

AUSTRALIAN FOREST AND WOOD PRODUCTS
INDUSTRY SECTOR

IRC Skills Forecast and Proposed Schedule of Work

2017–2020

Prepared on behalf of Forest Management and Harvesting IRC, Timber and Wood Processing IRC and Timber Building Solutions IRC for the Australian Industry and Skills Committee

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IRC SKILLS FORECAST AND PROPOSED SCHEDULE OF WORK 2017–2020

Purpose

This skills forecast represents the latest industry intelligence and resulting schedule of work of the Forest Management and Harvesting Industry Reference Committee (IRC), Timber and Wood Processing IRC and Timber Building Solutions 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 industry intelligence to support the Australian Industry and Skills Committee's (AISC) four-year rolling National Schedule of training product development and review work.

This industry intelligence covers the following sections:

Sector Overview – examining the depth and breadth of the industry and identifying the macro environment that currently challenges and/or provide opportunities for the industry

Employment – reviewing the employment projections by the Department of Employment and outlining the current workforce profile and supply for the industry

Skills Outlook – identifying the key priority skills for the industry and how they can benefit from improvement or development of national skills standards

Training Product Review Work Plan – establishing the scope and timeframe of proposed training package development in line with industry priority skills.

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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 by the Australian Industry and Skills Committee (AISC) to support the development of the four-year rolling National Schedule of training product development and review work. The report is structured, as per the AISC template, in four main sections: 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 the housing construction market, and the National Construction Code 2016 (NCC) which now allows for the construction of tall wood buildings, provides the industry with the potential for growth and new business opportunities. The opportunities are also shaped by government mechanisms such as Carbon Farming Initiative (CFI), 'Wood Encouragement' policy (WEP) and Regional Forest Agreements. 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, the forest and wood products manufacturing workforce is aging, with increasing numbers of workers reaching retirement age. This trend creates 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, both specific and non-specific to the industry, to support more demanding job functions in most workplaces. This is the case because businesses respond to opportunities with ongoing adoption of more efficient and effective high-tech harvesting and extraction operations, improved strategies for resource efficiency, 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 to improve the job specific skills to support these higher efficiency targets, innovations and automation/digitisation.

Higher demands also add new functions to job roles to support broader processes and outcomes. Operational employees are increasingly required to undertake management, quality inspection/control, information reporting, data analysis, 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.

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 merchandising.
- The industry includes 13,230 forestry and manufacturing businesses and 1,071 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 14.6 per cent (or \$2.0 billion) to \$15.7 billion between 2013-14 and 2014-15.
- 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 — *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 occupations¹: operators working in Copper Chromium Arsenate (CCA) 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:
 - Carbon Farming Initiative (CFI), 'Wood Encouragement' policy (WEP), and Regional Forest Agreements, amongst other government and industry policies, which can create new opportunities for Australia's future forest resources enabling the industry to develop into a significant producer for the building construction market as well as the carbon and renewable energy markets
 - climate change effects on forests, which cause concerns relating to log availability, investment opportunities, and supply of wood products

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.

- 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
- current and projected growth in the housing construction market and expected growth for mid-rise building constructions from wood as a result of the National Construction Code 2016 (NCC) and 'Wood Encouragement' policy, 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 harvesting operators, forestry plant operators, wood trades workers, carpenters and joiners, factory process and machinery operators. The sector also involves a range of other jobs that are typical to the manufacturing sector in general.

Skills outlook

- Priority skills in the forest and wood products industry over the next four years, 2017–2020, are summarised in the following table:

PRIORITY SKILL	DRIVERS	TRAINING PACKAGE SOLUTION ²
FOREST MANAGEMENT AND HARVESTING		
Skills in specialist forest management and harvesting and haulage processes to lead safety performance	The high-risk nature of the forestry industry sector, involving operation of a wide range of mobile heavy equipment for falling and hauling logs; social responsibility and legislative requirements to continually improve safety culture and reduce work-related injuries in workplaces.	Development of up to 2 new skills sets and 3 new units of competency. Review of 7 units of competency in forest management, forest operations, and harvesting and haulage
Skills in geospatial technologies for forestry	A growth in the use of geospatial technologies in a range of forest management and harvesting operations.	Development of up to 6 new units of competency in forest management operations. Review of 6 units of competency.
Skills in advanced electrical and hydraulic	Advances in the mechanisation and automation of existing log harvesting	Development of up to 5 new units of competency in forest

² For a full list of relevant qualifications and units of competencies which are proposed for improvement / development refer to Attachment A.

PRIORITY SKILL	DRIVERS	TRAINING PACKAGE SOLUTION ²
maintenance of equipment for log harvesting operators	equipment; skill shortages for mobile heavy equipment mechanics; increased expectations for business efficiency and productivity.	management and harvesting operations. Review of 1 unit of competency in harvesting and haulage.
Commercial export skills for logs and wood chip products	Woodchip and log export boom over the recent years – on a value basis, woodchip and log exports reached record levels in 2015-16, with key exporting markets being China, Japan and South Korea.	Development of up to 6 new units of competency. Review of 9 units in log/timber merchandising and processing.
Improved skills to minimise the environmental footprint of log harvesting	The ongoing commitment to best practice for increasing sustainable forest management and logging operations and ongoing compliance with environmental certification and audits in forests and forest management.	Development of up to 3 new units of competency in harvesting operations. Review of 15 units of competency.
Forest landscape restoration skills for minimising bushfire risks	A growth in bushfire frequency and severity in Australia; policies on reducing the bushfire risk to rural towns and regions	Development of up to 3 new units of competency in forest operations Review of 3 units of competency in forest operations
Farm forestry management skills	Australian Government's new policies and initiatives supporting planting of commercial trees on agricultural land.	Development of a new skill set and up to 5 new units of competency in forest operations. Review of 8 units of competency.
Tree breeding optimisation skills	Immediate decline in forest resource availability from 2020; fast development in tree genetics and genomics; higher targets for enhancing plantation productivity and profitability.	Development of up to 3 new units of competency. Review of 6 units of competency in forest operations.
TIMBER AND WOOD PROCESSING		
Skills in manufacturing prefabricated solid engineered wood	Changes to the National Construction Code (NCC) that allow for the construction of multi-story residential	Development of at least 11 new units of competency in timber manufacturing or

PRIORITY SKILL	DRIVERS	TRAINING PACKAGE SOLUTION ²
products (CLT and Glulam)	and commercial timber buildings of up to eight stories from 2016; sustained residential and commercial building construction activity nationally; growing adoption of a wood encouragement policy for public buildings at local government level; developments in timber construction products for mid- and high-rise buildings including prefabricated solid engineered wood products.	wood panel operations. Review of 21 units in wood panel products, timber processing, and forest management and forest industry sustainability.
Bioenergy, co-generation and biochar skills	Cogeneration is increasingly used in the industry; recent industry assistance provided through State government funding for bioenergy.	Development of up to 7 new units of competency in timber processing Review of 7 units of competency.
Log sawing optimisation skills	Increased targets for efficiency and productivity in sawmills; advances in optimisation technologies and techniques used to maximize yields from logs.	Development of up to 2 new units of competency in sawmilling operations. Review of 6 units of competency in sawmilling and timber processing operations.
Skills for efficient timber product supply operations and chain of custody	Increased complexity of the Australian timber businesses in the marketplace; introduction of Radio-frequency identification (RFID) technology and other software technologies to track entire timber product shipments along the supply chain and undertake supply chain planning, collaboration and analytics.	Development of up to 2 new units of competency in forest operations, timber processing, manufacturing, and merchandising. There are no relevant units of competency in the existing FWP Forest and Wood Products Training Package. Therefore, no unit of competency will need to be reviewed.
Timber product development/innovation skills	Increasing business targets for efficiency, productivity and competitiveness, which require development of valuable and innovative timber products that address key issues such as resource efficiency, transportability, durability, costs as well as key environmental, economic and	Development of up to 4 new units of competency in forest operations and timber processing and manufacturing. Review of 6 units of competency.

PRIORITY SKILL	DRIVERS	TRAINING PACKAGE SOLUTION ²
	social factors.	
TIMBER BUILDING SOLUTIONS		
Skills in loading/unloading long packs of timber and frames and trusses safely	Loading and unloading of long span packs of timber is recognised as high risk activity by safety regulators; The industry sector does not currently have skill standards and accredited training programs to train operators to perform safe loading and unloading of long packs of timber beams, wall frame and roof trusses on site.	Development of up to 5 new units of competency in timber products processing and manufacturing. Review of 3 units of competency.
Improved truss and frame estimating and detailing skills	Existing units and qualification no longer accurately align to the industry job roles for estimators and training requirements; industry identified that the structure of existing qualification represents a barrier for training uptake due to a high number of prerequisite units for this qualification	Development of up to 2 new units of competency and skill sets at AQF level 3 and 4. Review of 2 qualifications and 25 units of competency.
Skills in prefabrication of panelised building systems (walls, flooring ceiling panels) and on-site installation	Changes to the National Construction Code (NCC) that allow for the construction of multi-story residential and commercial timber buildings of up to eight stories from 2016; sustained residential and commercial building construction activity nationally; growing adoption of a wood encouragement policy for public buildings at local government level; growing adopted panelised building systems in residential developments.	Development of up to 5 new units of competency. Review of 3 units of competency.
Advanced sales, marketing and customer service skills	Increased demand for Australia's quality timber products from the Asian markets as well as domestic markets; growing adoption of digital technology to support sales and exposure to new and emerging markets both domestically and internationally.	Development of up to 5 new units of competency in timber products processing, manufacturing and merchandising. Review of 1 unit of competency.

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 sub-sectors:

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

In 2016, the sector included 13,230 forestry and manufacturing businesses and 1,071 timber wholesalers³, employing close to 120,000 people across the industry value chain, as estimated by the industry⁴. ABS compilation of industry sectors indicates that there were 53,000 people employed in the forestry and logging sector and the wood product manufacturing sector in 2014-15⁵. 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 includes⁶:

- total sales turnover which increased by 14.6 per cent (or \$2.0 billion) to \$15.7 billion between 2013-14 and 2014-15
- industry value added (IVA) which increased by 4.1 per cent (or \$204 million) to \$5.2 billion over the same period

³ ABS, 2017, Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016

⁴ Australian Forest Products Association, 2015, 'A National Institute for Forest Products Innovation', viewed April 2017, <<http://ausfpa.com.au/wp-content/uploads/2015/11/AFPA-RD-Policy-Proposal.pdf>>

⁵ ABS, 2016, Australian Industry, 2014-15, Cat No 8155.0.

⁶ Ibid.

- operating profit before tax (OPBT) which increased by 4.5 per cent (\$80 million) to \$1.9 billion.

Relevant training package qualifications

The training package for the forest and wood products sector is *FWP Forest and Wood Products*. FWP comprises 25 qualifications, 31 skill sets and 322 units of competency.

FWP QUALIFICATIONS

Qualification Level: Certificate I

Certificate I in Forest and Forest Products

Qualification Level: Certificate II

Certificate II in Forest Growing and Management

Certificate II in Harvesting and Haulage

Certificate II in Sawmilling and Processing

Certificate II in Wood Panel Products

Certificate II in Timber Manufactured Products

Certificate II in Timber Merchandising

Certificate II in Timber Truss and Frame Design and Manufacture

Qualification Level: Certificate III

Certificate III in Forest Growing and Management

Certificate III in Harvesting and Haulage

Certificate III in Sawmilling and Processing

Certificate III in Wood Panel Products

Certificate III in Timber Manufactured Products

Certificate III in Timber Merchandising

Certificate III in Sawdoctoring

Certificate III in Woodmachining

Certificate III in Timber Truss and Frame Design and Manufacture

Qualification Level: Certificate IV

Certificate IV in Forest Operations

Certificate IV in Timber Processing

Certificate IV in Timber Truss and Frame Manufacture

Certificate IV in Timber Truss and Frame Design

Qualification Level: Diploma

Diploma of Forest and Forest Products

Diploma of Timber Truss and Frame Manufacture

Diploma of Timber Truss and Frame Design

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	<p>The sector consists of businesses engaged in the management of commercial plantation estates, native forests, and farm forests primarily for the production of wood and wood fibre. This sector includes establishment of estates and access roads, and management of fire breaks.</p> <p>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.</p>
FOREST BUSINESS ENTERPRISES	<p>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 plantations⁷.</p> <p>State forestry business enterprises⁸</p> <ul style="list-style-type: none"> • Forestry Corporation of New South Wales • VicForests • Forestry Tasmania • ForestrySA • Forest Products Commission of Western Australia • Department of Agriculture and Fisheries Queensland. <p>Major plantation management companies</p> <ul style="list-style-type: none"> • 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. <p>The majority are foreign-owned proprietary companies involving Australian and international superannuation and investment funds.</p>
GEOGRAPHICAL LOCATION	<p>Businesses and forest management activities for commercial timber harvesting are located and undertaken in all states and territories.</p> <p>Geographic zones with high concentration of industrial plantations include the south-west and the great southern region of Western Australia; the</p>

⁷ ForestWorks research

⁸ Enterprises are listed according to their market share or significance in the sector

	south-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	<p>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 forest management companies (public and private).</p> <p>This sector also includes businesses that haul or transport logs and other forest products, produce woodchips in the field, or gather forest biomass.</p>
HARVESTING ENTERPRISES	<p>Most enterprises in this sector are small to medium size and family owned businesses.</p> <p>There are several large harvesting businesses and they are often vertically integrated with a wide range of complex forest operations being performed.</p> <p>Some examples of major vertically integrated harvesting enterprises</p> <ul style="list-style-type: none"> • Softwood Logging Services (WA) • L.V. Dohnt & Co Pty Ltd (Vic, SA and WA) • 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 delimiting 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, quality 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	<p>This 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:</p> <ul style="list-style-type: none"> • Sawmills processing hardwood or softwood logs for the production of rough sawn timber and re-sawn timber. <p>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 (e.g. timber manufactured products or furnishing) into:</p> <ul style="list-style-type: none"> ▪ 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. <p>Sawmills also undertake chemical preservation of rough timber or logs produced.</p> <ul style="list-style-type: none"> • 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. • 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	<p>The sector is estimated⁹ to comprise:</p> <ul style="list-style-type: none"> • 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. <p>Major timber processors¹⁰</p> <p>Softwood:</p> <ul style="list-style-type: none"> • Carter Holt Harvey Woodproducts Australia (NSW, VIC, SA) • Hyne Timber (NSW, QLD) • Timberlink Australia (SA, TAS) • Highland Pine Products (NSW)

⁹ ABARES, 2015, 'Australia's Forestry Industries 2015', viewed April 2017,

<http://data.daff.gov.au/data/warehouse/9aaf/9aafe/2015/AustForIndustryMap/AustForIndustryMap201504_hires_v1.0.0.pdf>

¹⁰ Enterprises are listed according to their market share or significance in the sector

	<ul style="list-style-type: none"> • Wespine Industries Pty Ltd (WA) • Associated Kiln Driers Pty Ltd (VIC) • Dongwha Timbers (NSW) • Superior Wood Pty Ltd (QLD) • Allied Timber Products Pty Ltd (NSW, QLD) • N F McDonnell & Sons (SA). <p>Hardwood:</p> <ul style="list-style-type: none"> • Boral Hardwood Timber (NSW) • Neville Smith Forest Products (VIC, NSW, TAS) • Hurford Hardwood (NSW) • Australian Sustainable Hardwoods (ASH) (VIC) • Auswest Timber (WA). <p>Major wood chip producers¹¹</p> <ul style="list-style-type: none"> • Mitsui Bussan Woodchip Oceania Pty Ltd (Mitsui & Co Limited) operates Bunbury Fibre Exports in WA and South West Fibre Pty Ltd (49.0%) in VIC • Midway Limited operates Midway woodchip mill and South West Fibre Pty Ltd (51.0%) in VIC • 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 proximity 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.

