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ECONOMIC POTENTIAL OF NORTH QUEENSLAND'S HARDWOOD FORESTRY AND TIMBER PRODUCT INDUSTRY

NORTH QUEENSLAND REGIONAL FORESTRY HUB

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EXECUTIVE SUMMARY

BACKGROUND

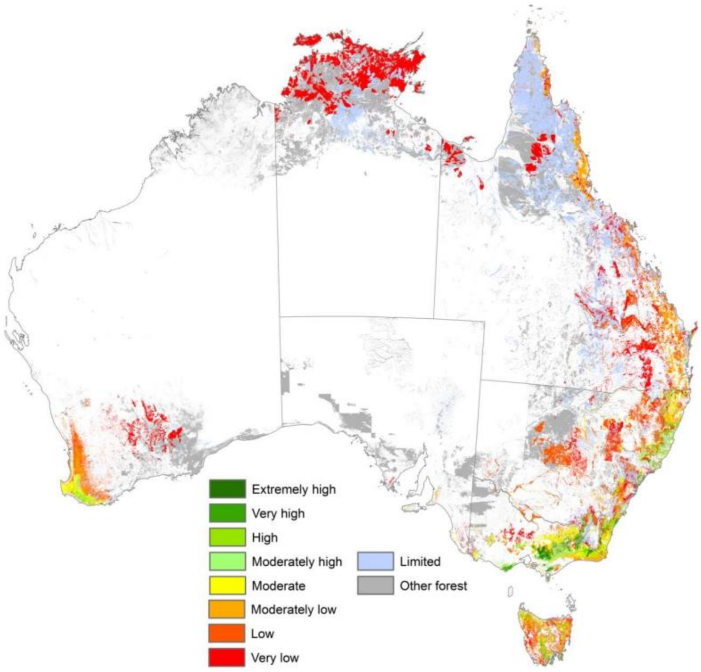
The North Queensland Regional Forestry Hub (NQFH) was established as a key action under the Federal Government's National Forest Industries Plan: Growing a Better Australia – A Billion Trees for Jobs Growth (DAFF, 2018).

The focus of the NQFH is to assess priority and technical issues, needs, and opportunities to progress growth of the forestry and timber industry. Outcomes of projects conducted by NQFH are to improve investor returns, increase traditional owner engagement and to support a renewed community understanding and engagement in the forestry and timber industry.

In 2023, NQFH released the Northern Queensland Supply Chain Study which mapped and analysed the current forestry supply chain infrastructure from harvest, haulage, processing and export of the Northern Queensland region (NQFH, 2024). Findings from this report provided a detailed understanding of the current forestry supply chain within Northern Queensland, along with barriers and opportunities that can be pursued by the industry in future interactions with the Queensland and Australian Governments. A key finding of the report highlighted that the development of Northern Queensland's forestry industry has been constrained by limited access to primary resources such as native timbers and underutilisation of local sawmills.

These findings align with research undertaken by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) on the commerciality of native forestry in Australia. Figure ES. 1 highlights the productivity of native forests in Australia in which the Northern Queensland region has limited and very low productivity due to low tree growth rates. However, recent research from Department of Primary Industries (DPI) has estimated that a sustainable harvest yield in Northern Queensland of between 42,672m^3 and 64,454m^3 may be achievable, well above current harvest rates of 19,210m^3, indicating considerable potential to increase productivity and thereby economic benefits of native hardwood forestry resources in the Northern Queensland region.

Figure ES. 1. Productivity of Australian Native Forests



Source: ABARES (2014).

PURPOSE & APPROACH

This report has been prepared to profile the expected economic benefits that can be generated through increased access to native hardwood forests within the Northern Queensland region. An Economic Impact Assessment (EIA) uses Input-Output modelling to highlight the direct and indirect benefits of various scenarios which explore a range of hardwood timber harvesting volumes and hardwood sawmill throughput volumes. An overview of the Input-Output model is provided in Appendix A.

The key objective of this report is to demonstrate to the Queensland Government the economic benefits of increased access and harvesting of native hardwood forests in Northern Queensland – much of which is located on state-owned land.

KEY FINDINGS

REGIONAL FORESTRY PROFILE

Key findings identified in the regional forestry profile include:

- 19,210m^3 of native hardwood timber is harvested in the Northern Queensland region which is predominately located on land owned by the State Government. The harvestable native hardwood forests in the Northern Queensland region have an estimated sustainable yield between 42,672m^3 and 64,454m^3, 122.1% and 235.5% higher than current native hardwood timber harvest volumes.
- There are 11 hardwood sawmills within the North Queensland region which have an estimated annual total throughput of 13,365m^3. Hardwood sawmills in the Northern Queensland region are underutilised having a total annual capacity of 45,000m^3.
- The Northern Queensland region is significant importer of raw logs and wood products, the total value is estimated to be approximately $127.22 million annually (ABS 2012; 2017; 2021; 2022; 2023 a, 2023 b, Jobs and Skills Australia 2023).
- Demand for hardwood timber is principally driven by activity in the construction industry (both residential and civil). The number of residential dwellings is projected to increase over time, driven by population growth in large populous sub-regions of Cairns, Townsville and Mackay-Isaac-Whitsunday. By 2046, an additional 89,568 residential dwellings are required to be constructed in the Northern Queensland region (QGSO, 2024 a).

ECONOMIC POTENTIAL OF NATIVE HARDWOOD FORESTRY AND TIMBER PRODUCT INDUSTRY IN NORTHERN QUEENSLAND

This report investigated three different scenarios based on various volumes of harvested native hardwood forests and sawmill throughput in the Northern Queensland region. A summary of the volumes of hardwood logs harvested and hardwood sawmill throughput is highlighted in Table ES. 1.

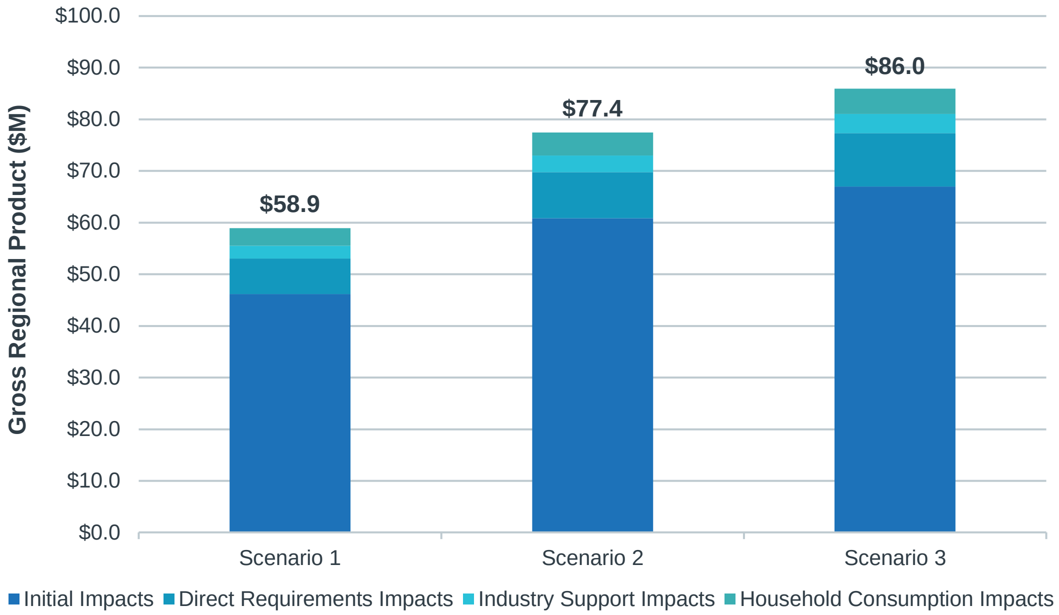
Table ES. 1. Scenario Assumptions

Scenario	Hardwood Harvest Volume (m^3)	Hardwood Sawmill Throughput (m^3)
Scenario 1	42,672	29,688
Scenario 2	64,454	44,843
Scenario 3	64,454	64,454

Source: DPI (unpublished), AEC.

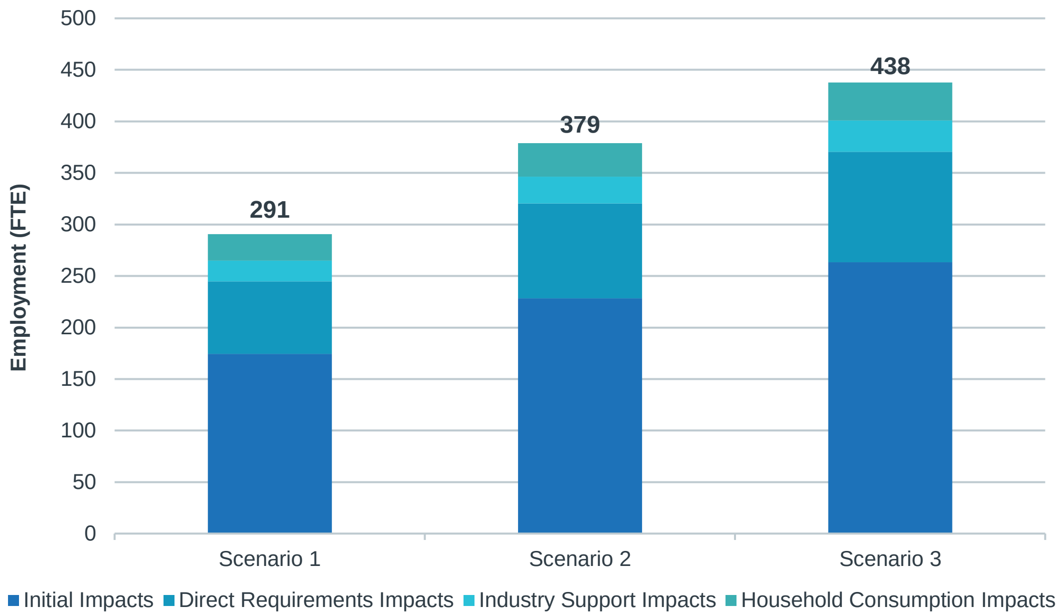
Access to additional native hardwood resources is estimated to generate significant economic impacts in the Northern Queensland region. Gross Regional Product (GRP) and employment impacts of the various scenarios are displayed in Figure ES. 2 and Figure ES. 3 respectively.

Figure ES. 2. Gross Regional Product Impacts to the Northern Queensland Region ($M)



Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Figure ES. 3. Employment Impacts to the Northern Queensland Region (FTEs)



Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

OTHER SOCIO-ECONOMIC BENEFITS

In addition to the net additional economy activity generated from increased access to native hardwood timber, the increased access to native hardwood timber will support a variety of socio-economic benefits for the Northern Queensland region. These benefits are examined below.

- **Indigenous Employment Opportunities** – Expanding the access in supply of hardwood timber across the Northern Queensland region will enable organisations such as Cape York Timbers to increase employment and training opportunities for indigenous persons.
- **Sustainable Timber Resources** – Increasing the sustainable timber supply in the Northern Queensland region can reduce the need to import timber products into the region and decreasing the chance that unsustainable timber is imported into the region.

- **Agricultural Diversification** – The increase in access to and harvesting of native hardwood timber in the Northern Queensland region would diversify agricultural production in the region. Increased access to native hardwood timber would provide increased agricultural output of $15.7 million and $30.3 million along with subsequent value adding opportunities, diversifying the region's current agricultural production.

