



Final Report - Confidential
14 September 2018

Building the future trade potential of the Wide Bay Burnett

This report has been collaboratively funded by Bundaberg Regional Council, Wide Bay Burnett Regional Organisation of Councils and Gladstone Ports Corporation

Ben Artup
Bundaberg Regional Council

14 September 2018

Dear Ben

RE: Building the future trade potential of the Wide Bay Burnett: Final report

In accordance with our work dated March 2018, this final report provides the findings of economic analysis of the future trade potential of Wide Bay Burnett region with a focus on key growth sectors and infrastructure implications in the region ("the project"). The report has been developed in extensive consultation with the Bundaberg Regional Council and also received input from the Wide Bay Burnett Regional Organisation of Councils (WBBROC) and Gladstone Ports Corporation. The report provides a comprehensive analysis of current and future opportunities in the region and new industries that could emerge over the longer-term. It also considers the types of infrastructure investment needed in the region to improve regional connectivity and support growth in trade and production. Lastly, economic scenarios have been modelled to highlight the economic potential of the region and the impacts on output and jobs under a number of potential future growth scenarios.

Restrictions on report use

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Basis of our work

We have based this work on our economic research and analysis of publically available data, relevant studies, and information provided by the Bundaberg Regional Council as well as our own economic analysis.

To the extent that these key information and data change, the results of the economic analysis and impact assessment are likely to change.

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Yours sincerely



Steve Kanowski

Partner

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Executive Summary

Wide Bay Burnett is a region of real economic potential

The region has unique comparative advantages

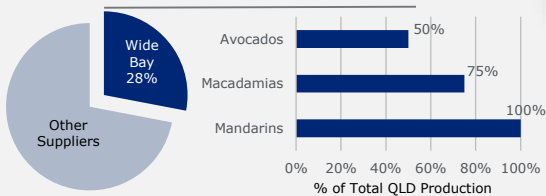
Agriculture



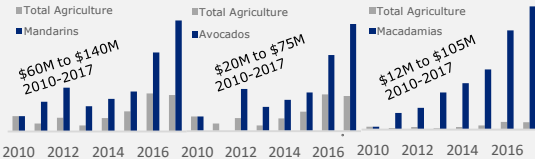
The region is taking advantage of key growth opportunities in **fruit** and **nuts**.

\$404M

Value of Fruit & Nut production of Wide Bay region – **28%** of QLD production



Growth of key fruit & nut commodities - 2010-2017



Sugar is still an important commodity and strength of the region.

↑ 30% Increase in land holdings for sugar production in 2016-17 – resulting in a 20% increase in production (value).

Wide Bay Burnett produces 12% of Australia's total sugar cane production and is the third largest sugar producing region in Australia.*



Other Strengths of the Agriculture Sector



Vegetables

Wide Bay Burnett accounts for **17%** of Queensland's vegetable production.



Livestock

\$440M in livestock produced in the region.

*Comparison of SA4 regions. ABS 2017

Mining



North Burnett minerals province - mining opportunities in bauxite, ilmenite and apatite.

Maryborough - mining opportunities in coal.

South Burnett - mining opportunities in coal.

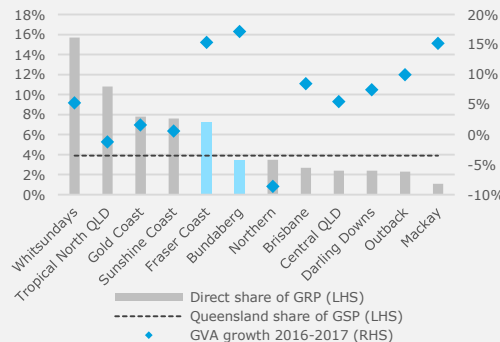
The Wide Bay Burnett region has enormous mining potential with a number of known mining deposits and potential projects. Exploiting these opportunities could result in increases in trade out of the region by \$73M to \$250M per annum.

Potential incremental increases in trade average p.a. 2018-35:

	Bauxite	Coal	Ilmenite	Total
Medium:	\$31M	-	\$42M	\$73M
High:	\$37M	\$156M	\$57M	\$250M

Tourism

Fraser Coast and Bundaberg have the fastest growing tourism industries in Queensland based on GVA growth - 2016-17.



TRA 2017

Other key strengths of the region

Road & Rail



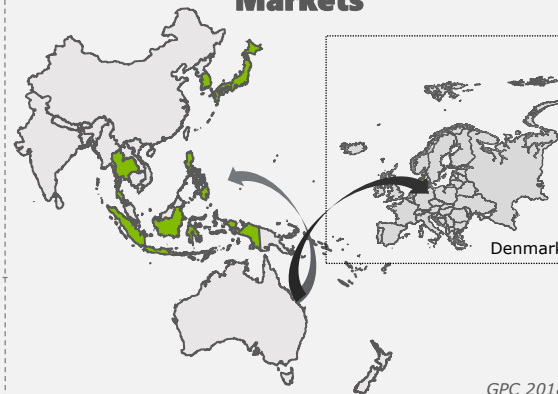
Wide Bay is home to the largest **rail manufacturing** hub in Queensland



1,900 persons employed in the **road freight** transport industry – a major regional employer.
ABS Census 2016

Growing Export Facilities

The Port of Bundaberg Exports to 6 International Markets

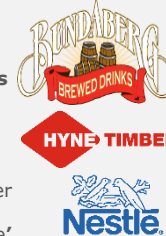


GPC 2018

Home to National Icons

World Heritage Listed Tourist Attractions – such as Fraser Island

The region is also home to iconic companies such as **Bundaberg Brewed Drinks** and **Hyne Timber**. Global giant, **Nestle** opened a factory in Gympie in 1953 originally for dairy powder and is now a primary supplier of coffee to Australia and New Zealand via the Nescafe brand.



Wide Bay Burnett

The region has significant economic potential

The Wide Bay Burnett region is an **integral economic hub** to the Queensland economy, strategically situated to the north of the densely populated South East Queensland region, and to the south of the key industrial hub, Gladstone. The region is home to a unique and diverse mix of agriculture production, minerals resource endowments, world heritage listed tourist attractions, and an abundance of natural resources.

The region **has a storied history**, from the infamous 'Gympie Gold Rush' in 1867, to being known as the home of iconic Australian companies such as, Bundaberg Brewed Drinks, Hyne Timber and the global producer, Nestle in Gympie.

The future of Wide Bay Burnett looks just as bright, with the region well placed to take advantage of rising incomes in Asian countries and demand for its mineral resources. If the right investments in infrastructure are made in a timely manner, the Wide Bay Burnett region could increase its trade potential substantially, resulting in higher output, greater employment and real growth in incomes.

Sustainable long-term growth *Wide Bay Burnett can position itself for the future by....embracing global trends*

The Wide Bay Burnett region has many strengths that can enable it to take advantage of growing opportunities in the region and globally. It also has the potential to create an economy that has inter-generational sustainability by capitalising on some of the global megatrends.

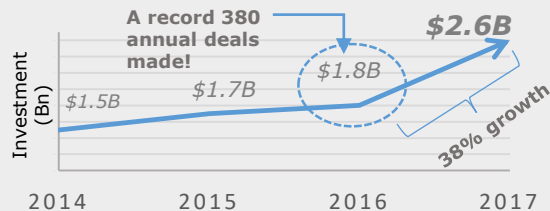
Digital Immersion



An increasing global population is expected to put strain on farming systems with food demand projected to increase by 60% by 2060².

The region has an **opportunity to capitalise on technology advancements in agriculture** to ensure that it can increase crop utilities. Targeted investments in new technology will enable the region to take advantage of opportunities in agriculture, food technologies and services to agriculture to grow its global exports/market share.

Global Farmtech Investment¹



This emerging market has seen farming companies invest in robotics, drones and decision support technology to create efficiencies. Precision agriculture employs satellite imaging, information technology, and geographical tools that optimise the use of resources to maximise outputs.

Innovative technologies can **increase farm productivity** substantially, and save the industry approximately \$4 billion annually due to improvements in weed control and mitigating associated lost production².

Sources:

- 1) <https://research.agfunder.com/2017/AgFunder-Agrifood-Tech-Investing-Report-2017.pdf>
- 2) <https://home.kpmg.com/content/dam/kpmg/au/pdf/2016/powering-growth-realising-potential-agtech-australia.pdf>

Planetary Pushback

Global concerns are growing about the **environment and the impact that production has on pollution and erosion** of the environment. Further, climate change may well change production processes through decreasing the availability of water and productivity of agriculture land.

Researchers believe that agriculture commodities that will be hardest hit by rising temperatures will be products such as avocados, grapes, and tree fruits and nuts, largely due to increases in dry seasons and decreases in winter chills. Some of these commodities are currently important sources of income for the Wide Bay Burnett economy^{1,2}.



Wide Bay Burnett should consider **investment in infrastructure for the future** that allows for **agriculture systems to remain sustainable**. Droughts are an ongoing challenge for Queensland and the nation and may become more frequent. Appropriate investments in water supply management systems and infrastructure, water recycling plants, and infrastructure that mitigates the effects of climate change will assist the region to **prepare for the future**.

The Wide Bay Burnett region could also access global carbon markets through **carbon forestry initiatives**. The region is home to vast forestry lands, with over 60% of Queensland's softwood plantation resources found in Wide Bay Burnett. Carbon forestry initiatives can aid farmers to access these markets by growing carbon-reducing forestry, enhancing and diversifying on-farm income streams.

Sources:

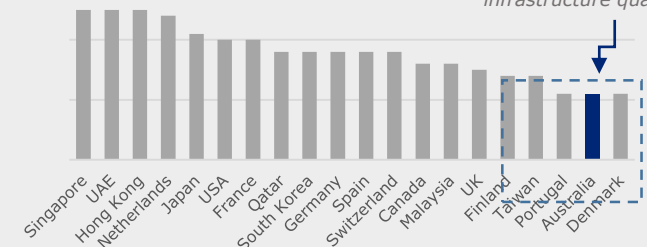
- 1) <https://news.nationalgeographic.com/news/2014/04/140406-climate-change-ipcc-report-foods-chipotle-guacamole/>
- 2) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3101230/>

More with Less

Australia is one of the most **urbanised** nations in the world; over **89%** of the population resides in coastal towns and cities². Population growth is expected to exacerbate the effects of urbanisation, with national population expected to reach approximately **31 million** by 2030³. Wide Bay Burnett will experience population growth in the coastal cities as well as in towns across the region⁴.

With more people living in coastal cities in Wide Bay Burnett **greater investments in infrastructure** will be required. This will cater for increased demand and the new infrastructure needed to export goods including agriculture and minerals to global markets and increase connectivity for residents, tourists and to interstate markets.

Transport Infrastructure Competitiveness Index



WEF 2017

In addition to investing in new infrastructure, Wide Bay Burnett should **increase current infrastructure utilisation and demand management**, particularly with regards to roads and port facilities. Increasing the use of sensors and data analytics, as well as smart policies, will contribute to improving the effectiveness of current infrastructure¹. This can ensure that traffic congestion is limited and travel times are faster – reducing the need for greater investment and improving productivity and utilisation of existing assets.

Sources:

- 1) <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/the-infrastructure-conundrum-improving-productivity>
- 2) Planning Institute Australia (2016). Through the Lens: megatrends shaping our future
- 3) ABS (2012). Population projections. Catalogue no. 3222.0
- 4) Queensland Government Statisticians Office (2016). Queensland Regional Profiles.

Global Opportunities

Wide Bay Burnett can take advantage of **emerging global markets** to enhance economic growth through export revenue and attract investment. The region has an abundance of exportable commodities that will be in high demand globally in the future. These commodities include mineral sands, bauxite, coal and a vast array of high quality agricultural and food commodities.



1) <https://www.ft.com/content/5841236e-183a-11e0-88c9-00144feab49a>

Forever Young

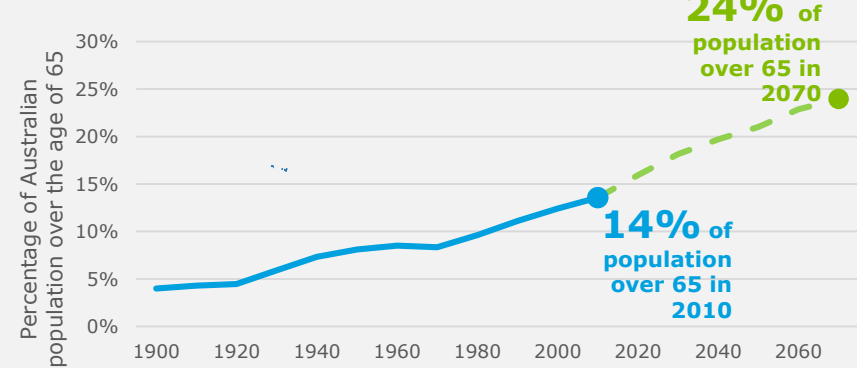
Australia has an ageing population. It is projected that by the year 2070 approximately **1 in 4 Australians will be over the age of 65**¹. Meanwhile, growth in the workforce is expected to slow over the next 40 years², with a heavier burden falling on each person in the workforce to support the ageing population. A rising population means that there will be **rising demand for health care, aged care and other leisure services and goods** associated with an ageing population. There are a number of ways in which Wide Bay Burnett can accommodate this growing market opportunity.

Firstly, the Wide Bay Burnett region has a strong and flexible agriculture sector with significant hectares of fertile land that can accommodate **growing pharmaceutical, vitamin demand, as well as other health goods**.

Secondly, due to advancements in health care, people are retiring healthier and wealthier than ever before. This has led to a **boom in seniors tourism** over recent years, outpacing domestic tourism as a whole³. The Wide Bay Burnett region has natural beauty to attract this booming market. Infrastructure that better connects the region will enhance the region's readiness to accommodate the increase in traffic associated with drive and 'grey nomad' tourism.



Australia has an ageing population



1) ABS(2012). Population projections. Catalogue no. 3222.0
2) http://demographics.treasury.gov.au/content/_download/australias_demographic_challenges/html/adc-04.asp
3) <http://www.smh.com.au/national/nsw/grey-nomad-numbers-up-20170223-gujkdx.html>

Wide Bay Burnett is well positioned to capture a good share of high growth industries and develop new long-term (intergenerational) opportunities in overseas markets building on comparative advantages offered by the region

Long-term sustainable growth opportunities for the Wide Bay Burnett will stem from changing demand, both regionally, domestically, and internationally. It will be critical to ensure that the right infrastructure is in place to allow the region to develop industries of the future. Wide Bay Burnett can capitalise as consumers overseas continue to demand a variety of goods, services and niche products to satisfy their consumption requirements. Having specialisations in agriculture, mining and tourism, the region is well positioned to sell a variety of products to overseas and domestic customers. To take full advantage, the region should explore the potential for new industry sectors to anticipate changing consumer preferences and technological change that is causing 'ongoing disruptions' to markets.

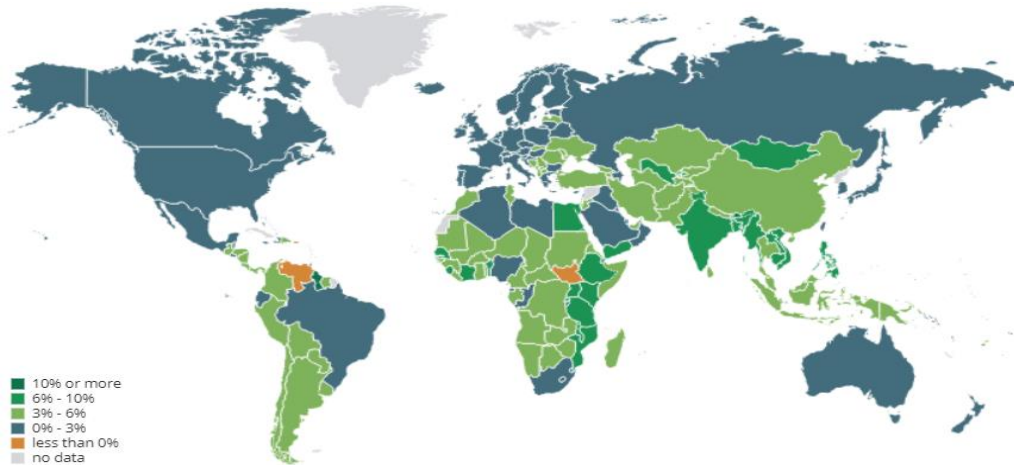
A snapshot of the direction of international demand and output growth

A 2015 study by Deloitte, called 'Positioning for Prosperity? Catching the next wave', projected that the fastest growing sectors through to 2033 would be; gas, tourism, agribusiness, health, international education, and wealth management (Figure B). These industries are expected to grow at 10% more than the projected long-run average annual growth rate of global gross domestic product (GGDP) (i.e. high growth industries). Wide Bay Burnett has an industrial structure that will allow the region to benefit from fast growing global sectors, such as agribusiness (related to agriculture) and tourism.

The Wide Bay Burnett region also has quality agricultural land and minerals deposits (e.g. in North Burnett), an educated workforce, stable government, and its proximity to Asia sets the region up to take advantage of the fastest growing industries, commodities as well as services.

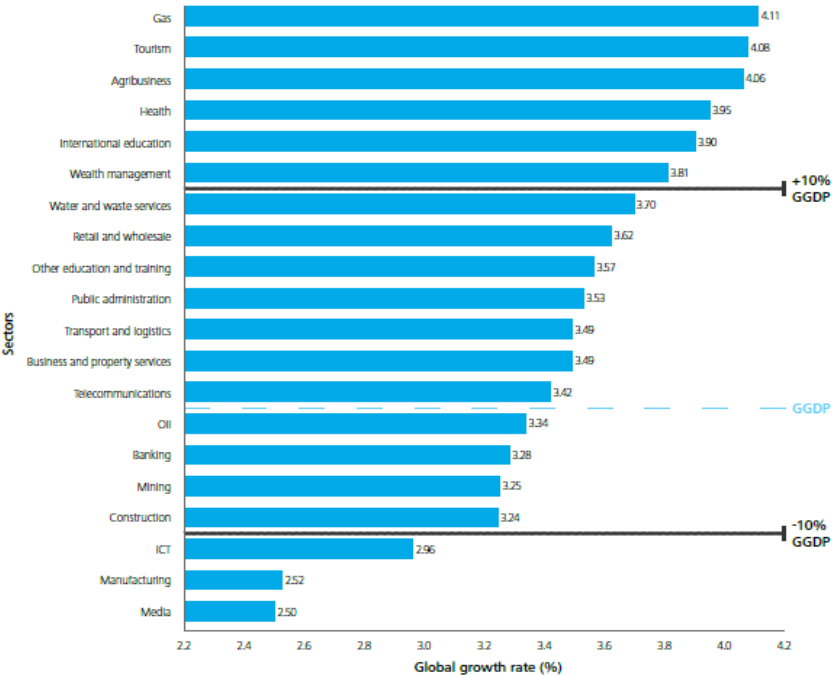
Encouragingly for Wide Bay Burnett, future global growth is expected to be powered by emerging nations, particularly from Asia, where strong economic growth is expected to drive rising incomes, higher consumption and increase demand for alternative sources of energy (Figure A). This in turn will provide opportunities to develop new industries (i.e. inter-generational opportunities including biofutures, niche value added products, technologies and services).

Figure A: Projected Annual GDP Growth Rate of Nations; 2018-2023



Source: International Monetary Fund

Figure B: Projected annual global output industry growth 2013-2033



Source: Deloitte; Positioning for Prosperity? Catching the next wave (2015).

Supporting regional growth and capturing rising global demand will involve building on Wide Bay Burnett’s existing strengths and seeking new opportunities in agriculture, agribusiness and food commodities

The industries that will shape the future of Wide Bay Burnett

The Wide Bay Burnett region has a well established comparative advantage in agriculture, forestry and fishing industry with large areas of land that are suitable for growing crops and other production. The region currently produces large amounts of Queensland and Australian produce, such as sugar, avocados and mandarins (Chart A).

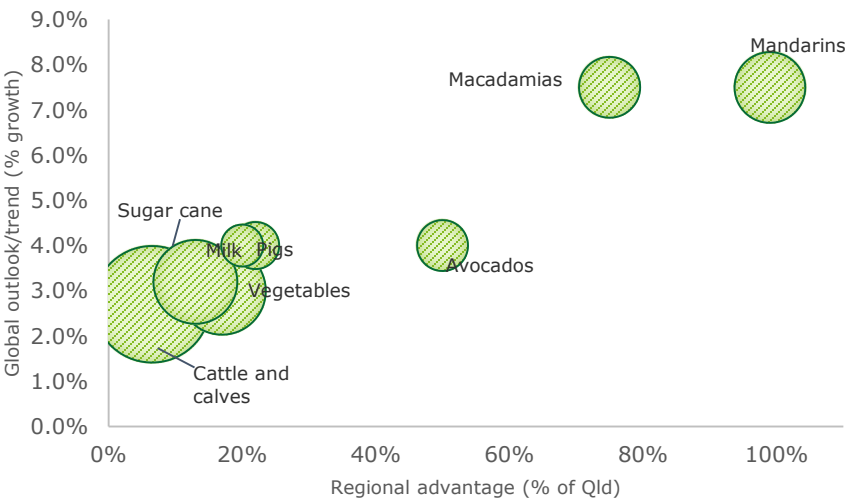
Large agriculture and food commodities

- Fruit and nuts (including citrus/mandarins, macadamias and avocados)
- Vegetables (including tomatoes, capsicum, and sweet potatoes)
- Beef cattle (and downstream meat processing)
- Sugar (and related by-products)

Niche agricultural and food commodities

These include dairy, pigs, fisheries & aquaculture and other food and beverages.

Chart A: Agricultural opportunity analysis in Wide Bay Burnett



Source: Deloitte analysis based on ABS statistics

The Opportunity – Food and Agribusiness

Food and agribusiness is expected to be a key driver of economic growth for Australia, as increases in population and rising incomes globally continue to drive demand. The food and agribusiness sector already has a large global footprint with the industry estimated to be worth \$5 trillion, representing about 40 percent of employment and about 30 percent of greenhouse gas emissions.¹ It is thought that if current trends continue, by 2050, calorific demand will increase by 70 percent, and crop demand for human consumption and animal feed will increase by at least 100 percent. This type of growth represents a significant opportunity for Wide Bay Burnett with its competitive strengths in agriculture, food processing and related technologies.

The food and agribusiness value chain comprises a wide range of companies, from suppliers of agricultural machinery, seeds, chemicals, animal-health tests and vaccines, and packaged foods to data providers for precision agriculture. Precision agriculture employs technologies such as satellite imaging, information technology, and geographical tools that optimize the use of resources to maximise outputs (and increasingly applications of big data). Filling the global gap between supply and demand requires more resources; technical, human, and financial inputs. With natural advantages in agriculture, businesses in Wide Bay Burnett can capitalise on the food and agribusiness value chains and attract new investment into the region to support jobs and economic growth.

What is required to capitalise on the opportunity?

The Wide Bay Burnett region has a vast agricultural base which produces goods for national and overseas markets. Improvements in infrastructure connectivity is vital to ensure that roads have the capacity to accommodate production increases, and that transport costs are competitive. The region also needs to plan for reliable and low-cost access to water for current and future production, and the potential effects of climate change on dry weather patterns.

The region will need to respond to changing global demand shifts and price shocks and anticipating demand through the right investments will be key to success.

1. <https://www.mckinsey.com/industries/chemicals/our-insights/pursuing-the-global-opportunity-in-food-and-agribusiness>

The combination of responding to global demand and having the appropriate infrastructure in the right place at the right time will enable mining to expand, with resource projects in North Burnett at an advanced stage of development and other mining projects in the pipeline

The opportunity – Mining

The development of North Burnett minerals projects and other minerals across Wide Bay Burnett will provide economic opportunities for the region over the medium to long term.

The Wide Bay Burnett region is richly endowed in mineral deposits and there are opportunities in coal seam gas, coking coal, and minerals including bauxite, ilmenite, magnetite and molybdenum.

The use of these commodities in production of goods by different industries will sustain demand globally. Ilmenite, for example, is used to manufacture a wide variety of high-performance parts and tools. Examples include: aircraft parts, artificial joints for humans, and sporting equipment such as bicycle frames.

Most of the economic potential in the region for mining and minerals expansion relates to projects in the pipeline (Figure C). Some of the projects in the pipeline include ilmenite, bauxite and coal, however, there are several other resource projects under consideration in the region.

What is required to capitalise on the opportunity?

To realise this opportunity will require the global price outlook to be favourable so a sufficient rate of return on capital is achieved to justify investment in the project by the private sector (so the timing will be driven by market developments) (Table A).

Transport and infrastructure connectivity is also needed to ensure that mineral products, once mined, are being transported optimally to market and to a port that achieves supply chain efficiencies and minimises transport costs. To support the development of mineral projects in the North Burnett, minerals province, infrastructure upgrades may be required. The choice of mode (e.g. road or rail) will depend on the scale of operations and rail could be an option for bulk dry commodities if being moved in sufficiently large volumes (e.g. bauxite).

Figure C: Snapshot of mineral projects in the pipeline

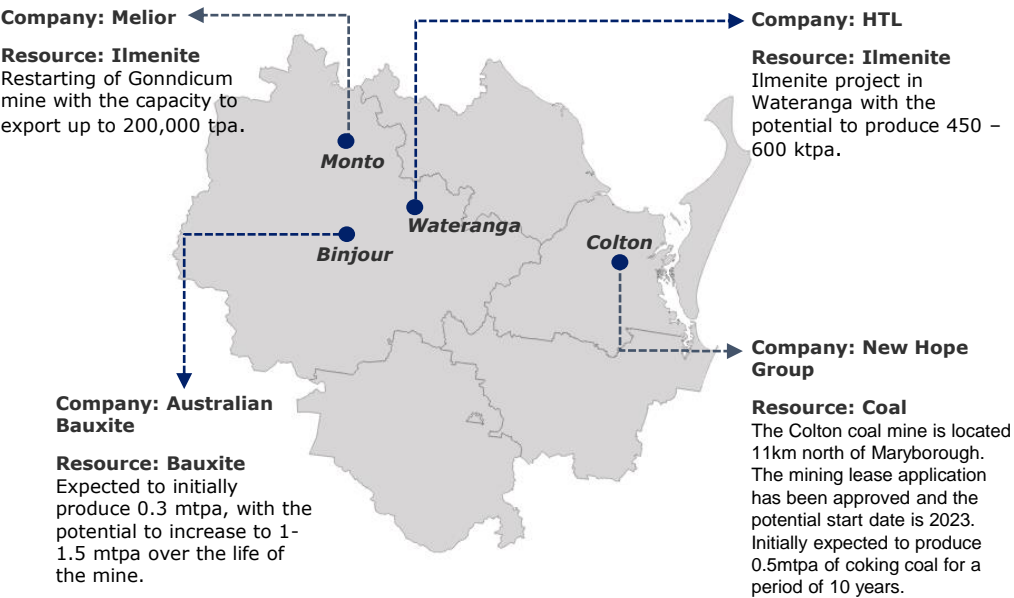


Table A: Outlook for mineral commodities

Bauxite	Ilmenite	Coal
Office of Chief Economist project increases in domestic Bauxite production by 7% p.a. through to 2020–largely driven by increased demand from China.	Financial services firm Credit Suisse project an ilmenite price increase of 25% through to 2020 – largely driven by increased global economic growth and demand from China.	Office of Chief Economist project Metallurgical coal global consumption to continue to grow (at a subdued pace) through to 2020. Drivers of growth will shift from China to India.

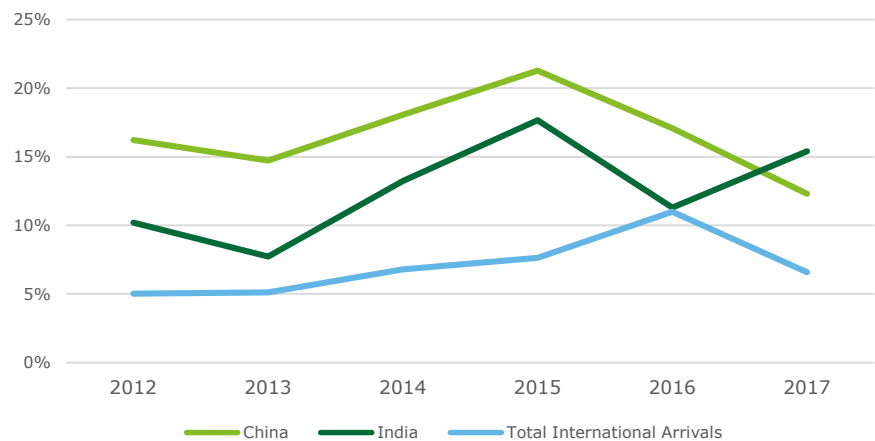
Source: Deloitte Access Economics based of Estimates by Office of Chief Economist, ABARES and Credit Suisse.

