

Queensland **FOREST & TIMBER** industry

An overview





INTRODUCTION

The Queensland forest and timber industry makes an important contribution to the state's economy and is a significant source of employment in many regional communities. The industry has a proud history in Queensland, and continues to evolve and innovate to meet changing market demands.

Queensland's forest estate is characterised by large, highly productive softwood plantations and extensive areas of relatively slow growing native forest comprising both hardwoods and cypress pine. The majority of the state's productive forests are certified under internationally recognised forest management schemes that verify the sustainability of their management.

Queensland forests support an extensive regionally based processing sector that produces a broad range of timber products. These facilities are often the lifeblood of rural communities, generating essential employment and economic activity that sustains individual towns.

Most of Queensland's timber is used to produce building products, with the domestic housing market consuming the greatest quantity of timber products.

The state's diverse forest estate also contributes to a broad range of unique products, such as naturally termite resistant cypress pine, durable hardwoods and appearance grade Araucaria (hoop pine).

Industry recognises the importance of innovation to maintain and grow market share – new termite treatments are increasingly making Queensland products more competitive in the market, and engineered wood products and associated timber building systems are increasing flexibility, reducing building times and improving building quality.

Further development of engineered wood products and building systems, combined with recent regulatory changes, offer the industry an opportunity to better compete with alternative building products such as steel and concrete in multi residential, commercial and industrial markets.

Investment in forest and timber research continues to be strong, with both the Queensland Government and universities possessing unique and wide ranging capabilities. Strong links with industry ensure this investment is focused on delivering the new and innovative solutions needed to sustain business and economic success.

Contents

Introduction	1
Contribution to Queensland	3
Employment	4
Economic value	8
Forest resources	9
State-owned native forests	12
Private native forests	12
Plantations	14
Timber processing and products	15
Timber processing	15
Timber products	17
Opportunities	19
Innovation	19
Carbon and bioenergy	21
Research	22
Looking to the future	24

Thank you to Timber Queensland, case study contributors (Hyne Timber, Private Forestry Services Queensland, Altus Renewables and HQPlantations), suppliers of selected images (Hyne Timber, Pryda, Kennedy's and Austral Plywoods) and industry stakeholders for their assistance in the production of this document.

CS5288 05/16

© State of Queensland, 2016.

The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 3.0 Australia (CC BY) licence.



Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms.

You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

For more information on this licence, visit <http://creativecommons.org/licenses/by/3.0/au/deed.en>





CONTRIBUTION TO QUEENSLAND

The Queensland forest and timber industry has an estimated annual turnover of around \$3.2 billion and directly employs around 10 000 people. The forest and timber industry provides a significant contribution to the Queensland economy.

The industry is diverse, with activity and investment occurring across the value chain—from forest growing through to the manufacture and sale of new and innovative timber products.

The forest and timber industry generates and supports a range of economic activity in the state. The industry is defined in this publication by three main sectors for which reliable data is readily available:

- **forestry**—including forest-growing activities, forest harvesting (logging) and forestry support services
- **wood product manufacturing**—including sawmilling, woodchipping, timber resawing and dressing activities, and production of plywood, veneer, panel boards, laminated timber products, doors, structural frames, roof trusses, wooden containers, engineered wood products, pallets and packing cases
- **pulp and paper manufacturing**—including production of pulp, paper, paperboard, recycled paper products, converted paper products, corrugated paperboard, paper bags, paper stationery and sanitary paper products.



Employment

In 2014–2015, the Queensland forest and timber industry directly employed an estimated 9540 people across the three main sectors. Queensland accounts for approximately 15% of all employment in the Australian forest and timber industry (estimated to be 64 500 people in 2014–2015).

Industry employment

Sector (2014–2015)	Queensland (number of employees)	Australia (number of employees)
Forestry	790	8 400
Wood product manufacturing	7 050	42 900
Pulp and paper manufacturing	1 700	13 200
Total	9 540	64 500

Source: Australian Bureau of Statistics 2015, *Labour force, Australia, detailed, quarterly, category 6291.0.55.003*.

The wood product manufacturing sector dominates industry employment activity, accounting for around 75% of total employment in the Queensland industry in 2014–2015. This reflects the complex and diverse scope of activities in this sector, which includes primary processing of sawlogs in sawmills and other primary processing plants, through to timber fabrication activities in major population centres.

The pulp and paper sector accounts for around 18% of industry employment. There is a range of paper recycling facilities located across the state and two major processors located near Brisbane that manufacture tissue, sanitary products and corrugated board products for packaging and building applications. Queensland's paper product manufacturing sector is not integrally linked to the state's forest resources because of its reliance on recycled and imported inputs.

Forestry is the smallest employing sector, accounting for 8% of total employment in the Queensland industry. This reflects the low intensity and long timeframes of forest-growing activities. Employment in the forestry sector has decreased by over 50% since 2012, when it was around 2000 employees.

A significant component of this reduction is due to a decrease in new plantation investment after the global financial crisis, which saw the failure of the plantation managed investment scheme sector throughout Australia.¹

Timber wholesaling and wooden furniture manufacturing are also important sectors of the Queensland forest and timber industry. Available data from the 2011 Australian census indicates that the timber wholesaling sector employed just over 1000 people and the wooden furniture manufacturing sector around 2000 people.² As timely employment information is not available for these sectors, they are not included in the direct industry employee estimate of 9540. It is likely that employment in the wooden furniture sector in Queensland has decreased over recent years due to an increase in imported furniture meeting local demand.

Just over one-quarter of Queensland's estimated 9540 employees are within the forestry sector and the initial processing subsectors of the wood product manufacturing sector. The Department of Agriculture and Fisheries (DAF) has estimated that approximately one-third of these employees rely on native forest resources, with two-thirds using softwood resources from plantations.³

The three-quarters of employees outside the forestry and initial processing subsectors include the remainder of the wood product manufacturing sector and the pulp and paper sectors. Although softwood is the main resource used, employment in these sectors cannot be directly attributed to a particular resource type.

Key industry centres

The key centres of forest and timber industry activity in Queensland are the Gympie, Fraser Coast, South Burnett, North Burnett and Maranoa local government areas.

The forest and timber industry in the **Gympie** local government area employs 572 people (3.55% of local employment). A diverse range of forest resources are located in the area, including state-owned and private native forests, extensive softwood plantations and a forestry nursery. The largest Araucaria processor in the state, as well as softwood and hardwood processing facilities and two wood panel plants are also located in the Gympie region to utilise these forest resources. The key towns are Gympie, Imbil and Toolara. DAF and HQPlantations both have multiple offices in the area to manage native forest and plantation operations.

1 Commonwealth of Australia 2016, *The Senate Economics References Committee: agribusiness managed investment schemes—bitter harvest*, March 2016.

2 Australian Bureau of Statistics 2011, *Australian census of population and housing*, August 2011.

3 Gavran, M, Burns, K, Hug, B, Frakes, I & Gupta, M 2014, *ABARES national wood processing survey: 2012–2013*, ABARES research report 14.6, and various unpublished socioeconomic surveys.