- **Alignment with Queensland Sustainable Timber Industry Framework –** The Queensland Government released the terms of reference for its new Queensland Sustainable Timber Industry Framework in June 2024. The framework is to be developed in partnership with industry and is designed to promote and ensure stability within Queensland's forest and timber industry. Increasing access to the Northern Queensland region's forestry resources and the economic activity associated with an uptake in harvesting of hardwood timber products aligns with priority areas of the framework including (Queensland Government, 2024):
  - Securing sustainable timber supply
  - Adding value to forest and timber supply chains
  - Future forest workforce and strong timber industry
  - Fostering First Nations peoples' forestry employment and enterprise opportunities.
- **Hardwood Timber Product Import Replacement Opportunity** – The Northern Queensland region currently has a negative net trade of wood products of -$161.3 million suggesting there is an opportunity to increase the volume of wood products produced in hardwood sawmills in the Northern Queensland region. Increasing sawmill throughput will boost local economic growth through employment and incomes paid.

ECONOMIC GROWTH BARRIERS TO OVERCOME

Unlocking hardwood timber reserves will play a pivotal role in the development of the hardwood forestry and wood product manufacturing industry within the Northern Queensland region. There are several economic factors hindering economic growth of the hardwood forestry and wood product manufacturing industry such as:

- **Resource Security** – The underutilisation of native hardwood timber on crown leasehold land is a key economic barrier to overcome and increased access to this will provide economic benefits and employment opportunities within the region. Increased access to native hardwood timber on crown leasehold land can be done through longer-term supply arrangements between the State Government and local harvesters. These supply arrangements can also be partnered with traditional owner groups on indigenous lands to increase indigenous employment and activity within the supply chain.

- **Access and Cost to Industry Training** – Accredited harvesting and sawmill training organisations are predominantly located in larger forestry regions of Australia such as New South Wales and Victoria. Collaboration between industry and education providers could assist in providing necessary and industry recognised training courses within Queensland.

- **Freight and Supply Chain Costs and Limitations** – The Northern Queensland region has higher supply chain costs in comparison to established forestry industries elsewhere in Australia due to the distance between hardwood resources, sawmills and market and the volume of product produced. Freight infrastructure is generally adequate to support the current industry's needs however, further investments into specific road infrastructure can be made to improve the efficiency of the industry and support higher volumes of forest products such as:
  - Removal of weight restrictions at the Barron River Bridge.
  - Extending Road Train Routes from hardwood forest permit areas from the Outback-North and Townsville sub-regions to hardwood sawmills located in the Cairns sub-region – particularly between Mareeba and Mount Garnet.

- **Investment Risks** – High capital requirements into machinery and infrastructure required to support the operations of hardwood timber harvesting and sawmill operations can deter investment into the Northern Queensland region's hardwood forestry and timber industry. Historical uncertainty to access to hardwood resources and high supply chain costs have also created unfavourable investment conditions for potential investors. The development of a feasibility study to assess the viability of the development of new hardwood sawmill within Northern Queensland would assist in understanding investment risks and highlight project returns.

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1. INTRODUCTION

1.1 BACKGROUND

The North Queensland Regional Forestry Hub (NQFH) was established as a key action under the Federal Government's National Forest Industries Plan: Growing a Better Australia – A Billion Trees for Jobs Growth (DAFF, 2018).

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These findings align with research undertaken by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) on the commerciality of native forestry in Australia. Figure 1.1 highlights the productivity of native forests in Australia in which the Northern Queensland region has limited and very low productivity due to low tree growth rates. However, recent research from Department of Primary Industries (DPI) has estimated that a sustainable harvest yield in Northern Queensland of between 42,672m^3 and 64,454m^3 may be achievable, well above current harvest rates of 19,210m^3, indicating considerable potential to increase productivity and thereby economic benefits of native hardwood forestry resources in the Northern Queensland region.

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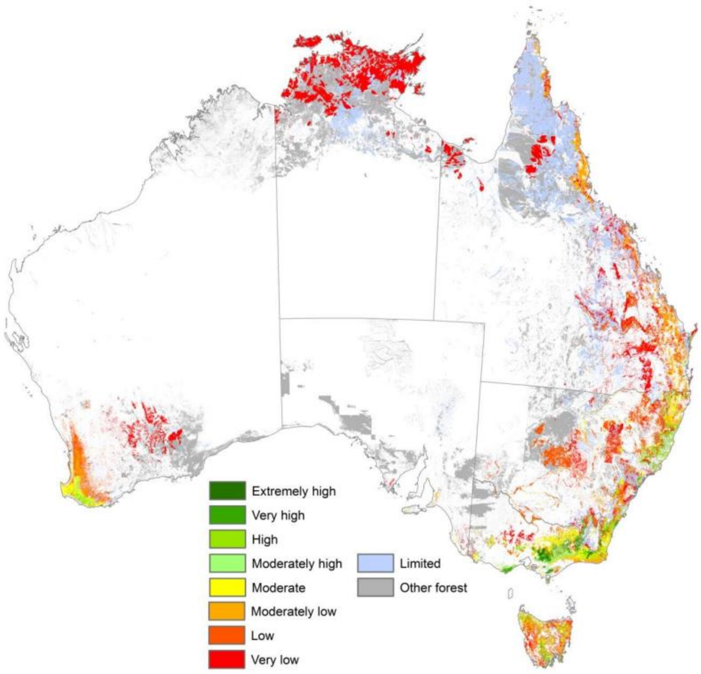
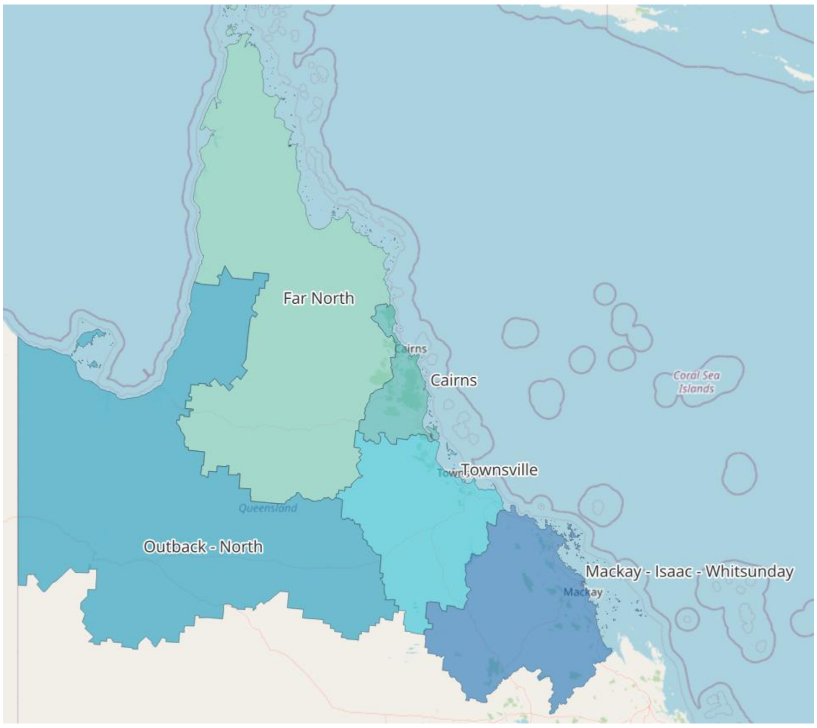


Source: ABARES (2014).

1.2 GEOGRAPHICAL EXTENT OF THE ANALYSIS

This report examines the hardwood forestry and timber industry in the Northern Queensland region which stretches from Mackay through to the Cape York encompassing all area west. The Northern Queensland region has been disaggregated into five sub-regions including the Mackay-Isaac-Whitsunday, Townsville and Cairns SA4s and Outback – North and Far North SA3s. The Northern Queensland catchment and five sub-regions are displayed in Figure 1.2.

Figure 1.2. Geographies Analysed



Source: AEC.

1.3 PURPOSE OF THIS REPORT AND APPROACH

This report has been prepared to profile the expected economic benefits that can be generated through increased access to native hardwood forests within the Northern Queensland region. An Economic Impact Assessment (EIA) has been conducted using Input-Output modelling to highlight the direct and indirect benefits of various scenarios which explore a range of hardwood timber harvesting volumes and hardwood sawmill throughput volumes. An overview of the Input-Output model is provided in Appendix A.

The key objective of this report is to demonstrate to the Queensland Government the economic benefits of increased access and harvesting of native hardwood forests in the Northern Queensland region – much of which is located on state-owned land.

1.4 REPORT STRUCTURE

The approach taken for this report includes the following elements:

- **Chapter 2:** Situational analysis of the regional forestry industry within the Northern Queensland region.
- **Chapter 3:** Detailed analysis of the estimated economic activity currently associated with the Hardwood Forestry and Timber Product industry in the Northern Queensland region.
- **Chapter 4:** Detailed analysis of the estimated economic activity associated with an increase in access to hardwood timber reserves in the Northern Queensland region.
- **Chapter 5:** An analysis of key economic barriers that have the potential to hinder economic growth with the expansion of the hardwood forestry resources within the Northern Queensland region.

2. REGIONAL FORESTRY PROFILE

This chapter provides a situational analysis of the native hardwood forestry industry within the Northern Queensland region.

2.1 HARDWOOD FORESTRY AND TIMBER INDUSTRY

2.1.1 OVERVIEW OF INDUSTRY ACTIVITIES

The hardwood forestry and timber industry in the Northern Queensland region is primarily based on resources located on state-owned land, including forest land and leasehold land. Hardwood forest resources are located right across the region stretching from Cape York to Mackay with hardwood trees individually selected before being harvested.

After harvesting, hardwood logs are either exported out of the region or transported to a hardwood sawmill for manufacturing. Local hardwood sawmills then cut hardwood logs into sawn timber before undergoing kiln and treatment processes. Sawn and treated timber can then undergo two pathways:

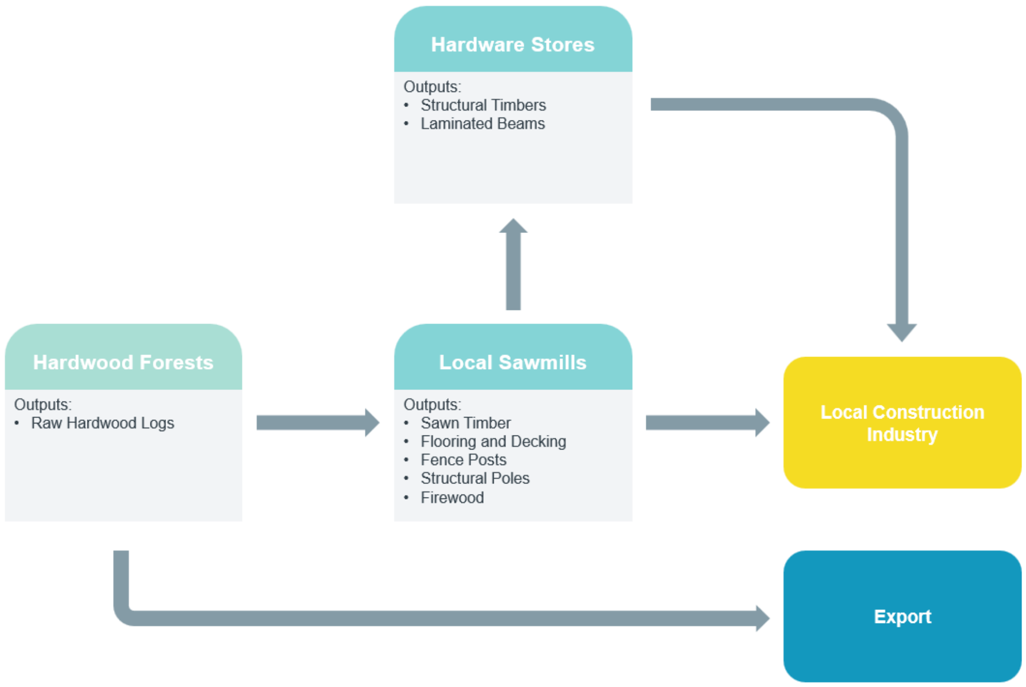
1 Sawn logs are re-cut further by hardwood sawmills into a variety of products before being transported for uses in the construction industry.