¹¹ Enterprises are listed according to their market share or significance in the sector

PRODUCERS	<p>The sector is estimated to comprise more than 350 small and medium size timber frame and truss producers throughout the country¹², 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.</p> <p>Major producers of timber manufactured products¹³</p> <p>Frame and truss:</p> <ul style="list-style-type: none"> • Timbertruss • AAA Advanced Trusses and Windows • Dahlsens • BB Truss & Timber • Able Truss • Trusses Plus Pty Ltd • Trusspro Pty Ltd • South Coast Prefab Pty Ltd • M.B. Pre-Fab Framing • Owen Truss • OStruss Pty Ltd • Truss Right • Prefab Technology Pty Ltd • Drouin West timber and Truss • Country Truss Pty Ltd • Engtruss Australia Pty Ltd • Able Truss and Timber • Cleveland Trade Centre • Parkside Timber & Hardware • Dynamic Timbers Pty Ltd • Rankine Timber & Truss. <p>Other timber pre-fabricated solutions</p> <ul style="list-style-type: none"> • Tilling Timber Pty Ltd • Structural Insulated Panels (SIPs) Industries (WA).
GEOGRAPHICAL LOCATION	<p>Production facilities are located close to capital cities in all states with larger populations and growing housing construction and economic activity.</p>
AUTOMATION AND DIGITISATION	<p>The sector predominantly utilises 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.</p>

SUB-SECTOR NAME	WOOD PANEL AND BOARD PRODUCTION
SCOPE OF WORK	<p>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.</p> <p>Types of wood panel products include particleboards (PBs), medium-density fiberboards (MDFs), hardboard, softboard and other fibreboards.</p>

¹² Pryda, 2016, 'About Us', viewed April 2017, <http://www.pryda.com.au/about-us>.

¹³ Enterprises are listed according to their market share or significance in the sector

	Laminations are decorative plastic and veneer laminates applied by panel producers on wood panels or other substrates.																
PRODUCERS	<p>The sector is represented by the following wood panel mills¹⁴, most of which are large-scale operations.</p> <p>Major producers¹⁵</p> <p>Wood panel:</p> <table border="0"> <tr> <td>• Carter Holt Harvey (QLD, SA, NSW)</td> <td>Particleboard</td> </tr> <tr> <td>• Laminex (QLD, WA)</td> <td>MDF&Particleboard</td> </tr> <tr> <td>• Borg Manufacturing (NSW)</td> <td>MDF</td> </tr> <tr> <td>• Alpine MDF Industries (VIC)</td> <td>MDF</td> </tr> <tr> <td>• D&R Henderson (VIC)</td> <td>Particleboard</td> </tr> <tr> <td>• DG Brims & Sons (QLD, WA)</td> <td>Particleboard</td> </tr> <tr> <td>• Tasmanian Wood Panels (TAS)</td> <td>Particleboard</td> </tr> <tr> <td>• Weathertex (NSW)</td> <td>Hardboard</td> </tr> </table> <p>Decorative veneer:</p> <ul style="list-style-type: none"> • Speciality Veneers (TAS). <p>Plywood:</p> <ul style="list-style-type: none"> • Carter Holt Harvey (VIC) • Big River Timbers (NSW) • Austral Plywoods (QLD) • Ta Ann Timbers (TAS) • North Coast Plywood (NSW) <p>Laminated Veneer Lumber (LVL):</p> <ul style="list-style-type: none"> • Wesbeam (WA) • Carter Holt Harvey (SA). <p>Glulam:</p> <ul style="list-style-type: none"> • Hyne & Son (QLD) • VICBEAM Australia (VIC) • ASH (Australian Sustainable Hardwoods) (VIC). 	• Carter Holt Harvey (QLD, SA, NSW)	Particleboard	• Laminex (QLD, WA)	MDF&Particleboard	• Borg Manufacturing (NSW)	MDF	• Alpine MDF Industries (VIC)	MDF	• D&R Henderson (VIC)	Particleboard	• DG Brims & Sons (QLD, WA)	Particleboard	• Tasmanian Wood Panels (TAS)	Particleboard	• Weathertex (NSW)	Hardboard
• Carter Holt Harvey (QLD, SA, NSW)	Particleboard																
• Laminex (QLD, WA)	MDF&Particleboard																
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• DG Brims & Sons (QLD, WA)	Particleboard																
• Tasmanian Wood Panels (TAS)	Particleboard																
• Weathertex (NSW)	Hardboard																
GEOGRAPHICAL LOCATION	Production facilities are located in most Australian states (New South Wales, Victoria, Queensland, and South Australia) and are dependent 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.																

¹⁴ ABARES, 2015, 'Australia's Forestry Industries 2015' viewed April 2017, <http://data.daff.gov.au/data/warehouse/9aaf/9aafe/2015/AustForIndustryMap/AustForIndustryMap201504_hires_v1.0.0.pdf>.

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

SUB-SECTOR NAME	TIMBER MERCHANDISING
SCOPE OF WORK	<p>The sector operates via two major channels:</p> <ul style="list-style-type: none"> • Retail and trade merchants selling and providing advice and customer solution to the public, DIY market and builders • Wholesalers, manufacturers, importers and exporters. <p>Retail and trade merchants stock a broad range of local and imported timber products, panel products, wooden structural components and builder's hardware.</p> <p>Wholesalers, manufacturers, importers and exporters sell, import and/or export large volumes of hardwood and softwood products, sawn and moulded products, softwood framing, panel products and engineered wood products, and distribute them through the merchant sector, or directly to the building industry.</p>
WHOLESALEERS	<p>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.</p> <p>Major wholesalers¹⁶</p> <ul style="list-style-type: none"> • Gunnersens • Meyer Timber • Dindas Australia • Wesbeam Pty Ltd • Tilling timber Pty Ltd • ITI Australia • Bowens • Heyden Frame & Truss Pty Ltd • Timber Truss Solutions • Big River Timbers • Engineered Wood Products Association of Australasia (EWPAA)? • Le Messurier Timber Co Pty Ltd/Carter Holt Harvey Woodproducts • Bunnings Warehouse • Home Timber and Hardware • Austim.
GEOGRAPHICAL LOCATION	<p>Timber wholesalers and retailers have operations throughout Australia.</p>
AUTOMATION AND DIGITISATION	<p>Wholesalers and retailers are increasingly reviewing the best ways of providing products, information and services to 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</p>

¹⁶ Enterprises are listed according to their market share or significance in the sector

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).

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 – PEAK INDUSTRY SECTOR ORGANISATIONS	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	

CATEGORIES – PEAK INDUSTRY SECTOR ORGANISATIONS	GEOGRAPHICAL REPRESENTATION
Forest Growing and Management	
Australian Forest Growers (AFG)	National
Harvesting and Haulage	
Australian Forest Contractors Association (AFCA)	National
Tasmanian Forest Contractors 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 of Australia (FTMA)	National
Glued Laminated Timber Association of Australia (GLTAA)	National
Wood Panel and Board Production	
Engineered Wood Products Association of Australasia (EWPA)	National & Pacific
Timber Veneer Association of Australia	National
Timber Merchandising	
Timber & Building Materials Association (TABMA)	National
Timber Merchants Association (TMA)	VIC
ASSOCIATIONS OF OTHER INDUSTRY-RELATED SECTORS	
Australian Pulp and Paper Industry Technical Association (APPITA)	National & NZ
Australian Furniture Association (AFA)	National
Australian Shop & Office Fitting Industry Association (ASOFIA)	National
Australian Window Association (AWA)	National
Australian Woodworking Industry Suppliers Association (AWISA)	National
Cabinet Makers & Designers 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 (PFGA)	National
Cabinet Makers Association Inc (CMA) of WA	WA
INDUSTRY NETWORKS	
Forest Industry Council (Southern NSW) Inc.	NSW
PROFESSIONAL ASSOCIATIONS	

CATEGORIES – PEAK INDUSTRY SECTOR ORGANISATIONS	GEOGRAPHICAL REPRESENTATION
Institute of Foresters Australia (IFA)	National
Arboriculture Australia	National
INDUSTRY STANDARDS BODIES	
Australian Forestry Standard Ltd (AFS)	National
Forest Stewardship Council (FSC) Australia	National
EMPLOYEE REPRESENTATIVE ORGANISATIONS	
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 (FWPA)	National
INDUSTRY SERVICES BODIES	
ForestWorks Ltd	National
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 work health and safety (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 work 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 consumers) and promotes fair trading among these parties.

Industry standards

The industry implements two voluntary forest certification schemes—Australian Forestry Standard (AFS) 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 licence to practice from, or registration by, a professional association or occupational licensing authority.

This sector 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, and mobile equipment, crane and forklift operators.

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

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 Forestry 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 platform for storing and verifying skills and qualifications.

FOLS is a streamlined system for the management of the skills of operators. It offers employers a method of demonstrating that appropriate training and currency 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 and environmental challenges, and market factors including forest resources, technology and product demand. The 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 always impact on industry's potential to grow. The following include major and recent government-mandated regulations and initiatives that provide opportunities to industry to grow and collaborate with governments.

Australian Government's Direct Action

Late 2016 saw the release of a draft Carbon Farming Initiative (CFI) forest plantation methodology which will potentially allow forest growers and farmers to factor the possibility of a small carbon payment into the high cost of establishing areas of new trees.

This latest development is a component of the Australian Government's Direct Action plan which provides practical policies, including the Emissions Reduction Fund, for the industry. It 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.

The industry works closely with the Australian Government on policies for recognising forestry sector carbon credits in Australia and for the inclusion of bioenergy in renewable energy policy development. The industry also works with the Australian Government to build support for the use of forest biomass and renewable forest products, including bioproducts and bioenergy. Through the potential implementation of the National Institute for Forest Products Innovation and the National Wood and Fibre Plan, the industry could develop into a significant producer for the renewable energy and bioproducts market, supporting Australia to achieve its ambitious emissions reduction targets and realise significant new investment.

'Wood Encouragement' policy (WEP)

A growing number of local governments are making the decision to change their tender processes to drive construction in their area of management towards timber products. In 2017, the Fraser Coast Council in Queensland has joined ten other local government associations and councils around Australia and New Zealand (NZ) that have adopted WEPs.¹⁷

Regional Forest Agreements

The Regional Forest Agreements (RFAs) between the Australian and State governments were established as 20 year plans in 1997 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. The Australian Government is committed to maintaining their support for long-term RFAs through the extension of 20 year rolling lives for each RFA. Formal negotiations are underway for the extension of the RFAs in Tasmania and for the east Gippsland region in Victoria, with an opportunity for renewing obligations to provide long-term stability of local industries in the future.

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

The Forestry (Rebuilding the Forest Industry) Act 2014 was introduced in Tasmania in October 2014 to rebuild industry confidence in business after a significant reduction in the state's estimated native log supply led by the Tasmanian Intergovernmental Agreement 2013 and the Tasmanian Forest Agreement 2012.

¹⁷ AFPA, January 2017, 'Fraser Coast Council adopts 'Wood Encouragement' policy Media Release' viewed April 2017, <<http://ausfpa.com.au/media-releases/fraser-coast-council-adopts-wood-encouragement-policy/>>

The Act established a process by which the land designated Future Reserve Land under the Tasmanian Forests Agreement Act 2013 will be converted into a permanent timber production zone land from 2018.¹⁸

The Victorian Koala Management Strategy

Early in 2017 the Victorian Government formalised the existing Koala Management Strategy to improve the management practices of blue gum plantations to better protect koalas during harvesting. As a result, blue gum plantation management companies with harvesting operations in the Green Triangle region have to apply for authorisation to undertake harvesting under the Wildlife Act 1975 and develop a Koala Management Plan that meets minimum requirements. The companies have to demonstrate certain practices to protect koalas, including identification and monitoring of trees which contain koalas (potentially by using new advances in technology such as drones), and retention of a number of trees around any tree containing a koala.

The West Australian Softwood Industry Strategy

The West Australian Government and the Forest Products Commission (FPC) are currently applying the new Softwood Industry Strategy which provides a foundation for the forest industry's future. The strategy includes a \$21 million investment in new plantation establishment over the next five years: value will be added through industry-wide certification; assets will be better protected from bushfires; downstream integrated value and innovation will be pursued; and the community benefits of forestry operations will be better promoted.

ENVIRONMENTAL FACTORS

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

Extensive studies¹⁹ show that growing occurrences of higher temperatures, drought, flood, and bushfire conditions may affect the future of forest growth and resource suitability for intended production purposes.

Likewise, increased fire risk and bushfires introduce changes in the estimates for resource availability impacting the forest industry. 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. The industry has joined together to reduce the bushfire risk to our forests, country towns and important rural assets with a new bushfire policy. The policy outlines a new approach of proactive and targeted reduction of understory and dense forest regrowth.²⁰

¹⁸ The Act is currently going through a review process.

