

MAGNETIC ISLAND ECONOMIC ANALYSIS

TOWNSVILLE ENTERPRISE LIMITED
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Job Name: Magnetic Island Economic Analysis
Client: Townsville Enterprise Limited
Client Contact: Lisa Woolfe
Project Manager: Matthew Kelly
Email: matthew.kelly@aecgrouppltd.com
Telephone: 07 4771 5550
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EXECUTIVE SUMMARY

BACKGROUND & PURPOSE

Magnetic Island is North Queensland's premier tourism destination and a major recreational/leisure hub for residents. The island is located approximately 8km off the shore of Townsville's CBD and is a short 20 minute ferry ride. Magnetic Island was home to a resident population of 2,377 in 2018 and attracted over 290,000 visitors throughout the year, with residents and tourists alike enjoying a unique tropical lifestyle with access to wildlife and the Great Barrier Reef.

The island has over 23 bays and beaches boasting serenity and natural beauty, along with an abundance of amenities including a range of accommodation.

Magnetic Island generated \$90.9 million in Gross Regional Product (GRP) during 2017-18. The provision of housing and accommodation to support residents and visitors are major contributors to the economy, with tourism being a pillar of economic activity for the Island with a total of 290,399 estimated visitors in 2018-19¹.

PURPOSE OF THE REPORT

Given the strategic importance of Magnetic Island, Townsville Enterprise Limited (TEL) has engaged AEC Group Pty Ltd (AEC) to provide an assessment of the contribution that Magnetic Island provides to the broader regional economy. Input-Output modelling techniques are used to estimate the direct and flow on impacts the Island generates as part of the regional North Queensland² economy.

The findings of this report will be used to support future strategic decisions and advocacy/awareness of the importance of Magnetic Island.

ECONOMIC CONTRIBUTION

Magnetic Island is a key driver of economic activity to the broader North Queensland economy through inducing tourist visitation to the broader region and providing an intra-regional holiday destination for North Queensland residents (without this option significant local expenditure would be drawn elsewhere).

Economic modelling of these impacts indicates that Magnetic Island generated the following economic activity within the North Queensland economy in 2018-19:

- **\$380.2 million in economic output for businesses within North Queensland** (including \$170.5 million in direct impacts).
- **\$202.8 million contribution to Gross Regional Product (GRP)** (including \$90.2 million through direct impacts).
- **\$107.4 million in incomes and salaries paid to North Queensland households** (including \$54.5 million in direct incomes).
- **Employment totalling 1,746 Full Time Equivalent (FTE) jobs** (including 1,041 direct FTE jobs).

¹ Visitor estimates provided by SeaLink, Magnetic Island Ferries, Breakwater Marina and Townsville Yacht Club do not align with Tourism Research Australia visitor numbers.

² Townsville Statistical Area Level 4 (SA4).

TABLE OF CONTENTS

DOCUMENT CONTROL	I
EXECUTIVE SUMMARY	II
TABLE OF CONTENTS	III
1. INTRODUCTION	4
1.1 BACKGROUND & PURPOSE	4
1.2 PURPOSE OF THIS REPORT	4
2. MAGNETIC ISLAND PROFILE	5
2.1 SOCIO-ECONOMIC PROFILE	ERROR! BOOKMARK NOT DEFINED.
2.2 EMPLOYMENT FOR RESIDENTS OF MAINLAND NORTH QUEENSLAND	ERROR! BOOKMARK NOT DEFINED.
3. ECONOMIC CONTRIBUTION	8
3.1 APPROACH	8
3.2 DRIVERS & ASSUMPTIONS USED IN MODELLING	8
3.3 ECONOMIC CONTRIBUTION ASSESSMENT	10
REFERENCES	12
APPENDIX A: INPUT-OUTPUT METHODOLOGY	13

1. INTRODUCTION

1.1 BACKGROUND

Magnetic Island is North Queensland's premier tourism destination and a major recreational/leisure hub for residents. The island is located approximately 8km off the shore of Townsville's CBD and is a short 20 minute ferry ride. Magnetic Island was home to a resident population of 2,377 in 2018 and attracted over 290,000 visitors throughout the year, with residents and tourists alike enjoying a unique tropical lifestyle with access to wildlife and the Great Barrier Reef.