In the **Fraser Coast** local government area, 516 people are employed by the industry (1.75% of local employment). State-owned and private native forests, and extensive softwood plantations are located in the area. Queensland's largest softwood processor is located at Tuan to utilise the extensive softwood plantation resources, along with softwood and hardwood processing facilities, a bioenergy plant, two pole facilities and harvesting and haulage contractors. The key towns are Maryborough, Tuan and Tiaro. Both DAF and HQPlantations have offices in the area.

The industry in the **South Burnett** local government area employs 126 people (1.38% of local employment). The industry utilises the state-owned and private native forests, and some softwood plantations established in this area. Queensland's largest hardwood processor is located in the area, as well as other hardwood processing facilities. The key towns are Wondai, Kingaroy and Blackbutt, and there are DAF and HQPlantations work centres in the area.

In the **North Burnett** local government area, 57 people are employed by the industry (1.34% of local employment). There are state-owned and private native forests, and some softwood plantations, as well as important hardwood processing facilities located in the North Burnett area. Key towns include Mundubbera, Eidsvold, Gayndah and Monto, and there are DAF offices in the area.

Industry in the **Maranoa** local government area employs 80 people (1.28% of local employment). The industry in the Maranoa area includes state-owned hardwood and cypress pine native forests and cypress pine processing. Key towns are Roma, Injune and Mitchell, and there are DAF offices in the area.

The industry is also an important employer in North Queensland, with around 500 employees in the Mackay, Atherton Tablelands, Cairns and Cassowary Coast local government areas. The majority of these employees are in the wood product manufacturing sector and a smaller proportion in the forestry sector.

The statistics presented in this publication were largely collated from the most recent Australian Bureau of Statistics (ABS), Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) and BIS Shrapnel reports.

The Australian and New Zealand Standard Industrial Classification (ANZSIC) system is generally used for compiling and reporting industry statistics. ANZSIC categories for sectors reported in this publication include:

Forestry

- ANZSIC 03 Forestry and logging (encompasses '301 Forestry' and '302 Logging')
- ANZSIC 051 Forestry support services (where available)

Wood product manufacturing

- ANZSIC 14 Wood product manufacturing (encompasses '141 Log sawmilling and timber dressing' and '149 Other wood product manufacturing')

Pulp and paper manufacturing

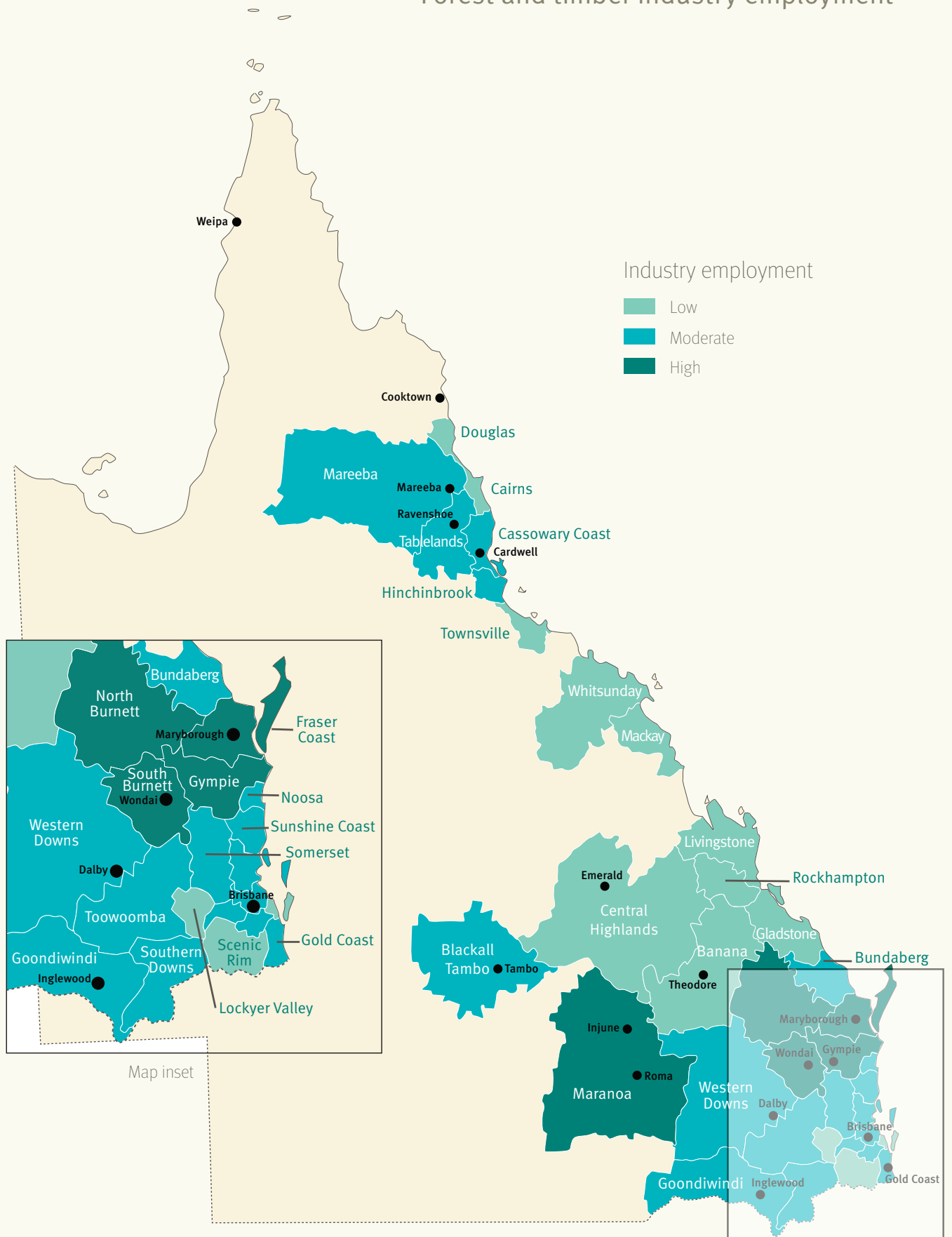
- ANZSIC 15 Pulp, paper and converted paper product manufacturing (encompasses '151 Pulp, paper and paperboard manufacturing' and '152 Converted paper product manufacturing').

Between 2012 and 2016, ABS reduced the level of detail reported for the manufacturing sector, including sales data and employment statistics. As a result, data presented in this publication reflects a more narrow definition of the Queensland forest and timber industry when compared to previous Queensland Government publications, which resulted in some significant differences in key statistics.





Forest and timber industry employment



Source: Australian Bureau of Statistics 2011, *Australian census of population and housing*, August 2011 (proportion of local government area employment within the forest and timber industry).

