MANUFACTURING SKILLS QUEENSLAND

M13

MANUFACTURING IN THE

TIMBER AND WOOD INDUSTRIES

MANUFACTURING SKILLS QUEENSLAND

A guide on how to use this Industry Pack Resource for teachers and students

This industry pack is a resource designed to support the Manufacturing Careers Short Course. It connects classroom lesson plans, assessment tasks and the Manufacturing Matters website: manufacturingmatters.com.au.

COVER PAGE

Identifies the main manufacturing industry explored in this pack. Each industry pack is assigned an alphanumeric code, such as M4, to assist in identifying the industry pathway pack in various printed and digital outputs. There are 14 pathways in total.

» *Use to identify workplaces or industries of interest for Assessment 1.*

PAGE 1

Provides an overview of the specific manufacturing industry. It briefly explains where the industry operates and provides a basic understanding of relevant industry subject matter. **Supports Lesson 1 & 3**.

» *Use to identify key interests or targeted questions for Assessment 1.*

PAGE 2

Features images and descriptions of the manufacturing industry. These examples support further independent research by providing clear visual references for inspiration. **Supports Lesson 1 & 3**.

» *Use to direct independent research to prepare targeted questions for Assessment 1.*

PAGE 3

A career story offers real-life insight into an individual working in the manufacturing industry. It highlights variability in career pathways and offers real-world context of roles and progression within the sector. **Supports Lesson 3**.

» *Use for Assessment 1 & Assessment 2 to understand pathways and core skills, attributes and knowledge.*

PAGE 4

Includes:

- A map of Queensland to prompt a guided Google Maps research activity into where manufacturing industries are located.
- Industry specific search strings to assist further independent research into the industry.
- Links to job search platforms to research employment opportunities in the industry in Queensland.

Supports Lessons 8 to 13 & 16.

» *Use for Assessment 1 & Assessment 2 to identify local industries and support independent research into job skills, attributes and knowledge gathering search terms.*

PAGE 5

Provides an overview of educational training pathways and connects to the Career Bullseye highlighting roles at various Levels on the following page. **Supports Lessons 16 & 17**.

» *Use for Assessment 2 to understand pathways into specific roles.*

PAGE 6

An interactive Career Bullseye indicates roles within the industry at various Level (1 – 4) and allows for quick cross-industry comparisons on flexible career pathways. **Supports Lessons 1 & 3**.

» *Use for Assessment 2 to understand pathways into specific roles and cross-industry relevance.*

PAGE 7

Focuses on the first career pathway theme: **"Leading Teams"**.

Highlights the skills, qualities and attributes required for leadership roles and provides a list of examples to support further independent research. **Support Lessons 11, 18 & 19**.

Note: More detailed job descriptions are available on the Manufacturing Matters website. These may be made available as printed copies also.

Note: Additional videos are available to support this section exploring select "Leadership" and "On the Tools" occupations.

» *Use for Assessment 2 to identify skills, attribute, knowledge and/or experience as pathways into specific roles in interested manufacturing industries.*

PAGE 8

Focuses on the second career pathway theme: **"On the Tools"**.

Highlights the skills, qualities and attributes required for hands-on roles and provides a list of examples to support further independent research. **Support Lessons 2, 6, 11**.

Note: More detailed job descriptions are available on the Manufacturing Matters website. These may be made available as printed copies also.

Note: Additional videos are available to support this section exploring select "Leadership" and "On the Tools" occupations.

» *Use for Assessment 2 to identify skills, attribute, knowledge and/or experience as pathways into specific roles in interested manufacturing industries.*

PAGE 9

Provides an overview of the Future of the Industry and how technology is changing it. The section highlights skills needed for the future and growing trends in the industry. **Supports Lessons 12 & 13**.

» *Use to identify targeted questions for Assessment 1 and for Assessment 2 for planning careers pathways and future skills, attributes and knowledge.*

PAGE 10

Includes helpful online resources for further exploration of manufacturing industries. A matrix is provided that identifies all 14 core manufacturing industry pathways to discover!

