AUSTRALIAN FOREST AND WOOD PRODUCTS INDUSTRY SECTOR

IRC Work Plan 2016-2019

Prepared on behalf of the Forest and Wood Products Skills and Employment Industry Reference Committee for the Australian Industry Skill Council

THE FOREST AND WOOD PRODUCTS INDUSTRY REFERENCE COMMITTEE WORK PLAN 2016-2017

Purpose

This workforce development and skills needs analysis represents the latest industry intelligence and resulting work plan of the Forest and Wood Products Industry Reference Committee (IRC). It was developed through research of national and industry data sources and ongoing input from IRC members and key stakeholders. The report is designed to provide the Australian Industry and Skills Committee (AISC) on the four-year rolling National Schedule of training product development and review work.

The industry intelligence component covers the following topics:

Sector Overview

An analysis of the depth and breadth of the industry and identification of the macro environmental forces that currently challenge and / or provide opportunities for the industry

Employment

A review of employment projections by the Department of Employment and an outline of the current workforce profile and supply for the industry

Skills Outlook

Insights into the key trends that could potentially drive changes in workplace design and identification of key priority skills and skilled labour shortages for the industry.

The training product review work plan – at the end of the report – draws on the industry intelligence, reports and various points of engagement with industry associations, employers and training providers.

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Executive Summary

This report provides an overview of workforce development and skills needs for the Australian forest and wood products industry sectors. The report was commissioned to support the Australian Industry and Skills Committee (AISC) in developing the four-year rolling National Schedule of training product development and review work. The report is structured, as per AISC template, in four main sections as follows: sector overview, employment, skills outlook, and training product review plan. Methods of analysis include research of published national and industry data sources and input from Industry Reference Committee (IRC) members and key stakeholders.

The report draws attention to the fact that current and projected growth in housing construction market and the *National Construction Code (NCC)* now allowing for the construction of tall wood buildings, provides this industry with the potential for growth and new business opportunities. The opportunities are also shaped by government mechanisms such as the Emissions Reduction Fund. Through products and services, the Australian forest and wood products industry can be part of the potential carbon abatement opportunities.

Further, the report describes the industry workforce, consistent with many other industry sectors, is reaching the retirement age in higher numbers, creating significant challenges for employers – particularly in respect to their ability to attract people to the industry and train them.

Importantly, the report shows that employers will increasingly seek high level skills to support more demanding job functions in most workplaces. This occurs because businesses respond to opportunities with ongoing adoption of more efficient and effective high-tech harvesting and extraction operations, improved strategies for resource efficiency of all activities in the entire forest sector, improvements and increased use of automation, and new capacities for development of modular / panelised prefabricated systems and engineered/laminated timber products (CLT, LVL, etc.), among many other innovations. The workforce needs skills to support the higher efficiency targets, innovation and automation/digitisation.

Examples of changing job functions for operational employees include management, quality inspection, generation of information/reporting, process improvements, and technical maintenance. Similarly, higher level skills will be required of specialist managers to support strategic developments and targets. Examples include strategic leadership and change management skills, marketing executive skills, developing investment project skills, global supply chain and logistics skills and other high level skills.

The report also identifies that new forest biomass and bioengineering skills and occupations are likely to emerge from a potential upward demand and projects of woody biomass production and bioethanol from forest residues.

Summary of key points in each section

Sector overview

- The forest and wood products industry can be described as having six sectors: forest growing and management, harvesting and haulage, sawmilling and processing, timber manufactured products, wood panel and board production, and timber building solutions, merchandising.
- The industry includes 13,261 forestry and manufacturing businesses and 1,176 timber wholesalers, who employ close to 120,000 people across the industry value chain as estimated by the industry.
- Australian state and territory governments undertake many forest conservation and forest growing and harvesting activities through large state forestry business enterprises or agencies. The sawmilling and timber manufactured sectors are characterised by a large number of small and medium-size producers and a smaller number of large producers which are often vertically integrated companies. Most of the wood panel businesses are large-scale operations.
- Total sales turnover of the forestry and manufacturing sectors increased by 4.7 per cent (or $611 million) to $13.7 billion between 2012-13 and 2013-14.
- The industry is represented by about 42 peak organisations at a national and state or regional level, including industry and industry sub-sector associations, associations of other industry-related sectors, industry networks, professional and employee associations and key industry services bodies.
- Key regulations for the industry include or are related to: three major pieces of legislation at the national level and 26 at the state and territory level that support the conservation and sustainable management of forests; three major national policies including *1992 National Forest Policy Statement (NFPS)*, *Plantations for Australia: the 2020 Vision and National Indigenous Forestry Strategy*; a wide range of industry codes of practice for sustainable forest management of wood production forests; and two voluntary forest certification schemes, Australian Forest Certification Scheme (AFCS) and Forest Stewardship Council Scheme (FSC).
- The industry has the following regulated occupations[1]: operators working in CCA (Copper Chromium Arsenate) timber treatment plants are required by law to hold a specific operator licence or user permit; and operators involved in high risk activities must have licences, (as an industry requirement), to perform these work functions.
- Key macro forces which currently challenge and provide opportunities for the industry sectors include:
  - The UN Framework Convention on Climate Change through the Paris Agreement and a potential streamlined Australian Government's Direct Action Plan, which can create new opportunities for the Australia's future forest resources enabling the industry to develop into a significant producer for the renewable energy markets.
  - Climate change effects on forests, which cause concerns relating to log availability, investment opportunities, and demand for wood products.
  - Lack of a national afforestation / reforestation financing mechanism, which affect the ongoing availability of forest resources in the long term as an important factor for the industry's future growth.

[1] Regulated occupations have legal (or industry) requirements or restrictions to perform the work. Regulated occupations require a license from, or registration by, a professional association or occupational licensing authority.

- Current and projected growth in housing construction market and expected growth for tall wood buildings constructions as a result of the new *National Construction Code (NCC)*, which drive new business opportunities in the industry.

Employment

- The employment numbers in the forest and wood products industry is expected to remain relatively stable over the next five years
- About 20 per cent of the industry workforce is likely to retire over the next five years.
- A significant number of the workforce occupies roles specific to this industry including forestry and logging workers, forestry plant operators, wood trades workers, carpenters and joiners, factory process and machinery operators. Nevertheless, the sector involves also a range of other jobs that are typical to the manufacturing sector in general.

Skills outlook

A summary of development trends in the forest and wood products manufacturing industry sectors, which determine new demands for skills, and the proposed training package projects to support these skill needs are provided in the following table.

Driver	Skills outlook	Training Package project
Growth in the use of geospatial technologies in the forestry sector	Skills in using GIS technologies with applications in forestry are required.	Geospatial technology
Transition to ongoing implementation of process automation and digital technologies on a wide range of equipment used on forest operations.	Skills in electronics maintenance skills are required for in-field maintenance, ensuring equipment functions with a minimum downtime.	Electronics Maintenance
Increasing opportunities for agroforestry and farm forestry developments	Skills in conservation and land management will be required at the farm level. Skills in managing harvesting and sale of logs from farm forests are required.	Skills for farm forestry managers
Arboriculture practices	Skills for operating a small loader during arboriculture activities are required Skills for using chainsaws above ground from elevated work platforms and when climbing a tree during arboriculture activities are required.	Arboriculture
Transition to new forest growing and management practices to increase the overall productivity and sustainability of forests Growing focus on maximising resource utilisation through	Skills in tree genetics, tree nutrition, and new silvicultural methods are required. Specialist skills are required to rapidly adjust cutting processes	Forest productivity and sustainability

production of high value added wood products from small diameter logs Increased focus on mechanical fuel reduction, as an alternative to prescribed or controlled forest burns for managing forest sustainably Maintaining forest sustainability through low impact harvesting and Chain of Custody certification	Skills for specialist processing small diameter logs Skills for undertaking mechanical fuel reduction are required where conservation values could be compromised by fuel reduction burning Skills to minimise the environmental footprint of harvesting through low impact harvesting methods such as tree marking, pre-designated skid trails, carefully designed landings and haul roads, as well as use of cording and matting on log extraction tracks in hardwood native forests Skills for implementing due diligence code of practices (chain of custody)	
Increased focus on maximising forest value by minimising waste (increased productivity)	Skills to apply the latest forest harvesting optimisation principles, practices and processes are required. Skills to operate optimisation technology effectively are required as well.	Optimisation of log production at AQF level III
Transition to ongoing implementation of new processes and technologies in harvesting operations. Examples include: ▪ flail equipment in mobile chipping ▪ use of self-loading and truck mounted cranes ▪ mechanical falling of plantation timber	New knowledge and operational capacity related to advanced harvesting technology and processes is required to fill existing gaps. Investigate the need to calculate tree mass requirements when manually falling trees	Harvesting equipment operations at AQF level III
Transition to ongoing implementation of new processes and technologies in timber sawmilling operations. Impact of technology wood machining and saw repair and maintenance	New knowledge and skills related to advanced technology and processes are required to fill existing gaps including ▪ CAT scanner and laser technology ▪ automated transfer systems between different process sequences Skill needs for Saw Doctor and Wood Machinist trade level occupations have	**Timber products production** Impact of new and emerging mill technology across a range of job roles in sawmilling, wood panel products and timber manufactured products and truss and frame manufactureat AQF level II, III and IV

Transition to ongoing implementation of new timber drying techniques and processes	evolved with the emergence of new CNC and CAM centres, sophisticated measuring, workflow processes and advancements in material technologies and qualifications need to be redesigned to reflect these advancements. Specialist skills in new drying techniques are required	Saw doctoring and woodmachining at AQF level II, III New/reviewed units of competency for timber drying
Forest growing and management (FGM) and harvesting and haulage (H&H) business owners have identified the need to improve business management	Skills in managing the safety, environmental, economic and social aspects of a business	Small business management
Forest and forest products industry requirements for efficiency in production and access to the timber products supply chain.	Technical skills and knowledge in logistics/supply chain management and business-to-business needs to meet needs of a vertically integrated industry.	Skills for value chain logistics
Transition to ongoing implementation of new processes and technologies in the sale and merchandising and marketing of timber and related products Estimated growth of biomaterials production including wood plastic composites Estimated growth in the production of new engineered/laminated timber products (CLT, LVL, etc.)	Skills for developing complex customer solutions, applying detailed product knowledge, developing innovative product uses, and skills for innovative product promotion and presentation. Skills in new marketing and communication methods, including digital and social media platforms are required across the sector. Skills for biomaterials production operators are required Skills and knowledge required around the uses and applications of engineered/laminated timber	Product development, sales, merchandising and marketing

A. ADMINISTRATIVE INFORMATION

Name of Applicable Industry Reference Committee (IRC)	Forest and wood Products Industry Reference Committee
Name of Applicable Skills Service Organisation (SSO)	Skills Impact Ltd

B. SECTOR OVERVIEW

Sector Description

The forest and wood products industry sector integrates the value chain of forests and wood resource utilisation through six industry sectors:

- Forest growing and management
- Harvesting and haulage
- Sawmilling and processing
- Timber manufactured products
- Wood panel and board production
- Timber merchandising.

In 2014, the sector included 13,261 forestry and manufacturing businesses and 1,176 timber wholesalers[2], employing close to 120,000 people across the industry value chain as estimated by the industry[3]. ABS compilation of industry sectors indicates that there were 54,000 people employed in forestry and logging sector and wood product manufacturing sector in 2014[4]. This ABS employment number does not include people involved in the wide range of industry support services and in the timber wholesaling and retailing sector.