Economic value

The industry recorded direct turnover of \$3.2 billion in 2013–2014 and accounted for an estimated 15% of the total turnover of the Australian forest industry. The wood product manufacturing sector accounted for about 60% of the total turnover, followed by the pulp and paper manufacturing sector with 30% of total industry turnover.

Industry turnover

Sector (2013–2014)	Queensland sales (\$ million)	Australia sales (\$ million)
Forestry	164	1 789
Wood product manufacturing	2 030	10 266
Pulp and paper manufacturing	1 004	9 788
Total	3 198	21 843

Source: Australian Bureau of Statistics 2015, *Australian manufacturing industry 2013–14, category 8155.o*.

Around 70% of the turnover of the Queensland industry cannot be directly attributed to either softwood or hardwood timber resources. However, it is likely that most of this is made up from the use of softwood resources in the manufacture of products such as panels, plywood, trusses, frames, paper and cardboard.

Just over 30% of the Queensland industry turnover can be attributed to a specific resource type, and this captures activities in the forest-growing sector and the sawn timber processing subsector of the broader wood product manufacturing sector. Of this 30%, one-third can be attributed to sales of hardwood products (generally sourced from native forests) and two-thirds are related to softwood products (sourced from plantations).

Demand for Queensland timber is strongly tied to activity in the housing and construction sector. There has been record residential building activity in 2014–2015, which has seen a high demand for building products. This high demand is expected to flatten in Queensland as the housing sector moves into an oversupply by 2018.⁴

Queensland is a net importer of wood products, producing around 70% of the products consumed. The average consumption of sawn timber in Queensland over the 10 years to 2014 was 1 184 300 cubic metres per annum, with the Queensland industry producing an average of 843 800 cubic metres per annum over the same period.⁵

⁴ BIS Shrapnel 2015, *Building in Australia 2015–2030*.

⁵ BIS Shrapnel 2015, *Sawn timber in Australia 2015–2029*.

Queensland imported an estimated \$693 million of forest and wood products in 2014–2015—an increase of 14% from 2010–2011. In 2014–2015, the majority of Queensland's imports were produced by the wood product and pulp and paper manufacturing sectors, reflecting the high demand for these products in Queensland.

Queensland industry imports

Sector	Imports 2014–2015 (\$ million)	Imports 2010–2011 (\$ million)
Forestry	13	9
Wood product manufacturing	380	292
Pulp and paper manufacturing	300	300
Total	693	601

Source: Australian Bureau of Statistics 2015, *Foreign trade, Australia, unpublished data*.

Exports of wood and timber products from Queensland totalled around \$160 million in 2014–2015. Exports of products produced by the wood product manufacturing sector include both high-quality, appearance-grade hardwood and Araucaria products, as well as lower grade, non-structural material that is difficult to sell domestically. The majority of these exports are to meet demand in China, Japan, Taiwan and New Zealand.

Export of pulp and paper products include a range of tissue, sanitary and paper products, predominantly to meet demand in China and New Zealand.

The Queensland forest and timber industry is exposed to fierce competition from both interstate and imported processed and semi-processed products, particularly from producers in Asia, New Zealand and Europe. Continued innovation in the industry will be important in responding to these challenges.

Queensland industry exports

Sector	Exports 2014–2015 (A\$ million)	Exports 2010–2011 (A\$ million)
Forestry	7	15
Wood product manufacturing	80	78
Pulp and paper manufacturing	73	77
Total	160	170

Source: Australian Bureau Statistics 2015, *Trade data—exports—industry 1994 to 2015 edition, Australia, unpublished data, category 5368.o*.



FOREST RESOURCES

Queensland has the largest forested area of any Australian state or territory, with around 52 million hectares of native forest, of which around 80% is owned by the state. The most productive forests are generally located in the southern part of the state and along a narrow strip east of the Great Dividing Range, where rainfall and soil conditions are more favourable than the dryer conditions in the western region of Queensland. Queensland's native forests are generally slower growing and less productive when compared to southern temperate forests.

The Queensland plantation estate comprises around 216 000 hectares—the majority owned and managed by private company, HQPlantations. There are also smaller, scattered areas operated by other private growers. These are generally located on Queensland's coastal strip, with the majority in south-east Queensland.

Native forests supply about 18% of Queensland's domestically sourced timber, of which approximately one-third is cypress pine and two-thirds is native hardwood. The remaining 82% of Queensland's domestically sourced timber is obtained from plantations managed by HQPlantations.

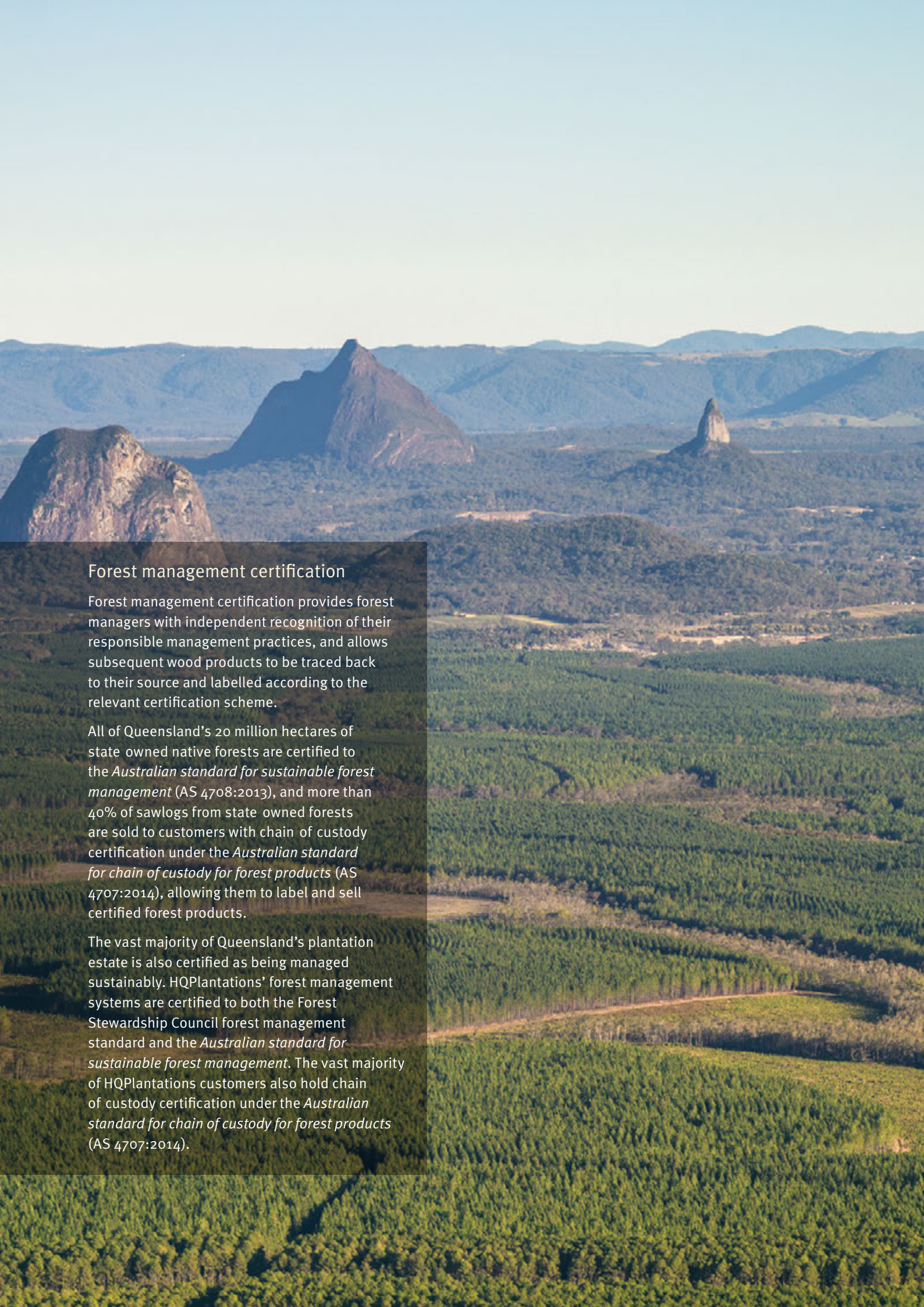
Queensland log supply (2013–2014)