» *Use for Assessment 1 & Assessment 2 to expand independent research into pathways, core skills, attributes, and knowledge.*

Understanding the Timber and Wood Industry in Queensland

The Timber and Wood Manufacturing industry in Queensland represents a vital component of Australia's manufacturing sector, contributing significantly to both domestic production and export markets. This sector combines traditional processing methods with advanced manufacturing technologies to serve construction, furniture, and various commercial applications.

PRIMARY PROCESSING OPERATIONS

Queensland's primary timber processing sector integrates traditional sawmilling with modern production technologies. The sector produces structural timber, engineered wood products, and specialised materials for both residential and commercial construction. Many processors specialise in native hardwood and plantation softwood processing, with particular emphasis on sustainable resource management and maximum resource recovery.

The commercial timber sector serves diverse market segments including building construction, civil infrastructure, and wholesale supply. Queensland processors have developed particular expertise in producing timber products that meet the specific requirements of Australia's tropical and subtropical environments, including considerations for termite resistance and durability in coastal areas.

SECONDARY MANUFACTURING OPERATIONS

The secondary manufacturing sector encompasses a broad range of value-adding activities. Engineered wood products form a substantial segment, with manufacturers producing laminated timber beams, plywood, and composite materials suited to Queensland's construction industry. Many manufacturers have developed niche markets by focusing on products adapted to local conditions and requirements.

Specialised manufacturing includes joinery, cabinet making, and pre-fabricated building component production. These subsectors often combine traditional woodworking techniques with advanced technology, particularly in areas such as computer-controlled manufacturing and precision finishing.

Manufacturing Support Industries

The industry is supported by a network of specialised facilities including timber treatment plants, kiln drying operations, and timber grading facilities. These support industries are crucial to the sector's success, providing essential services and quality assurance. Chemical suppliers and equipment manufacturers form an integral part of the supply chain, often developing custom solutions for specific manufacturing requirements.

Advanced Manufacturing Technologies

Contemporary timber processing and manufacturing in Queensland relies heavily on advanced technologies. Computer-Numerical Control (CNC) machinery and Computer-Aided Design (CAD) systems are now standard in most facilities. These technologies enable precise production methods while maintaining cost-effectiveness. Quality control systems and inventory management procedures have been developed to meet international standards while addressing local market needs.

Skills and Workforce

The industry depends on a highly skilled workforce including saw doctors, timber machinists, wood technologists, and CNC programmers. Production supervisors and timber graders play crucial roles in maintaining quality and efficiency. The sector actively collaborates with training organisations to develop and maintain these essential skills.

Manufacturing Locations

Manufacturing facilities are strategically positioned throughout Queensland, with significant concentrations in regional areas close to timber resources. Major processing centres exist in areas such as Fraser Coast, Wide Bay Burnett, and South East Queensland, often focused on particular timber species or production techniques.

Sustainable Practices

Sustainability has become increasingly important in the sector. Manufacturers are implementing sustainable timber sourcing practices, energy-efficient processes, and waste reduction programs. Chain of custody certification systems are becoming standard, reflecting both environmental concerns and market requirements.

The industry provides significant employment opportunities and contributes to Queensland's domestic production while supporting related sectors such as construction, furniture manufacturing, and building industries. This manufacturing network ranges from large-scale timber processors to specialised manufacturers, creating a diverse and resilient industry sector.

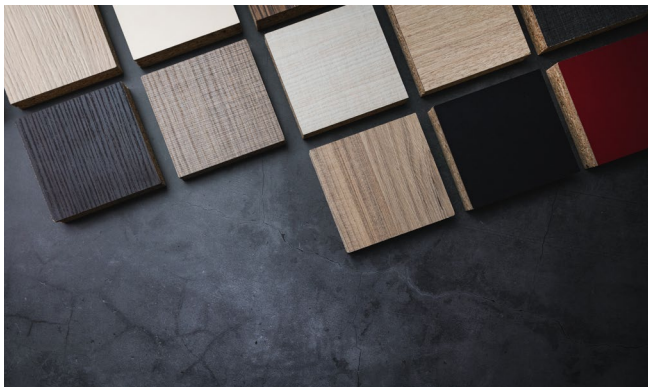
Example of a 'plain sawn' log to maximise use of material.

Laying up of processed timber to prepare for kiln drying process.

Waste as a by-product of the sawing process to be used in other industrial and consumer products.