2 Sawn logs are sent to larger timber manufacturers and hardware stores before being manufactured into fabricated wooden structural products (e.g. wood trusses) before being used in the construction industry.

There is potential for wood products produced in Northern Queensland to be exported, however, it is currently understood the majority of wood products manufactured in the region are used within the local construction industry.

Figure 2.1 highlights products generated at each stage of the Northern Queensland region hardwood forestry supply chain.

Figure 2.1. Northern Queensland Hardwood Forestry Supply Chain



Source: AEC.

2.1.2 HARDWOOD TIMBER PRODUCTS

Hardwood timber is commonly used in construction projects requiring strong material, particularly for outdoor applications. Its appearance and durability make it a common choice for decking, indoor flooring, posts, beams and joists. Its durable nature and long growth times (of 30 – 50 years) contribute to it to generally be more expensive than softwood timbers which have growth times of 25 years and have typically lower durability (Forestry Corporation; 2024, Modinex; 2024). Hardwood timber products produced within the Northern Queensland region include (NQFH, 2024):

- Sawn hardwood logs
- Flooring and decking
- Fence posts
- Structural poles
- Firewood
- Cabinetry timbers
- Structural timbers
- Laminated beams.

2.1.3 RELEVANT INPUT-OUTPUT INDUSTRIES OF THE HARDWOOD FORESTRY AND TIMBER INDUSTRY

Table 2.1 provides the Input-Output industries and definitions associated with the hardwood forestry and timber industry in the Northern Queensland region.

Table 2.1. Key Input-Output Industries in the Hardwood Forestry and Timber Product Industry

IO Industry	Definition
Forestry and Logging	This industry consists of activities mainly engaged in growing native or plantation timber forests and logging of native or plantation timber forests including felling, cutting and/ or roughly hewing logs into products.
Sawmill Product Manufacturing	This industry consists of activities engaged in manufacturing of rough sawn timber, boards, wood chips, resawing timber and timber seasoning (kiln processing) and treatment.
Other Wood Product Manufacturing	This industry consists of activities engaged in the manufacturing of wooden structural products (e.g. roof trusses, kitchen fittings).

Source: ABS (2013), AEC.

2.2 PRIMARY NATIVE FORESTRY RESOURCES

2.2.1 CURRENT NATIVE HARDWOOD TIMBER RESOURCE LEVELS (PERMIT AREAS)

The Northern Queensland region harvests approximately 223,546m^3 of timber annually; a large proportion of this softwood timber which accounts for 91.4% of the total volume of timber (or 204,336m^3) harvested within the region. Native hardwood timber accounts for 8.6% (or 19,210m^3) of timber harvested within the region which is predominately located on land owned by the State Government. Table 2.2 highlights annual hardwood timber harvest volumes on state-owned land from permits given from the Queensland Government and their destination local government areas (LGAs). Key findings from the table below:

- 78.0% (or 14,980m^3) of hardwood timber harvested in the Northern Queensland region is situated in the Far North sub-region.
- Due to the lack of hardwood sawmill infrastructure in the Townsville sub-region and Outback North sub-region, hardwood timber harvested in these sub-regions are transported to the Cairns sub-region for export or sawmilling.

Table 2.2. Northern Queensland Native Forestry Permits

Permit	Lot on Plan	Source LGA	Annual Harvest Volumes (m^3)	Destination LGA
Far North Sub-Region				
SP20110853	7024MP41159	Cook SC	2,000	Unknown
SP397	8MP14466	Cook SC	5,000	Unknown
SP20180911	5362SP314591	Cook SC	6,650	Unknown
201409021	53CP887336	Cook SC	1,330	Cook SC
Cairns Sub-Region				
201409022	438FTY1917	Tablelands RC	1,000	Tablelands RC
Townsville Sub-Region				
201409023	268FTY1271	Charters Towers RC	200	Cassowary Coast RC
Outback North Sub-Region				
201409024	8SP248068, 9SP340613	Flinders SC	1,330	Tablelands RC
Mackay Isaac Whitsunday Sub-Region				
20110880	929FTY1874	Mackay RC	1,000	Mackay RC
201409034	679FTY1949	Mackay RC	700	Mackay RC
Total			**19,210**	

Notes: SC = Shire Council. RC = Regional Council.
Source: Queensland Government (2023).

2.2.2 STATE-OWNED NATIVE HARDWOOD TIMBER RESERVES

Despite the Northern Queensland region having low hardwood harvest volumes compared to softwood harvest volumes, the region has an abundant supply of native forestry hardwood timber with approximately 4,733,200 ha of harvestable native hardwood reserves on state-owned land. The Department of Primary Industries (DPI) estimates hardwood forest reserves can provide an annual sustainable yield between 42,672m^3 and 64,454m^3 (DPI, 2024), reflecting an approximately 122.1% to 235.5% increase on existing hardwood harvest volumes. Table 2.3 provides a breakdown of the area of native hardwood timber on state-owned land within Northern Queensland and the range of estimated sustainable harvest yields. It is noted that hardwood timber located in areas such as national parks are not included in the figures below.

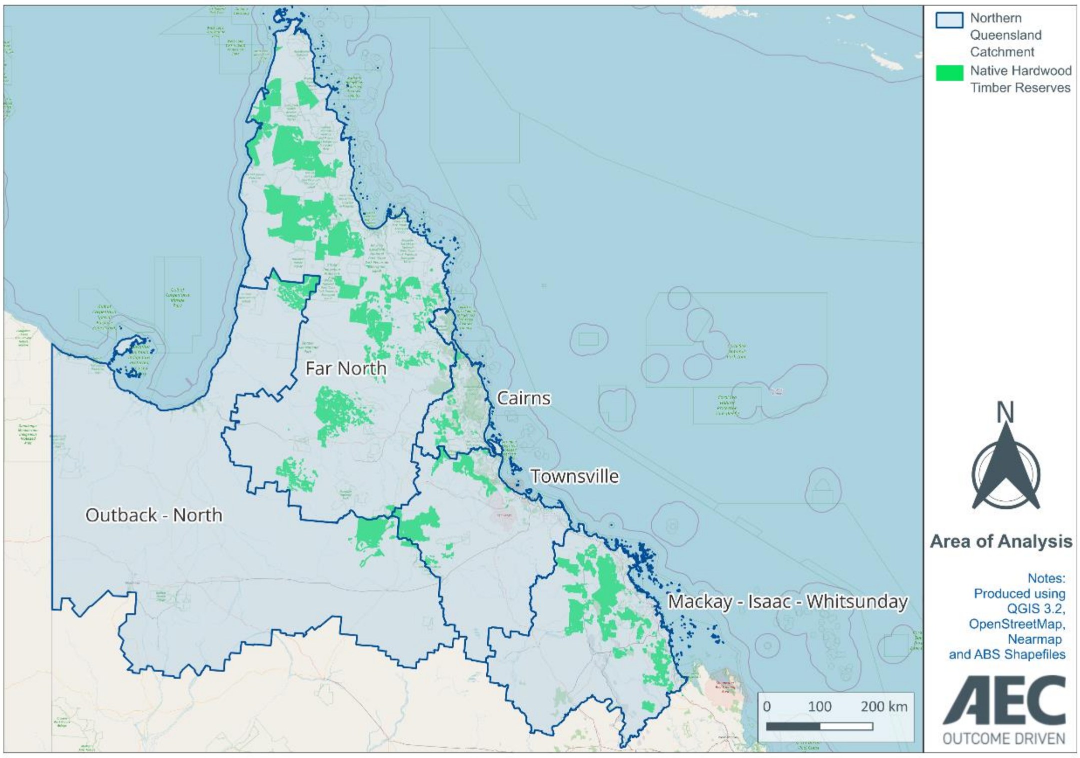
Table 2.3. State-Owned Native Hardwood Timber Resource and Harvest Yields

Sub-region	State-Owned Hardwood Forest Resource (ha)	Range of Estimated Sustainable Harvest Yield	
		Min (m^3)	Max (m^3)
Far North	2,685,110	27,754	41,631
Outback North	306,910	3,172	4,758
Cairns	471,550	4,874	7,311
Townsville	406,340	4,200	6,300
Mackay-Isaac-Whitsunday	863,290	2,672	4,454
Total	**4,733,200**	**42,672**	**64,454**

Note: Represents a best estimate at the time of the report. Sub-region estimations with Far-North Queensland for forest resource extent have been made by AEC for the purposes of this report.
Source: DPI (unpublished).

Figure 2.2 displays the location of harvestable native hardwood timber reserves within the Northern Queensland region.

Figure 2.2. Northern Queensland Region State-Owned Native Hardwood Timber Reserves



Source: DPI (unpublished), AEC.

2.3 HARDWOOD TIMBER SAWMILLS

2.3.1 HARDWOOD SAWMILL LOCATIONS

There are 11 hardwood timber sawmills within the Northern Queensland region which have an estimated annual total throughput of 13,365m^3 with an annual total sawmill capacity of 45,000m^3. Total sawmill throughput and capacity is comprised of the following regional contributions:

- Far North sub-region – One sawmill with an estimated annual throughput of 1,000m^3 and a capacity of 8,000m^3.
- Cairns sub-region – Six sawmills with an estimated annual throughput of 8,925m^3 and a capacity of 21,000m^3.
- Mackay–Isaac–Whitsunday sub-region – Four sawmills with an estimated annual throughput of 3,440m^3 and a capacity of 16,000m^3.

The Townsville sub-region and the Outback – North sub-region have no hardwood sawmills within their respective regions to process raw logs, however, have capabilities to create manufactured hardwood timber products from sawn hardwood timber.

Table 2.4 displays the current capacity and throughput of hardwood sawmills in the Northern Queensland region. There is publicly available information for six of the 11 hardwood sawmills in the Northern Queensland region (NQFH, 2024). Sawmills with no public information available have been assumed to have an average sawmill capacity of 3,000m^3 based off Queensland Government information on the average size of hardwood sawmills and a throughput based on current capacity and throughput ratios experienced within their respective regions (DPI, 2016).

Table 2.4. Northern Queensland Region Hardwood Sawmills

Sawmill	Sub-Region	Capacity (m^3)	Throughput (m^3)
Sawmills with Information Available			
Cape York Timbers	Far North	8,000	1,000
Tableland Hardwood Timbers	Cairns	5,000	2,300
Millstream Specialty Timbers	Cairns	5,000	2,000
Mayne Specialty Timbers	Cairns	2,000	800
O'Brien's Sawmill	Mackay-Isaac-Whitsunday	5,000	650
Platypus Timbers	Mackay-Isaac-Whitsunday	5,000	1,500
Sawmills with Information Not Available			
Innisfail Sawmill	Cairns	3,000	1,275
Gadgarra Sawmill	Cairns	3,000	1,275
Wongabel Sawmill	Cairns	3,000	1,275
Nebo Sawmill	Mackay-Isaac-Whitsunday	3,000	645
Eungulla Sawmill	Mackay-Isaac-Whitsunday	3,000	645
Total	**-**	**45,000**	**13,365**

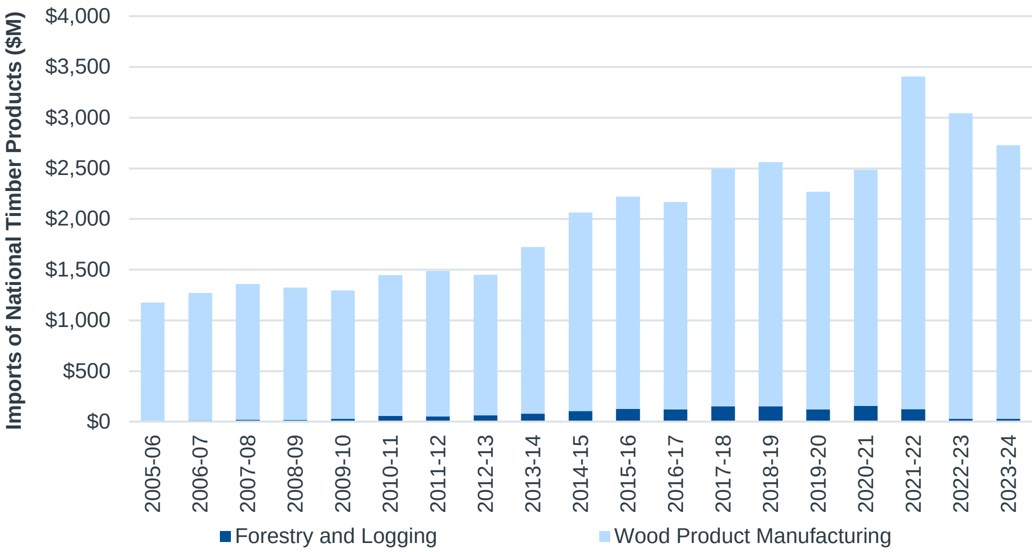
Source: DPI (2016), NQFH (2024), AEC.