¹⁹ ABARES, January 2012, '*Potential effects of climate change on forests and forestry in Australia*', viewed April 2017, <http://www.agriculture.gov.au/abares/forestsaustralia/publications/display?url=http://143.188.17.20/anrdl/DAFFService/display.php?fid=pe_abares20110824.01_21a.xml>.

²⁰ AFPA, 2016, '*Can we better fire-proof our country towns? Using matches and machines to reduce fuel load. A new policy proposal from the Australian Forest Products Association*', viewed April 2017, <<http://ausfpa.com.au/wp-content/uploads/2016/06/Bushfire-New-Policy-Proposal.pdf>>.

LOG AVAILABILITY

Availability of high-quality native forest sawlogs from public production forest is predicted to decrease by about 33 per cent to 1 million cubic metres (annually) by 2030. This reduction in native hardwood timber resources is likely to affect producers and markets in the future, particularly those involved in producing for timber appearance applications such as flooring and furniture, where high quality and specialty timber is needed. The effects on production and jobs are already seen in Victoria at Australia's largest hardwood mill, Australian Sustainable Hardwoods.²¹

Pulp log supply from native forests is predicted to decrease by 22 per cent from 4.5 million cubic metres (annually) over 2010-14 to 3.5 million cubic metres (annually) in 2020 and onwards²².

Estimates of plantation log availability show diverging trends, with yields projected to increase by 28 per cent from 25.5 million cubic metres (annually) over 2010-14 to 32.7 million cubic metres (annually) by 2030¹⁷.

While the availability of forest resources is an important factor for the industry's future growth, a range of factors such as weak economic conditions in local and global wood markets, location of forest resources too far from the wood processing infrastructure, or low market prices determine when available logs are harvested and how they are processed.

MARKET AND TRADE

Economic and market conditions were favourable in Australia's forestry sector leading into 2017 as both domestic and international demand for forest and wood products were strong and coincided with falling shipping costs, and a weaker Australian dollar.

The following provides a snapshot of the industry's recent economic activity based on Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)²³:

- Dwelling commencements—the strongest demand driver for most sawnwood timber and wood products—increased nationally for the fourth year in a row reaching the highest number on record.
- The volume and value of logs harvested in Australia reached record levels in 2016, totalling an estimated 29.5 million cubic metres and almost \$2.3 billion.
- The value of imports and exports, including paper and paperboard, also reached record levels in 2016, exceeding \$8 billion.
- The growth in exports was primarily driven by increases in the value of woodchip and roundwood exports and, to a lesser degree, miscellaneous forest products exports. Key export destinations were China, Japan and New Zealand.
- Imports were primarily the result of growth in the value of imports of paper and paperboard, miscellaneous forest products, paper manufactures, and wood-based panels. Almost half of Australia's total wood product imports in 2016 were from China, New Zealand and Indonesia.

²¹AAP, January 2017, *'Timber workers contemplate unemployment'*, 9News, viewed April 2017,

<http://www.9news.com.au/national/2017/01/20/03/33/timber-workers-contemplate-unemployment?app=applenews>>

²² ABARES, 2013, *'Australia's State of the Forests Report'*, viewed 2017,

<http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2013>>

²³ ABARES, 2016, *'Australian forest and wood products statistics: March and June quarters 2016'*, viewed April 2017,

<http://www.agriculture.gov.au/abares/forestsaustralia/australian-forest-and-wood-products-statistics>>

The National Construction Code (NCC) 2016 provides the opportunity for the industry to produce and supply timber products in a new market. The Code permits the use of timber structural elements in mid-rise buildings up to eight stories, and was adopted by all Australian States and Territories from May 2016. When associated with the values provided by timber, the Code has the potential to fuel the demand for timber framing or massive timber products such as cross-laminated timber (CLT).²⁴

The growth in building construction activity and use of timber as the dominant structural material will increase the demand of sawn wood in the future. Opportunities for industry to meet the future demand include operations at maximum production capacities and capital investments in new processing and manufacturing plants.

INVESTMENTS

The value and contribution of Australia's forest and wood products industry over the long term is determined by 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 and generating employment and value-added services to national and regional economies.

In 2016, the industry announced 12 new investment projects with Federal and State government funding support in areas such as wood panel and veneer, CLT, biochemical, bioenergy & biofuel, and technology upgrade:

- Borg – expanding the Oberon MDF plant to include a PB production line
- OneFortyOne – conducting a feasibility study into building a new particle board mill in Mount Gambier to supply domestic and export markets
- Meyer Timber – establishing a pre-fabricated building manufacturing facility in Dandenong, Victoria, to produce innovative timber panels for use in low to mid-rise buildings
- Shield Formply – refurbishing a south-east South Australian mill (Kalangadoo mill) into a timber veneer plant to make formply using locally grown blue gum and pine for export and for the construction industry
- Xlam Australia – developing country's first cross-laminated timber (CLT) facility in Wodonga, Victoria
- Hyne Timber – installing a state of the art Computer numerical control (CNC) machine to supply Glulam (engineered timber) quicker and more cost efficiently from the existing plant in Maryborough
- Radial Timber Australia Pty Ltd – installing a new state of the art streamlined radial sawmill at existing premises in Yarram, Victoria.
- Ryan and McNulty – expanding the Benalla sawmill's capacity to process native forest timbers for timber flooring, including mountain ash from the Central Highlands
- More than 10 bioenergy and biofuels projects in Tasmania and Queensland
- Quintis (the former Tropical Forestry Services) – establishing a sandalwood industry approximately 300 km south of Darwin.

²⁴ FWPA, 2016, 'National Construction Code (NCC) – Mid-rise Timber Buildings (Posted 10 June 2016)', viewed April 2017, <<http://www.fwpa.com.au/forwood-newsletters/1078-national-construction-code-ncc-mid-rise-timber-buildings.html>>.

C. EMPLOYMENT

Employment outlook

The Department of Employment²⁵ estimates that total employment in the forest and wood products industry remains relatively stable over the five years from November 2015 to November 2020 (Table 3).

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 18.4 per cent in the five years to 2020. The employment in sawmilling is likely to grow by 4.8 per cent over the same period of time. Manufacturing sub-sectors of the industry are likely to employ less people in the future, even at higher product value outputs, due to increasing mechanisation and computerisation. 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 2020²⁶

INDUSTRY SECTOR	EMPLOYMENT LEVEL	EMPLOYMENT PROJECTIONS		
	Nov 2015 ('000)	Nov 2020 ('000)	Growth ('000) (%)	
Forestry and Logging	4.8	3.9	-0.9	-18.4
Forestry Support Services	2.1	2.1	0.0	0.0
Log Sawmilling and Timber Dressing	11.6	12.2	0.5	4.6
Wood Product Manufacturing	45.0	45.1	0.0	0.0
Timber and Hardware Goods Wholesaling*	47.6	51.8	4.2	8.9
Total	111.1	115.1	4.0	3.6

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

Description of workforce supply

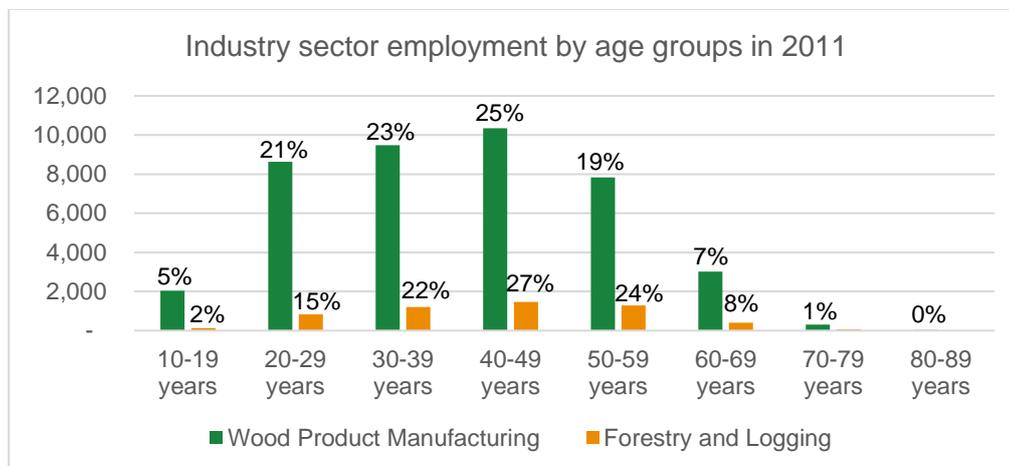
The forest and wood products industry sector is a significant employer in regional and remote areas. The sector workforce profile is aging and this is confronting businesses with challenges resulting from the upcoming wave of retirement. About 30 per cent (or 19,211 people) in the sector workforce was aged 50 years and over in 2011 (Figure 5). About 8 per cent of this group are estimated to have retired from the workforce by 2016 and an additional 20 per cent is likely to retire

²⁵ Department's projections are based on the forecasts and projections set out in the Mid-Year Economic and Fiscal Outlook (MYEFO)

²⁶ Department of Employment, 2016, 'Industry Employment Projections – Five Years to November 2020', viewed April 2017, <<http://lmip.gov.au/default.aspx?LMIP/EmploymentProjections>>.

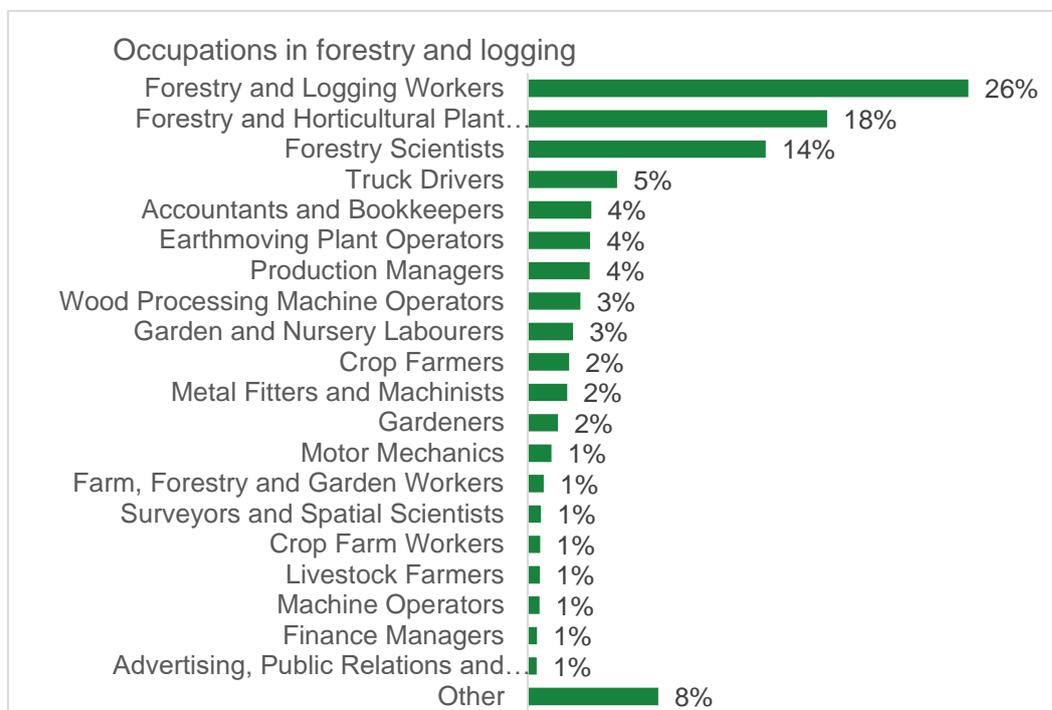
over the next five years. The upcoming workforce retirement is likely to bring significant job vacancies across the sector and significant efforts from employers to replenish these skills.

Figure 5: Industry sector employment by age groups in 2011²⁷



Specifically, about 80 per cent of current 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 also includes a range of other jobs that are typical in the manufacturing sector in general.

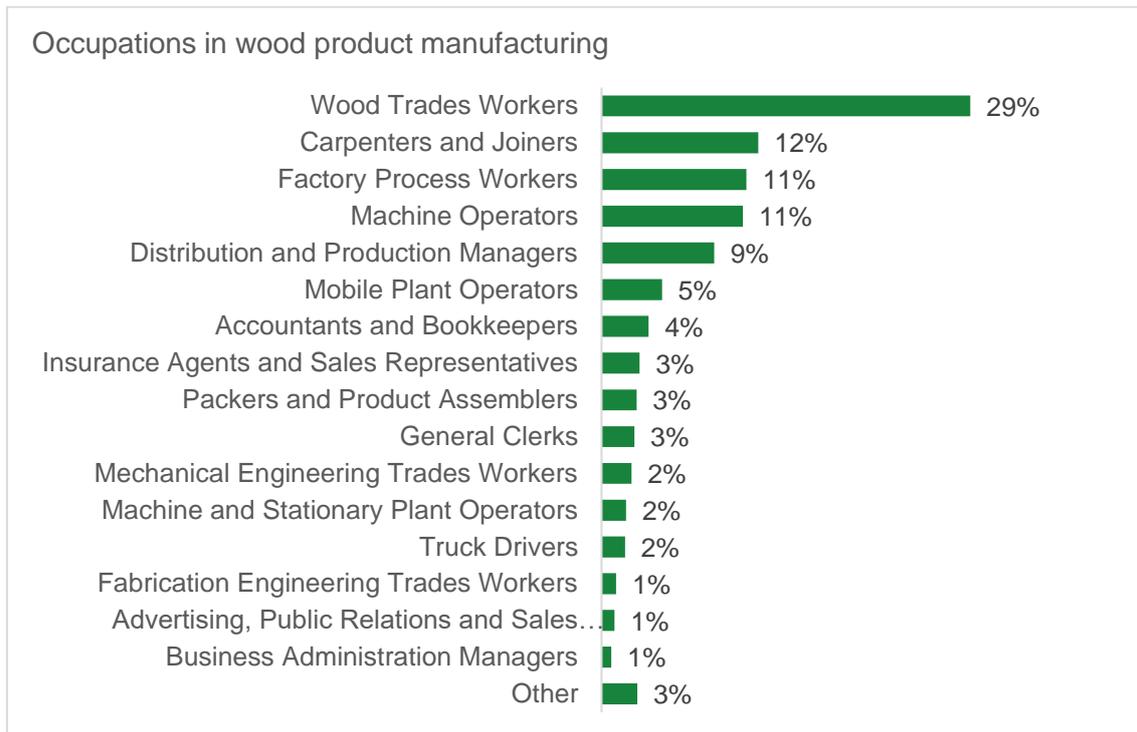
Figure 6: Occupations and their relative number in the forestry and logging sector²⁸



²⁷ 2011 Census of Population and Housing

²⁸ Ibid.

