

Industry Skills Scan 2014

A research summary of the developments and directions impacting on skills, training and workforce demands in the forest, wood, paper and timber products industry.





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With its contribution to global sustainability, the forest, wood, paper and timber products industry will play a significant role in the economy and communities into the future.



Overview

The forest industry makes a significant contribution to the Australian economy through the manufacturing of renewable and carbon-rich timber materials and bioenergy, particularly in rural and regional Australia. The industry had a total sales turnover of \$21.3 billion in 2011-12, with an industry added value of \$6.3 billion. In addition to its economic value, the industry is a major employer. The forest industry supports approximately 100,000 direct jobs, mainly in regional areas. There are around 15,000 employed in forestry and logging; 20,000 by sawmills and related processing plants; and more than 40,000 in the manufacture of wood products (including wood based panels and frame and trusses). The pulp and paper sector employs a further 21,000 people.ⁱ

An analysis of the macro and micro economic industry factors covered in section one of this Industry Skills Scan, as well as predictions from market analysts,^{ii,iii} indicate increasing demand in traditional wood and paper product markets and new opportunities in bioenergy and innovative new products such as nanocrystalline cellulose and cross-laminated timber.

To stay ahead of society's needs and demands, industry requires a workforce prepared for efficiency, flexibility and equipped with both high order and broad based skills across decision making, technical and communication areas.

The priorities for workforce skill development that successfully underpin this industry and its businesses' directions into the future require:

- Improved literacy and numeracy as industry develops in sophistication, with greater digital-based work functions; trend data reporting; program and process digital information; interaction of multiple computer controlled machines and processes.
- Advanced technical and digital skills that implement and use resource efficient methods and quality control tools and techniques; provide technical maintenance to the advanced technology.
- Significant operations management skills to manage production platforms that allow both high-end and low-end products to be produced at the same facility or even on the same production process; and, form new collaborations that allow development of innovative materials such as cellulosic fibre technologies.
- Strategic skills for senior managers that will need to encompass greater thinking, planning and communication within partnerships to respond effectively to domestic and global pressures and trends; and generate capacity to develop new ties with industries that potentially gain economic, social and environment benefits from using wood in products or processes (such as commercial and institutional infrastructure, textile, automotive, aerospace, electronics, consumer products, and medical device).
- Knowledge of new world economies and developed countries in order to take advantage of Australia being recognised for its forest investment potential and attract direct investments for resource development and industry development.
- Industry leadership generated by the volunteer effort of work experts, who work in industry and commit their time and expertise to ForestWorks ISC, to provide us with the information and data to convert into national skills standards and qualifications.
- Research and development skills to contribute to industry innovation to enable businesses to improve their competitiveness.

Meeting industry's workforce skill development priorities and the emerging skills needs are at the forefront of ForestWorks ISC activity. Our goal is to facilitate continuous learning, high and medium-level skills and diverse knowledge that lead to creativity, innovation and higher productivity.



SECTION 1

Latest intelligence

Section summary

- The pressure on forests are increasing over the longer term due to population growth, social, economic and environmental development and land use constraints at global and national levels.
- To respond effectively to future needs, the Australian forest and wood products industry will need to continue to develop effective communication and collaboration with governments, communities and other industries, and invest in the higher order skills required to do this.
- Operating in a high cost economy is a business challenge that is especially demanding for trade exposed industries in Australia. This can also be an opportunity for improvement through innovation – as a number of businesses and industry regions demonstrate, providing examples of industry leadership.
- Targeted collaboration, and active support and cooperation from the public and private sector, including the financial industry, can also lead to a greater use of business opportunities created by growth opportunities and domestic and international markets, particularly Asia.
- Although patchy, industry stakeholders are reporting a level of recovery from the economic recession and there are signs of increasing interest in investing in and adopting advanced workforce development plans.
- Sporadic demand for formal training, increased Australian Skills Quality Authority (ASQA) requirements, and tighter standards for regulation of RTOs has created a difficult operating environment for the VET sector in this industry and is posing challenges for the future of our human resource development.
- Extensive work by ForestWorks ISC with the industry, its businesses and the VET system to create and maintain workforce development partnerships and relevant skill standards and training delivery continues with a focus on leadership and innovation capabilities, technical skills and foundation skills.
- The industry is looking at ways of increasing the amount of research and development and have developed a proposal for a National Institute for Forest Products Innovation to be jointly funded by industry and government.

Macroeconomic Factors affecting this Industry and Workforce Development

World's growing population, society demands, environmental concerns and depletion of non-renewable natural resources are all global factors that produce pressures on forests' use and their associated industries. That is because trees and the wood they supply is the sustainable product the modern world demands – a renewable, carbon-sink, incredibly versatile and recyclable product.

To respond effectively to future needs, the Australian forest and wood products industry will need to continue to:

- Communicate with governments, other industries and communities, to ensure an informed understanding of the sustainable management of forest systems that delivers a renewable product essential to our communities and the environment.
- Develop higher order skills to satisfy ever-increasing and diversified needs of a growing population demanding renewable resources and products that can be sourced from Australia's forests.

The key macroeconomic conditions affecting the future of this industry include:

- Fast global population growth in developing nations and increasing living standards, particularly in Asian, South American and African growing economies, which support an increasing demand of timber, wood products and paper products globally.
- Ongoing Australian population growth supports increasing demand in the housing market and domestic consumption of structural timber and wood products. The consumption of sawn wood and wood-based products in Australia is forecast to grow by 0.7 and 2 per cent, respectively, a year on average between 2012 and 2050^v.

- Growing economies of the world and developed countries continue to generate an increasing demand for energy but the world's environmental and social trends will further demand a reduction in environmental impacts via increased use of forests and wood supplies to reduce carbon emissions and oil-based energy materials.
- The business environment in Australia which is currently being shaped by high commodity prices, a dollar that remains at elevated levels and high corporate tax rates. This puts Australian trade-exposed businesses behind some of the major trading partners and key regional and industrial competitors^{vi}.
- Increasing demand on water globally and in Australia will influence the ratio of value of existing native forests to protect domestic water supply through water catchment areas; and, the ratio of land for plantations where ground-water is in debate^{vii} or water regulations introduced.
- The growing pressures on preserving biodiversity will influence forest management and production levels as this interacts with the expansion of protected biodiversity sites.



- Growing climate change effects of higher temperatures, drought, flood and bushfire conditions affect the forest growth and resource suitability for intended production purposes^{viii}.
- Continuing developments of UN Framework Convention on Climate Change and the Government's Direct Action Plan are relevant for future opportunities and challenges in forest management and use. Also, the continuing evolution and expansion of regulatory based regional cap and trade systems and voluntary schemes and the demand of forest carbon markets globally^{ix} provide an indication of the potential of Australian based forest projects to generate carbon credits within sustainable landscapes.
- Growing demand for food and food supply challenges support an increased tension with land and water use between forests and agricultural systems. In Australia, land under forest plantations is expected to decrease over the next 5 to 10 years due to a number of reasons including forest plantation conversion to agriculture or decisions to increase ground-water recharge^x.

Macroeconomic environment calls for strategic approaches

Greater strategic thinking, planning, communication and collaborative partnerships skills will allow the industry to respond effectively to domestic and global pressures and trends. Further, the industry will continue to increase its ability to develop ties with:

- various industries that might gain sustainability advantages from using wood feedstock in their products or processes.
- Australian and overseas consumers, by developing niche industries that feed into developing markets.
- investors from the new world economies and developed countries, considering Australia's foreign investment potential.

Focusing on people development as a key strategic asset that can be applied to extract maximum value and add to timber and wood products and services.

Microeconomic factors affecting this industry and workforce development

Industry shows readiness for improvement

For the last few years, business activity and workforce development in this industry were shaped by the economic downturn, changes in plantation ownership and diminution of access to significant native forests areas. Many businesses ceased operating and retrenched large numbers of workers due to these effects resulting in a substantial loss of critical skills to the industry. Company restructures and considerable reviews of business activity and workforce utilisation also resulted in a reduction of the workforce and therefore a further loss of critical skills.

With improved business and consumer confidence in 2013, industry stakeholders report patchy recovery and increased interest in investing in and adopting workforce development plans. However, employers remain mindful of challenges ahead, such as the slow recovery of residential and commercial construction, increasing import penetration, slow productivity growth and skill shortages.

Change can only happen with active support and cooperation; thus, collaboration has become a critical skill development strategy which is developing in this industry.

ForestWorks ISC contributes to this through its annual Industry Development Conference and the federally funded Innovation Skills Program. Clearly, more businesses are now able to identify what innovation and working collaboratively involve. ForestWorks ISC continues to address these themes through its activities with industry.

Economic drivers

The following economic indicators and drivers have been raised consistently by stakeholders as influencing their business activity and workforce development:

Security of native hardwood resource supply

The ongoing reduction of native forest area for timber production has produced enduring concerns in the industry regarding hardwood timber supply in the future to meet local demand for appearance grade timber products. In 2011–12, the total volume of native hardwood logs harvested in Australia decreased by 28 per cent from the year before^{xi}.

The wood supply agreements for state forests have only recently transitioned in most of the states to long-term agreements. Long-term economic stability of local businesses is therefore expected to improve and generate development in this segment of the industry but the log volumes enacted through agreements for harvesting and the prices applied to the logs continue to produce economic viability challenges to sawmilling businesses as they are currently configured.

Security of plantation hardwood and softwood resource supply

The recent commercialisation of previously state-owned plantations has introduced the industry to new owner (investor) policies and new market priorities. Measures to prevent supply mismatch in the local market were adopted in South Australia but in the rest of the country there is industry debate that international markets will become a key option of the owners to commercialise the plantation resource.

Since 2006–07 the area of new plantations has continued to decline, (both softwood and hardwood), with an overall reduction in the development of new plantations of 90 per cent over the past 6 years^{xii}. The industry also forecasts that 40 per cent of short rotation hardwood plantations harvested are unlikely to be replanted over the next 10 years leading to an overall 16 per cent reduction of Australian plantations^{xiii}. This means future challenges to wood supply from the domestic forest plantations.

Bioeconomy

A growing Australian bioeconomy can provide additional economic opportunities and outcomes for this industry, particularly with forest biomass and wood resources for bioenergy production, biocomposites and biochemical.

The South Australia government has advanced and supported over the last two years the Cellulosic Value Chain Technology Study and South-East Forestry Partnerships Program to encourage capital investment for development and diversification of the forestry resources in the Limestone Coast region of the state.

In Tasmania the Plantation Manufacturing Innovation and Investment Fund (PMIIF) was made available. In Victoria the Australian Research Council and Monash University together with participating businesses announced funding for the Bioprocessing Advanced Manufacturing Initiative (BAMI) which is to develop functional materials to maximize the value of forest resources and green chemistry and energy solutions for bioprocessing industries.