	Queensland (m ³)
Softwood plantation sawlog	1 388 000
Softwood plantation pulpllog	270 000
Native hardwood sawlog	263 000
Native cypress pine sawlog	100 000
Total	2 021 000

Source: ABARES 2015, *Australian forest and wood products statistics, March and June quarters 2015*.

Queensland is a modest contributor of hardwood and softwood sawlogs to the Australian timber market. In 2013–2014, Queensland accounted for 13% of Australia's total hardwood sawlog production and 15% of softwood sawlog production. Queensland is the largest producer of native cypress pine sawlogs, accounting for almost three-quarters of Australia's production in 2013–2014.

Over 90% of Queensland's log production is sourced from forests certified to international forest management standards, which provides independent recognition of their responsible management practices.

An aerial photograph of a vast forest landscape. In the foreground, there are dense, green forest plantations with visible rows of trees. The middle ground shows a mix of natural forest and some cleared areas. In the background, several large, rugged rock formations (boulders) rise above the forest, set against a backdrop of rolling hills and a clear blue sky.

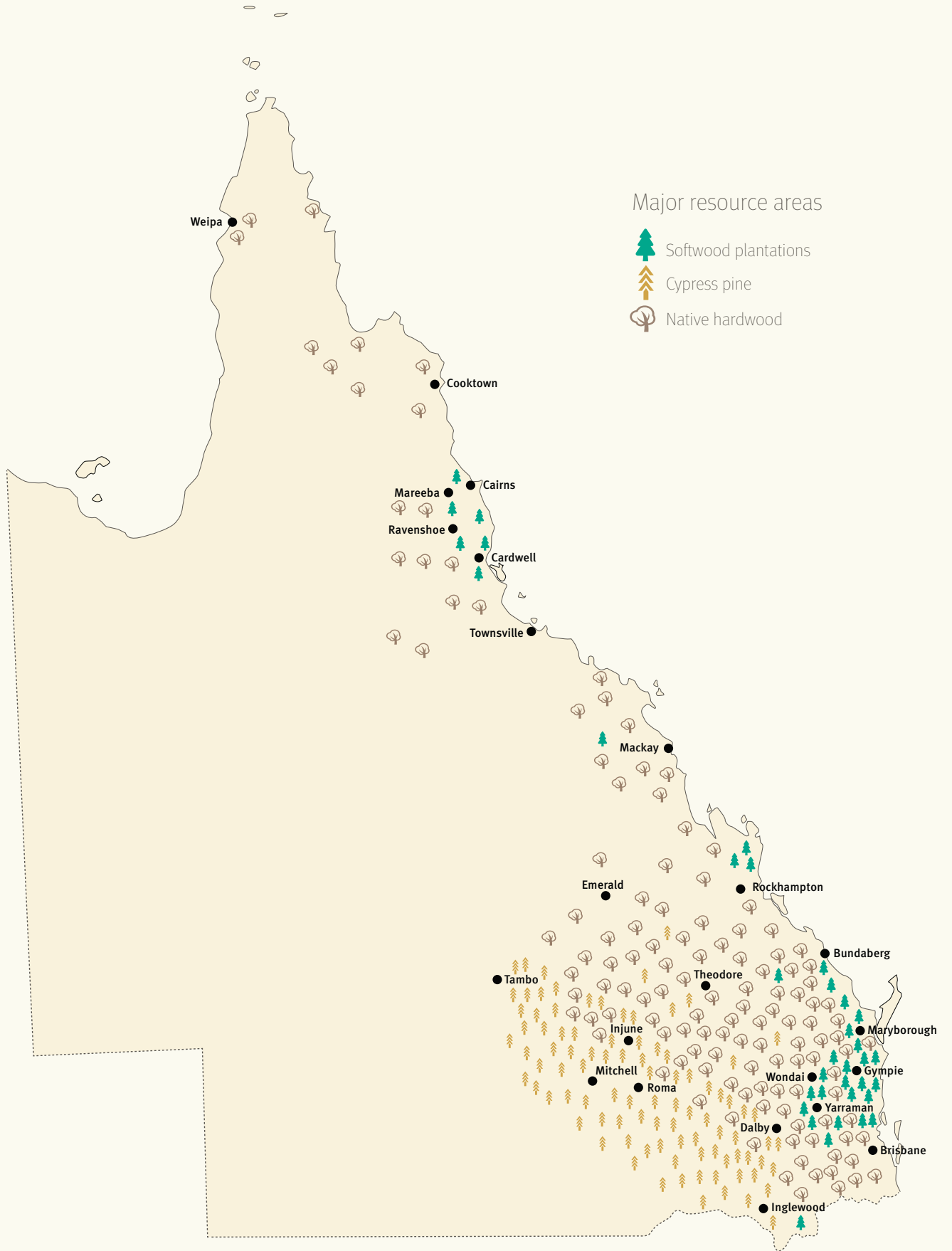
Forest management certification

Forest management certification provides forest managers with independent recognition of their responsible management practices, and allows subsequent wood products to be traced back to their source and labelled according to the relevant certification scheme.

All of Queensland's 20 million hectares of state owned native forests are certified to the *Australian standard for sustainable forest management (AS 4708:2013)*, and more than 40% of sawlogs from state owned forests are sold to customers with chain of custody certification under the *Australian standard for chain of custody for forest products (AS 4707:2014)*, allowing them to label and sell certified forest products.

The vast majority of Queensland's plantation estate is also certified as being managed sustainably. HQPlantations' forest management systems are certified to both the Forest Stewardship Council forest management standard and the *Australian standard for sustainable forest management*. The vast majority of HQPlantations customers also hold chain of custody certification under the *Australian standard for chain of custody for forest products (AS 4707:2014)*.