The island has over 23 bays and beaches boasting serenity and natural beauty, along with an abundance of amenities including a range of accommodation.

Given the strategic importance of Magnetic Island, Townsville Enterprise Limited (TEL) has engaged AEC Group Pty Ltd (AEC) to provide an assessment of the contribution that Magnetic Island provides to the broader regional economy.

1.2 APPROACH & PURPOSE OF THIS REPORT

Input-Output modelling techniques are used to estimate the direct and flow on impacts the Island generates as part of the regional North Queensland³ economy. An overview of the Input-Output model used and limitations is presented in Appendix A.

The remainder of this report includes:

- A socio-economic profile of Magnetic Island highlighting key factors such as Gross Regional Product (GRP), unemployment, visitation and median household income per weeks.
- An assessment of the economic contribution of Magnetic Island utilising Input-Output modelling techniques to estimate the direct and flow on impacts the Island generates as part of the broader North Queensland regional economy.

The findings of this report will be used to support future strategic decisions and advocacy/awareness of the importance of Magnetic Island.

³ Townsville Statistical Area Level 4 (SA4).

2. MAGNETIC ISLAND PROFILE

This section provides an overview of Magnetic Island’s economy and community to provide context for the economic contribution assessment in section 3. In profiling the Magnetic Island economy and community, the Magnetic Island Statistical Area 2 (SA2) has been used. All data referencing Magnetic Island in this section refers to this SA2.

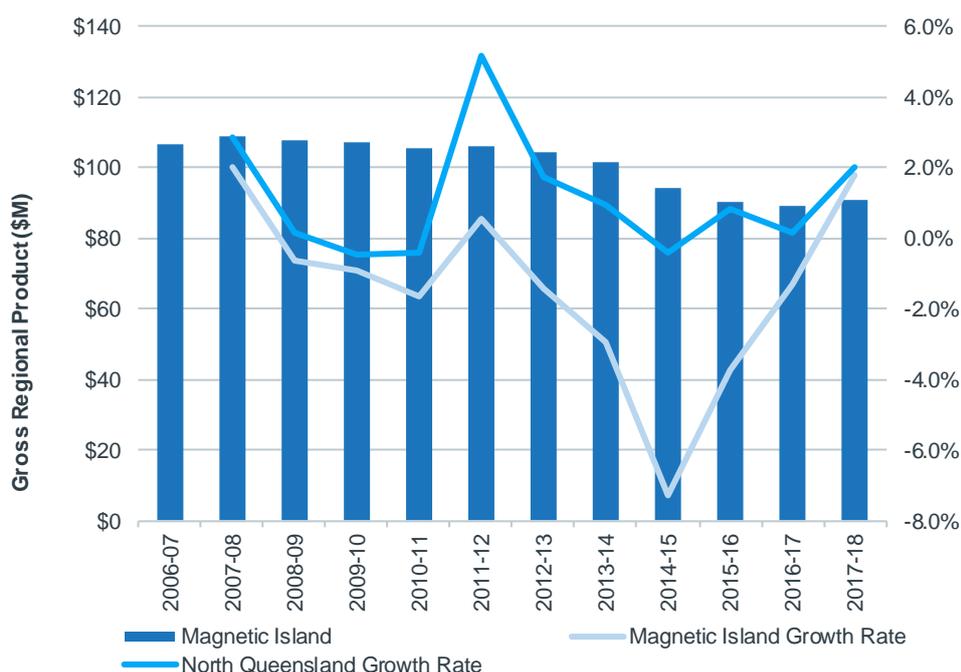
Magnetic Island is a major North Queensland tourism destination that also supports a sizeable resident population and industry presence.