Increased imports and threats to local markets

This industry continues to be affected by a large volume of imports, particularly in the paper and paperboard products sector and wood-based panels. For instance, the total volume of paper and paperboard imports increased by about 20 per cent (on average) over 2010–12 compared to 2009^{xiv} and continued to increase in 2012–13 for particular grades of paper^{xv}.

While the Customs Amendment (Anti-dumping Improvements) Act 2012 might remove some of the price pressure created by dumped products, many other socio-economic implications produced by imports remain unresolved. Low quality standards and safety issues associated with low quality products continue to pose a risk to users and the imports are having a negative impact on Australian manufacturing jobs and local production. A small positive step forward has been made, with increased industry campaigns, through the recent changes in Federal Government paper procurement policy^{xvi}.

Australian high standard and cost economy

Operating in a high cost economy is a constant business challenge^{xvii}. Large companies in the industry show greater capacity for securing financial capital to invest in business development, when compared to smaller businesses. For instance, a number of large sawmills from the south-west New South Wales and Gippsland region of Victoria have undertaken significant technology upgrade to their facilities over the last years, increasing efficiency and production focus on the business' highest value products.

Small and medium businesses are starved of capital, with a severe impact on the ability to innovate and invest. In response to the need for business to improve its innovative capacity, a

series of industry and ForestWorksISC's Innovation Skills Program forums have been implemented to engage businesses in discussions about how to build their management practices and skills to form new business partnerships and collaborations.

Housing and commercial building demand

Housing and commercial building demand is the strongest economic driver for most timber manufactured products and wood-based panels businesses. The market instability exhibited in the last few years has improved during 2013 in most parts of Australia for both new housing and housing renovations. Forecasts indicate however that activity will remain flat during the next 2 years.^{xviii,xix}



Consumer trends

New customer trends such as the move to digital information and the increasing trend for multi-unit residential buildings^{xx} in the Australian market are challenging pulp and paper and timber manufacturing sectors.

Digital technology and imports of finished paper products from countries with lower cost bases that are able to supply global markets with consistent volumes of paper at lower prices will further reduce the market for the local paper manufacturing industry.

Paper and packaging businesses continue to pursue increased use of recovered paper for paperboard and an increasing proportion of printing and writing paper, import of high quality pulp for other grades of paper, considerable paper product innovation for growing in niche markets, and production of biofuel and nanocellulose in biorefineries.

Traditionally, multi-unit residential buildings use less timber than single houses but they could provide avenues for increased market opportunities for panelised building elements and other structural timber solutions. This requires innovation and collaboration in the building sector to move towards multi-storey residential and commercial timber buildings as used overseas and by Lend Lease in the Forte example at Melbourne docklands.

Efficient and resilient architectural solutions, inspired and customised lifestyle home designs with integrated interior and exterior wood features are all elements of potential and growing new market trends.

VET Market Conditions in the Industry

Difficult environment for businesses and RTOs alike

Workforce development has been part of business sustainability strategies for many businesses during the economic uncertainty where the reality of tight budgets has led to a focus on informal in-house approaches to skill development.

Declining state government funding for TAFEs and the increasing cost of more sophisticated skills for training delivery have further reduced

businesses' capacity to invest in nationally recognised training. Several TAFEs removed or minimised the Forest and Forest Products qualifications from their scope and have not replaced teachers leaving this system.

Other VET sector initiatives, such as ASQA requirements from August 2013 and tighter standards for regulation of RTOs, will continue to put pressure on the RTOs into the future.

This environment has challenged not only the RTO's business viability but put also at risk their own workforce development strategies. Those RTOs continuing to use networks, such as the Forest Industries Assessment Plan System (FIAPS) and ForestWorks ISC network, were able to benefit from increased access to VET policy developments and practices related to skills development, increasing their ability to participate in quality and improvement training activities.

Meeting the changing VET demands from industry and learners

Increasingly, industry stakeholders are seeking skill development assistance for a broader range of skills than just those technical skills traditionally delivered by industry RTOs.

As an example, the national RTO Managers meeting conducted by ForestWorks ISC on 19th November 2013 reported a general reduction in full qualifications enrolments but an increase in requests for fee for service short courses.

Introduction of advanced manufacturing technologies tends to remove labour intensive tasks creating opportunities for the workforce to deal with digital information and an increased attention to solutions for resource efficiency, quality control and effective management of the supply chains.

Recalibrating the skills base is an ongoing challenge for businesses and the VET sector alike. VET sector challenges include the delivery of education programs that are able to equip the workforce with:

- technology-related knowledge and skills.
- skills for using external, real time data to budget, plan or forecast in the organisation.
- non-technical skills and knowledge that underpin successful participation in work (the core skills for work)^{xxi}.



Maintaining technical depth and relevance whilst delivering on a wide range of high level generic and management skills will continue to require a flexible VET delivery system and ongoing coordination.

ForestWorks ISC continues to play a significant role in the system facilitating the coordination and VET-industry exchange programs. VET connectivity with businesses provides opportunities for trainers to access up-to-date technology and practices, and develop courses that involve practical experience within business developments.

ForestWorks ISC has focused on increasing the delivery capacity for the industry to include underpinning foundation skills and higher level innovation and leadership skills including people management and self-management skills in line with this need. ForestWorks ISC's critical initiative with the industry has been to establish a people development approach with a focus on innovation. This includes conducting forums for industry followed

by the opportunity for innovation working groups, supported by experts and government services, such as Enterprise Connect and the National Workforce Development Fund.

The Innovation Hub that supports this program is at www.forestworks.com.au/innovation

ForestWorks ISC is currently working with a number of RTOs to cover a range of skills sets that include broad skill areas such as innovative thinking and practice, business development and change management.

Enterprises in the forest, wood, paper and timber products industry are often regionally based with limited or no local access to literacy and numeracy training specialists.

ForestWorks ISC has worked extensively with enterprises providing advice on how to approach Language Literacy and Numeracy (LLN) delivery whilst assisting providers to develop strategies to enable a smooth delivery process within an enterprise with multiple sites across state boundaries.

Sector overview

	Forest Growing and Management	Harvesting and Haulage	Sawmilling and Processing
Sector description	This sector includes businesses that manage plantation estates, native forests and farm forests for the production of commercial wood and wood fibre, for carbon offsets, recreation or conservation benefits, or the production of other forest products. It also includes forestry support businesses that provide plantation, maintenance and research services to the forestry sector.	This sector includes all businesses that harvest forests for logs destined for a wide range of timber products, firewood, pulpwood and rough-hewn products (such as mine timbers, posts and railway sleepers). There are also businesses that produce woodchips in the field and gather forest biomass.	Sawmills process logs for the production of sawn timber and resawn timber. Sawn timber products include structural green sawn timber and dry sawn timber. They are further processed at the same mill or downstream into timber components and a variety of other timber products. This sector also includes businesses that manufacture softwood or hardwood wood chips (used in the pulp and paper product manufacturing industry); and, businesses that source timber from sawmills and timber re-sawing and dressing processors to manufacture veneer, plywood and laminated veneer lumber (LVL).
Skills shortages (shortage of workers)	<ul style="list-style-type: none"> Forester Forest manager Forestry worker Forest technical officer Workplace trainer and assessor 	<ul style="list-style-type: none"> Logging plant operator Manual chainsaw harvester Manual fellers in steep terrain Logging truck driver Mechanic and fitter 	<ul style="list-style-type: none"> Timber drying kiln operator Saw doctor Sawmilling operator Truck driver Forklift operator, electrician, fitter
Skills gaps in existing workforce	<ul style="list-style-type: none"> Small business management skills Skills in resource analysis and management of environmental risks Digital literacy Specialised skills in GIS Forest firefighting skills Fire salvage skills Leadership skills for innovation Strategic skills, communication skills for collaboration, critical thinking skills Energy efficiency skills 	<ul style="list-style-type: none"> Skills in small business management Skills in segregating and sorting logs Digital literacy Leadership skills for innovation Strategic skills, communication skills for collaboration, critical thinking skills Energy efficiency skills Skills for implementing new national code of practice 	<ul style="list-style-type: none"> Skills in timber treatment Skills for timber grading 'Finger jointing' skills Advanced technical skills Digital literacy Leadership skills for innovation Strategic skills, communication skills for collaboration, critical thinking skills
Emerging skills needs	<ul style="list-style-type: none"> Skills for increased forest productivity Skills for forest growing and management in far northern Australia 	<ul style="list-style-type: none"> Skills in cording and matting of log extraction and log processing Skills for operating biomass harvesting machinery 	<ul style="list-style-type: none"> Skills for processing small diameter logs Skills for implementing chain of custody practices Skills for bioenergy

Pulp and Paper Manufacturing	Timber Manufactured Products	Wood Panel and Board Production	Timber Merchandising
<p>The pulp and paper industry manufactures produce pulp and a wide range of paper and paper products in the following main categories: printing and communications paper, newsprint, packaging, industrial paper, tissue and family care products.</p>	<p>This industry sources timber from sawmills and timber resawing and dressing processing operations to manufacture wooden structural components (doors and windows, roof trusses and wall frames, glue laminated lumber (Glulam), Laminated Veneer Lumber (LVL), I-Beams), components for prefabricated buildings and joinery. This also includes: companies that manufacture structurally complete prefabricated wooden buildings or sections of a building; and, businesses that produce dressed timber (such as floorboards and weatherboards) or mouldings and resawn timber.</p>	<p>This sector consists of businesses that manufacture wood boards (particleboards, medium-density fiberboards (MDFs), hardboard, softboard, and other fibreboards) from reconstituted wood fibres (such as wood chips, sawdust, wood shavings, slabwood or off-cuts). Parts of this sector also manufacture laminations from timber and non-timber materials (including decorative plastic laminates on wood boards or other substrates).</p>	<p>This sector operates via two major channels: retail and trade merchants selling to the public, DIY market and builders; and wholesalers, manufacturers, importers and exporters. Retail and trade merchants stock a broad range of local and imported timber products, panel products, wooden structural components and builders' hardware. Wholesalers, manufacturers, importers and exporters sell, import and/or export large volumes of hardwood and softwood products, sawn and moulded products, softwood framing, panel products and engineered wood products; and distribute them through the merchant sector, or directly to the building industry.</p>
<ul style="list-style-type: none"> Paper machine operations manager (highly qualified) Chemical engineer Electrical engineer Mechanic, electrician, boiler maker, plumber 	<ul style="list-style-type: none"> Wood machinist Estimator and detailer for roof trusses, floor systems and wall frames Truck driver, forklift operator, electrician, mechanic 	<ul style="list-style-type: none"> Electrician Plumber Mechanic 	<ul style="list-style-type: none"> Stock inventory officer Sales assistant Retail supervisor Warehouse manager Timber yard operator Truck driver, forklift driver
<ul style="list-style-type: none"> Advanced technical skills (Remote) control systems and production operations skills Line management and team leader skills for production line supervisors Operator level maintenance skills Leadership skills for innovation Strategic skills, communication skills for collaboration, critical thinking skills 	<ul style="list-style-type: none"> Advanced technical skills Digital skills Skills for value chain logistics Leadership skills for innovation Strategic skills, communication skills for collaboration, critical thinking skills 'Finger jointing' skills 	<ul style="list-style-type: none"> Advanced technical skills in using new sector-specific technology Leadership skills for innovation Strategic skills, communication skills for collaboration, critical thinking skills 	<ul style="list-style-type: none"> General knowledge about wood and timber products Supply chain communication and collaboration skills Analytical skills Digital literacy
<ul style="list-style-type: none"> Skills for future environmental sustainability developments Skills for implementing chain of custody practices 	<ul style="list-style-type: none"> Electronics maintenance skills Knowledge and skills to use energy efficiency options Skills for implementing chain of custody practices 	<ul style="list-style-type: none"> Knowledge and skills to use energy efficiency options Skills for implementing chain of custody practices 	<ul style="list-style-type: none"> Skills for implementing chain of custody practices



SECTION 2

Analysis of workforce development needs

This section summarises the workforce development priorities for each of the seven sectors of forest, wood, paper and timber products industry.