2.4 TRADE OF TIMBER PRODUCTS (NATIONAL)

2.4.1 IMPORTS

National imports of wood products (includes both hardwood and softwood) have substantially increased from $1.2 billion since 2005-06 reaching a peak in imports of $3.4 billion in 2021-22. In 2023-24, imports of wood products decreased slightly from this peak to $2.7 billion, of which 98.9% of the total value represents products from the wood product manufacturing industry (comprises of sawmill product manufacturing and other wood product manufacturing). Figure 2.3 highlights the national imports of wood products between 2005-06 and 2023-24.

Figure 2.3. National Imports of Timber Products ($M)

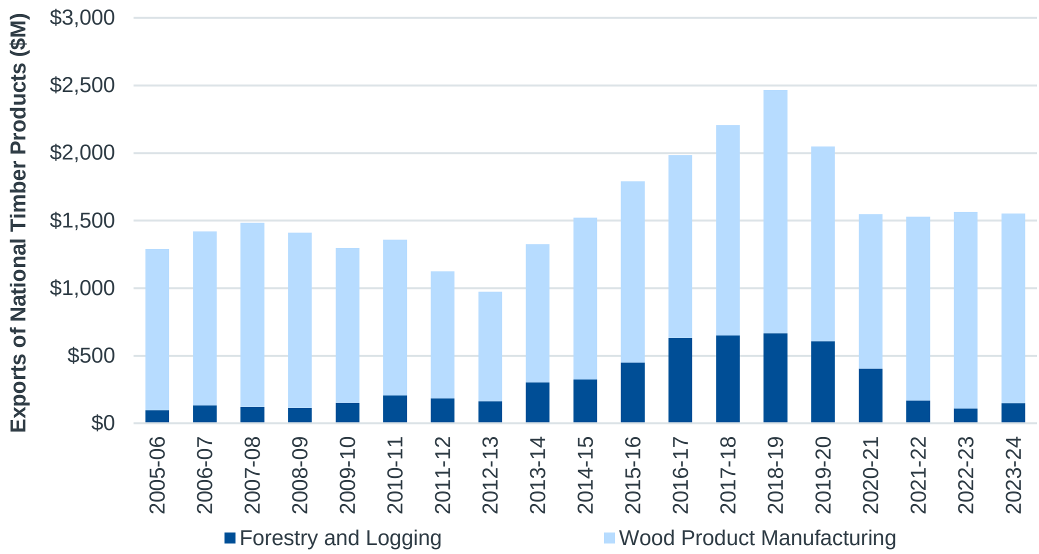


Source: ABS (2024).

2.4.2 EXPORTS

National exports in wood products (includes both hardwood and softwood) have substantially decreased since a peak of $2.5 billion in 2018-19, decreasing 37.0% from this peak to $1.5 billion in 2023-24. In 2023-24, approximately 90.3% of the total export value of wood products are from the wood product manufacturing industry. Figure 2.4 highlights the national exports of wood products between 2005-06 and 2023-24.

Figure 2.4. National Exports of Timber Products ($M)

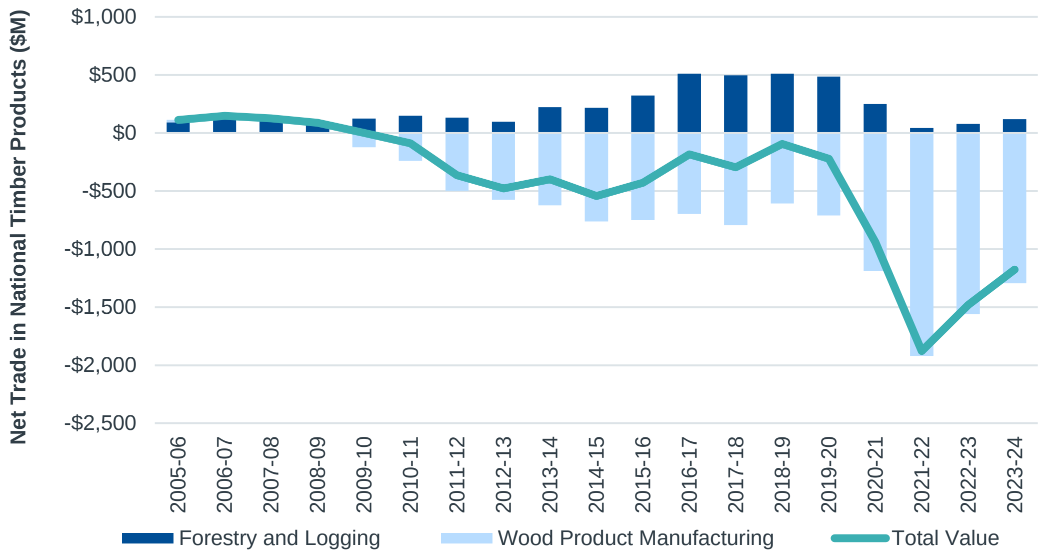


Source: ABS (2024).

2.4.3 NET TRADE

Australia is a net importer of wood products (includes both hardwood and softwood) with a negative balance of trade in wood products of -$1.2 billion in 2023-24, comprised of net exports of $120.0 million in products from the forestry and logging industry and net imports of $1.3 billion in products from the wood product manufacturing industry. Australia has been a net importer wood products since 2009-10. Figure 2.5 highlights the national net trade of wood products between 2005-06 and 2023-24.

Figure 2.5. National Net Balance of Trade of Wood Products ($M)



Source: ABS (2024).

2.5 TRADE IN NORTHERN QUEENSLAND TIMBER PRODUCTS

The Northern Queensland region is a significant importer of wood products (includes both hardwood and softwood) which are principally used in construction (both residential and civil). Table 2.5 below provides an overview of trade in timber products across the Northern Queensland region.

Table 2.5. Net Trade of Wood Products in the Northern Queensland Region

Region	Import ($M)	Export ($M)	Net Trade ($M)
Far North Sub-Region			
Forestry and Logging	$1.08	$1.95	$0.87
Wood Product Manufacturing	$22.39	$2.49	-$19.90
Total	**$23.47**	**$4.44**	**-$19.03**
Cairns Sub-Region			
Forestry and Logging	$6.50	$20.50	$14.00
Wood Product Manufacturing	$98.30	$65.30	-$33.00
Total	**$104.80**	**$85.80**	**-$19.00**
Townsville Sub-Region			
Forestry and Logging	$2.59	$25.16	$22.57
Wood Product Manufacturing	$85.44	$30.99	-$54.45
Total	**$88.04**	**$56.16**	**-$31.88**
Outback – North Sub-Region			
Forestry and Logging	$0.15	$0.28	$0.13
Wood Product Manufacturing	$2.41	$0.28	-$2.13
Total	**$2.57**	**$0.56**	**-$2.01**
Mackay – Isaac – Whitsunday Sub-Region			
Forestry and Logging	$7.66	$4.14	-$3.52
Wood Product Manufacturing	$67.44	$15.66	-$51.78
Total	**$75.10**	**$19.80**	**-$55.30**
Northern Queensland Region			
Forestry and Logging	$17.98	$52.03	$34.05
Wood Product Manufacturing	$275.99	$114.72	-$161.27
Total	**$293.97**	**$166.75**	**-$127.22**

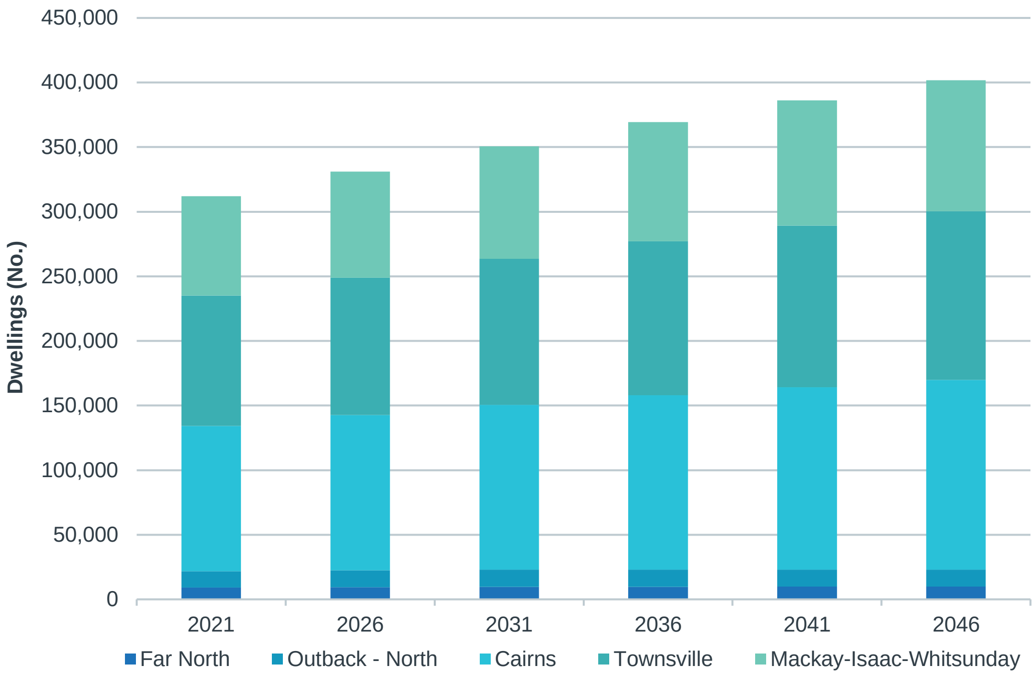
Note: Figures may not add due to rounding.
Source: AEC.

2.6 FOREST PRODUCT INDUSTRY OUTLOOK

Demand for hardwood timber is predominately determined by growth in the construction industry. Hardwood timber has a competitive advantage over softwood timber as it is more durable and stronger compared to softwood timbers. Due to slower growth rates and durable properties of hardwood, however, hardwood timber is often more costly and is only used in approximately 20.0% of timber construction (Sherwood Lumber, 2022).

Due to its primary use as a construction material, demand for hardwood timber is reliant on residential and non-residential building activity within the region. Residential dwellings are projected to increase over time, driven by population growth in the large populous sub-regions of Cairns, Townsville and Mackay-Isaac-Whitsunday (MIW). In 2021, there were a total of 312,075 residential dwellings within the region which is projected to increase by 89,568 dwellings to a total 401,643 dwellings in 2046 (QGSO, 2024 a). Figure 2.6 displays dwelling projections for the Northern Queensland region.

Figure 2.6. Dwelling Projections (No.)



Source: QGSO (2024 a).