Pre-nailed framing for the construction industry to prepare for onsite installation.

Composite panels being processed in a workshop using CNC equipment.



Finished laminated panels used in kitchen joinery and other construction applications.

Images in this document have been supplied by Manufacturing Skills Queensland and industry partners. Additional images have been sourced through Adobe Stock or generated using Adobe and Google AI software. Design layout by Liveworm, Queensland College of Art and Design, Griffith University.

Career Stories
Head of People, Culture and Safety

I work as the Head of People, Culture and Safety at a manufacturing company based in Brisbane. We specialise in timber processing and wood product manufacturing, specifically producing engineered wood solutions for residential and commercial construction applications. Our primary operations align with the timber and wood sub-industry within manufacturing.

Looking at industry trends, sustainable and environmentally friendly product manufacturing solutions are becoming increasingly important. While Year 10 students might not directly interact with our products, the industry is evolving with a strong commitment to Net Zero emissions targets and Sustainable Development Goals, particularly in sustainable forestry practices.

My role is strategic, combining elements of human resources, organisational culture, and workplace safety to foster a supportive and compliant work environment. A typical workday involves strategic planning, employee engagement, and safety oversight, including team meetings, culture development, policy oversight, safety checks, training, problem-solving, data analytics, and executive updates.

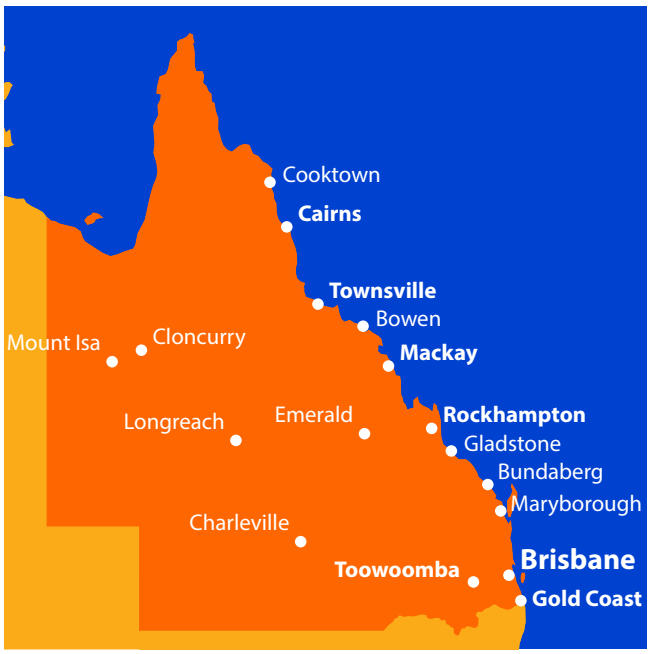
The pathway to my position combined tertiary qualifications (bachelor, masters) with experience in HR, organisational culture, change management and safety management, alongside leadership and strategy skills. Before entering manufacturing, I had only basic knowledge of the industry. What drew me was the interesting product lifecycle perspective and the diverse, complex nature of manufacturing, which I find motivating.

I brought global HR experience to the role, hoping to spearhead local industry leadership. Since joining, I've gained valuable insights into local manufacturing challenges and perspectives, particularly regarding timber processing and wood manufacturing capabilities for the construction industry. The most challenging aspect is acquiring and retaining female talent in our manufacturing and production department, but the ability to have an impact makes it rewarding.

To students considering a manufacturing career, I'd say: "Explore what interests you most about how things are made! Take every chance to learn about machines, building things, and problem-solving. If you can, visit factories or workshops and ask lots of questions. Keep up with maths and science, as they're important in manufacturing. Later, look into technical courses or apprenticeships; hands-on skills are valuable in this industry. And remember, teamwork and curiosity are key to solving real-world challenges in manufacturing!"

"My role is strategic, combining elements of human resources, organisational culture, and workplace safety to foster a supportive and compliant work environment."

Industry Map



FINDING INDUSTRY NEAR YOU

Want to see what Industry is around you? Here's how to do it on Google Maps!

Start by going to:

maps.google.com

Quick tip: Sign in if you want to save places for later!

