper	5,139	2,871	2,268
Furniture			
C251100 Wooden Furniture and Upholstered Seat Manufacturing	5,712	5,712	
Furniture	5,712	5,712	
Other manufacturing			
C149100 Prefabricated Wooden Building Manufacturing	540		540
C149200 Wooden Structural Fittings and Components Manufacturing	6,819	6,819	
C149900 Other Wood Product Manufacturing n.e.c.	2,073	2,073	
Other manufacturing	9,432	8,892	540
Total processing and manufacturing	29,853	27,045	2,808
Total forestry and processing and manufacturing	37,815	35,007	2,808
Downstream sectors			
F333100 Timber Wholesaling	1,218		1,218
F373100 Furniture and Floor Coverings Wholesaling	1,419		1,419
F373600 Paper Product Wholesaling	3,303		3,303
Downstream sectors	5,940	-	5,940
Total forestry and downstream industries	43,755	35,007	8,748

Appendix 2: Selected forest occupations

For the purposes of this research, BERL has focused on the following occupations within the forest industries.

Table 10-3 Statistics New Zealand ANZSCO occupation classification and occupation title

ANZSCO	Occupation Title
133511	Production Manager (Forestry)
234113	Forest Scientist
394211	Furniture Finisher
394213	Wood Machinist
394214	Wood Turner
394299	Wood Machinists and Other Wood Trades Workers nec.
711311	Paper Products Machine Operator
711312	Wood Processing Machine Operator
721112	Logging Plant Operator
839411	Paper and Pulp Mill Worker
839412	Sawmill or Timber Yard Worker
839413	Wood and Wood Products Factory Worker
841311	Forestry Worker
841312	Logging Assistant
841313	Tree Faller
841999	Farm, Forestry and Garden Workers nec.

We have selected these occupations and industries in consultation with FITEC, as the majority of people employed in the forest industries are employed within these categories. However, there are some discrepancies.

Not all of the people employed in the downstream wholesaling industries are employed in forest-related businesses. Timber wholesaling involves businesses engaged in wholesaling

timber; this includes plywood and veneer wholesaling, and timber dealing. However, furniture and floor wholesaling includes businesses engaged in furniture wholesaling as well as those involved in blind, mattress and floor covering wholesaling so not all the people employed in this industry are directly relevant to this research project. In turn, paper product wholesaling involves greeting card, paper or paper board container, and paper stationery wholesaling as well as paper wholesaling. Again, not all of the people employed in this industry are of interest to this research.

In addition, there is a wide range of occupations in the forest industries that are not directly forest-related. For example, there are people that provide support and services to the forest industries such as nursery growers and workers, heavy truck drivers, accountants, and engineers.

Appendix 3: BERL 2008 Survey interviewees

Northland

Tiwha Everitt, PF Olsen

Rowan Struthers, Northern Area Manager, Hancock Forest Management (NZ) Limited

Mark Robertson, LVL Production Manager, CHH Futurebuild

Grant Arnold, Mill Manager, CHH Wood Products

Keith Reay, Northpine Limited

Bruce Larsen, General Manager, Northpine Limited Waipu

Auckland

Walter Lee, Human Resources and Training Manager, Criterion Group Limited

Allan Winter, Managing Director, Danske Mobler

Grant McNaughton, General Manager, M J N McNaughton

David Anderson, Managing Director, Winstone Pulp International

Central North Island

Tim Rigter, General Manager, Red Stag Timber Limited

Melissa Bennett, Human Resources and Health and Safety Manager, Red Stag Timber Limited

Sally Strang, Environmental Manager, Hancock Forest Management (NZ) Limited

Ngaro Tumai, Protection Forester, Hancock Forest Management (NZ) Limited

Les Russell, Eastern Area Manager, Hancock Forest Management (NZ) Limited

Ian Whyte, Mill Manager, Carter Holt Harvey Pulp & Paper Kinleith

Jenny Oakley, Human Resources Manager, Carter Holt Harvey Pulp & Paper Kinleith

Bob Willetts, ABB Limited

Louise Macbeth, Training Coordinator, ABB Limited

David Herries, Interpine Forestry Limited

Jeremy Christmas, Director School of Forestry, Wood Processing and Biotechnology, Waiariki Institute of Technology

Alison Clark, Peter Clark Limited

Alan Gleason, SCA Tissue

Don Hammond, Hammond Resource Management Limited

Taranaki/Wellington

Bruce Bulloch, National Treasurer, New Zealand Farm Forestry Association (Inc)

Peter Boedecker, Chief Executive, Wood Processors Association of New Zealand

Gary Brocklebank, Ferndale Furniture

Peter Sutton, The Living Room

Nelson/Marlborough

Aaron Robinson, Nelson Forests Limited

Rick Osbourne, Flight Timbers Limited

Murray Turbitt, Merrill & Ring New Zealand Limited



John MacKenzie, MacKenzie Forestry Management

Paul van der Voort, PF Olsen Ltd

Rob Laurence, PF Olsen Ltd

Tamati Smith, Tasman Forest Management Limited

Ron Sutherland, PALMS Ltd

Jeremy Paterson-Green Zindia Ltd

Blair Tilley, Nelson Pine Industries Ltd.

West Coast/Canterbury

Natasha Wong, Production Manager, Carter Holt Harvey Panels

David Shaw, David Shaw

Murray Turnbull, Director, M F Turnbull Ltd.

Alister McKenzie, Royal Furniture

Aaron Sonnenberg, Manager, Gunns Veneers New Zealand

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