Forest resources



Forest Products, DAF

Forest Products is a commercially focused unit within DAF that manages the sale of state owned forest products (and quarry material). The unit employs around 100 staff located at more than 20 offices across Queensland.

Forest Products is committed to the responsible management of state owned native forest resources and its forest management system is certified to the *Australian standard for sustainable forest management (AS 4708:2013)*.

The unit oversees the selective harvesting of around 30 000 hectares of state owned native forests each year. The majority of activity is in southern Queensland, including the central south west of the state, with around 80% of wood supply sourced from state forests.

Forest Products reported total sales of around 280 000 cubic metres of log timber in 2014–2015 comprising around 160 000 cubic metres of hardwood and 120 000 cubic metres of cypress pine. Log timber includes hardwood and cypress pine sawlogs, hardwood poles and piles, landscaping and fencing timbers, large section bridge timbers and mining timber.

Around 40% of the total resource used by Queensland's native hardwood processing sector is supplied by Forest Products. Spotted gum represents approximately 70% of the hardwood log timber supplied from state owned native forests each year, and is used to produce sawn timber, poles, piles and girders. Other species supplied in moderate volumes include broadleaved red ironbark, grey ironbark and blackbutt. Forest Products also sells small quantities of sandalwood, which is a small native tree valued for its aromatic heartwood and oil content.

Forest Products is also the dominant supplier of cypress pine in Queensland, accounting for around 95% of total cypress log timber sourced from Queensland each year, and around 72% of the Australian supply.⁶ Cypress pine is a slow growing native species that is distributed extensively west of the Great Dividing Range. White cypress is the only species used by the timber industry. It is a relatively unique timber that can be utilised for a range of external applications due to its natural termite resistance.

⁶ Gavran, M, Burns, K, Hug, B, Frakes, I & Gupta, M 2014, *ABARES national wood processing survey: 2012–2013*, ABARES research report 14.6.

State-owned native forests

There are approximately 20 million hectares of state-owned native forests available for commercial timber production in Queensland. These forests are established on a range of land tenures, including state forests, timber reserves, extensive areas of leasehold land and some areas of freehold land where the state has retained ownership of the forest products.

State forests comprise approximately 3 million hectares of Queensland's state-owned native forests, and these are generally more productive than native forests on other state-owned tenures.

State-owned native forests are an important supply of log timber for Queensland's native hardwood and cypress processing sectors.

Private native forests

The largest concentration of commercially important native forests located on privately owned land is in south-east Queensland, where over 1 million hectares of native forests contain commercial timber species. These forests are dominated by hardwood species that include the dry forest species of spotted gum, ironbark, white mahogany and bloodwood, and the wet forest species of blackbutt, brush box, flooded gum and Gympie messmate.

Private native forests make a significant contribution to Queensland's forest and timber industry, supplying an estimated 60% of the domestically produced hardwood resource. Many regional sawmills are reliant, or at least partially reliant, on the timber produced from these forests.

Many productive private native forests are located on large properties where cattle grazing is the major focus of the enterprise. However, well-managed private native forests can generate additional income for landholders and beneficial land management and environmental outcomes in conjunction with productive grazing systems.



DAF Forest Products staff planning a selective harvesting operation



Thompson property

The Thompson family operate a 1500 hectare mixed grazing and private native forestry property near Maryborough in south east Queensland.

Approximately half the property has native forest of value for timber production the lower flats with more fertile soil on the property are principally managed for beef cattle grazing.

Since 1912, the property had been mostly used for grazing, with small amounts of commercial timber harvesting conducted on an ad hoc basis. In 1946, an adjacent 358 hectares of forested land was acquired specifically for timber production, formalising the family's intention to manage their property for both forestry and cattle grazing.

Tight economic conditions in the early 1950s saw high volumes of timber harvesting. The regrowth was actively managed and thinned in the 1960s to around 150 trees per hectare. Since this time, these healthy, vigorous trees have grown at a highly productive rate.

Each year, around 500 cubic metres of timber is harvested from the property following a cutting cycle of around 15 years. During harvesting, trees are assessed for health, vigour and economic value, and only trees that have reached their maximum commercial potential are removed.

Stocking rates and cattle exclusion ensure timber production can occur as part of the property's broader grazing management activities. The property provides a working example of a successful combined grazing and private native forestry enterprise.

Mark Thompson with the 'king tree' on the family property near Maryborough (photograph courtesy of Private Forestry Services Queensland)



HQPlantations

HQPlantations holds a 99 year plantation licence issued by the Queensland Government in 2010 to manage, harvest and regrow plantation timber on state owned lands in Queensland – this represents the bulk of their estate.

HQPlantations manages a total area of 342 000 hectares, of which around 211 000 hectares are used (or planned) for softwood and hardwood plantations. The remaining areas are mostly ‘buffer areas’ of surrounding native forest.

HQPlantations plantation area

Plantation type	Number of hectares
Southern pine	148 000
Araucaria	43 000
Hardwood	15 000 (with 5000 planned)

Source: HQPlantations 2015, *Forest stewardship plan*.

HQPlantations’ southern pine plantations are principally located along the coastal lowland strip between Beerburrum and Maryborough, with modest plantation estates established in central Queensland, north Queensland and in small areas around Toowoomba and Stanthorpe.

HQPlantations’ southern pine plantations in north and central Queensland were severely impacted by cyclones Yasi (2011) and Marcia (2015), with around 20 000 hectares destroyed or significantly damaged. Major salvage operations were required in both areas; however, it is expected that plantation re establishment in both regions will be completed by 2022.

The southern pine plantations consist of Caribbean pine and an advanced hybrid of Caribbean and slash pine. This hybrid combines the best attributes of both trees, including slash pine’s straightness, wood density and tolerance of wetter sites, and Caribbean pine’s excellent growth rates, minimal branching and evenly textured wood. Southern pines are renowned for their higher strength in comparison to radiata pine, which is the main species deployed in plantations in southern Australia and New Zealand.

Araucaria cunninghamii, or hoop pine, is a native species to Queensland that is grown in plantations typically confined to the hilly coastal and subcoastal ranges of the Brisbane, Mary and Burnett river catchments. Smaller areas of Araucaria plantations have also been established in north Queensland on the Atherton Tableland.

HQPlantations manage a comparatively small plantation estate of native hardwood species that is relatively immature and yet to produce a final crop. Approximately 15 000 hectares of hardwood plantations are established on mostly privately owned land scattered across south east Queensland in the Brisbane, Burnett and Mary river catchments.

Plantations

The vast majority of Queensland’s plantation estate is managed by HQPlantations. Their estate is dominated by softwood species, which are managed on long-term rotations (between 25 and 40 years) to produce a range of structural and high-value timber products. HQPlantations also manage a smaller hardwood plantation estate.