Figure 7: Occupations and their relative number in the wood product manufacturing sector²⁹



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. 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 remains 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.

²⁹ 2011 Census of Population and Housing

D. SKILLS OUTLOOK

Anticipating future skills needs in the forest and wood products sector is crucial to prepare for, and to meet, the new demands for forest sustainability and timber product markets in Australia. Leading indicators of the current and future skills needs in the sector include:

- trends and/or estimates of workforce supply, skill shortages, employment growth or growing occupations
- future changes in workplace and job design which are driven by innovation at the business and/or industry level as a result of economic, technological, social and environmental factors, as well as introduction of new policies and legislations.

This section identifies the priority skills needs in forest management and wood products manufacturing over the next four years (2017–2020) through an analysis of new and estimated future demands placed upon the industry. The section focuses on the skill needs that can benefit from improvement or development of national skill standards as opposed to market adjustment mechanisms designed to balance the supply and demand for a skilled workforce.

The industry expects that the priority skill projects identified in this section will be undertaken over 2017 and 2018 so that the skills can be developed and available before 2020. Refer to *Attachment A - IRC Training Product Review Plan 2017–2020* for the proposed schedule of priority skill projects and units of competency to be checked for currency, and possibly reviewed, as part of the 4 year cycle.

Industry priority skills

The 2017–2020 outlook for skills needs and priorities in the forestry and wood products sector is shaped by a range of development trends and factors as outlined below.

FOREST MANAGEMENT AND HARVESTING

Priority skill 1

Skills in specialist forest management and harvesting and haulage processes to lead safety performance

Skill description

Ability to apply leadership practices to develop a positive safety culture.
Ability to communicate the importance of safety in different ways.
Ability to encourage participation in work health and safety programs and involve others in safety leadership.
Ability to address health and safety problems and encourage reporting of incidents and near misses—and learn from these and apply learning.
Knowledge of Chain of Responsibility obligations under the National Heavy Vehicle Law and ability to apply industry codes of practice to ensure that timber transportation is conducted in a safe and efficient manner.
Ability to implement current chemical application techniques in forestry, read Global Harmonised System (GHS) labels, and use Safety Data Sheets (SDS); ability to conduct aerial spraying and calibration of spray equipment.

Relevant occupations

Harvesting operation managers, forest manager, forestry supervisor,

harvesting supervisor/team leader, plantation establishment manager, plantation manager.

Drivers

Social responsibility and legislative requirements to continually improve safety culture and contribute to reducing work-related injuries and fatalities in the sector workplaces.

The forestry sector is a high-risk industry which involves operation of wide range of mobile heavy equipment used in timber harvesting for felling and hauling logs. High-risk activities include: mechanical and manual felling of trees, extraction of logs, log landings, loading, transport and unloading of logs, in-field processing, equipment inspection and maintenance.³⁰

Industry has a responsibility to ensure the supply chain, particularly timber transportation, is conducted in a safe and efficient manner under the National Heavy Vehicle Law, whilst meeting its Chain of Responsibility obligations. The National Heavy Vehicle Regulator (NHVR) has developed new framework which encourages industry to work with them to develop a voluntary registered Code of Practice that is appropriate for the industry's circumstances.

Australia's full implementation of the Global Harmonised System (GHS) under work health and safety laws on the 1st January 2017, making mandatory that all chemicals be labelled and comply with GHS regulations. Chemical application techniques in forestry are constantly being refined and required to meet standards outlined in Codes of Forest Practices and government regulations and guidelines.

Training package solutions

Development of up to 2 new skill sets and 4 new units of competency following industry consultation to cover the following:

- lead safety initiatives within forestry operations
- participate in safety initiatives within forestry operations
- apply chain of responsibility in log / timber transportation
- plan, conduct and monitor chemical procedures in plantation management.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Forest Growing and Management*, *Certificate III in Harvesting and Haulage* and *Certificate IV in Forest Operations*, and will potentially form the components of new skill sets.

Review of 7 units of competency in relation to forest management, harvesting and haulage, and forest operations to update specific skills and aspects as determined through industry consultation.

³⁰ Work Safe, 'Hazards and high-risk forestry activities', viewed April 2017, <<http://www.worksafe.vic.gov.au/safety-and-prevention/your-industry/forestry/how-to-comply/hazards-and-high-risk-forestry-activities>>.

Priority skill 2

Skills in geospatial technologies for forestry

Skill description

Knowledge of and ability to use specialised geospatial software and technologies, including Global Positioning System (GPS), Geographic Information System (GIS), remote sensing, drones and new generation satellite imagery technologies including wearable and mobile technologies and applications.

Ability to work with different types of geospatial data for operational and planning of forest resources as well as protection and enhancement of environmental resources.

Ability to apply a range of analytical methods to geospatial data that directly support assessment, planning, diagnosis and decision making in forest and environmental resource management.

Relevant occupations

GIS Officers, GIS Forestry Technicians, GIS Forestry Analysts, environmental planners, forest sustainability managers, forestry/plantation manager.

Drivers

A growth in the use and importance of geospatial technologies in a range of forest management and harvesting operations for supporting efficiencies in forest management and the quality of the environment.

Training package solution

Development of up to 6 new units of competency following industry consultation to cover the following:

- select and apply geospatial technologies for forest and conservation management
- select and apply geospatial software for forest and conservation management
- collect geospatial data in the field for forest and conservation management
- design and perform analysis of geospatial data using spatial analysis techniques for forest and conservation management
- use geospatial data techniques to model forest resources, climate and soil conditions, species habitat and distribution
- prepare, present and apply geospatial data to forest and conservation planning.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Forest Growing and Management*, *Certificate III in Harvesting and Haulage*, *Certificate IV in Forest Operations*, *Diploma of Forest and Forest Products* and *Advanced Diploma of Forest Industry Sustainability*, and will potentially form the components of new skill sets.

Review of 6 units of competency in relation to forest management operations to update specific skills and aspects of using geospatial

technology as determined through industry consultation.

Benefits from changes in the training package

New and improved skills and operations; increased efficiency in planning and conducting site-specific forest management activities and operations; increased productivity and competitiveness of the industry through improved wood product quality and utilisation and reduced waste; improved supply chain communication, and; greater ability to improve the quality of forests and the environment.

Priority skill 3

Skills in advanced electrical and hydraulic maintenance of equipment for log harvesting operators

Skill description

Knowledge about the fundamentals of hydraulics and electrical systems related to log harvesting equipment (mobile heavy equipment).

Ability to diagnose electrical and hydraulic problems related to log harvesting equipment.

Ability to dismantle, repair, replace, clean and lubricate parts for log harvesting equipment.

Ability to reassemble and test the log harvesting equipment for operational efficiency.

Ability to manage electrical risks when conducting harvesting head maintenance involving electrical power.

Relevant occupations

Harvesting operators.

Drivers

Higher targets for business efficiency and productivity which demand equipment functions with minimum downtime.

Skill shortages for mobile heavy equipment mechanics to execute in-field repairs.

Advances in the mechanisation, automation and on-board computing of existing log harvesting equipment.

Training package solutions

Development of up to 5 new units of competency following industry consultation to cover the following:

- apply knowledge of hydraulics and electrical systems related to log harvesting equipment
- diagnose electrical and hydraulic problems related to log harvesting equipment
- dismantle, repair, replace, clean and lubricate parts for log harvesting equipment
- reassemble and test log harvesting equipment for efficient operation
- manage electrical risks when conducting harvesting head

maintenance.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Forest Growing and Management* and *Certificate III in Harvesting and Haulage*, and will potentially form the components of new skill sets.

Review of 1 unit of competency to update specific skills and aspects as determined through industry consultation.

Priority skill 4

Commercial export skills for log and wood chip products

Skill description

Ability to apply wood chip sampling methodology for receivals and export.

Ability to conduct basic wood chip stockpile management and measurers to avoid contamination.

Ability to understand and communicate log grade product codes and their specifications in export markets.

Ability to conduct log yard management with regards to managing different log grades.

Skills and knowledge to conduct measurement of logs according to the Japanese Agricultural Standard (JAS).

Ability to comply with the Australian Quarantine and Inspection Service (AQIS) requirements.

Skills and knowledge required to conduct fumigation.

Relevant occupations

Wood chip sampling operators, log scalers, operators at the receival/export facilities, export managers.

Drivers

Woodchip and log export growth over the last years—on a value basis, woodchip and log exports reached record levels in 2015-16, with key exporting markets being China, Japan and Korea.³¹ Precisely, Tasmanian woodchip exports have increased by 76 per cent during the same period³². Also, Port of Portland in Victoria has grown as the single biggest port for hardwood chips being exported in the world³³, and current exports are sustained and appear set to continue at high levels.

³¹ ABARES, 2016, 'Australian forest and wood products statistics: March and June quarters 2016', viewed April 2017, <<http://www.agriculture.gov.au/abares/forestsaustralia/australian-forest-and-wood-products-statistics>>.

³² Ryan, J., January 2016, 'Forestry industry behind 76pc woodchip export jump, 'not Tasmanian Government, Greens say', ABC News, viewed April 2017, <<http://www.abc.net.au/news/2016-01-12/tasmanian-woodchip-exports-jump-76pc-in-12-months/7082644>>.

³³ Grindlay, D., August 2015, 'Port of Portland now biggest exporter of blue gum hardwood chips in the world', ABC News, viewed April 2017, <<http://www.abc.net.au/news/2015-08-18/blue-gum-portland-woodchips-exports-china-japan-forestry/6704158>>.

Training package solution

Development of up to 6 new units of competency following industry consultation to cover the following:

- conduct wood chip sampling for receivals and export
- conduct wood chip stockpile management to avoid contamination
- use log grade product codes for export operations
- conduct log yard management for export operations
- measure logs according to export market standards
- manage fumigation requirements for logs and wood chips .

The new units of competency will be integrated as elective units in the specialisation areas for *Certificate IV in Forest Operations* and *Diploma of Forest and Forest Products*; and will potentially form the components of 4 new skill sets.

Review of 9 units of competency in relation to log/timber merchandising and processing to update specific skills and aspects as determined through industry consultation.

Priority skill 5

Improved skills to minimise the environmental footprint of log harvesting

Skill description

Ability to implement current practices of reduced impact logging of timber harvesting operations to minimise the environmental impact on forests and soils including:

- pre-harvesting planning of roads, skid trails and landings to minimise soil disturbance and to protect streams and waterways with appropriate crossings
- the construction of roads, landings and skid trails following environmentally friendly design guidelines
- the winching of logs (log cording and matting) to planned skid trails, and ensuring that skidding machines remain on the trails at all times.

Relevant occupations

Harvesting operation managers, harvesting supervisor/team leader, harvesting machinery operators, forestry workers.

Drivers

Ongoing environmental pressure on forests and forest management.

Industry-wide environmental certification against Forest Stewardship Council Scheme (FSC) and Australian Forestry Standard (AFS) standards, with yearly audits ensuring continued compliance with best practices for increasing sustainable forest management and logging operations.

Training package solutions

Development of up to 3 new units of competency following industry consultation to cover the following:

- develop pre-harvesting plans of roads, skid trails and landings to minimise environmental impact
- construct forest roads, landings and skid trails to minimise environmental impact
- apply log cording and matting techniques to planned skid trails to minimise environmental impact.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Harvesting and Haulage*, and will potentially form the components of new skill sets.

Review of 15 units of competency to update skills and aspects of environmental care in harvesting operations, as determined through industry consultation.

Priority skill 6

Forest landscape restoration skills for minimising bushfire risks

Skill description

Knowledge of best practice methods in forest landscape restoration for reducing bushfire risk.

Ability to manage forest landscape restoration programs.

Ability to undertake forest landscape restoration operations (mechanical biomass removal to remove understory and dense forest regrowth and fuel reduction burns in combination).

Relevant occupation

Forestry manager, forestry planner, forest workers.

Drivers

A growth in bushfire frequency and severity in Australia, causing major social, economic and environmental damage.^{34,35} The Australian Government, in partnership with the NSW Government, undertook trials to establish whether mechanical thinning of forests can reduce bushfire risk in an economical, socially acceptable and environmentally sound manner around key assets, such as conservation areas or townships, where prescribed burning is undesirable for a range of reasons.³⁶ Australian Forest Products Association's (AFPA) new policy on reducing

³⁴ Dutta, R., Das, A. and Aryal, J. February 2016, Research Article: Big data integration shows Australian bush-fire frequency is increasing significantly. R. Soc. open sci. 2016 3 150241; DOI: 10.1098/rsos.150241, viewed April 2017, <<http://rsos.royalsocietypublishing.org/content/3/2>>.

³⁵ Arup, T., February 2016, 'Australian bushfires on the rise, new research finds', The Sydney Morning Herald, viewed April 2017, <<http://www.smh.com.au/environment/australian-bushfires-on-the-rise-new-research-finds-20160209-gmpjfp.html>>.

³⁶ The Department of Agriculture and Water Resources, 2016, 'Mechanical Bushfire Fuel Load Reduction Trials', viewed April 2017, <<http://www.agriculture.gov.au/forestry/national/nbmp>>.

the bushfire risk to our country towns and important rural assets.³⁷

Training package solutions

Development of up to 3 new units of competency following industry consultation to cover the following:

- apply knowledge of forest landscape restoration methods to reduce bushfire risk
- manage forest landscape restoration programs to reduce bushfire risk
- undertake mechanical biomass removal operations to reduce bushfire risk.

The new units will be integrated as elective units in specialisation areas in *Certificate III in Forest Growing and Management*, *Certificate IV in Forest Operations* and *Diploma of Forest and Forest Products*; and will potentially form the components of new skill sets.

Review of 3 units of competency in relation to forest operations to update specific skills and aspects as determined through industry consultation.

Priority skill 7

Farm forestry management skills

Skill description

Ability to conduct whole farm planning or property management planning.

Knowledge of basic silviculture practice and ability to manage trees for markets while maintaining the quality of the environment.

Ability to apply basic financial analysis for long term cash-flow planning of carbon and log production.

Basic knowledge about sourcing markets for log products and ability to undertake marketing/sales.

Basic knowledge of harvesting planning and contracting harvesting services.

Basic knowledge of forest carbon accounting.

Relevant occupations

Farm forestry manager.