The forest and wood products industry sector is also closely related to other economic sectors with cross-industry representation including management of forest reserves and parks through conservation and land management; arboriculture for provision of environmental and recreational services; indoor and outdoor timber furniture manufacturing; and emerging industries such as bio-fuels, bio-energy and bio-materials production.

The sector contribution to the Australian economy through its forestry and manufacturing component includes[5]:

- Total sales turnover which increased by 4.7 per cent (or $611 million) to $13.7 billion between 2012-13 and 2013-14.
- Industry value added (IVA) which increased by 11.6 per cent (or $518 million) to $5.0 billion over the same period.
- Operating profit before tax (OPBT) which increased by 60.8 per cent ($701 million) to $1.8 billion.

[2] ABS, Counts of Australian Businesses, including entries and exits, June 2010 to June 2014, Cat No 81650
[3] Australian Forest Products Association, 2015, A National Institute for Forest Products Innovation. [www] http://ausfpa.com.au/wp-content/uploads/2015/11/AFPA-RD-Policy-Proposal.pdf
[4] ABS, Australian Industry, 2013-14, Cat No 8155.0.
[5] ABS, Australian Industry, 2013-14, Cat No 8155.0.

Relevant Training Package Qualifications

The Training Package for the forest and wood products sector is FWP - Forest and Wood Products Training Package. FWP comprises 25 qualifications, 31 skill sets, 328 native units of competency, and 227 imported units of competency.

FWP QUALIFICATIONS
Qualification Level: Certificate I
Certificate I in Forest and Forest Products
Qualification Level: Certificate II
Certificate II in Timber Merchandising
Certificate II in Wood Panel Products
Certificate II in Harvesting and Haulage
Certificate II in Timber Truss and Frame Design and Manufacture
Certificate II in Forest Growing and Management
Certificate II in Sawmilling and Processing
Certificate II in Timber Manufactured Products
Qualification Level: Certificate III
Certificate III in Sawmilling and Processing
Certificate III in Woodmachining
Certificate III in Harvesting and Haulage
Certificate III in Sawdoctoring
Certificate III in Timber Manufactured Products
Certificate III in Forest Growing and Management
Certificate III in Timber Truss and Frame Design and Manufacture
Certificate III in Wood Panel Products
Certificate III in Timber Merchandising
Qualification Level: Certificate IV
Certificate IV in Timber Processing
Certificate IV in Forest Operations
Certificate IV in Timber Truss and Frame Design
Certificate IV in Timber Truss and Frame Manufacture
Qualification Level: Diploma
Diploma of Timber Truss and Frame Design
Diploma of Timber Truss and Frame Manufacture
Diploma of Forest and Forest Products
Qualification Level: Advanced Diploma
Advanced Diploma of Forest Industry Sustainability

Sector Analysis

Sub-sector description and analysis of businesses involved

SUB-SECTOR NAME	FOREST GROWING AND MANAGEMENT
SCOPE OF WORK	The sector consists of businesses engaged in the management of commercial plantation estates, native forests, and farm forests for the production of wood and wood fibre. This sector includes establishment of estates and access roads and management of fire breaks. Commercial forestry estate management is undertaken on behalf of the Australian state governments and private forest owners such as institutional investors, managed investment schemes, farm forest owners, timber industry companies, and other private owners.
FOREST BUSINESS ENTERPRISES	Australian state and territory governments undertake many forest conservation and forest growing and harvesting activities through large state forestry business enterprises or agencies. There are over 20 private plantation management companies that manage Australia's industrial plantations[6]. **State forestry business enterprises[7]** ▪ Forestry Corporation of New South Wales ▪ VicForests ▪ Forestry Tasmania ▪ ForestrySA ▪ Forest Products Commission of Western Australia ▪ Department of Agriculture and Fisheries Queensland. **Major plantation management companies** ▪ Hancock Queensland Plantations (Hancock Timber Resource Group) ▪ Hancock Victorian Plantations (Hancock Timber Resource Group) ▪ Australian Bluegum Plantations ▪ Forico Pty Ltd (New Forests) ▪ OneFortyOne ▪ Timberlands Pacific ▪ PF Olsen. The majority are foreign-owned proprietary companies involving Australian and international superannuation and investment funds.
GEOGRAPHICAL LOCATION	Businesses and forest management activities for commercial timber harvesting are located and undertaken in all states and territories. Geographic zones with high concentration of industrial plantations include the south-west and the great southern region of Western Australia; the south-

[6] ForestWorks research
[7] Enterprises listed according to their market share or significance in the sector

	east of South Australia and south-west Victoria (known as Green Triangle); Tasmania; central and east coast of Victoria; coastal, southern highlands and northern New South Wales and southern Queensland; and the north of Northern Territory.
AUTOMATION AND DIGITISATION	Advanced technologies were introduced in this sector to assist efficient forest planning and forest operations, fire and pathogen management, and cultivation of trees. IT technologies are used to develop growth models, logistics models, harvest planning models, reporting, and communication services for integrated harvest planning. State forests in Victoria, New South Wales, Queensland, Tasmania and Western Australia provide native resources for processing and further manufacturing, subject to availability through Regional Forest Agreements (RFAs).

SUB-SECTOR NAME	**HARVESTING AND HAULAGE**
SCOPE OF WORK	The sector includes all enterprises that harvest forests for timber products and pulpwood, rough-hewn products (mine timbers, posts and railway sleepers) and firewood. Forest harvest enterprises are normally commissioned by public and private forest management companies. This sector also includes businesses that haul logs and other forest products, produce woodchips in the field, or gather forest biomass.
HARVESTING ENTERPRISES	Most enterprises in this sector are small to medium size and family owned businesses. There are several large harvesting businesses and they are often vertically integrated with a wide range of complex forest operations being performed. **Some major vertically integrated harvesting enterprises** ▪ Softwood Logging Services (WA) ▪ LV Dohnt (Vic, SA and SA) ▪ Tabeel Logging (Vic and SA).
GEOGRAPHICAL LOCATION	Harvesting businesses operate in industrial plantations in all states and territories and regions of native forests with allowable areas for harvest.
AUTOMATION AND DIGITISATION	Enterprises in this sector use tree falling equipment, chainsaws, automated heavy machinery (including mechanical harvesters, debarking and de-limbing machines, excavators and log grab machines, forwarders and skidders), and GPS-based technology to monitor harvester's location over time, communicate, or control equipment in remote areas. They also are growing in their reliance upon computer monitoring of harvest rates, values, qualities and quantities, compiled on an hourly and daily basis, increasing the complexity of digital management by field operators.

SUB-SECTOR NAME	SAWMILLING AND PROCESSING
SCOPE OF WORK	The sector includes primary processing activities that transform logs from trees for a range of products using sawing, peeling and chipping processes. Types of processing facilities include: 1. Sawmills processing hardwood or softwood logs for the production of rough sawn timber and re-sawn timber. Rough sawn timber products include green and dry sawn timber for structural applications and green sawn timber for other uses. These products are further processed at the same sawmill or in the downstream sectors (timber manufactured products or furnishing) into: ▪ Timber components in a wide variety of sizes, which are used by building and construction industries ▪ Timber frame and roof trusses ▪ Furniture, internal joinery, lining, finger-jointed lengths and laminated beams ▪ Fencing, poles ▪ Packaging and pallets. Sawmills also undertake chemical preservation of rough timber or logs produced. 2. Processors converting logs or waste from sawmilling into chips. The woodchips are used in downstream sectors for paper and paperboard manufacturing and wood panel production. 3. Timber re-sawing and dressing enterprises producing dressed timber (floorboards and weatherboards), mouldings and re-sawn timber from timber sawn at other mills. Dressing involves seasoning (kiln or air dried timber) or chemical preservation for different end-uses in the building construction industry.
PROCESSORS	The sector is estimated[8] to comprise of: ▪ 186 hardwood mills, most of which are small-scale operations ▪ 60 softwood mills. Softwood operations are generally larger in scale, with some being part of integrated forest products companies ▪ 15 wood chip production plants and export facilities. **Major timber processors[9]** Softwood ▪ Carter Holt Harvey NSW, VIC, SA ▪ Hyne Timber NSW, QLD ▪ Timberlink SA, TAS ▪ Highland Pine Products NSW ▪ Wespine Industries WA ▪ Associated Kiln Driers VIC

[8] ABARES, 2015, Australia's forest Industries 2015, http://data.daff.gov.au/data/warehouse/9aaf/9aafe/2015/AustForIndstryMap/AustForIndstryMap201504_hires_v1.0.0.pdf

[9] Enterprises listed according to their market share or significance in the sector

	▪ Dongwha Timbers NSW ▪ Superior Wood QLD ▪ Allied Timber Products NSW, QLD ▪ N F McDonnell & Sons SA Hardwood ▪ Hyne Timber QLD ▪ Boral Hardwood Timber NSW ▪ Neville Smith VIC, NSW, TAS ▪ Hurfords NSW ▪ Australian Sustainable Hardwood (ASH) VIC ▪ AusWest Timber WA **Major wood chip producers[10]** ▪ Mitsui Bussan Woodchip Oceania Pty Ltd (Mitsui & Co Limited) operates Bunbury Fibre Exports in WA and South West Fibre Pty Ltd (49.0%) in Victoria ▪ Midway Limited operates Midway woodchip mill and South West Fibre Pty Ltd (51.0%) in Victoria ▪ WA Plantation Resources Pty Ltd, WAPRES (Marubeni Corporation & Nippon Paper Industries) WA ▪ Allied Natural Wood Exports NSW
GEOGRAPHICAL LOCATION	Sawmilling activities are undertaken in most states. Sawmills are generally established in near vicinity to logging/harvestable areas of both native forests and plantations and provide important regional employment opportunities for small towns across Australia.
AUTOMATION AND DIGITISATION	The sector is generally highly mechanised and operations are very reliant upon computer controlled equipment. Types of machinery includes: saws, finger-jointing equipment, moulders, chippers, kilns and boilers, cranes, log loaders, forklifts, timber stacking machinery.

SUB-SECTOR NAME	**TIMBER MANUFACTURED PRODUCTS**
SCOPE OF WORK	Producers of timber manufactured products source timber from sawmills and other upstream timber processing enterprises to manufacture wooden structural components/systems and other timber products including joinery. Examples of manufactured timber products used for structural applications include: pre-fabricated timber roof trusses, wall frames, glue laminated lumber (Glulam), I-Beams, and other pre-fabricated timber building systems.
PRODUCERS	The sector is estimated to comprise of more than 350 small and medium size timber frame and truss producers throughout the country[11], a smaller number of pre-fabricated timber manufacturing plants and an assortment of manufacturing plants that use timber as a major component of the items they produce.

[10] Enterprises listed according to their market share or significance in the sector
[11] Pryda website http://www.pryda.com.au/about-us

	Major producers of timber manufactured products[12] Frame and truss ▪ Timber Truss ▪ AAA Trusses and Windows ▪ Dahlsens Truss and Frame ▪ BB Truss ▪ Able Truss ▪ Trusses Plus ▪ Trusspro ▪ South Coast Prefab ▪ MB Prefab ▪ TimberTruss Geelong ▪ Owentruss ▪ Ostruss ▪ Truss Right ▪ Prefab Technology ▪ Drouin West ▪ Country Truss ▪ Engtruss ▪ A Truss and Timber ▪ Cleveland Trade Centre ▪ Parkside Timber & Hardware ▪ Dynamic Timbers Pty Ltd ▪ Rankine Timber & Truss. Other timber pre-fabricated solutions ▪ Tilling Timbers ▪ Structural Insulated Panels (SIPs) Industries (WA).
GEOGRAPHICAL LOCATION	Production facilities are located in all states with larger population and growing housing construction and economic activity, in the proximity of capital cities.
AUTOMATION AND DIGITISATION	The sector, particularly larger businesses, operates on state-of-the-art machinery and involves digital design and fabrication processes. There is an ongoing skills shortage for estimators and detailers in the manufacturing of roof trusses, floor systems and wall frames due to recent buoyant demand in the new housing and renovation markets.