Tourism is vital to the Fraser Coast and Bundaberg region and attracting international tourists will be vital to future prospects and will enable the region to continue to out perform other regions in this important sector for Queensland

The opportunity – Tourism

Wide Bay Burnett has seen growth in visitors numbers, particularly in the high-value and fast growing international market over the past decade. Tourism in the region is expected to be increasingly driven by international arrivals, particularly from the fast-growing Asia-Pacific region (Chart B).

Chart B: Annual growth rate of international arrivals from China and India; year ending December 2012 - 2017



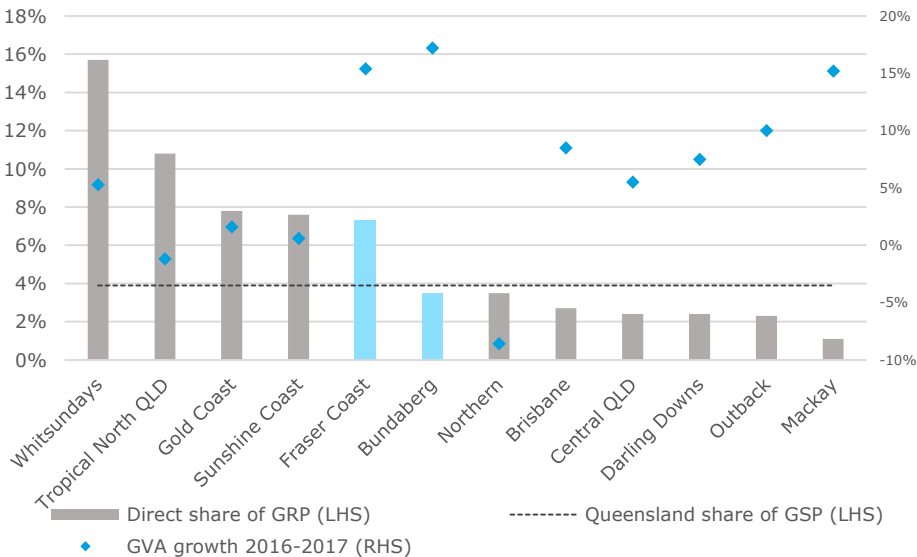
Source: TRA 2018

The Wide Bay Burnett region has a number of natural advantages that support the growth of tourism:

1. The region provides tourists with key attractions, such as whale watching in Hervey Bay, access to the iconic Fraser Island, and serves as the gateway from south east Queensland to the Great Barrier Reef.
2. The region already has a strong tourism industry that can be leveraged. The region has two key tourist hubs; Fraser Coast (including Hervey Bay), and Bundaberg.

The significance of tourism to the Fraser Coast is evident by the tourism contribution to the economy (around 7%) and the strong growth in tourism's contribution to the economy in 2016-17 (Chart C). While international tourism is a growth market, the larger share of tourism is sourced from domestic tourists, particularly same-day visitors¹. However, Bundaberg and Fraser Coast both rank in the top 40 regions nation-wide for international tourist nights².

Chart C: Tourism value added share of total value added of QLD regions and value added growth, 2016-17



Source: TRA 2017

What is required to capitalise on the opportunity?

The Wide Bay Burnett region also needs to ensure that it has the right transport infrastructure to continue to make its region accessible to a growing amount of tourists. This means that road infrastructure should allow for efficient travel throughout the region, a strong and reliable public transport system, and a continued focus on infrastructure projects that increase the benefits to tourists in a highly competitive market.

1. https://www.tra.gov.au/tra/2016/Tourism_Region_Profiles/Region_profiles/index.html
2. https://www.tra.gov.au/ArticleDocuments/185/Tourism_Satellite_Account_2015-16.pdf.aspx?Embed=Y

Investment in a cruise shipping berth at the Port of Bundaberg, redevelopment of the marina at Burnett Heads and growth in international education will play important roles in growing the region's tourism sector

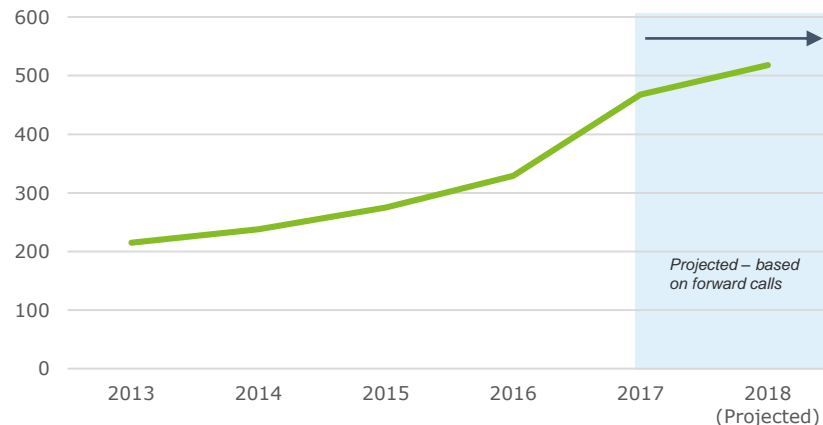
The opportunity – Broader Tourism Opportunities

1. The cruise industry

The proposed development of a cruise ship berth that can accommodate cruise vessels of up to 180m to 200m will allow the Wide Bay Burnett region to expand its tourism offerings. Bringing cruise ships into the Port of Bundaberg leads to incremental expenditure by passengers and crew on-shore and provides opportunities for local businesses across the region. This has positive flow on effects to the local businesses and supports tourism in the region.

Whilst a recent trend of the cruise ship industry has seen larger and more luxurious ships come into the market, smaller expedition class cruise ships (i.e. less than 180m) are a budding niche industry with high potential due to their flexibility and unique itineraries. Evidence of the potential of this niche market can be seen in the surge in growth in cruise ships docking at Fraser Island (which can only facilitate smaller ships), from 2 in 2015-16, to 6 in 2017-18. Further, in 2016-17 Bundaberg port received its first cruise ship in a number of years, docking at the Port of Bundaberg. Looking ahead, there will be further opportunities for regional ports in Australia to capitalise on capacity constraints in some major cruise ports in Australia, including Sydney as an example.

Chart D: Number of Cruise Ship Calls (Forward Bookings) for Queensland Ports: 2013-2017



Source: <http://statements.qld.gov.au/Statement/2017/10/25/queensland-cruising-to-top-with-11-billion-4000-jobs>

1. <https://www.tiq.qld.gov.au/invest/regional-investment-opportunities/wide-bay-burnett/>

2. Redevelopment of the Marina at Burnett Heads

There are plans to redevelop the existing marina at Burnett Heads. The development will house 273 wet berths and stage one includes construction of 144 berths and land based facilities. The land based part of the development has two restaurants, a tourism office, marine reception and chandlery. The facility will also cater for tenants with an estimated 122 car parking spaces. The new marina will also have mooring for super yachts. This is important from a tourism perspective as visitors and crew of super yachts (are likely to include higher income/wealthy individuals) will support local retail, restaurants and other businesses through additional spend in the region.

3. International education

International education and training is an important emerging sector for Wide Bay Burnett with more than 4,000 international students based there annually. The University of Southern Queensland, Central Queensland University and the University of the Sunshine Coast all have campuses in the region¹. This demonstrates the potential to increase the number of international students that choose to study in the region.¹

What is need to realise the opportunity?

The Queensland Government has identified the Bundaberg region as having the appropriate port arrangements and tourism infrastructure necessary to facilitate an expansion of cruise ship dockings. A key strength of the region is its unique history, scenery, and locality to Fraser Island and the Great Barrier Reef. Further, the ability for cruise ships to dock at Fraser Island is a significant advantage of the region. These strengths have resulted in growing interest of Cruise ship companies in stopping at the Port, with the Silver Discoverer docking at the port in 2017, and the Crystal Endeavour showing interest for a potential visit to the region in 2020.

However, the region will need to make investments in cruise ship capacity to grow the cruise tourism market. The Port of Bundaberg does not have dedicated wharf facilities for cruise ship docking and passenger transfer. In order to ensure that Bundaberg can attract a greater number of cruise ships, the region will need to ensure that facility agreements are in place to provide certainty to cruise ship companies. Further, for the region to fully reap the benefits of expanded cruise ship access, the regional council will need to work with business to ensure that 'port days' result in tourism spend through unique product offerings.

Additionally, attracting international students will require tourism marketing that efforts to increase the profile of the region to international students and the courses on offer at campuses in the region.

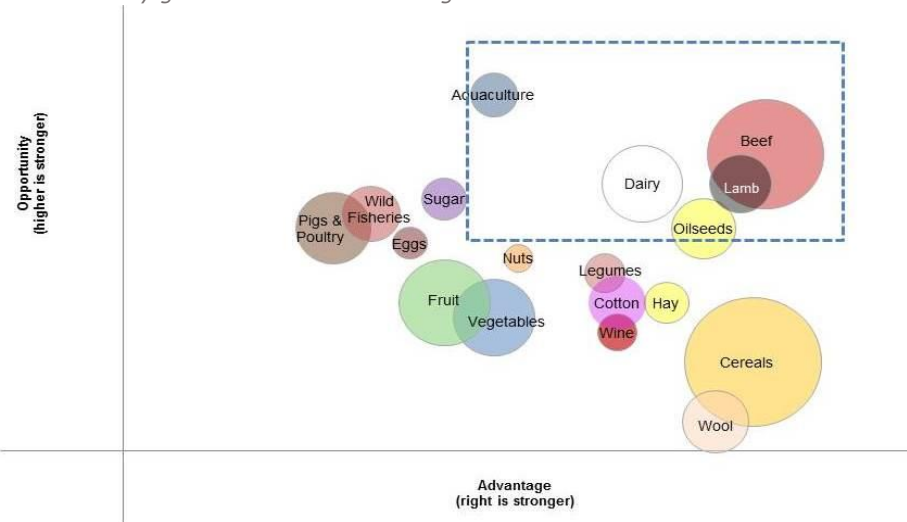
The emergence of new industries - including aquaculture, vitamins, pharmaceuticals and niche areas like hemp products - will increase the region's growth potential and diversify the regional economy

The Opportunity – Aquaculture

A Deloitte study on the key drivers of the agriculture industry identified that future growth will come from industries such as beef and other meats including lamb, dairy related products, oilseeds and aquaculture (Chart E).

Aquaculture is one of the fastest growing niche primary industries in Australia over the past decade, largely driven by pressures on wild fish stocks. Further, the Wide Bay Burnett region, particularly Hervey Bay, has been identified by the Queensland Government as an area with high potential for greater development of its aquaculture (see: daf.qld.gov).

Chart E: Key growth industries within agriculture



Source: Deloitte Access Economics; <https://www2.deloitte.com/au/en/pages/consumer-business/articles/where-are-growth-opportunities-australian-agriculture.html>

What is required to capitalise on the opportunity?

The east coast of the Wide Bay Burnett region borders the Pacific Ocean, and is home to a number of aquaculture precincts¹. Further, the region is in close proximity to growing export markets in Pacific-Asia, which are expected to drive demand in the future. However, a recent study by Deloitte¹ highlighted some important strategies that Australian producers (and those in Wide Bay Burnett) should use to ensure more success in breaking into the highly competitive global markets.

Producers should focus on:

1. Sufficient margin to offset higher production / transport costs.
2. Consumer demand for best quality in taste and production methods.
3. Taste difference, provenance.
4. Or brand value that can be exploited, and for which consumers are willing to pay a little more.

High value items such as abalone, which is considered a delicacy in East Asian countries and commands export prices in excess of \$100 per kilogram, could be one such opportunity².

The Opportunity – Vitamins & pharmaceuticals

The vitamins and pharmaceuticals industry in Wide Bay Burnett is relatively small, with around 10-20 human-pharmaceutical manufacturing employees working in the region in 2016 (ABS 2016). However, there are new opportunities emerging in the vitamins and pharmaceuticals sectors that the region is well placed to take advantage of to grow the sector. It has been estimated that 25% of the active components of prescribed pharmaceuticals have their origins in flowering plants and this trend is expected to continue³. Nutraceuticals and pharmaceuticals are growth areas globally and this is evidenced by growth in sales of herbal supplements, vitamins, minerals and other products like cosmeceuticals. Wide Bay Burnett grows many of agriculture products that go into pharmaceuticals and nutraceuticals. Hence the region stands to benefit from rapid global expansion of the sector as consumers become more health conscious.

Hemp (as an example of an emerging niche crop):

Whilst the categorisation of this product is difficult, it is consumed for its perceived health benefits – thus, for the purposes of this report, it is discussed as a vitamin. Since its legalisation for human consumption in 2017, the Hemp industry has seen strong demand growth from consumers. Wide Bay Burnett has an opportunity to facilitate this developing market, as well as to supply international markets, due to high quality agriculture land, which can be used to grow Hemp products⁴.


1. https://www.daf.qld.gov.au/__data/assets/pdf_file/0003/67953/1633-aquaculture-EOI-brochure.pdf
2. <https://www2.deloitte.com/au/en/pages/consumer-business/articles/the-growth-of-aqua-culture-fishy-business.html>
3. Rural Industry Research and Development Corporation, 2000, *New Pharmaceutical, Nutraceutical and industrial products, The Potential for Agriculture*
4. <http://statements.qld.gov.au/Statement/2017/8/22/low-thc-hemp-seeds-to-grow-new-agriculture-industry-in-queensland>

Effective infrastructure connectivity is critical for future growth as it links producers in the region to the ports of Bundaberg and Gladstone, as well as other hubs such as Wellcamp airport and industrial area

Infrastructure required to unleash the trade potential of Wide Bay Burnett

Improvements in transport connectivity will optimise the flow of goods from the point of production to export markets and make the region more competitive by reducing transport costs and ensuring competitive market access. Infrastructure projects of regional significance and aspirational infrastructure will be a catalyst to build on the region's competitive strengths and support the emergence of new industries.


Transport and logistics



Upgrades to regional highways: upgrades to the Burnett/Isis Highways to improve regional connectivity for key freight routes (including to Toowoomba and the Surat Basin) as well as liveability and other benefits such as supporting drive tourism supply chains across the region. It will also mitigate the risk of flooding on certain sections and serve as an alternative to the Bruce Highway

Port Access Road: upgrading the port access is a key strategic priority with the development of the State development area and potentially higher commodities trades in the future through the Port of Bundaberg. The existing average annual daily traffic (AADT) for the Bundaberg Port Road between the Burnett Heads Road intersection and Bundaberg Port is 1,192 vehicles per day in 2016 and this could increase up to 1,700 to 2,300 over the next 20 years.


Port and Marine



Berthing facilities north bank: Developing a berth and ship-loading infrastructure on the northern side of the Burnett river (where PoB owns vacant land) creates access from northern side of the Burnett river. This will increase development potential for the northern side of the SDA, whilst increasing future capacity at the Port

Construction of outer harbour berthing facilities: Development of stage 1 of an outer harbour to facilitate a 'step change' in exports of mineral commodities to new overseas markets. This is considered to be a long term opportunity and if it comes to fruition, will allow large volumes of commodities such as bauxite to be exported through the Port of Bundaberg.

Rail



Rail link direct from North Burnett: A rail link has been proposed to connect the North Burnett Minerals province with either the Port of Bundaberg or the Port of Gladstone. A number of options have been considered in previous studies. It was highlighted to achieve a modal switch from road freight to rail freight would require a critical threshold volume to be reached in the order 1 to 1.5 million tonnes of bulk dry product. At the time the connection was investigated demand was not high enough to support a direct connection. This situation may change in the future as more projects continue to develop in the North Burnett minerals province.

Sugar cane railway: Construction of a 36km cane railway from Cordalba to Wallaville has been investigated to achieve internal cost efficiencies, and to enable sustainable sugarcane production expansion into the Wallaville-Gin Gin area. This will depend on sugar prices with the current trend being to switch to other commodities given the outlook for sugar prices.

Relationships with other ports and projects of significance

It is essential that goods produced in the Wide Bay Burnett region are transported to market in a way that is efficient from a supply chain perspective and minimises costs. This is driven by economic factors such as distance, tonnes, capacity on the road and capacity at the port. Both the Port of Gladstone and Port of Bundaberg are feasible options and the choice must be weighed up on a case by case basis (as well as other ports outside of the region including Port of Brisbane).

The development of Wellcamp airport will provide economic opportunities for the South Burnett and makes its feasible for goods to be moved by road freight to Wellcamp airport given the distances are in the order of 200 kilometres from South Burnett.



















The Inland Rail project provides a strategic opportunity to make a step change in the capacity of the national rail system. It will make it easier to connect our farms, mines, cities and ports to domestic and international markets. Two million tonnes of agricultural freight will switch from road to rail, with a total of 8.9 million tonnes of agricultural freight more efficiently diverted to Inland Rail. While there are unknowns this could have positive implications for a region like Wide Bay Burnett that are big agriculture producers².

1. Orion Advisory 2011, North Burnett Mineral Transport Logistic Study
2. <https://inlandrail.artc.com.au/benefits>







There could be significant flow-on effects to Wide Bay Burnett from strategic capital investments and increased trade and the 'highly aspirational' scenario would deliver 'game changing' economic benefits to the region

Scenarios	Medium expansion	High expansion (aspirational)	Highly aspirational
Trade: Port of Bundaberg:	The port continues to develop through incremental commodity expansion with trades linked to industry projects.	Incremental trade expansion continues to occur but with a step change in commodity throughout at the port driven by the North Burnett Minerals Province	Same as high expansion - although there is potential for trade to increase significantly after 2035 if a game changing investment occurs at the port
Wide Bay Burnett:	Assumes additional trade related projects go ahead over the long term including those with Federal funding support. This is driven by industry projects including mainly agricultural and resources.	Assumes those projects with funding support expand further and also some trade projects that are currently in the planning phase (i.e. not as close to market) go ahead over the long term.	Same as high expansion – this is currently viewed as a highly aspirational objective and currently viewed as a very long term proposition (i.e. >2035).
Infrastructure & capital investment:	This assumes that the associated capital investment by industry projects to support medium trade expansion plans occur and also new infrastructure projects that are close to market come on-line. Importantly, such projects represent new economic activity in the region relative to business as usual growth which excludes such developments.	This assumes that the associated capital investment by industry projects to support high trade expansion plans goes ahead and also new infrastructure projects that are in the planning phase but identified as more aspirational in nature (e.g. North Bank developments at the port require significantly higher mining tonnages to support the investment).	Same as the high expansion but also assumes the Port of Bundaberg experiences a fundamental change such as the development of an Outer Harbour. Such a development could be accompanied by significant expansion at the port precinct including niche hubs around transport and logistics, marine servicing and tourism related developments and manufacturing.





































Scenario inputs – Capital investment and real production/revenue

Trade:	Potential annual increase of \$295M by 2035 Average annual increase of \$195M (2018-35)	Potential annual increase of \$855M by 2035 Average annual increase of \$680M (2018-35)	Potential annual increase of \$955M by 2035 Average annual increase of \$715 M (2018-35)
Infrastructure and capital investment			
Road	 \$159M	 \$1,059M	 1,059M
Rail	 \$13M	 \$13M	 \$493M
Port and marine	 \$55M	 \$185M	 \$1,082M
Energy	 \$50M	 \$50M	 \$50M
Water	 \$0M	 \$23M	 \$23M
Industry projects	 \$244M	 \$1,020M	 \$1,008M

Scenario outputs – Regional economic impacts Wide Bay Burnett Economy – relative to a 'business as usual'

Gross Regional Product (GRP)	 Increase of \$325M by 2035 GRP per annum - \$240M (2018-35)	 Increase of \$850M by 2035 GRP per annum- \$680M (2018-35)	 Increase of \$995M by 2035 GRP per annum - \$790M (2018-35)
Employment (Full time equivalents)	 Increase of 625 FTEs by 2035 Jobs per annum 485 FTEs (2018-35)	 Increase of FTEs 1,580 by 2035 Jobs per annum 1,455 FTEs (2018-35)	 Increase of 1,860 FTEs by 2035 Jobs per annum 1,650 FTEs (2018-35)

Expansions in trade and production can be realised by building on the region's competitive advantages and matching these with investments to improve regional connectivity and to support export growth

Sector	Industry outlook/game changers	Spatial view	Infrastructure required	Trade potential^	Infrastructure and capital investment	
 Agriculture, forestry and fishing and related processing	The region capitalises on its comparative advantage in agriculture with additional export driven production of key horticultural, meat and niche food products as well as beverages, wood products and other goods.	Wide Bay Burnett	Regional connectivity     	\$180M to \$360M	\$185M to \$255M	
 Mining and minerals	Mining projects come on-line in the North Burnett Minerals Province including (but not limited to) ilmenite, silica sand and bauxite.	North & South Burnett	Regional connectivity      	\$100M to \$345M	\$60M to \$435M	
 Defence and industrial manufacturing	Building new capabilities to service naval and marine facilities as well as industrial manufacturing opportunities linked to the defence industry as well as broader manufacturing opportunities (e.g. bio-refinery).	Bundaberg SDA and Port	Bundaberg SDA and berthing   	Up to \$180M	Up to \$315M	
 Transport and logistics	Development of trade related transport and logistics with the long term vision of improving connectivity in the region to improve access to key supply routes and export facilities.	Wide Bay Burnett	Bundaberg SDA and North Burnett connectivity (and regional connectivity)    	Up to \$70M	Up to \$1,765M – this assumes almost \$900M to develop first stage of the Outer Harbour	
 Marine servicing	Capitalising on the marine services precinct activities including Pacific Tugs and marine servicing opportunities more broadly including those related to the supply chain at or in close proximity to the port.	Bundaberg SDA and Port	Bundaberg Port  	Up to \$10M	Up to \$35M	
 Tourism (port specific and tourism more broadly)	Development of tourism related marina including future aspirations for yacht berths and also cruise ships. Outside of the Bundaberg Port and SDA there are opportunities linked to Fraser Coast, Southern Great Barrier Reef and also drive tourism (e.g. Burnett highway).	Wide Bay Burnett	Bundaberg Port, SDA (and regional connectivity)    	Up to \$50M	Up to \$12M	

1. Projected Growth in Trades through the Port of Bundaberg

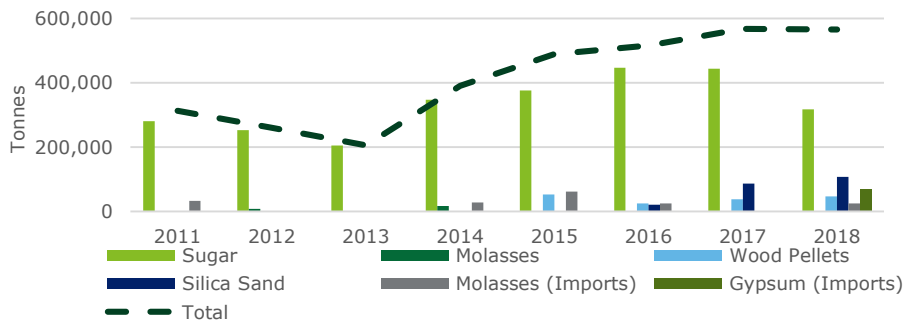
Analysis of recent trends in commodity trades through the Port of Bundaberg and previously developed forecasts of project trades provided key insights into likely futures

Recent Trends

Trade through the Port of Bundaberg (PoB) has been trending upwards since a low of 2013, which was due to poor sugar crop outputs due to extreme weather conditions. Over the period 2010-11 to 2016-17 growth in throughput has increased by around 250,000 tonnes, due to the increased diversification and expansion in the volumes of commodities passing through the port (e.g. bulk sugar, silica and wood pellets in recent times).

Throughput of trades through the PoB reached 703,719 tonnes in the year ending March Quarter 2018.[^] This is made up of 608,498 exports and 95,221 imports and represents 61% growth in trade throughput relative to the year ending March Quarter 2017 (437,637 tonnes). Preliminary estimates for 2017-18 indicate that trade throughput was almost on par with 2016-17 at 565,637 tonnes. Sugar exports were much lower than 2016-17 but there were large imports of gypsum for the first time associated with the operation of the Knauf plasterboard facility.

Chart 1.1: Trade throughput exports and imports 2010-11 to 2017-18*



* 2017-18 are preliminary estimates Source: <https://www.gpcl.com.au/Pages/Trade-Statistics.aspx> (GPC)

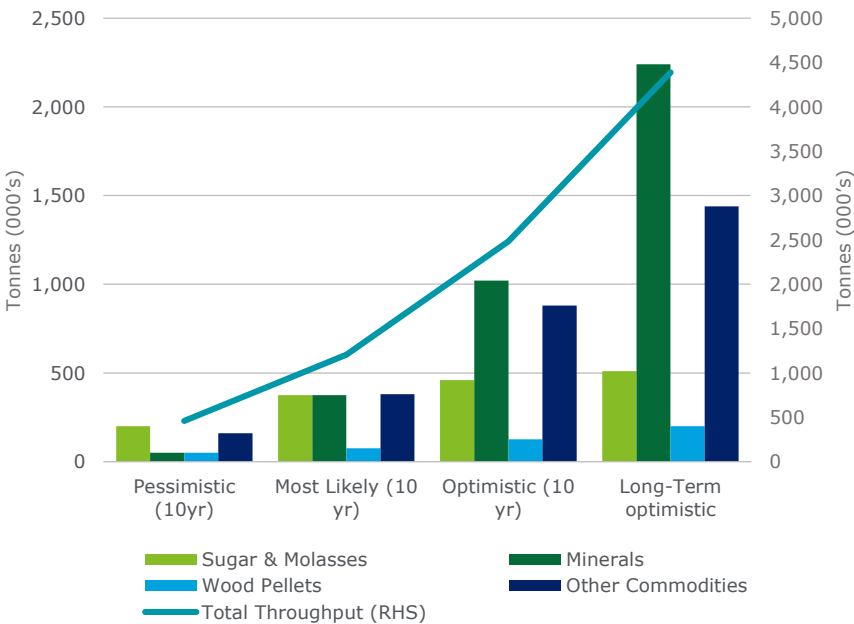
Trade Forecast Analysis Review

The most recent PoB trade forecasts were conducted by Jacobs in 2016 as part of a broader study on the trade and transport infrastructure needed to support growth in trade throughput over the next 10-years. Through a thorough consultation process, Jacobs determined trade forecasts for four scenarios over a 10-year period. They were 'pessimistic', 'most likely' (considered a proxy for business as usual), 'optimistic', and 'long-term optimistic' scenarios.

[^] This is the four quarters, June 2017, September 2017, December 2017 and March 2018. It is important to note that the port trade data is quite volatile so it is important to focus on long run trends over time rather than a specific period. Due to seasonal factors it is important to compare against the same period in the previous year but there will still be unexplained volatility in the trade data as many other factors apart from seasonality affect trade

The optimistic and long-term optimistic scenarios were driven by a number of identified potential commodity throughputs, which are further contingent on a number of favourable factors, such as infrastructure investment at the port and favourable global/local economic conditions. These investments are subject to considerable uncertainty (hence speculative) and it is possible these commodities are produced in the region and reach export destinations via another port in Queensland. The most optimistic trade scenario (i.e. long-term optimistic) predicts throughput of over 4 million tonnes through the PoB in total, largely driven by growth in resources and minerals, including silica sand, ilmenite, mineral sands and bauxite.

Chart 1.2: Port of Bundaberg Trade Analysis: 10-year Outlook



Source: Derived from the Trade and transport study for the Port of Bundaberg catchment area (Jacobs 2016)

New information on commodity trades was used to update trade forecasts for the Port of Bundaberg to further inform likely futures for the region

Updated Trade Forecast Analysis: Methodology and Assumptions

Why Update the Trade Forecasts?: The most recent trade forecasts estimated by Jacobs (2016) are considered to be robust, as they were developed through a comprehensive consultation process. However, changing economic conditions over the past two years and recent upgrades and investments at the PoB, including the establishment of an SDA, have increased the potential of a number of projects, as well as the attractiveness of the PoB.

Methodology: The updated trade forecasts developed by Deloitte Access Economics draw on the latest intelligence and previous work to develop three trade scenarios. These forecasts also draw on consultations undertaken by Deloitte with businesses in the Wide Bay Burnett region, particularly for this study.