Drivers

Australian Government's new policies and initiatives supporting planting of commercial trees on agricultural land as a valuable addition to the current available resource; investment in farm forestry Research and

³⁷ AFPA, 2016, 'Can we better fire-proof our country towns? Using matches and machines to reduce fuel load. A new policy proposal from the Australian Forest Products Association', viewed April 2017, <<http://ausfpa.com.au/wp-content/uploads/2016/06/Bushfire-New-Policy-Proposal.pdf>>.

Development (R&D)³⁸; release of the draft Carbon Farming Initiative (CFI) forest plantation methodology³⁹.

Training package solutions

Development of a new skill set and up to 5 new units of competency following industry consultation to cover the following:

- develop and implement a property/whole farm management plan
- apply knowledge of basic silviculture and environmental practice for farm forest management
- apply knowledge of basic harvesting planning and contracting services for harvesting
- conduct basic financial, tree marketing and sale operations for a farm forest business
- apply knowledge of basic forest carbon accounting methods for a farm forest business.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Forest Growing and Management*, and will potentially form the components of new skill sets.

Review of 8 units of competency to update specific skills and aspects as determined through industry consultation.

Priority skill 8

Tree breeding optimisation skills

Skill description

Knowledge of and ability to apply latest genetic selection tools for enhanced wood properties and plantation productivity.

Ability to select appropriate breeding strategies, breeding methods and management approaches for the genetically improved material.

Ability to use software for simulating tree breeding outcomes.

Relevant occupations

Nursery technician/researcher.

Drivers

A decline in forest resource availability from 2020 due to the loss of investments in plantations since the Global Financial Crisis, demanding yield improvement from the new plantations such as through planting faster growing trees or seedlings, adaptation to particular conditions including pest- and disease-resistance, and production of wood with

³⁸ AFPA, May 2016, 'Government's \$0.5m investment in farm forestry R&D is welcome – Media Release', viewed April 2017, <<http://ausfpa.com.au/wp-content/uploads/2016/05/19.05.2016-Governments-0.5m-investment-in-farm-forestry-RD-is-welcome.pdf>>.

³⁹ Department of the Environment and Energy, 2016, 'Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2016', viewed April 2017, <<https://www.environment.gov.au/system/files/consultations/7c629a49-0d6f-430e-b6e2-2a9655df56c0/files/erf-method-determination-plantation-forestry-consultation-draft.pdf>>.

superior properties for products which align with market needs.

Fast development in tree genetics and genomics which contributes to genetic improvement and management of forest trees.

Higher targets for enhancing plantation productivity and profitability—optimising value through advanced tree breeding.

Training package solution

Development of up to 3 new units of competency following industry consultation to cover the following:

- apply latest genetic selection tools for enhanced wood properties and plantation productivity,
- select appropriate breeding strategies, methods and management approaches for genetically improved trees.
- use software for simulating tree breeding outcomes.

The new units of competency will be integrated as elective units in the specialisation areas in *Diploma of Forest and Forest Products* and will potentially form the components of new skill sets.

Review of 6 units of competency to update specific skills and aspects as determined through industry consultation.

TIMBER AND WOOD PROCESSING

Priority skill 1

Skills in manufacturing solid engineered wood products (cross-laminated timber (CLT) and Glulam)

Skill description

Ability to apply knowledge and operate machines used in different stages of the cross-laminated timber (CLT)/Glulam production, including timber bonding, panel/beam assembly and arrangement, adhesive application, and vertical and/or horizontal pressing for both softwood and hardwood.

Skills to operate and program Computer numerical control (CNC) technology for cutting, drilling, slotting and profiling CLT / Glulam to obtain maximum precision during processing, and deliver customer-tailored solutions/dimensions.

A range of different levels and aspects of process management skills at the production supervisor and management level.

Knowledge about the uses and applications of solid engineered wood products.

Relevant occupations

Engineered timber products/timber manufactured managers, supervisors and operators.

Drivers

Changes to the National Construction Code (NCC) that allow for the construction of multi-story residential and commercial timber buildings of

up to eight stories from 2016.⁴⁰

A sustained residential and commercial building construction activity nationally. Dwelling commencements—the strongest demand driver for most sawnwood timber and wood products—increased nationally for the fourth year in a row, reaching the highest number on record.⁴¹

Growing adoption of a wood encouragement policy for public buildings at local government level.⁴²

Developments in timber construction products for mid- and high-rise buildings including prefabricated solid engineered wood products such as CLT and Glulam—the new generation of engineered wood products.

A growing presence of innovative market leaders in Mass Timber Construction such as Lendlease, and an increasing number of architects, designers and builders who are investing in timber building prefabrication developments in Australia, demonstrating their potential.

Recent major investments in the industry including the country's first CLT manufacturing facility in Wodonga, Victoria—Xlam Australia, and installation of a state of the art CNC machine at Hyne Timber's facility in Maryborough to supply Glulam quicker and more cost efficiently.

Training package solutions

Development of up to 11 new units of competency in relation to timber manufacturing or wood panel operations to cover the following:

- understand components and technical requirements of solid engineered wood products
- plan production of solid engineered wood products
- use grading techniques/technologies to select and prepare timber for the manufacture of solid engineered wood products
- operate machine to apply timber dressing in the manufacture of solid engineered wood products
- operate machine to cut timber and layers to length in the manufacture of solid engineered wood products
- apply adhesive over timber layers and for edge gluing in the manufacture of solid engineered wood products
- conduct operations for panel/beam lay-up in the manufacture of solid engineered wood products
- operate machines to apply assembly pressing of components in the manufacture of solid engineered wood products

⁴⁰ FWPA, June 2016, 'National Construction Code (NCC) – Mid-rise Timber Buildings', viewed April 2017, <<http://www.fwpa.com.au/forwood-newsletters/1078-national-construction-code-ncc-mid-rise-timber-buildings.html>>

⁴¹ ABARES, 2016, 'Australian forest and wood products statistics: March and June quarters 2016', viewed April 2017, <<http://www.agriculture.gov.au/abares/forestsaustralia/australian-forest-and-wood-products-statistics>>

⁴² AFPA, 2017, 'Fraser Coast Council adopts 'Wood Encouragement' policy - media release', viewed April 2017, <<http://ausfpa.com.au/media-releases/fraser-coast-council-adopts-wood-encouragement-policy/>>

- operate machines to sand solid engineered wood panels/beams at specified thickness
- operate CNC machines to cut openings, splices and other parts in solid engineered wood panels
- conduct marking, packing and shipping of solid engineered wood products.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Wood Panel Products*, *Certificate IV in Timber Processing*, *Diploma of Forest and Forest Products*, and *Advanced Diploma of Forest Industry Sustainability*.

Review of 21 units of competency in relation to wood panel products, timber processing, and forest industry sustainability to update specific skills and aspects as determined through industry consultation.

Priority skill 2

Bioenergy, co-generation and biochar skills

Skill description

Ability to operate equipment to heat/convert biomass using automation and control systems, calculate and load biomass feedback for power generation/co-generation, ensure compliance with safety regulations, and perform routine maintenance to the mechanical and electrical equipment used in production.

Knowledge about technical aspects of a range of bioenergy conversion technologies including combustion, gasification and pyrolysis, the range of biomass resources suitable for bioenergy production, and combustion characteristics of biomass and thermodynamics.

Ability to connect bioenergy plants to heating and the electricity grid/electrical systems.

Ability to investigate and design bioenergy systems at a small or large scale.

Ability to apply environmental considerations including control, monitoring and testing of emissions (to air and water) and management of ash and other residues.

Ability to apply knowledge about sustainable biomass provision for biochar, biomass pyrolysis, and the impacts on soil properties.

Relevant occupations

Bioenergy/biomass plant operator, technicians, managers.

Drivers

The efficient use of forest/wood residues for the generation of heat and electricity is an opportunity for Australia. Cogeneration is increasingly used in the industry to produce steam for the mill (heat boilers) to operate kilns. The steam is also used to produce electricity. Cogeneration increases the efficiency of a mill by reducing the consumption of electricity from the grid. Cogeneration of heat offers opportunities to reduce other impacts such as waste disposal costs.

Recent industry assistance provided through State government funding for bioenergy, including \$1.25 million from the Tasmania 2016-17 Budget towards a Wood and Fibre Processing Innovation Program for the utilisation of forest harvesting and timber processing residues and/or agricultural plant residues to create value-added products. In 2016, the industry in Tasmania announced more than 10 new investment projects with local government funding support in areas such as bioenergy and biofuel.⁴³

Biochar is a solution for both mitigation and adaptation strategies to climate change. Biochar can offer a range of environmental services, such as reclamation of degraded land, improvement of soil fertility and carbon sequestration.

Training package solution

Development of up to 7 new units of competency following industry consultation to cover the following:

- operate equipment to heat/convert biomass using automation and control systems
- calculate and load biomass feedback for power generation/co-generation
- apply compliance with safety and environmental regulations to bioenergy conversion technologies
- apply technical knowledge about a range of bioenergy conversion technologies
- connect bioenergy plants to heating and the electricity grid
- investigate and design bioenergy systems at a small or large scale
- apply knowledge about sustainable biomass provision for biochar, biomass pyrolysis, and the impacts on soil properties

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Sawmilling and Processing*, *Certificate IV in Timber Processing*, *Diploma of Forest and Forest Products*, and *Advanced Diploma of Forest Industry Sustainability*, and will potentially form the components of new skill sets.

Review of 7 units of competency to update specific skills and aspects as determined through industry consultation.

⁴³ Tasmania Government, Department of State Growth, 2016, 'Wood and Fibre Processing Innovation Program', viewed April 2017, <http://www.stategrowth.tas.gov.au/forestry/wood_and_fibre_processing_innovation_program_2016>.

Priority skill 3

Log sawing
optimisation skills

Skill description

Ability to apply timber sawmilling principles, practices and processes that demonstrate improvement in resource efficiency and productivity.

Ability to effectively operate timber optimisation scanners (including x-ray, CT and 3D laser scanning) and software for log grading and sawing pattern optimisation.

Knowledge about the fundamentals of mechanical and computing systems related to timber optimisation equipment and ability to undertake maintenance for this equipment.

Relevant occupations

Sawmill managers, supervisor, operators.

Drivers

Higher targets for efficiency and productivity in sawmills which demand minimal loss of raw material and the production of sawn timber to be optimised by the commercial value of the cuts.

Advances in optimisation technologies and techniques used by sawmills to maximize yields from logs. Advanced technologies for optimisation of timber processing include optimising scanners and software based on x-ray CT and 3D laser scanning technologies and automated transfer systems between different process sequences for optimisation of process management.

Training package solutions

Development of up to 2 new units of competency following industry consultation to cover the following in sawmilling and processing:

- use log scanning technologies and software to optimise log breakdown before sawing
- perform basic maintenance for sawing optimisation equipment.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Sawmilling and Processing*.

Review of 6 units of competency in relation to sawmilling and timber processing operations to update specific skills and aspects as determined through industry consultation.

Priority skill 4

Skills for efficient timber product supply operations and chain of custody

Skill description

Ability to operate supply chain software tools, including basic software programming and development, to execute timber product supply chain transactions, managing supplier relationships and controlling associated business processes

Ability to plan hardware operations, control and manage supply chain hardware systems.

Relevant occupations

Warehousing/distribution/supply chain operational staff, sales and merchandising officers, supervisors, managers.

Drivers

Increased complexity of the Australian timber businesses in the marketplace demands abilities to deal with complex supply chains and logistics including full traceability, enhanced inventory management and warehouse management.

Many timber producers have introduced Radio-frequency identification (RFID) technology and other software technologies, including computerised scheduling and telematics, to track entire shipments along the supply chain.⁴⁴ The complexity of tracking systems increases.

Supply chain management is driven by two key technologies: software technology and hardware technology⁴⁵. Software technology includes:

- transaction processing
- supply chain planning and collaboration
- order tracking and delivery coordination
- supply chain analytics.

Hardware technology covers:

- distribution and fulfilment operations including automated equipment and robotics, bar code scanners and RFID
- transportation such as GPS and telematics, and other possibilities such as drones.

Training package solution

Development of up to 2 new units of competency following industry consultation to cover the following in forest operations, timber processing, manufacturing, and merchandising:

- operate supply chain and product tracking software tools for timber operations management

⁴⁴ Munro, T., August 2014, 'Tracking timber in the supply chain — Part 2', Matthews Intelligent Identification, viewed April 2017, <<http://blog.matthews.com.au/tracking-timber-through-the-supply-chain-part-2/>>.

⁴⁵ Myerson, P., August 2016, 'Supply Chain Technology Brings the World Closer Together', Industry Week, viewed April 2017, <<http://www.industryweek.com/supply-chain/supply-chain-technology-brings-world-closer-together>>.

- plan, control and manage supply chain technologies and systems for timber operations management.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate III in Timber Merchandising*, *Certificate IV in Timber Processing*, *Certificate IV in Timber Truss and Frame Design*, *Certificate IV in Timber Truss and Frame Manufacture*, *Diploma of Forest and Forest Products*, and *Advanced Diploma of Forest Industry Sustainability*.

There are no relevant units of competency in the existing *FWP Forest and Wood Products Training Package*. Therefore, no units will need to be reviewed.

Priority skill 5

Timber product development/innovation skills

Skill description

Knowledge of wood science and technology and timber products fundamentals.

Application of advanced knowledge of wood science, technology and products

Ability to analyse timber product design, from concept to delivery.

Business skills in project management, creative and critical thinking, value creation, entrepreneurship and leadership.

Ability to investigate key industry research topics and their practical application in a commercial setting.

Ability to apply business collaborative practices to access more services and more opportunities for product development.

Relevant occupations

Timber production supervisors, managers.

Drivers

Higher business targets for efficiency, productivity and competitiveness, which require the development of valuable and innovative timber products that address key issues such as resource efficiency, transportability, durability, and cost, as well as key environmental, economic and social factors.

Training package solution

Development of up to 4 new units of competency at the AQF level 4, 5 and 6 in forest operations and timber processing and manufacturing to cover the following:

- apply advanced knowledge of wood science, technology and products
- analyse timber product design from concept to delivery
- investigate forest and timber research topics for practical application in commercial setting
- apply principles of collaborative business relationships for timber

product development.

The new units of competency will be integrated as elective units in the specialisation areas of *Certificate IV in Timber Processing*, *Certificate IV in Timber Truss and Frame Design*, *Certificate IV in Timber Truss and Frame Manufacture*, *Diploma of Forest and Forest Products*, and *Advanced Diploma of Forest Industry Sustainability*.