Queensland Government does not produce projections for non-residential buildings; however, it can be assumed that construction of additional non-residential buildings will be required to accommodate the workforce needs associated with a growing population. The population of the Northern Queensland region was estimated to be 742,082 persons in 2021 and is projected to increase by 196,630 persons to a total population of 938,712 persons in 2046 (QGSO, 2024 b). This increase in population will increase the region's labour force with employment projected to increase from 363,913 in 2022-23 to 431,620 in 2041 which will increase the demand for non-residential dwellings (AEC, unpublished).

3. CURRENT HARDWOOD FORESTRY AND TIMBER PRODUCT INDUSTRY ACTIVITY

The following chapter provides an overview of the key assumptions and data applied to model the economic activity associated with potential scenarios of future harvest and manufacturing levels of hardwood timber within the Northern Queensland region. Input-Output industries predominantly utilised with the hardwood forestry and timber product industry timber include forestry and logging, sawmill product manufacturing and other wood product manufacturing.

3.1 CURRENT ACTIVITY

The aim of modelling current activity of the hardwood forestry and timber industry in the Northern Queensland region is to understand the current benefits of the industry to the economy. The Input-Output industries highlighted in Table 2.1 provide estimated activity associated with both the softwood and hardwood industries with calculations and assumptions presented below providing estimates of the contribution of hardwood forestry and timber industry to the relevant Input-Output Industries.

3.1.1 FORESTRY AND LOGGING

The value of the hardwood forestry and logging has been estimated by understanding the contribution of the industry to the total forestry and logging industry. This has been calculated based on the proportion of hardwood logs harvested compared to the softwood logs harvested in the Northern Queensland region. An additional 10% above current softwood and hardwood log volumes has been assumed to cover activities such as stump grinding and tree lopping activity.

It is estimated that hardwood logging volume contributes 7.8% to the total log harvest volume in Northern Queensland. In determining the value of hardwood logging, an estimate of hardwood prices compared to softwood prices in Queensland in 2022 was used (ABARES, 2024), which indicates hardwood timber had a value approximately 158.8% higher than softwood timber. The combination of volume share and value differential for hardwood versus softwood was applied to the total value for forestry and logging in the Northern Queensland region (as estimated from AEC's Input-Output model), to provide an estimated value of hardwood forestry and logging of $12.9 million, or a value of $669 per m3. To estimate the economic impacts of hardwood activity in the forestry and logging sector for each of the sub-regions, the value per m3 ratio of $669 was applied to hardwood log harvest volumes which was subsequently used in Input-Output modelling.

Table 3.1 displays the annual hardwood harvest volumes and estimated value of the hardwood forestry and logging industry within the sub-regions.

Table 3.1. Annual Log Harvest Volume

Sub-Region	Hardwood Log Volume (m^3)	Hardwood Forestry and Logging Value ($M)
Far North	14,980	$10.0
Outback North	1,330	$0.9
Cairns	1,000	$0.7
Townsville	200	$0.1
Mackay-Isaac-Whitsunday	1,700	$1.1
Total	**19,210**	**$12.9**

Note: Figures may not add due to rounding.
Source: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), DPI (unpublished), Jobs and Skills Australia (2023), AEC.

3.1.2 SAWMILL AND WOOD PRODUCT ACTIVITY

Hardwood timber products produced within the Northern Queensland region are categorised into two different Input-Output industries, sawmill product manufacturing, and other wood product manufacturing. Hardwood products commonly produced within each of these industries are as follows:

- Sawmill Product Manufacturing – Sawn hardwood logs, flooring and decking, fence posts, structural poles.
- Other Wood Product Manufacturing – Cabinetry timbers, structural timbers, laminated beams.

Products produced within the other wood product manufacturing industry can be produced by some hardwood sawmills within the Northern Queensland region or produced by larger timber manufacturers and hardware stores using sawn logs produced in sawmill product manufacturing.

Using a regionalised transaction table of the Northern Queensland region, it is estimated that 70.3% of products produced by hardwood sawmills are situated within the sawmill product manufacturing industry and 29.7% of products are produced within the other wood product manufacturing industry.

The following sub-chapters provides an overview of the methodology and assumptions used to estimate the value of hardwood timber manufacturing within the Northern Queensland region.

SAWMILL PRODUCT MANUFACTURING

Using a regionalised transaction table of the Northern Queensland region to understand ratios of forestry and logging inputs to the sawmill product manufacturing sector, combined with the value differential between hardwood and softwood products of 158.8%, it is estimated that the sawmill product manufacturing is valued to be $16.7 million. The value of sawmill product manufacturing was then disaggregated by the proportion of sawmill throughput of each of the regions. The Northern Queensland region currently harvests 19,210m^3 of hardwood timber annually with the region's sawmills only processing 13,365m^3 of this indicating that 30.4% of hardwood timber harvested in the Northern Queensland region exported or used without any additional sawmill manufacturing.

Using the values and volumes mentioned above, the value of hardwood sawmill product manufacturing per m^3 is $1,253/ m^3 which has been subsequently applied to throughput volumes in the sub-regions.

Table 3.2 displays the Northern Queensland's region sawmill capacity and throughput.

Table 3.2. Northern Queensland Region Hardwood Sawmill Capacity and Throughput

Sub-Region	Capacity (m^3)	Capacity (%)	Throughput (m^3)	Hardwood Sawmill Product Manufacturing Value ($M)
Far North	8,000	17.8%	1,000	$1.3
Outback North	-	-%	-	$-
Cairns	21,000	46.7%	8,925	$11.2
Townsville	-	-%	-	$-
Mackay-Isaac-Whitsunday	16,000	35.6%	3,440	$4.3
Total	**45,000**	**100.0%**	**13,365**	**$16.7**

Note: Figures may not add due to rounding.
Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), NQFH (2024), AEC.

OTHER WOOD PRODUCT MANUFACTURING

Using a regionalised transaction table of the Northern Queensland region to understand ratios of forestry and logging and sawmill product manufacturing inputs to the other wood product manufacturing sector, combined with the value differential between hardwood and softwood products of 158.8%, it is estimated that other wood product manufacturing is valued to be $32.1 million. The value of other wood product manufacturing was then disaggregated to sub-regions by the proportion of the current value of the other wood product manufacturing industry in each of the sub-regions, as displayed in Table 3.3.

Table 3.3. Hardwood Other Wood Product Manufacturing Value

Sub-Region	Other Wood Product Manufacturing Industry Value ($M)	Other Wood Product Manufacturing Industry Proportion (%)	Hardwood Other Wood Product Manufacturing Industry Value ($M)
Far North	$0.0	0.0%	$0.0
Outback North	$5.0	3.6%	$1.2
Cairns	$50.3	36.2%	$11.6
Townsville	$55.8	40.2%	$12.9
Mackay-Isaac-Whitsunday	$27.7	19.9%	$6.4
Total	**$138.8**	**100.0%**	**$32.1**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

3.2 CURRENT ECONOMIC ACTIVITY

Input-Output modelling was used to examine the direct and flow-on activity expected to support the current Hardwood Forestry and Timber Product Industry within the Northern Queensland region (refer to Figure 2.2). A description of the Input-Output modelling framework used is provided in Appendix A.

Input-output modelling describes economic activity by examining four types of impacts:

- **Output**: Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
- **Gross product**: Refers to the value of output after deducting the cost of goods and services inputs in the production process. Gross product (e.g., Gross Regional Product (GRP)) defines a true net economic contribution and is subsequently the preferred measure for assessing economic impacts.
- **Income**: Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.
- **Employment**: Refers to the part-time and full-time employment positions generated by the economic stimulus, both directly and indirectly through flow-on activity, expressed in full time equivalent (FTE) positions/ FTE job years[1].

Current hardwood harvesting and sawmill operations are estimated to directly support $61.7 million in industry outputs (i.e. revenues) in the Northern Queensland region. A further $18.4 million is estimated to be supported in the economy through flow-on activity, comprised of $14.5 million in production induced (i.e. supply chain) activity and $3.9 million through household consumption induced activity (i.e. expenditure of households within the local economy as a result of a lift in household incomes).

This level of activity is estimated to support the following annual impacts within the Northern Queensland region:

- A $39.0 million contribution to GRP (including $30.4 million through initial impacts).
- 162 FTE jobs (including 96 FTE jobs through initial impacts), paying a total of $15.8 million in wages and salaries (including $10.3 million through initial impacts).

[1] Where one FTE job year is equivalent to one person working full time for a period of one year.

Table 3.4. Current Activity Hardwood Forestry and Timber Industry, Northern Queensland

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$61.7	$30.4	$10.3	96
Direct Requirements Impacts*	$10.9	$4.6	$3.3	39
Industry Support Impacts*	$3.6	$1.7	$1.1	12
Household Consumption Impacts	$3.9	$2.3	$1.2	15
Total Impacts in Local Economy	**$80.1**	**$39.0**	**$15.8**	**162**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

4. ECONOMIC POTENTIAL OF THE HARDWOOD FORESTRY & TIMBER INDUSTRY

Economic modelling in this chapter estimates the economic activity supported with the expansion of the hardwood forestry and timber product industry through increased access to hardwood timber resource on state-owned land within the Northern Queensland region. Input-Output modelling is used to examine the direct and flow-on activity expected to be supported within the Northern Queensland region (refer to Figure 2.2). A description of the Input-Output modelling framework used is provided in Appendix A.

The following scenarios are analysed in this chapter:

- **Scenario 1 (Minimum Range of Estimated Sustainable Harvest Yield)** – Assumes an uptake in hardwood logging activity based on the minimum range of estimated sustainable harvest yield produced by DPI (42,672m^3) as highlighted in Table 2.3. The following hardwood log volumes and hardwood sawmill throughputs have been assumed in this scenario:
  - Hardwood log harvest volume – 42,672m^3
  - Hardwood sawmill volume – 29,688m^3.
- **Scenario 2 (Maximum Range of Estimated Sustainable Harvest Yield)** – Assumes an uptake in hardwood logging activity based on the maximum range of estimated sustainable harvest yield produced by DPI (64,454m^3) as highlighted in Table 2.3. The following hardwood log volumes and hardwood sawmill throughputs have been assumed in this scenario:
  - Hardwood log harvest volume – 64,454m^3
  - Hardwood sawmill volume – 44,843m^3.
- **Scenario 3 (Maximum Range of Estimated Sustainable Harvest Yield with All Hardwood Logs Processed Locally)** – Assumes that all hardwood logs harvested under the maximum range of estimated sustainable harvest yield produced by DPI undergo sawmill manufacturing within the Northern Queensland region. The following hardwood log volumes and hardwood sawmill throughputs have been assumed in this scenario:
  - Hardwood log harvest volume – 64,454m^3
  - Hardwood sawmill volume – 64,454m^3.

4.1 SCENARIO 1 – MINIMUM RANGE OF ESTIMATED SUSTAINABLE HARVEST YIELD MODEL DRIVERS

FORESTRY AND LOGGING

Hardwood harvest volumes utilised in Scenario 1 uses the minimum estimated sustainable yield displayed in Table 2.3. Using value per volume ratios developed in chapter 3.1.2, it is estimated that harvesting the minimum estimated sustainable yield of hardwood logs within the Northern Queensland region would generate $28.6 million in harvesting activity as displayed in Table 4.1.

Table 4.1. Hardwood Forestry and Logging Value (Scenario 1)

Sub-Region	Volume (m^3)	Value ($M)
Far North	27,754	$18.6
Outback North	3,172	$2.1
Cairns	4,874	$3.3
Townsville	4,200	$2.8
Mackay-Isaac-Whitsunday	2,672	$1.8
Total	**42,672**	**$28.6**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

SAWMILL PRODUCT MANUFACTURING

Approximately 30.4% of hardwood logs within the Northern Queensland region are used or exported without being treated or going onto further manufacturing within Sawmills in the region. Under the minimum estimated sustainable yield hardwood harvest scenario, 42,672m^3 hardwood logs are able to be harvested with 29,688m^3 undergoing manufacturing processes within sawmills within the region.