Begin finding Pathways to Industry by typing what you're looking for using the knowledge you have, and include where you want to find it, for example:

"timber processing regional QLD"

For this specific industry here are some terms to try:

- Timber mill
- Timber processing
- Timber manufacturing/engineering
- Timber truss manufacturer
- Timber frame manufacturer
- Pallet and crate

Include "mill" or "processing" for primary operations

Use "manufacturing" for finished products

Try "fabrication" for custom products

Some general search tips:

- Always include both "QLD" and "Queensland" in separate searches
- Add your postcode or "near me" to find stuff nearby
- Moving around the map? Click "search this area" to find new places
- Want to see how big a place is? Switch to Satellite View!
- Use Street View to get a closer look
- Found something interesting? Save it to your lists

Don't forget to check regular Google Search too! Sometimes you'll find different results there.

EXTENDING YOUR INDUSTRY KNOWLEDGE ONLINE

Here are some useful web search queries to find out more about this industry:

- advanced wood processing
- timber modification technology
- engineered wood innovations
- automated grading systems
- wood composite advances
- precision cutting technology
- wood preservation methods
- sustainable processing
- wood drying innovation
- surface finishing technology

EXPLORING INDUSTRY PATHWAYS ONLINE

Search for manufacturing jobs in Queensland using platforms like Seek, Indeed, and LinkedIn. Filter results by location and experience level to find opportunities ranging from production line work to engineering roles. Use specific keywords like "advanced manufacturing careers" to discover industry trends and requirements.

seek.com.au

au.indeed.com

linkedin.com

Industry Pathways

In Queensland, an industry training pathway blends secondary school education with hands-on vocational training, allowing students to gain practical skills and qualifications while completing their high school certificate.

These pathways often involve partnerships between schools, TAFEs (Technical and Further Education), and industry, providing students with apprenticeships, traineeships, or work experience in their chosen field.

This combination of classroom learning, and real-world experience gives students a head start in their careers and helps them transition smoothly into the workforce or further tertiary education.

What does an industry training pathway look like?

The four education and training levels serve as a general guide and represent the most common educational and/or entry-level requirements for these roles.

LEVEL 1

Typically requires skills equivalent to the completion of Year 10, a Senior Secondary Certificate of Education, or a Certificate I or II. Australian Apprenticeships may be available at this level.