Review of 6 units of competency to update specific skills and aspects as determined through industry consultation.

TIMBER BUILDING SOLUTIONS

Priority skill 1

Skills in loading/unloading long timber beams and frames and trusses safely

Skill description

Ability to plan for the loading/unloading operation by considering hazards at the manufacturer and delivery site such as restricted site access, overhanging trees, powerlines, passing traffic, lighting, working at height, uneven/unstable surfaces.

Ability to develop a comprehensive traffic management plan, dealing with all likely traffic control issues.

Ability to communicate the load planning process with builders, manufacturers and transport operators who are involved.

Ability to select a suitable vehicle fitted with mechanical means of unloading long timber beams and frame and trusses which presents the lowest risk.

Ability to select and apply work methods for getting on and off load or accessing vehicle tray to prevent a fall, or stop a fall.

Ability to select and apply work methods and mechanical aids for safe loading/unloading of long timber beams and frames and trusses products.

Relevant occupations

Timber product/wall frame and roof truss operators, transport operators.

Drivers

Loading and unloading of long span timber beams is recognised as a high risk activity by safety regulators, and general loading/unloading exclusion zone principles don't work for timber.

The industry sector does not currently have skill standards and accredited training programs to train operators to perform safe loading and unloading of long timber beams, wall frames and roof trusses on site. The industry is currently using steel industry codes of practice for loading long packs to handle frames and trusses products which do not meet the health and safety requirements. Several fatalities have resulted in the sector from the use of inappropriate practices and lack of formal training.

Training package solutions

Development of up to 5 new units of competency following industry consultation to cover the following in timber products processing and manufacturing:

- plan for the loading/unloading long timber beams and frames and trusses
- develop a traffic management plan for loading/unloading long timber beams and frames and trusses
- communicate the load planning process for long timber beams and frames and trusses
- select a low risk vehicle (fitted with mechanical means) for unloading long timber beams and frames and trusses
- select and apply work methods and mechanical aids for safe loading/unloading of long timber beams and frame and trusses

The new units of competency will be integrated as elective units in the specialisation areas in Certificate III and IV for operations in the full range of timber manufacturing environments and the *Diploma of Forest and Forest Products*.

Review of 3 units of competency to update specific skills and aspects as determined through industry consultation.

Priority skill 2

Improved truss and frame estimating and detailing skills

Skill description

Ability to interpret sketches, drawings and designs to prepare truss and frame planning documents.

Ability to implement planning documents to take off material quantities and provide quotes.

Relevant occupations

Wall frame and roof truss estimators and detailers.

Drivers

The existing units of competency and qualification no longer accurately reflect the industry job roles for estimators and detailers, and training requirements. The definition of outcomes within existing units are seen as insufficient to support the quality outcomes required by industry. In addition, the industry identified that the structure of existing qualification represents a barrier for training uptake due to a high number of prerequisite units for this qualification. There has been no significant review of the qualification over the past 7 years.

Training package solutions

Development of skill sets and up to 2 new units of competency following industry consultation to cover the following:

- interpret sketches, drawings and designs to prepare truss and frame planning documents
- implement planning documents to take off material quantities and provide quotes.

The new units of competency will be integrated as elective units in the specialisation areas in *Certificate IV in Timber Truss and Frame Design*.

Removal of all prerequisite requirements from *Certificate IV in Timber Truss and Frame Design*.

Review of 2 qualifications and 25 units of competency in relation to timber truss and frame design to update specific skills and aspects as determined through industry consultation.

Priority skill 3

Skills in prefabrication of panelised building systems (walls, flooring and ceiling panels) and on-site installation

Skill description

Ability to apply knowledge and processes to prefabricate a range of lightweight building systems from frame and truss components, engineered and reconstituted wood products (e.g. Laminated Veneer Lumber (LVL), Oriented strand board (OSB), particleboards (PB) and plywood) and other construction materials.

Skills to operate and program CNC technology for cutting, drilling, slotting and profiling components to obtain maximum precision during processing, and deliver customer-tailored solutions/dimensions.

A range of different levels and aspects of process management skills at the production supervisor and management level.

Ability to apply knowledge and use tools for installation of a range of panelised building systems and frames and trusses.

Knowledge of product conformance, recognising non-compliance and providing advice to architects/specifiers/builders about product solutions.

Relevant occupations

Prefabrication plant manager/production manager and operators.

Drivers

Changes to the National Construction Code (NCC) that allow for the construction of multi-story residential and commercial timber buildings of up to eight stories from 2016.⁴⁶

A sustained residential and commercial building construction activity nationally.⁴⁷

⁴⁶ FWPA, 2016, 'National Construction Code (NCC) – Mid-rise Timber Buildings', viewed April 2017, <<http://www.fwpa.com.au/forwood-newsletters/1078-national-construction-code-ncc-mid-rise-timber-buildings.html>>.

Growing adoption of a wood encouragement policy for public buildings at local government level.⁴⁸

Growing adoption of panelised building systems in residential developments. Examples include innovative market leaders with projects such as Mirvac's sustainability projects.

Recent major investments in the industry including Meyer Timber who is establishing a pre-fabricated building manufacturing facility in Dandenong, Victoria to produce innovative timber panels for use in low to mid-rise buildings.

Training package solutions

Development of up to 5 new units of competency following industry consultation to cover the following in timber processing and product manufacturing:

- implement and manage processes to prefabricate panelised timber building systems
- program CNC technology to cut, drill, slot and profile panelised timber building systems
- operate CNC technology to cut, drill, slot and profile panelised timber building systems
- select and use tools for on-site installation of a range of panelised timber building systems and frames and trusses
- provide advice on product conformance and solutions for panelised timber building systems.

The new units will be integrated as elective units in the specialisation areas in Certificate III, IV and Diploma Timber Truss and Frame Design and Manufacture for operations in the full range of timber manufacturing environments.

Review of 3 units of competency in relation to timber truss and frame design and manufacture to update specific skills and aspects as determined through industry consultation.

Priority skill 4

Advanced sales, marketing and customer service skills

Skill description

Marketing and sale capabilities including market research, social media and marketing and brand development skills to promote sustainability credentials to consumers and the broader community.

Capability in the implementation and ongoing management and utilisation of online portals for both wholesale and retail markets covering both the domestic and export markets.

⁴⁷ ABARES, 2016, 'Australian forest and wood products statistics: March and June quarters 2016', viewed April 2017, <<http://www.agriculture.gov.au/abares/forestsaustralia/australian-forest-and-wood-products-statistics>>.

⁴⁸ AFPA, 2017, 'Fraser Coast Council adopts 'Wood Encouragement' policy- media release', viewed April 2017, <<http://ausfpa.com.au/media-releases/fraser-coast-council-adopts-wood-encouragement-policy/>>.

Retail knowledge of timber products, sustainable production systems and the environmental benefits of using timber.

Skills required also include:

- utilisation of online payment systems
- marketing capability using online systems, including knowledge of market preferences for products, presentation and transportation both domestically and internationally
- refined customer service skills, including online retailing, to enable appropriate interactions with international export markets.

Relevant occupations

Managers, supervisors, sales personnel, marketing personnel, customer service personnel.

Drivers

Increased demand for Australia's quality timber products from the Asian markets as well as domestic markets, which involves greater interaction with global supply chains and stronger online presence of businesses to sell and promote products.

Growing adoption of digital technology to support sales and exposure to new and emerging markets both domestically and internationally.

Training package solutions

Development of up to 5 new units of competency following industry consultation to cover the following in timber products processing, manufacturing and merchandising:

- apply market research to deliver customer-tailored products, presentation and transportation solutions
- use online portals and payment systems for the sale of timber products
- use social media to promote timber products
- manage online portals for wholesale and retail markets of timber products
- develop and implement a marketing and brand strategy for timber products.

The new units will be integrated as elective units in the specialisation areas in Certificate III, IV and Diploma and Advanced Diploma for operations in the full range of timber manufacturing and merchandising environments.

Review of 1 unit of competency for operations in timber manufacturing and merchandising environments to update specific skills and aspects as determined through industry consultation.

E. TRAINING PRODUCT REVIEW PLAN 2017–2020

The IRC Training Product Review Plan 2017–2020 for the Australian forest and wood products industry sector is provided in Attachment A.

Time-critical projects

The criteria used to outline time critical projects within the *FWP Forest and Wood Products Training Package* include workplace safety issues, regulatory needs, biosecurity issues (disease outbreak) and qualifications under VET Student Loans courses list that can benefit from improvement or development of national skills standards.

Proposed project	Time critical issues
FOREST MANAGEMENT AND HARVESTING	
Skills in specialist forest management and harvesting and haulage processes to lead safety performance	<p><i>Workplace safety</i></p> <p>The forest management and harvesting sector is a high-risk industry which involves the operation of a wide range of mobile heavy equipment used in timber harvesting for felling and hauling logs. Continually improving safety culture and meeting legislative requirements contribute to reducing work-related injuries and fatalities in the sector workplaces.</p> <p><i>Regulatory needs</i></p> <p>A full implementation of the Global Harmonised System (GHS) from January 2017, making mandatory that all chemicals be labelled and comply with GHS regulations and introducing new chemical training requirements.</p>
TIMBER AND WOOD PROCESSING	
Skills in manufacturing solid engineered wood products (CLT and Glulam)	<p><i>Regulatory changes</i></p> <p>Changes to the National Construction Code (NCC) that allow for the construction of multi-story residential and commercial timber buildings of up to eight stories from 2016. The timber building solution has to meet the Code's requirements.</p>
TIMBER BUILDING SOLUTIONS	
Skills in loading/unloading long timber beams and frames and trusses safely	<p><i>Workplace safety</i></p> <p>Loading and unloading of long span timber beams is recognised as high risk activity by safety regulators. Several fatalities have resulted in the sector from the use of inappropriate practices and lack of formal training.</p>

Proposed projects that will involve review or development of new units for qualifications under VET Student Loans include the following.

Proposed project	Improving VET Student Loans qualifications
FOREST MANAGEMENT AND HARVESTING	
Commercial export skills for log and wood chip products	FWP50116 Diploma of Forest and Forest Products
Forest landscape restoration skills for minimising bushfire risks	FWP50116 Diploma of Forest and Forest Products
Skills in geospatial technologies for forestry	FWP50116 Diploma of Forest and Forest Products FWP60116 Advanced Diploma of Forest Industry Sustainability
Improved skills to minimise the environmental footprint of log harvesting	FWP50116 Diploma of Forest and Forest Products FWP60116 Advanced Diploma of Forest Industry Sustainability
Tree breeding optimisation skills	FWP50116 Diploma of Forest and Forest Products
TIMBER AND WOOD PROCESSING	
Skills in manufacturing solid engineered wood products (CLT and Glulam)	FWP50116 Diploma of Forest and Forest Products FWP60116 Advanced Diploma of Forest Industry Sustainability
Bioenergy, co-generation and biochar skills	FWP50116 Diploma of Forest and Forest Products FWP60116 Advanced Diploma of Forest Industry Sustainability
Skills for efficient timber product supply operations and chain of custody	FWP50116 Diploma of Forest and Forest Products FWP60116 Advanced Diploma of Forest Industry Sustainability
Timber product development/innovation skills	FWP50116 Diploma of Forest and Forest Products FWP60116 Advanced Diploma of Forest Industry Sustainability
TIMBER BUILDING SOLUTIONS	
Skills in loading/unloading long timber beams and frames and trusses	FWP50116 Diploma of Forest and Forest Products

safely

Skills in prefabrication of panelised building systems (walls, flooring and ceiling panels) and on-site installation

FWP50216 Diploma Timber Truss and Frame Manufacture
FWP50316 Diploma Timber Truss and Frame Design

Advanced sales, marketing and customer service skills

FWP50116 Diploma of Forest and Forest Products
FWP60116 Advanced Diploma of Forest Industry Sustainability
FWP50216 Diploma Timber Truss and Frame Manufacture
FWP50316 Diploma Timber Truss and Frame Design

Interdependencies

Proposed projects with an opportunity to involve more than one training package or IRC include:

Proposed project	Interdependencies
Skills in geospatial technologies for forestry	There is a shared interest from forestry, agriculture and animal care and management industries in specialised skills for using geospatial software and technologies to capture data that support both biosecurity programs and strategic decisions in these industries. Hence, there is an opportunity for a joint project between three training packages – <i>ACM Animal Care and Management</i> , <i>AHC Agriculture, Horticulture and Conservation and Land Management</i> and <i>FWP Forest and Wood Products</i>
Skills for efficient timber product supply operations and chain of custody	Forest product supply chains, product development and product sales and marketing are key business functions conducted across the forest and wood products industry. There is an opportunity for all three IRCs representing the industry to collaborate and improve relevant skills standards to benefit occupations across this industry.
Timber product development/innovation skills	
Advanced sales, marketing and customer service skills	

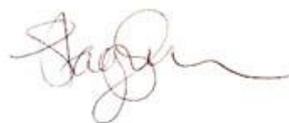
Current Projects

The industry is currently undertaking the Forest Harvesting Optimisation Project which was funded and emerged from the 2016 Work Plan. The project is expected to be completed by the end of 2017. Refer to *Attachment B - Current IRC Projects* for the list of units which are currently developed and reviewed.

F. IRC SIGNOFF

This IRC Skills Forecast and Proposed Schedule of Work was agreed as the result of a properly constituted IRC decision.