Sawmill throughput for each of the region's sawmills has been disaggregated by their respective contribution to the Northern Queensland region's total sawmill capacity as displayed in Table 3.2. Using value per volume ratios developed in chapter 3.1.2, it is estimated that the value of hardwood sawmilling within the Northern Queensland region would be $37.2 million as displayed in Table 4.2.

Table 4.2. Hardwood Sawmill Product Manufacturing Value (Scenario 1)

Sub-Region	Volume (m^3)	Value ($M)
Far North	5,278	$6.6
Cairns	13,855	$17.4
Mackay-Isaac-Whitsunday	10,556	$13.2
Total	**29,688**	**$37.2**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

OTHER WOOD PRODUCT MANUFACTURING

Other wood product manufacturing predominantly covers prefabricated wooden building manufacturing and wooden structural fitting and component manufacturing. Demand for these products is driven by activity in the construction industry, and an increase in supply of hardwood forestry and logging has been assumed to result in no change to the quantum of economic activity associated within the other wood product manufacturing industry across all scenarios within this report (i.e., the hardwood other wood product manufacturing sector is assumed to remain constant with current activity in all three scenarios examined).

4.2 SCENARIO 2 – MAXIMUM RANGE OF ESTIMATED SUSTAINABLE HARVEST YIELD MODEL DRIVERS

FORESTRY AND LOGGING

Hardwood harvest volumes utilised in Scenario 2 uses the maximum estimated sustainable yield displayed in Table 2.3. Using value per volume ratios developed in section 3.1.2, it is estimated that harvesting the maximum estimated sustainable yield of hardwood logs within the Northern Queensland region would generate $43.1 million in harvesting activity as displayed in Table 4.3.

Table 4.3. Hardwood Forestry and Logging Value (Scenario 2)

Sub-Region	Volume (m^3)	Value ($M)
Far North	41,631	$27.9
Outback North	4,758	$3.2
Cairns	7,311	$4.9
Townsville	6,300	$4.2
Mackay-Isaac-Whitsunday	4,454	$3.0
Total	**64,454**	**$43.1**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

SAWMILL PRODUCT MANUFACTURING

Approximately 30.4% of hardwood logs within the Northern Queensland region are used or exported without being treated or going onto further manufacturing within Sawmills in the region. Under the maximum estimated sustainable yield hardwood harvest scenario, 64,454m^3 hardwood logs are able to be harvested with 44,843m^3 undergoing manufacturing processes within Sawmills within the region.

Sawmill throughput for each of the region's sawmills has been disaggregated by their respective contribution to the Northern Queensland region's total sawmill capacity as displayed in Table 3.2. Using value per volume ratios developed in chapter 3.1.2, it is estimated that the value of hardwood sawmilling within Northern Queensland would be $56.2 million as displayed in Table 4.4.

Table 4.4. Hardwood Sawmill Product Manufacturing Value (Scenario 2)

Sub-Region	Volume (m^3)	Value ($M)
Far North	7,972	$10.0
Cairns	20,927	$26.2
Mackay-Isaac-Whitsunday	15,944	$20.0
Total	**44,843**	**$56.2**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

OTHER WOOD PRODUCT MANUFACTURING

As highlighted in section 4.4, demand for other wood product manufacturing is driven by activity in the construction industry with increases in supply of hardwood forestry and logging assumed to result in no change in economic activity associated with the other wood product manufacturing industry. Therefore, other wood product manufacturing direct impacts are identical to those modelled in the current activity scenario.

4.3 SCENARIO 3 – MAXIMUM RANGE OF ESTIMATED SUSTAINABLE HARVEST WITH ALL HARDWOOD LOGS PROCESSED LOCALLY MODEL DRIVERS

FORESTRY AND LOGGING

Hardwood harvest volumes utilised in Scenario 3 uses the maximum estimated sustainable yield displayed in Table 2.3 as it provides the largest extractable volume of hardwood logs able to be harvested annually within the Northern Queensland region. Using value per volume ratios developed in chapter 3.1.2, it is estimated that harvesting the maximum estimated sustainable yield of hardwood logs within the Northern Queensland region would generate $43.1 million in harvesting activity as displayed in Table 4.5.

Table 4.5. Hardwood Timber Harvest Value (Scenario 3)

Sub-Region	Volume (m^3)	Value ($M)
Far North	41,631	$27.9
Outback North	4,758	$3.2
Cairns	7,311	$4.9
Townsville	6,300	$4.2
Mackay-Isaac-Whitsunday	4,454	$3.0
Total	**64,454**	**$43.1**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

SAWMILL PRODUCT MANUFACTURING

Under the maximum estimated sustainable yield harvest scenario, 64,454m^3 hardwood logs are able to be harvested. It is assumed in scenario 3 that all logs harvested within the Northern Queensland region also undergo sawmill manufacturing processes.

Sawmill throughput for each of the region's sawmills has been disaggregated by their respective contribution to the Northern Queensland region's total sawmill capacity as displayed in Table 3.2. As harvest volumes exceeds current capacity of the region's sawmills, it is assumed that capacity will increase to accommodate the additional hardwood logs. Table 4.6 displays the assumed hardwood timber throughput of the Northern Queensland region hardwood sawmills and estimated value of hardwood sawmills utilising value per volume ratios calculated in chapter 3.1.2.

Table 4.6. Hardwood Sawmill Product Manufacturing Value (Scenario 3)

Sub-Region	Volume (m^3)	Value ($M)
Far North	11,458	$14.4
Cairns	30,078	$37.7
Mackay-Isaac-Whitsunday	22,917	$28.7
Total	**64,454**	**$80.8**

Note: Figures may not add due to rounding.
Source: Queensland Government (2023), AEC.

OTHER WOOD PRODUCT MANUFACTURING

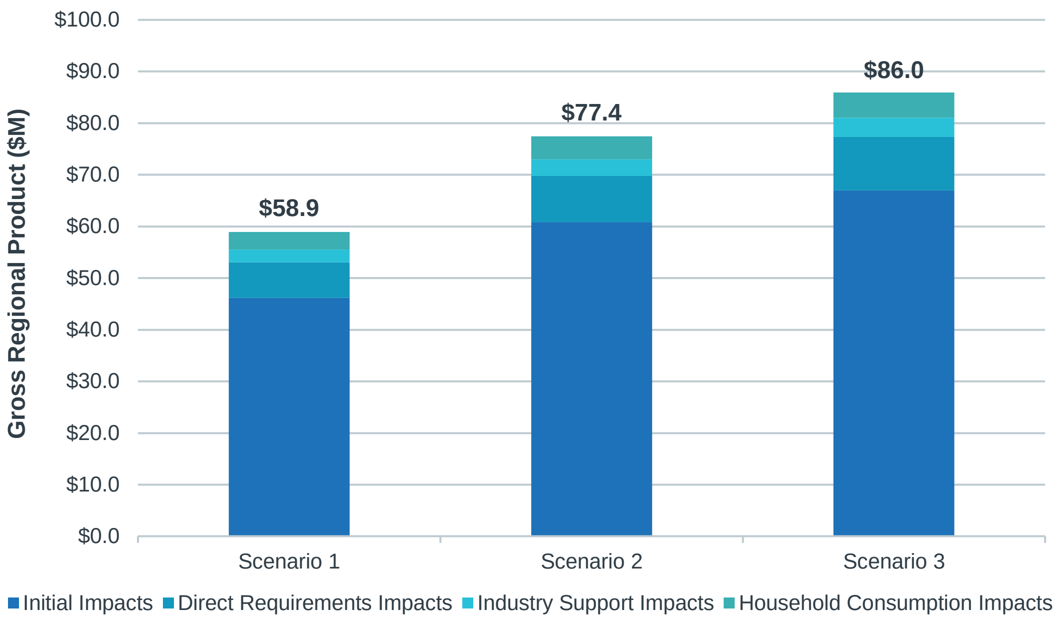
As highlighted in section 4.4, demand for other wood product manufacturing is driven by activity in the construction industry with increases in supply of hardwood forestry and logging assumed to result in no change in economic activity associated with the other wood product manufacturing industry. Therefore, other wood product manufacturing direct impacts are identical to those modelled in the current activity scenario.

4.4 MODELLING RESULTS

Figure 4.1 presents the estimated economic potential of the Northern Queensland region's Hardwood Forestry and Timber Product industry in terms of GRP from operations directly associated with the industry (i.e., hardwood harvesting and sawmilling). GRP impacts vary across the scenarios driven by volume of hardwood logs harvested and sawmill throughput. Key findings from GRP impacts of each scenario to the Northern Queensland region:

- Scenario 1: A $58.9 million contribution to GRP including $46.2 million through initial impacts.
- Scenario 2: A $77.4 million contribution to GRP including $60.8 million through initial impacts.
- Scenario 3: A $86.0 million contribution to GRP including $67.0 million through initial impacts.

Figure 4.1. Annual Contribution to Gross Regional Product ($M), Northern Queensland Region

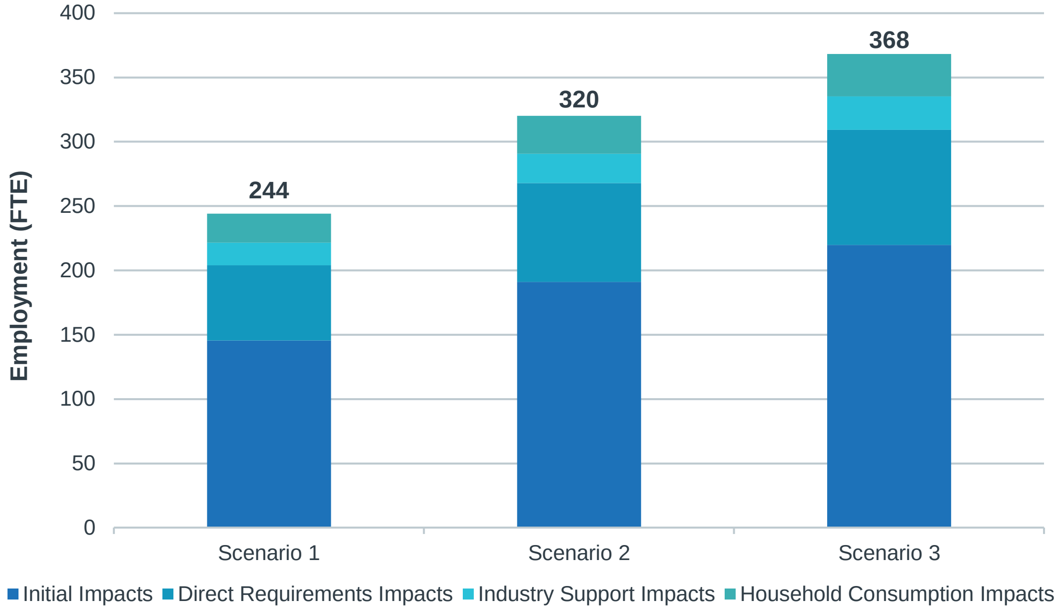


Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Figure 4.2 presents the annual employment contribution to the Northern Queensland region across the various scenarios, including initial and flow-on activity. Employment impacts follow trends experienced within the GRP impacts above with an increase in employment associated with an increase in volume of hardwood logs harvested and sawmill throughput. Key findings from employment impacts of each scenario to the Northern Queensland region:

- Scenario 1: 244 FTE jobs including 146 FTE jobs through initial impacts
- Scenario 2: 320 FTE jobs including 191 FTE jobs through initial impacts
- Scenario 3: 368 FTE jobs including 220 FTE jobs through initial impacts.