SUB-SECTOR NAME	**WOOD PANEL AND BOARD PRODUCTION**
SCOPE OF WORK	The sector includes all enterprises that manufacture wood panels from wood chips, sawdust, wood shavings, slabwood or off-cuts; laminations of timber – Glulam and I-Beam; and, veneer, plywood and Laminated Veneer Lumber (LVL) from logs and sawn timber. Types of wood panel products include: particleboards (PBs), medium-density fiberboards (MDFs), hardboard, softboard and other fibreboards. Laminations are decorative plastic and veneer laminates applied by panel producers on wood panels or other substrates.
PRODUCERS	The sector is represented by the following wood panel mills[13], most of which are large-scale operations. **Major producers**[14]

[12] Enterprises listed according to their market share or significance in the sector
[13] ABARES, 2015, Australia's forest Industries 2015, http://data.daff.gov.au/data/warehouse/9aaf/9aafe/2015/AustForIndstryMap/AustForIndstryMap201504_hires_v1.0.0.pdf
[14] Enterprises listed according to their market share or significance in the sector

	Wood panel ▪ Carter Holt Harvey — PB — QLD, SA, NSW ▪ Laminex — MDF&PB — QLD, WA ▪ Borg Manufacturing — MDF — NSW ▪ Alpine MDF Industries — MDF — VIC ▪ D&R Henderson — PB — VIC ▪ DG Brims & Sons — PB — QLD, WA ▪ Tasmanian Wood Panels — PB — TAS ▪ Weathertex — HB — NSW Decorative veneer ▪ Speciality Veneers — TAS Plywood ▪ Carter Holt Harvey — VIC ▪ Big River Timbers — NSW ▪ Austral Plywoods — QLD ▪ Ta Ann Timbers — TAS ▪ North Coast Plywood — NSW LVL ▪ Wesbeam — WA ▪ Carter Holt Harvey — SA Glulam ▪ Hyne & Son — QLD ▪ VICBEAM Australia — VIC ▪ ASH (Australian Sustainable Hardwoods) — VIC
GEOGRAPHICAL LOCATION	Production facilities are located in most Australian states (NSW, VIC, QLD, and SA) and are dependant upon growing populations and housing/industrial construction and economic activity, in the proximity of capital cities.
AUTOMATION AND DIGITISATION	In this sector, manufacturing is carried out in capital intensive continuous production lines, involving highly automated machineries, computerised equipment, and new systems for efficient drying processes.

SUB-SECTOR NAME	**TIMBER ADVICE, DESIGN AND MERCHANDISING**
SCOPE OF WORK	The sector operates via two major channels: ▪ Retail and trade merchants selling and providing advice and customer solution to the public, DIY market and builders ▪ 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 builder's 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.
WHOLESALERS	The sector is highly detailed, consisting of many small-scale timber yards and wholesalers who service narrow geographic or product markets and several large scale manufacturers and retailers. **Major wholesalers**[15] ▪ Gunnersens ▪ Meyer Timber ▪ Dindas ▪ Wesbeam ▪ Tilling ▪ ITI ▪ Bowens ▪ Heyden ▪ Timber Truss Solutions ▪ Big River Timbers ▪ EWP Australia ▪ Le Messurier Timber/Carter Holt Harvey ▪ Bunnings ▪ Masters ▪ Austim.
GEOGRAPHICAL LOCATION	Timber wholesalers and retailers have operations throughout Australia.
AUTOMATION AND DIGITISATION	Wholesalers and retailers are increasingly reviewing the best ways of providing products, information and services to the customers. They are adapting to new ways of collaborative logistics (computerised inventory control systems, tracking and reporting technologies) and digital communication. Ongoing development of units to support these skills is required.

Relevant stakeholders

The forest and wood product industry sector is represented by about 42 peak organisations at a national and state or regional level. These organisations include industry and industry sub-sector associations (18), associations of other industry-related sectors (11) and other industry networks, professional and employee associations and industry services bodies (13).

[15] Enterprises listed according to their market share or significance in the sector

Table 1: Relative number of the industry peak bodies

CATEGORY	NUMBER
Industry Associations	7
Industry Sub-Sector Associations	11
Associations of Other Industry-related Sectors	11
Industry Networks	1
Professional Associations	2
Employee Associations	3
Industry Standards Bodies	2
Industry R&D Services Bodies	1
Industry Services Bodies	2
Council Associations	2
Total	**42**

Table 2: Peak industry sector organisations

CATEGORIES	GEOGRAPHICAL REPRESENTATION
INDUSTRY SECTOR ASSOCIATIONS	
Australian Forest Products Association (AFPA)	National
Timber Communities Australia (TCA)	National
Timber NSW	NSW
Timber Queensland Ltd	QLD
Forest Industries Association of Tasmania (FIAT)	TAS
Victorian Association of Forest Industries (VAFI)	VIC
Forest Industries Federation WA (FIFWA)	WA
INDUSTRY SUB-SECTOR ASSOCIATIONS	
Forest Growing and Management	
Australian Forest Growers (AFG)	National
Harvesting and Haulage	
Australian Forest Contractors Association (AFCA)	National
Tasmanian Forest Contractor Association (TFCA)	TAS
Sawmilling and Processing	
Timber Preservers Association of Australia (TPAA)	National
Tasmanian Sawmillers Association (TSA)	TAS
Timber Manufactured Products	
Frame & Truss Manufacturers Association (FTMA)	National
Glued Laminated Timber Association of Australia	National
Wood Panel and Board Production	
Engineered Wood Products Association of Australasia (EWPAA)	National & Pacific
Timber Veneer Association of Australia	National
Timber Merchandising	
Timber & Building Materials Association (TABMA)	National
Timber Merchants Association (Vic) (TMA)	VIC

ASSOCIATIONS OF OTHER INDUSTRY-RELATED SECTORS	
Australian Pulp and Paper Industry Technical Association (APPITA)	National & NZ
Australian Furniture Association Inc. (AFA)	National
Australian Shop & Office Fitting Industry Association (ASOFIA)	National
Australian Window Association (AWA)	National
Australian Woodworking Industry Suppliers Association (AWISA)	National
Cabinet Makers & Design Association (CMDA)	National
Furnishing Industry Association of Australia (FIAA)	National
Furniture Cabinets Joinery Alliance (FCJA)	National
NSW Glass & Glazing Association	National
Picture Framers Guild Australia (PFG)	National
Cabinet Makers Association (CMA) of WA	WA
INDUSTRY NETWORKS	
Forest Industry Council (Southern NSW)	NSW
PROFESSIONAL ASSOCIATIONS	
Institute of Foresters Australia (IFA)	National
Arboriculture Australia	National
INDUSTRY STANDARDS BODIES	
Australian Forestry Standard Ltd (AFS)	National
Forest Stewardship Council (FSC) Australia	National
ForestWorks	National
EMPLOYEE ASSOCIATIONS	
CFMEU Forestry and Furnishing Products Division	National
Australian Workers' Union (AWU)	National
Australian Council of Trade Unions (ACTU)	National
INDUSTRY R&D SERVICES BODIES	
Forest and Wood Products Australia Ltd	National
INDUSTRY SERVICES BODIES	
Timber Trade Industrial Association (TTIA)	National
Timber Development Association NSW	NSW
COUNCIL ASSOCIATIONS	
National Timber Councils Association (NTCA)	National
Timber Towns Victoria (TTV)	VIC

Industry and occupational regulations and standards

Industry regulations

Australian forest and wood products industry operates under a high level of regulation.

Australia's public native forests, including those held in nature conservation reserves and those available for wood production, are governed and managed under national and state and territory regulatory frameworks and management plans (many of which are prescribed in legislation) relating to the conservation and sustainable management of forests.

There are three major pieces of legislation at the national level that support the conservation and sustainable management of forests and 26 pieces of legislation at the state and territory level.

National legislation includes:

- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Regional Forest Agreement Act 2002*
- *Illegal Logging Prohibition Act 2012*

Harvesting, particularly in public native forests, is subject to the above regulatory frameworks and other policies. Management of forests on private land is also regulated under various native vegetation Acts.

National policies include:

- *1992 National Forest Policy Statement (NFPS)*
- *Plantations for Australia: the 2020 Vision*
- *National Indigenous Forestry Strategy*

In addition, the industry operates under the guidance and implementation of codes of practice for sustainable forest management of wood production forests. As exemplified below, the codes cover a range of matters varying in their legal status and jurisdiction coverage.

- Forest planning
- Forest access and roading
- Operating heavy vehicles
- Managing WHS risks in forest harvesting
- Sawmilling and timber operations
- Timber preservation
- Conservation of non-wood values
- Pest, weed and fire management
- Harvesting of non-wood forest products.

Industry producers and wholesalers are required to meet general workplace regulations and workplace health and safety regulations.

Wholesalers must comply with the *Competition and Consumer Act 2010*, which covers relationships between all parties within the supply chain (including wholesalers, manufacturers, retailers and consumer) and promotes fair trading among these parties.

Industry standards

The industry implements two voluntary forest certification schemes, Australian Forest Certification Scheme (AFCS) and Forest Stewardship Council Scheme (FSC), which typically require more stringent forest management practices than the legislation alone. Both schemes are framed by forest management standards and chain-of-custody standards.

Regulated occupations in the industry

Regulated occupations have legal (or industry) requirements or restrictions to perform the work. Regulated occupations require a license from, or registration by, a professional association or occupational licensing authority.

This sectors has a number of activities for which high risk licences are required and operators must have licences to perform those work functions. This industry employs a wide range of regulated occupations including electricians, plumbers, mobile equipment, crane and forklift operators.

Operators working in CCA (Copper Chromium Arsenate) timber treatment plants are required to hold, consistent with the type of business, either a CCA Commercial Operator Licence or a CCA Agricultural Chemical User Permit.

The accreditation of CCA timber treatment plant operators is based on regulations enforced by Australian Pesticides and Veterinary Medicines Authority (APVMA) on CCA products from 1 July 2012. Becoming a restricted chemical product, CCA can only be supplied to and used by suitably trained persons authorised under state or territory law.

The legislation provides two types of authorisation for CCA users:

- CCA Commercial Operator Licence (CCA COL). This licence is required for operators of any business that treats timber on behalf of others for a fee or reward
- CCA Agricultural Chemical User Permit (CCA ACUP). This permit is required for operators of any business that treats only its own timber

Skills Verification Programs for managers, contractors and operators

The forest and wood products industry value the importance of verification of currency of skills for key high risk activities and the standardisation of assessment processes nationally. Initiatives such as FOLS and Better Business are industry-led programs that aim to support the professionalism and safety of industry through skills verification. The programs are emerging and supported by the industry to become a national model. FOLS aims to support the professionalism and safety of industry through a national electronic system of recording and verifying skills and qualifications.

It is a streamlined system for the management of the skills of operators. FOLS offers employers a method of demonstrating that appropriate training has been provided to satisfy obligations and liabilities under national WHS Regulations.

A Forestry Better Business Program is currently under development. It will recognise professional businesses operating to high standards in the forest industry. The online program will assist forest managers and forestry contracting businesses, by clearly describing and documenting the standards they are required to meet under four key areas: safety, environmental, economic and social. The online program will provide a platform to support business development. Businesses will be able to use the web portal to store and share information to demonstrate they meet current standards.