Section summary

- Workforce development in this industry over the past two years has been largely been carried out as an 'in-house' activity. This is part of the effort to reduce external costs and expenditure as a result of reduced sales, low resources and increased focused on immediate business viability.
- The significant loss of workforce and their skills during recent years is now requiring increased use of formal training in areas of the industry regions supplying residential construction sector and other areas where demand for the timber industry products have increased.
- Traditional skill shortages for industry-specific occupations (including forester, manual chainsaw harvester, wood machinist and timber drying kiln operator) continue to exist in some regions, or, in other parts, evolved as a skill gap rather than a shortage during restructuring.
- Trade professionals such as mechanics, electricians and truck and other mobile equipment drivers continue to remain in shortage for all sectors of this industry.
- In the short to medium term, workforce development strategies supporting business development will consider up-skilling in several key competency areas:
 - Advanced process-oriented technical skills and digital literacy at high technology workplaces.
 - Licence compliance and inventory skills across most workplaces.
 - Skills for timber products supply chain and logistics solutions and analytics skills.
 - Energy efficiency skills.
 - Innovation suite skills (leadership, communication, critical thinking, strategic thinking).
- The industry training packages are being highly responsive to the industry skills needs, undergoing reviews and upgrades across all identified skills needs areas, which has been causing concern with RTOs required to keep up with these changes.
- ForestWorks ISC will continue to target engagement and consultation for those areas of rapid technological and practice change.
- A key emerging space for the industry and workforce development is innovative wood and fibre products technologies such as bioenergy solutions, new wood fibre based compounds and materials.

Forest Growing and Management

Sector trends and developments

- The wood supply agreements concerning commercial use of Australia's native forests have been improved in most states over the last few years, endorsing long-term guaranteed log resource. Still, the volume of logs legislated for harvest, and the price applied, remain factors of economic uncertainty for the hardwood sawmilling businesses and industry's capacity to respond effectively to the market demands.
- The recent corporatisation of a number of state-owned forest growing and management institutions involved a greater focus on business restructure, reducing temporarily the decisions about workforce development and amount of training needed by the business. Workforce Development Plans are expected to become more important and will lead to increased training demands in the coming years.
- From 2007 to 2012 the plantation rate of new forest areas has decreased by 90 per cent. Also, replanting of harvested plantations has significantly reduced.
- Agroforestry has increased its share of forestry accounting at present for approximately 20 per cent of all plantations and 90 per cent of all new plantations.
- Sustainability continues to be a key focus with an increasing number of businesses adopting both Australian Forestry Standards (AFS) and Forest Stewardship Council (FSC) certification systems; new policies have been adopted to protect wildlife and their habitats while maintaining a sustainable timber industry.
- Australian Forestry Standard (AFS) and Forest Stewardship Council (FSC) standards have driven forest businesses to invest significantly in internal, system focused training to ensure staff and contractors know the specifics of the standards procedures, but not yet to national competency standards.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
234113 133511	Forester/ Forest manager	Foresters remain in high demand in most states (excluding Tasmania) due to an ageing workforce and difficulty in attracting younger workers. The rate of forestry graduates remains low.	The industry and universities continue to apply strategies for overcoming the student shortage and outcomes are expected over the medium to longer term. ForestWorks ISC continues to examine feasible qualification pathways from VET qualifications to undergraduate qualifications in the higher education sector.
841311 311413	Forestry worker/ Forest technical officer	Plantation areas destroyed by the 2011 cyclone in Queensland and Black Saturday fires in Victoria continue to require workers as replanting develops over a number of years.	Investigation of flexible training approaches is being undertaken, including modes such as teleconference, Skype, flexible modules, as well as partnerships between organisations.
242211	Workplace trainer and assessor	RTOs report difficulty in recruiting and retaining forestry trainers due to low market demand (leading to incapacity to offer full time work) and lack of suitable applicants ^{xxii} .	ForestWorks ISC is assisting the sector and training providers to coordinate a critical mass of trainees at a national level, by promoting links between RTO trainers and assessors and workplace trainers, and is developing new resources to support learning and assessment.

Workforce development needs	Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill gaps (skill gaps in existing workforce)		
Small business management skills	Small forest growers will need to lift their business management practices, partnership capabilities and the compliance with Workplace Health and Safety laws and codes of practice, to maintain their economic viability.	ForestWorks ISC is scoping existing and emerging skills and knowledge requirements for managers of small forestry and harvesting businesses to develop opportunities and career pathways into management.
Skills in resource analysis and management of environmental risks	The use of GIS, IT (for integrated harvest planning, quality control and forest science advancements) and resource analysis and solving problems associated with environmental issues has expanded rapidly as part of industry development and the Environmental Management System (EMS) of plantation and native forests estates, including the implementation of AFS and FSC standards.	The Advanced Diploma in Forest Industry Sustainability integrates competencies for job roles with sustainability specialisations. Digital literacy is additionally supported and promoted via the explicit incorporation of foundation skills into performance criteria in the transition of training packages to the new standards.
Digital literacy/ Specialised skills in GIS		
Forest firefighting skills	State-based forestry institutions have prioritised increasing the skills and labour capacity for firefighting management and fire salvage operations as this dropped due to the rate of skilled workers who left the industry.	The skill set for fire salvage operations is now available in the FPI11 to support training for a quick response to bushfires. Industry feedback has clarified that specific firefighting training is sourced from the Public Safety Training Package.
Fire salvage skills (harvesting burnt timber and regrowing)		
Leadership skills for innovation	Leadership skills for innovation, high strategic skills and collaboration skills (for relationships in the supply chain and with the broader community) are essential for businesses to compete successfully. Leadership skills are also necessary to develop creative workplace environments.	Skill sets for supporting innovation, collaboration and leadership capacity for leaders, managers and operations personnel in the forest and wood products businesses are now available in the FPI11. The Advanced Diploma in Forest Industry Sustainability integrates competencies in community liaison.
Strategic skills/ Communication skills for collaboration/Critical thinking skills		
Energy efficiency skills	Forestry enterprises have the potential to improve their energy use by using low-carbon alternative fuels, new technologies for efficient use of fuel, logistics monitoring and optimisation.	A new unit of competency for supporting skills to maintain energy efficient work practices is now available in the FPI11 together with a new learner resource 'Maintain and contribute to energy efficiency'. The unit and learner resource supports further the workplace-based learning of energy efficiency concepts and practices. New customised forestry industry specific units will be incorporated into the Innovation Skill Sets and Advanced Diploma of Forest Industry Sustainability in 2014.
Emerging skill needs		
Skills for increased forest productivity	Increased forest productivity will contribute to meeting resource demand in the future and it can be achieved through improving tree genetics, superior nutritional work and better silvicultural methods.	ForestWorks ISC will continue to analyse the latest practices in these areas and update or develop units and skill sets as required.
Skills for forest growing and management in far northern Australia	There is potential for industry to expand in this region due to the area's higher rainfall, the range of species types, demand for new products and opportunities for indigenous economic development and landscape management. Tiwi Island, with its new port, will commercialise its plantations exporting logs by June 2014. Skill gaps relate to harvesting and haulage.	The industry will work with providers to develop knowledge and skills related to new species and new product types.

Harvesting and Haulage

Sector trends and developments

- The lack of demand for wood chips during 2013 has kept the demand for harvesting and haulage work low and commitments to undertake training have also been lows. However harvesting volumes have been increasing in specific regions such as in hardwood pulp plantation in the Green Triangle and Great Southern region of Western Australia which will lead to future training demand.
- Management approaches in this sector create highly competitive environments for the harvesting and haulage contractors. In many cases, profitability is driven very low levels and often removed compromising business viability. The skills to understand and manage these business requirements are becoming very important.
- Remote vehicle monitoring, messaging and equipment control technology (GPS tracking) is increasingly used in this sector to address road-safety issues, monitor delays, facilitate improved communication between workers exposed to highly isolated working areas and manage logistics operations. This technology involves some level of digital literacy, and significant changes and opportunities for management of logistical operations.
- Other critical skills required by managers in this sector to increase workforce performance include: leadership and working effectively with others, high-level technical skills (aligned to up-to-date technology and its sophistication) for logging plant operator roles, digital literacy, and Work Health and Safety (WHS) knowledge and compliance skills.
- Challenges to sustained development of a highly skilled workforce in this sector include: a workplace culture that traditionally was centred on informal workplace organisation and workforce migration to other industries with better wages and greater job security conditions; shortages of skilled operators on the job market.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers to fill job roles)			
ANZSCO	Occupation		
721112	Logging plant operator	Many plantations have reached commercial maturity, and will continue over the next years, driving high demand for mechanical harvesting operators. The mature-age workforce, difficulty in attracting talented new staff, the high capital investment needed to develop a harvesting and haulage contractor business, complexity of training, and higher incomes offered by other industries in particular regions, are all drivers of skill shortages related to these occupations.	The current skill sets satisfy mechanised plantation harvesting requirements. ForestWorks ISC is looking at developing strategies for transition and mobility of native forest harvesting operators to plantation areas in demand for harvesting. Formal training for manual fallers in steep terrain is still required however, with machinery doing much of the harvesting in flatter terrain, sustainable demand for these high-level manual harvesting skills is reducing.
841312	Manual chainsaw harvester		
841312/ 841313	Manual fallers in steep terrain		
733111	Logging truck driver	Logging truck drivers continue to have a high percentage of older workers, and new recruits are difficult to find. The shortage is particularly severe in regions where mining and forestry are co-located. Specialised driving and WHS skills are required for driving on logging and the associated country roads. Truck drivers who are not experienced in off-road and heavy haulage require specific skill sets.	Two new units addressing safety and specialist log truck driver skills and two new skill sets addressing the unique load bearing and movement issues specifically involved with the transportation of and loading of logs, have been developed and are now available in the FPI11 training package.