In order to robustly account for uncertainty in the trade forecasts, a scenario analysis method is employed, with each scenario based on assumptions about economic activity and infrastructure investment in consultation with Bundaberg Regional Council.

Trade Forecast Scenarios

Most likely: This scenario is developed on the basis that economic growth will continue along recent growth trends. The growth in commodities through the PoB is supported by consultations with businesses that have explicitly targeted export plans, based largely on existing infrastructure at the PoB and expanded production in the short to medium term.

It was identified that trade throughput at the port could increase, reaching around 0.8 mtpa to 1.1 mtpa. This includes growth in currently traded commodities such as wood pellets and silica sand, as well as additional small volumes of throughput from ilmenite, bauxite and logs. Ranges have been assigned to certain trades to take uncertainty into account.

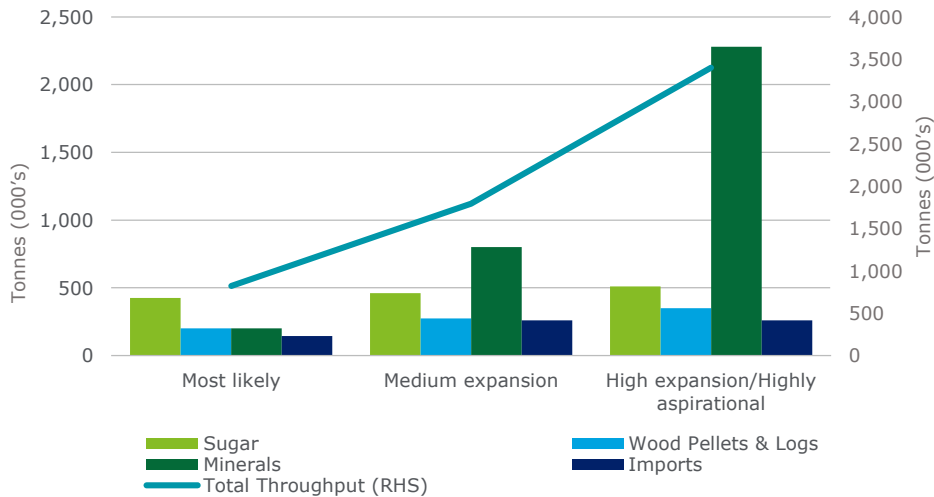
Medium expansion scenario: The medium expansion assumes solid global conditions underpin demand for trades through the PoB. Under this scenario, there is assumed potential for significant expansion in additional trades over the 10-years through to 2028. The PoB has sufficient ship loading capacity to cater for additional trade volumes (the existing ship loader has a capacity of up to 3 million tonnes) and can potentially support low volumes of bauxite and ilmenite. Increased volumes will be supported through an upgrade to the Port Access Road to plan for long-term growth in traffic volumes.

Updated Trade Forecast Analysis: Trade Forecast Scenarios

It was identified that trade through the PoB could increase to reach around 1.8 mtpa under this trade expansion scenario by 2028. This includes increased growth and expansion in currently traded commodities such as wood pellets and sugar, and additional throughput from ilmenite, bauxite and logs, when compared to the throughput levels of the most likely scenario.

High expansion and highly aspirational scenarios: This scenario is based on strong global economic demand for commodities produced in Wide Bay Burnett over the 10-years through to 2028. Further, investment and infrastructure spending is assumed to increase above current expectations to accommodate the increased demand. In the **high expansion scenario*** there is investment at the PoB of a new multi commodity ship loader at the sugar terminal, refurbishment of the bulk liquids terminal into a cruise ship berth (for a 180m to 200m cruise ship berth) and development of a northern berth facility and ship loader. In addition, in the **highly aspirational scenario*** there is assumed to be port investment in Stage 1 development of an outer harbour and the cruise ship berth is extended to accommodate a cruise ship of up to 220m in length.

Chart 1.3: Updated trade scenarios – most likely, medium expansion and high expansion/highly aspirational scenarios



Source: Deloitte Access Economics

* Port related investments in the high expansion and highly aspirational scenario are based on specific information provided by Bundaberg Regional Council

A scenario based approach was used in trade forecasting with the upper bound, namely, the 'highly aspirational' scenario indicating a large expansion in activity at the Port of Bundaberg

Updated Trade Forecast Analysis: Trade Forecast Scenarios

In the high expansion to highly aspirational scenario it is projected that trade throughput at the PoB could increase through to 2028, to up to 3.7 mtpa. This increase is largely driven by large-scale increase in bauxite, ilmenite exports and sugar, which are enabled by private investment in response to positive economic conditions.

The development of Stage 1 of an outer harbour is a 'game changer' and would potentially support a wider variety of trades and economic activity at the port over the long term (noting this is seen as a 50 year proposition). It should be noted that in the absence of the development of Stage 1 of an outer harbour, these commodities would still be produced in Wide Bay Burnett and would be exported overseas through another port. The outer harbour (Stage 1) allows the PoB to start to make a step change from being a 'second tier' port to a 'top tier' port in terms of a much higher level of commodity throughput with larger vessels berthing offshore to take commodities to overseas markets.

The Port of Bundaberg could transition from a 'second tier' port to a 'top tier' port under certain conditions

An overarching assumption of these forecasts is that the PoB has the potential to move from a 'second tier' to a 'top tier port' under a highly aspirational scenario. This is facilitated by additional investments in port infrastructure including the development of Stage 1 of an outer harbour to facilitate large scale exports with cargo ships anchoring offshore (which is considered highly aspirational). This will allow mineral commodities to be exported through the PoB to new overseas markets.

Apart from an outer harbour there are several other factors that could influence the PoB moving towards being a top tier port.

- A major private sector port operator invests into operations at the PoB.
- The Department of Defence uses PoB for berthing and/or land facilities.
- There is growth in the occupancy of industrial land on the western side of the SDA.
- A logistic operator could potentially see transhipment of cars to the PoB.

The above 'game changers' for the PoB could see the landscape and throughput levels change significantly.



Table 1.1: Updated trade throughput forecasts through Port of Bundaberg

Commodity	2016-17 Financial Year	10 Year Outlook		
		Most likely (tpa)	Medium expansion (tpa) i.e. optimistic	High expansion to Highly aspirational (tpa)
Export Commodities				
Sugar	443,765	400,000	460,000	510,000
Wood Pellets	37,113	200,000	275,000	300000 - 350,000
Silica Sand	86,793	150,000	150,000	160,000 - 180,000
Ilmenite		100,000	350,000	400,000 - 600,000
Bauxite		0 - 150,000	300,000	350,000 - 1,500,000
Logs		0 - 100,000	200,000	200,000
Import Commodities				
Gypsum		120,000	180,000	200,000 - 250,000
Fertiliser		0 - 10,000	20,000	20,000
Molasses		25,070	60,000	60,000
Total Throughput	567,671	995,070 - 1,255,070	1,995,000	2,200,000 - 3,670,000
Additional tonnage (relative to 2016-17)		427,400 – 687,400	1,277,329	1,632,329 – 3,102,329

2. Industries that will shape the future of the Wide Bay Burnett

Existing industries with comparative advantages are set to expand trade and production in the region whilst new industries will emerge through the influence of technological change, digital disruption and evolving consumer preferences

Medium to long term opportunities in existing industries

Industry	Existing Industry Opportunities
 Agriculture, forestry and fishing and related processing	The total agriculture supply chain from the farm gate to the dinner plate accounts for around 1 in 5 jobs in the Wide Bay Burnett region as a whole. This is a key economic mainstay of the region and there is considerable potential to further capitalise on the region's comparative advantage in agriculture and related processing including additional horticultural production, meat, niche food products (including value added goods), beverages, forestry, wood and other products.
 Mining and minerals	The Wide Bay Burnett mining industry is expected to significantly drive trade potential in the region, largely due to the large minerals endowments in the North Burnett region, and as these endowments get developed in the future and exported to global markets. These projects, producing high value mineral commodities, will boost export income, jobs and support regional growth including investment. The region also has coal and other minerals projects.
 Defence and industrial manufacturing	There is significant potential to service the growing defence industry through supply chain arrangements. This includes attraction of foreign training ships (e.g. Singapore defence), a centre of excellence and innovation in ship design, testing and large scale industrial manufacturing for exports, and joint training initiatives including Shoalwater Bay and other exercises. A good example of industrial manufacturing is the potential to establish a bio-refinery plant in the Wide Bay Burnett region based on sweet sorghum feedstock with potential outputs of the biorefinery being ethanol and electricity.
 Transport and logistics	The transport sector is a significant employer in the Wide Bay Burnett region, with 60% of employment in the transport sector employed in the road transport industry. Due to the dispersion of key production regions, investments in transport infrastructure is essential to reducing costs in the industry and supporting productivity of regional supply chains. Future opportunities for niche transport and logistics operations in the region linked to the port and infrastructure development in the region.
 Marine servicing	The marine industry is a growing industry that is largely supported by developments at the Port of Bundaberg and potential projects well suited to the newly designated SDA area. This includes development of a new repair and maintenance facility by Pacific Tugs to service tug boats and marine maintenance and repairs. There is also marine opportunities in the Fraser Coast.
 Tourism	The tourism industry in the Wide Bay Burnett region is driven by the locality of the region to the Fraser Coast and Great Barrier Reef tourism regions. There are significant drive tourism opportunities in the region (linked to the Burnett Highway) and the region's pristine natural environment. Tourism will potentially be further boosted with a proposed cruise ship berth at the Port of Bundaberg and the development of a marina at Burnett Heads.

Emerging and new industries

New Industry Opportunities

Aquaculture: The region has the advantage of being in close proximity to Asian markets. Asian consumers have a preference for high value seafood and the region has niche specialisation in on-shore aquaculture (almost twice as many people employed in on-shore aquaculture in Wide Bay Burnett compared to the state as a whole in 2016). To be successful, the region should focus on supplying niche seafood products as selling standard seafood products could come at a cost disadvantage. The fishing industry in Wide Bay Burnett is based on scallops, prawns, spanner crabs, mackerel, mullet and reef fish. The export quality of the regions products should provide a competitive edge.

Agribusiness: Expanding into agribusiness in the future is a natural step with the region's comparative advantage in agriculture production (e.g. fruit, nuts, vegetables etc.) food processing and food technology. Agribusiness is growing globally and along value chains with the opportunities to provide several niche opportunities (e.g. seeds, chemicals) and is being 'disrupted' by digital technology through the use of techniques like precision agriculture (e.g. satellite imagery) as well as increasing demand for "experience goods".

Vitamins, pharmaceuticals, nutraceuticals, clean, green products: This is a continuing growth area in both Australia and globally as consumers become more and more health conscious and place a higher focus on preventative health and natural products as the key to managing health. Wide Bay Burnett can seize such an opportunity with its specialisation in products linked to its clean and green image, which will allow it to supply a variety of agriculture based products to the pharmaceutical and nutraceutical sectors. The nutraceutical industry in the United States is predicted to be valued at \$560 billion by 2023 and grow at a compound annual growth rate of around 7%¹. The region can also capitalise through the production of other niche agricultural and food products (an example includes hemp, which is being used for medicinal purposes).

International education and training: International education and training is an important emerging sector for Wide Bay Burnett with more than 4,000 international students based there annually. The University of Southern Queensland, Central Queensland University and the University of the Sunshine Coast all have campuses in the region².

1. <https://mordorintelligence.com/industry-reports/global-nutraceuticals-market-industry>
 2. <https://www.tiq.qld.gov.au/invest/regional-investment-opportunities/wide-bay-burnett/>

The main trade related industries are driven by the region's natural resource base with established strengths in agriculture and food and emerging industries across a range of niche areas, including resources

Key industries for the purposes of this study

The following key industries have been defined in consultation with the BRC to focus on potential regional growth opportunities related to trade and infrastructure in the Wide Bay Burnett region as a whole. This study has been developed through analysis, research, as well as consultation with key organisations in the region related to these industries that were willing to be involved in this study.

The key industries are as follows:

- Agriculture, forestry and fishing and related processing (includes food, beverages and wood products)
- Mining and minerals
- Defence and related industrial manufacturing
- Transport and logistics
- Marine servicing (includes shipping)
- Tourism

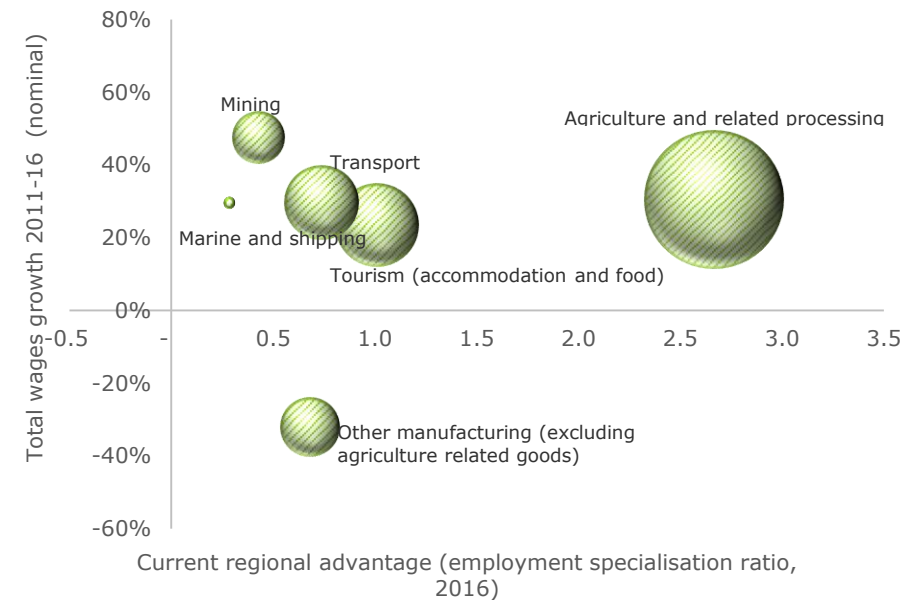
This section of the report provides analysis of selected sub-industries/commodities within these industries based in analysis of a range of regional level and industry data sets. This analysis focuses on the region's potential advantage within these areas compared against trade/market outlook and key regional trends.

The Wide Bay Burnett region has a range of established industry strengths, including agricultural and related processing industries as well as transport and logistics that support the movement of such goods to key markets and destinations in and outside the region. The region also has a reasonably mature manufacturing sector with established niches in transport equipment such as railway equipment and other manufacturing (the bulk of manufacturing in the region is linked to the agricultural and forestry base – including sugar milling, although there is also specialised transport, machinery and equipment manufactures). The Wide Bay Burnett region also has a range of emerging industries, including mining (driven by the North Burnett Minerals Province), marine servicing and shipping (linked to the Port of Bundaberg) and also a defence presence.

Regional industry opportunity analysis

It is important to note that the following analysis is based on industry trends to date from the latest data rich ABS census. To provide an outlook perspective, this study also focuses on growth plans of industries in the region to model the economic trade potential of the region to ensure this canvasses the potential for growth in the future (that is, if these expansion plans come on-line to drive trade, exports, investment and the Wide Bay region will benefit).

Chart 2.1: Trends in key industries in Wide Bay Burnett, 2011 to 2016



Source: Deloitte analysis based on ABS statistics

Notes: employment specialisation ratio is measured relative to Queensland – i.e. Agriculture and related processing accounts for around 3 times more employment in the region when compared with the state)

Agriculture is a significant industry in the region both in output value terms and employment across areas such as fruit and nuts, vegetables, beef cattle and sugar

Agriculture - Industry/global outlook

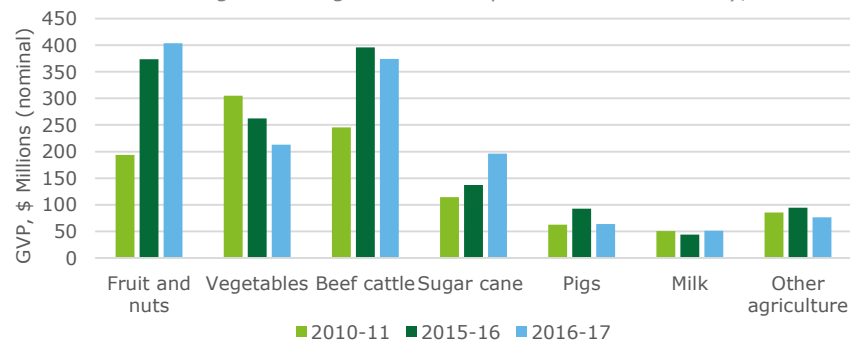
The Wide Bay region is a significant producer of agricultural products, due to its large endowments of agricultural land, which occupy approximately 68% of the region's land mass (ABS). As of 2016-17, the Wide Bay Burnett region produced approximately \$1.4 billion in gross value of agriculture, accounting for approximately 10% of Queensland's total agriculture production. Further, agriculture commodities are largely exported out of the region, and internationally more broadly.

Analysis of leading industry projections and consultation outcomes indicates that the agriculture industry is expected to have a positive long term outlook, particularly in the Wide Bay Burnett region, which is projected to be driven by increasing global and national demand.

Regional industry overview and economic snapshot

- **\$1.4 billion farm gate agriculture industry in 2016-17** (over 10% of Queensland production) – key regional export industries include sugar, fruit, nuts and other horticulture, beef and niche food products.
- Approximately 8,200 persons are directly employed in the agriculture, forestry and fishing industry, and an additional 2,500 and 230 employed persons are employed in processed foods and beverages in the region respectively in 2016 (place of work). A further 9,500 persons employed in downstream food industries such as food wholesale, food retail and food and beverage services. In total, the supply chain related to the farmgate agricultural sector (including forestry and fishing) is estimated to account for over **20% of total employment in Wide Bay (or alternatively 1 in 5 jobs in the region)**.

Chart 2.2: Trends in agricultural gross value of production in Wide Bay, 2011 to 2017



Source: Deloitte analysis based on ABS statistics

Key regional opportunities – Growth analysis

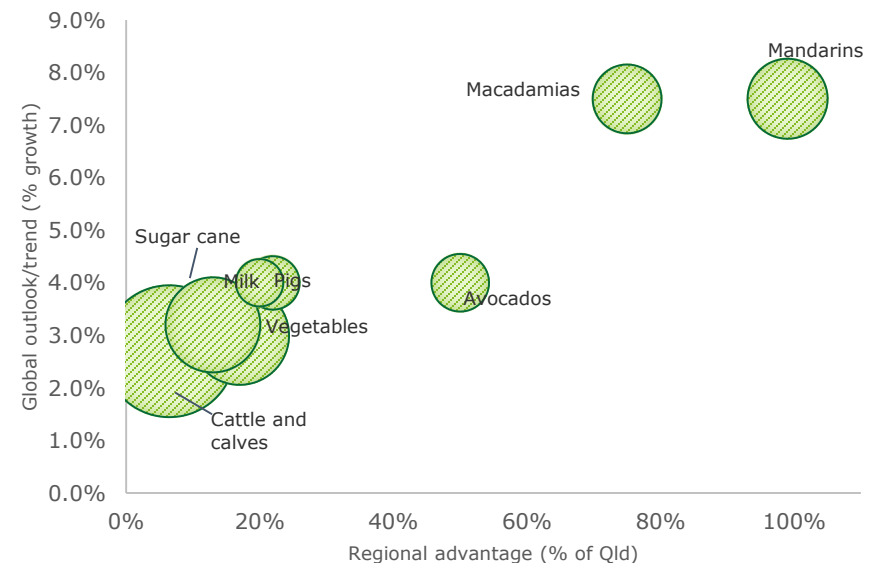
Large agriculture and food commodities

- Fruit and nuts (including citrus/mandarins, macadamias and avocados)
- Vegetables (including tomatoes, capsicum, and sweet potatoes)
- Beef cattle (and downstream meat processing)
- Sugar (and related by-products)

Niche agricultural and food commodities

These include dairy, pigs, fisheries & aquaculture and other food and beverages

Chart 2.3: Agricultural opportunity analysis in Wide Bay Burnett



Source: Deloitte analysis based on ABS statistics

“Fruit and nuts” is the largest agriculture industry in the region by value and include growing exports of avocados and mandarins

Fruit and Nuts - Regional snapshot and trends

Overview: Is the largest agricultural industry in terms of value in 2017 with key commodities including mandarins, macadamias and avocados. Strong growth industry centred around Bundaberg and Gayndah/Mundubbera.

Gross value of production (GVP) and GVP growth: \$404M in 2017 (farmgate), up by 108% since 2011 in nominal value terms.

Employment: Over 1,500 persons employed in citrus, fruit and nut farming in the Wide Bay region in 2016, and an increase of around 125 jobs since 2011.

Downstream processing: some fruit/vegetable processing in region (combined total jobs of around 120 persons in 2016).

Exports and trade outlook: Strong growth with the value of mandarin and avocado exports from Queensland increasing by almost \$50M and \$20M respectively over the last decade with almost 100% of Queensland mandarins and 50% of Queensland avocados produced in Wide Bay.

GVP (\$M), 2017

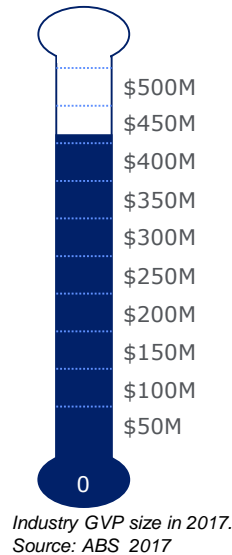
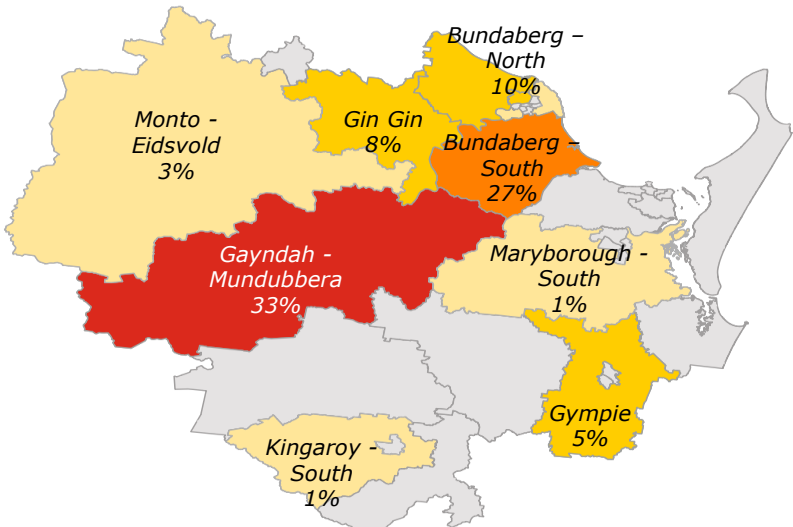


Table 2.1: Regional growth dashboard (farmgate): Growth in industry employment and GVP over recent years; Fruit and nuts

Growth dashboard	Jobs (11-16)	Output/GVP (11-17)
Average annual change	25 jobs	\$35M

Source: ABS Census data and ABS 2017

Figure 2.1: Sub-regional production value breakdown; Fruit and nuts

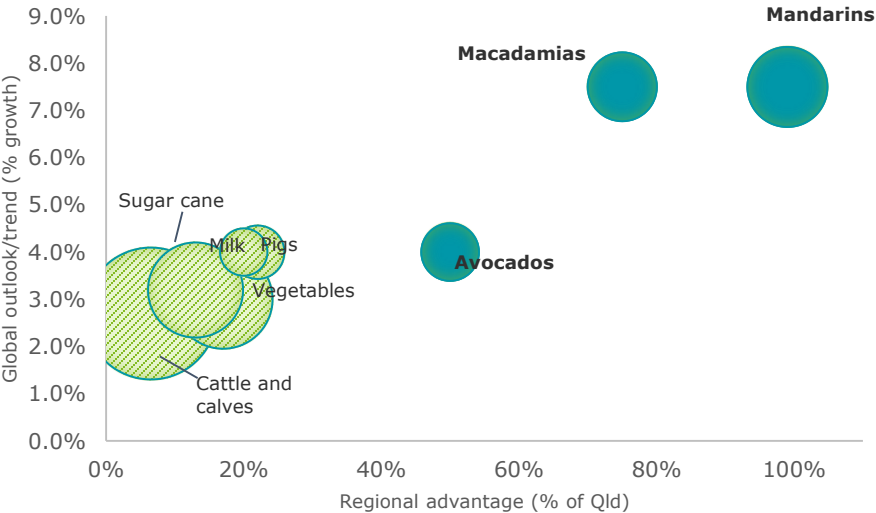


Expansion plans in region

A number of companies consulted in the region are looking to expand operations particularly in key commodity areas including macadamias, citrus and avocados. There have also been a number of recent Federal Government approvals for funding to support expansion operations. In summary, there is identified potential for regional fruit and nuts (particularly macadamias to China) production to increase by up to \$50 million to \$75 million per annum (2018-2035).



Chart 2.4: Global market outlook and regional advantage; Fruit and nuts



Beef (cattle and calves) is the second largest agriculture industry by value in the region and supports down stream processing for which demand for more capacity has been articulated

Beef (cattle and calves) - Regional snapshot and trends

Overview: Second largest agricultural industry in terms of production value in 2017, and also a sizeable downstream meat processing industry in the region (growing industry in the region).

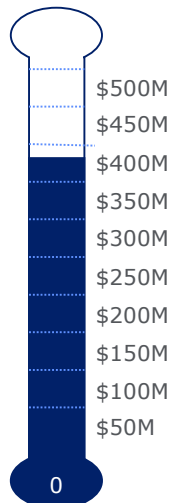
Gross value of production (GVP) and GVP growth: \$374M in 2017 (farmgate), up by 52% since 2011 in nominal value terms

Employment: Over 2,160 persons employed in beef farming in Wide Bay in 2016, and an increase of around 150 jobs since 2011 at just the farm gate.

Downstream processing: 780 persons employed in meat processing in the region in 2016 (mainly beef). Employment in beef processing increased by around 25% or 160 persons in between 2011 and 2016 highlighting strong growth in processing

Exports and trade outlook: Export growth potential has been identified by some producers/processors in the region focusing on increased meat processing.

GVP (\$M), 2017



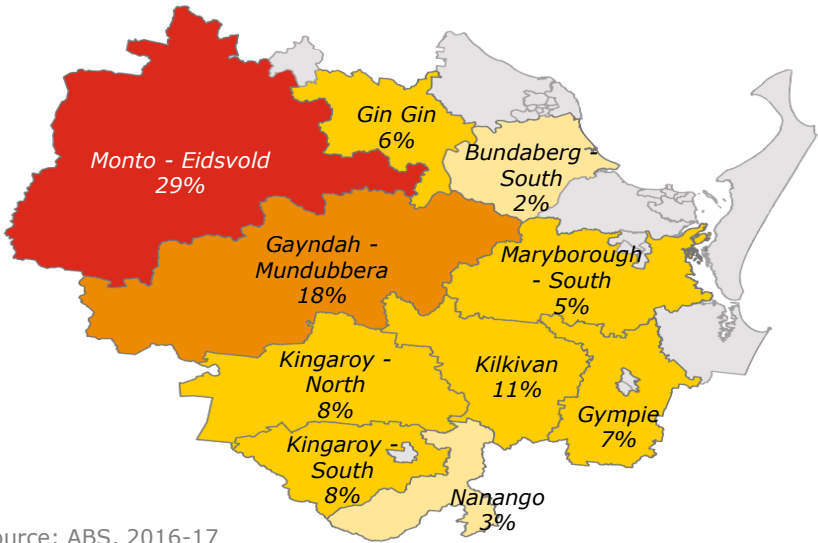
Industry GVP size in 2017.
Source: ABS 2017

Table 2.2: Regional growth dashboard (farmgate): Growth in industry employment and GVP over recent years; Beef

Growth dashboard	Jobs (11-16)	Output/GVP (11-17)
Average annual change	30 jobs	\$20M

Source: ABS Census data and ABS 2017

Figure 2.2: Sub-regional production value breakdown; Beef



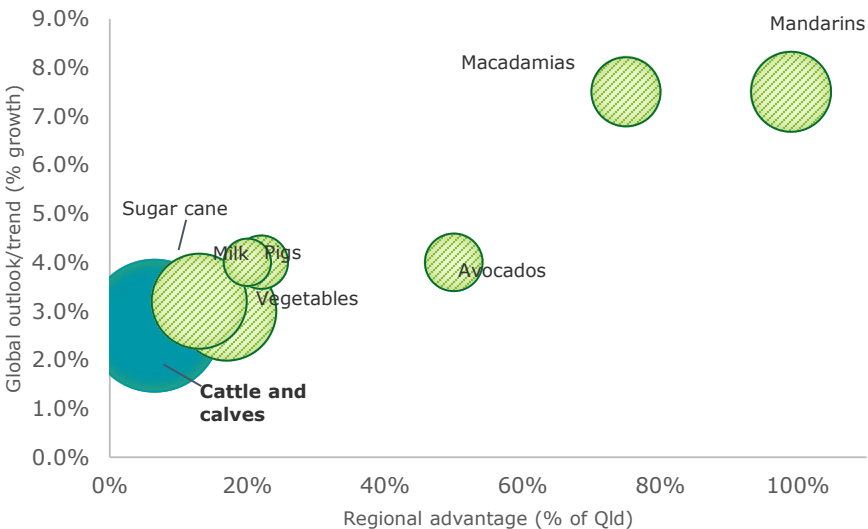
Source: ABS, 2016-17

Expansion plans in region

A couple of companies consulted in the region are looking to expand operations linked to markets outside the region including international as well as exports to rest of Australia. There have also been some recent Federal Government approvals for funding to support expansion operations in the region including Nolan Meats and Teys. In summary, there is identified potential for increased meat processing by around \$20M to \$65M per annum (2018-35).