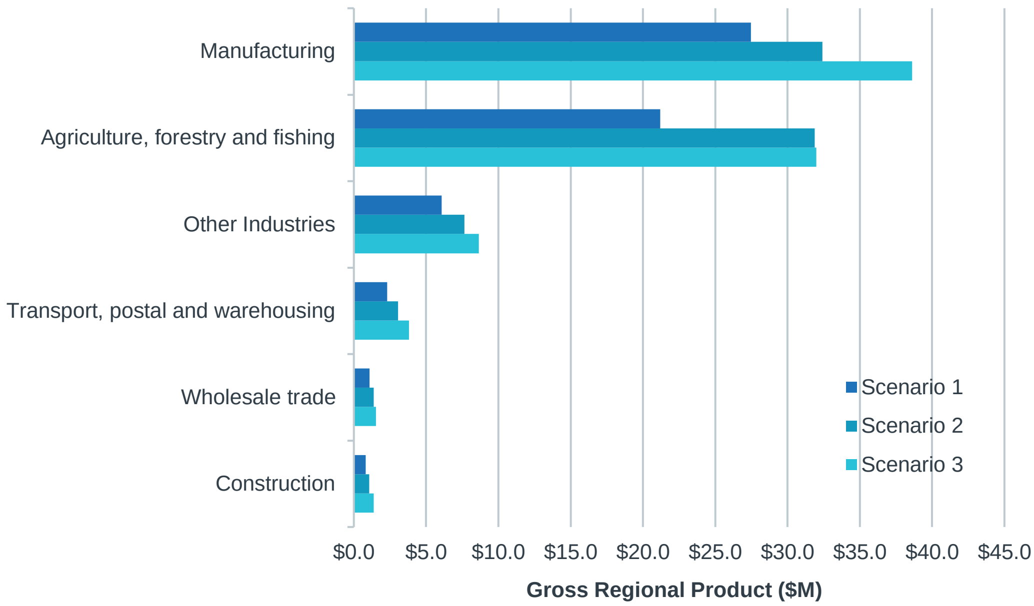
Figure 4.2. Annual Contribution to Employment (FTEs), Northern Queensland Region



Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

An increase in the hardwood logs harvested and sawmilled in the Northern Queensland region will predominantly impact the manufacturing and agriculture, forestry and fishing industry. Major industry/ sector beneficiaries across each scenario are presented in Figure 4.3.

Figure 4.3. Gross Regional Product (GRP) Impact by Industry, Northern Queensland Region



Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

5. SOCIO-ECONOMIC BENEFITS

In addition to the net additional economy activity generated from increased access to native hardwood timber in chapter 4, the increased access to native hardwood timber will support a variety of socio-economic benefits for the Northern Queensland region that are not fully captured or explored in Input-Output modelling. These benefits are examined below.

5.1 AGRICULTURAL DIVERSIFICATION

In 2020-21, agricultural production in the Northern Queensland region was valued at $5.2 billion, of which beef cattle contributed $2.4 billion (45.6%) and sugar cane farming contributed $1.1 billion (21.1%). This higher reliance on these two commodities makes the Northern Queensland region's agricultural sector highly susceptible to changes in national and international cattle and sugar market dynamics.

The increase in access to and harvesting of native hardwood timber in the Northern Queensland region would diversify agricultural production in the region. Increased access to native hardwood timber would provide increased agricultural output of $15.7 million and $30.3 million along with subsequent value adding opportunities, diversifying the region's current agricultural production.

Increasing economic diversification is important for managing and reducing the adverse impacts from volatility in markets to a regional economy and thereby providing a greater level of economic stability to support growth and development. This is important not only for the agricultural sector, but also for regional supply chains, value adding industries and supporting household industries that require higher levels of economic stability to attract investment and development.

5.2 INDIGENOUS EMPLOYMENT OPPORTUNITIES

The increase in access to native hardwood forests in the Northern Queensland region can provide employment opportunities for indigenous communities and persons throughout the region. An example of this is Cape York Timber which harvests hardwood from state-owned land across the Cape York providing valuable local indigenous employment and training across its operations.

Expanding the access in supply of hardwood timber across the Northern Queensland region will enable organisations such as Cape York Timbers to increase employment and training opportunities for indigenous persons.

5.3 SUSTAINABLE TIMBER RESOURCES

Native hardwood timber harvested in the Northern Queensland region is a sustainable source, planted, grown and harvested in accordance with codes of practice consistent with the world's leading environmental standards. Increased access to hardwood timber reserves in the Northern Queensland region will provide an increased supply of sustainable timber products within the national market.

Australia is a net importer of wood products with a net trade of $1.2 billion in 2023-24. Wood products imported from overseas are frequently imported from countries with less developed regulatory conditions of wood products providing a risk that timber may be sourced from unstainable forests. It is estimated that approximately 10% of wood products imported into Australia is from an untraceable origin (Timber Queensland, 2024).

Increasing the sustainable timber supply in the Northern Queensland region can reduce the need to import timber products into the region and decreasing the chance that unstainable timber is imported into the region.

5.4 ALIGNMENT WITH QUEENSLAND SUSTAINABLE TIMBER INDUSTRY FRAMEWORK

The Queensland Government released the terms of reference for its new *Queensland Sustainable Timber Industry Framework* in June 2024.The framework is to be developed in partnership with industry and is designed to promote and ensure stability within Queensland's forest and timber industry. Increasing access to the Northern Queensland region's forestry resources and the economic activity associated with an uptake in harvesting of hardwood timber products aligns with priority areas of the framework including (Queensland Government, 2024):

- Securing sustainable timber supply
- Adding value to forest and timber supply chains
- Future forest workforce and strong timber industry
- Fostering First Nations peoples' forestry employment and enterprise opportunities.

5.5 HARDWOOD TIMBER PRODUCT IMPORT REPLACEMENT OPPORTUNITY

As highlighted in chapter 2.5, the Northern Queensland region currently has a negative net trade of wood products of -$161.3 million suggesting there is an opportunity to increase the volume of wood products produced in hardwood sawmills in the Northern Queensland region. Increasing sawmill throughput will boost local economic growth through employment and incomes paid.

6. POTENTIAL BARRIERS TO ACHIEVING GROWTH

Unlocking access to state-owned hardwood timber reserves will be pivotal role in the development of the hardwood forestry and wood product manufacturing industry within the Northern Queensland region. However, there are several economic factors that have the potential to hinder growth of the Hardwood Forestry and Timber Product industry, such as:

- **Resource Security** – A key potential barrier to growth to overcome is access to hardwood timber reserves. Currently, hardwood forest harvesters generally have 12 month permits for access to state-owned land providing a lack of resource security. The region currently harvests 19,210m^3 from 601,706 ha however has native forest reserves of 4,733,200 ha indicating that only 12.7% of forest land is being utilised. The underutilisation of native hardwood timber on crown leasehold land is a key economic barrier to overcome and increased access to this will provide economic benefits and employment opportunities within the region as highlighted in chapter 4.

  Increased access to native hardwood timber on crown leasehold land can be done through longer-term supply arrangements between the State Government and local harvesters. These supply arrangements can also be partnered with traditional owner groups on indigenous lands to increase indigenous employment and activity within the supply chain.

- **Access and Cost to Industry Training** – Accredited harvesting and sawmill training organisations are predominantly located in larger forestry regions of Australia such as New South Wales and Victoria. Sending employees interstate for up to a week to receive necessary training can be costly and unviable for small family-owned hardwood sawmills. Lack of access and cost to sufficient industry training can provide several disadvantages to hardwood timber harvest and sawmill operations including, lower productivity rates, unsafe operation of machines, difficulty in recruitment and reduced competitiveness in the employment market.

  Collaboration between industry and education providers could assist in providing necessary and industry recognised training courses.

- **Freight and Supply Chain Costs and Limitations** – The Northern Queensland region has higher supply chain costs in comparison to established forestry industries elsewhere in Australia due to the volume of wood products produced and distance between hardwood resources, sawmills and market. Freight infrastructure is generally adequate to support the current industry's needs however, further investments into specific road infrastructure can be made to improve the efficiency of the industry and support higher volumes of forest products transported including:

  - Removal of weight restrictions at the Barron River Bridge.
  - Extending Road Train Routes from hardwood forest permit areas from the Outback-North and Townsville sub-regions to hardwood sawmills located in the Cairns sub-region – particularly between Mareeba and Mount Garnet.

- **Investment Risks** – High capital requirements into machinery and infrastructure required to support the operations of hardwood timber harvesting and sawmill operations can deter investment into the Northern Queensland region's hardwood timber industry. Historical uncertainty to access to hardwood resources and high supply chain costs have also created unfavourable investment conditions for potential investors.

  The development of a feasibility study to assess the viability of the development of a new hardwood sawmill within the Northern Queensland region would assist in understanding investment risks and highlight project returns.

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APPENDIX A: INPUT–OUTPUT METHODOLOGY

INPUT–OUTPUT MODEL OVERVIEW

Input-Output analysis demonstrates inter-industry relationships in an economy, depicting how the output of one industry is purchased by other industries, households, the government and external parties (i.e. exports), as well as expenditure on other factors of production such as labour, capital and imports. Input-Output analysis shows the direct and indirect (flow-on) effects of one sector on other sectors and the general economy. As such, Input-Output modelling can be used to demonstrate the economic contribution of a sector on the overall economy and how much the economy relies on this sector or to examine a change in final demand of any one sector and the resultant change in activity of its supporting sectors.

The economic contribution can be traced through the economic system via:

- **Initial stimulus (direct) impacts**, which represent the economic activity of the industry directly experiencing the stimulus.
- **Flow-on impacts**, which are disaggregated to:
    - **Production induced effects (type I flow-on)**, which comprise the effects from:
        - Direct expenditure on goods and services by the industry experiencing the stimulus (direct suppliers to the industry), known as the first round or direct requirements effects.
        - The second and subsequent round effects of increased purchases by suppliers in response to increased sales, known as the industry support effects.
    - **Household consumption effects (type II flow-on)**, which represent the consumption induced activity from additional household expenditure on goods and services resulting from additional wages and salaries being paid within the economic system.

These effects can be identified through the examination of four types of impacts:

- **Output**: Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
- **Gross product**: Refers to the value of output after deducting the cost of goods and services inputs in the production process. Gross product (e.g., Gross Regional Product) defines a true net economic contribution and is subsequently the preferred measure for assessing economic impacts.
- **Income**: Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.
- **Employment**: Refers to the part-time and full-time employment positions generated by the economic shock, both directly and indirectly through flow-on activity, and is expressed in terms of full time equivalent (FTE) positions.

Input-Output multipliers can be derived from open (Type I) Input-Output models or closed (Type II) models. Open models show the direct effects of spending in a particular industry as well as the indirect or flow-on (industrial support) effects of additional activities undertaken by industries increasing their activity in response to the direct spending.

Closed models re-circulate the labour income earned as a result of the initial spending through other industry and commodity groups to estimate consumption induced effects (or impacts from increased household consumption).

MODEL DEVELOPMENT

Multipliers used in this assessment are derived from sub-regional transaction tables developed specifically for this project. The process of developing a sub-regional transaction table involves developing regional estimates of gross production and purchasing patterns based on a parent table, in this case, the 2018/19 Australian transaction table (ABS, 2021).

Estimates of gross production (by industry) in the study areas were developed based on the percent contribution to employment (by place of work) of the study areas to the Australian economy (ABS, 2012; ABS, 2017; ABS, 2022; ABS, 2023 a; Jobs and Skills Australia, 2023), and applied to Australian gross output identified in the 2018/19 Australian table.

Industry purchasing patterns within the study area were estimated using a Flegg Location Quotient approach, as described in Flegg *et al*. (2021), with a fixed degree of convexity applied to the regional size scalar. Regional final demand estimates (except exports) developed based on the regional inter-industry sales estimated using the Flegg Location Quotient relative to national inter-industry sales and final demand estimates for each industry (noting regional exports are assumed to reflect the remainder of total uses).

Employment estimates were rebased from 2018/19 (as used in the Australian national Input-Output transaction tables) to current year values using the Wage Price Index (ABS, 2023 b).