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers to fill job roles)			
ANZSCO	Occupation		
321212 323211	Mechanic Fitter	These job roles are an integral part of the sector’s service industry and continue to be in shortage for this sector.	The industry will continue to promote the benefits of this sector for technical specialists, particularly the career and lifestyle benefits.
Skill gaps (skill gaps in existing workforce)			
Skills in small business management	Business owners have identified the need to improve business management skills, the LLN skills essential to business management, their partnership capabilities and compliance with workplace health and safety laws and codes of practice, to maintain the economic viability of their businesses.		ForestWorks ISC is scoping the benefits of developing a new Certificate IV in small forestry and harvesting and haulage businesses. ForestWorks ISC has also developed Harvesting and haulage learning implementation toolkit to assist trainers with the newly-endorsed Foundation Skills Training Package.
Skills in segregating and sorting logs	Best practice methods to maximise the recovery of logs and sort the resources for the most appropriate uses add increased value to the industry. A hardwood pole incorrectly graded as salvage log results in an 80 per cent loss in stumpage value to the forest grower. Also,sawmillers will not accept logs that are persistently graded above their potential sawn-wood recovery value. ^{xxiii}		ForestWorks ISC continues to encourage ongoing skill development activities in this area for qualified workers in order to maximise recovery.
Digital literacy	Harvesting is increasingly mechanised and assisted by computers. Also, the use of electronic data capture systems increasingly replaces written log docket for transferring log information. Thus, IT knowledge and skills become an integral part of being a harvesting operator.		ForestWorks ISC will continue to ensure the training package keeps abreast of technical changes, will circulate information on emerging technologies and will support professional development for trainers and assessors.
Leadership skills for innovation/ Strategic skills/ Communication skills/ Critical thinking skills	Leadership skills for innovation, high strategic skills and collaboration skills (for relationships in the supply chain and with the broader community) are essential for businesses to compete successfully. Leadership skills are also necessary to develop creative workplace environments.		Skill sets for supporting innovation, collaboration, and leadership capacity for leaders, managers and operations personnel in the forest and wood products businesses are now available in the FPI11. The Advanced Diploma in Forest Industry Sustainability also integrates relevant competencies.
Energy efficiency skills	Forestry enterprises have the potential to improve their energy use by using low-carbon alternative fuels, new technologies for efficient use of fuel, logistics monitoring and optimisation.		A unit of competency for supporting skills to maintain energy efficient work practices is now available in the FPI11. A new learner resource, ‘Maintain and contribute to energy efficiency’, supports further the workplace-based learning of energy efficiency practices and leadership.
Skills for implementing New National Codes of Practice for Managing Risks in Forest Operations	In line with the current national WHS legislation, harvesting and haulage operators need to acquire skills to implement the requirements under the New Code of Practice for Managing Risks in Forestry Operations and Cable Logging.		ForestWorks ISC is considering whether this new code requires changes to the competency standards and/or training delivery materials.
Emerging skill needs			
Skills in cording and matting of log extraction and log processing in loading areas	Forest certification principles require harvesting and haulage contractors to comply with specific environmental criteria by using agreed practices.		ForestWorks ISC will scope the requirements to review the relevant units of competency.
Skills for operating biomass harvesting machinery	As bioenergy sector grows, harvesting and haulage contractors will play a role in forest biomass harvesting. Specialised machines such as bundlers and mobile chippers are used in harvesting biomass.		ForestWorks ISC will scope industry skills requirements for operating biomass harvesting machinery. A mallee harvester has been successfully developed jointly by Biosystems Engineering and Future Farm Industries CRC to assist the biomass supply chain based on mallee trees.

Sawmilling and Processing

Sector trends and developments

- The production of sawn-wood products has declined for the last few years across Australia due to lower housing construction levels and from an increase in cheaper imported products. Residential construction sector (representing more than 70 per cent of the domestic sawn timber market) has improved in Qld and NSW during the second part of 2013, increasing industry optimism for recovery and presenting prospects for formal training.
- The woodchip industry has faced export declines and low domestic demand during the last few years. The pressure has been not only from the economic growth in the industry's main exports markets (Japan, Korea and China), increased global supply from low cost countries with new, up-to-date woodchip production facilities but also from increasing market preferences for FSC certified woodchips. Growing industry's capacity and skills of adding FSC compliance to FSC Australia has become vital for a number of businesses exporting in Asian woodchip markets.
- Restructures and hardwood sawmill exits continue in Tasmania due to the transition from productive native forests to conservation reserves. New investments and innovation considering product substitution with plantation hardwood and softwood is likely to prevail.
- World-class technology upgrade has been adopted by a number of larger sawmills in these years, with various considerations being placed on workforce development, and opportunities arising via the SA Govt Cellulose Fibre Value Chain Study and South-East Forestry Partnerships Program supported by the SA government.
- Due to business viability issues leading to an increased focus on immediate business viability, training has been generally developed and delivered in-house. Further challenges to formal training include the regional location of businesses, lack of formal training culture and sometimes a lack of motivation to obtain greater or new skills.
- Critical skills sought by managers in this sector, with a focus on performance at the workplace include: digital literacy, leadership and working effectively with others, problem solving skills, licence compliance skills, inventory skills, HR management skills.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
712999	Timber drying kiln operator	This skill shortage existing in some regions is associated with lack of local training, regional location of the workplaces and comparatively low rates of pay. Learning is also difficult as different drying techniques are required for plantation and native wood species. Industry restructuring has led to a skill loss in this area but skills upgrade of the remaining operators remains a possibility.	ForestWorks ISC will continue to promote the skill standards and the value of structured training and nationally accredited skills; and will work with industry to identify the latest drying techniques and review current drying units of competency to ensure they are in line with evolving trends.
323315 711313	Saw doctor Sawmilling operator	Saw doctors and sawmilling operators are traditionally in shortage nationally despite a significant increase in enrolments for these qualifications in 2009 and further intakes thereafter. Sawdoctoring work is increasingly being outsourced to saw shops who gain their training through the metal industry.	ForestWorks ISC will scope a project to restructure the sawdoctor qualification by reviewing the requirements of the role to a full extent and the work pathway available.

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
733111 721311 341111 323211	Truck driver Forklift operator Electrician Fitter	Trade professionals in this range of occupations continue to be in shortage for the manufacturing sector.	ForestWorks ISC will continue to support enterprises in accessing assistance to take on apprentices in this area.
Skill gaps (skill gaps in existing workforce)			
Skills in timber treatment		New alternative timber treatment technologies are becoming available. Also, under the new Australian Pesticides and Veterinary Medicines Authority (APVMA) regulations, CCA treatment operators must complete accredited training to become a licensed operator.	ForestWorks ISC has revised existing three units for timber treatment to reflect updated treatment processes and licensing requirements. The upgrade will be reflected in Certificate II and III in Sawmilling and Processing and Cert IV in Timber Processing.
Skills for timber grading		More timber mill workers could achieve timber grading skills in order to maximise recovery of resource and maintain quality control in all areas of processing.	ForestWorks ISC will consider investigating a regional delivery initiative.
'Finger jointing' skills		Finger jointing has emerged as an opportunity to utilise timber off-cuts (allowing new structural uses for timber) and address the steadily rising cost of raw materials. With recent upgrades in technology and equipment, the skills for this specialised role need to be upgraded.	New finger jointing skill sets supporting three different sawmill job roles have been developed for integration in the industry's new training package standards.
Advanced technical skills Digital literacy		Many jobs are highly mechanised and increasingly computerised, including electronic technology monitoring and control operations which involve advanced timber grading/screening technologies and transfer systems between different process sequences. These jobs require not only advanced technical skills to troubleshoot but also digital skills to support computerised equipment.	ForestWorks ISC continues to target engagement and consultation for those areas of rapid technological change, circulate information on emerging technologies and support professional development for trainers and assessors.
Leadership skills for innovation/ Strategic skills/ Communication skills/ Critical thinking skills		Leadership skills for innovation, strategic skills and collaboration skills (for relationships in the supply chain and with the broader community) are essential for businesses to compete successfully. Leadership skills are also necessary to develop creative workplace environments.	Skill sets that support innovation, collaboration and leadership capacity for leaders, managers and operations personnel in the forest and wood products businesses are now available in the FPI11. Industry specific units will be incorporated into the Innovation Skill Sets and Advanced Diploma of Forest Industry Sustainability.
Emerging skill needs			
Skills for processing small diameter logs		As more plantations become available for harvest and less native hardwood is used, skills that accommodate technological adjustments and the varied properties of immature wood for producing high value added products will become more important.	ForestWorks ISC and industry will develop programs to upgrade the skills of existing worker as skills needs are identified
Skills for implementing due diligence code of practices (chain of custody)		Growing adoption of Chain of Custody certification and the implementation of the Illegal Logging Prohibition Bill 2012 from November 2014 require due diligence skills and processes in reporting on material sourcing, production controls and transaction documentation.	Understanding the precise impact of the skills required by industry remains a priority for ForestWorks ISC in 2014.
Skills for bioenergy		Sawmills' location in proximity of logging areas and the amount of biomass residues resulting from forest operations allow this sector to economically integrate biofuel and bioenergy production. The biofuel sector includes a range of specialised technologies for a handful of specialised products yet the regulatory system is limiting investment.	ForestWorks ISC will investigate current technologies, be alert to their uptake and consult with industry to accurately identify the skill needs and evaluate the need for skills standards at Certificate II, III, IV and Diploma levels.