In 2017-18 Magnetic Island generated GRP of \$90.9 million. GRP has declined by approximately -1.4% on average per annum since 2006-07. In 2017-18 GRP grew by approximately 1.8%, the first positive growth experienced in the last five years.

The largest annual decrease in GRP occurred between 2013-14 and 2014-15. This is attributed to a decrease in a number of sectors, primarily construction (decreasing by approximately \$3 million), followed by ownership of dwelling (decreasing by \$1.16 million) and electricity, gas, water and waste services (decreasing by \$1.06 million).

There is weakening economic growth in Magnetic Island from 2007-08 to 2012-13, with a sharp decline in GRP the following year. This can be attributed to a number of factors including the accuracy of the GRP model for smaller SA2 level economies and fluctuation in tourism numbers. From 2011-12 to 2013-14, electricity, gas, water and waste services experienced the single largest decline in GRP. The largest decline from 2013-14 to 2014-15 was experienced in the construction sector, potentially resulting from reduced investment in Magnetic Island.

Figure 2.1. Gross Regional Product (GRP), Magnetic Island

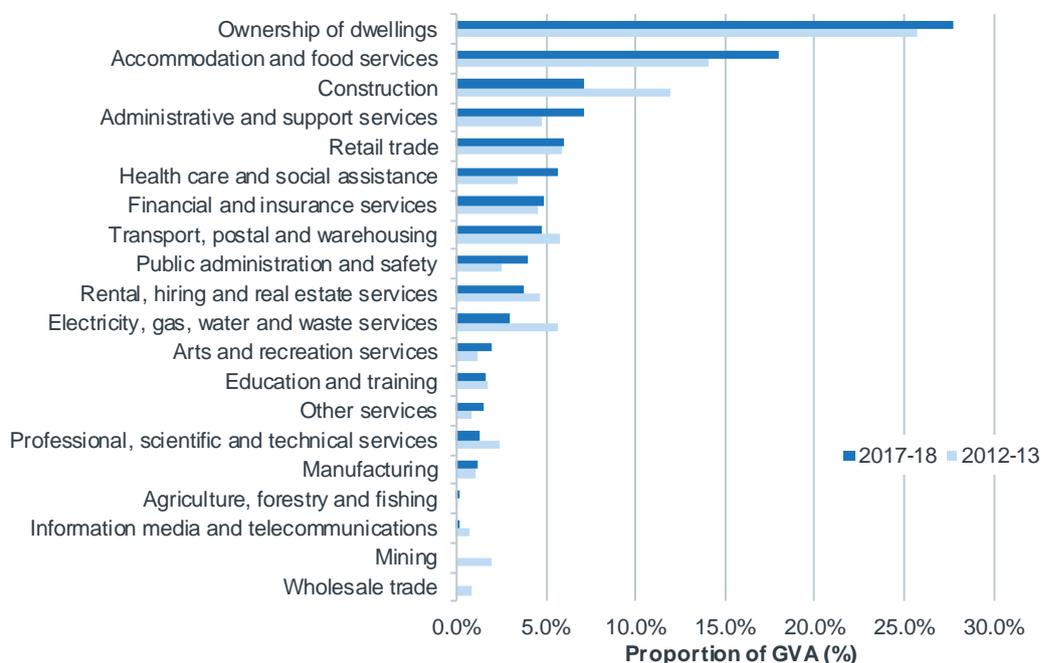


Note: The North Queensland growth rate includes Magnetic Island SA2.
Source: AEC (Unpublished).

The largest contributor to GRP in Magnetic Island is ownership of dwellings at 27.8%, followed by accommodation and food services at 18.0% in 2017-18. The importance of the tourism industry to the local economy is reflected through these sectors as well as retail trade (which is the fifth largest contributor to GRP accounting for 6.0%). Construction is the third largest contributor to GRP (7.2%), which supports the provision of housing and accommodation for local residents and visitors.