Chart 2.5: Global market outlook and regional advantage; Beef



Vegetables production is centred in and around Bundaberg and accounts for c.20% of the State's production as well as contributing to processing in the region

Vegetables - Regional snapshot and trends

Overview: Third largest agricultural industry in terms of production value in 2017 and centred in the Bundaberg region. Mature industry in the region with some producers in recent times shifting into new fruit and nut crops.

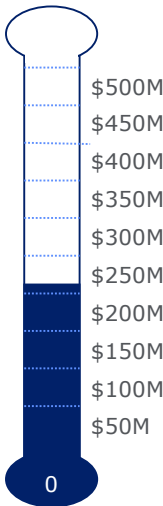
Gross value of production (GVP) and GVP growth: \$213M in 2017 (farmgate), down by 30% since 2011 in nominal value terms.

Employment: Around 935 persons employed in outdoor and indoor vegetable farming in the Wide Bay region in 2016 and an increase of around 65 jobs in total since 2011.

Downstream processing: around 115 persons employed in fruit and vegetable processing in the region as a whole in 2016.

Exports and trade outlook: Most vegetables are produced for markets in Australia (mainly outside of the region), producing around 17% of the state's vegetable production per year with population growth a key driver.

GVP (\$M), 2017



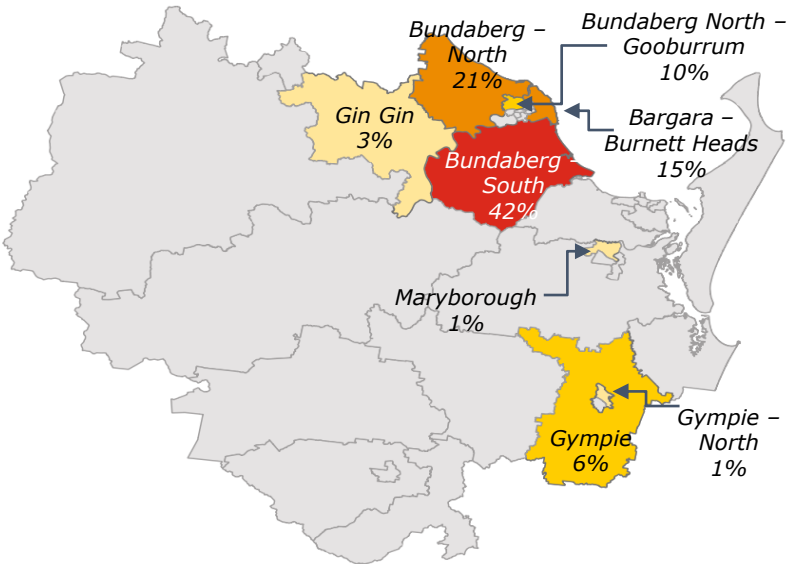
Industry GVP size in 2017.
Source: ABS 2017

Table 2.3: Regional growth dashboard (farmgate): Growth in industry employment and GVP over recent years; Vegetables

Growth dashboard	Jobs (11-16)	Output/GVP (11-17)
Average annual change	13 jobs 	-\$15M 

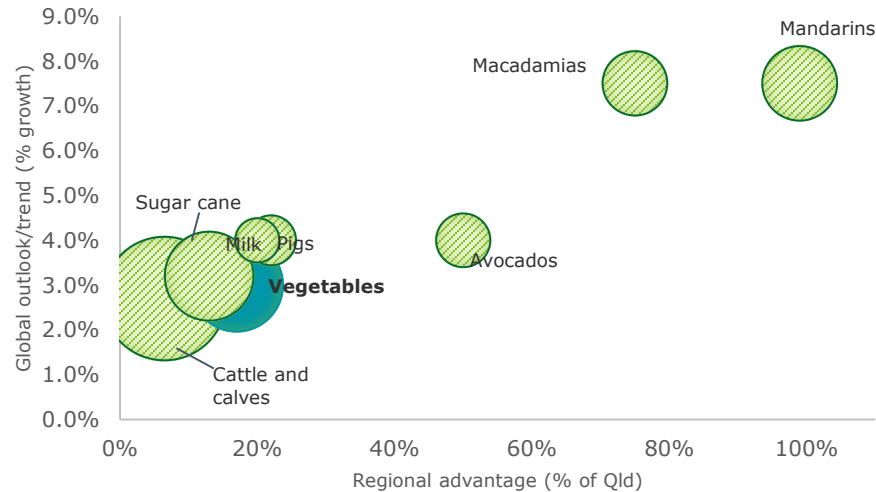
Source: ABS Census data and ABS 2017

Figure 2.3: Sub-regional production value breakdown; Vegetable



Source: ABS, 2016-17

Chart 2.6: Global market outlook and regional advantage; Vegetables



Expansion plans in region

No specific expansion plans over and above business as usual conditions by growers/producers/processors identified through consultations as at May 2018 but the industry is an economic mainstay in Bundaberg with scope to increase production over the medium to long term. Consultation identified that in recent times there has been a transition from vegetables into other horticultural production in the region.

Sugar cane has traditionally been, and will continue to be, an important sector with processing locally for domestic and overseas markets

Sugar cane - Regional snapshot and trends

Overview: Fourth largest agricultural industry in terms of production value in 2017 and also a sizeable processing industry. Although, employment has been subdued in recent times.

Gross value of production (GVP) and GVP growth: \$196M in 2017 (farmgate), up by 72% since 2011 in nominal value terms.

Employment: around 650 employed in sugar cane farming in the Wide Bay Burnett region in 2016. Employment levels in sugar farming have been relatively flat since 2011. In total there is over 1,280 persons employed in sugar farming and processing in the region.

Downstream processing: around 640 persons employed in sugar processing which is down by 125 jobs since 2011.

Exports and trade outlook: Potential for export growth linked to expansion plans in the region for sugar. Also the largest traded commodity at the Port of Bundaberg although can be volatile.

GVP (\$M), 2017

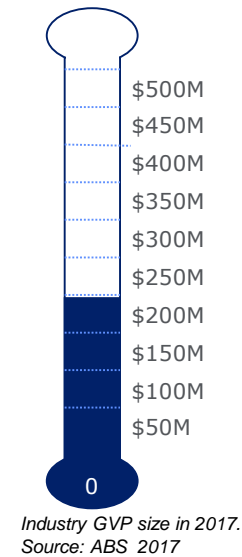
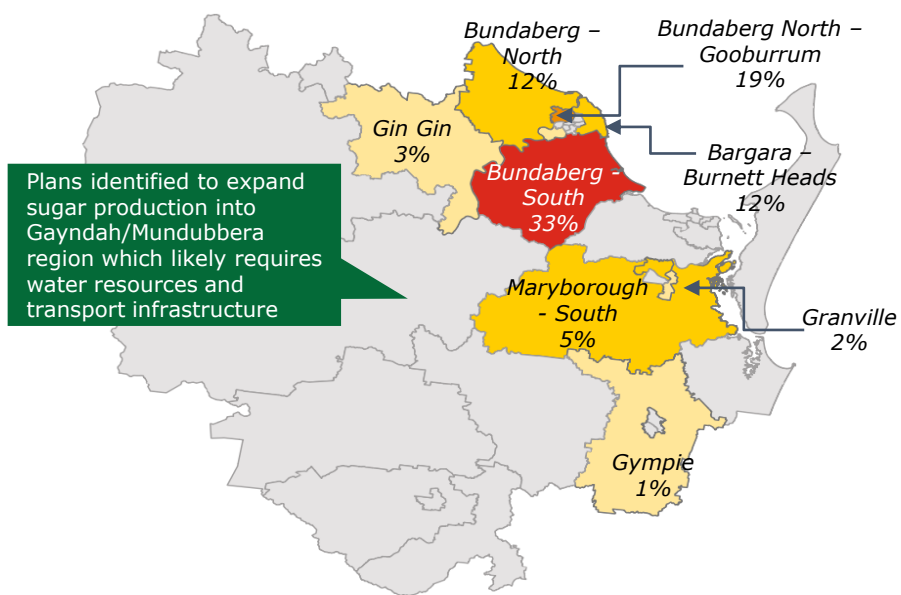


Table 2.4: Regional growth dashboard (farmgate): Growth in industry employment and GVP over recent years; Sugar Cane

Growth dashboard	Jobs (11-16)	Output/GVP (11-17)
Average annual change	-5 jobs	\$15M

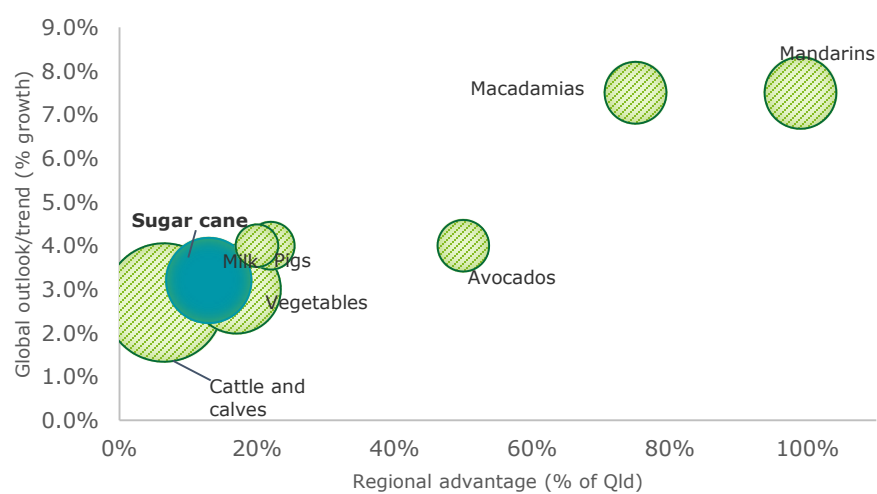
Source: ABS Census data and ABS 2017

Figure 2.4: Sub-regional production value breakdown; Sugar Cane



Source: ABS, 2016-17

Chart 2.7: Global market outlook and regional advantage; Sugar Cane



Expansion plans in region

There is some identified expansion plans for sugar cane in the region with up to \$20M to \$40M of potential exports of sugar to overseas markets per annum (2018-2035). The assumed price sugar is estimated to be 480/t based on ABARES.



Pig production in the region supplying downstream processing predominantly for the domestic market accounts for about 20% of the State's production by value

Pigs - Regional snapshot and trends

Overview: Fifth largest agricultural industry in terms of production value in 2017. Wide Bay is a relatively large pigs producing industry from a state perspective (around 20% of state production).

Gross value of production (GVP) and GVP growth: \$64M in 2017 (farmgate), which is around the same production level at 2010-11 (marginal 2% increase).

Employment: around 150 employed in pig farming in the region in 2016. Employment levels have been relatively flat since 2011.

Downstream processing: while beef processing is the largest meat processing industry, there is also downstream pig meat processing.

Exports and trade outlook: Most pig meat is produced for markets in Australia (mainly outside of the region) producing around 20% of the state's pig farming production per year with population growth a key driver.

GVP (\$M), 2017

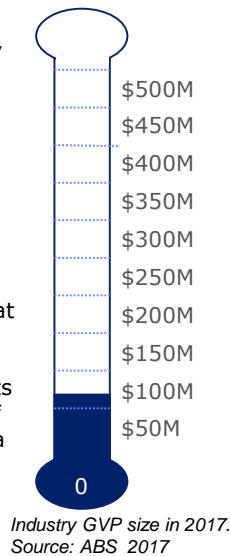


Table 2.5: Regional growth dashboard (farmgate): Growth in industry employment and GVP over recent years; Pigs

Growth dashboard	Jobs (11-16)	Output/GVP (11-17)
Average annual change	-5 jobs	\$1M

Source: ABS Census data and ABS 2017

Figure 2.5: Sub-regional production value breakdown; Pigs

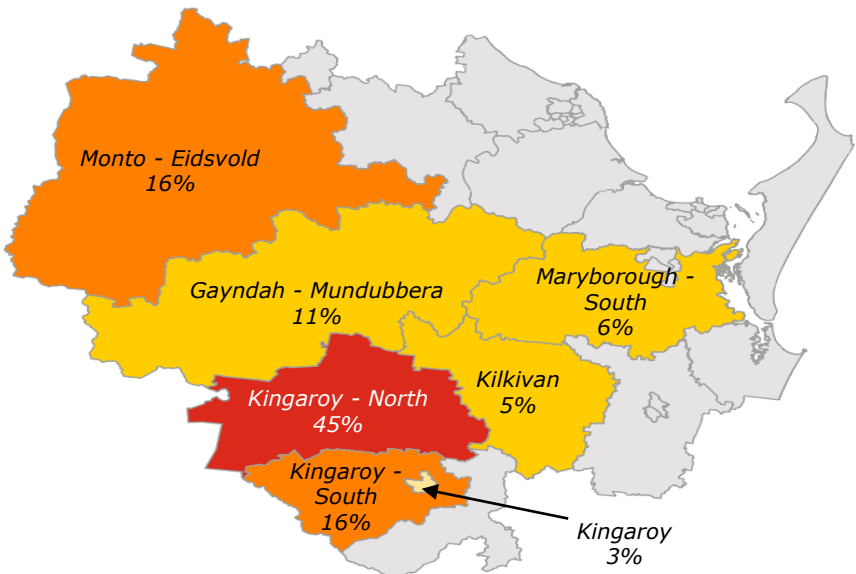
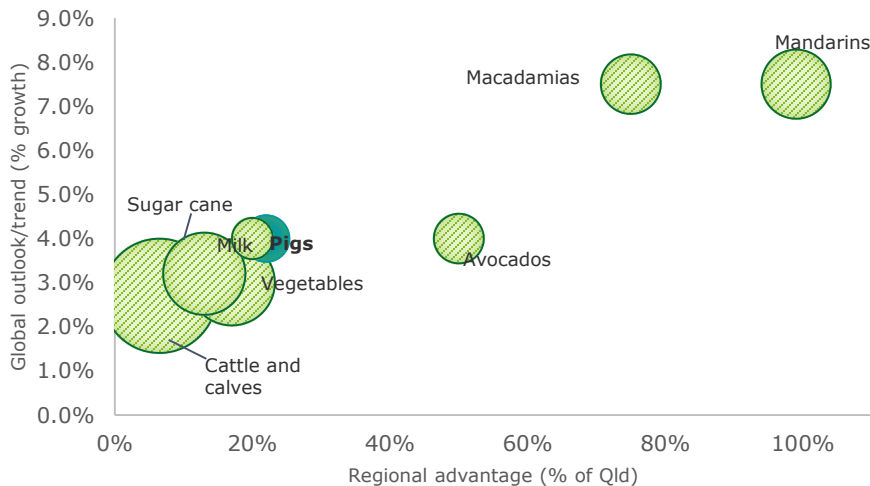


Chart 2.8: Global market outlook and regional advantage; Pigs



Expansion plans in region

No specific expansion plans identified through consultations to date. Although, potential exists for expansion with the region producing around 20% of the states pig farming production.

The region is a niche producer of dairy products; a sector where there is potential for future expansion into value-adding dairy processing

Milk and Dairy - Regional snapshot and trends GVP (\$M), 2017

Overview: Sixth largest agricultural industry in terms of production value in 2017.

Gross value of production (GVP) and GVP growth: \$51M in 2017 (farmgate), which is around the same production level at 2010-11 (marginal 1% increase).

Employment: around 250 employed in dairy cattle farming in the Wide Bay region in 2016. Employment levels in dairy farming have declined significantly since 2011 (decrease of around 75 jobs over these five years highlighting increasing industry consolidation).

Downstream processing: only small levels of employment in downstream dairy processing including cheese processing in 2016

Exports and trade outlook: The region is a relatively niche dairy producer, with this product sold for consumption in Wide Bay and also in other markets in Queensland.

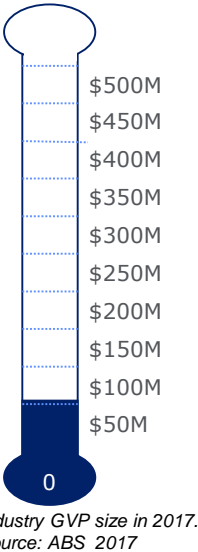
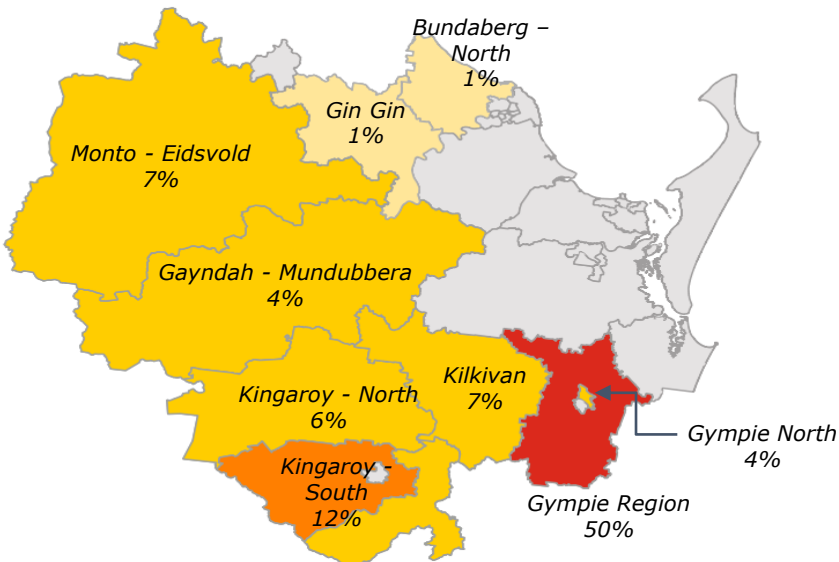


Table 2.6: Regional growth dashboard (farmgate): Growth in industry employment and GVP over recent years; Milk and Dairy

Growth dashboard	Jobs (11-16)	Output/GVP (11-17)
Average annual change	-15 jobs	\$0M

Source: ABS Census data and ABS 2017

Figure 2.6: Sub-regional production value breakdown; Milk and Dairy

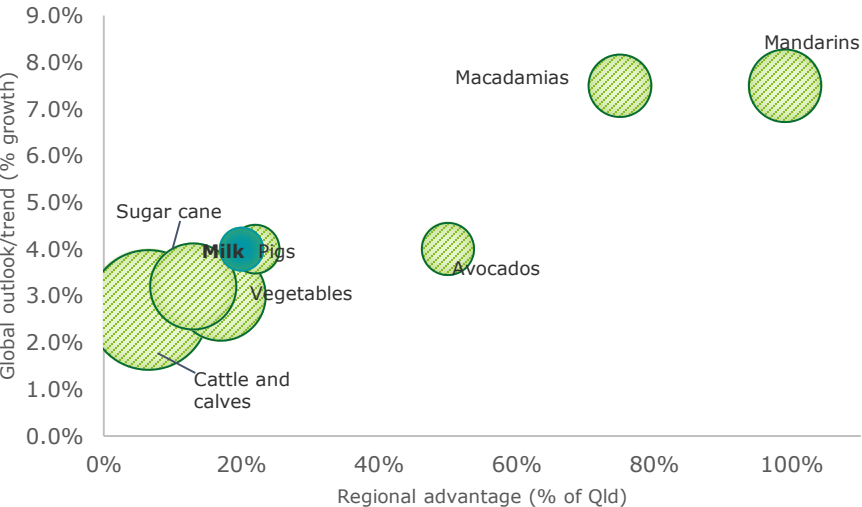


Source: ABS, 2016-17

Expansion plans in region

No specific expansion plans identified through consultations although potential exists for expansion including niche dairy processing with the region producing around 20% of the states milk farming production.

Chart 2.9: Global market outlook and regional advantage; Milk and Dairy



The North Burnett Minerals Province has a variety of resource endowments which if developed more could substantially increase exports of minerals over the medium-to-long term

Mining - Regional industry overview and economic snapshot

- **Approximately 900 persons** employed in the mining industry in the Wide Bay region (this is based on place of work) (ABS, 2016).
- There has been steady increases in mining employment with an increase of approximately **145 jobs – equating to approximately 20% of total mining jobs** in the region based on place of work data. This trend has potential to continue given resource developments in the North Burnett Minerals Province.
- Employment in the Wide Bay Burnett mining industry is largely concentrated in commodities such as, coal (around 40% of total mining employment in 2016), gold ore (around 20%), gravel/sand quarrying, and other construction materials, with small shares of employment in other commodities, such as mineral sands, other ores and mining services.
- Current levels of employment do not reflect future potential associated with resource developments, which are centred in the North Burnett Minerals Province.

Industry/global outlook

Mining industry growth drivers differ substantially between industries. The outlook for key commodities located in the Wide Bay Burnett region is summarised as follows:

Commodity	Outlook
Ilmenite	Credit Suisse project an ilmenite price increase of 25% through to 2020 of the back of a strong price growth trend and a positive outlook. This bodes well for ilmenite projects in the region.
Bauxite	The outlook for bauxite growth is positive due to strong global economic demand. Prices are set bilaterally, driven by prices of aluminium & alumina. Prices are projected to be stable through to 2023, nominal projected average price growth rate of 0.6% through to 2023.
Coal	Metallurgical coal is forecast to fall by 4.5% out to 2023. Over that time Australia's export volumes are forecast to increase by 3.5%. Thermal coal prices are expected to fall by 2.1% out to 2023 with a slight reduction in export volumes of 0.5% over the same period.

Key regional opportunities – Resource projects in the pipeline

Most of the economic potential for mining and minerals expansion relates to projects in the pipeline which are summarised in the following table (including but not limited to):

Project	Commodity	Production potential
HTL	Ilmenite	Ilmenite project in Wataranga with potential to produce 400,000-600,000 tpa over 45 years. The key mineral exported is expected to be ilmenite but there is also potential for zircon, apatite and magnetite.
Melior	Ilmenite	Restarting of Goondicum mine with capacity to export of up to 200,000 tpa.
Australian Bauxite	Bauxite	Binjour project is dependent on finalisation of necessary approvals. Expected to initially produce 0.3mtpa, increasing to 1 Mtpa in years 3-5 of operations, and 1.5mtpa beyond year 5. Port exports are dependent on infrastructure upgrades
Colton coal mine	Coal	Colton coal mine is located 11km north of Maryborough. Mining lease applicated has been approved and potential start date of 2023. Project classified as in the planning phase and the project proponent is New Hope Group. Potential capital expenditure of \$250 million.

Expansion plans in the region

The potential has been identified for long term expansion of up to \$100M to \$345M per annum (2018-2035) in additional mining and mineral production in the region if planned resource projects come on line. This includes potential expansion into minerals such as ilmenite, bauxite as well as coal. Further details on these assumptions and projects are also provided in Appendix A.



Taking up opportunities in Defence and Industrial Manufacturing will lead to expansion of economic activity in the future and help underpin sustainable regional growth

Defence and Industrial Manufacturing related opportunities

The Australian Defence Force is set to spend \$200 billion to increase its defence capability. In support, the Australian Government's 2018 Defence Industrial Capability Plan acknowledges Australia must grow its defence related industrial capability – including establishing a larger, more capable defence related industrial capability with the resident skills, expertise, technology and intellectual property to sustain Australia's future defence needs.

Based on this national plan, Queensland has developed a Queensland Defence Industries 10-Year Roadmap and Action Plan to grow its defence industrial capability. Both these plans provide an opportunity for the Wide Bay region (and PoB) to capitalise through supplying services to the Australian Defence Forces as part of a plan to build industrial capability.

Range of opportunities

- Naval and marine service facilities
- Attraction of foreign training ships (e.g. Singapore defence)
- Centre of excellence in innovation in ship design, testing and servicing
- Large scale industrial manufacturing that meets export and defence needs (e.g. Australian military MREs are made in New Zealand)
- Dry Dock servicing for large vessels
- Support joint training initiatives at Shoalwater Bay and, other exercises

The PoB is well placed to expand its capability in ship maintenance and repair and develop naval and marine services facilities. There is already some capability at PoB to do maintenance/repair with Pacific Tugs investing \$35 million to develop a ship repair/maintenance facility. The facility will house heavy equipment including a crane capable of lifting navy vessels, opening opportunities for the port to attract naval contracts. This site will also be developed to attract other marine industry businesses in the future.¹

There is an opportunity to build on this existing ship repair/maintenance capability and use it to attract future contracts for repair/maintenance of navy vessels. It is important for PoB to seize the opportunity as Ports such as Newcastle are also positioning themselves to be the main provider of maintenance/repair services for the Australian Navy.

1. <https://www.news-mail.com.au/news/why-investing-in-our-port-made-sense-for-pacific-t/3290267/> (Pacific Tugs News Article on new investment at the PoB)

The Wide Bay Burnett region has the capability to capture other opportunities offered by the Australian Defence Forces to support the regional economy.

- The region set its up to in the future to manufacture Meals Ready to Eat (MRE) for soldiers, which is currently produced in New Zealand. This would be a natural fit for Wide Bay Burnett region with its strengths in agriculture and processed foods. There is sufficient land in the SDA to establish a large industrial manufacturing facility for MRE's.
- The PoB is currently underutilised with trade throughput operating well below the level of throughput that the port can handle. A way to make up for this is to diversify activities into other areas and one strategy would be to host foreign defence training ships. This will provide a boost to the regional economy through incremental expenditure on provision and training activities and additional spend onshore by visitors.

If these Australian Defence Force opportunities are realised they will support an increase in regional output and employment in the Wide Bay Burnett region. The additional production in the region has not been modelled in this study as these early stage opportunities could not be quantified with any certainty.

Industrial Manufacturing (Biofutures capability)

Industrial manufacturing is defined as large scale manufacturing of industrial goods and there will be opportunities for such development at the SDA land adjacent to the PoB. A good example of industrial manufacturing is the proposed development of a biorefinery plant in the Wide Bay Burnett region based on sweet sorghum feedstock with the outputs of the biorefinery being ethanol and electricity. The type of industry has significant potential as a niche high value manufacturing industry and the development of such activities could result in the creation of high value knowledge intensive jobs.

The significant potential is demonstrated by a joint Deloitte Access Economics and Queensland University of Technology (QUT) study—*Economic Impact of a Future Tropical Bio-refinery Industry in Queensland*, which found that by 2035, an industrial biotechnology and bioproducts sector could contribute \$1.8 billion to Queensland's annual Gross State Product and support 6,640 full-time jobs in Queensland.

The study considered the potential for biorefineries in different locations across Queensland. It found that a biorefinery in Wide Bay Burnett based on sweet sorghum feedstock could cost \$315 million in capital investment over three years. Once operational the biorefinery plant would draw on local inputs of sweet sorghum and produce \$180 million worth of output each year comprising of ethanol and electricity.

Niche opportunities exist in relation to supply chain links with key defence projects in Queensland

Defence Facilities - Wide Bay Training Area

The Wide Bay Training Area is located near Tin Can Bay, which is adjacent to Fraser Island. The training area covers 22,300 hectares. The Base was established before 1980.

The Wide Bay Training Area supports the 7th Brigade units to conduct combat team training. It is a live training facility and allows troops to train with live fire overhead and is a part of the Australian Government's Enhanced Land Force Stage 2 Facilities Project reportedly with around \$100 million at the Wide Bay Training Area completed in 2014.