In addition to the HQPlantations estate, Queensland also has a range of small areas of privately owned softwood and hardwood plantations, estimated to be about 5000 hectares in total. A proportion of the hardwood plantations were established by managed investment scheme companies in the mid 2000s, which totalled approximately 40 000 hectares at their peak. However, virtually all of these companies subsequently collapsed and most of the plantations established in Queensland failed. The majority of the land purchased to establish these plantations has now been sold and cleared, and is being used for a range of agricultural activities.



Logs from Cyclone Marcia ready for export at Port of Gladstone

TIMBER PROCESSING AND PRODUCTS

Timber processing

Timber processing involves the transformation of log timber and residual material into products required by the building and construction sectors and for a range of other applications. While plantation softwoods represent the greatest volume of wood processed in Queensland, hardwoods and cypress pine sourced from native forests remain an important component of the Queensland processing sector.

DAF estimates that there are almost 100 sawmills in Queensland, with around 60 of these processing more than 3000 cubic metres per annum.

A small number of high-capacity softwood sawmills in south-east Queensland process the largest volumes of timber, producing mostly structural sawn timber, as well as appearance-grade products such as lining boards, finished mouldings and joinery. These sawmills process over 100 000 cubic metres of log timber per annum, with the residues they generate (such as chips and shavings) supplying a range of additional wood product manufacturers or other applications such as landscaping products. Other smaller softwood processors supply the fencing and treated timber markets.

Numerous hardwood and cypress pine sawmills process timber sourced from native forests. These include several mid-sized sawmills and many small sawmills, with the vast majority being based in regional communities. These sawmills produce a range of high-quality structural and appearance-grade products. There are also a number of small, portable sawmills in operation throughout Queensland, largely processing native hardwood resources.

Harvesting Araucaria plantations



Hyne Timber

Hyne Timber is one of Australia’s largest producers of sawn timber products. Established by Richard Matthews Hyne in Maryborough in 1882, the company has world class manufacturing capacity and environmental standards, and is an industry leader in preservative treatments.

Hyne’s flagship manufacturing site in Queensland is the Tuan sawmill – Queensland’s largest sawmill that uses contemporary manufacturing technology to process approximately 750 000 cubic metres of Queensland grown plantation pine each year.

Since its commission in 1985, \$123 million has been invested in the Tuan sawmill to ensure high speed and high quality timber production. The sawmill processes approximately \$70 million worth of Queensland pine each year, and generates about \$12 million of activity in the Queensland freight industry. Hyne Timber has been run by six generations of the Hyne family, leading to a strong focus on family and employee values. In July 2015, Hyne Timber was recognised for its significant long term contribution to the Queensland economy when it was inducted into the Queensland Business Leaders Hall of Fame.

Number of Queensland sawmills

Resource	< 3000 m ³ per annum	>3000 m ³ per annum	>100 000 m ³ per annum	Total
Softwood	2	11	4	17
Hardwood	31	30	0	61
Cypress pine	3	13	0	16

The Queensland timber processing sector also includes three wood panel manufacturers, producing high-quality plywood, medium density fibreboard and particleboard. The plywood manufacturer, based in Brisbane, uses only high-quality pruned butt logs from Araucaria plantations in order to deliver a high-value, appearance-grade product to market. The other two processors, based in Gympie, use small softwood logs sourced directly from plantations and residues sourced from other softwood processors.

Queensland pulp and paper manufacturers produce tissue, sanitary, paper towel and paper products, as well as cardboard and corrugated cardboard products used for packaging by the building industry. The sector sources pulp and recycled material from Queensland and other states. Queensland Tissue Products and Visy are the major manufacturers—both companies are located in south-east Queensland, but they are not reliant on locally produced log timber.

Hyne Tuan sawmill near Maryborough
(photograph courtesy of Hyne Timber)



Timber products

Queensland produces a broad range of timber products that supply many local, national and international markets. Queensland also imports a wide variety of timber products from interstate and overseas to meet local demand.

Structural timber

Timber sourced from softwood plantations dominates the Queensland structural timber framing market. The main treated and dressed structural framing products are sourced from Queensland's southern pine plantations. Radiata pine from southern states and New Zealand, as well as European softwoods such as pine and fir, are also imported by the industry for a range of structural applications.

Cost-effective envelope treatment that covers the timber in preservative to protect structural pine framing from termites has been an important development undertaken by the Queensland industry in recent years, and this innovation demonstrates how the industry is responding to consumer demands. Development of these treatments, combined with long-term product guarantees, has allowed the industry to respond to competition from materials such as steel and alleviated consumer concerns about termite damage to homes.

Cypress pine structural timber also makes a contribution to the framing market, offering natural termite resistance. Important markets for these products are areas west of the Great Dividing Range, close to cypress pine growing regions. Significant volumes of Queensland cypress pine are sold in southern states for use as fence posts, fencing and house stumps.

Hardwood timber is used in limited structural framing applications—usually in situations requiring high strength and durability. Weather-exposed applications such as deck framing, posts, beams and joists are the most common uses of hardwood structural timber.

Timber fabrication

Queensland has around 70 timber fabrication plants, located in all major population centres to be near their markets. Most of these plants use plantation softwood to produce roof trusses, floor trusses and pre-nailed frames. Residential construction drives most of the demand for these products, with the timber needs of approximately 25 000 houses being supplied annually, consuming around 225 000 cubic metres of structural softwood framing.

There is growing demand for new and innovative fabricated timber products. This includes prefabricated systems (such as timber floor cassettes) that can be manufactured off-site and craned into position on building sites. Prefabrication of large timber members and systems (such as trusses and portal frames) for commercial and industrial architectural applications also offers a growth opportunity for a number of manufacturers.



Timber flooring cassette system used in construction (photograph courtesy of Pryda)

Appearance-grade timbers

The Queensland industry also produces a range of appearance-grade timbers—with flooring and decking being significant products for the hardwood sector. Queensland has Australia's largest supply of spotted gum, and this dominates the quality timber flooring market. Cypress pine is also used for a range of flooring and panelling applications.

Araucaria, with its fine grain and excellent workability, is predominately used for mouldings, joinery, cladding, panelling, flooring and furniture components. A high percentage of Araucaria product is finger-jointed to produce 'clears', free of knots and blemishes for mouldings and other milled products. For example, one Queensland company specialises in supplying treated Araucaria window and door frames, and balustrading systems.



Wood panels

Queensland's only plywood manufacturer specialises in producing premium-grade Araucaria plywood for appearance and marine applications. The product is also supplied to interstate and international markets, and has been used in the production of decorative panelling and furniture in projects such as the Brisbane Supreme and District Courts, Perth Arena and Melbourne Recital Centre.

Queensland also has a number of veneer specialists that rely on a combination of imported veneers and overseas manufacturers to process locally sourced timbers into veneers and plywood. The veneers are used in a range of cabinet and furniture applications.

Low-emission, medium-density fibreboard is also manufactured in Queensland and used in a range of applications, such as kitchen cabinets, benchtops, walls and panels, and furniture. Queensland's only particle board plant produces a diverse range of products, with flooring being an important product.