Challenges and opportunities in the sector

Australian forest and wood products sector operates in a dynamic environment shaped by a range of policy frameworks, environmental challenges and market factors including forest resources, technology and product demand. Challenges and industry's opportunities for growth that relate to these factors are discussed below.

GOVERNMENT POLICIES

Changes or gaps in the government policies relating to the forest areas or management regimes have the capacity to influence industry's potential to grow. The impact can be positive or negative, and the effect is generally reflected in market confidence, community confidence and industry confidence. Major legislations important for the sector and its opportunities for growth include:

The UN Framework Convention on Climate Change and Australian Government's Direct Action

- The Emissions Reduction Fund is the centrepiece of the Government's Direct Action, which works alongside the international UN Framework Convention on Climate Change and national Renewable Energy Target and energy efficiency standards to offset Australia's emissions growth.

  Through the products and services, and motivated by mechanisms like the Emissions Reduction Fund, Australian forest and wood products industry can be part of the potential carbon abatement opportunities, including arrangements with land owned by remote indigenous communities in Northern Territory and other states. This vision is promoted by the Australian Forest Products Association (AFPA) in a new policy proposal for the Australian Government Budget 2016.

Under certain policy conditions, bioenergy technologies and options may become suitable for Australia's future forest resources, enabling the industry to develop into a significant producer for the renewable energy market.

Regional Forest Agreements

- The Regional Forest Agreements (RFAs) were established to balance competing economic, social and environmental demands on native forests by setting obligations and commitments for forest management. RFAs cover the major forestry regions around mainland Australia and Tasmania and are likely to remain effective in the coming years. In 2013, the Australian Government committed to maintain its support for long-term RFAs through the extension of 20-year rolling lives for each RFA.

The *Forestry (Rebuilding the Forest Industry) Act 2014* (Tasmania)

- Tasmania's estimated native log supply was reduced in 2013 to reflect the *Tasmanian Intergovernmental Agreement 2013* and the *Tasmanian Forest Agreement 2012*. As a result, industry's confidence to do business in the future was significantly diminished. In October 2014, the *Forestry (Rebuilding the Forest Industry) Act 2014* was introduced to support the re-invigoration. The Act established a process by which the land designated Future Reserve Land under the *Tasmanian Forests Agreement Act 2013* may be converted into permanent timber production zone land in the future.

CLIMATE CHANGE EFFECTS

Climate variability and frequent events of extreme weather conditions due to the global warming have various implications on the industry and its value chain. The climate conditions cause concerns relating to log availability, investment opportunities, and demand for wood products.

Extensive studies[16] show that growing occurrence of higher temperatures, drought, flood, and bushfire conditions may affect the future of forest growth and resource suitability for intended production purposes.

[16] ABARES, 2012, Potential effects of climate change on forests and forestry in Australia.

Likewise, bushfires introduce changes in the estimates for resource availability. VicForests' outlook projections incorporate the effects of fire on the resource supply following the broad scale wildfires from 2002 to 2009 in eastern Victorian public forests. Western Australia is also likely to face a shortage of sawlog supply within the next 10 to 15 years due to the effects of major bushfires from 2015-16.

LOG AVAILABILITY

Availability of high-quality native forest sawlogs from public production forest is predicted to decrease by about 33 per cent (or 0.5 million cubic metres) over the coming decades, to 1 million cubic metres annually by 2030. The reduction of high quality and specialty timber resources affects producers and markets that include appearance applications such as flooring and furniture. Similarly, pulp log supply from native forests is predicted to decrease by 22 per cent in the future, from 4.5 million cubic metres annually in 2010-14 to 3.5 million cubic metres annually from 2020-24 onwards[17].

In contrast, plantation log availability is projected to increase by 28 per cent (or 7.2 million cubic meters) over the next decades, from 25.5 million cubic meters cubic metres annually in 2010-14 to 32.7 million cubic meters annually by 2030[4].

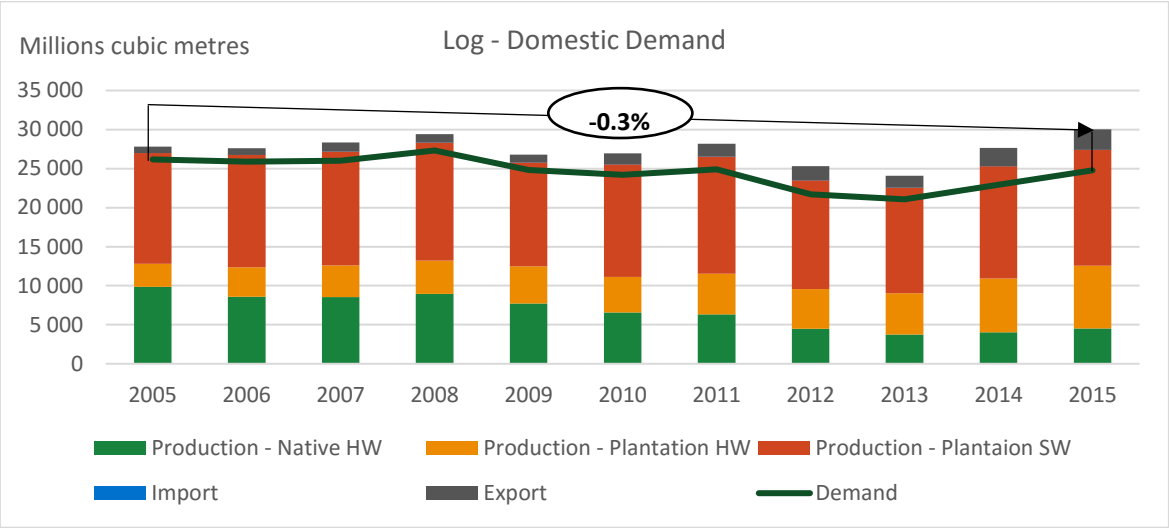
Availability of forest resources is an important factor for the industry's future growth, yet, several other factors determine whether the available logs are harvested and how they are processed. Past experience shows that lower volumes of log are harvested than there is available, due to weak economic conditions in national and global wood markets or because forest resources are located too far from the wood processing infrastructure and the market price is too low for harvesting to be economically feasible. In conditions like these, existing plantation areas are not, or will not, be replanted after the first rotation.

MARKET AND TRADE

- Growth in construction markets is the strongest demand driver for most timber and wood products. Forecasts indicate that housing construction activity remains variable but at elevated levels relative to recent years. Housing supply lags in responding to growing population.[18]
- The *National Construction Code (NCC)* introduced new changes from May 2016, providing the Australian forest and wood products sector opportunities to access new markets. Construction of multi-story residential and commercial timber buildings of up to eight storey is now recognized through the Code to use lightweight and massive timber building systems as used overseas for some years and by Lend Lease locally in the Forte building in Melbourne. Benefits to the timber industry are expected to be substantial, while dependent on the rate of uptake (capital investments for suitable timber-based products and technologies in this new market).
- The harvest of native saw logs and pulp logs has decreased at an annual rate of 9 per cent over the last decade, totalling 4 million cubic metres in 2014. About half of the production was for sawn wood (44 per cent). The remaining half was for woodchips export (38 per cent) and domestic paper (13 per cent). The average annual growth of domestic demand for logs has decreased slightly (0.3 per cent) since 2005 (Figure 1).

[17] ABARES, 2013, Australia's' State of the Forests Report
[18] Housing Industry association (HIA) 2015

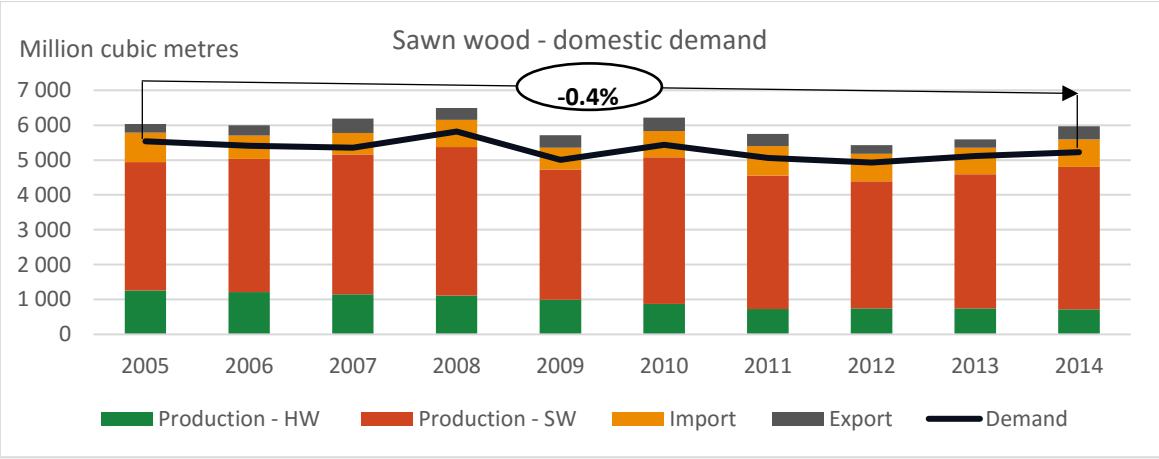
Figure 1: Log production, trade and demand 2005-2015



Source: ABARES, 2015

- Australia is a net exporter of wood fibre, exporting the vast majority of its pulpwood. Woodchips export declined to a low of 3.8 million tonnes in 2012-13 before recovering strongly to 5.7 million tonnes in 2014-15.[19]
- Sawn wood demand is highly variable, depending on local housing construction activity. The average annual growth shows a slight decline (0.4 per cent) in sawn wood demand in Australia from 2005 to 2015 (Figure 2). However, future projections indicate that sawn wood demand will increase by 30 per cent over the next three decades, from about 5 million cubic metres in 2010 to 6.5 million cubic metres in 2050[20]. Opportunities for industry to meet the future sawn wood demand include operations at maximum production capacities and capital investments in new processing and manufacturing plants.

Figure 2: Sawn wood production, trade and demand 2005-2014



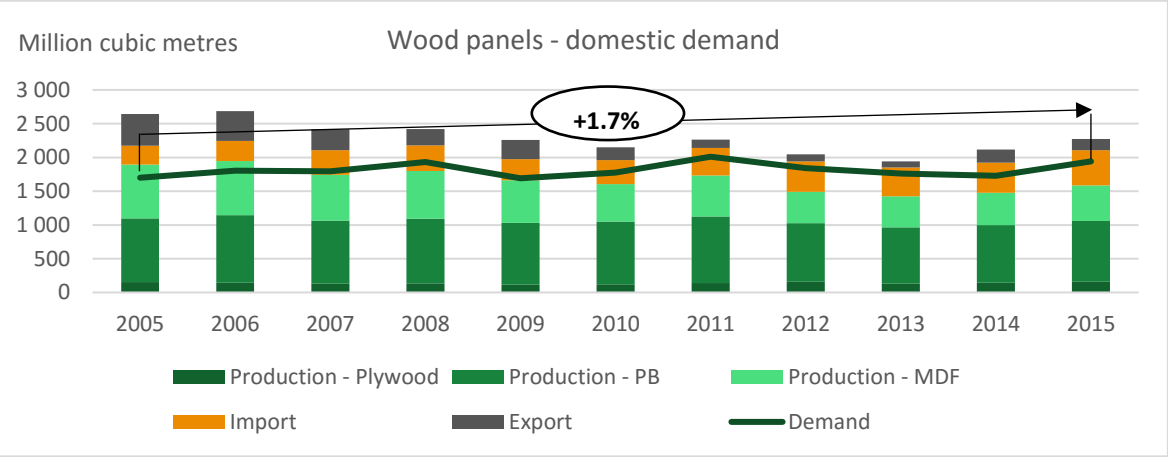
Source: ABARES, 2015

- Similarly, wood panel demand is highly variable, being driven by a number of new multi-dwellings to commence in Australia and house renovations. Over the last decade, the average annual

[19] ABARES, 2015, Australian forest and wood products statistics: March and June quarters 2015
[20] ABARES, 2013, Preliminary long-term forecasts of wood product demand in Australia

growth of wood panel demand increased by 1.7 per cent in Australia (Figure 3). Domestic wood panel demand is forecast to double over the next three decades, from about 2 million cubic metres in 2010 to 4.3 million cubic metres in 2050.[21] Domestic production is expected to increase yet it may remain insufficient to meet the strong growth anticipated in consumption. The imports are expected to bridge the demand-supply difference by increasing strongly.