Queensland has one of the largest army bases in the country and is at the front line of army deployment, with reportedly around 40% of Australian Army personnel based in the state, and with 7 defence bases across the State including the Wide Bay Training Area. This provides the potential to capture defence related expenditure in the region in the future.

Image 2.1: Wide Bay Training Area



<http://www.digwright.com.au/wide-bay-military-training-area-elf-2b-ecr-training-range/>
<https://www.defenceindustries.qld.gov.au/defence-industries/land/facilities.html>

Defence supply chain opportunities including industrial manufacturing

The Wide Bay Burnett region could benefit from jobs created from the Federal Government's announcement of Rheinmetall as the selected supplier for the Combat Reconnaissance Vehicle project.

Defence already has a strong presence in Wide Bay, with the Tin Can Bay Training Area, Camp Kerr, bringing many troops to the region.

There are also potential opportunities for metal manufacturing companies in the region with reports that because Global Manufacturing Group has a teaming agreement with Rheinmetall, more manufacturing jobs could be in the pipeline for construction of the parts needed for vehicles. It is estimated that around 10-20 jobs could be created from the work.

There could also be other supply chain related opportunities in the region with businesses with supply chain links to key suppliers given the significant economic activity injected through defence related works over the next 10 years in Queensland.

Image 2.2: Wide Bay Training Area



<https://www.frasercoastchronicle.com.au/news/maryboroughs-slice-of-a-5-billion-development-pie/3361282/>

The region stands to gain from investments to improve connectivity to the port and expanded port capacity as well as with better access to and use of State Development Area (SDA) land

Transport & Logistics – Regional Overview

Industry Overview

Transport and Logistics is defined as relating to transport and logistics activity and infrastructure that directly impacts the trade potential of the Wide Bay Burnett region. This includes rail infrastructure connecting key industrial regions to the PoB, road infrastructure that increases the accessibility to the PoB and port infrastructure to increase the amount of throughput through the PoB and facilitate exports from the region to new overseas markets.

The Transport, Postal and warehousing industry as a whole in the Wide Bay Burnett region employed an estimated 3,230 people as of 2016 (ABS 2016). This industry is largely reliant on road networks for transport and logistic movements due to the limited rail connections, with only the North Coast rail line passing through the Wide Bay Burnett region. There is currently no direct rail connection between key production regions and key exporting areas and routes, such as PoB and the North Coast Line.

Industry Outlook: Challenges & Opportunities

The outlook for transport and logistics in the Wide Bay Burnett region is heavily dependent on future investments in infrastructure that increase the connectivity of key production areas to exporting ports. Increases in population growth, tourism, and growth in economic activity (such as production of minerals from the North Burnett Minerals Province) that could potentially increase road usage by trucks hauling minerals. This is likely to require additional investments to enhance the road network to cater for these additional volumes and ensure efficient transport by road – including to the PoB. At the present time a range of options are still under investigation including transport of commodities by either road or rail for export to overseas market. A number of potential locations are being considered to facilitate export of these commodities to overseas markets including the PoB.

It should be noted that investments in port infrastructure at the PoB (such as staged developments of an outer harbour) will position the port to accommodate a greater proportion of Wide Bay Burnett's export production. It will also increase the level of port related services required (e.g. such as stevedoring) due to the step change in trade throughput if mineral commodities are exported to new markets following the establishment of stage 1 of an outer harbour at PoB.

Key Infrastructure Required for Future Trade Growth

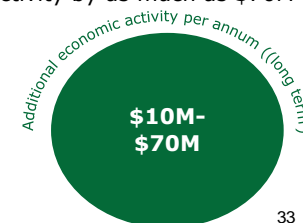
There are a number of key infrastructure investments that can address the challenges facing transport and logistics in the Wide Bay Burnett region in order to enhance the future trade potential of the region (providing these investments are cost effective).

Infrastructure to improve connectivity and enhance trade in the region

- ✓ **Road corridor upgrades:** Upgrades to existing key road corridors, such as the Bruce Highway Cooroy to Curra project (Section D) and the Burnett Highway will increase safety, reduce congestion on existing roads, and reduce transport costs through achieving time savings.
- ✓ **Port Access Road:** A new Port Access road will be developed to cater for a future increase in activity at the port. This road will bypass Powers Street that is a residential area.
- ✓ **East-West SDA Corridor; Burnett Bridge:** A bridge connecting the eastern and western side of the SDA will increase connectivity and enhance development opportunities on the western side of the SDA.
- ✓ **Rail connectivity:** Rail connectivity to the PoB will reduce congestion on key roads and provide an efficient way to move bulk-commodities.
- ✓ **New port infrastructure facilities:** The development of a northern berth and Stage 1 of development of an outer harbour will increase the capability of the port to facilitate exports of mineral commodities to new overseas markets. It has been proposed to upgrade/replacement of the existing bulk liquids wharf with a cruise ship berth that can accommodate cruise ships of up to 200 to 220 metres in length. This port infrastructure will have implications for marina servicing, tourism, and high-volume commodity trade.

Trade potential of Transport and Logistics:

Investments transport and logistics infrastructure associated with trade, in the Wide Bay Burnett region, will increase the viability of a number of projects, particularly mining and agriculture commodities located in rural regions. Further, identified potential projects in the region may increase economic activity by as much as \$70M in real terms, largely due to increases in servicing jobs associated with increased activity at the PoB.



Marine services industry opportunities can be leveraged at the Port of Bundaberg for maintenance and repairs as well as works on Defence vessels

Marine Industry Related Opportunities – Regional Overview

Industry Overview

According to the IBIS World Industry Profile (*Shipbuilding and Repair Services*) the industry is expected to undergo robust growth over the next five years. At the national level the industry had a value added of \$1.1 billion and employed 7,795 persons in 2017-18 (with a large part being shipbuilding). A strong commitment by the Federal Government to support local firms will ensure a solid revenue output over the next five years. Further, construction on the Offshore Patrol Vessel project and on the Future Frigate program, which is designed to replace Australia's Anzac-class frigate fleet, is expected to commence in 2018 and 2020 respectively. This is anticipated to increase industry revenue and provide a stable operating environment for industry operators.

Ship repair and maintenance works may be done during anchorage, on voyage and off-site. Off-site repairs are typically completed at a plant or facility. Repair services include pipe and metal fabrication, and mechanical, electrical, boiler and hydraulic repairs. This segment has increased as a percentage of revenue over the past five years, as the Royal Australian Navy has numerous vessels requiring regular maintenance. The potential to get Royal Australian Navy work is a possibility for Wide Bay Burnett if ship repair and maintenance services can be developed at PoB.

Marine maintenance and repairs

There is a considerable potential to grow marine industry maintenance and repairs in Wide Bay Burnett, in particular at the PoB. This follows a decision by Pacific Tugs to invest \$35 million to develop a marine repair and servicing facility on vacant land at PoB. The site will accommodate services such as a ship repair and maintenance facility, cargo barging trade, and a potential disaster and emergency response centre, with the construction of the ship maintenance and repair facility to begin soon.

This facility will act to attract future investment in the marine industry, giving the PoB a competitive advantage to support increased trade throughput and increased ship calls to the PoB. Further, the marine site will address a need along the east coast of Queensland, as there is currently a limited supply of these services amongst Queensland ports.

Defence vessels

The PoB has long been cited as a potential Port that could be utilised by the defence industry for vessel maintenance and servicing. The Port can take advantage of its emerging vessel maintenance and servicing industry to take advantage of this opportunity.

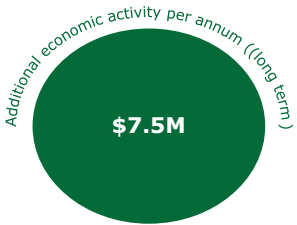
As the IBIS World Profile on *Shipbuilding and Repair Services* notes there is a significant amount of Royal Australian Navy work in the pipeline that Wide Bay Burnett can capitalise on if it builds the right capabilities.

Trade potential of marine repair and service

It has been reported that the \$35 million investment by Pacific Tugs¹ will result in the development and operation of the site, which once completed will create 100 full-time jobs (this includes direct and indirect jobs), such as auto mechanics and diesel fitters.

Benchmarks from the ABS Australian Industry Publication ABS 8155.0 (of output/worker for shipbuilding and repair services) is used to estimate the potential increase in direct output of marine servicing and repairs due to a potential increase of 25 additional workers at Pacific Tugs at PoB.

The potential increase in regional output is estimated to be \$7.5M per annum.



1. <https://www.news-mail.com.au/news/why-investing-in-our-port-made-sense-for-pacific-t/3290267/>

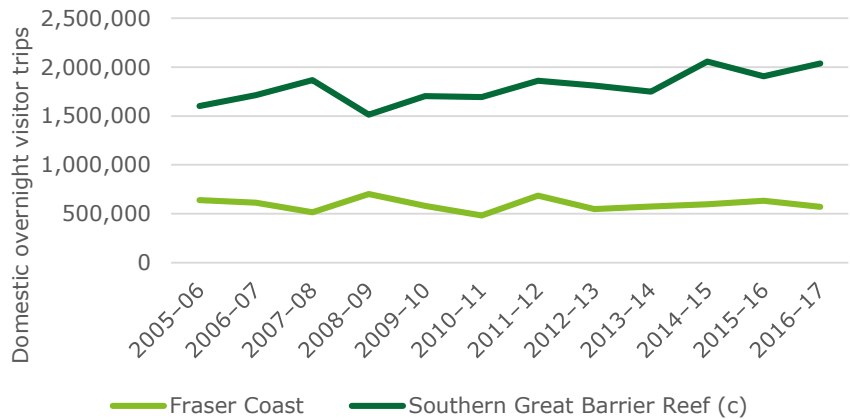
Growing domestic overnight visitors in the Southern Great Barrier Reef is supporting tourism development in Wide Bay Burnett and is gradually strengthening international visitor arrivals that bodes well for the future

Tourism – Regional Snapshot and Trends

Domestic overnight visitors

Domestic visitors comprise the bulk of overnight visitors to the Southern Great Barrier Reef and Fraser Coast tourism regions. Over the past decade there has been steady growth in the Southern Great Barrier Reef with stable levels of domestic overnight visitors to Fraser Coast.

Chart 2.10: Domestic Overnight Visitor Trips to Fraser Coast and Southern Great Barrier Reef Tourism Regions



Source: Analysis based on Queensland Treasury data sourced from Tourism Research Australia

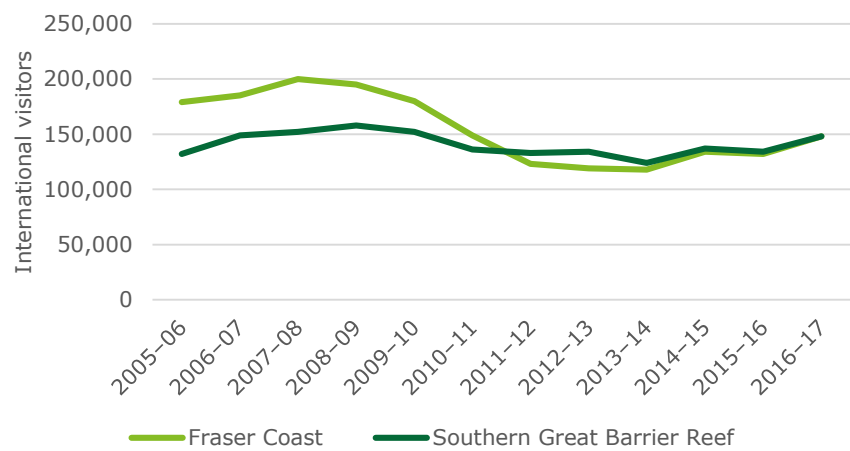
Outlook for domestic tourism

Domestic overnight visitors to the Southern Great Barrier Reef tourism region is a growing market with steady growth over the past decade that is set to continue. There is also niche tourism markets related to key road infrastructure, including 'grey nomads' and drive tourism, which is linked to the key tourism routes in the region including the Burnett Highway. Bundaberg is a key attraction of the South Great Barrier Reef tourism industry.

International overnight visitors

International visitor arrivals are starting to pick gradually pick up over the last few years in the Fraser Coast and Southern Great Barrier Reef tourism regions (which includes Bundaberg).

Chart 2.11: International Tourist Visitor Trips to Fraser Coast and Southern Great Barrier Reef Tourism Regions



Source: Analysis based on Queensland Treasury data sourced from Tourism Research Australia

Outlook for international tourism

The outlook for international tourism is solid for Queensland with strong growth predicted in international visitors over the coming years. The proximity of Wide Bay to the Greater Barrier Reef and Whitsundays Wide Bay should be well positioned to capture some of the growth in international tourism. Based on Tourism Research Australia Forecasts, inbound visitors nights (by international visitors) to Queensland are forecast to grow in average annual terms by 6% over the period 2016-17 to 2026-27.

Cruise ship infrastructure and redevelopment of the marina at Burnett Heads will support additional visitation and incremental tourism spend in the region

Potential tourism, marine and cruise ship developments

Industry Overview

Wide Bay Burnett's tourism industry capitalises on the natural beauty of the World Heritage-listed Great Barrier Reef and Fraser Island, 169 Queensland Heritage sites, and a range of outdoor and eco-tourism experiences.

The latest tourism figures for the Fraser Coast and the Southern Great Barrier Reef (a proxy for tourism in the Wide Bay Burnett Region) indicate growth in both the domestic and international market segments over the year ending December 2017¹.

- International visitors to the Fraser Coast grew by 1.9% to 150,000 overnight visits in the year ending December 2017. The regions international market accounted for 18% of total overnight visits and 11% of total overnight visitor expenditure to the region. European markets dominate the regions top international source markets – with the UK comprising around 34% of the international source market. International visitors to the Southern Great Barrier Reef increased by 6.1% or 151,000 overnight visits in the year ending December 2017.
- Domestic visitors nights to the Fraser Coast increased by 675,000 over the past three years ending December 2017 (or growth of 4.5% over this time). The intrastate market was the largest contributor with growth of 5.6% or 510,000 overnight visit over the three years ending December 2017. The Southern Great Barrier reef welcomed 2.0M overnight visits representing growth of 1.8% in the year ending December 2017. The bulk of domestic visitors were from the intrastate market (an estimated 1.7M overnight visits).

The latest Tourism Satellite Accounts for Fraser Coast and South Great Barrier Reef² highlight the important contribution tourism expenditure makes to regional economies. In 2016-17, direct tourism GRP in the Fraser Coast was around \$242 million and represents about 7.4% of the region's GRP. In the Southern Great Barrier Reef region, direct tourism GRP was around \$677 million and this comprised about 2.6% of the region's GRP. Some of the key industries that benefited from additional tourism expenditure (are tourism intensive industries) including food services, accommodation, retail trade and transport services.

Marina related tourism

The region has a considerable opportunity to capitalise on tourism growth with the plans to redevelop the existing marina at Burnett Heads. The various approvals are currently being sought to redevelop the marina at Burnett Heads with a significant capital expenditure over two stages³. The development will house more wet berths and stage one includes construction of additional berths and land based facilities..

The present marina facilities at Burnett Heads will be removed to make way for the new facility. The land based part of the development has two restaurants, a tourism office, marine reception and chandlery. The new marina will also have mooring for super yachts. This is important from a tourism perspective as visitors and crew of super yachts (are likely to include higher income/wealthy individuals) will support local retail, restaurants and other businesses through additional spend in the region. The restaurant facilities and marine based businesses associated with the development will support additional jobs at Burnett Heads.

Superyacht activity has the potential to deliver strong flow-on benefits. Specifically, the Queensland Government Superyacht Strategy notes that in Cairns and Whitsunday regions, the Superyacht sector could potentially contribute \$580 million and support about 4,500 FTEs by 2021. While not directly related to Wide Bay Burnett this level of activity demonstrates the tourism potential from attracting super yachts to the region⁴.

Cruise Ship Tourism

Bundaberg has a healthy tourism industry, partly due to its location in the Southern Great Barrier Reef tourism region and close proximity to Fraser Island. The Lagoon Parkland is \$20-30M investment that would enhance the PoB and Burnett Heads as a destination and key gateway to the Southern Great Barrier Reef Marine Park and the Great Sandy Straits Marine Park.

Further, the cruise industry is a fast expanding segment of the tourism industry, particularly along the east coast of Australia. As a result of this growth PoB docked its first luxury Cruise ship at its facilities in the last 5 years in 2017-18. There is potential for PoB to take greater advantage of this growing market through expansions in ship docking capacity and servicing facilities and infrastructure. There will be greater opportunities in the future to host cruise ship visits as there are plans to demolish the old bulk liquids terminal at PoB and develop a cruise ship berth. The cruise ship berth will be able to accept cruise ships from 180 to 200 metres with potential for this berth to be increased in size in the future to accommodate cruise ships of up to 220 metres in length. This augers well for cruise ship tourism in the future.

Trade Potential: Rather than being modelled explicitly, the impact of tourism expansion in Wide Bay Burnett is captured indirectly in economic impact modelling through the expansion of tourism related sectors (that includes 'accommodation and food services' and 'arts and recreation services' sector).

1. *International and Domestic Visitor Snapshots – Year Ending December 2017, Tourism and Events Queensland*

2. *Tourism Research Australia – Regional Tourism Satellite Accounts (2016-17) Southern Great Barrier Reef and Fraser Coast (note: SGBR is an aggregate of Bundaberg and Central Queensland)*

3. <https://www.news-mail.com.au/news/approval-given-burnett-heads-marina-development/1866024/>



4. *Queensland Super Yacht Strategy 2018-23 – Department of State Development Manufacturing Infrastructure and Planning*

3. Infrastructure required to unleash the trade potential of the Wide Bay Burnett

There are a number of key enabling infrastructure projects that could have a significant impact on Wide Bay Burnett's future trade potential

Infrastructure Opportunities for the Wide Bay Burnett Region




There are a number of opportunities in the Wide Bay Burnett region to increase the connectivity of potential and current producing areas with export ports, particularly the PoB. The following list is key enabling infrastructure for the region to capitalise on growth opportunities. This list excludes industry specific capital that is specific to a project (and termed 'Industry Projects'), A full list of infrastructure with estimated costs for the 'medium', 'high expansion' and 'highly aspirational' scenarios is included in **Appendix A** with relevant sources of data/information. It should be noted that this report does not provide an economic evaluation of these projects.

Infrastructure Opportunities and Trade Potential Implications	Potential infrastructure projects	Capital Expenditure (indicative costings)
 Road	Infrastructure Projects	Total: \$1.06 billion
<p>The Wide Bay Burnett regional economy is highly dependent on key regional highways and road corridors for the mobility of trade and goods, connectivity with markets (both inside and outside the region), and tourism. More specifically;</p> <ol style="list-style-type: none"> 1. Targeted investment in transport infrastructure to support freight efficiency including key North-South and East-West Corridors. Current key links for the region include to SEQ markets and Port of Brisbane, which are vital connections to support continued growth of trade and exports. 2. The latest trade forecasts and regional studies indicate a number of regional priorities to support port expansion, including road access to the Port among other projects. There is a strategic need to capitalise on planned road project investments across the Wide Bay region. 3. New corridors of transport could emerge including transport of goods to Brisbane West Wellcamp airport and Surat Basin over time, and targeted infrastructure upgrades on key state strategic road networks may be required over the long term 	Port Access Road A new Port Access Rd will be develop in anticipation for increase activity at the port. This road will bypass Power St.	\$150 million (medium point of cost estimation range).
	Burnett Highway Upgrades/other key state network regional highways Upgrades to the Burnett/Isis Highways to improve regional connectivity for key freight routes (including to Toowoomba and the Surat Basin) as well as liveability and other benefits (such as supporting drive tourism). These upgrades could also mitigate the risk of flooding on key sections where relevant as well as providing an alternative to the Bruce Highway, which has been highlighted by RACQ (see Appendix F).	\$900 million.
	Burnett Bridge A construction of a bridge crossing the Burnett river connecting the North and South SDA areas. Options for the development of this bridge are still being considered and only indicative costs estimate are currently available	NA [^]
	Transport Depot Expansion Establishment of a new transport depot in the Bundaberg region. This would greatly expand road freight capacity in the Wide bay region.	\$9 million.
 Rail	Infrastructure Projects	Total: \$493 million
<p>Long-term opportunities exist to improve the connectivity of key areas in Wide Bay Burnett to rail (Bundaberg Port and SDA) in order to support transport connectivity to minerals production areas in the region. In addition, this could provide greater access to the PoB to facilitate higher growth in exports of commodities to overseas markets. These opportunities are underpinned by the future economic merit of such projects.</p>	Rail connection to Cordalba Construction of a 36km cane railway from Cordalba to Wallaville to achieve internal cost efficiencies, and to enable sustainable sugarcane production expansion into the Wallaville-Gin Gin area.	\$13.3 million.
	Rail link connecting the PoB with the North Burnett Mineral Province A rail link has been proposed in the future to link the PoB with the North Burnett Minerals Province.	\$480 million.

[^]This investment provides an upside to capital expenditure and this is implicitly reflected in the CGE modelling scenarios

Port and marine, energy and water infrastructure are important to facilitate trade and build productive capacity

Infrastructure Opportunities for the Wide Bay Burnett Region (cont.)

Infrastructure Opportunities and Trade Potential Implications	Potential infrastructure projects	Capital Expenditure (indicative costings)
 Port and Marine <p>The PoB is a strategic asset located in the Wide Bay Burnett region that has the potential to greatly expand its throughput in the future. This could be achieved by capitalising on potential infrastructure upgrades at the port, and development opportunities within the port precinct and Bundaberg SDA.</p>	Infrastructure Projects	Total: \$1.07 billion
	Port infrastructure Infrastructure to support the development of industry and port operations at the Port of Bundaberg and the surrounding state development area.	\$55 million
	Development of berthing facilities at the Northern Bank of PoB Developing a berth and ship-loading infrastructure on the northern side of the Burnett river (where PoB owns vacant land) will prevent having to transport commodities to the southern berth on the south bank of the river. This will increase the development potential of the northern side of the SDA, whilst increasing future capacity at the Port	\$120 million.
	Construction of Outer Harbour Berthing Facilities Development of stage 1 of an outer harbour to facilitate a 'step change' in exports of mineral commodities to new overseas markets. This is considered to be far into the future and is only included in the highly aspirational scenario but will allow large volumes of commodities such as bauxite to be exported through the PoB	\$880 million.
	Development of Cruise Ship Berthing Facilities Construction of a new berthing facility that would allow larger cruise ships to dock at the PoB. This would enhance tourism in Wide Bay Burnett, in addition to increasing the need for ship servicing at the Port of Bundaberg. This is for a 180 – to 200 meter cruise ship berth initially and up to 220 metres in the future	\$10 million - \$15 million (indicative estimate)
 Energy <p>A reliable supply of energy is required to support plans for future expansion for the State Development Area and the PoB.</p>	Infrastructure Projects	Total: \$50 million
	Electricity infrastructure Development of electricity infrastructure	\$50 million
 Water <p>A reliable supply of water is required to support agricultural production in the region.</p>		Total: \$23 million
	Paradise Dam This is a spillway upgrade to Paradise Dam with funding announced that is currently under consideration based on the latest Deloitte Access Economics Investment monitor	\$23 million.

4. The economic impacts of trade and export expansion and infrastructure investment

New capital investment and expansion of exports results in significant flow-on effects regionally to economic output and to jobs

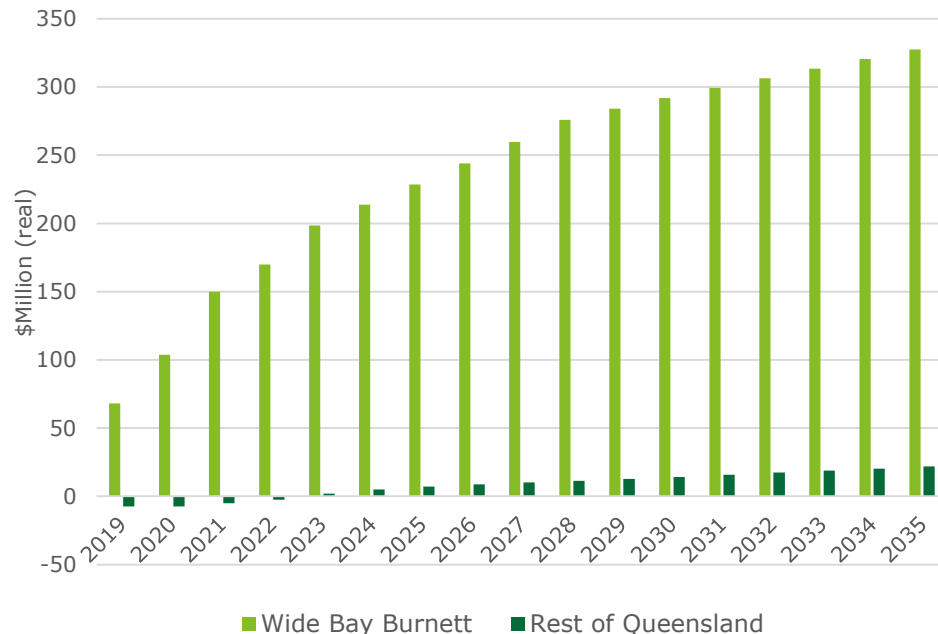
Medium Scenario - Outputs

Gross Regional Product (GRP)

In the medium expansion scenario, real GRP increases by around **\$240 million** per annum over the period 2019 to 2035. There is a steady increase in real GRP to around **\$325 million** above business as usual by 2035. In the main, the combination of investments to build the region's productive capacity and increased production and exports drives the increase in real GRP.

Real GRP is around **1.9% points** higher relative to business as usual in Wide Bay Burnett by 2035. The percentage deviation is a useful way to show the magnitude of the impacts relative to the size of the economy.

Chart 4.1: Deviation in real GRP, Wide Bay Burnett and rest of Queensland, 2019 to 2035



Employment

Over the five years from 2019 to 2024, employment (full time equivalents or FTE's) increases by around **340 FTE jobs** per annum (on average), driven largely by construction related investment. The increase in investment and production results in an additional **485 FTE jobs** per annum (on average) over the period 2019 to 2035. There is a positive increase in employment in the rest of Queensland, which is driven through increased regional connectivity and model interactions.

Aggregate employment is **0.6% point** above business as usual relative to business as usual by 2035. The proportionately higher deviation in real GRP compared to FTE employment highlights that productivity is playing a key role in driving the economic impacts.

Chart 4.2: Deviation in FTE's, Wide Bay Burnett and rest of Queensland, 2019 to 2035



The “medium expansion” trade scenario has positive flow-on effects to agriculture and processing and related investment expands the output of construction and related industries

Industry impacts

The initial investment phase leads to a spike in construction activity driven by transport infrastructure projects, as well as capital and project investment activities linked to trade expansion plans identified in the region through consultation and the findings of this study.

The industries that benefit the most are metal ores and mining (including mining support services), fruit and nuts and other horticulture as well as manufacturing sub-industries including metals, beverages, sugar and other foods. There are broader gains to service industries including other services (this includes trade which reflects tourism as well as regional consumption), transport and a sustained increase in construction.