Heavy construction

Queensland is fortunate to have native forests that produce some of the world's strongest and most durable hardwoods. This timber is in demand domestically and internationally for heavy construction applications, including for poles, piles, sleepers, girders and commercial decking. Most species are naturally termite resistant, with red ironbark, spotted gum, turpentine and blackbutt also having a high rating for bushfire resistance.

Recycled timber

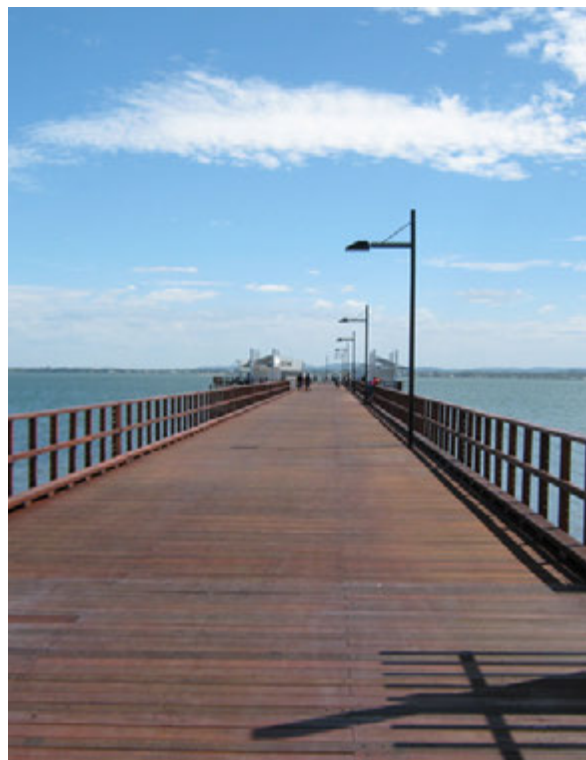
Queensland has two main recycled timber manufacturers, both located in south-east Queensland, that produce around 10 000 to 15 000 cubic metres of product per annum. Most recycled timber is sourced from the demolition of large timber-framed structures and from power poles and bridge timbers at the end of their useful life.

Recycled timber products are generally used for high-value custom applications, including beams, columns, joinery, benchtops, flooring and panelling. Custom-designed and fabricated architectural trusses are also produced from recycled timber.

Demand for recycled timber is often driven by unique specifications and architectural preferences. Green Star certification—an internationally recognised sustainability rating systems for buildings—is an important driver for use of recycled products.



Araucaria plywood in the Perth Arena
(photograph courtesy of Austral Plywoods)



Recycled timber used in construction of the jetty at Woody Point, Brisbane (photograph courtesy of Kennedy's)



OPPORTUNITIES

The Queensland forest and timber industry and the Queensland Government developed the *Queensland forest and timber industry plan* in 2012, with a vision to sustain business growth and innovation in the industry. The plan identifies a range of important actions to ensure the industry continues to remain competitive and delivers ongoing benefits to Queensland.

Timber has a range of structural and environmental qualities that differentiate it from substitute products. To better capitalise on these attributes, the industry is developing new and innovative products that are more reliable and have better performance.

Innovation

The Queensland industry has a demonstrated capacity to innovate and adapt to meet changing market demand. In less than a decade, many large sawmills have invested in new production processes to meet increased demand from consumers for termite-treated timber. Many of the larger timber manufacturers have also developed integrated timber framing solutions that combine engineered wood products, panel products and sawn timber into comprehensive timber building systems. Continued innovation is required to sustain the industry into the future by meeting demand for new and innovative products.

Engineered wood products in GHD Auditorium Advanced Engineering Building, University of Queensland (photograph courtesy of Hyne Timber)



Initiatives to support Queensland plantations

A number of actions have been implemented under the *Queensland forest and timber industry plan*, providing positive outcomes for plantation investments in Queensland.

Consistent arrangements for local government consideration of new plantation developments have been introduced into Queensland's planning laws.

The *Timber plantation operations code of practice for Queensland* was finalised in 2015 to help existing and new commercial plantations comply with all laws and operate according to sound plantation management practices.

The planning provisions and voluntary code were developed in consultation with the Australian Government to ensure they met the requirements for removal of export controls on Queensland's unprocessed plantation sourced timber products (under the *Export Control Act 1982*).

As a result of these actions, a licence is no longer required to export Queensland unprocessed plantation sourced timber products, removing a long standing regulatory burden and offering new market opportunities.

Engineered wood products

Engineered wood includes a diverse range of products that are manufactured by bonding wood using adhesive or other methods to create a composite material. The process improves timber's structural properties and reliability in a cost-effective way.

Queensland's production of glued laminated timber or 'glulam' continues to increase, with four plants producing around 8000 cubic metres of glulam product each year. Both softwood and hardwood timber are used in the production of structural beams and high-quality architectural appearance-grade products. Glulam has thermal, acoustic and corrosion-resistance values that make it suitable for portal frame structures, and curved glulam beams offer unique application opportunities.

A range of other engineered wood products offer growing opportunities for the Queensland industry, as demand increases for cost-effective, high-strength, durable and adaptable products. I-beams and laminated veneer lumber (LVL) are high-strength, long-span structural timber products used for residential and commercial applications that compliment traditional sawn timber products. These products are already being used extensively in floor framing applications, with Queensland companies providing design and specification services for the products that are manufactured outside of Queensland.

Composite structural beams using LVL or glulam combined with pre-stressed steel tendons are able to span large expanses and support the further use of timber in commercial and industrial applications. These products are finding increased applications overseas and are likely to be important in supporting the increased use of timber building systems in Queensland.

Cross-laminated timber (CLT) is fabricated by bonding together timber boards with structural adhesives to produce solid timber panels. Alternating the grain directions in each layer of timber generates high strength and fire resistance properties. There has been strong uptake of products in commercial and residential projects in other Australian states, with Queensland expected to follow. New Zealand company XLam is currently the only producer in the southern hemisphere and reportedly has plans to expand its production capability to Australia in the future.



Glulam beams used in house construction (photograph courtesy of Hyne Timber)



Multi-story construction

The increasing use of timber in multi-story commercial and residential applications provides innovation and growth opportunities for the industry. This is being supported by an increased interest and uptake of new and emerging timber technologies into low- and medium-rise construction in Australia and overseas.

In Australia, changes to the *National construction code* made in 2016 to simplify the use of timber in buildings up to eight stories high is expected to facilitate the increased use of timber framing in multi-story construction. Some leading development companies, such as Lend Lease and Australand, are already starting to use timber systems for these applications.

These changes will likely drive additional demand for new and innovative timber products, with a focus on a systems approach that maximises the benefits and attributes of prefabrication, panelised construction, cassette floors and engineered wood products. Composite construction techniques that combine the attributes of timber with non-timber products (such as steel and concrete) will also play an important role in these developments.