Pulp and Paper

Sector trends and developments

- The demand for packaging products, office paper and other paper stationaries, books, newspapers, catalogues, magazines, paper bags and sanitary products. Local demand for packaging products has remained stable over the past few years while exports have increased; and the outlook for global and local packaging markets stays positive. Printing and publishing industries have steadily lost market share due to digital alternatives (30 per cent of communication is now digital) and escalation of imported 'dumped' office paper. The share of domestic newsprint market is expected to flatten during the next few years. Other markets such as paper label, transactional paper and catalogue/magazines are likely to rise globally and locally^{xxiv}.
- During recent years a number of large development projects have been undertaken including Amcor's technology upgrade at the Botany site, Australian Paper's new de-inking pulp plant at Maryvale, Norske Skog's re-development of Boyer mill, Kimberly Clark Australia's new co-generation unit and SCA Hygiene's technology upgrade. Most skilling and up-skilling across these businesses for operation of the new technology and processes involved technology vendor support, with training also delivered in overseas, where the technology is imported from.
- Industry's innovation considerations include various aspects of recyclability, environmental friendly certified products, supply chain simplification, stakeholder engagement and increasing customer awareness of environmental certification. With considerable product innovation and greater product design skills (particularly in the package and paper bag segment) this industry can further increase its potential of growing in different markets (locally and in Asian markets where product demand is rising).
- The graduate programs, VET qualifications and short courses specific to this industry have all been impacted by the decline in industry enrolments and the cost pressures facing each organisation.
- In 2013, workforce development plans involved greater consideration of licencing training programs, leadership management pilot programs with nationally recognised skills, LEAN manufacturing programs, front line management programs, strategies of mapping and applying accredited competences, and a focus on multi-skilling and work flexibility.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
133512	No widespread industry-specific skill shortages	Generally there is not a significant shortage of industry-specific skilled workers in this sector. However, there has been a report over the past 12 months of skill shortage incidence for highly technically qualified paper machine operations managers. Businesses undertake 'just-in-time' workforce development processes to develop the industry-specific skills that they need. This sector generally offers above average pay and high standards of working conditions.	ForestWorks ISC and the Pulp and Paper Skills and Training Advisory Committee (STAC) continue to support this sector on the basis of 'just-in-time' workforce development performance.

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
233111	Chemical engineer	Trade professionals in this range of occupations continue to be in shortage for this manufacturing sector.	Enterprises are carrying out their own specific recruitment activities to fill these positions.
233311	Electrical engineer		
323211	Mechanic		
341111	Electrician		
322311	Boiler maker		
334113	Plumber		
Skill gaps (skill gaps in existing workforce)			
Advanced technical skills		This sector integrates continuous, technical manufacturing processes, requiring highly skilled operators. There are gaps in applied skills and knowledge, mainly regarding new and company-specific technologies, compromising troubleshooting competencies for equipment and process operations.	Employers continue to develop skilled personnel to develop the necessary resources to fill gaps. Employers are continuously improving their skills development systems to support national training, including the application of resources developed to fill identified gaps.
(Remote) control systems and production operations skills and knowledge		Technology upgrades and the level of process integration and computerisation are ever increasing in this sector. Technology and process integration across multiple processes and technologies (i.e. centralised control) and between different technologies (i.e. old and new) are common features.	Employers continue to develop skilled personnel to provide the necessary resources to fill gaps identified. This work will continue to ensure enterprises support workforce development for roles associated with (remote) control systems, production operations and maintenance.
Line management and team leader skills for production line supervisors		Pulp and paper manufacturing is based on end-to-end processes, aligned with a specific manufacturing technology that entails high-level coordination of activities and workers engaged in a production line.	ForestWorks ISC will investigate leadership skills required across a range of job roles to support supervisors and front line managers.
Operator level maintenance skills		There is increasing demand for pulp and paper operators to take on 'operator-level' maintenance tasks. These are generally regarded as 'non-precision' maintenance trade tasks that may include first-year apprentice fitter skills, which are carried out in addition to normal operations functions.	A coordinated approach with the key training providers is being developed by ForestWorks ISC to consolidate the training needs and service delivery to the industry.
Leadership skills for innovation/ Strategic skills/ Communication skills/ Critical thinking skills		Leadership skills for innovation, high level strategic skills and collaboration skills (for relationships in the supply chain and with the broader community) are essential for businesses to compete successfully. Leadership skills are also necessary to develop creative workplace environments.	Skill sets that support innovation, collaboration and leadership capacity for leaders, managers and operations personnel in the forest and wood products businesses are now available in the FPI11.
Emerging skill needs			
Skills for future environmental sustainability developments		Implementation and operation of environmental sustainability developments and technologies (i.e. biofuel/conversion into renewable energy, water and energy efficiency solutions) is an ongoing process and necessitates specialised skills that are readily available.	The Advanced Diploma in Forest Industry Sustainability addresses sustainability skills yet ForestWorks ISC continues to seek advice from the Pulp & Paper Industry Skills & Training Advisory Committee and develop appropriate competency standards.
Skills for implementing due diligence code of practices (chain of custody)		Growing adoption of Chain of Custody certification and the implementation of the Illegal Logging Prohibition Bill 2012 from November 2014 require due diligence skills and processes in reporting on material sourcing, production controls and transaction documentation.	Understanding the precise impact of the skills required by industry remains a priority for ForestWorks ISC in 2014.

Timber Manufactured Products

Sector trends and developments

- The performance of this sector is driven by the growth in residential building construction and renovations in Australia, activity in the furniture and wood joinery industries, and competition from substitute products made from aluminium, steel and fibreglass.
- The unsteady growth in housing construction over the past five years leading up to 2012–13 has produced economic instability in this industry. While 2013 has seen some optimism by industry, new housing construction activity is forecast to remain steady nationally, but uneven regionally, over the next 2 years^{xxv}. Investment in housing renovations is expected to recover slowly over the next 5 years nationally^{xxvi}.
- The high value-added wood products that provide resilient, highly efficient and customised solutions are creating market and business opportunities for this sector. Over the past years, Australian timber products industry has made significant improvements to the quality of roof trusses, house framing (i.e. off-site framing fabrication), floor joist and general timber products, developing also a new prefabricated panelised flooring configuration for the construction market.
- To keep growing its construction competitiveness, the industry needs greater focus on investment in and adoption of innovation. By comparison, the rate of global construction innovations (including modular/panelised prefabricated systems) and available advanced technologies (such as laminated timber products) is much higher.
- Australian timber products businesses are also focusing on developing a workforce ready for efficiency, flexibility and technology preparedness. The priority skills include advanced technical and digital skills, significant operations management skills, analytical and strategic skills to identify new market opportunities in the global supply chains, and strong leadership skills.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
394213	Wood machinist	In recent times there has been a change in job roles and tasks for wood machinists and a decline in training.	ForestWorks ISC will scope the need to restructure the saw doctor and wood machining qualifications to align them more appropriately with the job roles.
312114 312199	Estimator Detailer (for roof trusses, floor systems and wall frames)	More than 250 frame and truss estimators and detailers have been enrolled nationally in timber frame and truss qualifications via the National Workforce Development Fund. Despite these numbers, a skill shortage remains in this area. More training is needed to create more Estimators and Designers particularly in New South Wales, Victoria and South Australia.	Industry will enhance promotion of these jobs by marketing the industry's advanced design systems and promoting the new industry skill standards and workplace pathways.
733111 721311	Truck driver Forklift operator	Trade professionals in this range of occupations continue to be in high demand in this (manufacturing) sector.	Industry will continue to support promotional activities to underline the benefits of working in this industry.
341111 323211	Electrician Mechanic		

Workforce development needs	Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill gaps (skill gaps in existing workforce)		
Advanced technical skills (to set-up, operate advanced and complex operation machineries, and provide technical maintenance)	New and sophisticated technologies for wood products production have introduced complexity in jobs: multitasking and specialisation. The work is highly specialised and most jobs are computerised, requiring digital and technical, engineering and mechanical-diagnostic skills to manage complex operations. With an ageing workforce in this industry, up-skilling for program and control computer-assisted equipment is a real challenge.	Industry enterprises will increasingly undertake progressive and constant training for existing workers and work to attract and train young people. ForestWorks ISC scopes the skill requirements of emerging technology at the research stage of each training package project.
Digital skills		
Skills for timber products value chain logistics	Procurement, supply chain and logistics jobs in this industry require workers knowledgeable in wood and wood products supply and usage in order to meet business-to-business needs.	ForestWorks ISC will investigate the extent of technical skills and knowledge in logistics/supply chain management, and the possibility for new units and qualifications.
Leadership skills for innovation/ Strategic skills/ Communication skills/ Critical thinking skills	Leadership skills for innovation (to develop creative workplace environments), high strategic skills and collaboration skills (for relationships in the supply chain and with the broader community), analytical skills (for undertaking market analysis, operation planning and analysis of processes) are essential for businesses to compete successfully.	Skill sets that support innovation, collaboration and leadership capacity for leaders, managers and operations personnel in the forest and wood products businesses are now available in the FPI11.
'Finger jointing' skills	Finger jointing has emerged as an opportunity to utilise timber off-cuts (allowing new structural uses for timber) and address the steadily rising cost of raw materials. With recent upgrades in technology and equipment, the skills for this specialised role need to be upgraded.	New finger jointing skill sets supporting three different sawmill job roles have been developed for integration in the industry's new training package standards.
Emerging skill needs		
Electronics maintenance skills	The use of electrical and electronic equipment in the industry is emerging, increasing the need for skilled electronics maintenance personnel. A national skill shortage already exists for this skill area.	Enterprises need to prepare for up-skilling existing workers in this skill area. In-house IT experts will reduce the reliance on external sources to solve problems that interrupt business.
Knowledge and skills to use energy efficiency options	This sector is technology driven, using both fixed and mobile machinery. Considerable energy savings can be achieved via machinery modifications, adaptations and replacement with new technology.	To encourage the maintenance and promotion of energy efficiency both individually and across workplaces, ForestWorks ISC has developed a new unit - 'Maintain and contribute to energy efficiency', and a resource/booklet supporting the new unit. A number of specialist imported units were added to elective banks of a range of qualifications to address energy efficiency.
Skills for implementing due diligence code of practices (chain of custody)	Growing adoption of Chain of Custody certification, and the implementation of the Illegal Logging Prohibition Bill 2012 from November 2014, will require due diligence skills and new processes related to reporting on material sourcing, production controls and transaction documentation.	Understanding the precise impact of the skills required by industry remains a priority for ForestWorks ISC in 2014.