LEVEL 2

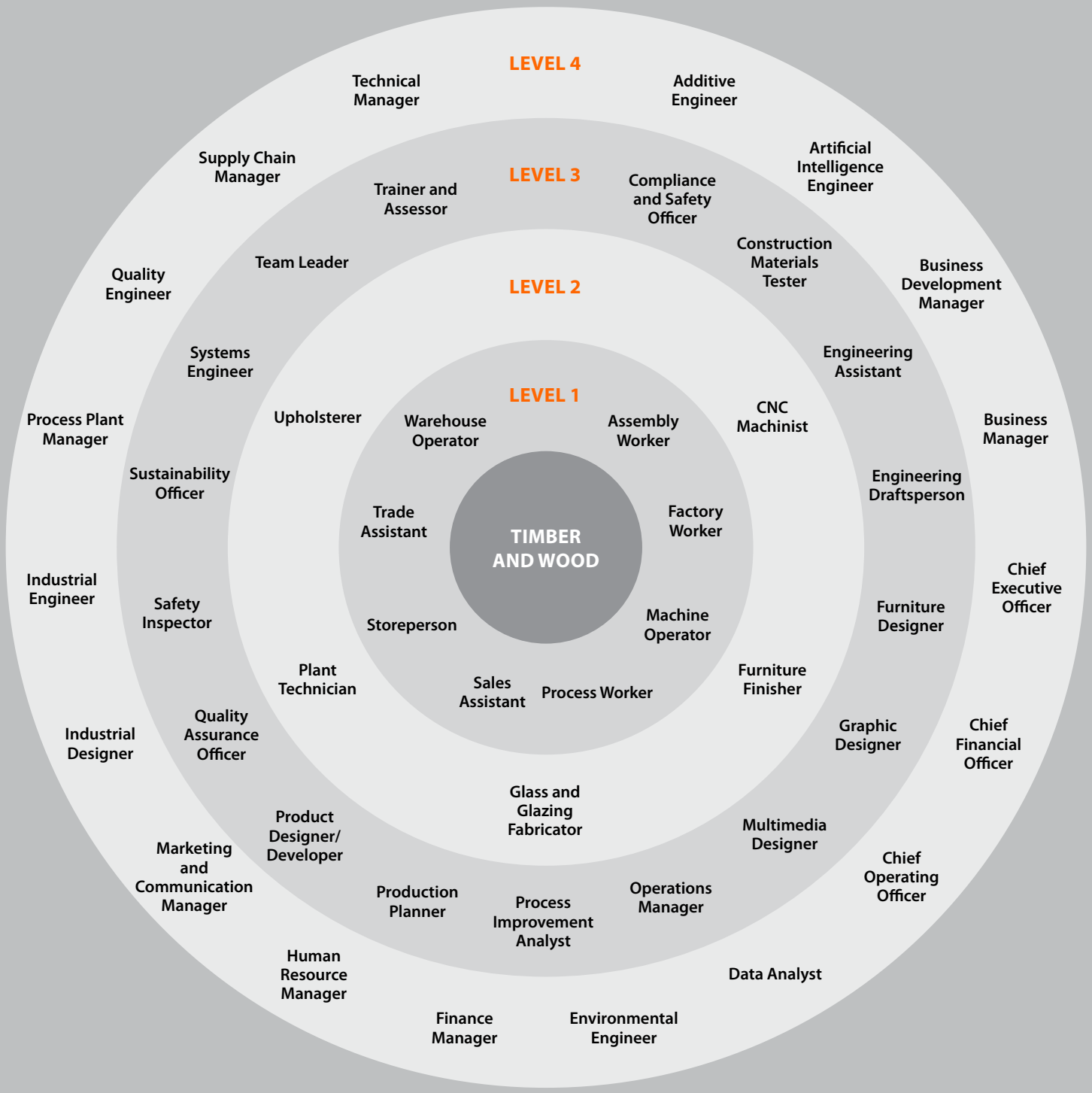
Typically requires skills equivalent to a Certificate III or IV, or at least three years of relevant experience. Australian Apprenticeships may also be available at this level.

LEVEL 3

Typically demands a level of expertise equivalent to a Diploma or Advanced Diploma, often gained through TAFEs or Registered Training Organisations. Some universities also offer programs at this level.

LEVEL 4

Typically requires qualifications equivalent to a Bachelor's Degree or higher. This level of education is usually pursued at a university.



CORE INDUSTRIES

- Aerospace and Defence
- Chemicals, Hydrocarbons and Refining
- Food and Beverage
- Furniture and Other Products
- Meat and Seafood Processing
- General Manufacturing and Engineering
- Pharmaceutical and Medical Technology
- Polymers, Plastic and Rubber
- Printing and Graphic Arts
- Pulp, Paper and Packaging
- Renewables
- Textiles, Clothing and Footwear
- Timber and Wood
- Transport Equipment and Machinery

SUPPORTING INDUSTRIES

- Laboratory Operations
- Process Plant Operations
- Sustainable Operations

For further information, visit:

manufacturingmatters.com.au/careers

Industry Pathways - Leading Teams

Leading a team is about more than just managing tasks; it's about inspiring, motivating, and guiding a group of individuals towards a shared goal. A good team leader fosters a collaborative and supportive environment where everyone feels valued and empowered to contribute their best.

ROLE OF A TEAM LEADER

- Setting a Vision: Clearly define goals and objectives, and communicate them effectively to the team.
- Providing Direction: Guide the team's efforts, ensuring everyone understands their roles and responsibilities.
- Motivating and Inspiring: Encourage and support team members, recognising their achievements and fostering a positive work environment.
- Facilitating Collaboration: Promote teamwork, open communication, and constructive conflict resolution.
- Delegating Effectively: Assign tasks based on individual strengths and skills, empowering team members to take ownership.
- Monitoring Progress: Track the team's performance, providing feedback and making adjustments as needed.
- Developing Individuals: Support the growth and development of team members through mentoring, coaching, and training opportunities.