Over the past five years, construction experienced the largest decrease in contribution to GRP, declining by -4.8 percentage points. Accommodation and food services on the other hand experienced the largest increase in contribution to GRP, increasing by 3.9 percentage points.

Figure 2.2. Proportion of Gross Value Add (GVA), Magnetic Island (2012-13 and 2017-18)



Source: AEC (Unpublished).

Population on Magnetic Island has remained static since 2016, with no population growth experienced over 2017-18. Over the past five years, residential population on the island has increased by 0.2% on average per annum. Magnetic Island accounts for approximately 1% of North Queensland's population.

Around 45% of the resident population are in the labour force (1,077 people), with around 8.4% of the local labour force unemployed as of the quarter ended March 2019. Other key socio-economic statistics for Magnetic Island include:

- Median household income is \$851 per week (2016 Census).
- Over 290,000 visitors came to Magnetic Island in 2018-19, staying approximately 1 million days/ nights (as well as an estimated 272,956 nights in Townsville as a result of Magnetic Island visitation).

Table 2.1. Socio-Economic Indicators

Indicator	Year	Magnetic Island	North Queensland	5 year Annual Growth
Population	2018	2,377	236,441	0.2% on average
Labour Force	March 2019 (quarter)	1,077	116,268	-1.6% on average
Unemployment Rate	March 2019 (quarter)	8.4%	7.8%	0.7 percentage point increase
Tourist Visitation	2018-19	290,399	n.a.	n.a.
Median Household Income	2016	\$851	\$1,362	\$4 decrease since 2011

Note: North Queensland statistics include Magnetic Island SA2.
Source: QGSO (2018), DoJSB (2019), ABS (2017b), AEC.

The table below highlights the number of residents living in Magnetic Island, rest of North Queensland (Townsville SA4) and rest of Australia and working on Magnetic Island. Residents of broader North Queensland employed on Magnetic Island will bring back a significant share of their incomes and expenditure to the mainland, generating economic activity within their local communities.

Table 2.2. Place of Work by Place of Usual Residence for Workers and Residents of Magnetic Island, 2016

		Lives In		
		Magnetic Island	Elsewhere North Queensland	Elsewhere Australia
Works In	Magnetic Island	595	58	21
	Elsewhere North Queensland	236	77,911	3,573
	Elsewhere Australia	124	25,951	10,657,769

Source: ABS (2018).

Note: Totals may not sum due to random small area adjustments within the ABS database to protect privacy.

3. ECONOMIC CONTRIBUTION

3.1 APPROACH

Economic modelling in this section estimates the economic activity supported by Magnetic Island within the broader North Queensland (Townsville Statistical Area Level 4) economy. Input-Output modelling is used to examine the direct and flow-on⁴ activity supported within the North Queensland economy. Modelling drivers used in the assessment are described in section 3.2. 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 State Product) defines the true net 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) positions⁵.

3.2 DRIVERS & ASSUMPTIONS USED IN MODELLING

While Magnetic Island is estimated to generate \$90.9 million in GRP in 2017-18, the following section has examined the contribution of the island on the basis of the visitor activity and expenditure it induces to the broader region that wouldn't otherwise occur (as well as supply/ value chain impacts). It has been conservatively assumed that aside from visitor activity supported by Magnetic Island, other economic activity supported by the island could otherwise occur elsewhere in the North Queensland catchment (including activity supporting the resident population on the assumption that residents would most likely still reside elsewhere in the North Queensland if Magnetic Island wasn't an option).

Magnetic Island is a key driver of economic activity to the broader North Queensland economy through the following avenues:

- Inducing visitation to the broader region that would potentially not otherwise occur.
- Providing an intra-regional holiday destination for North Queensland residents, without this option significant local expenditure would potentially be drawn elsewhere.

Assumptions and data used to model these impacts is considered in the following sections.