Wood Panel and Board Production

Sector trends and developments

- Wood panel and board production is driven by the construction of residential and commercial buildings and activity in the furniture industry. The volume of wood panel and boards produced in Australia fell over the past five years, mainly due to decreased furniture manufacturing.
- The industry is further affected by the product knowledge of building architects and designers and the increased volumes of panel imports from China (an 8 per cent increase from 2012 to 2013)^{xxvii}, which often fail to meet Australian standards.
- Workforce development in this industry has been focused on on-going national education and timber promotion programs, targeting architecture and carpentry students in schools, colleges and universities. New concepts of training delivery for apprenticeships and graduate certificate in timber (processing and building) are being applied by training organisations delivering to this industry and include rotations of school and employer training periods throughout the school year or online delivery.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
323211 334113 323211	Electrician Plumber Mechanic	Trade professionals in this range of occupations continue to be in high demand in this (manufacturing) sector.	Industry will continue to undertake campaigns to attract apprentices and skilled tradespeople to this industry.
Skill gaps (skill gaps in existing workforce)			
Advanced technical skills in using new sector-specific technologies		This sector integrates in-line and highly technical manufacturing processes, requiring commensurate skill levels from operators.	ForestWorks ISC will continue to support mentoring programs for newer operators with the support of more experienced operators and supervisors.
Leadership skills/ Strategic skills/ Communication skills/ Critical thinking skills		Leadership skills for innovation (to develop creative workplace environments), high strategic skills and collaboration skills (for relationships in the supply chain and with the broader community), analytical skills (for undertaking market analysis, operation planning and analysis of processes) are essential for businesses to compete successfully.	Skill sets that support innovation, collaboration and leadership capacity for leaders, managers and operations personnel in the forest and wood products businesses are now available in the FPI11.
Emerging skill needs			
Skills for implementing due diligence code of practices (chain of custody)		Growing adoption of Chain of Custody certification, and the implementation of the Illegal Logging Prohibition Bill 2012 from November 2014, require due diligence skills and processes in reporting on material sourcing, production controls and transaction documentation.	Understanding the precise impact of the skills required by industry remains a priority for ForestWorks ISC in 2014.
Knowledge and skills to use energy efficiency options		This sector is technology driven, using both fixed and mobile equipment. Considerable energy savings can be achieved via machinery modifications, adaptations and replacement with new technology.	To encourage the maintenance and promotion of energy efficiency both individually and across workplaces, ForestWorks ISC has developed a new unit - 'Maintain and contribute to energy efficiency', and a resource/booklet supporting the new unit.

Timber Merchandising

Sector trends and developments

- This industry has been traditionally highly fragmented, consisting of many small-scale timber yards and wholesalers, who service narrow geographic or product markets, and several large-scale manufacturers and retailers. As consumers develop preferences for direct purchases (online), manufacturers and retailers are increasingly reviewing the best way of providing information and services to customers. With Australia's high dollar, imports have increased significantly.
- To succeed in the current highly competitive environment, merchants are adapting to new ways of collaborative logistics (computerised inventory control systems, tracking and reporting technologies) and communication. With a focus on understanding what customers want, and through collaborative approaches with manufacturers, the merchants can contribute to delivery of 'value extraction' and 'value creation' in the supply chain.
- Communication and collaborative approaches, including skills to communicate product knowledge and industry sustainability, digital skills, and analytical skills to maximize utilisation of both technologies and the data leveraged through them, are priority skills for this industry. To support ongoing skill development, ForestWorks ISC developed a competency standard to address product knowledge and is currently reviewing qualifications to align a range of job roles to logistics, customer service and sale management needs.

Workforce development needs

Workforce development needs		Rationale and challenges	The FPI training package response and additional strategies on opportunities to boost skill levels
Skill shortages (shortage of skilled workers)			
ANZSCO	Occupation		
591115	Stock inventory officer	The skill shortages in these areas are associated with competition for labour from other retail sectors. Many people, particularly in regional communities, are not aware of the types of jobs available in this sector.	The industry will continue to work closely with career advisors in schools and in employment placement centres such as Job Services Australia (JSA) to ensure that jobs available in this sector are advertised; and to engage with career promotion experts and promote qualifications to advance work pathways through this sector.
621111	Sales assistant		
621511	Retail supervisor		
591116	Warehouse manager		
839412	Timber yard operator	Some enterprises do not yet recognise the value of merchandising knowledge for this occupation or are not aware of appropriate units of competency.	ForestWorks ISC will continue to work to increase awareness of the units of competency relevant to these occupations.
733111 721311	Track driver Forklift driver	Trade professionals in this range of occupations continue to be in high demand.	Industry and ForestWorks ISC will consider campaigns to attract apprentices and skilled tradespeople to this industry.
Skill gaps (skill gaps in existing workforce)			
General knowledge about wood and timber products		Traditionally, formal wood and timber products knowledge has not been expected in this sector for employment. Also, for international transactions, specialised agents are generally involved, many of whom do not have timber knowledge.	ForestWorks ISC has developed a new unit of competency to support this need (FPICOT2241 Apply wood and timber product knowledge), continuing to promote a training culture within the sector.
Supply chain communication and collaboration skills Analytical skills Digital skills		Analytical skills at all occupational levels, and innovation in service delivery and customer relationship, allow merchants to identify and respond to market dynamics and remain competitive.	Skill sets that support innovation, collaboration and leadership capacity for leaders, managers and operations personnel are now available in the FPI11. ForestWorks ISC will further investigate the analytical skills requirements.
Emerging skill needs			
Skills for implementing due diligence code of practices (chain of custody)		Implementation of the Illegal Logging Prohibition Bill 2012 from November 2014 will require integration of due diligence skills into jobs and new processes.	Understanding the precise impact of the skills required by industry remains a priority for ForestWorks ISC in 2014.



SECTION 3

Current impacts of training packages

Keeping training packages current and relevant

Through a range of industry based activities, projects and consultations, ForestWorks ISC ensures that training packages meet industry stakeholder requirements and provide greater currency and relevancy to learners.

In 2013 two training package upgrades resulted in the release of the following Training Package versions:

- FPI11 Forest and Forest Products Training Package Version 2
- FPP10 Pulp and Paper Manufacturing Industry Training Package Version 1.2

A new Case for Endorsement for FPI11 Forest and Forest Products Training Package is scheduled to be submitted to the National Skills Standards Council (NSSC) for endorsement in May 2014.

Flexibility of FPI11 and FPP10 training packages

During 2013 the following changes were made to FPI11 in response to industry need. These changes will enable workers in the forest and forest products industry to access the additional competencies required to respond to the following examples of critical industry imperatives. However this access is dependent upon RTOs' delivery capacity and many have

issues with their ability to keep up with the rate of change of the Skills Standards:

- **Innovation skills** - ForestWorks ISC's Innovation Skills Program addressed the emerging skills in the industry. It also supported innovation skills development in a series of forums conducted nationally over the past 6 months. The skills were captured in a suite of Innovation Skill Sets focusing on innovative thinking and practice, change management and business development for leaders, managers and operators.
- **Forest industry sustainability** - The Advanced Diploma of Forest Industry Sustainability was modified to align to a broader range of job roles and include existing and emerging sustainability needs identified by industry practitioners who have been using units for Carbon Farming Initiative (CFI), carbon stock audits – which are now becoming part of the industry practice, and sustainable forestry establishments.
- **Energy efficiency** - ForestWorks ISC's energy efficiency project addressed emerging industry skill needs. The inclusion of a new energy efficiency unit in all Certificate II and III qualifications facilitates the adoption of energy efficiency work practices specific to the forest and forest products industry, at both individual enterprises and across a range of workplaces.

- **Safety** - New units were developed in response to the unacceptable number of incidents of roll-overs of log tracks and a fatal accident at a sawmill that drew attention to gaps in the training of workers when it came to safely creating and monitoring stacks of timber.
- **Promoting product awareness** - A new unit responded to the need for product sale employees to address the increasing consumer expectation that people at the point-of-sale have detailed wood and timber product knowledge.

During 2013 we developed a number of new skill sets which now total 31. The most recent skill sets cover job roles including finger jointing operations, transport of forestry logs and produce, as well as providing a whole workforce approach to skills development for innovation for leaders, managers and operators. These skill sets will enable the industry to position itself effectively in embracing opportunities as they present themselves in the future.

Skill sets are intended to provide pathways to qualifications or specialist training rather than an alternative to qualifications. Skill sets allow enterprises to access highly targeted, easily achieved training outcomes and can be completed more quickly, which benefits enterprises as they meet immediate training needs. However they do not contain the full suite of skills required for a job role and, therefore, is not seen the most effective way of skilling the workforce in the longer term.

During 2013 FPP10 Pulp and Paper Manufacturing Industry Training Package underwent ongoing review by industry in regular Skills and Training Advisory Committee (STAC) meetings and delivery and assessment monitored through Box Hill Institute to ensure that all qualifications and units were current and meeting the needs of industry. Work has commenced to transition this training package to the new standards.

Enrolments in training

Course enrolments in government-funded VET activity across both training packages have been stable for a number of years up to 2011, however in 2012 enrolments decreased by 40 per cent.

Nearly 60 per cent of NWDF training during the past 12 months has been in Frame and Truss qualifications across the certificate III, IV and Diploma levels. The remaining delivery reflects significant skills investment in the forest growing and harvesting and haulage sectors.

This dramatic decrease is attributed to declining state government funding and the reduced demand for training of accredited qualifications over the past few years. Other VET pressures affecting training delivery included increased ASQA fees and tighter standards of regulation of RTOs. These changes together with the removal of government incentives for existing workers will continue to put pressure on the industry's smaller RTOs into the future.

Although the full extent of enrolments is not currently captured by the National Centre for Vocational Education Research (NCVER) data collection, the industry support for the development of relevant units and skill sets indicates a change in the way the Industry is using training packages and you could reasonably expect to see this change reflected in the enrolments data in the future. However it is understood that the majority of training is still undertaken in the workplace without any formal recognition, as industry absorbs the cost for this training as part of its cost of doing business.

Reduced sales, restricted financial resources and increased focus on immediate business viability are factors considered responsible for these changes seen in the publicly funded training demand. VET stakeholders report an increased preference in the industry for short fee for service courses and although these are generally made up from units within the existing scope they allow businesses to make a smaller financial contribution to meet short term demand.

Workplace English Language and Literacy (WELL)

ForestWorks ISC continues to maintain the position of WELL Broker assisting workplaces to identify strategies to better access literacy and numeracy skill development.

ForestWorks ISC has worked extensively with enterprises providing advice on how to approach LLN delivery across multiple training providers; whilst assisting providers to develop strategies to enable a smooth delivery process within an enterprise with multiple sites across state boundaries.

The focus on extensive enterprise engagement with workers across all levels in the forest, wood, paper and timber products industries across Australia extended to key stakeholders, industry leaders and industry based training providers, creating opportunities to share existing best practises that have supported LLN development and examine the transferability of these approaches within other sectors.

The majority of the enterprises and stakeholders who participated in the consultations were very aware of the need for increasing LLN skills for workers across all levels of employment. Many agreed that these are important when dealing with workplace development, innovation, marketing and coping with change both internally and in a changing market place.

Workforce priorities and the Australian Core Skills Framework

ForestWorks ISC has completed the second year of the Australian Core Skills Framework (ACSF) project. To date 81 units of competency have been mapped to the ACSF from both the FPI11 Forest and Forest Products Training package and the FPP10 Pulp and Paper Manufacturing Industry Training Package. The ACSF mapping project is expected to be completed in June 2014 with a total of 160 units of competency mapped.

Workforce priorities and foundation skills

ForestWorks ISC has produced six podcasts aimed at helping trainers, employers and workers identify possible literacy and numeracy requirements and build foundation skills in the workplace.