MODELLING ASSUMPTIONS

The key assumptions and limitations of Input-Output analysis include:

- **Lack of supply-side constraints**: The most significant limitation of economic impact analysis using Input-Output multipliers is the implicit assumption that the economy has no supply-side constraints so the supply of each good is perfectly elastic. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- **Fixed prices**: Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using Input-Output multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. The system is in equilibrium at given prices, and prices are assumed to be unaffected by policy and any crowding out effects are not captured. This is not the case in an economic system subject to external influences.
- **Fixed ratios for intermediate inputs and production (linear production function)**: Economic impact analysis using Input-Output multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. That is, the input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs). As such, impact analysis using Input-Output multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount. Further, it is assumed each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies there is only one method used to produce each commodity and that each sector has only one primary output.
- **No allowance for economies of scope**: The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the "additivity assumption". This generally does not reflect real world operations.
- **No allowance for purchasers' marginal responses to change**: Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.

- **Absence of budget constraints**: Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.

Despite these limitations, Input-Output techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and provide useful insight into the quantum of final demand for goods and services, both directly and indirectly, likely to be generated by a project.

In addition to the general limitations of Input-Output analysis, there are three other factors that need to be considered when assessing the outputs of sub-regional transaction table developed using the above approach, namely:

- It is assumed the sub-region has similar technology and demand/ consumption patterns as the parent (Australia) table (e.g. the ratio of employee compensation to employees for each industry is held constant).
- Intra-regional cross-industry purchasing patterns for a given sector vary from the national tables depending on the prominence of the sector in the regional economy compared to its input sectors. Typically, sectors that are more prominent in the region (compared to the national economy) will be assessed as purchasing a higher proportion of imports from input sectors than at the national level, and vice versa.

The size of the regional economy is assumed to have an inverse relationship with the requirement to import goods/ services to meet its needs (i.e. the smaller the economy, in general the greater the reliance on imports).

APPENDIX B: INPUT-OUTPUT MODELLING RESULTS

NORTHERN QUEENSLAND

Table B. 1. Scenario 1 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Northern Queensland Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$97.9	$46.2	$15.4	146
Direct Requirements Impacts*	$16.6	$6.9	$4.9	59
Industry Support Impacts*	$5.2	$2.5	$1.5	17
Household Consumption Impacts	$5.9	$3.4	$1.8	23
Total Impacts in Local Economy	**$125.6**	**$58.9**	**$23.6**	**244**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 2. Scenario 2 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Northern Queensland Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$131.5	$60.8	$20.2	191
Direct Requirements Impacts*	$21.8	$8.9	$6.3	77
Industry Support Impacts*	$6.8	$3.2	$2.0	23
Household Consumption Impacts	$7.6	$4.4	$2.3	29
Total Impacts in Local Economy	**$167.7**	**$77.4**	**$30.8**	**320**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 3. Scenario 3 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Northern Queensland Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$156.0	$67.0	$23.0	220
Direct Requirements Impacts*	$25.2	$10.4	$7.4	89
Industry Support Impacts*	$7.8	$3.7	$2.3	26
Household Consumption Impacts	$8.5	$4.9	$2.6	33
Total Impacts in Local Economy	**$197.6**	**$86.0**	**$35.3**	**368**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

FAR NORTH

Table B. 4. Current Activity Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Far North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$11.3	$7.1	$1.9	18
Direct Requirements Impacts*	$1.9	$0.7	$0.4	6
Industry Support Impacts*	$0.5	$0.3	$0.1	1
Household Consumption Impacts	$0.4	$0.3	$0.1	2
Total Impacts in Local Economy	**$14.0**	**$8.3**	**$2.6**	**27**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 5. Scenario 1 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Far North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$25.2	$14.3	$4.0	38
Direct Requirements Impacts*	$3.8	$1.4	$0.9	13
Industry Support Impacts*	$1.0	$0.5	$0.3	3
Household Consumption Impacts	$0.8	$0.5	$0.3	3
Total Impacts in Local Economy	**$30.8**	**$16.7**	**$5.5**	**57**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 6. Scenario 2 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Far North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$37.9	$21.5	$6.1	56
Direct Requirements Impacts*	$5.7	$2.1	$1.4	20
Industry Support Impacts*	$1.5	$0.8	$0.4	4
Household Consumption Impacts	$1.2	$0.8	$0.4	5
Total Impacts in Local Economy	**$46.2**	**$25.1**	**$8.3**	**85**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 7. Scenario 3 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Far North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$42.2	$22.6	$6.6	61
Direct Requirements Impacts*	$6.1	$2.2	$1.5	21
Industry Support Impacts*	$1.5	$0.8	$0.4	5
Household Consumption Impacts	$1.2	$0.8	$0.4	5
Total Impacts in Local Economy	**$51.1**	**$26.4**	**$8.9**	**92**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

OUTBACK NORTH

Table B. 8. Current Activity Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Outback North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$2.0	$1.2	$0.4	3
Direct Requirements Impacts*	$0.4	$0.2	$0.1	1
Industry Support Impacts*	$0.1	$0.0	$0.0	0
Household Consumption Impacts	$0.1	$0.0	$0.0	0
Total Impacts in Local Economy	**$2.6**	**$1.5**	**$0.5**	**5**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 9. Scenario 1 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Outback North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$2.6	$1.4	$0.6	5
Direct Requirements Impacts*	$0.6	$0.2	$0.2	2
Industry Support Impacts*	$0.1	$0.1	$0.0	0
Household Consumption Impacts	$0.1	$0.1	$0.0	0
Total Impacts in Local Economy	**$3.5**	**$1.8**	**$0.8**	**8**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 10. Scenario 2 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Outback North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$4.3	$2.8	$0.8	7
Direct Requirements Impacts*	$0.8	$0.3	$0.2	3
Industry Support Impacts*	$0.2	$0.1	$0.1	1
Household Consumption Impacts	$0.2	$0.1	$0.1	1
Total Impacts in Local Economy	**$5.5**	**$3.3**	**$1.1**	**11**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 11. Scenario 3 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Outback North Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$4.3	$2.8	$0.8	7
Direct Requirements Impacts*	$0.8	$0.3	$0.2	3
Industry Support Impacts*	$0.2	$0.1	$0.1	1
Household Consumption Impacts	$0.2	$0.1	$0.1	1
Total Impacts in Local Economy	**$5.5**	**$3.3**	**$1.1**	**11**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

CAIRNS

Table B. 12. Current Activity Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Cairns Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$23.5	$9.6	$3.6	35
Direct Requirements Impacts*	$3.7	$1.6	$1.2	13
Industry Support Impacts*	$1.3	$0.6	$0.4	5
Household Consumption Impacts	$1.6	$0.9	$0.5	7
Total Impacts in Local Economy	**$30.1**	**$12.7**	**$5.7**	**59**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 13. Scenario 1 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Cairns Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$32.3	$12.9	$4.8	46
Direct Requirements Impacts*	$4.8	$2.1	$1.5	18
Industry Support Impacts*	$1.7	$0.8	$0.5	6
Household Consumption Impacts	$2.3	$1.3	$0.7	9
Total Impacts in Local Economy	**$41.1**	**$17.0**	**$7.5**	**79**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 14. Scenario 2 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Cairns Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$42.8	$16.2	$6.1	59
Direct Requirements Impacts*	$6.0	$2.6	$1.9	22
Industry Support Impacts*	$2.1	$0.9	$0.6	8
Household Consumption Impacts	$3.0	$1.7	$0.9	12
Total Impacts in Local Economy	**$53.9**	**$21.4**	**$9.6**	**101**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 15. Scenario 3 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Cairns Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$54.2	$19.0	$7.4	72
Direct Requirements Impacts*	$7.3	$3.2	$2.3	27
Industry Support Impacts*	$2.6	$1.1	$0.8	9
Household Consumption Impacts	$3.5	$2.0	$1.1	14
Total Impacts in Local Economy	**$67.6**	**$25.3**	**$11.6**	**122**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

TOWNSVILLE

Table B. 16. Current Activity Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Townsville Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$13.1	$7.1	$2.5	23
Direct Requirements Impacts*	$2.4	$1.0	$0.7	8
Industry Support Impacts*	$0.9	$0.4	$0.3	3
Household Consumption Impacts	$1.1	$0.6	$0.3	4
Total Impacts in Local Economy	**$17.4**	**$9.2**	**$3.8**	**38**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 17. Scenario 1 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Townsville Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$15.7	$8.9	$2.9	27
Direct Requirements Impacts*	$2.8	$1.2	$0.9	10
Industry Support Impacts*	$1.0	$0.5	$0.3	3
Household Consumption Impacts	$1.5	$0.8	$0.4	5
Total Impacts in Local Economy	**$21.0**	**$11.4**	**$4.5**	**46**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 18. Scenario 2 Hardwood Harvesting and Sawmilling Annual Economic Impacts, Townsville Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$17.1	$9.9	$3.2	29
Direct Requirements Impacts*	$3.0	$1.3	$0.9	11
Industry Support Impacts*	$1.1	$0.5	$0.3	4
Household Consumption Impacts	$1.7	$1.0	$0.5	6
Total Impacts in Local Economy	**$22.9**	**$12.6**	**$4.9**	**50**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 19. Scenario 3 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Townsville Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$17.1	$9.9	$3.2	29
Direct Requirements Impacts*	$3.0	$1.3	$0.9	11
Industry Support Impacts*	$1.1	$0.5	$0.3	4
Household Consumption Impacts	$1.7	$1.0	$0.5	6
Total Impacts in Local Economy	**$22.9**	**$12.6**	**$4.9**	**50**

Note:
- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

MACKAY-ISAAC-WHITSUNDAY

Table B. 20. Current Activity Hardwood Harvesting and Sawmilling Annual Economic Impacts, Mackay-Isaac-Whitsunday Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$11.9	$5.3	$1.9	18
Direct Requirements Impacts*	$2.6	$1.1	$0.8	9
Industry Support Impacts*	$0.8	$0.4	$0.2	3
Household Consumption Impacts	$0.7	$0.4	$0.2	3
Total Impacts in Local Economy	**$16.0**	**$7.3**	**$3.2**	**32**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 21. Scenario 1 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Mackay-Isaac-Whitsunday Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$21.4	$8.0	$3.0	30
Direct Requirements Impacts*	$4.6	$2.0	$1.4	16
Industry Support Impacts*	$1.4	$0.7	$0.4	5
Household Consumption Impacts	$1.2	$0.7	$0.3	4
Total Impacts in Local Economy	**$28.6**	**$11.3**	**$5.2**	**54**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 22. Scenario 2 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Mackay-Isaac-Whitsunday Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$29.4	$10.5	$4.0	39
Direct Requirements Impacts*	$6.3	$2.6	$1.9	22
Industry Support Impacts*	$1.9	$0.9	$0.6	6
Household Consumption Impacts	$1.6	$0.9	$0.5	6
Total Impacts in Local Economy	**$39.1**	**$15.0**	**$7.0**	**73**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

Table B. 23. Scenario 3 Hardwood Forestry and Sawmill Industry Annual Economic Impacts, Mackay-Isaac-Whitsunday Sub-Region

Impact	Output ($M)	Gross Regional Product ($M)	Incomes ($M)	Employment (FTEs)
Initial Stimulus in Local Economy	$38.1	$12.7	$5.0	50
Direct Requirements Impacts*	$8.0	$3.4	$2.4	28
Industry Support Impacts*	$2.4	$1.1	$0.7	8
Household Consumption Impacts	$1.9	$1.1	$0.6	7
Total Impacts in Local Economy	**$50.4**	**$18.3**	**$8.8**	**93**

Note:

- *Production induced flow-on (Type I) Impacts.
- Figures may not add due to rounding.

Sources: ABS (2012; 2017; 2021; 2022; 2023a, 2023b), Jobs and Skills Australia (2023), AEC.

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