Visitor expenditure estimates have been developed based on traveller information supplied by SeaLink (passenger ferries), Magnetic Island Ferries (car ferries), Breakwater Marina (private boating), recreational boating in Townsville and Townsville Yacht Club totalling 290,399 estimated visitors.

For the purposes of this assessment, the following assumptions were made to model the economic impacts of visitor expenditure.

⁴ Both Type I and Type II flow-on impacts have been presented in this report. Refer to **Appendix A** for a description of each type of flow-on impact.

⁵ Where one FTE is equivalent to one person working full time for a period of one year.

Table 3.1. Modelling Assumptions

Factor	Notes
Visitation Splits	<ul style="list-style-type: none"> Total of 290,399 visitors, which includes: <ul style="list-style-type: none"> 121,156 local visitors that are residents from the North Queensland catchment. 79,736 domestic visitors that reside outside the North Queensland catchment. 89,508 international visitors.
Local Resident Visitation	<ul style="list-style-type: none"> Without Magnetic Island, locals living within the North Queensland catchment area would have reduced options for day trip and short stay holidays within the catchment and thereby be more likely to travel outside of the catchment area for holiday destinations. This would result in a reduction in capture of local expenditure within the North Queensland catchment. To reflect the avoided loss of local visitor expenditure, 40% of expenditure on Magnetic Island resulting from resident holidays has been included in the assessment. This reduction also allows for workers travelling to the mainland to be excluded. Of these local residents, 52% have been assumed to represent day trip visitors, while the other 48% have been assumed to represent domestic overnight visitors, based on TRA splits for Magnetic Island (TRA, 2019). Based on AEC assumptions, it has been assumed that domestic overnight visitors from within the North Queensland region stay an average of 2 nights.
Non-Local Visitation	<p>Some visitors to Magnetic Island will not visit the North Queensland region specifically as a result of Magnetic Island (i.e. without Magnetic Island these visitors will still travel to North Queensland). As a result, the number of non-local visitation nights have been reduced by 30% to account for expenditure that would otherwise be spent within the North Queensland region without Magnetic Island⁶.</p> <ul style="list-style-type: none"> Domestic overnight visitors (from outside of North Queensland) are assumed to stay an average of 6 nights, based off data from TRA (2019). International overnight visitors stay an average of 4.9 nights, based off data from TRA (2019).
Additional Stay in Townsville	Based on consultation with industry stakeholders, an allowance for 20% of overnight visitors who live outside of the catchment area and visit Magnetic Island are assumed to extend their stay in North Queensland by approximately 1.5 nights as a result of visiting the island.
Recreational Boats	Based off the DTMR (2016) recreational ship census in 2016 and Townsville Yacht Club figures, it is assumed that 20% of Townsville's recreational boats and Marina users will travel to Magnetic Island throughout the year. Assumptions are: <ul style="list-style-type: none"> The number of passengers per recreational boat were based on data provided by Breakwater Marina of 2.5 pax. 11,837 people travel to Magnetic Island on recreational boats while 119 travel from the Townsville Yacht Club <ul style="list-style-type: none"> These visitors are assumed to split into day trip and domestic overnight using the local resident visitation splits. These visitors do not stay an additional 1.5 nights in Townsville due to their trip.
Race Week	From consultation with key stakeholders, an additional visitation of 650 people has been applied to the local resident visitation splits for day trip and domestic overnight. These visitors will not stay additional nights in Townsville due to their trip to Magnetic Island as it has been assumed they are solely in the region to compete in tournaments.

Source: AEC.

Average expenditure per day/night of \$125 for day trips, \$183 for domestic overnight, and \$50 for international (TEQ, 2019) were applied across expenditure by item based on national TRA (2019) averages. Some items were excluded from this distribution as some expenditure items such as flights and long distance transport will likely occur outside the local economy and thereby would not be included within the local expenditure estimates outlined

⁶ Drivers of visitation may change due to a number of factors including (but not limited to) purpose of visit, availability of friends and/or relatives to stay with and the availability of alternative destinations which will impact non-local visitation assumptions. Detailed allowance for these factors is beyond the scope of this study.

by TEQ. Expenditure items were allocated to relevant Input-Output industries and a summary of assumed visitor spend by industry is presented in the table below.