Signed for and on behalf of the **Forest Management and Harvesting IRC** by its appointed Chair



Stacey Gardener

(Name of Chair)

Signature of Chair

Date: 28 April, 2017

Signed for and on behalf of the **Timber and Wood Processing IRC** by its appointed Chair



Mark Lourigan

(Name of Chair)

Signature of Chair

Date: 28 April, 2017

Signed for and on behalf of the **Timber Building Solutions IRC** by its appointed Chair



Dave Gover

(Name of Chair)

Signature of Chair

Date: 28 April, 2017

ATTACHMENT A

IRC Training Product Review Plan 2017–2020 for the Forest and Wood Products Industry

Relevant training package: FWP - Forest and Wood Products

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

Date submitted to Department of Education and Training: 28 April, 2017

FOREST MANAGEMENT AND HARVESTING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2017	Skills in specialist forest management and harvesting and haulage processes to lead safety performance	Development of up to 2 skill sets as determined following industry consultation: Skill set for operator safety leadership Skill set for supervisor safety leadership	<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Lead safety initiatives within forestry operations</p> <p>FWPXXXXXXX Apply chain of responsibility in log / timber transportation</p> <p>FWPXXXXXXX Plan, conduct and monitor chemical procedures in plantation management</p> <p>Total new units 3</p> <p>Review of the following units of competency:</p> <p>FWPCOR3201- Implement safety, health and environment policies and procedures</p> <p>FWPCOR2201 Work effectively in the forest and forest products industry</p> <p>FWPCOR2202 Communicate and interact effectively in the</p>

FOREST MANAGEMENT AND HARVESTING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			workplace FWPCOR4201 - Monitor safety, health and environment policies and procedures FWPCOR4202 - Monitor review forestry operations FWPCOT2233 Navigate in forest areas FWPCOR2205 Follow WHS policies and procedures <i>Total units for review</i> 7
2017	Skills in geospatial technologies for forestry		Development of the following new units of competency: FWPXXXXXXX Select and apply geospatial technologies for forest and conservation management FWPXXXXXXX Select and apply geospatial software for forest and conservation management FWPXXXXXXX Collect geospatial data in the field for forest and conservation management FWPXXXXXXX Design and perform analysis of geospatial data using spatial analysis techniques for forest and conservation management FWPXXXXXXX Use geospatial data techniques to model forest resources, climate and soil conditions, species habitat and distribution FWPXXXXXXX Prepare, present and apply geospatial data to

FOREST MANAGEMENT AND HARVESTING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			forest and conservation planning <i>Total new units</i> 6 Review of the following units of competency: FWPFGM4209 - Interpret and use aerial photographs for forest management FWPFGM5219 - Undertake carbon stock sampling of forests and plantations FWPFGM4207 Conduct a forest site assessment FWPFGM5202 Manage forestry information and interpretations programs FWPFGM6207 Develop forest management systems and processes FWPFGM6203 Manage sustainable tree inventory <i>Total units for review</i> 6
2017	Skills in advanced electrical and hydraulic maintenance of equipment for log harvesting operators		Development of the following new units of competency: FWPXXXXXXX Apply knowledge of hydraulics and electrical systems related to log harvesting equipment FWPXXXXXXX Diagnose electrical and hydraulic problems related to log harvesting equipment FWPXXXXXXX Dismantle, repair, replace, clean and lubricate parts for log harvesting equipment

FOREST MANAGEMENT AND HARVESTING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>FWPXXXXXXX Reassemble and test log harvesting equipment for efficient operation</p> <p>FWPXXXXXXX Manage electrical risks when conducting harvesting head maintenance</p> <p>Total new units 5</p> <p>Review of the following units of competency:</p> <p>FWPCOT3224 - Plan and monitor equipment maintenance</p> <p>Total units for review 1</p>
2017	Commercial export skills for logs and wood chip products		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Conduct wood chip sampling for receivals and export</p> <p>FWPXXXXXXX Conduct wood chip stockpile management to avoid contamination</p> <p>FWPXXXXXXX Use log grade product codes for export operations</p> <p>FWPXXXXXXX Conduct log yard management for export operation</p> <p>FWPXXXXXXX Measure logs according to export market standards</p> <p>FWPXXXXXXX Manage fumigation requirements for logs and wood chips</p> <p>Total new units 6</p> <p>Review of the following units of competency:</p>

FOREST MANAGEMENT AND HARVESTING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPCOT2241 - Apply wood and timber product knowledge FWPSAW3223 - Assess wood chips FWPSAW3216 - Transfer wood chips FWPCOT3236 - Coordinate stock control procedures FWPCOT3250 - Prepare timber to meet import/export compliance requirements FWPCOR3204 Visually assess materials FWPCOT3203 Weigh loads FWPCOT3227 Receive and measure logs FWPCOT3245 Grade, sort and mark materials Total units for review 9
2018	Improved skills to minimise the environmental footprint of log harvesting		Development of the following new units of competency: FWPXXXXXXX Develop pre-harvesting plans of roads, skid trails and landings to minimise environmental impact FWPXXXXXXX Construct forest roads, landings and skid trails to minimise environmental impact FWPXXXXXXX Apply log cording and matting techniques to planned skid trails to minimise environmental impact Total new units 3 Review of the following units of competency:

FOREST MANAGEMENT AND HARVESTING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPFGM3209 - Construct and maintain forest roads and tracks FWPCOT3221 - Rehabilitate tracks, quarries and landings FWPCOT3256 - Apply biodiversity protection principles FWPCOT3252 - Use environmental care procedures to undertake fire salvage operations FWPCOT3254 - Implement environmentally sustainable work practices in the work area/work site FWPHAR4203 - Design log landings and snig tracks FWPHAR5201- Design harvesting plans FWPCOT5201 - Implement sustainable forestry practices FWPCOT5206 - Implement forestry chain of custody certification system FWPCOT5207 - Implement sustainability in the workplace FWPFGM5208 - Manage road construction and maintenance FWPCOT5209 - Manage tree harvesting to minimise environmental impact FWPFGM5214 - Develop a native forest regeneration plan FWPCOR6201 - Manage sustainability in the workplace FWPCOT6202 - Develop and manage a forestry chain of custody certifications process
			Total for review

15

FOREST MANAGEMENT AND HARVESTING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2018	Forest landscape restoration skills for minimising bushfire risks		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Apply knowledge of forest landscape restoration methods to reduce bushfire risk</p> <p>FWPXXXXXXX Manage forest landscape restoration programs to reduce bushfire risk</p> <p>FWPXXXXXXX Undertake mechanical biomass removal operations to reduce bushfire risk</p> <p>Total new units 3</p> <p>Review of the following units of competency:</p> <p>FWPCOT3258 Comply with soil and water protection</p> <p>FWPCOR3203 Evaluate fire potential and prevention</p> <p>FWPFGM4203 Design plantations</p> <p>Total units for review 3</p>
2018	Farm forestry management skills	Development of a new skill sets as determined following industry consultation Skill set for farm forestry management	<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Develop and implement a property / whole farm management plan</p> <p>FWPXXXXXXX Apply knowledge of basic silviculture and environmental practice for farm forest management</p> <p>FWPXXXXXXX Apply knowledge of basic harvesting planning and contracting services for harvesting</p> <p>FWPXXXXXXX Conduct basic financial, tree marketing and sale</p>

FOREST MANAGEMENT AND HARVESTING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>operations for a farm forest business</p> <p>FWPXXXXXXX Apply knowledge of basic forest carbon accounting methods for a farm forest business</p> <p>Total new units 5</p> <p>Review of the following units of competency:</p> <p>FWPFGM3206 - Plan and implement non-commercial thinning operations</p> <p>FWPFGM4201 - Implement a forest establishment plan</p> <p>FWPFGM4202 - Manage stand health</p> <p>FWPFGM4206 - Conduct a wood volume and yield assessment</p> <p>FWPHAR4205 - Implement harvesting plans</p> <p>FWPCOT5209 - Manage tree harvesting to minimise environmental impact</p> <p>FWPFGM4204 Conduct a pests and diseases assessment</p> <p>FWPFGM4205 Monitor regeneration rates</p> <p>Total units for review 8</p>
2018	Tree breeding optimisation skills		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Apply latest genetic selection tools for enhanced wood properties and plantation productivity</p> <p>FWPXXXXXXX Select appropriate breeding strategies, methods</p>

FOREST MANAGEMENT AND HARVESTING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>and management approaches for genetically improved trees</p> <p>FWPXXXXXXX Use software for simulating tree breeding outcomes</p> <p>Total new units 3</p> <p>Review of the following units of competency:</p> <p>FWPFGM2209 Cut, sort and set cuttings</p> <p>FWPFGM2201 Collect seed</p> <p>FWPFGM3201 Manage seed collection</p> <p>FWPFGM3202 Extract seed</p> <p>FWPFGM5212 Manage genetic resources</p> <p>FWPFGM5215 Breed trees</p> <p>Total units for review 6</p>

TIMBER AND WOOD PROCESSING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2017	Skills in manufacturing prefabricated solid engineered wood products (CLT and Glulam)		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXXX Understand components and technical requirements of solid engineered wood products</p> <p>FWPXXXXXXXX Plan production of solid engineered wood products</p> <p>FWPXXXXXXXX Use grading techniques / technologies to select and prepare timber for the manufacture of solid engineered wood products</p> <p>FWPXXXXXXXX Operate machine to apply timber dressing in the manufacture of solid engineered wood products</p> <p>FWPXXXXXXXX Operate machine to cut timber and layers to length in the manufacture of solid engineered wood products</p> <p>FWPXXXXXXXX Apply adhesive over timber layers and for edge gluing in the manufacture of solid engineered wood products</p> <p>FWPXXXXXXXX Conduct operations for panel / beam lay-up in the manufacture of solid engineered wood products</p> <p>FWPXXXXXXXX Operate machines to apply assembly pressing of components in the manufacture of solid engineered wood products</p> <p>FWPXXXXXXXX Operate machines to sand solid engineered wood panels / beams at specified thickness</p> <p>FWPXXXXXXXX Operate CNC machines to cut openings, splices</p>

TIMBER AND WOOD PROCESSING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>and other parts in solid engineered wood panels</p> <p>FWPXXXXXX Conduct marking, packing and shipping of solid engineered wood products</p> <p>Total new units 11</p> <p>Review of the following units of competency:</p> <p>FWPCOT3205 - Dress boards using multi-headed machines</p> <p>FWPWPP3206 - Laminate and veneer board surfaces</p> <p>FWPWPP3209 - Prepare resin and additives</p> <p>FWPWPP3210 - Laminate board</p> <p>FWPWPP3219 - Blend and test binding mixes</p> <p>FWPWPP3221 - Trim new panels to size</p> <p>FWPWPP3226 - Operate a continuous press</p> <p>FWPCOT3228 - Plane/sand panels</p> <p>FWPCOT3229 - Mechanically stress grade panels</p> <p>FWPCOT3230 - Operate automated stacking equipment</p> <p>FWPCOT3234 - Cut material using CNC sizing machines</p> <p>FWPCOT3235 - Machine material using CNC machining and processing centres</p> <p>FWPCOT3244 - Cut material to profile</p>

TIMBER AND WOOD PROCESSING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPWPP4201 - Plan and coordinate panel production FWPTMM4201 - Construct prototypes and samples FWPSAW4204 - Plan and monitor board conversion FWPTMM5201 - Assess product feasibility of designs FWPTMM5204 - Manage product design FWPTMM5205 - Optimise CNC operations FWPTMM5206 - Plan production FWPCOT6203 - Develop engineered timber products to meet energy efficient building design needs Total units for review 21
2017	Bioenergy, co-generation and biochar skills		Development of the following new units of competency: FWPXXXXXXX Operate equipment to heat / convert biomass using automation and control systems FWPXXXXXXX Calculate and load biomass feedback for power generation / co-generation FWPXXXXXXX Apply compliance with safety and environmental regulations to bioenergy conversion technologies FWPXXXXXXX Apply technical knowledge about a range of bioenergy conversion technologies FWPXXXXXXX Connect bioenergy plants to heating and the

TIMBER AND WOOD PROCESSING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>electricity grid</p> <p>FWPXXXXXX Investigate and design bioenergy systems at a small or large scale</p> <p>FWPXXXXXX Apply knowledge about sustainable biomass provision for biochar, biomass pyrolysis, and the impacts on soil properties</p> <p>Total new units 7</p> <p>Review of the following units of competency:</p> <p>FWPCOT3231 - Operate steam boiler</p> <p>FWPCOT3232 - Operate heat plant</p> <p>FWPCOT3253 - Convert timber residue into products for further use</p> <p>FWPCOT4206 - Plan and coordinate boiler operations</p> <p>FWPCOT4207 - Plan and coordinate heat plant operations</p> <p>FWPCOR6202 - Implement practices to maximise value from wood residues</p> <p>FWPFGM6201 - Plan a biochar storage system for carbon capture and storage</p> <p>Total units for review 7</p>
2017	Log sawing optimisation skills		<p>Development of the following new units of competency:</p> <p>FWPXXXXXX Use log scanning technologies and software to</p>

TIMBER AND WOOD PROCESSING IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>optimise log breakdown before sawing</p> <p>FWPXXXXXXX Perform basic maintenance for sawing optimisation equipment</p> <p>Total new units 2</p> <p>Review of the following units of competency:</p> <p>FWPSAW3202 - Produce sawn green boards</p> <p>FWPSAW3203 - Break down logs</p> <p>FWPCOT3206 - Cut material using high speed optimiser</p> <p>FWPSAW3227 - Select and saw logs in multi-species operations</p> <p>FWPSAW3226 - Saw logs using CNC optimising systems</p> <p>FWPSAW4202 - Plan and monitor saw log operations</p> <p>Total units for review 6</p>
2017	Skills for efficient timber product supply operations and chain of custody		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Operate supply chain and product tracking software tools for timber operations management</p> <p>FWPXXXXXXX Plan, control and manage supply chain technologies and systems for timber operations management</p> <p>Total new units 2</p> <p>There are no relevant units in the existing FWP. Therefore, will need to be reviewed.</p>

TIMBER AND WOOD PROCESSING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<i>Total units for review</i> 0
2017	Timber product development / innovation skills		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Apply advanced knowledge of wood science, technology and products</p> <p>FWPXXXXXXX Analyse timber product design from concept to delivery</p> <p>FWPXXXXXXX Investigate forest and timber research topics for practical application in commercial setting</p> <p>FWPXXXXXXX Apply principles of collaborative business relationships for timber product development</p> <p><i>Total new units</i> 4</p> <p>Review of the following units of competency:</p> <p>FWPTMM4204 - Sample and test products to specifications</p> <p>FWPTMM5202 - Develop, trial and evaluate prototypes</p> <p>FWPCOT6208 - Manage innovative thinking and practice in the forest and wood products industry</p> <p>FWPCOT6209 - Manage forest and wood products industry research</p> <p>FWPCOT8101 - Lead forest and wood products industry innovative thinking and practice</p> <p>FWPCOT8102 - Initiate and lead a forest and wood products industry innovation</p>

TIMBER AND WOOD PROCESSING IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<i>Total units for review</i> 6