QUALITIES AND ATTRIBUTES OF A GOOD TEAM LEADER

- Strong Communication Skills: Clearly and effectively convey information, actively listen to team members, and provide constructive feedback.
- Integrity and Trustworthiness: Act with honesty and ethical principles, building trust and respect among team members.
- Emotional Intelligence: Understand and manage their own emotions and those of others, fostering empathy and positive relationships.
- Decisiveness: Make informed and timely decisions, even in challenging situations.
- Accountability: Take responsibility for the team's performance, both successes and failures.
- Problem-Solving Skills: Identify and analyse challenges, develop creative solutions, and guide the team through obstacles.
- Adaptability: Adjust to changing circumstances, embrace new ideas, and remain flexible in their approach.

JOB TITLE

Industry roles where qualities of leadership, effective communication and specialist knowledge are valued.

- Chief Executive Officer
- Chief Operating Officer
- Chief Financial Officer
- Process Plant Manager
- Technical Manager
- Supply Chain Manager
- Human Resource Manager
- Finance Manager
- Marketing and Communication Manager
- Business Manager
- Business Development Manager
- Operations Manager
- Team Leader
- Production Planner
- Safety Inspector

For further information, visit:

manufacturingmatters.com.au/careers/

Industry Pathways - On the Tools

Jobs involving hands-on work with technology are increasingly common, blending technical expertise with manual dexterity and problem-solving skills. These roles often involve building, repairing, installing, or maintaining technological equipment and systems.

QUALITIES NEEDED FOR THESE ROLES:

- Manual Dexterity: Skilled and precise use of hands and tools to manipulate small components and perform intricate tasks.
- Technical Knowledge: Understanding of the technology they work with, including its principles, operation, and maintenance.
- Problem-Solving Skills: Ability to diagnose issues, identify solutions, and apply critical thinking to resolve technical challenges.
- Attention to Detail: Accuracy and precision in their work, ensuring that equipment is assembled and functioning correctly.
- Patience and Persistence: Ability to work through complex tasks methodically and remain focused, even when facing setbacks.
- Communication Skills: Clearly explain technical issues to colleagues or clients and work effectively in a team.
- Physical Stamina: May involve lifting, bending, and standing for extended periods.
- Up-to-date Knowledge: A willingness to learn and stay current with rapidly evolving technologies.
- Adaptability: Adjust to changing circumstances, embrace new ideas, and remain flexible in their approach.

JOB TITLE

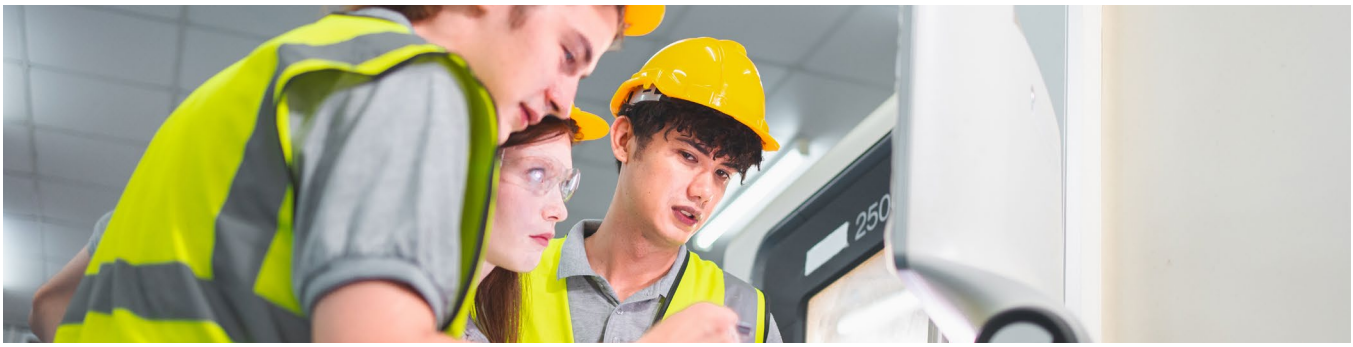
Industry roles that can be considered 'on the tools' which requires different levels of training and specialist knowledge.