Figure 3: Wood panels production, trade and demand 2005-2015



Source: ABARES, 2015

- Pricing of timber and wood products is often influenced by the Australian dollar relative to the US currency, changes in production costs, and resource or product oversupply. Price changes such as price deflation can be a major threat for commercial activity of local producers, influencing the opportunities for growth.

  For several years the sector was confronted with the appreciation of the Australian dollar, which made imported stocks cheaper in the local market. The dollar has recovered since 2014, and so the corresponding price for all end-use timber products (Figure 4).

  A weaker domestic currency has also provided export opportunities for the woodchip producers. The international woodchip market is getting increasingly competitive as many countries have invested heavily in hardwood plantations resulting in lower international prices.

Figure 4: Price indexes of wood products

Source: ABARES, 2015

- Higher prices can lead to higher productivity by improving incentives for investment in research and development, through innovation and through adaptation of existing overseas technologies applied to an Australian environment.

[21] ABARES, 2013, Preliminary long-term forecasts of wood product demand in Australia

INVESTMENT

One of the most important factors that determine the value and contribution of Australia's forest and wood products industry over the long term is the extent and type of investment that occurs in domestic wood processing infrastructure.

Ongoing investment plays a key role in:

- Maintaining productivity growth
- Enabling the industry to adapt to changing resource and market conditions
- Generating employment and value-added services to national and regional economies.

A key issue for Australia is whether the projected increase in supply of wood from plantation forests, over the coming decades will be processed domestically or exported overseas as logs and woodchips. This issue will be directly influenced by the extent and type of future investment.

ABARES[22] projects sufficient economic returns to support ongoing investment in Australia's wood processing infrastructure. Future large-scale investments are projected to include:

- New manufacturing plants for the production of lightweight and massive timber systems suitable for the construction of multi-story buildings
- New large-scale hardwood sawmills replacing older and smaller capacity sawmills
- Additional softwood sawmills
- New plywood mills and additional particleboard mills and laminated veneer lumber mills utilising both softwood and hardwood resources.

Value-adding opportunities may also increase over time. For example, development of innovative engineered wood products may provide new products that can be produced from available log types and compete in new markets for the industry. Bioenergy is another area where technological advances and policy developments may provide opportunities in the future.

[22] ABARES, 2015, Outlook scenarios for Australia's forestry sector: key drivers and opportunities

C. EMPLOYMENT

Employment Outlook

The Department of Employment estimates[23] that total employment in the forest and wood products industry remains relatively stable over the next five years to November 2019 (Table 3). However, at the industry sub-sector level, it is predicted that some employment variations will occur over the coming years. For instance, the employment in the forest management and harvesting sector is expected to decline by 10.7 per cent while in the forestry support services to grow by 3.6 per cent. Manufacturing sub-sectors of the industry are also seen to be increasing mechanisation and computerisation and will most likely employ less people in the future even at higher product value outputs. It appears that the estimates are possibly based on a 'business as usual' scenario and previous trends, with little consideration on the future opportunities and possible investments.

Table 3: Department of Employment Industry Projections – five years to November 2019[24]

INDUSTRY SECTOR	EMPLOYMENT LEVEL	EMPLOYMENT PROJECTIONS		
	Nov 2014 ('000)	Nov 2019 ('000)	Growth ('000)	Growth (%)
Forestry and Logging	4.9	4.4	-0.5	-10.7
Forestry Support Services	3.6	3.7	0.1	3.6
Log Sawmilling and Timber Dressing	7.2	7.0	-0.2	-2.3
Wood Product Manufacturing	34.7	34.5	-0.2	-0.7
Timber and Hardware Goods Wholesaling*	42.7	43.9	1.2	2.8
Total	**93.1**	**93.5**	**0.4**	**0.4**

Note: (*) This industry sector includes timber wholesaling, plumbing goods wholesaling, and other hardware goods wholesaling.

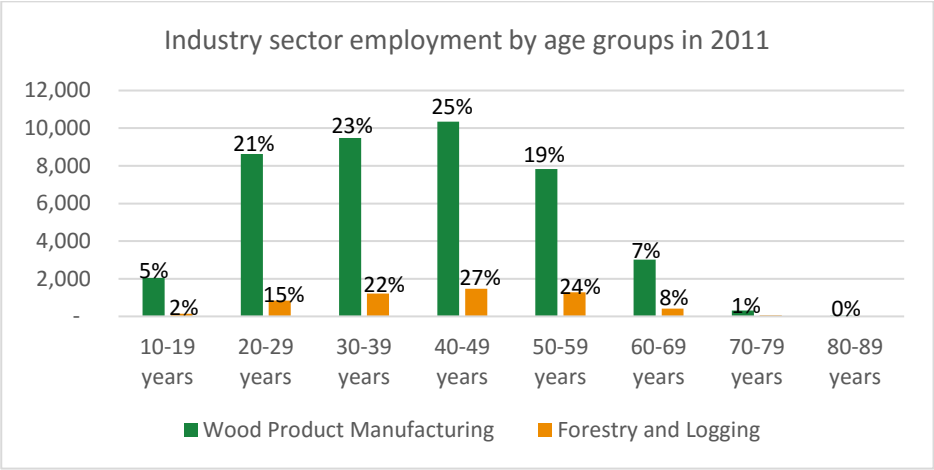
Description of Workforce Supply

The forest and wood products industry sector is a significant employer in regional and remote areas. The sector workforce profile is aging and this is confronting businesses with challenges provided by an oncoming wave of retirement. About 30 per cent (or 19, 211 people) of the sector workforce was aged 50 years and over in 2011 (Figure 5). About 8 per cent of this group is expected to have retired from the workforce by 2016 and an additional 20 per cent is likely to retire over the next five years. The coming workforce retirement is likely to bring significant job vacancies across the sector and significant efforts from employers to replenish these skills.

[23] Department's projections are based on the forecasts and projections set out in the Mid-Year Economic and Fiscal Outlook (MYEFO)

[24] Department of Employment, Industry Employment Projections, 2015 Report. Release date: March 2015. http://lmip.gov.au/default.aspx?LMIP/EmploymentProjections

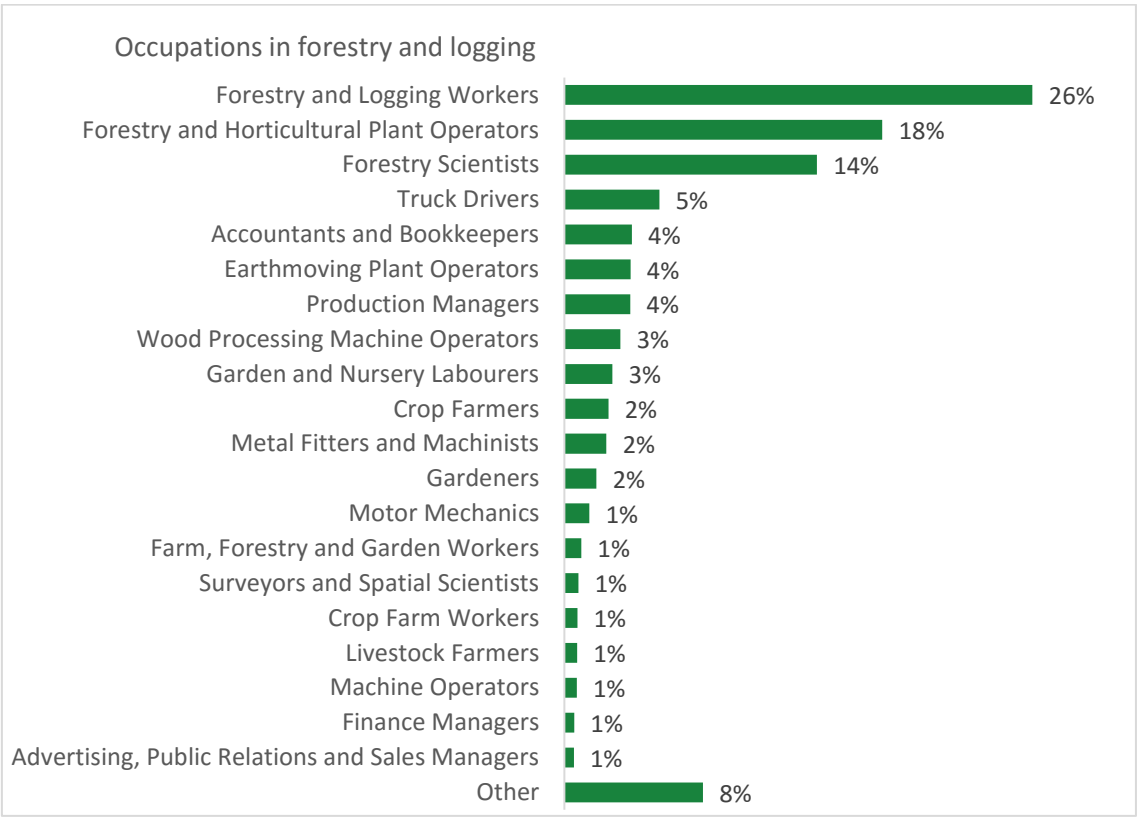
Figure 5: Industry sector employment by age groups in 2011



Source: 2011 Census of Population and Housing

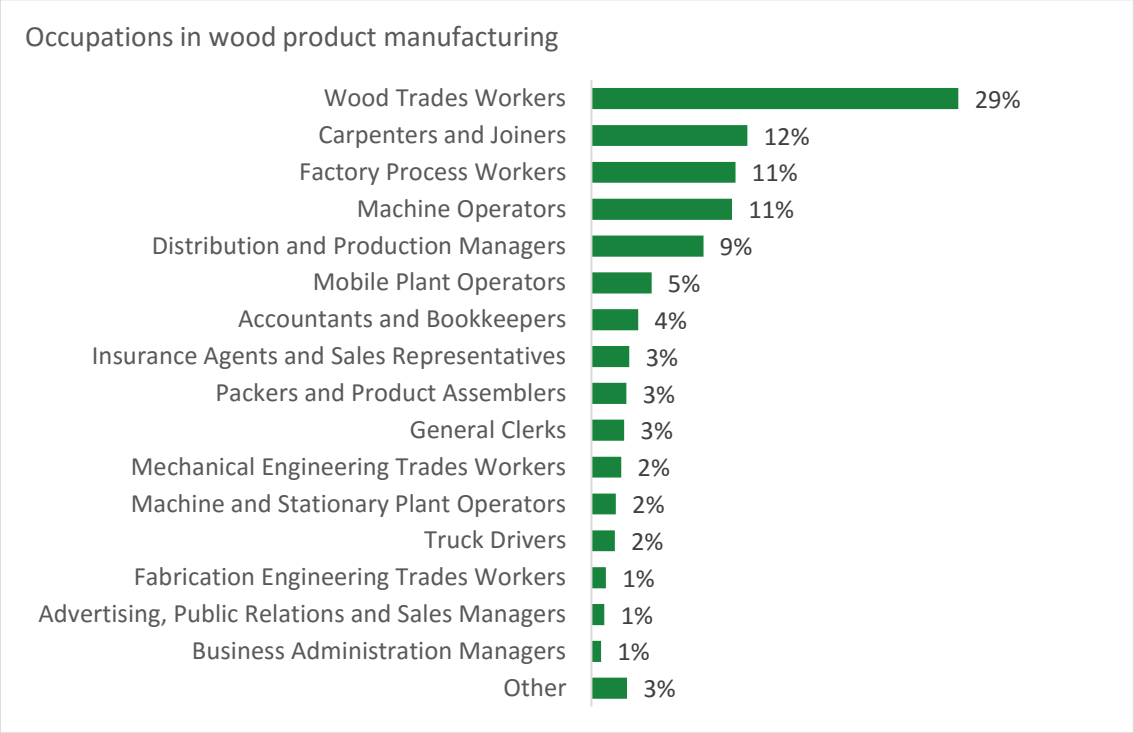
Specifically, about 80 per cent of current employing occupations in the forest and wood products industry sector include professions that are configured below (Figure 6 and 7). It is clear that a significant proportion of the workforce occupies industry-specific roles including forestry and logging workers, forestry plant operators, wood trades workers, carpenters and joiners, factory process and machinery operators. Nevertheless, the sector involves also a range of other jobs that are typical to the manufacturing sector in general.