Chart 4.3: Deviation in real output in Wide Bay Burnett, Agriculture and resources

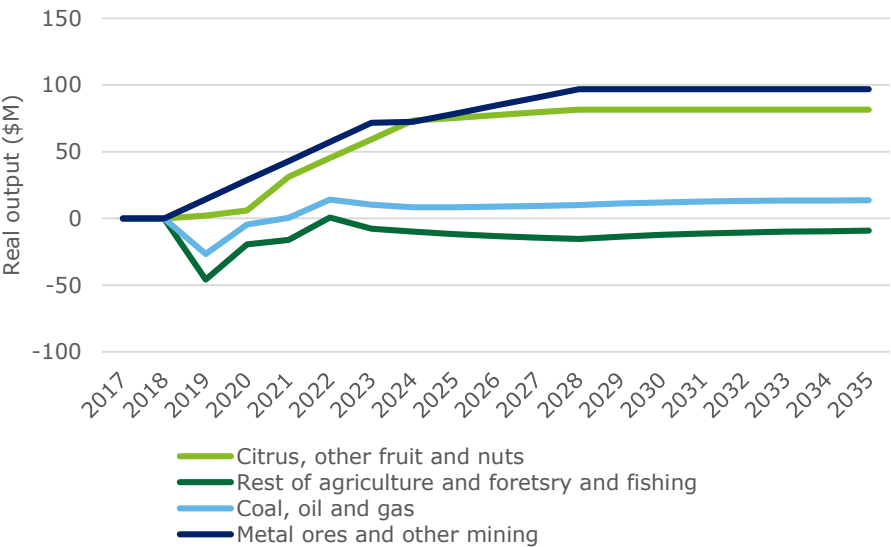


Chart 4.4: Deviation in real output in Wide Bay Burnett, Manufacturing industries

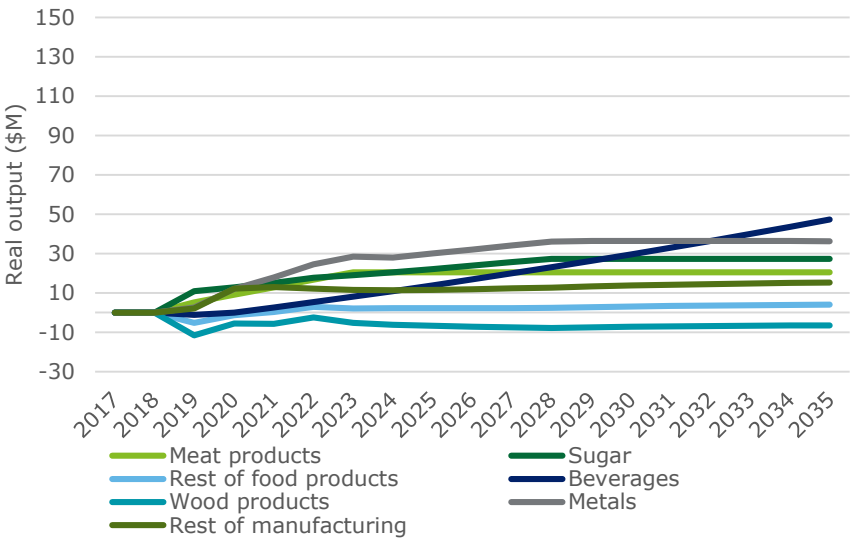
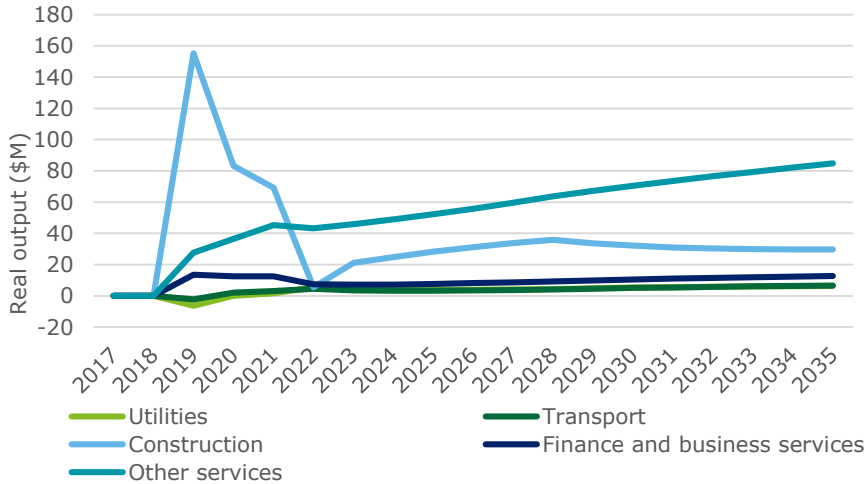


Chart 4.5: Deviation in real output in Wide Bay Burnett, Other industries



There are much higher flow-on effects to output and employment under the “highly aspirational” trade scenario as additional investments and expansions to output are assumed to occur

Highly Aspirational Scenario - Outputs

Gross regional product

In the highly aspirational scenario real GRP increases by **\$790 million** per annum over the period 2019 to 2035. A key feature of the scenario is the modelling of additional capital infrastructure at the PoB (e.g. development of an outer harbour) and increased connectivity to the port. The increase in capital investment stimulates increased output growth and real GRP increases by **\$995 million** relative to the business as usual by 2035. While an outer harbour creates the potential for increased trade and output at the port this is not explicitly modelled as these gains are viewed as a longer term proposition (i.e. over 50 years) and information is not currently available to support such modelling.

Real gross regional product is estimated to be **5.8% pts higher** relative to business as usual by 2035.

Chart 4.6: Deviation in real GRP, Wide Bay Burnett and rest of Queensland, 2019 to 2035

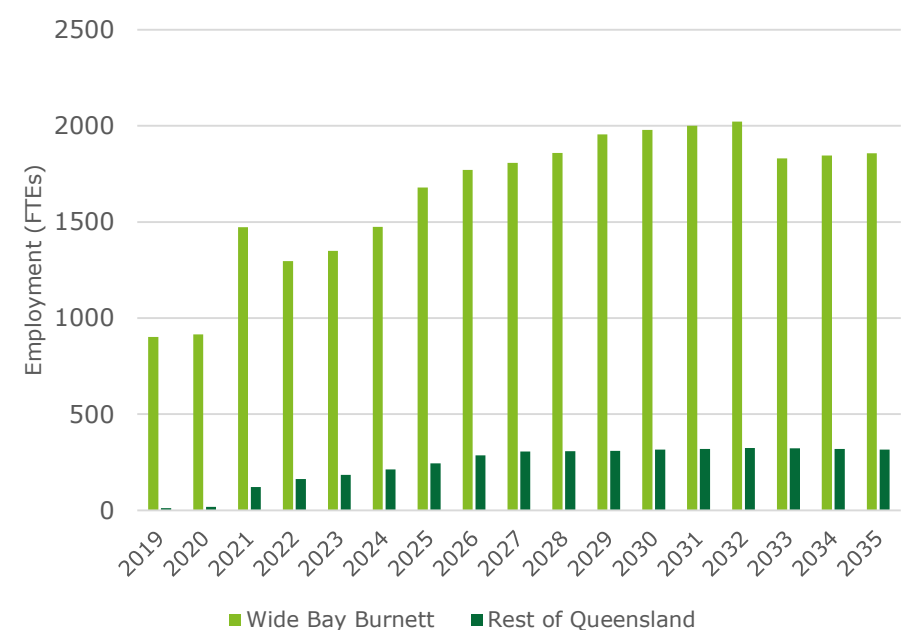


Employment

The magnitude of employment impacts are higher in this scenario due to the ongoing investment in capital infrastructure out to 2035, which has positive flow-on effects to the construction sector that is labour intensive. The increase in investment and additional production results in an increase in **1,650 FTE jobs** per annum (on average) over the period 2019 to 2035.

Aggregate employment is estimated to be **1.9% pts higher** relative to the business as usual by 2035. There are also marginally higher employment gains in the rest of Queensland compared to the high expansion scenario.

Chart 4.7: Deviation in FTEs, Wide Bay Burnett and rest of Queensland, 2019 to 2035



The industry flow on effects are much large under the “highly aspirational” trade scenario as direct shocks to capital and trade/production are larger

Industry impacts

The initial investment phase leads to a spike in construction activity driven by transport infrastructure projects, as well as capital and project investment activities linked to future trade expansion plans. The time path and pattern of industry results is similar to the high scenario, however the additional investments in infrastructure at the PoB add to regional capital stock and productivity capacity supporting an expansion in industry output across a range of sectors. While Stage 1 of an outer harbour is modelled the full potential of these investments likely be realised over the very long-run and this has not been explicitly modelled, apart from an expansion in the output of port related services over the first stage of expansion.

Chart 4.8: Deviation in real output in Wide Bay Burnett, Agriculture and resources

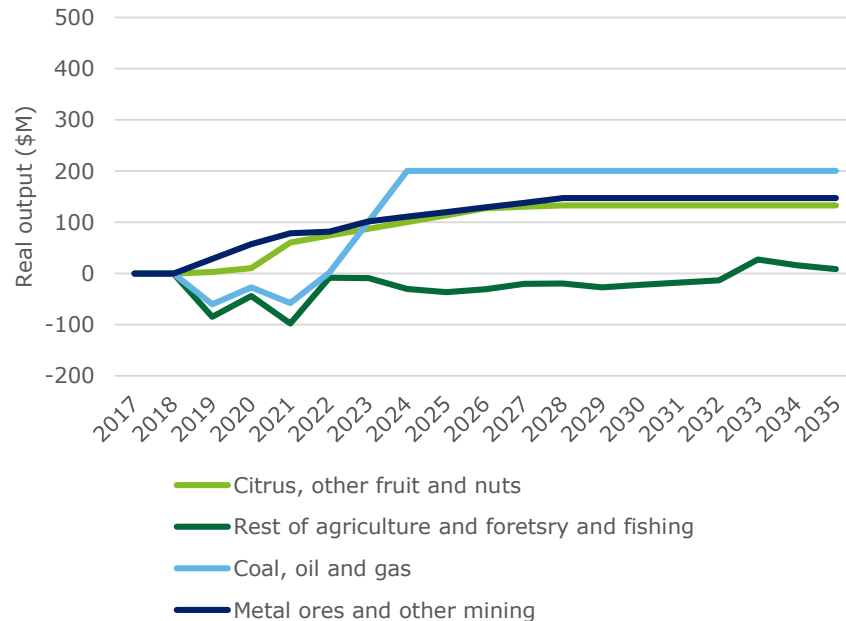


Chart 4.9: Deviation in real output in Wide Bay Burnett, Manufacturing industries

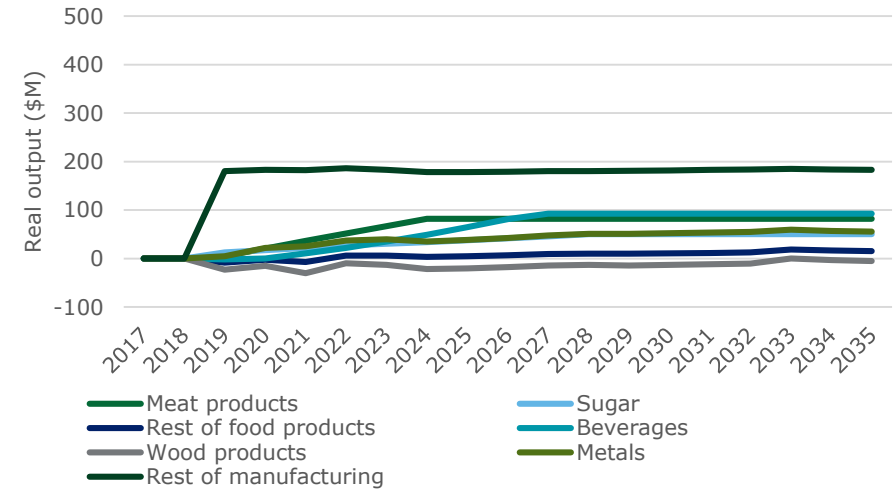
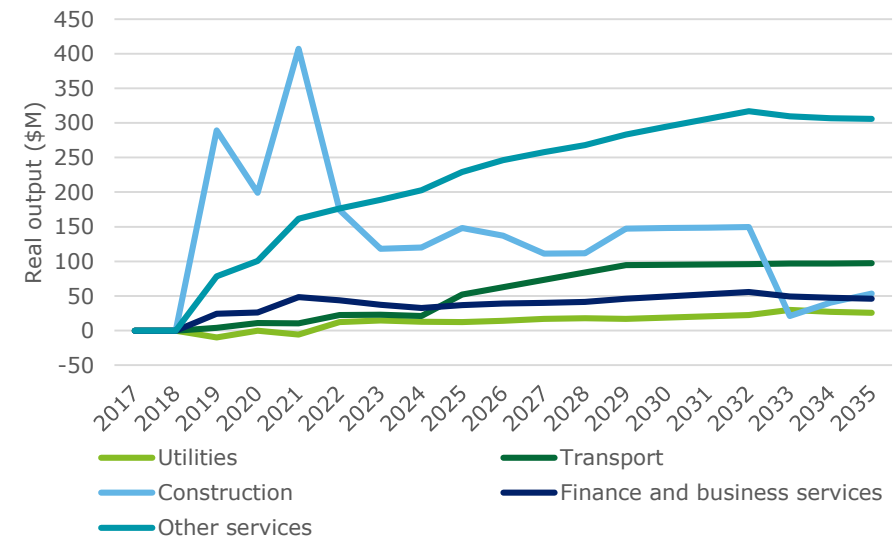


Chart 4.10: Deviation in real output in Wide Bay Burnett, Other industries



Conclusion

There is a strong economic dividend if businesses can capitalise on trade and export opportunities and the region can invest wisely in the future as investing in infrastructure to improve connectivity and build productive capacity will be vital for the region's growth prospects

The Wide Bay Burnett is a region with significant economic potential. This potential is directly related to key established industries driven by the region's vast natural endowments including agriculture, forestry and related processing, tourism and mining and minerals. While the region is highly specialised in agriculture there is evidence of a shift away from traditional agricultural areas such as sugar cane farming into tree crops such as macadamias/avocados that are popular in both domestic and overseas export markets.

The study found strong opportunities to grow established businesses in the region and tap into new overseas markets including horticulture, meat, beverages, value added foods, forestry and wood products and some mineral commodities.

Research undertaken as part of the study and consultation identified opportunities to diversify the Wide Bay Burnett economy to capture jobs of the future and support economic growth. An example of this type of opportunity is capitalising on the economic potential related to defence related contracts for maintenance/repair of navy and other vessels and moving into industrial manufacturing (e.g. bio-refineries) that will create knowledge intensive high value jobs for the future.

Improvements in transport infrastructure are required to get better connectivity across the region and to allow more efficient movement of goods. This is necessary to connect resource rich areas such as the North Burnett Mineral Province to capitalise on mining opportunities. This will allow companies producing/exporting these goods to become relatively more competitive on the global market where value chain efficiencies can be achieved.

It is important that transport connections provide suitable access to the PoB. Enhancing infrastructure at the PoB and developing the Bundaberg SDA has the potential to be 'game changing' for the Bundaberg and Wide Bay Burnett region.

The enhancement of the Bundaberg SDA can support new growth industries and jobs and coupled with enhanced port infrastructure, the port could potentially attract new trades over time and greater access to overseas export markets.

To quantify this future potential the study developed a range of economic modelling scenarios that examined various levels of capital expansion and associated increases in real production in the region.

The study found that the potential economic dividends are significant for the Wide Bay Burnett region with increases in real annual GRP of **\$325M to \$995M** and job creation (FTEs) of **625 FTEs to 1,860 FTEs** relative to business as usual by 2035.

This study demonstrates that even without catalytic infrastructure such as a Stage 1 of an outer harbour or a cruise ship berth at PoB there are still potential for significant gains to the region. This is highlighted by the economic modelling results for the medium expansion scenario, which provides the lower bound estimate of the potential economic impacts associated with trade and infrastructure expansion scenarios.

An integral part of success for the region will be industries to innovate and adopt cutting edge production technologies to improve efficiency and become more competitive to capture global and national economic opportunities.

It should be noted that this study has not conducted economic evaluations of specific projects and infrastructure investments.

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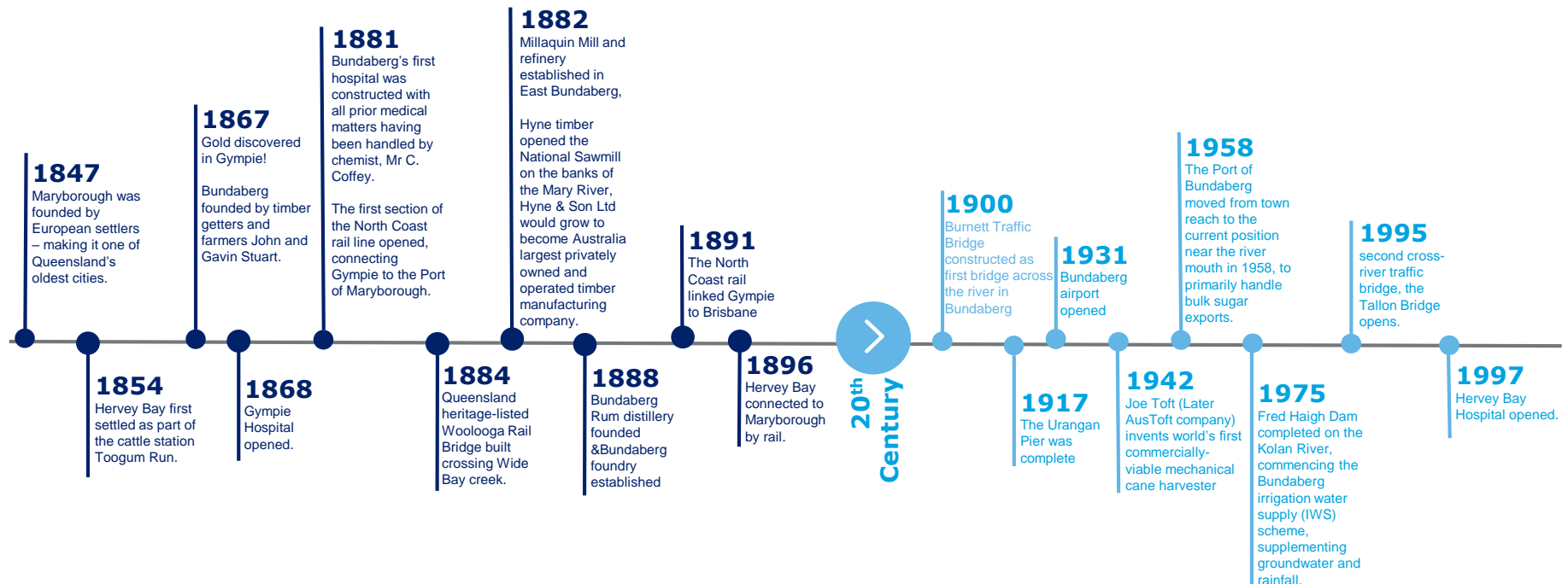
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Appendix A

History of Wide Bay Burnett Infrastructure

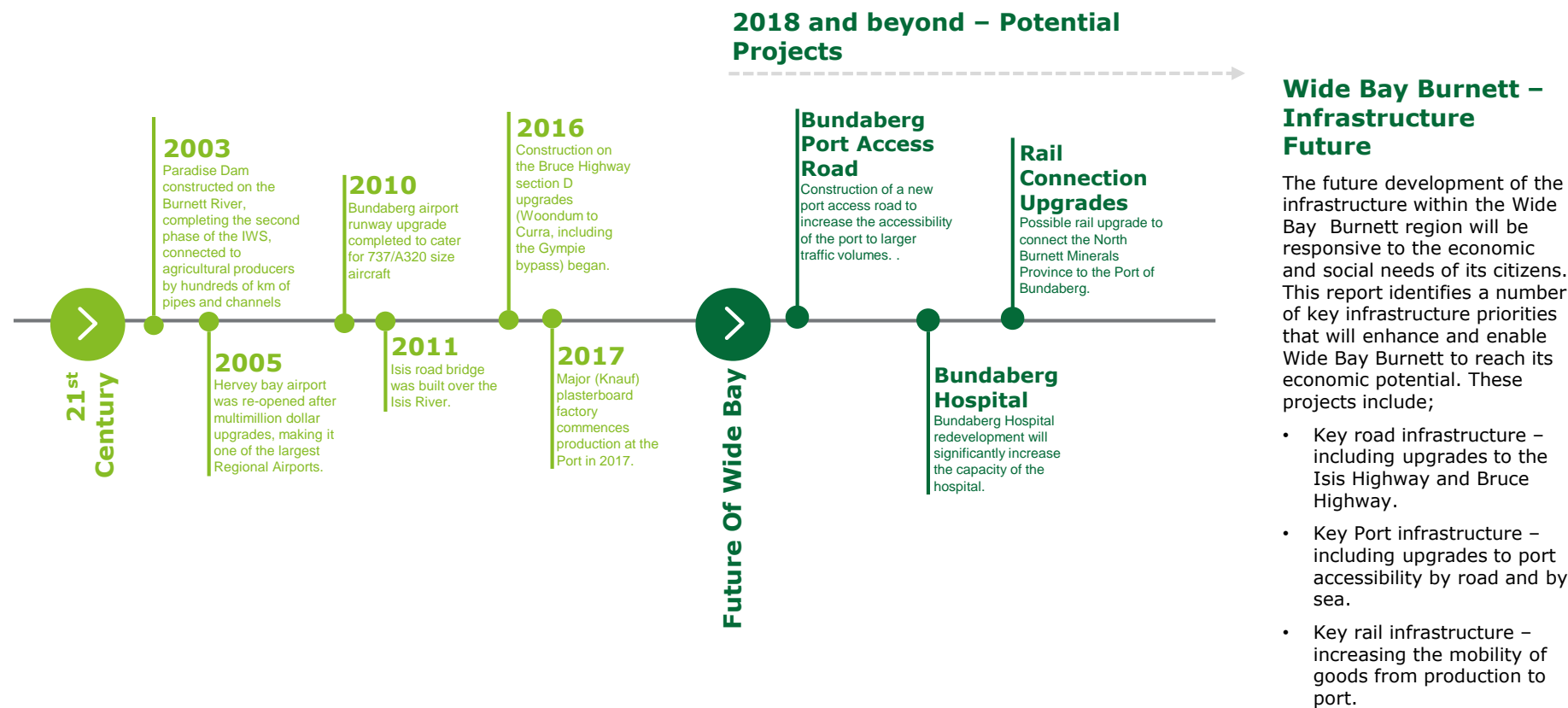
There is a long history of infrastructure development and upgrades to support trade and living standards in the region

Figure 1.1: A Brief History of the Major Infrastructure Projects completed in the Wide Bay Burnett Region 1900-2000



The 21st century has seen even more infrastructure investments in the region; with new investments planned in the near-term to expand capacity and support export opportunities

Figure 1.2: A Brief History of the Major Infrastructure Projects completed in the Wide Bay Burnett Region 2000-Future



Appendix B

Detailed trade and infrastructure/projects data
and assumptions developed for economic
modelling

Medium Expansion Scenario – Infrastructure

Enabling infrastructure

Industry	Enabling Infrastructure	Capital Expenditure	Justification
	Infrastructure Investment		
Road	Port Access Road A new Port Access Rd will be develop in anticipation for increase activity at the port. This road will bypass Power St.	\$150 million (mid-point of the RMA 2017 estimate range). Initial capital expenditure in 2019 and finalise in 2021 - \$50 million per annum.	Based on estimates by RMA Engineers 2017 on the Port of Bundaberg Road
	Transport Depot Establishment of a new transport depot in the Bundaberg region.	\$9 million. Capital expenditure will occur in 2020.	Consultations indicate that this project is likely to occur as planning is already underway.
Rail	ISIS rail connection to Cordalba Construction of a 36km cane railway from Cordalba to Wallaville to achieve internal cost efficiencies, and to enable sustainable sugarcane production expansion into the Wallaville-Gin Gin area.	\$13.3 million. (Regional Jobs and Investment Packages Applications). Capital expenditure will occur in 2020 and finalise in 2022 - \$4.4million per annum.	Already has acquired \$2.5 million through government grants. Required to increase sugar production in expected moderate price environment by increasing efficiency of crop transfers to mills.
Port	Port infrastructure Infrastructure to support the development of industry and port operations at the Port of Bundaberg and the surrounding state development area.	\$55 million Capital expenditure expected to commence in 2019	Investment required to support future increase in activity and output at the Port of Bundaberg and associated state development area.
Electrical	Electricity infrastructure Development of electricity infrastructure to support development of the state development area surrounding the Port of Bundaberg	Indicatively estimated to be \$50 million	Developing a higher capacity electricity connection to the Port of Bundaberg and state development areas as activity is predicted to expend in the future.

Medium Expansion Scenario – Industry Projects

Sector specific projects

Industry	Industry Projects	Capital Expenditure	Justification	Trade Forecasts	Commodity Value
	Industry Investment				
Agriculture	D.T.R. Holding Pty Ltd Construction of an additional infrastructure at current vegetable processing facility which will enable an increase in output by 20%.	3.9 million (Australian Government 2018 – RJIP Applications). Capital expenditure will occur in 2019.	\$1.5 million in federal funding has already been secured, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	Additional production will begin in 2020 – expected to increase output of vegetables by \$9 million p.a. in the medium term.	The value of output is based on revenue/worker (IBISWorld 2018) and additional employment due to the expansion (Australian Government 2018).
	SunCoast Macadamias (Glanmire & Gympie) Investments in technology at processing facilities to improve the efficiencies of macadamia processing.	\$600,000. (Australian Government 2018 – RJIP Applications). Capital expenditure will occur in 2019.	50% of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	This will result in a productivity improvement at the plant but specific information is not available to quantify the benefits	Has not be quantified as the data is not available we quantified other projects involving expansion in macadamia production in the region have been incorporated
	Bundaberg Macadamia Processing Investment in an expansion of processing plant and additional tourism facility. Expected to increase production by over 10,000 tonnes over the coming 5 years.	\$11.7 million. (Australian Government 2018 – RJIP Applications). Capital expenditure will occur in 2019.	\$4.7 million of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	Production will begin in 2022 – allowing for crops to mature. . It is expected that production will increase by 2,000 tonnes in 2022, increasing to 6,000 tonnes in additional production by 2024.	\$5,130/tonne Macadamia production value is determined by the 2017 domestic value per tonne obtained from ABS Agriculture Census Data 2016/17.
	North Fresh Pty Ltd An expansion and modernisation of the existing Costa Avocado packing facility. Will provide greater packing facilities to accommodate for the expected increases in crop yields.	\$990,000. (Australian Government 2018 – RJIP Applications). Capital expenditure will to occur in 2019.	50% of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	This has not been quantified at this stage.	This has not been quantified but exports of avocados from other projects has been included.
	Last Pastoral Co Pty Ltd A redevelopment of the Biggenden livestock saleyards to increase sale day capacity by 43% in order to accommodate to meet increasing demand.	\$3,467,681. (Australian Government 2018 – RJIP Applications). Capital expenditure will to occur in 2019.	50% of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	This has not been quantified at this stage.	This has not been quantified but exports of avocados from other projects has been included.

Medium Expansion Scenario – Industry Projects

Sector specific projects

Industry	Industry Projects	Capital Expenditure	Justification	Trade Forecasts	Commodity Value
	Industry Investment				
Agriculture	Bundaberg Brewed Drinks* Growth in production and exports through expanding business partnerships globally.	NA^	Additional investment to accommodate additional sales as international sales expand	Production is expected to commence in 2021.	Based on revenue/worker (IBISWorld 2018), with adjustments made to account for productivity differences in Wide Bay. This is used to estimate the additional output in the medium and high expansion scenarios for modelling purposes.
	Nolan Meats Investment in an expansion of meat processing plant that will increase infrastructure and technology, allowing Nolan Meats to double production capacity.	\$9.6 million. (Australian Government 2018 – RJIP Applications). In the modelling capital expenditure is assumed to occur in 2019.	\$5 million in federal funding has already been secured for the project, an indication of a high degree of certainty that this project will go ahead (RJIP Successful Applications, 2018).	Additional production will begin in 2020 and increase to a level of \$20 million in the medium term.	The value of output is based on revenue/worker (IBISWorld 2018) and additional employment due to the expansion (Australian Government 2018).
	Teys Australia An expansion of a beef cattle processing facility to increase the production capacity of Tey's Australia in Wide Bay.	\$600,000. (Australian Government 2018 – RJIP Applications). Capital expenditure will occur in 2019.	50% of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	Production will begin to increase in 2020, with 25% of new capacity reached by 2023.	The value of output is based on revenue/worker (IBISWorld 2018) and additional employment due to the expansion (Australian Government 2018).
	Dale & Meyers Establishment of a production line for broadening timber product offering scope of Dale & Meyers.	\$3.5 million. (Australian Government 2018 – RJIP Applications). Capital expenditure will begin to occur in 2019.	50% of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	This has not been quantified at this stage.	This has not been quantified, however, exports of timber products and logs from other projects has been modelled.

NA^ Official estimates not currently available but indicative estimates have been included in the economic modelling.