- Industrial Engineer
- Industrial Designer
- Quality Engineer
- Artificial Intelligence Engineer
- Additive Engineer
- Data Analyst
- Environmental Engineer
- Sustainability Officer
- Process Improvement Analyst
- Quality Assurance Officer
- Product Designer/Developer
- Engineering Draftsperson
- Engineering Assistant
- Furniture Designer
- Construction Materials Tester
- Systems Engineer
- Compliance and Safety Officer
- Graphic Designer
- Trainer and Assessor
- Multimedia Designer
- CNC Machinist
- Glass and Glazing Fabricator
- Upholsterer
- Plant Technician
- Process Worker
- Factory Worker
- Storeperson
- Warehouse Operator
- Trade Assistant
- Sales Assistant
- Machine Operator
- Assembly Worker

For further information, visit:

manufacturingmatters.com.au/careers/

Future Industry



FUTURE TRENDS AND INNOVATION

The future of Queensland's Timber and Wood manufacturing industry aligns with Australia's national economic priorities, particularly in sustainable manufacturing, digital transformation, and advanced materials development. These changes support the Future Made in Australia plan's goals of strengthening sovereign manufacturing capabilities and developing advanced skills.

KEY TRENDS INCLUDE:

Digital Manufacturing: Integration of artificial intelligence and digital twin technology in timber processing, enabling precise cutting patterns and reducing waste. This includes advanced scanning systems that optimise log breakdown and improve yield recovery.

Engineered Wood Products: Development of new composite materials and mass timber products for construction, aligned with the growing demand for sustainable building materials. This includes cross-laminated timber (CLT) and glue-laminated timber (Glulam) manufacturing capabilities.

Advanced Processing Technologies: Implementation of robotics and automated handling systems in timber processing, supported by industry-specific digital skills training programs.

Sustainable Manufacturing: Adoption of closed-loop manufacturing processes, including biomass energy generation from wood waste and water recycling systems.

FUTURE ROLES IN THE INDUSTRY

Leadership Roles:

- Mass Timber Production Manager: Oversees engineered wood manufacturing
- Digital Operations Director: Leads smart factory implementation
- Sustainability Manager: Coordinates circular economy initiatives
- Skills Development Leader: Implements digital manufacturing training

Technical Roles:

- Timber Technology Specialist: Maintains advanced processing equipment
- Digital Systems Technician: Programs automated sawmilling systems
- Advanced Materials Specialist: Develops new engineered wood products
- Robotics Maintenance Engineer: Services automated handling systems
- Industry 4.0 Trainer: Supports workforce digital transition

FUTURE SKILLS FOCUS

Emerging skills requirements across all levels include:

- Digital literacy and data analysis
- Automated systems operation
- Sustainable manufacturing practices
- Advanced material handling
- Cross-disciplinary communication

These emerging roles emphasise the integration of digital technologies and sustainable manufacturing processes. The industry offers new career pathways through technical training programs and micro-credentials, with particular focus on developing digital skills in traditional timber processing roles.

Other Resources

For further information, visit:

MANUFACTURING MATTERS

manufacturingmatters.com.au

MANUFACTURING SKILLS QUEENSLAND

msq.org.au

QUEENSLAND STATE GOVERNMENT

Department of State Development, Infrastructure and Planning

statedevelopment.qld.gov.au/industry/critical-industry-support/industry-roadmaps

Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

nrmmrrd.qld.gov.au/manufacturing

BUSINESS QUEENSLAND

business.qld.gov.au/industries

REGIONAL DEVELOPMENT AUSTRALIA

rdabrisbane.org.au

INDUSTRY ASSOCIATIONS

Australian Forest Products Associatoin

ausfpa.com.au

Forest and Timber Industry Queensland

business.qld.gov.au

Timber Queensland

timberqueensland.com.au

Other Core Industries to Discover

Check out these other core manufacturing industries to understand the similarities and differences between them!

M1 Aerospace and Defence
M2 Chemicals, Hydrocarbons and Refining
M3 Food and Beverage
M4 Furniture and Other Products
M5 Meat and Seafood Processing
M6 General Manufacturing and Engineering
M7 Pharmaceutical and Medical Technology
M8 Polymers, Plastic and Rubber
M9 Printing and Graphic Arts
M10 Pulp, Paper and Packaging
M11 Renewables
M12 Textiles, Clothing and Footwear
M13 Timber and Wood
M14 Transport Equipment and Machinery