Figure 6: Occupations and their relative number in the forestry and logging sector[25]



[25] 2011 Census of Population and Housing

Figure 7: Occupations and their relative number in the wood product manufacturing sector[26]



Most technical skills and the knowledge required in this industry sector are generally learnt after, and not before employment commences. The learning occurs 'on the job' through workforce development activities provided by employers. Gaining forest and wood products qualifications before employment is very rare amongst young people and other potential new entrants.

This means, the workforce supply for industry-specific professions is virtually and consistently nil. In these conditions, the responsibility for engaging young people and existing workers with the sector and in specialist training resides solely with employers. The challenge for the industry is currently securing skilled workers to meet the demand due to increased production levels.

To secure skilled employees or recruit for positions with a general manufacturing character (i.e. including truck drivers, stationary plant operators, forklift drivers or fitter and machinists), the employers need to compete in the labour market, on the available workforce, with other employers and industry sectors.

This means that the need for up to date qualifications remain high, even though specific and current enrolments may not demonstrate that at any point in time. Employers regularly and routinely train workers on the job with units of competency as a guide with part of the process of preparing employees for skilled job roles, and the potential to secure a qualification in the future, as part of a career offering. This is often done without RTO involvement and hence no enrolment figures are generated.

[26] 2011 Census of Population and Housing

D. SKILLS OUTLOOK

Future changes in workplace and job design are generally driven by innovations - at the business and industry level, introduction of new policies and legislations, and business challenges.

At the business level, innovations may involve introduction of new or improved technologies and processes, new or improved ways to deliver services, and new work organisation, including new job demands and job control (i.e. more complex and diversified tasks involving greater autonomy). Work organisation involves also a better interaction between internal and external stakeholders through integration of supportive technologies.

Trends in Workplace Design/Job Design[27]

At a higher level, value-added skills will be driven by higher efficiency targets, innovation and automation/digitisation of some work activities in most workplaces and jobs. In addition, higher level supply chain and logistics skills will be required and skills to adapt and respond to climate change challenges, changing government policies, industry code of practices and WHS procedures. Skills at the customer interface will require significant improvement in relation to customer service, product knowledge, digital marketing and digital commercialisation approaches.

In the presence of automation and digitisation, operational employees will be required to spend much less time on operating machinery or processing paperwork and more time on higher value added job functions. Higher level skills will be required of operational employees to support extended job functions and strategic targets. These skills include Science Technology Engineering and Mathematics (STEM) skills, compliance skills, and leadership skills. Specialist manager will require higher level skills to support strategic developments and targets.

A specific example for new skills requirements in the coming years is in the timber frame and trusses manufacturing sector. Timber frame and trusses fabricators consider opportunities to integrate installation services with the product delivery. For an activity that has not been part of a standard production process in the past, employees will need to acquire new skills in timber frame and trusses installation.

Key development trends and business challenges likely to change jobs in the forest and wood products sector and sub-sectors include the examples outlined below.

[27] This section is based on feedback from IRC meetings, desktop research and broader stakeholder consultation via the website

Key Priority Skills for the Sector Workforce

It is critical for the industry and the Australian economy to maintain and further support a skilled workforce, particularly in key regions.

The skills currently needed in the forest and wood products sector include:

FOREST GROWING AND MANAGEMENT

Modern planning, mechanised harvesting operations and applied IT; more efficient and effective high-tech harvesting and extraction operations; resource efficiency of all activities in the entire forest sector; climate change and forest work adaptation strategies; water conservation, conservation and enhancement of forest biodiversity..

Skills to utilise advanced technologies for forest planning, operations, management and reporting are critical for efficient harvest in the future.

Geospatial technologies

Recent years have seen a rise in the use of geospatial technologies such as Geographic Information Systems (GIS) for collecting forest information to map and prepare spatial statistics of inventory, silviculture operations and fire management planning within forest areas planned for harvesting or regeneration (coupes). GIS supports efficient and effective analysis, assessment, and management of forests, and skill standards are needed to support operator, forest technician and forester skills in the use of these technologies.

Electronics maintenance skills

Advances in process automation and digital technologies have seen an increase in the use of electronic control systems on a wide range of equipment used on forest operations. Shortages exist for personnel with electronics maintenance skills capable of in-field maintenance, ensuring equipment functions with a minimum downtime.

Agroforestry

Farm forestry, or agroforestry, is the integration of commercial tree crops with farming and agricultural systems for multiple benefits. Farm forestry offers farmers the opportunity to enhance agricultural production, control land degradation, and enhance biodiversity and to diversify their income sources. Increasing opportunities, conservation and land management requirements and the need for skills in managing harvesting and sale of wood products have given rise to the need for a new qualification to address these skill needs.

Arboriculture practices

Arboriculture activities are conducted by tree workers, arborists and professional tree managers, mainly in urban forest areas and other built environments. The sector focuses on equipment operation and safety practices. Critical skills identified for development include operations of small loaders during arboriculture activities in line with safety practices and safe use of chainsaws above ground from elevated work platforms and when climbing a tree during arboriculture activities.

Forest productivity and sustainability

Productivity is key to successful and sustainable forest operations in this current period of strong demand for wood and wood products. Increased forest productivity and future resource demands should be supported with skill standards for tree genetics, nutritional work and silvicultural methods,

as well as specialist skills in maximising resource utilisation. Skills for sustainability include minimising the impact that fuel reduction and harvesting activities have on the environment.

Skills for processing small diameter logs

Equipment for processing small diameter/low value logs to produce high value added products that maximise yield and profit requires specialist skills to rapidly adjust cutting processes as the market need changes.

HARVESTING AND HAULAGE

Automated machinery in this sector now utilise GPS-based technology to monitor harvester's location over time, communicate, or control equipment in remote areas. This and a range of other technology advancements will drive skill development needs in the future.

Optimisation of log production

Digitisation has had a profound effect on the sustainable harvesting of wood. Optimisation software enables mechanical harvesters to maximise product yields and recovery value to exact customer requirements whilst minimising waste. New skill standards are needed to support operators who manage production and wood flow through optimisation software programs that integrate with specialised harvesting heads. Skills are also needed to optimise log production in the areas of forwarding, stacking marking and grading and loading of logs.

Mechanical Fuel reduction

Mechanical fuel reduction is widely used in the US and Canada as an alternative to relying on burning off and is currently being trialled across Victoria as part of bushfire prevention. New skill standards are required to support operators undertaking mechanical fuel reduction as part of industry's approach to managing forests sustainably

Harvesting equipment operations

There is an ongoing need to update units of competency in response to new equipment, processes and products including flail equipment in mobile chipping, use of self-loading and truck mounted cranes and skills for mechanical falling of plantation timber in response to the rise in sustainable plantation growing.

Effective environmental care

Effective environmental care through low impact harvesting is vital for a long term sustainable use of our natural resources. Modern harvesting extraction operations strive to create the smallest possible footprint on forest ecologies. Skills for use of cording and matting on log extraction tracks in hardwood native forests will support operators to minimise the impact of machinery in forest areas

TIMBER PRODUCTS PRODUCTION

Highly mechanised operations and machinery in this sector has meant the job roles and work practices have evolved as a result of new and emerging technology. Improvements and increased use of automation; modular/panelised prefabricated systems (wall, floors and roof trusses); new engineered/laminated timber products (CLT, LVL, etc.), development of new production plants (large-scale hardwood and softwood sawmills, plywood mills, particleboard mills, laminated veneer lumber mills, sawmills for small/low value logs); biomaterials (biobased adhesives, wood plastic composites); new wood modification treatments; other processes to increase the overall efficiency of the business to meet the near-term market challenges.

New and emerging mill technology

Many operations now involve advanced timber grading/screening technologies (using CAT scanner and laser technology) and automated transfer systems between different process sequences. There

is now a need to review qualifications and units to incorporate skills needed for the range of new and emerging technologies as mills upgrade machinery.

Evolving job roles and work practices

Saw Doctors and Wood Machinists trade level occupations have evolved with the emergence of computer aided manufacturing (CAM) and CNC machining centres, sophisticated measuring, workflow processes and advancements in material technologies and qualifications need to be redesigned to reflect these advancements.

Timber drying

New techniques and processes for drying of plantation and native wood species have emerged and impact on skills needs for this sector.

PRODUCT DEVELOPMENT, SALES, MERCHANDISING AND MARKETING

Timber merchandising and marketing

New marketing and commercialisation approaches, including digital methods; new collaborative logistics and communication methods, including inventory control, tracking and reporting based on digital technology.

Generic skills priorities

The sector was asked as part of the consultation process to nominate generic skills priorities for businesses from a list provided by the Department of Education and Training. Received feedback provides no answer to this specific question in the consultation.

E. TRAINING PRODUCT REVIEW PLAN 2016-19

The IRC Training Product Review Plan 2016-19 for the Australian forest and wood products industry sector is provided in Appendix A.

Explanation

Time critical issues and interdependencies

Numerous items relate to issues relevant to the same subsector. These would be best developed concurrently to maximise efficient use of IRC time and other resources. For example, items 4, 5, 6, 7, 10 and 15 all relate to the Harvesting and Haulage subsector, so may best be developed concurrently.

Training products scheduled for review more than once in four years

Where qualifications and/or units appear against more than one item, it is because each item relates to separate and different development work.

Training products with contentious or lengthy review

None identified at this stage.

F. IRC SIGNOFF

This Work Plan was agreed as the result of a properly constituted IRC decision.