*<https://www.news-mail.com.au/news/brewed-drinks-strikes-deal-with-pepsi/3305752/>

Medium Expansion Scenario – Industry Projects

Sector specific projects

Industry	Industry Projects	Capital Expenditure	Justification	Trade Forecasts	Commodity Value
Industry Investment					
Mining	Bauxite and Ilmenite Minerals projects proposed in the North Burnett minerals province for the future production and export of bauxite and ilmenite.	NA^	These projects are at an advanced stages of planning and therefore likely to go ahead. The exact timing will depend on market outlook for these commodities and getting all the right infrastructure in place.	Production of mineral is expected to commence in the medium term	\$35/tonne (Bauxite) Based on 2017 export value prices of Bauxite (Queensland Government Statistician's Office 2018). \$193/tonne (Ilmenite) Based on 2017 market values, sourced from the Department of Industry, Innovation and Science.
Tourism	Gympie Regional Council – Rainbow Beach Tourism investment Investment in training for tourism businesses to improve their ability to engage in global marketplaces.	\$200,000. (Australian Government 2018 – RJIP Applications). Capital expenditure will occur in 2019.	50% of capex has been secured through federal government grants, an indication of a high degree of certainty that this project will go ahead (Australian Government 2018).	This has not be quantified.	To be considered qualitatively.

NA^ Official estimates not available but indicative estimates have been used in the economic modelling.

High Expansion (Aspirational) Scenario – Enabling Infrastructure

Specific Infrastructure Projects

Industry	Enabling Infrastructure	Capital Expenditure	Justification
	Infrastructure Investment		
Road	Port Access Road See description in the Medium scenario.	\$150 million. See description in the medium scenario.	See description in the medium scenario.
	Transport Depot See description in the Medium scenario.	\$9 million. See description in the medium scenario.	See description in the medium scenario.
	Burnett Highway Upgrades Upgrades to the Burnett Highway to reduce costs of transport and to mitigate the risk of flooding on key freight transport roads.	\$900 million. Capital expenditure will occur in 2021 and finalise in 2025 - \$180 million per annum.	Large scale infrastructure investment requires strong demand growth, as projected by this scenario. This will increase the efficiency of freight flows and also open up opportunities for drive tourism and act as alternative route to use during periods of flooding to prevent network disruptions.
Rail	ISIS rail connection to Cordalba See description in the Medium scenario.	\$13.3 million. See description in the Medium scenario.	See description in the Medium scenario.

High Expansion (Aspirational) Scenario – Enabling Infrastructure

Specific Infrastructure Projects

Industry	Enabling Infrastructure	Capital Expenditure	Justification
	Infrastructure Investment		
Port	Port infrastructure Infrastructure to support the development of industry and port operations at the Port of Bundaberg and the surrounding state development area.	\$55 million Capital expenditure expected to commence in 2019	Investment required to support future increase in activity and output at the Port of Bundaberg and associated state development area.
	North Bank Development at PoB North Bank berth facility and ship-loading infrastructure to facilitate exports from the North Bank Berth.	\$120 million. Capital expenditure will occur in 2019 and the higher expansion but there are also other options such exporting bauxite out through another port	Project built to accommodate rail linkages from the North Burnett minerals province to the Northern side of the SDA. Allows for ship-loading directly from the Northern Bank, and further relieves capacity pressure on the South Bank berthing facility. Therefore, the project is dependent on other developments, and is thus considered in the high expansion scenario.
	Enhancement of Marina Infrastructure Marina infrastructure enhancements, such as those that would allow greater access from super yachts, and related docking and servicing infrastructure.	\$12 million. (Estimated based on former 2012 TK Investments proposal).	The project is dependent on large-scale investments associated with accessibility and tourism, as well as demand. Therefore, this project is considered in the high expansion scenario.
	Cruise ship berthing facilities at the Port of Bundaberg Construction of a new berthing facility that would allow larger cruise ships to dock at the Port of Bundaberg. This would enhance tourism in Wide Bay, in addition to increasing the need for ship servicing at the Port of Bundaberg.	\$10 million. (Initial indicative estimate).	As above, the project is dependent on large-scale investments associated with accessibility and tourism, as well as demand. Therefore, this project is considered in the high expansion scenario.
Utilities	Electricity infrastructure Development of electricity infrastructure to support development of the State Development area surrounding the Port of Bundaberg	Indicatively estimated to be \$50 million	Developing a higher capacity electricity connection to the Port of Bundaberg and state development areas as activity is predicted to expend in the future.
Water	Paradise Dam An upgrade to the Paradise Dam.	\$23 million (DAE investment monitor). Capital expenditure to occur in 2020.	Some uncertainty surrounding this project but projects of this type help secure the supply of water which is necessary to support the regions agriculture production

High Expansion (Aspirational) Scenario – Industry Projects

Sector Specific Projects

Industry	Industry Projects	Capital Expenditure	Justification	Trade Forecasts	Commodity Value
	Industry Investment				
Agriculture	D.T.R. Holding Pty Ltd See description in the Medium scenario.	3.9 million. See description in the Medium scenario.	See description in the Medium scenario.	See description in the Medium scenario.	See description in the Medium scenario.
	SunCoast Macadamias (Glanmire & Gympie) See description in the Medium scenario.	\$600,000. See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.
	Bundaberg Macadamia Processing See description in the Medium scenario.	\$11.7 million. See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.
	North Fresh Pty Ltd See description in the Medium scenario.	\$990,000. See description in the Medium scenario.	See description in the Medium scenario.	See description in the Medium scenario.	See description in the Medium scenario.
	Last Pastoral Co Pty Ltd See description in the Medium scenario.	\$3,467,681. See description in the Medium scenario.	See description in the Medium scenario.	See description in the Medium scenario.	See description in the Medium scenario.
	Bundaberg Brewed Drinks* Growth in production and exports through expanding business partnerships globally.	NA^	Additional investment to accommodate additional sales as international sales expand	Production is expected to commence in 2021.	Based on revenue/worker (IBISWorld 2018), with adjustments made to account for productivity differences in Wide Bay. This is used to estimate the additional output in the medium and high expansion scenarios for modelling purposes.

NA^ Official estimates not currently available but indicative estimates have been included in the economic modelling

*<https://www.news-mail.com.au/news/brewed-drinks-strikes-deal-with-pepsi/3305752/>

High Expansion (Aspirational) Scenario – Industry Projects

Sector Specific Projects

Industry	Industry Projects	Capital Expenditure	Justification	Trade Forecasts	Commodity Value
	Industry Investment				
Agriculture	Nolan Meats See description in the Medium scenario.	\$9.6 million. See description in the medium scenario.	See description in the Medium scenario. Production increases due to increased economic activity.	Production will begin in 2020. It is expected that production will increase by \$5 million in 2020, and increase by approximately to reach \$77 million by 2024, when the facility will be at capacity.	See description in the medium scenario.
	Teys Australia See description in the Medium scenario.	\$600,000. See description in the medium scenario.	See description in the Medium scenario. Production increases due to increased economic activity.	Production will begin to increase in 2020, with the new facility reaching capacity by 2024.	See description in the medium scenario.
	Dale & Meyers See description in the Medium scenario.	\$3.5 million. See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.
	Services to Agriculture Development of an irradiation facility in the region.	Confidential Capital expenditure to begin in 2019, and finalise in 2021.	There is some uncertainty about the feasibility of the project. Therefore, it is considered in the high expansion.	No explicitly modelled trade implications.	No explicitly modelled trade implications.

High Expansion (Aspirational) Scenario – Industry Projects

Sector Specific Projects

Industry	Industry Projects	Capital Expenditure	Justification	Trade Forecasts	Commodity Value
Industry Investment					
Mining	Bauxite and Ilmenite Minerals projects proposed in the North Burnett minerals province for the future production and export of bauxite and ilmenite.	NA^	These projects are at an advanced stages of planning and therefore likely to go ahead. The exact timing will depend on market outlook for these commodities and getting all the right infrastructure in place.	Production of mineral is expected to commence in the medium term	\$35/tonne (Bauxite) Based on 2017 export value prices of Bauxite (Queensland Government Statistician's Office 2018). \$193/tonne (Ilmenite) Based on 2017 market values, sourced from the Department of Industry, Innovation and Science.
	New Hope Group – Colton Coal Mine A coking coal mine project north of Maryborough has received the necessary approvals to begin development for production.	\$250 million. (Based on information ascertained from BRC). Capital expenditure will begin to occur in 2019 and will finalise in 2022 - \$63 million p.a. Production will begin in 2023.	This project has all of the necessary approvals and licenses to begin production. However, the project is heavily dependent on appropriate transport infrastructure and economic conditions. Therefore, it is considered in the High Expansion (aspirational) scenario.	The mine is expected to produce approximately \$98 million worth of output in 2023. This will expand until the mine reached capacity in 2026. The mine will stay at capacity, with the necessary investments made to prolong the life of the mine for the full 25 years.	The value of output is based on revenue/worker (IBISWorld 2018) and additional employment due to the expansion (Based on information ascertained from BRC).
Tourism	Gympie Regional Council – Rainbow Beach Tourism investment See description in the Medium scenario.	\$200,000. See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.	See description in the medium scenario.
Bioenergy	Biofuel Refinery Plant A potential investment in a bio refinery plant in Wide Bay.	\$317 million. (Based on previous DAE modelling on bio refineries) \$63 million of capital expenditure to occur in 2020, \$159 million in 2021, and \$95 million in 2022.	There is a lot of uncertainty surrounding investments in this field as it is an emerging technology hence it is put in the high scenario	The refinery is expected to produce \$182 million worth of output p.a once operational	Commodity values are determined by previous DAE modelling on bio refineries

Highly Aspirational Scenario Enabling – Infrastructure

Specific Infrastructure Projects

Industry	Enabling infrastructure	Capital Expenditure	Justification
	Infrastructure Investment		
Rail	Rail link connecting the PoB with the North Burnett Mineral Province Rail will link the Port of Bundaberg with the North Burnett Minerals Province. It is likely to occur in this scenario due to the projected growth of mining production in North Burnett	\$480 million. North Burnett Minerals Transport and Logistic Study – 2011, Orion.	Capital expenditure will occur in 2026 and finalise in 2028 - \$160 million per annum.
Port	Cruise ship berthing facilities at the Port of Bundaberg Expansion of the new berthing facility that would increase the capacity of the berthing facility described in the High scenario above. This facility would allow larger cruise ships to dock at the Port of Bundaberg. This would enhance tourism in Wide Bay, in addition to increasing the need for ship servicing at the Port of Bundaberg.	\$15 million. (initial indicative investment).	As above, the project is dependent on large-scale investments associated with accessibility and tourism, as well as demand. Therefore, this project is considered in the high expansion scenario.
	Outer Harbour Berthing Facility Outer harbour facilities are required to facilitate larger shipping berths, which are currently limited by depth and width of the river bed. Particularly important for large-scale mining exports.	\$880 million. (Indicative costings provided by BRC based on information obtained from GPC).	Large scale infrastructure investment requires strong demand growth from large-scale mineral exporting. This scenario assumes that the demand growth of commodities induces investment in Outer harbour facilities to accommodate berthing of large cargo ships.

Note: All other infrastructure and industry projects modelled in this scenario align with those detailed in the high expansion (aspirational) scenario.

Appendix C

CGE modelling approach and framework

CGE Methodology and Approach

Customised model of the region

The model developed for this study is a customised version of the Deloitte Access Economics Regional General Equilibrium Model (DAE RGEM). The Wide Bay Burnett economy is explicitly represented in this model as well as trade and export industries and infrastructure and capital investment.

Regions represented in the model

- Wide Bay Burnett (based on the six local government areas that comprise the region including Bundaberg, North Burnett, South Burnett, Fraser Coast, Gympie and Cherbourg)
- Rest of Queensland
- Rest of Australia
- Rest of world

The selection of industries in the model takes into account the region's industry structure and sectors of interest for this study:

Sectors represented in the model

- Fruit and vegetables
- Rest of agriculture
- Forestry and fishing
- Coal, oil and gas
- Other mining
- Meat Products
- Sugar
- Other food products
- Beverages
- Wood products
- Metal products
- Transport equipment
- Machinery and equipment
- Rest of Manufacturing
- Electricity
- Construction
- Road and Rail
- Air and Water
- Finance, insurance and business
- Government services
- Other services

Specifying a 'Business as Usual'

A 'business as usual' scenario has been developed to capture the underlying trend growth rate of the Wide Bay Burnett economy and this is estimated at 2 per cent per annum over the forecast period out to 2035. Population and labour supply in the region are also assumed to grow at this rate annually over the forecast period. Over the period 2000-01 and 2010-11 the compound growth rate was estimated to be 2-3 per cent per annum based on experimental estimates of real Gross Regional Product developed by Queensland Treasury. A more conservative estimate of 2% is used for the business as usual growth in the forecast with economic conditions in the region being subdued in recent years.

The business as usual only includes projects where funding commitments have been allocated by State/Federal Government and construction is underway. Other projects investments in the region are modelled as incremental to the business as usual.

In this study, the economic impacts of three scenarios have been modelled relative to a 'business as usual' scenario:

- Medium expansion scenario
- High expansion scenario (aspirational)
- Highly aspirational scenario

The business as usual implicitly assumes currently announced projects in the Wide Bay Burnett region from the recent State Budget 2018-19 go ahead over the forward estimates period as planned. As such these projects do not add to additional activity in the growth scenarios as they are reflected in the BAU.

Approach

A base of knowledge has been built up through trade profiles, industry outlooks (e.g. such as based on IBIS World industry profiles) and consultation with stakeholders. The direct assumptions used in the economic modelling have been translated to DAE RGEM as two type of shocks. These are ascribed to the model as percentage changes shocks, relative to the business as usual:

1. Capital investment
2. Expansion of production

To develop these shocks assumptions were made with respect to the profile of capital investment and ramp up of additional output in a sector. In some cases the change in real production due to the project is derived using operational employment levels and output per worker using the ABS Australian Industry Publication (ABS 8155.0) and other industry data sources.

Scenario overview and key assumptions

Trade Potential of the Region Overview

The economy of the Wide Bay Burnett region produces a large degree of trade/export goods, such as fruits and nuts, vegetables, livestock and animal products, and has large mineral resource endowments throughout the North/South Burnett regions. The majority of these commodities are, or potentially will be, produced and exported out the region through the most efficient means.

To analyse the trade potential of the Wide Bay Burnett region, four economic scenarios were developed, a 'most likely' scenario, 'medium' expansion, 'high expansion' and 'highly aspirational' scenario. These scenarios are discussed in succession.

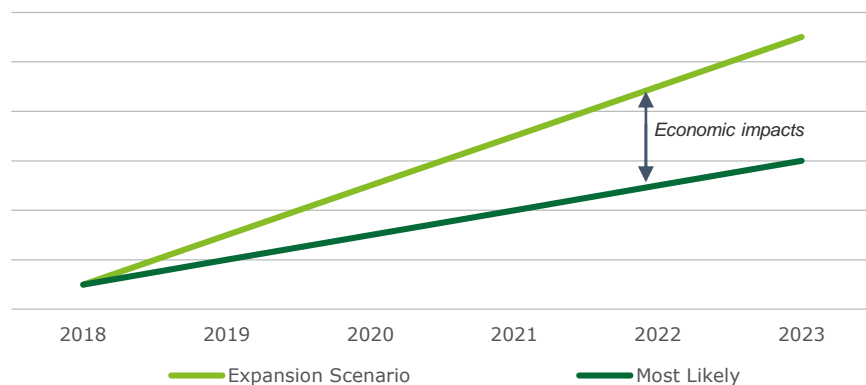
Most likely (business as usual plans)

Description & Key Assumptions:

- **Capital investment:** Only investments that are currently fully-funded and where construction is underway have been included in this scenario, in addition to maintenance of existing capital assets.
- **Economic activity:** a continuation of external conditions and internal economic activity that supports underlying trend growth in economic activity in the region.

The economic impacts of each scenario are measured relative to the 'business as usual' forecast of the economy

Chart B.1: Description of the measurement of impacts from the CGE model Outputs.



Medium Expansion Scenario

Description & Key Assumptions: The medium expansion scenario will see additional investment in the region supporting additional production and export opportunities and a moderate increase in trade throughput through the PoB.

- **Capital investment** – investment in project opportunities that have previously shown significant potential over the medium term, particularly those that have acquired partial funding, from a businesses perspective and across a range of sectors (e.g. fruits, sugar and some ilmenite).
- **Production** – additional capital investment supports an expansion in production and employment in sectors such as mining, agriculture, and sugar.

Capital Expenditure: An estimated \$521 million of additional capital expenditure is modelled over the period 2018 to 2022. Investments at the PoB or in its vicinity include a ship loader, ship maintenance/repair facility, and a road upgrade – a new port access road. Capital investments associated with industry specific projects across the Wide Bay Burnett region have been modelled.

Chart B.2: Total Annual Capital Expenditure in Medium Expansion – Occurrence of Capital Exp.

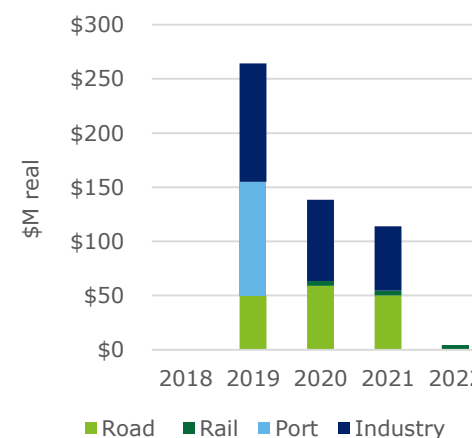


Table B.1: Total Annual Capital Expenditure in Medium Expansion Scenario – Total Capital Exp.

Capital Expenditure	Total (\$M 2016-17)
Road	\$159
Rail	\$13
Port	\$55
Industry Projects	\$244
Total	\$521

Note: A breakdown of these projects and capital spend is shown in Appendix A

Scenario overview and key assumptions

Medium Expansion Scenario

Expansion in real production: In the medium expansion scenario real output increases in the region by \$195 million on average per annum (i.e. 2018-35) as follows:



Agriculture, food and beverages real output increases on average by around \$105 million p.a.

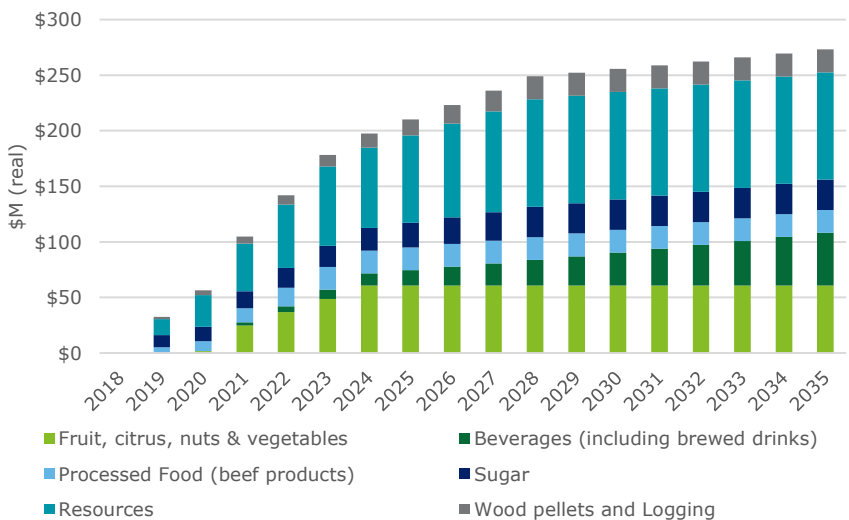


Resources real output increases on average by \$75 million p.a.



Wood pellets and logging real output increases on average by \$15 million p.a.

Chart B.3: Medium Expansion – incremental increase in real output 2018-2035 (\$M2016-17)



High Expansion Scenario

Description & Key Assumptions: The high scenario (aspirational) views economic activity as more optimistic, with stronger commodity prices inducing greater infrastructure investment. More specifically;

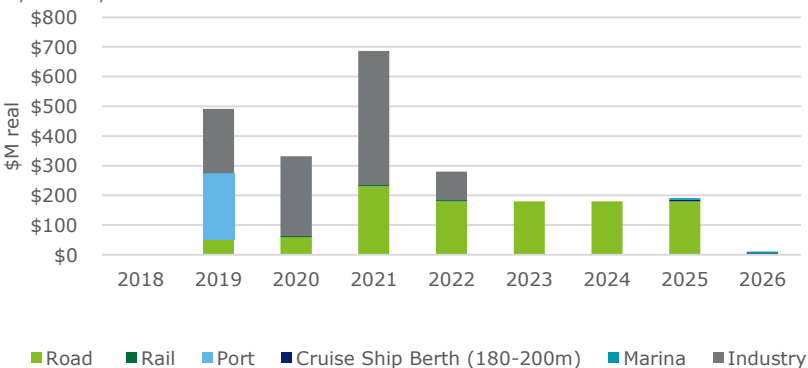
- Capital investment** is assumed to occur in opportunities that have a larger degree of uncertainty but have potential over the longer-term. Particularly projects that have no current funding commitments but have undergone significant planning, support regional growth and assumes more favourable commodity prices
- Expanded Production** – the additional investment in capital supports an expansion in production and employment

Capital Expenditure: Total capital expenditure modelled is an estimated \$2.35 billion. This potential investment is assumed to occur out to 2026 including a cruise ship berth (180 to 200m ships, marina development and port enhancements.

Table B.2: Total Annual Capital Expenditure in High Expansion Scenario – Total Capital Exp.

Capital Expenditure	Total (\$M 2016-17)
Road	\$1,059
Rail	\$13
Port	\$175
Cruise Ship Berth (180-200m)	\$10
Marina	\$12
Industry	\$1,081
Total	\$2,350

Chart B.4: Total Annual Capital Expenditure in High Expansion – Occurrence of Capital Exp.



Note: A breakdown of these projects is shown in Appendix A

Scenario overview and key assumptions

High Expansion Scenario (aspirational)

Expansion in real production: In the high expansion scenario real output increase in the region by \$685 million on average per annum (2018-35) as follows:



Agriculture, food and beverages real output increases on average by 240 million p.a.

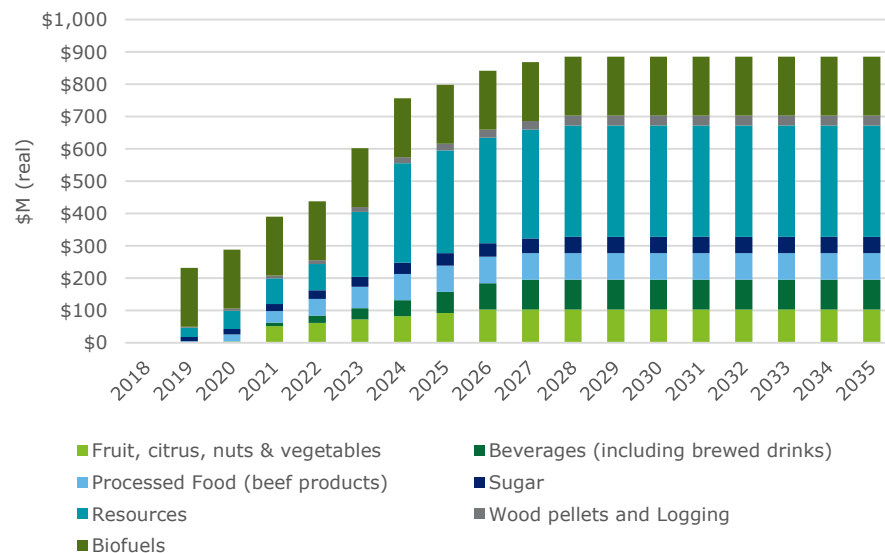


Resources real output increases on average by \$250 million p.a.



Biofuels, wood pellets and logging real output increases on average by \$195 million p.a.

Chart B.5: High Expansion – incremental increase in real output 2018-2035 (\$M 2016-17)



Highly Aspirational Scenario

Description & Key Assumptions: The aspirational scenario could see a number of large-scale investments that will transform the capacity of the Port of Bundaberg by taking advantage of its competitive advantages in vessel maintenance and servicing, as well strong external demand growth for Wide Bay commodities and Tourism.

- **Capital investment** is assumed to occur in opportunities that significantly expand the capacity of the port through additional berth facilities to dock large cruise ships (220 metres), service defence vessels, and outer harbour infrastructure Stage 1 to accommodate larger minerals trade through the Port of Bundaberg. There is the development of rail connection directly from the North Burnett Minerals Province to PoB. The marina at Burnett Heads is redeveloped to support smaller luxury yachts/vessels and incremental tourism spend in the region by visitors.
- **Expanded production** the scale of additional investment in capital supports an expansion in production and employment of level equivalent to the high expansion scenario (with additional throughput at the Port of Bundaberg) so activity levels at the port increase

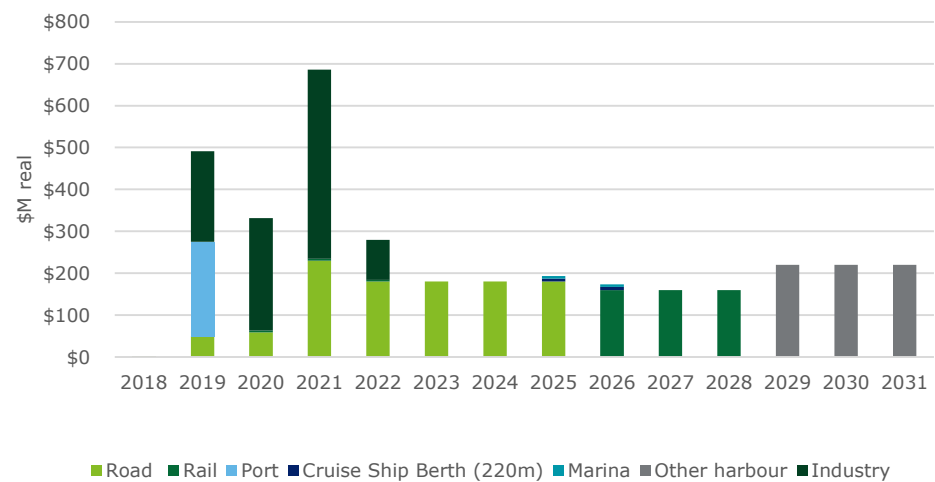
Table B.3: Total Annual Capital Expenditure in Highly Aspirational Expansion Scenario – Total Capital Exp.

Capital Expenditure	Total (\$M 2016-17)
Road	\$1,059
Rail	\$493
Port	\$175
Cruise Ship Berth (220m)	\$15
Marina	\$12
Outer harbour	\$880
Burnett Bridge	NA*
Industry	\$1081
Total	\$3,715

Scenario overview and key assumptions

Highly Aspirational

Chart B.6: Total Annual Capital Expenditure in Highly Aspirational Scenario



Expansion in real production: The expansion in real production essentially remains the same as the high expansion scenario. However, there are a number of key differences including an increase in real output in transport and logistics and other port related activities due to the assumption about the potential for the first stage of the Outer Harbour to go ahead by 2035.

Further details

The consultations conducted as part of this study with business and industry highlighted that improvements in productivity would be a key driver growth in the Wide Bay Burnett economy in the future.

The key points mentioned during consultation were about improving regional transport connectivity; developing improved production processes; enabling greater access to markets and attracting capital investments that bring new and innovative technologies into the region.

The capital investments modelled in the region adds to regional capital stock and expands the productive capacity of the Wide Bay Burnett economy.

Appendix A provides the detailed industry and infrastructure data/assumptions that informed the development of this analysis.

DAE-RGEM overview

Economic Modelling Framework Overview

The Deloitte Access Economics – Regional General Equilibrium Model (DAE-RGEM) is a large scale, dynamic, multi-region, multi-commodity computable general equilibrium model of the world economy with bottom-up modelling of Australian regions. The model allows policy analysis in a single, robust, integrated economic framework. This model projects changes in macroeconomic aggregates such as GDP, employment, export volumes, investment and private consumption. At the sectoral level, detailed results such as output, exports, imports and employment are also produced.