Carbon and bioenergy

The carbon benefits of timber are well known—both natural and planted forests act as a carbon sink, and carbon continues to be stored in timber used in buildings and long-life wood-based products. With an increasing focus on action to address climate change, these attributes are becoming more important.

Policies that support and promote the use of building products with low embodied energy will allow the industry to take advantage of timber's carbon credentials when compared to most substitute building products that require relatively more energy to produce. While participation in current carbon markets poses challenges for the industry, future opportunities are likely as these markets evolve. This could help provide an additional source of revenue for the forest and timber industry, or provide an opportunity to drive investment and expansion through improved financial viability.

Bioenergy opportunities for the forest and timber industry are also being actively considered in Queensland. The industry generates large volumes of wood by-products, including sawdust and shavings that are currently used to supply on-site heat needs and other products such as landscaping applications. However, these materials also have the potential to generate electricity, replacing non-renewable resources and reducing carbon emissions. Australian regulations currently recognise wood waste as an eligible renewable energy source that can be used to generate certificates that can be traded or sold in relevant markets.

Altus Renewables

Altus Renewables Limited specialises in the production of biomass based fuels for the generation of renewable energy. Built in 2013, the Altus production facility located at Tuan near Maryborough converts wood based by products (predominantly sourced from the adjacent Hyne Timber softwood sawmill) into densified wood pellets for sale in a combination of export and domestic markets.

Altus currently produces up to 125 000 tonnes of high quality wood pellets annually, and the company is seeking to increase its production capacity to up to 500 000 tonnes per annum through the construction of additional wood pellet production facilities. Altus is also investigating blending softwood pine fibre with alternative species to improve the quality of the product and increase the throughput of the plant.

Altus currently exports the majority of its wood pellets from the Port of Bundaberg to renewable energy markets in Korea, Japan and Europe.

The domestic animal bedding market is also showing strong interest in the wood pellets due to their high level of absorbency, natural odour control and hygiene, with sales for this use steadily increasing.



Altus Renewables production plant at Tuan (photograph courtesy of Altus Renewables)



Research

Queensland has a strong forest and timber research capability within the Queensland Government and also within a number of universities—each with a unique range of expertise and specialty areas.

The Queensland Government supports its strategic investment in forest and timber industry research, development and extension through the *Queensland forest and timber industry research, development and extension framework*, which was developed in conjunction with industry in 2014. This framework identifies key industry priorities to underpin Queensland's ongoing investment in research, development and extension.

Queensland Government

The Queensland Government continues to support one of Australia's major multidisciplinary forest and timber research teams through the Horticulture and Forestry Sciences group in DAF.

The group's relationships with the forest and timber industry, including growers and wood processors, are important to ensure industry-relevant research and development outcomes. Collaborative networks (including with universities and other institutes in Queensland, interstate and overseas, as well as with industry partners) helps to achieve positive outcomes across the industry value chain.

Research outcomes are being delivered around three themes.

Managing and improving forest productivity

This research focuses on improving forest productivity through actions that include forest resource characterisation, tree and wood properties improvement, modelling growth and assessing soil carbon. In conjunction with project partners, this research will help to deliver improved softwood plantation wood quality that is targeted to end-use, increased productivity in native forests, support systems for managing forest carbon balance, and improved plantation tree varieties for tropical and subtropical conditions.

Genetics softwood trial of Nelder wheel design among softwood plantations



Managing and improving forest health

Forest health research aims to identify effective and sustainable ways of managing damaging insects and disease pathogens, and to determine the role of soils and plant nutrition on health and productivity. A number of partnerships are helping to develop systems for early detection and rapid response and surveillance, as well as the identification of emerging threats.

Developing new forest products and processing systems

This research aims to develop innovative, engineered wood products and new building systems, as well as more efficient wood processing systems and wood products—providing technical solutions for industry.

Universities

Most Queensland universities also contribute to the broader forest and timber industry research effort, with a number establishing specific capacity to support the forest and timber industry.

The Forest Industries Research Centre at the University of the Sunshine Coast undertakes research across the industry value chain, including tree selection and genetics, pest and disease management, ecology and biodiversity, harvesting and haulage, and wood product processing and utilisation. The centre has developed a research alliance with DAF, and also undertakes collaborative research with other universities, governments and industry groups from across Australia and overseas.

The University of the Sunshine Coast, along with Australian industry stakeholders, has also established the Australian Forest Operations Research Alliance to build on the collaborative forest supply chain research originally undertaken by the Cooperative Research Centre for Forestry.

In 2015, the Centre for Future Timber Structures opened—a collaboration between The University of Queensland School of Civil Engineering and DAF. With industry support (including Lend Lease, Arup and Hynes Timber), the centre will create knowledge-based innovation that can drive the future development of timber in the built environment, with a focus on fire safety and building structures.

Research staff with a spindleless lathe at the Salisbury Research Facility

Salisbury Research Facility

The DAF research facility located at Salisbury in Brisbane is equipped to undertake research at laboratory and semi industrial scales, and it is Australia's largest centre focused on providing technical solutions for the processing and manufacturing sectors of the forest and timber industry. These include solutions relating to:

- processing – evaluating forest resources for traditional and non traditional timber markets
- seasoning – exploring new methods of drying timber, as well as optimising traditional techniques
- engineering – testing of wood properties in accredited testing laboratories, as well as testing of new products
- utilisation – studying the recovery potential of different forest resources within existing and new markets
- wood quality – analysing internal wood properties such as wood density and spiral grain.

The facility has expertise in developing technologies for veneer based and other engineered wood composites, kiln drying and sawmilling, designing and manufacturing new wood products, timber grading and advanced mechanical wood properties testing, wood anatomy and identification, and preserving timber and testing performance.



LOOKING TO THE FUTURE

The Queensland forest and timber industry has a future based on a robust and well established softwood plantation resource combined with timber sourced from extensive native forests. Over 90% of Queensland's log production is from forests certified to international forest management standards that underpin the environmental credentials of Queensland's timber products.

Queensland timber species are renowned for their structural properties, durability and unique appearance, providing them with a clear market advantage over competing timber products and other materials. With strong supporting research and technical capabilities, the industry is well positioned to meet growing market demand for innovative engineered wood products and for application in multi residential construction.

Manufacturers and processors continue to evolve and adapt to market demand, with a range of new timber products being adopted by the market in recent years. Continued innovation and development of new products that deliver structural, environmental and performance benefits will be required to ensure that the industry remains competitive. This, coupled with a high quality resource base, offers significant future opportunities for the industry in Queensland.

A dynamic and competitive forest and timber industry that can meet future challenges will ensure that it continues to make an important contribution to Queensland's employment opportunities and economic outcomes, particularly in rural and regional areas.

The Queensland Government will continue to work closely with the industry in the delivery of the *Queensland forest and timber industry plan* to achieve the industry's vision of sustained business growth and innovation in the Queensland based forest and timber industry.



Department of Agriculture and Fisheries

13 25 23

www.daf.qld.gov.au