Signed for and on behalf of the **Forest and Wood Products IRC** by its appointed Chair

Kersten Gentle

(Name of Chair)	Signature of Chair
	Date: 27/9/2016

ATTACHMENT A

IRC Training Product Review Plan 2016-19 – Forest and Wood Products Industry Sector

Contact details: Skills Impact Ltd., 559A Queensberry Street, North Melbourne VIC 3051

Date submitted to Department of Education and Training: 29 September 2016

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
2016						
Harvesting and haulage						
	Forest and Wood Products	FWP	Certificate III in Harvesting and Haulage	FWP30216	**Optimisation of log production:** Operate a single grip harvester Conduct feller buncher operations Conduct forwarder operations Grade and mark logs Segregate and sort logs Conduct mechanical processor operations Conduct loader operations Conduct boom delimber operations Operate yarder Conduct excavator operations with grabs Debark logs mechanically New unit TBA for optimisation of log production	 FWPHAR3214 FWPHAR3207 FWPHAR3206 FWPCOT3223 FWPCOT2223 FWPHAR3210 FWPHAR3218 FWPHAR3208 FWPHAR3211 FWPHAR3219 FPICOT2226 New code TBA

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
	Forest and Wood Products	FWP	Certificate III in Harvesting and Haulage	FWP30216	**Harvesting equipment operations** • **operation of flail equipment in mobile chipping** Operate a mobile chipper/mulcher Operate a heavy production mobile chipper • **use of self-loading and truck mounted cranes** Conduct loader operations Potential new unit to cover truck mounted cranes • **skills for mechanical falling of plantation timber** Conduct feller buncher operations	 FWPHAR2206 FWPHAR3215 FWPHAR3218 FWPHAR3207
	Forest and Wood Products	FWP	Certificate III in Harvesting and Haulage	FWP30216	**Mechanical fuel reduction** Review units and develop new units as required to support mechanical fuel reduction activities	
	Forest and Wood Products	FWP	N/A	N/A	**Review for low impact harvesting:** Conduct forwarder operations Conduct forestry operations using crawler tractor Conduct skidder operations Conduct loader operations Design log landings and snig tracks Implement harvesting plans	 FWPHAR3206 FWPHAR3216 FWPHAR3217 FWPHAR3218 FWPHAR4203 FWPHAR4205

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
					Manage road construction and maintenance	FWPFGM5208
Forest growing and management						
	Forest and Wood Products	FWP			**Geospatial technology** Investigate development of new unit or availability of imported unit to reflect current use of GIS technologies in forest industry to collect and interpret mapping data.	
	Forest and Wood Products	FWP			**Arboriculture** New unit TBA for operating a small loader during arboriculture activities. New unit TBA for use of chainsaws above ground from elevated work platforms and when climbing a tree during arboriculture activities.	New code TBA New code TBA
	Forest and Wood Products	FWP			**Individual unit reviews** **Investigate the need to calculate tree mass requirements when manually falling trees:** Fall trees manually (basic) Fall trees manually (intermediate)	 FWPCOT2236 FWPFGM3212

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
					Fall trees manually (advanced) Monitor Quality and Product Care Procedures	FWPFGM3213 FWPCOR4203
Timber advice, design and merchandising						
					Plan and specification reading and interpretation skills New unit/s TBA.	
Cross sector skills						
	Forest and Wood Products	FWP	**Small forestry business management** New qualification: Certificate IV in Small Forestry Business Management skills	New TBA	**Small business management** Units to be identified during business case for review for small forestry business management for all sectors. A new unit may be required for specific small forestry business management skills.	New TBA
	Forest and Wood Products	FWP	N/A	N/A	Monitor wood or timber product developments Develop wood or timber product innovation.	New TBA
2017						
Forest growing and management						

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
	Forest and Wood Products	FWP	New qualification for Farm Forestry Managers	New TBA	**Skills for farm forestry managers** To be identified during business case review for farm forestry skills, including use of wheeled tractors to snig logs	New TBA
Cross sector skills						
	Forest and Wood Products	FWP	**Skills for value chain logistics** Qualifications and skill sets for value chain logistics		**Skills for value chain logistics** Units to be identified during business case review for value chain logistics across supply chains for all sectors for job roles including receipts and dispatches in warehouses, mills and plants and higher level roles overseeing contracts for supply and products distribution with other enterprises.	TBA
Sawmilling and processing						
	Forest and Wood Products	FWP	**New and emerging mill technology** Cert II in Wood Panel Products Cert II in Timber Manufactured Products Cert II in Sawmilling & Processing Certificate III in Sawmilling and Processing Certificate III in Wood Panel Products Certificate III in Timber	 FWP20416 FWP20516 FWP20316 FWP30316 FWP30416	**Impact of new and emerging mill technology across a range of job roles in sawmilling, wood panel products and timber manufactured products.** Units to be identified during business case review for emerging mill technology for sawing operations, grading, testing and timber product manufacture.	New TBA

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
			Manufactured Products Certificate IV in Timber Processing	FWP30516 FWP40216		
	Forest and Wood Products	FWP	**Saw doctoring and woodmachining** Certificate III in Sawdoctoring Certificate III in Woodmachining	 FWP30716 FWP30816		
	Forest and Wood Products	FWP			**Skills for specialist processing small diameter logs** Units to be identified during business case review of skills set up and operation for processing small diameter logs of low value.	
Timber manufactured products						
	Forest and Wood Products	FWP	**Truss and frame fabrication** Certificate III in Timber Truss and Frame Design and Manufacture (Production Fabricator stream)	FWP30916	Develop or update units to address gaps and emerging skills gap in production fabrication job roles due to new technology	
	Forest and Wood Products	FWP			**Timber drying** Dry timber in solar assisted kilns Dry softwood Coordinate timber drying operations Dry material Dry Wood Flakes	 FWPCOT3248 FWPSAW3206 FWPSAW4203 FWPWPP3212 FWPWPP3228

Planned review start (Year)	TP name	TP code	Qualification name	Qualification code	Unit of competency name	UOC code
	Forest and Wood Products	FWP			**Skills for implementing due diligence code of practices (chain of custody)** Units to be identified during business case review of skills for Chain of Custody certification through the value adding process	
2018						
Forest growing and management						
	Forest and Wood Products	FWP			**Forest Productivity for roles related to forest planting and management** To be identified during business case review of skills for increased forest productivity	
Cross sector skills						
	Forest and Wood Products	FWP			**Skills for bioenergy** To be identified during business case review of skills for commissioning and operating a bioenergy facility.	
2019						
Forest growing and management						
	Forest and Wood Products	FWP			**Electronics Maintenance** To be identified during business case review of skills for electronics maintenance.	

2016					Overall unit reviews	
	Forest and Wood Products	FWP			**Review 25% of units:** **Site Establishment & Maintenance** FWPCOT3221-Rehabilitate tracks, quarries and landings FWPCOT5206-Implement forestry chain of custody certification system FWPFGM2207-Undertake brushcutting operations FWPFGM2210-Implement animal pest control procedures FWPFGM2214-Maintain visitor sites FWPFGM3209-Construct and maintain forest roads and tracks FWPFGM3210-Patrol forest FWPFGM4201-Implement a forest establishment plan FWPFGM4207-Conduct a forest site assessment FWPFGM4208-Plan a quarry FWPFGM4209-Interpret and use aerial photographs for forest management FWPFGM5201-Plan and manage an inventory program FWPFGM5208-Manage road construction and maintenance FWPFGM5214-Develop a native forest regeneration plan FWPFGM5217-Promote plantations as a sustainable form of land use **Sustainable Industry Practices** FWPCOT5205-Develop biohazard contingency plans FWPCOT6202-Develop and manage a forestry chain of custody certification process for the workplace FWPCOT6203-Develop engineered timber products to meet energy efficient building design needs FWPCOT6204-Use carbon accounting to estimate emissions FWPCOT6205-Prepare an enterprise carbon management report FWPCOT6207-Develop forest management systems and processes	

					FWPFGM5219-Undertake carbon stock sampling of forests and plantations FWPFGM6201-Plan a bio-char storage system for carbon capture and storage FWPFGM6203-Manage sustainable tree inventory **Tree Growing & Maintenance** FWPCOT2239-Trim and cut felled trees FWPFGM2203-Plant trees by hand FWPFGM2204-Plant trees mechanically FWPFGM2205-Prune trees FWPFGM2206-Collect data or samples for assessment FWPFGM3206-Plan and implement non-commercial thinning operations FWPFGM3207-Coordinate stem improvement FWPFGM3211-Manage coppice stems FWPFGM3212-Fall trees manually (intermediate) FWPFGM3213-Fall trees manually (advanced) FWPFGM4202-Manage stand health FWPFGM4203-Design plantations FWPFGM4204-Conduct a pests and diseases assessment FWPFGM4205-Monitor regeneration rates FWPFGM4206-Conduct a wood volume and yield assessment FWPFGM5210-Manage tending operations in a native forest FWPFGM5211-Coordinate stand nutrition FWPFGM5213-Coordinate plantation tending operations FWPFGM5216-Manage coupe planning **Safety & Quality Processes** FWPCOT2233-Navigate in forest areas FWPCOT3202-Navigate in remote or trackless areas FWPCOT3255-Apply silvicultural principles

					FWPCOT3256-Apply biodiversity protection principles FWPCOT3257-Follow cultural heritage requirements FWPCOT3258-Comply with soil and water protection FWPCOT5201-Implement sustainable forestry practices **Machinery & Equipment** FWPCOT2237-Maintain chainsaws FWPCOT2240-Cut material with a pole saw FWPCOT2240-Cut materials with a pole saw FWPCOT3224-Plan and monitor equipment maintenance FWPCOT3259-Operate a four wheel drive on unsealed roads FWPCOT3259-Operate a four-wheel drive on unsealed roads FWPCOT3260-Recover four wheel drive vehicles FWPCOT3260-Recover four-wheel drive vehicles FWPFGM3214-Operate a four wheel drive in a towing situation FWPFGM3214-Operate a four-wheel drive in a towing situation FWPFGM3215-Perform complex 4x4 operations **Leadership & innovation** FWPCOT4208-Implement workplace sustainability practices FWPCOT5207-Implement sustainability in the workplace FWPCOT6201-Manage community engagement FWPCOT6208-Manage innovative thinking and practice in the forest and wood products industry FWPCOT6209-Manage forest and wood products industry research FWPCOT8101-Lead forest and wood products industry innovative thinking and practice FWPCOT8102-Initiate and lead a forest and wood products industry innovation **Breeding & Propagation** FWPFGM2201-Collect seed

					FWPFGM2202-Prepare seedbed FWPFGM2209-Cut, sort and set cuttings FWPFGM2212-Graft cuttings FWPFGM2213-Process seed FWPFGM3201-Manage seed collection FWPFGM3202-Extract seed FWPFGM5212-Manage genetic resources FWPFGM5215-Breed trees **Communication & Relationships** FWPCOT3222-Present forestry information and interpretations programs FWPCOT5202-Manage forestry information and interpretations programs FWPCOT5208-Build and maintain community relationships **Fire Control** FWPFGM2211-Detect fires
2017					
	Forest and Wood Products	FWP			**Review 25% of units:** **Core** FWPCOR2201-Work effectively in the forest and forest products industry FWPCOR2202-Communicate and interact effectively in the workplace FWPCOR2203-Follow environmental care procedures FWPCOR2204-Follow fire prevention procedures FWPCOR2205-Follow WHS policies and procedures FWPCOR2207-Maintain quality and product care FWPCOR3201-Implement safety, health and environment policies and procedures FWPCOR3202-Conduct quality and product care procedures FWPCOR3203-Evaluate fire potential and prevention FWPCOR3204-Visually assess materials