Table 3.2. Local Expenditure Splits

Expenditure Splits	Domestic Day Trip	Domestic Overnight	International	Total Spend (\$M)
Retail Trade	58.2%	28.5%	16.3%	\$47.5
Food and Beverage Services	29.3%	26.1%	30.7%	\$46.0
Heritage, Creative and Performing Arts	4.9%	3.9%	2.0%	\$6.2
Water, Pipeline and Other Transport	0.2%	3.8%	21.8%	\$11.3
Rental and Hiring Services (except Real Estate)	0.5%	2.0%	2.1%	\$3.3
Road Transport	1.8%	2.4%	4.0%	\$4.4
Personal Services	4.9%	1.8%	2.0%	\$3.3
Accommodation	0.0%	31.2%	20.5%	\$47.7
Gambling	0.2%	0.4%	0.6%	\$0.7
Total	100.0%	100.0%	100.0%	\$170.5

Source: TRA (2019), TEQ (2019), AEC.

3.3 ECONOMIC CONTRIBUTION ASSESSMENT

Modelling of the economic contribution of Magnetic Island to North Queensland has been undertaken using the modelling drivers outlined in section 3.2. The impacts represent the economic contribution to the North Queensland economy in 2018-19 from visitation and visitor expenditure in North Queensland induced by Magnetic Island.

Economic modelling indicates that Magnetic Island generated \$380.2 million in economic output for businesses within North Queensland in 2018-19, including \$170.5 million directly through visitor expenditure and \$209.7 million through production induced (i.e. supply chain) and household consumption impacts supported by direct activities associated with visitor expenditure. This level of industry activity is estimated to have supported the following economic activity in the North Queensland economy in 2018-19:

- A \$202.8 million contribution to GRP (including \$90.2 million through direct impacts).
- Employment totalling 1,746 FTE jobs (including 1,041 direct FTE jobs), paying \$107.4 million in incomes and salaries paid to North Queensland households (including \$54.5 million in direct incomes).

Table 3.3. Economic Contribution of Visitor Expenditure Induced by Magnetic Island (\$M), 2018-19, North Queensland

Impact	Output (\$M)	Gross Regional Product (\$M)	Incomes (\$M)	Employment (FTEs)
Direct	\$170.5	\$90.2	\$54.5	1,041
Production Induced	\$77.6	\$36.7	\$18.8	235
Household Consumption	\$132.0	\$75.9	\$34.1	470
Total	\$380.2	\$202.8	\$107.4	1,746

Note: Figures may not add due to rounding.