ForestWorks ISC has been working with LLN specialists and industry based trainers to develop a guide for trainers to address foundation skills; Growing Skills. Upon completion, Growing Skills will provide information to industry based trainers about LLN skills, and offer tips and strategies to address skill development in training programs.

Clean Energy Skills Package

The Clean Energy Skills Package has led to freely available resources that provide inexpensive solutions to online learning for trainers in our industries. The following projects were supported by the Australia Government to some extent through the Clean Energy Skills Package: Energy Efficiency, Sustainability Skills and Advanced Diploma of Forest Industry sustainability projects. The units for which resources have been developed are located in the Advanced Diploma of Forest Industry Sustainability, an emerging area of skills need in our industry. For trainers delivering training packages, these resources are valuable support materials because they provide an engaging and effective learning experience. The resources include: outlines (a facilitator guide); videos; assessment tools; and a reference kit (including the learner guide).



SECTION 4

Future directions for endorsed components of training packages

Responding to industry's emerging workforce priorities

ForestWorks ISC continues to collaborate and build strong relationships with industry through a diverse range of networks, forums and activities to ensure that training package skills standards align to current and emerging job roles. Engagement with technical and sector advisors, who volunteer their time, expertise and knowledge, includes STAC meetings, enterprise visits, regular meetings with and visits to training providers, industry conferences and workshops. This is formalised through the Skills and Employment Council (SEC) forum, which provides the national mechanism for feedback, review and validation for the Forest and Forest Products Training Package. These relationships and networks allow for widespread input during the process of development and review of training standards, as well as an industry-supported endorsement process. Enterprise engagement is at the core of training package continuous improvement programs. Projects are identified and prioritised using data collected through interconnected networks and through activities including enterprise visits, committee meetings, working groups and our annual industry conference.

The national mechanism for feedback, review and validation of the Pulp and Paper Manufacturing Industry Training Package is via the national Pulp and Paper Skills and Training Advisory Committee. ForestWorks ISC meets with this group four times per year to work with the industry on skills issues. In addition, ForestWorks ISC carry out site-based and region-based activities to support skills development at enterprise and industry level.

The data collected is validated internally within ForestWorks ISC, with feedback from STAC and SEC members. The diverse needs of the industry are supported through flexible qualifications and a growing suite of skill sets that allow enterprises to select from a range of industry-specific and imported units for specialist roles.

Ongoing projects to support industry needs and workforce priorities

These projects, continuing into 2014 and beyond, include work on moving training packages to the new standards and a range of Continuous Improvement Projects.

Transitioning training packages to the new standards

ForestWorks ISC developed and implemented a Governance and Communication Plan for the Transition to the New Training Package Standards during 2013. This plan drove communication activities with our stakeholder groups providing key messages about the transition process, ForestWorks ISC approach and the role stakeholder groups will play in providing guidance and feedback.

A case for endorsement covering the Advanced Diploma of Forest Industry Sustainability, Innovation Skill sets and five industry specific innovation units is expected to be submitted to NSSC in the first half of 2014 in the new standards. Over the next two years the units, qualifications and skill sets in both training packages will be progressively transitioned across to the new standards.

Ongoing projects to support industry needs and workforce priorities

Forestworks ISC will continue to undertake a range of projects in response to latest intelligence and analysis regarding industry's workforce priorities.

In response to latest intelligence the following projects to support industry needs will continue to be the focus into 2014

Merchandising timber solutions – this project will investigate the extent of technical skills and more advanced knowledge required in merchandising timber solutions to meet the broad range of end-user demands and consumer needs. Review of qualifications and units to identify any gaps.

Timber products value chain logistics – this project will examine the extent of technical and knowledge in logistics/supply chain management to meet needs of our vertically integrated industry, so workers are knowledgeable in wood and wood products supply and usage in order to meet business-to-business needs. This project will investigate the forest and forest products industry requirements for career progression within the timber products value chain, via new units and qualifications.

Small forestry business management skills – this project will address the business management skills required for industry specific areas, identified by industry, as required by business owners.

Timber treatment – this work to revise existing three units to reflect updated treatment processes and licensing requirements.

Further work will be undertaken to investigate the scope of work required to address the following areas identified by industry as skill gaps or emerging skill needs in the medium term. These are listed in Appendix 4.



To stay ahead of society's needs and demands, industry requires a workforce that is efficient, flexible and equipped with both high order and broad based skills.

Appendix 1

2012 Enrolments in training packages

Training packages	
Forest Growing and Management	
FPI10105 / FPI10199	Certificate I in Forest and Forest Products
FPI20105	Certificate II in Forest Growing and Management
FPI30105 / FPI30199	Certificate III in Forest Growing and Management
FPI40105	Certificate IV in Forest Operations
FPI50105	Diploma of Forest and Forest Products
Harvesting and Haulage	
FPI20205	Certificate II in Harvesting and Haulage
FPI30205	Certificate III in Harvesting and Haulage
Sawmilling and Processing	
FPI20305	Certificate II in Sawmilling and Processing
FPI30305	Certificate III in Sawmilling and Processing
FPI30705	Certificate III in Sawdoctoring
FPI30805	Certificate III in Woodmachining
Timber Manufactured Products	
FPI20505	Certificate II in Timber Manufactured Products
FPI30505	Certificate III in Timber Manufactured Products
FPI30910 / FPI30911	Certificate III in Timber Truss and Frame Design and Manufacture
FPI40205	Certificate IV in Timber Processing
FPI40310 / FPI40311	Certificate IV in Timber Truss and Frame Manufacture
FPI40410	Certificate IV in Timber Truss and Frame Design
FPI50310	Diploma of Timber Truss and Frame Manufacture
FPI50410 / FPI50411	Diploma of Timber Truss and Frame Design
Wood Panel and Board Production	
FPI20405	Certificate II in Wood Panel Products
FPI30405	Certificate III in Wood Panel Products
Timber Merchandising	
FPI20605	Certificate II in Timber Merchandising
FPI30605	Certificate III in Timber Merchandising
Pulp and Paper Manufacturing	
FPP10101	Certificate I in Pulp and Paper Manufacturing
FPP20101	Certificate II in Pulp & and Paper Manufacturing
FPP20110	Certificate II in Pulping Operations
FPP20201	Certificate II in Pulp and Paper Services
FPP20210	Certificate II in Papermaking Operations
FPP30101	Certificate III in Pulp and Paper Manufacturing
FPP30110	Certificate III in Pulping Operations
FPP30201	Certificate III in Pulp and Paper Services
FPP30210	Certificate III in Papermaking Operations
FPP40101	Certificate IV in Pulp and Paper Manufacturing
FPP40110	Certificate IV in Pulping Operations
FPP40201	Certificate IV in Pulp and Paper Services
FPP40210	Certificate IV in Papermaking Operations
Total	

	Victoria	New South Wales	Queensland	South Australia	Western Australia	Tasmania	Nationally
		47					47
	75	73	686		148	190	1,172
	83	3	75		103	55	319
	2	5	26	2	4	10	49
	3	6			2	9	20
	44	235	49			16	344
	104	33	48	20	131	458	794
	24	3	9				36
	58	67	40	1	3		169
	7	4	5			5	21
	18	16	5			1	40
		16	1				17
	44	18	7	5		2	76
	34		12	2		2	50
	11	22					33
	5		4				9
	3		2				5
	1						1
	1		1			6	8
	3				1		4
	74	7					81
	5	8	7				20
	24	7	3	4			38
	36						36
	61						61
	5						5
	1						1
	25						25
	47						47
	1						1
	3						3
	62						62
	33						33
	6						6
	1						1
	20						20
	924	570	980	34	392	758	3,654

Appendix 2

Training through the National Workforce Development Fund (NWDF)

- 18 NWDF projects were approved under ForestWorks ISC since the program launch in 2011 to December 2013, with 3 projects (and 50 learners) being approved in 2012-13. Of these, 3 projects were withdrawn before commencement.
- 3 additional NWDF projects involving 11 enterprises were approved in December 2013, expecting to enrol 125 learners over 2014. Also, a number of new project applications are being discussed and in the path for approval.
- 45 enterprises and more than 460 learners were involved in NWDF funded training over 2011-2013. 41 enterprises are continuing their participation in training programs in 2014 and 4 withdrew from the program before the commencement of training. 11 RTOs are involved in training delivery.
- Enterprise participation in training by employment size consists of:
 - 16 small enterprises (20-99 employees) participating with 270 learners.
 - 26 micro enterprises (0-19 employees) participating with 93 learners.
 - 2 large enterprises (200+ employees) participating with 74 learners.
 - 2 medium size enterprises (100-199 employees) participating with 23 learners.
- 107 completions were reported up to January 2014 at various AQF qualification levels: 82 Cert III, 18 Cert IV and 7 Diploma.

The following charts provide further insights into the training accessed by the forest and timber products industry through the NWDF program, including commencements, completions, and training activity by states and qualifications.