					FWPCOR4201-Monitor safety, health and environment policies and procedures FWPCOR4202-Monitor and review forestry operations FWPCOR4203-Monitor quality and product care procedures FWPCOR6201-Manage sustainability in the workplace FWPCOR6202-Implement practices to maximise value from wood residues FWPCOT2219-Use hand-held tools FWPCOT2235-Assess timber for manufacturing potential FWPCOT3201-Hand sharpen knives and blades FWPCOT3204-Prepare and interpret sketches and drawings FWPCOT3211-Maintain sawdoctoring tools FWPCOT3233-Sharpen and align blades and knives FWPCOT3247-Select timber for forestry operations **Harvesting Operations** FWPCOT2220-Select trees for tending operations FWPCOT2236-Fall trees manually (basic) FWPCOT3252-Use environmental care procedures to undertake fire salvage operations FWPCOT3253-Convert timber residue into products for further use FWPCOT3254-Implement environmentally sustainable work practices in the work area/work site FWPCOT3261-Transport forestry logs using trucks FWPCOT3262-Transport forestry produce using trucks FWPCOT5209-Manage tree harvesting to minimise environmental impact FWPHAR2203-Hook up felled logs using cables (choker) FWPHAR2204-Perform landing duties (chaser) FWPHAR2205-Conduct mobile splitting operations FWPHAR2206-Operate a mobile chipper/mulcher FWPHAR2207-Trim and cut harvested trees

					FWPHAR3201-Monitor log recovery (rigging slinger) FWPHAR3206-Conduct forwarder operations FWPHAR3207-Conduct feller buncher operations FWPHAR3208-Conduct boom delimber operations FWPHAR3210-Conduct mechanical processor operations FWPHAR3211-Operate yarder FWPHAR3213-Conduct mechanically assisted tree falling operations FWPHAR3214-Operate a single grip harvester FWPHAR3215-Operate a heavy production mobile chipper FWPHAR3216-Conduct forestry operations using crawler tractor FWPHAR3217-Conduct skidder operations FWPHAR3218-Conduct loader operations FWPHAR3219-Conduct excavator operations with grabs FWPHAR3220-Harvest trees manually (intermediate) FWPHAR3221-Harvest trees manually (advanced) FWPHAR4201-Apply tree jacking techniques FWPHAR4202-Coordinate log recovery (hook tender) FWPHAR4203-Design log landings and snig tracks FWPHAR4204-Plan and coordinate fire salvage operations FWPHAR4205-Implement harvesting plans FWPHAR5201-Design harvesting plans **Grading & Testing** FWPCOT2212-Grade hardwood sawn and milled products FWPCOT2213-Grade softwood sawn and milled products FWPCOT2214-Grade cypress sawn and milled products FWPCOT2215-Visually stress grade hardwood FWPCOT2216-Visually stress grade softwood FWPCOT2217-Visually stress grade cypress

					FWPCOT2223-Segregate and sort logs FWPCOT2225-Chip or flake wood FWPCOT3208-Test strength of joints FWPCOT3223-Grade and mark logs FWPCOT3225-Mechanically stress grade timber FWPCOT3229-Mechanically stress grade panels FWPCOT3240-Grade heavy structural/engineered products FWPCOT3245-Grade, sort and mark materials FWPCOT3246-Test heavy structural/engineered products FWPCOT3250-Prepare timber to meet import/export compliance requirements FWPFGM2215-Measure trees FWPSAW2201-Grade round poles and debarked logs FWPSAW3223-Assess wood chips FWPTMM4204-Sample and test products to specifications FWPWPP3229-Classify flake FWPWPP4202-Perform laboratory testing	
2018						
					Review 25% of units: **Board & Veneer Production** FWPCOT2202-Rack material FWPCOT2205-Tail out materials FWPCOT2207-Dress boards and timber FWPCOT2232-Cut material to shape using a saw FWPCOT3206-Cut material using high speed optimiser FWPCOT3234-Cut material using CNC sizing machines FWPCOT3235-Machine material using CNC machining and processing centres FWPCOT3249-Select timber preservation techniques	

					FWPSAW3226-Saw logs using CNC optimising systems FWPWPP2201-Cut panels FWPWPP2202-Surface treat raw board FWPWPP2203-Repair veneer and ply FWPWPP2204-Repair veneer mechanically FWPWPP2206-Prepare veneer for ply FWPWPP2207-Scarf edges of veneer FWPWPP2208-Cut veneer FWPWPP2209-Saw products from continuous ply FWPWPP2210-Cut panels to profile FWPWPP3201-Produce veneer from debarked logs FWPWPP3204-Form board FWPWPP3205-Match and join veneer FWPWPP3207-Clip veneer FWPWPP3211-Maintain caul plates and screens FWPWPP3213-Heat treat material FWPWPP3216-Press material using the daylight process FWPWPP3217-Process production effluent FWPWPP3218-Plan and coordinate machining of panels FWPWPP3219-Blend and test binding mixes FWPWPP3221-Trim new panels to size FWPWPP3223-Immunise veneer FWPWPP3226-Operate a continuous press FWPWPP3230-Produce decorative veneers FWPWPP3231-Produce veneer from prepared flitches FWPWPP4201-Plan and coordinate panel production **Load Handling** FWPWPP2211-Move material by transfer equipment

					Logyard and/or Material Preparation FWPCOT2218-Cross cut materials with a fixed saw FWPCOT2226-Debark logs mechanically FWPCOT3203-Weigh loads FWPCOT3227-Receive and measure logs FWPCOT4205-Coordinate log debarking operations **Manufacturing** FWPCOT3263-Maintain and contribute to energy efficiency **Sawdoctoring** FWPCOT3210-Sharpen cutting tools FWPCOT3212-Replace saws, blades and guides FWPCOT3213-Manufacture cutting tools FWPCOT3215-Swage and shape saw blades FWPCOT3216-Assess and maintain saw performance FWPCOT3217-Assess and maintain cutter performance FWPCOT3237-Produce templates FWPCOT3244-Cut material to profile FWPSAW3207-Sharpen band saws FWPSAW3208-Sharpen circular saws FWPSAW3209-Align sawing production systems FWPSAW3210-File and set saws FWPSAW3211-Recondition guides FWPSAW3212-Sharpen tipped circular saws FWPSAW3213-Level and tension circular saws FWPSAW3214-Join band saw blades FWPSAW3217-Hard face saw teeth FWPSAW3218-Replace tungsten tips FWPSAW3219-Replace stellite tips

FWPSAW3220-Maintain wide band saw blades
FWPSAW3221-Profile saw blanks
FWPSAW3222-Recondition band mill wheels
FWPSAW3225-Maintain frame saw blades

Sawing Operations

FWPCOT2208-Resaw boards and timber
FWPCOT2238-Cut materials with a hand-held chainsaw
FWPCOT3205-Dress boards using multi-headed machines
FWPCOT3207-Set up, operate and maintain finger jointing operations
FWPCOT3209-Set up, operate and maintain end matching operations
FWPSAW2202-Sort boards manually
FWPSAW2203-Sort boards mechanically
FWPSAW2204-Dock boards with mechanical feed
FWPSAW2207-Round softwood logs
FWPSAW2208-Split wood products
FWPSAW2209-Dismantle, transport and assemble hand portable sawmill
FWPSAW3202-Produce sawn green boards
FWPSAW3203-Break down logs
FWPSAW3204-Saw flitches and cants
FWPSAW3227-Select and saw logs in multi-species operations
FWPSAW3229-Operate a portable sawmill
FWPSAW4202-Plan and monitor saw log operations
FWPSAW4204-Plan and monitor board conversion
FWPTMM3201-Convert timber
FWPTMM3202-Manufacture using joinery machines

2019						
					Administration & Business FWPCOT2241-Apply wood and timber product knowledge FWPFGM4210-Prepare a tender FWPTMM3203-Estimate and cost job FWPSAW3228-Apply principles of blade design to sawing procedures FWPTMM2201-Cut material to length and angles FWPTMM2202-Machine material **Production** FWPCOT2201-Stack and bind material FWPCOT2210-Tally material FWPCOT2227-Process orders and despatch products FWPCOT2228-Store materials FWPCOT2229-Dock material to length FWPCOT2230-Assemble products FWPCOT3214-Take off material quantities FWPCOT3218-Quote and interpret from manufactured timber product plans FWPCOT3220-Quote and interpret from computerised timber manufactured product plans FWPCOT3236-Coordinate stock control procedures FWPCOT3239-Create drawings using computer aided design systems FWPCOT3241-Assemble timber wall frames FWPCOT3242-Lay up timber roof trusses FWPCOT3243-Operate a truss press FWPCOT3264-Build and maintain timber stacks FWPCOT4202-Design timber structures FWPCOT4203-Plan and coordinate product assembly	

					FWPCOT4204-Schedule and coordinate load shifting FWPCOT5203-Manage installation and commissioning of equipment FWPCOT5204-Organise enterprise maintenance programs FWPSAW2205-Assemble materials using nail plates FWPTMM2203-Read and interpret timber truss, floor and/or frame fabrication plans FWPTMM3207-Set up timber floor trusses FWPTMM4201-Construct prototypes and samples FWPTMM4202-Diagnose and calculate production costs FWPTMM4203-Install and commission CNC software FWPTMM4205-Prepare and advise on a broad range of timber roof truss details using computers FWPTMM4206-Prepare and advise on a broad range of timber floor system details using computers FWPTMM4207-Prepare and advise on a broad range of timber wall frame details using computers FWPTMM5201-Assess product feasibility of designs FWPTMM5202-Develop, trial and evaluate prototypes FWPTMM5203-Generate and transfer complex computer-aided drawings and specifications FWPTMM5204-Manage product design FWPTMM5205-Optimise CNC operations FWPTMM5206-Plan production **Lamination & Finishing** FWPCOT2203-Finish and pack products FWPCOT2222-Produce laminated beams FWPCOT2224-Band edges of panels FWPCOT3228-Plane/sand panels FWPWPP3202-Paint panels

					FWPWPP3206-Laminate and veneer board surfaces FWPWPP3208-Punch peg holes in panels FWPWPP3209-Prepare resin and additives FWPWPP3210-Laminate board FWPWPP3214-Treat paper FWPWPP3215-Cut paper FWPWPP3220-Plan and coordinate panel painting FWPWPP3222-Press laminated ply FWPWPP3224-Profile sand products FWPWPP3225-Produce profile sanding shoes and wheels FWPWPP3227-Vacuum paint **Sales** FWPCOT3251-Promote the carbon benefits of wood products FWPCOT3269-Provide specialised timber product solutions **Specialist Design** FWPTMM3204-Interpret designs to prepare timber roof truss drawings and documents using computers FWPTMM3205-Interpret designs to prepare timber floor system drawings and documents using computers FWPTMM3206-Interpret designs to prepare timber wall frame drawings and documents using computers **Specialist Machinery and Equipment** FWPCOT3238-Operate a pole saw **Timber Drying & Treatment** FWPCOT3231-Operate steam boiler FWPCOT3232-Operate heat plant FWPCOT3248-Dry timber in solar assisted kilns FWPSAW2210-Prepare for timber treatment operations FWPSAW3201-Treat timber

					FWPSAW3205-Dry hardwood FWPSAW3206-Dry softwood FWPWPP3212-Dry material FWPWPP3228-Dry wood flakes **Timber Products & Processes** FWPCOT4201-Produce complex truss and frame plans and details using computers FWPCOT4206-Plan and coordinate boiler operations FWPCOT4207-Plan and coordinate heat plant operations FWPSAW4201-Plan and monitor timber treatment plant operations FWPSAW4203-Coordinate timber drying operations **Timber Products** FWPCOT2209-Produce finger jointed timber FWPCOT2211-Produce pointed timber products FWPCOT3230-Operate automated stacking equipment FWPSAW2206-De-stack seasoning racks FWPWPP3203-Produce fibre from chips