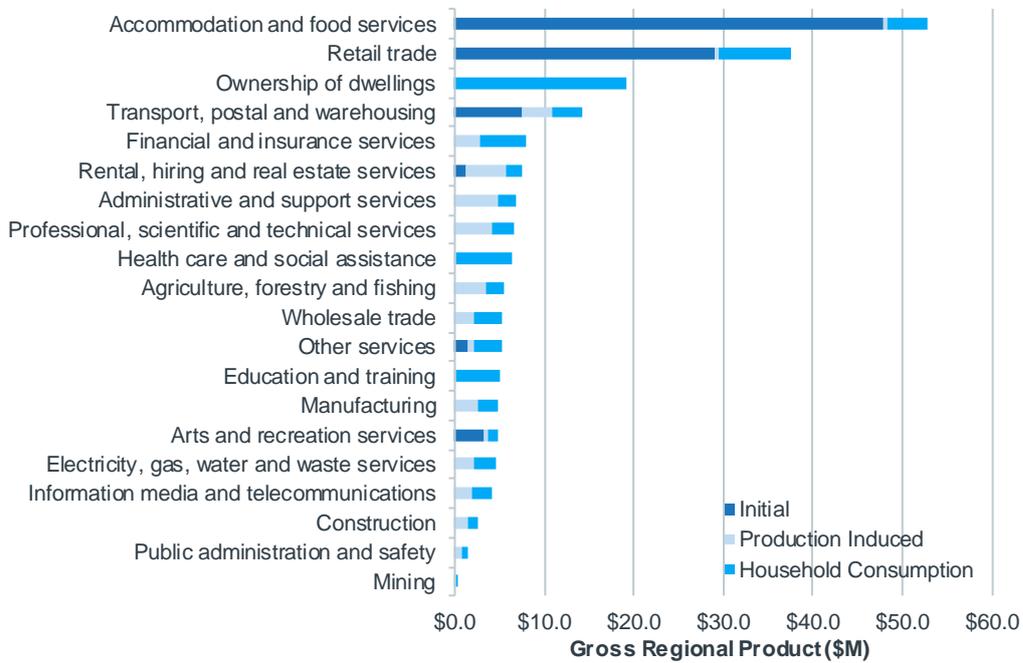
Source: AEC

GRP by industry supported through visitor expenditure induced to North Queensland by Magnetic Island is presented in Figure 2.2. As would be expected, tourism-oriented industries are estimated to have generated the majority of the contribution to GRP as a result of visitor expenditure, with the following industries recording the largest contribution:

- Accommodation and food services (combined direct and flow-on contribution to GRP of \$52.9 million).

- Retail trade (contribution to GRP of \$37.5 million).
- Ownership of dwellings⁷ (contribution to GRP of \$19.3 million).
- Transport, postal and warehousing (contribution to GRP of \$14.3 million).

Figure 3.1. GRP Impacts by Industry (\$M), 2018-19, North Queensland



Source: AEC

⁷ Reflecting rental incomes, both real and imputed, associated with dwelling ownership. Imputed rental incomes refers to the implied value housing delivers to owner-occupiers, as estimated by the market rental value of their property.

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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.⁸
 - 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).

⁸ Modelling note: In assessing construction phase impacts, AEC's modelling approach treats subcontractors in the construction services sector engaged through first round effects as part of the initial stimulus impact rather than as part of the production induced impact.

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 2016-17 Australian transaction table (ABS, 2019a).

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, 2017a; ABS, 2019b; DoESSFB, 2019), and applied to Australian gross output identified in the 2016-17 Australian table.

Industry purchasing patterns within the study area were estimated using a process of cross industry location quotients and demand-supply pool production functions as described in West (1993).

Where appropriate, values were rebased from 2016-17 (as used in the Australian national IO transaction tables) to 2018 values using the Consumer Price Index (ABS, 2019c).

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 two other factors that need to be considered when assessing the outputs of sub-regional transaction table developed using this 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.

BRISBANE

Level 5, 131 Leichhardt Street
Spring Hill QLD 4000
Australia
T: +61 (0)7 3831 0577

DARWIN

Level 1, 48-50 Smith Street
Darwin NT 0800
Australia
T: 1300 799 343

TOWNSVILLE

233 Flinders Street East
Townsville QLD 4810
Australia
T: +61 (0)7 4771 5550

MELBOURNE

Level 13, 200 Queen Street
Melbourne VIC 3000
Australia
T: +61 (0)3 8648 6586

SYDNEY

Level 14, 25 Bligh Street,
Sydney NSW 2000
Australia
T: +61 (0) 2 9283 8400

PERTH

Level 2, 580 Hay Street
Perth WA 6000
Australia
T: +61 (0) 8 6555 4940

AFFILIATED OFFICES:**BANGKOK**

2024/129-130 Sukhumvit 50
Prakanong Klongtoey,
Bangkok, Thailand 10260
T: +66 2 107 0189

SHANGHAI

Level 35, 1st Building,
700 Liqun Road, Putuo District,
Shanghai, China 200333
T: +8618 516293312

aecgrouppltd.com

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