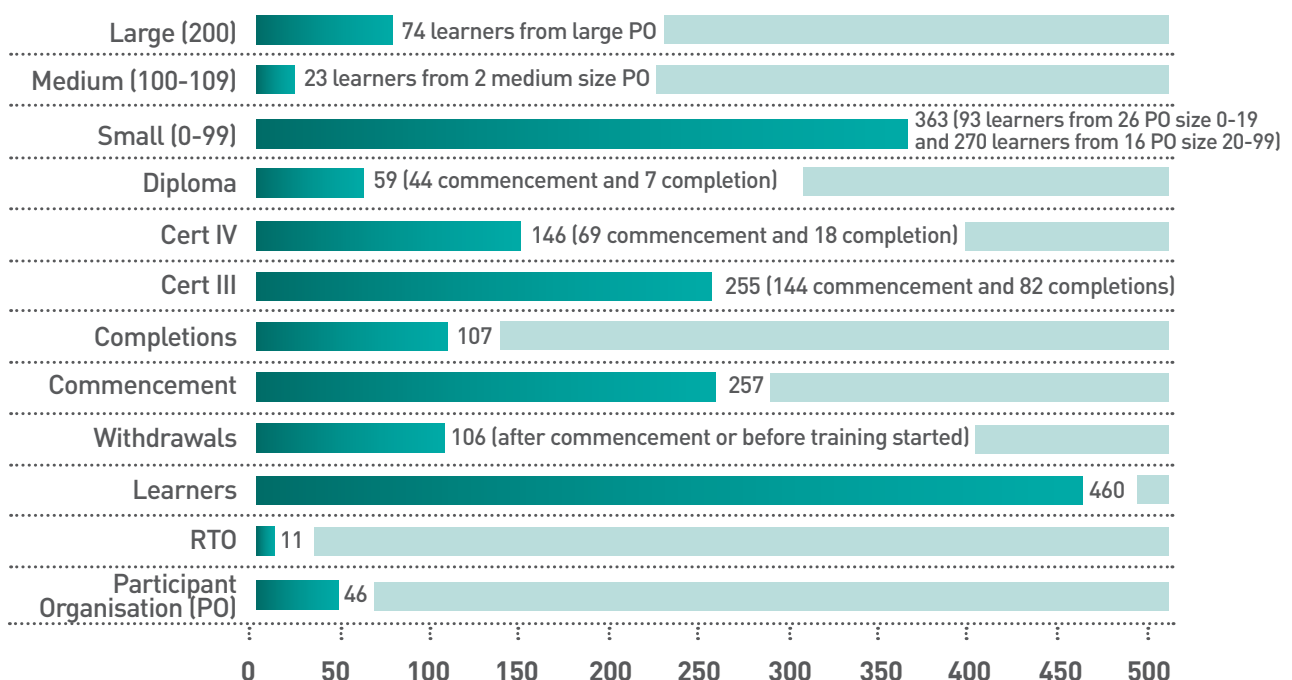


Figure 1: NWDF training | commencements and completions



Figure 2: NWDF training | enrolments by states

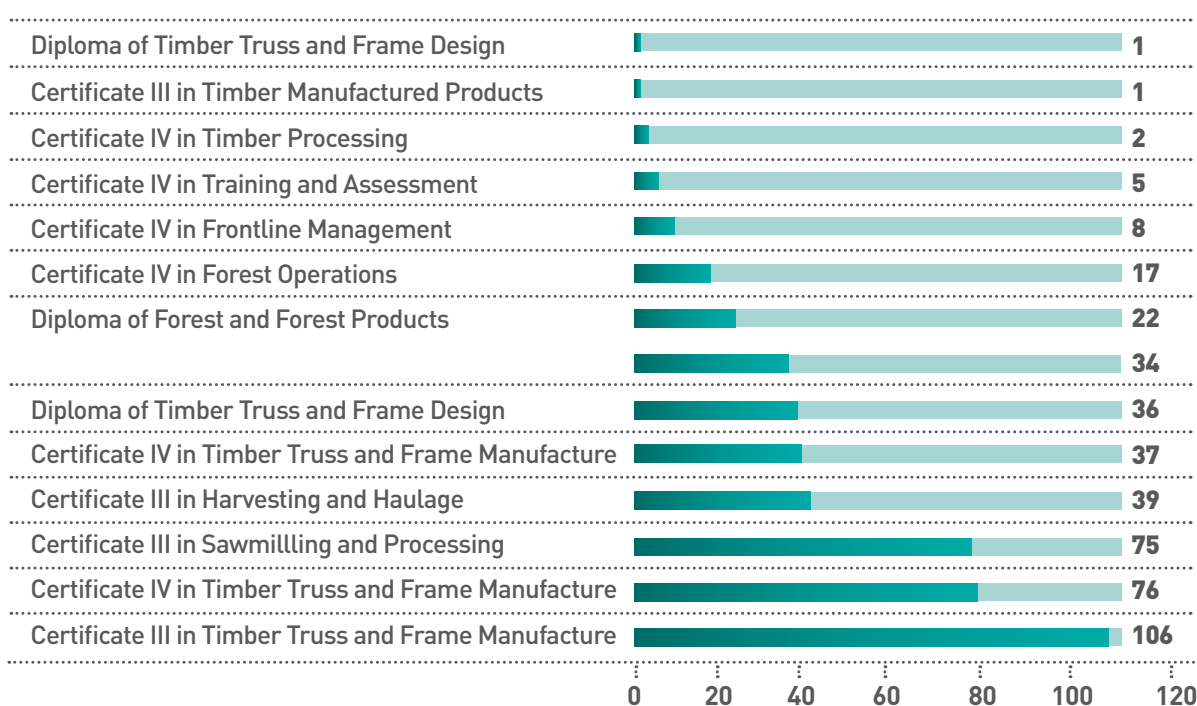


Figure 3: NWDF training | enrolments by qualifications

Appendix 3

Report on previous Continuous Improvement activity

FPI11 Forest and Forest Products Training Package

The following table provides a stocktake of changes made to the endorsed components of training packages over the preceding 12 months. It identifies new sectors and units of competency that have been endorsed and any refinements made to existing content through ISC upgrades.

Training package		FPI11 version 1.1 Forest and Forest Products Training Package		
Brief summary of change	Industry imperatives/ rationale for change	Date submitted to Office of the NSSC	Date endorsed by NSSC or ISC upgrade	Date made public through national register
NSSC upgrade incorporating:				
Revision of FPI60113	Changes in packaging rules and removal of one core unit to increase qualification's flexibility and provide option to focus on leadership through the choice of elective units.	5 July 2013	15 August 2013	27 August 2013
Revision of four qualifications	One superseded core unit updated with non-equivalent version and new FPI11 units added to qualification elective pools.	5 July 2013	15 August 2013	27 August 2013
ISC upgrade, incorporating:				
Addition of sixteen skill sets			15 August 2013	15 August 2013
Superseded imported units updated where equivalent	Ensures trainers are using, and industry is offered the most up-to-date training materials.		(as above)	(as above)
Spelling, typographical and alignment issues corrected	Improves readability and accessibility of materials for trainers, industry and trainees.		(as above)	(as above)
Pathways information (job roles) updated	This project refreshes the links between qualifications, occupations and industry sectors to assist all users of TGA, government departments (including Australian Apprenticeship Branch).		(as above)	(as above)
Correction to new qualifications equivalence status	Ensuring the following qualifications have Equivalent vocational outcome to superseded qualifications: FPI20111, FPI20113 FPI20211, FPI20213 FPI30111, FPI30113 FPI30211, FPI30213.		30 September 2013	30 September 2013
Correction of omissions from FPI20111 and FPI20211			28 October 2013	28 October 2013
Changes made to reflect that units have been previously superseded	[FPICOT2206A & FPICOT2206B – superseded by FPICOT2238A].		(as above)	(as above)
Brief summary of change	Industry imperatives / rationale for change.	Date submitted to Office of the NSSC	Date endorsed by NSSC/or ISC upgrade	Date made public through national register
Superseded imported units updated where equivalent	Ensures trainers are using, and industry is offered the most up-to-date training materials.		24 May 2013	24 May 2013
Spelling, typographical and alignment issues corrected	Improves readability and accessibility of materials for trainers, industry and trainees.		(as above)	(as above)

Appendix 4

Further Continuous Improvement projects

Further work will be undertaken to investigate the scope of work required to address the following areas identified by industry as skill gaps or emerging skill needs in the medium term.

- Front line management skills required by a range of job roles across the Pulp and Paper Manufacturing industry.
- Frame and truss installation on site.
- Advanced wood properties and the ability to apply wood properties into new product development and waste management to foster innovation in wood utilisation.
- Conservation and land management for farm forestry and skills required by private forest owners with respect to establishing and maintaining tree plantings and managing harvesting and sale of wood products.
- Low impact logging and standards for cording and matting of log extraction tracks in hardwood native forests.
- New and emerging technology due to mills upgrading machinery.
- Review of the Saw Doctoring and Wood Machining qualifications to align to current requirements of job roles.
- Operation of flail equipment in relation to mobile chipping.
- Planning escape routes during advanced tree harvesting.
- Safe operation of pole saws used in tree falling.
- Operation of a broader range of machinery for loader operations.
- Extend the monitoring of quality and product care to include whole logs and tree.
- Strengthen the Production Fabricator specialisation in Truss and Fame qualifications.
- Distinguishing between falling native and plantation timber.
- Investigate the units required by the industry for planning and conducting prescribed burns.
- Review drying techniques to incorporate recent developments.
- Operation of a range of specialised technology which captures bioenergy from biomass residues resulting from forestry operations.
- Skills for implementing due diligence codes of practices arising from the growing adoption of Chain of Custody certification, and the implementation of the Illegal Logging Prohibition Bill 2012 from November 2014, which requires due diligence skills and processes in reporting on material sourcing, production controls and transaction documentation.

Appendix 5

Methodology

ForestWorks ISC develops national skills standard and national qualifications for the Forest, Wood, Paper and Timber Products Industries, referred to as “the forest industry”.

In the Industry Skills Scan document we capture and provide industry intelligence that links the challenges of the industry with the flow of skills and people into the workforce meeting industry’s changing needs. This industry intelligence is conveyed across the year through a strong interactive engagement with industry associations, their members, and enterprises, industry bodies, including employer and employee representative organisations and link with educational providers across higher education and vocational education and training. These mechanisms bring focus to the vitality and importance of people development in the sustainability of the industry to the economy.

The information has been gathered throughout the year via all of ForestWorks ISC’s industry engagement activities as outlined in the ForestWorks ISC annual business plan. This provides a wide range of contact points, consultation and communication with industry and training experts across Australia and all industry sectors.

Systematic research of media sources and other relevant publications, as well as a careful analysis of the accessed data, was also used in the data collection and presentation process.

The information is assembled into a comprehensive document over the December and January period and sent to a wide range of stakeholders for comment and validation.

This report is circulated to the Skills and Employment Council members, including state and territory-based industry advisory bodies, State Training Authorities, registered training organisations and other interested industry stakeholders, including the New Zealand Forestry Industry Training and Education Body, and individual businesses.

In 2014, ForestWorks ISC will continue to operate its standard data collection and consultation processes in order to have access to information and industry intelligence regarding the progress of existing and proposed industrial developments and the needs that arise from them.

These processes include work by:

- Skills and Employment Council.
- Industry Training Advisory Committees in each state and in the Northern Territory and the National Pulp and Paper STAC.
- Engagement with industry associations, unions and enterprises.
- Industry journals and websites to develop research ideas and scans.
- Collection of data, research and analysis.
- Enterprise visits.
- Public and industry media.

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ForestWorks ISC will continue to undertake a range of projects in response to the latest intelligence and analysis regarding industry's workforce priorities.

Abbreviations

ACSF	Australian Core Skills Framework
AFS	Australian Forestry Standard
ANZSCO	Australian and New Zealand Standard Classification of Occupations
APVMA	Australian Pesticides and Veterinary Medicines Authority
ASQA	Australian Skills Quality Authority
BAMI	Bioprocessing Advanced Manufacturing Initiative
CFI	Caron Farming Initiative
FSC	Forest Stewardship Council
KCA	Kimberly Clark Australia
LLN	Language Literacy and Numeracy
LVL	Laminated Veneer Lumber
NCVER	National Centre for Vocational Education Research
NSSC	National Skills Standards Council
PMIIF	Plantation Manufacturing Innovation and Investment Fund
RTO	Registered Training Organisation
SEC	Skills and Employment Council
STAC	Skills and Training Advisory Committee
VET	Vocational Education and Training
WELL	Workplace English Language and Literacy
WHS	Work Health and Safety

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