TIMBER BUILDING SOLUTIONS IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2017	Skills in loading / unloading packs of long timber beams and frames and trusses safely		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Plan for the loading / unloading long timber beams and frames and trusses</p> <p>FWPXXXXXXX Develop a traffic management plan for loading / unloading long timber beams and frames and trusses</p> <p>FWPXXXXXXX Communicate the load planning process for long timber beams and frames and trusses</p> <p>FWPXXXXXXX Select a low risk vehicle (fitted with mechanical means) for unloading long timber beams and frames and trusses</p> <p>FWPXXXXXXX Select and apply work methods and mechanical aids for safe loading / unloading of long timber beams and frame and trusses</p> <p>Total new units 5</p> <p>Review of the following units of competency:</p> <p>FWPCOT3202 - Navigate in remote or trackless areas</p> <p>FWPCOT3264 - Build and maintain timber stacks</p> <p>FWPCOT4204 - Schedule and coordinate load shifting</p> <p>Total units for review 3</p>
2017	Improved truss and frame estimating and	Development of skill sets as determined following industry consultation	<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Interpret sketches, drawings and designs to</p>

TIMBER BUILDING SOLUTIONS IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
	detailing skills	<p>Review of the following qualifications:</p> <p>FWP30916 - Certificate III in Timber Truss and Frame Design and Manufacture</p> <p>FWP40416 Certificate IV in Timber Truss and Frame Design</p>	<p>prepare truss and frame planning documents</p> <p>FWPXXXXXXX Implement planning documents to take off material quantities and provide quotes</p> <p>Total new units 2</p> <p>Review of the following units of competency:</p> <p>FWPCOR3202-Conduct quality and product care procedures</p> <p>FWPTMM3204-Interpret designs to prepare timber roof truss drawings and documents using computers</p> <p>FWPTMM3205-Interpret designs to prepare timber floor system drawings and documents using computers</p> <p>FWPTMM3206-Interpret designs to prepare timber wall frame drawings and documents using computers</p> <p>FWPCOT3204-Prepare and interpret sketches and drawings</p> <p>FWPCOT3214-Take off material quantities</p> <p>FWPCOT3218-Quote and interpret from manufactured timber product plans</p> <p>FWPCOT3219 Produce standard truss or frame plans and details using computers</p> <p>FWPCOT3220-Quote and interpret from computerised timber manufactured product plans</p> <p>FWPCOT3239-Create drawings using computer aided design</p>

TIMBER BUILDING SOLUTIONS IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			<p>systems</p> <p>FWPCOT4202-Design timber structures</p> <p>FWPCOT2235-Assess timber for manufacturing potential processing centres</p> <p>FWPCOT3241-Assemble timber wall frames</p> <p>FWPCOT3242-Lay up timber roof trusses</p> <p>FWPCOT3243-Operate a truss press</p> <p>FWPTMM2203-Read and interpret timber truss, floor and/or frame fabrication plans</p> <p>FWPTMM3207-Set up timber floor trusses</p> <p>FWPCOR4203-Monitor quality and product care procedures</p> <p>FWPTMM4205-Prepare and advise on a broad range of timber roof truss details using computers</p> <p>FWPTMM4206-Prepare and advise on a broad range of timber floor system details using computers</p> <p>FWPCOT4201 Produce complex truss and frame plans and details using computers</p> <p>FWPTMM4207-Prepare and advise on a broad range of timber wall frame details using computers</p> <p>FWPTMM4202-Diagnose and calculate production costs</p> <p>FWPTMM4203-Install and commission CNC software</p>

TIMBER BUILDING SOLUTIONS IRC			
YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPTMM3203 Estimate and cost job
			Total units for review 25
2017	Skills in prefabrication of panelised building systems (walls, flooring ceiling panels) and on-site installation		<p>Development of the following new units of competency:</p> <p>FWPXXXXXXX Implement and manage processes to prefabricate panelised timber building systems</p> <p>FWPXXXXXXX Program CNC technology to cut, drill, slot and profile panelised timber building systems</p> <p>FWPXXXXXXX Operate CNC technology to cut, drill, slot and profile panelised timber building systems</p> <p>FWPXXXXXXX Select and use tools for on-site installation of a range of panelised timber building systems and frames and trusses</p> <p>FWPXXXXXXX Provide advice on product conformance and solutions for panelised timber building systems</p> <p>Total new units 5</p> <p>Review of the following units of competency:</p> <p>FWPCOT2230 - Assemble products</p> <p>FWPCOT4203 - Plan and coordinate product assembly</p> <p>FWPTMM5203 - Generate and transfer complex computer-aided drawings and specifications</p> <p>Total units for review 3</p>
2018	Advanced sales,		Development of the following new units of competency:

TIMBER BUILDING SOLUTIONS IRC

YEAR	PRIORITY SKILLS	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
	marketing and customer service skills		FWPXXXXXXX Apply market research to deliver customer-tailored products, presentation and transportation solutions FWPXXXXXXX Use online portals and payment systems to sale timber products FWPXXXXXXX Use social media to promote timber products FWPXXXXXXX Manage online portals for wholesale and retail markets of timber products FWPXXXXXXX Develop and implement a marketing and brand strategy for timber products Total new units 5 Review of the following units of competency: FWPCOT3251 Promote the carbon benefits of wood products Total units for review 1

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2019	Core and common technical units		FWPCOR2203 Follow environmental care procedures FWPCOR2204 Follow fire prevention procedures FWPCOR2207 Maintain quality and product care

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2019	Harvesting operations		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) FWPHAR3213 Conduct mechanically assisted tree falling operations FWPHAR3215 Operate a heavy production mobile chipper FWPHAR3220 Harvest trees manually (intermediate) FWPHAR3221 Harvest trees manually (advanced) FWPHAR4201 Apply tree jacking techniques FWPHAR4202 Coordinate log recovery (hook tender) FWPHAR4204 Plan and coordinate fire salvage operations FWPHAR4205 Implement harvesting plans FWPCOT3247 Select timber for forestry operations FWPCOT3260 Recover four wheel drive vehicles FWPCOT3261 Transport forestry logs using trucks

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPCOT3262 Transport forestry produce using trucks
2019	Machinery and equipment		FWPCOT2237 Maintain chainsaws FWPCOT2219 Use hand-held tools FWPCOT2240 Cut material with a pole saw FWPCOT3259 Operate a four wheel drive on unsealed roads FWPCOT5203 Manage installation and commissioning of equipment FWPCOT5204 Organise enterprise maintenance programs
2019	Sawing operations, sawdoctoring and woodmaching		FWPCOT4205 Coordinate log debarking operations FWPCOT2202 Rack material FWPCOT2205 Tail out materials FWPCOT2208 Resaw boards and timber FWPCOT2218 Cross cut materials with a fixed saw FWPCOT2229 Dock material to length FWPCOT2238 Cut materials with a handheld chainsaw FWPSAW2202 Sort boards manually FWPSAW2203 Sort boards mechanically FWPSAW2204 Dock boards with mechanical feed

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPSAW2207 Round softwood logs FWPSAW2208 Split wood products FWPSAW2209 Dismantle, transport and assemble hand portable sawmill FWPCOT3216 Assess and maintain saw performance FWPCOT3217 Assess and maintain cutter performance FWPCOT3210 Sharpen cutting tools FWPCOT3212 Replace saws, blades and guides FWPSAW3221 Profile saw blanks FWPSAW3222 Recondition band mill wheels FWPSAW3224 Coordinate and monitor the wood chip stockpile FWPSAW3225 Maintain frame saw blades FWPSAW3228 Apply principles of blade design to sawing procedures FWPSAW3229 Operate a portable sawmill FWPCOT3201 Hand sharpen knives and blades FWPCOT3209 Set up, operate and maintain end matching operations FWPCOT3211 Maintain sawdoctoring tools FWPCOT3213 Manufacture cutting tools

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPCOT3215 Swage and shape saw blades FWPTMM3201 Convert timber FWPTMM3202 Manufacture using joinery machines FWPCOT3233 Sharpen and align blades and knives
2020	Grading and 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 FWPSAW2201 Grade round poles and debarked logs FWPWPP4202 Perform laboratory testing FWPCOT3208 Test strength of joints FWPCOT3225 Mechanically stress grade timber
2020	Timber drying and treatment		FWPSAW2210 Prepare for timber treatment operations FWPCOT2225 Chip or flake wood FWPSAW4201 Plan and monitor timber treatment plant operations

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPSAW4203 Coordinate timber drying operations FWPSAW3201 Treat timberFWPCOT3248 Dry timber in solar assisted kilns FWPCOT3249 Select timber preservation techniques FWPSAW3205 Dry hardwood FWPSAW3206 Dry softwood FWPWPP3212 Dry material FWPWPP3213 Heat treat material FWPWPP3214 Treat paper FWPWPP3215 Cut paper
2020	Sustainable industry practices		FWPCOT3263-Maintain and contribute to energy efficiency FWPCOT5205 Develop biohazard contingency plans FWPCOT6204 Use carbon accounting to estimate emissions FWPCOT6205 Prepare an enterprise carbon management report FWPFGM5217 Promote plantations as a sustainable form of land use FWPCOT4208 Implement workplace sustainability practices sustainability practices FWPCOT5208 Build and maintain community relationships

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPCOT6201 Manage community engagement FPFGM4210 Prepare a tender FPFGM5210 Manage tending operations in a native forest FPFGM5211 Contribute to stand nutrition FWPFGM5213 Coordinate plantation tending operations FWPFGM5216 Manage coupe planning FWPFGM3207 Coordinate improvement FWPFGM3211 Manage coppice stems FWPFGM2215 Measure trees FWPFGM3203 Conduct an instrument survey FWPFGM3212 Fall trees manually (intermediate) FWPFGM3213 Fall trees manually (advanced) FWPFGM3214 Operate a four wheel drive in a towing situation FWPFGM3215 Perform complex 4x4 operations FWPCOT2220 Select trees for tending operations FWPCOT2236 Fall trees manually (basic) FWPCOT2239 Trim and cut felled trees FWPCOT3255 Apply silvicultural principles FWPCOT3257 Follow cultural heritage

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPCOT5202 Manage forestry information and interpretations programs FWPFGM2202 Prepare seeded FWPFGM2203 Plant trees by hand FWPFGM2204 Plant trees mechanically FWPFGM2205 Prune trees FWPFGM2206 Collect data or samples for assessment FWPFGM2207 Undertake brushcutting operations FWPFGM2210 Implement animal pest control procedures FWPFGM2211 Detect fires FWPFGM2212 Graft cuttings FWPFGM2213 Process seed FWPFGM2214 Maintain visitor sites FWPCOT3222 Present forestry information and interpretations programs FWPCOT6207 Develop forest management systems and processes FWPFGM5201 Plan and manage an inventory program
2020	Woodchipping		FWPWPP2205 Prepare chip or fibre blends FWPWPP3203 Produce fibre from chips

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2020	Warehousing and distribution		FWPCOT2201 Stack and bind material FWPCOT2210 Tally material FWPCOT2227 Process orders and despatch products FWPCOT2228 Store materials FWPCOT2231 Pack products FWPWPP2211 Move material by transfer
2020	Lamination , finishing, veneer and board production		FWPCOT2207 Dress boards and timber FWPCOT2209 Produce finger jointed FWPCOT2211 Produce pointed timber products FWPCOT2222 Produce laminated beams FWPSAW2205 Assemble materials using nail plates FWPSAW2206 De-stack seasoning racks FWPCOT2232 Cut material to shape using a saw FWPWPP2201 Cut panels FWPCOT2203 Finish and pack products FWPCOT2224 Band edges of panels FWPTMM2201 Cut material to length and angles FWPTMM2202 Machine material

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPCOT3269 Provide specialised timber product solutions FWPCOT3237 Produce templates FWPCOT3238 Operate a pole saw FWPCOT3240 Grade heavy structural/engineered products FWPCOT3246 Test heavy structural/engineered products FWPSAW3204 Saw flitches and cants 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 FWPSAW3215 Screen wood chips FWPSAW3217 Hard face saw teeth FWPSAW3218 Replace tungsten tips FWPSAW3219 Replace stellite tips FWPSAW3220 Maintain wide band saw blades

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPWPP3201 Produce veneer from debarked logs FWPWPP3202 Paint panels FWPWPP3204 Form board FWPWPP3205 Match and join veneer FWPWPP3206 Laminate and veneer board surfaces FWPWPP3211 Maintain caul plates and screens FWPWPP3216 Press material using the daylight process FWPWPP3217 Process production effluent FWPWPP3218 Plan and coordinate machining of panels FWPWPP3222 Press laminated ply FWPWPP3223 Immunise veneer FWPWPP3224 Profile sand products FWPWPP3225 Produce profile sanding shoes and wheels FWPWPP3227 Vacuum paint FWPWPP3228 Dry Wood Flakes FWPWPP3229 Classify flake FWPWPP3230 Produce decorative veneers FWPWPP3231 Produce veneer from prepared flitches FWPWPP2202 Surface treat raw board

PROPOSED FWP UNITS TO BE CHECKED FOR CURRENCY AND POSSIBLY REVIEWED AS PART OF THE 4 YEAR CYCLE

YEAR	SPECIALISATION	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			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 FWPWPP3207 Clip veneer FWPWPP3208 Punch peg holes in panel9 FWPWPP3220 Plan and coordinate panel painting

ATTACHMENT B

Current IRC Projects for the Forest and Wood Products Industry

Relevant training package: FWP - Forest and Wood Products

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

Date submitted to Department of Education and Training: 28 April, 2017

FOREST MANAGEMENT AND HARVESTING IRC			
YEAR	PROJECT	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
2017	Forest Harvest Optimisation		<p>Development of a new unit</p> <p>FWPXXXXXXX Use harvester technology and software for in-forest optimisation</p> <p>Review of existing units</p> <p>FWPHAR3207 Conduct feller buncher operations</p> <p>FWPCOT3223 Grade and mark logs</p> <p>FWPHAR3214 Operate a single grip harvester</p> <p>FWPHAR3206 Conduct forwarder operations</p> <p>FWPHAR3211 Operate yarder</p> <p>FWPHAR3216 Conduct forestry operations using crawler tractor</p> <p>FWPHAR3217 Conduct skidder operations</p> <p>FWPHAR3219 Conduct excavator operations with grabs</p>

FOREST MANAGEMENT AND HARVESTING IRC

YEAR	PROJECT	QUALIFICATION CODE & NAME	UNIT OF COMPETENCY CODE & NAME
			FWPHAR3208 Conduct boom delimeter operations FWPCOT2226 Debark logs mechanically FWPHAR3210 Conduct mechanical processor operations FWPCOT2223 Segregate and sort logs FWPHAR3218 Conduct loader operations