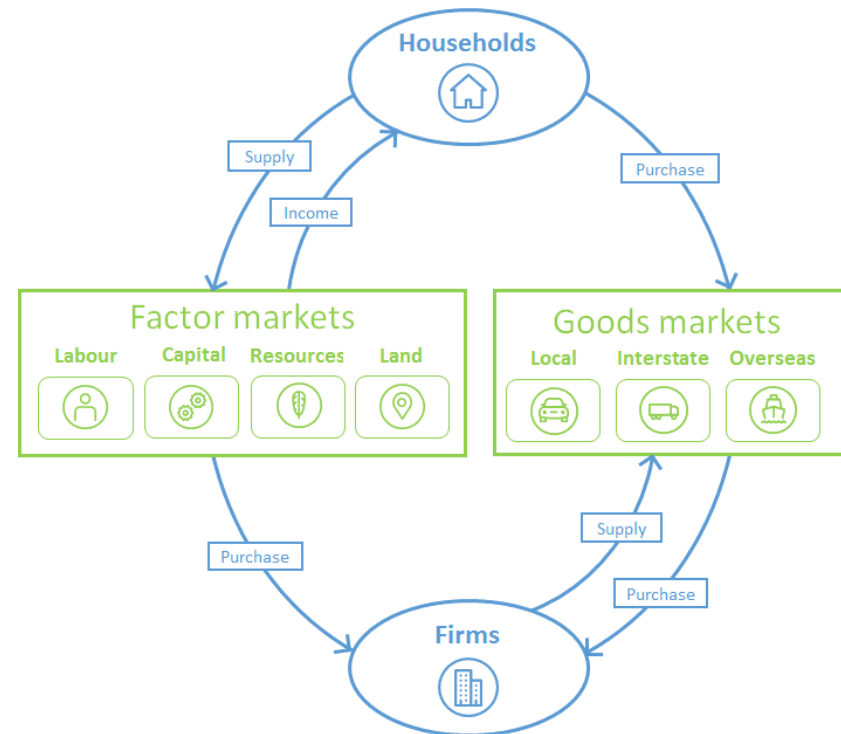
The model is based upon a set of key underlying relationships between the various components of the model, each which represent a different group of agents in the economy (Figure A.1). These relationships are solved simultaneously, and so there is no logical start or end point for describing how the model actually works. However, they can be viewed as a system of interconnected markets with appropriate specifications of demand, supply and the market clearing conditions that determine the equilibrium prices and quantity produced, consumed and traded.

Model Assumptions

DAE-RGEM is based on a substantial body of accepted microeconomic theory. Key assumptions underpinning the model are:

- The model contains a 'regional consumer' that receives all income from factor payments (labour, capital, land and natural resources), taxes and net foreign income from borrowing (lending).
- Income is allocated across household consumption, government consumption and savings so as to maximise a Cobb-Douglas (C-D) utility function.
- Household consumption for composite goods is determined by minimising expenditure via a CDE (Constant Differences of Elasticities) expenditure function. For most regions, households can source consumption goods only from domestic and imported sources. In the Australian regions, households can also source goods from interstate. In all cases, the choice of commodities by source is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.

Figure B.1 Stylised diagram of DAE-RGEM



Source: Deloitte Access Economics

DAE-RGEM overview

Model Assumptions (cont.)

- Government consumption for composite goods, and goods from different sources (domestic, imported and interstate), is determined by maximising utility via a C-D utility function.
- All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of creating capital.
- Producers supply goods by combining aggregate intermediate inputs and primary factors in fixed proportions (the Leontief assumption). Composite intermediate inputs are also combined in fixed proportions, whereas individual primary factors are combined using a CES production function.
- Producers are cost minimisers, and in doing so, choose between domestic, imported and interstate intermediate inputs via a CRESH production function.
- The supply of labour is positively influenced by movements in the real wage rate governed by an elasticity of supply.
- Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. A global investor ranks countries as investment destinations based on two factors: global investment and rates of return in a given region compared with global rates of return. Once the aggregate investment has been determined for Australia, aggregate investment in each Australian sub-region is determined by an Australian investor based on: Australian investment and rates of return in a given sub-region compared with the national rate of return.
- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.
- Prices are determined via market-clearing conditions that require sectoral output (supply) to equal the amount sold (demand) to final users (households and government), intermediate users (firms and investors), foreigners (international exports), and other Australian regions (interstate exports).
- For internationally-traded goods (imports and exports), the Armington assumption is applied whereby the same goods produced in different countries are treated as imperfect substitutes. But, in relative terms, imported goods from different regions are treated as closer substitutes than domestically-produced goods and imported composites. Goods traded interstate within the Australian regions are assumed to be closer substitutes again.
- The model accounts for greenhouse gas emissions from fossil fuel combustion. Taxes can be applied to emissions, which are converted to good-specific sales taxes that impact on demand. Emission quotas can be set by region and these can be traded, at a value equal to the carbon tax avoided, where a region's emissions fall below or exceed their quota.

Below is a description of each component of the model and key linkages between components.

Model Components and Interrelations Between Components

A.1 Households

Each region in the model has a so-called representative household that receives and spends all income. The representative household allocates income across three different expenditure areas: private household consumption; government consumption; and savings.

The representative household interacts with producers in two ways. First, in allocating expenditure across household and government consumption, this sustains demand for production. Second, the representative household owns and receives all income from factor payments (labour, capital, land and natural resources) as well as net taxes. Factors of production are used by producers as inputs into production along with intermediate inputs. The level of production, as well as supply of factors, determines the amount of income generated in each region.

DAE-RGEM overview

A.1 Households

The representative household's relationship with investors is through the supply of investable funds – savings. The relationship between the representative household and the international sector is twofold. First, importers compete with domestic producers in consumption markets. Second, other regions in the model can lend (borrow) money from each other.

- The representative household allocates income across three different expenditure areas – private household consumption; government consumption; and savings – to maximise a Cobb-Douglas utility function.
- Private household consumption on composite goods is determined by minimising a CDE (Constant Differences of Elasticities) expenditure function. Private household consumption on composite goods from different sources is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.
- Government consumption on composite goods, and composite goods from different sources, is determined by maximising a Cobb-Douglas utility function.
- All savings generated in each region is used to purchase bonds whose price movements reflect movements in the price of generating capital.

A.2 Producers

Apart from selling goods and services to households and government, producers sell products to each other (intermediate usage) and to investors. Intermediate usage is where one producer supplies inputs to another's production.

Capital is an input into production. Investors react to the conditions facing producers in a region to determine the amount of investment. Generally, increases in production are accompanied by increased investment. In addition, the production of machinery, construction of buildings and the like that forms the basis of a region's capital stock, is undertaken by producers. In other words, investment demand adds to household and government expenditure from the representative household, to determine the demand for goods and services in a region.

Producers interact with international markets in two main ways. First, they compete with producers in overseas regions for export markets, as well as in their own region. Second, they use inputs from overseas in their production.

- Sectoral output equals the amount demanded by consumers (households and government) and intermediate users (firms and investors) as well as exports.
- Intermediate inputs are assumed to be combined in fixed proportions at the composite level.
- To minimise costs, producers substitute between domestic and imported intermediate inputs is governed by the Armington assumption as well as between primary factors of production (through a CES aggregator). Substitution between skilled and unskilled labour is also allowed (again via a CES function).
- The supply of labour is positively influenced by movements in the wage rate governed by an elasticity of supply is (assumed to be 0.2). This implies that changes influencing the demand for labour, positively or negatively, will impact both the level of employment and the wage rate. This is a typical labour market specification for a dynamic model such as DAE-RGEM. There are other labour market 'settings' that can be used. First, the labour market could take on long-run characteristics with aggregate employment being fixed and any changes to labour demand changes being absorbed through movements in the wage rate. Second, the labour market could take on short-run characteristics with fixed wages and flexible employment levels.

A.3 Investors

Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. The global investor ranks countries as investment destination based on two factors: current economic growth and rates of return in a given region compared with global rates of return.

- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.

A.4 International

Each of the components outlined above operate, simultaneously, in each region of the model. That is, for any simulation the model forecasts changes to trade and investment flows within, and between, regions subject to optimising behaviour by producers, consumers and investors. Of course, this implies some global conditions that must be met, such as global exports and global imports, are the same and that global debt repayment equals global debt receipts each year.

Appendix D

Industry Consultation Notes

Lindsay Transport

Lindsay Transport

Consultation Information

Date & Time: Thursday 7 June 2018 8:00AM

Organisation Description

Lindsay Transport is a transport and logistics company with operations in South Australia, Queensland, New South Wales and Victoria, with its headquarters in Acacia Ridge, Queensland.

Q: How does the business mainly operate?

Lindsay Transport commenced operations in 1953 and mainly provides fruit and vegetable refrigerated transport services, along with minimal seafood transport. The goods are transported by B-double trucks, where 70% of goods are transported to Brisbane and the remaining 30% is transported directly to Sydney, Melbourne and Adelaide. Specifically, 7 B-double trucks transport goods from Bundaberg to Brisbane and 12 prime movers are used to transport goods locally. In total, Lindsay Transport oversees 15 to 20 long distance prime movers per day. All mechanical and maintenance services are sourced locally and completed in Bundaberg.

During quiet periods, approximately 300 pallets per day are delivered in comparison to busy periods where approximately 600 pallets per day are delivered (equivalent to 219,000 pallets per year). The average price of pallets was difficult to provide as pallet price depends on many factors such as farm location, delivery location and type of goods.

Q: How does Lindsay Transport view the outlook for the Wide Bay Burnett Regional Economy – short term and long term? What opportunities are there for the business?

The Wide Bay Burnett area is growing in terms of produce i.e. sweet potato producers are expanding their business and there is an increase in macadamia producers. In comparison, delicate produce such as tomatoes, are experiencing a decrease in production (although noting this is seasonal). In the short term, the area is expected to experience an overall growth. However, this is likely to be in the area of harder produce which will reduce the opportunities for delicate produce growers and transport of such goods.

In the medium and long term, it is possible that there could be a decrease in production of fruit and vegetable produce. This is not beneficial to Lindsay Transport as they utilise refrigerated trucks for their goods and cannot be substituted to transport goods which do not require refrigeration e.g. timber. Goods which do not require refrigeration rely on tip trailers for transport.

Q: What is the expected business future outlook?

Lindsay Transport has significantly expanded in the last three years. Two of these years were the greatest expansions seen in the company's history, illustrated by operations doubling in magnitude. During these years, Turners Transport ceased operations which provided the opportunity for Lindsay Transport to support the gap in the market.

To maintain expected short term growth, Lindsay Transport will expand to a new site and construct a new depot in the next 12-24 months. The depot construction cost is approximately \$6 million to \$9 million. In addition, the Burnett Heads Port is undergoing redevelopment and with the expansion there has been increase demand for seafood transport. It is likely that Lindsay Transport will capitalise on a portion of this increased market share.

Q: What levels of exports does the business sell?

A large proportion of Bundaberg's produce is delivered to the domestic market. There is also a small proportion of seasonal produce such as watermelon, zucchinis and tomatoes which are exported. A large proportion of exports is delivered by sea freight to New Zealand.

Q: Would the business expand if there were opportunities for increased overseas export?

Lindsay Transport is preparing to expand into the Chinese market. The strategy for developing this opportunity involves building a relationship with the receivers, then taking the proposal through to primary producers and introducing them to the Chinese market.

Q: Do you see any infrastructure upgrades required?

Currently, the Isis highway is the main road used for road freight. Lindsay Transport expressed a requirement for improving the road surface quality. As this is a major issue, Lindsay Transport considered a Heavy Mass Limit permit to transport goods north of Bundaberg. However, due to the condition of the Isis highway, a Higher Mass Limit permit was only attainable for delivering south of Bundaberg. The company transports to Far North Queensland and Emerald using the Dawson/Capricorn highway.

Q: Would an increase in capacity at Port of Bundaberg be beneficial for the business?

It was indicated that transporting majority of the freight to Bundaberg as opposed to Brisbane would be beneficial for the company. However, this would require Bundaberg to have adequate facilities. One of Lindsay's depots is on the ring road, further north and closer to the airport.

Nutrano

Nutrano (Seven Fields/Abbotsleigh)

Consultation Information

Date & Time: Thursday 31 May 2018 – 3.00 - 3.30pm

Organisation Description

Nutrano is a vertical integrated produce company, with farming divisions led by Seven Field and Abbotsleigh. Nutrano operates in the blueberry and citrus commodity markets.

Q: How does Nutrano view the outlook of the Wide Bay industry in which it operates, what are the potential market opportunities?

Nutrano hold a very positive view with regards to the potential of the agriculture industry within the Wide Bay Burnett region. The region includes areas where Nutrano have consistent access to good water, soil and labour. In addition, the plantation is close to Brisbane, which has a number of advantages for the company. The Asian market is viewed as the driver of potential / future market opportunities.

Q: What areas are targeted and where is there potential for more market share?

Nutrano do not see an opportunity to break into the European market due to the prevalence of South Africa as a major supplier to this market. Nutrano's focus is mainly on Asian nations, which includes China, Thailand, Japan, Korea, Indonesia, Vietnam and India.

Q: Potential barriers?

There are two elements when considering potential:

- *Free trade agreements:* FTAs are a significant factor and have so far had positive impacts on citrus exports.
- *Practical market access:* biosecurity issues such as fruit flies, fungal diseases which are endemic in parts of Australia restrict the ability to expand production.

Trade negotiations between nations are a long process and first require shortlisting. Further, negotiations are a two-way conversation and require both Australia and the country importing Australian goods to be willing to negotiate. For example, if Australia invested heavily in negotiations, the outcome relies heavily on the actions of the importing country and their acceptance. Specifically, if negotiations were with China then there is a need to consider that they are in trade negotiations with many other countries around the world.

Further, other potential barriers include fruit radiation, which is an emerging protocol system which is being utilised.

Currently, cold treatment is the protocol for fruit exporting to ensure the fruit remains below a certain temperature for a certain period of time. It is currently accepted as a good and safe procedure, according to the Asian countries they export to.

Q: What are production levels and what are potential growth and expansion plans?

Production has been relatively stable and increasing slightly in the past three years. This is in line with normal yield and it is expected to experience fluctuations from one year to the next. Growth is expected to decline over the next couple of years before increasing again. The focus of investment is in blueberries, with less emphasis on citrus investment. It is important to consider the following when forward planning:

- Time required for the tree to arrive when ordering / purchasing trees e.g. trees can take up to 2-3 years to arrive from time of order
- Time required before the tree provides produce e.g. trees can take up to 10 years before providing first produce.

In the last few years, there has been greater investment and growth in blueberries, whereas citrus investment and growth has remained stable. There are plans to expand and grow in citrus (increasing by 50-60%), and blueberries (increasing by 100% -doubling investment). Currently the domestic supply to exports ratio is 60:40. Domestic market is not a major factor when considering investment as international export markets provide more opportunities. The ratio may change to 70:30 in the future depending on the opportunities available.

Q: How are goods usually exported?

Everything goes through Port of Brisbane as there are extensive facilities and equipment required. In addition, freight transportation of goods to other countries is consistent and reliable. Using Port of Brisbane for exports could change as adequate services are provided in Bundaberg. There is ship which transports goods to China every fortnight from Bundaberg.

Q: What are other infrastructure constraints?

Currently, a heavy load permit has been obtained through the Department of Transport and Main Roads (TMR). This application provides TMR with a list of locations for domestic produce transport locations. This is required as the containers transporting produce through Australia are overweight in comparison to normal-sized trucks which requires special permission.

Q: What infrastructure is required for the region? Any specifics?

Good road infrastructure is required to transport produce efficiently. Facilities and service provided are required to ensure freighting of goods is consistent and reliable. A key theme reflected in the consultation was the requirement for consistent and reliable shipping times to freight goods internationally.

Richers Transport

Richers Transport

Consultation Information

Date & Time: Wednesday 6 June 2018 – 2:00PM

Organisation Description

Richers Transport is a Queensland company operating since 1935, with its head office is in Maryborough.

Q: How does the business mainly operate?

Richers Transport primarily move timber from the Tin Can Bay area to Melbourne. Approximately 48,000 tonnes per day of goods are transported by Richers Transport, with an estimated 50 tonnes of alcohol being transported to Bundaberg. Other operations includes:

- Two trucks transporting goods to Tasmania
- Pick up goods from Port of Brisbane and distribute to customers in Bundaberg and other northern areas
- Delivers to Gympie, Maryborough, Harvey Bay and Bundaberg
- Receives 12 semi-trailers every night from Brisbane, consisting of a mixture of B-double truck and single semi-trailers.

Previously, Richers Transport provided goods to North Queensland. However, this has reduced in recent years.

Q: How does Richers Transport view the outlook for the Wide Bay Burnett Regional Economy – short term and long term? What opportunities are there for the business?

In the past few years there has been a downturn. There has been a recovery this year with growth since January 2018 and month-to-month. It is hopeful that this continues into future years.

Q: In terms of exports, what levels are they for Richers Transport?

Due to the commodities transported by Richers Transport, it does not export to countries outside of Australia. It was noted that Toll Group delivers other commodities which are exported to countries outside of Australia.

Q: Would Richers Transport expand your business if there were opportunities for increased overseas export?

The business may be expanded depending on the decision of Richers Transport Head Office. Expansion would include acquiring more equipment and trucks. Currently, the depots in use are not at capacity and have room to accommodate more trucks if required.

Q: How does Richers Transport see the business future outlook?

As mentioned previously, growth has been experienced each month since January 2018 and it is hopeful to continue into the future. It is believed that road transport will be the continued mode of freight transport in the future due to its reliability to deliver on time. In comparison, the rail network in Queensland experiences delay making it less desirable as a mode of freight transport.

Q: What's the size of the company's workforce?

There are 200 people employed within the company, with drivers employed directly and have trained within the company.

Q: How are the rates set for freight transport?

Approximately \$74 per tonne with slight variability. Fruit and vegetable produce are more likely to be charged based on pallet rates.

Q: Does Richers Transport see any infrastructure upgrades required?

Richers Transport predominantly utilises the Bruce Highway. It was noted that additional road upgrades on the roads further north of Gympie would be beneficial for more efficient road freight transport.

Golden Mile Farms (GMF)

Golden Mile Farms (GMF)

Consultation Information

Date & Time: Friday 1 June 2018 – 9:30AM

Organisation Description

Golden Mile Farms (GMF) operate in the Citrus commodity industry in the Wide Bay region.

Q: How does GMF view the outlook of the industry and what are the potential market opportunities?

The outlook is positive and currently GMF is in development phase, planting new trees such as lemons and murcotts. Other growers are looking at new plant varieties and new products for future. New varieties are being considered for export and require future planning as the varieties require one to two years before being planted. Thus far hundreds of thousands of dollars have been invested in mandarins and lemons.

Q: In terms of exports, what levels are they?

Currently, citrus exports make up \$20m (60-65%) of the produce exported. The proportion of exports has increased compared to 5 years ago where exports were 35% of total produce sold. A \$10m (50%) increase in sales is expected over the next 3-5 years. Recently, there was an investment into a new Central Queensland fruit packers plant at Mundubbera. However, more investment is required in Central Queensland.

Q: What areas are targeted and where is there potential for more market share?

Currently, the largest export market is China and is followed by the southern regions of Asia, including Thailand, Taiwan and Indonesia. Hong Kong and Philippines is not a significant market anymore. The main issue for exports is the trade restriction imposed by the Indonesian government. This has been experienced by other countries including the US. Eight years of decreasing tariffs from China is expected with around 10 to 20% of the total cost this year attributable to the Chinese tariff.

Q: Does GMF see / consider shipping through the Port of Bundaberg?

Exports are primarily freighted from the Port of Brisbane (99.8%) and the rest (0.2%) by air freight. There are two to three growers in the Burnett region which load produce on farms in refrigerated shipping containers.

Exporting from the Port of Bundaberg does not appear feasible due to a lack of feasible freight lines from the Port of Brisbane. In addition, there are insufficient service facilities (i.e. refrigeration facilities). Protocols exist where fruit is required to be kept below a certain temperature for a certain period of time. Using the Port of Bundaberg is desirable as it requires half the time (3 hours by road) compared to transporting to Brisbane (6-7 hours by road).

Q: What infrastructure is required for the region? Any specifics?

There are a couple of roads which are unable to be used. These roads require upgrade to enhance transport efficiency, providing time and cost savings. GMF have heavy load permits in place which are required. Central Burnett Highway and Mary to the Coast and down the Bruce Highway are used to freight the produce. Tamsy Road requires significant upgrade before it can be utilised efficiently. The trucks for transport are lightweight semis with gen set trailer.

Macadamias Australia

Macadamias Australia

Consultation Information

Date & Time: Thursday 7 June 2018 – 9:45AM

Organisation Description

Macadamias Australia is a family owned business founded in 1957. The company operates in the macadamia commodity industry and currently maintains approximately 130,000 macadamia trees in the Bundaberg region.

Q: How does Macadamias Australia see the outlook for the Wide Bay Burnett Regional Economy – short term and long term?

Macadamias Australia view demand to be driven by factors such as, water accessibility, climate, world food security, and foreign investment for land. At current, there has been increased interest in foreign land investment.

The Wide Bay Burnett region is expected to experience strong growth in future. In particular, the macadamia industry is growing rapidly. This is driven by consumers outside of Australia increasing consumption of nuts for health reasons. The area may be prone to natural disasters such as the flood approximately two years ago. However, the flood had minimal impact on macadamia production and took only two years for the trees to be rehabilitated.

Q: What opportunities are there for the business? Are there plans for growing the business?

It was emphasised at this year's annual nut and dried fruit conference that the nut industry is large and experiencing strong growth. As mentioned previously, this is driven by increasing global consumption driven by increasing health preferences. An example of the growth in the nut industry is illustrated by almonds, which have record-size crops and able to maintain high prices.

The Bundaberg region has planned for significant expansion of macadamia production and provides opportunities for Macadamia Australia. Currently, Macadamia Australia produces 20,000 tonnes of macadamias annually. This is expected to rapidly expand over the next 7-10 years to 50,000 tonnes. 2000 tonnes of raw product per day is transported by road to Gympie for processing where the nuts are hulled and packaged. The shelled macadamia product is then transported directly to Port of Brisbane. Considering the expected future growth of the region, Macadamia Australia is looking to construct a facility in Bundaberg to be ready in 2020 which will remove the need for an external processor. Expanding the business will also include expanding its workforce from 72 to 100 employees. The main issue with these expansion plans is acquiring adequate funding.

Currently, Macadamia Australia uses 700 hectares of land for macadamia crops. It is planning to acquire additional land in the future and grow more crops to achieve the future target of 50,000 tonnes of macadamia production in 10 years' time. To put this in perspective, there is 3,000 hectares of land currently utilised for crop production in the Bundaberg region. It was noted that due to forestry land conversion, there was a missed opportunity for \$12 billion in revenue as other countries have filled the market gap and commenced macadamia production.

Q: What levels of exports does the company produce?

99% of the 20,000 tonnes of macadamias produced are exported and are transported by sea freight from Port of Brisbane. This equates to 19,800 tonnes of macadamias. There are opportunities from Port of Brisbane to connect to Europe, Middle East and Asia. As the production is expected to increase to 50,000 tonnes in 10 years' time, this will require 7 to 10 shipping containers per day to be transported by sea freight. Macadamia Australia are preparing a product to be released retail-ready and exported to China. The volume exported is estimated to be 5000-8000 tonnes requiring 20,000-40,000 pallets. In addition, Macadamia Australia is in the process of diversifying into other Macadamia products such as biscuits and beverages. The new retail brand for China will require an additional 1,250 40ft-containers per year (250 working day year, 5 40ft-containers per day). Developing the product market is likely to require \$13m-\$14m investment.

Q: Are there any restrictions for exports, such as biosecurity restrictions?

The main restriction imposed on macadamia exports are tariffs. The Australian Government is currently addressing this issue with countries which impose tariffs. However, the outcome and time for the issue to be addressed is uncertain. The FTA between China and Australia will eventually result in the removal of tariffs on Australian exports.

Q: Are there any infrastructure upgrades in the area that would assist the business? What would enable increased usage of Port of Bundaberg?

- As the industry is driven largely by exports (99% of Macadamias Australia produce is exported), positive trade relations between Australia's trading partners are essential.
- Road improvements on the Bruce Highway, Burnett Highway and Isis Highway would increase the efficiency of road freight movements of macadamia commodities on key logistic routes.
- Improvements in the rail network could induce Macadamias Australia to switch to rail freight.
- Macadamia Australia using Port of Bundaberg instead of Port of Brisbane would save approximately \$2.2 million of road transport costs. Currently, it is paying \$70 per pallet to transport produce to Port of Brisbane via road freight.
- However, Port of Bundaberg would require regular, consistent and reliable shipping, as well as adequate container loading facilities for Macadamia Australia to export from Port of Bundaberg.

Bundaberg Sugar Limited

Bundaberg Sugar Limited

Consultation Information

Date : 11 June 2018

Organisation Description

Bundaberg Sugar Limited (BSL) is a raw sugar company operating in the Bundaberg region.

Operations

- Cane grower, sugar milling, foundry, export milling equipment around the world (particularly Asia)
- There would be around 600,000 tonnes of sugarcane, and there are a couple of sugar mills in Bundaberg. This is refined and sent to some places domestically and via QSL that export sugar raw to various places around the world.

Outlook

- One issue for sugar is that the price has fallen and some people note the price is below production costs, not only for millers but also for growers
- On the flip side macadamia prices are high, so land is being exchanged for macadamias at the expense of sugar cane area. It was uncertain if this trend will persist but it depends on the macadamias outlook.
- This could result in under capacity mills, and trying to find additional cane land is challenging as this needs to be close to mills, close to irrigation etc.
- Cane farmers are looking at value adding to their land, by doing different crops (i.e. ginger, broccoli, sweet potato) given the challenges faced in the sugar market and high level of export competition.
- If this transition to other crop continues, it is possible that one of the sugar mills in the area could potentially close. If Bingara were to close there would be large amounts of cane that would need to go to Millaquin and would therefore require either (a) a rail bridge over the Burnett river or (b) need to put on trucks through town (would cause/add to congestion).
- Historical production statistics show that back in 2000 the mill crushed about 3.8m tonnes of cane, and this year it is down to 1.5 million tonnes. This reflects prices and a switch to other land uses (i.e. Macadamias) .
- Molasses business – there is a value adding factory at Oakey that supplies feedlots and southern part of state.

- Accessing sugar cane land can be difficult. It can sometime take years to clear land and most of the time the outcomes are not successful due to the land clearing laws.

Exports

- Sugar mainly is exported through Bundaberg (raw), to overseas markets and also through Brisbane.
- The sugar industry has invested a lot in bulk terminals so the infrastructure is available and cost effective to facilitate exports

Appendix E

Industry consultation findings

Companies with expansion plans in the Wide Bay Region include transport and agriculture businesses

Lindsay Transport

Organisation Description & Operations

Lindsay Transport is a transport and logistics company founded in 1953 with operations in South Australia, Queensland, New South Wales and Victoria, and headquarters in Acacia Ridge, Queensland. Lindsay Transport mainly provides fruit and vegetable refrigerated transport services, along with some seafood transport. The goods are transported by B-double trucks, with 70% of goods transported to Brisbane and the remaining 30% transported directly to Sydney, Melbourne and Adelaide. Specifically, seven B-double trucks transport goods from Bundaberg to Brisbane and 12 prime movers are used to transport goods locally. In total, Lindsay Transport oversees 15 to 20 long distance prime movers per day. All the mechanical and maintenance services for the fleet are sourced locally and completed in Bundaberg.

Future Market Opportunities in the Wide Bay Region

The Wide Bay Burnett region has a robust and growing agriculture industry, particularly with regards to sweet potatoes. In the medium to long term, Lindsay transport spoke of a potential flattening out of the levels of horticultural produce. They also this could be challenging for the business as they utilise refrigerated trucks for their goods and cannot easily substitute to transport goods that do not require refrigeration (for e.g. timber) Many good which do not require refrigeration also rely on tip trailers for transport.

Expansion Plans

To support growth in their operations, Lindsay Transport has plans to expand to a new site and construct a new depot in the next 12-24 months. The depot construction cost is approximately \$6M - \$9M.

Enablers for Future Expansion



Road: The Isis highway is the main road used for road freight in the region by Lindsay Transport, and is considered to be of sub-standard quality. This has impacted on the ability of the company to obtain a Heavy Mass Limit permit to transport goods north of Bundaberg. Therefore, road upgrades are essential to the efficiencies of the company's operations.



Port: The company indicated the transport to the Port of Bundaberg was more desirable than to Brisbane. However, the PoB does not have all the adequate infrastructure.

Nutrano (Seven Fields/Abbotsleigh)

Organisation Description & Operations

Nutrano is a vertical integrated produce company, with farming divisions led by Seven Field and Abbotsleigh. Nutrano operates in the blueberry and citrus commodity markets.

Future Market Opportunities in the Wide Bay Region

Nutrano hold a very positive view with regards to the potential of the agriculture industry within the Wide Bay Burnett region. The areas where Nutrano have plantations have consistent access to good water, soil and labour. In addition, the plantation is close to Brisbane, which has a number of advantages for the company. Furthermore, the region provides Nutrano with accessibility to the growing Asian market, which is viewed as the driver of potential/future market opportunities.

Expansion Plans

Nutrano have plans to expand and grow in citrus (increasing by 50-60% on current levels), and blueberries (increasing by 100% which will double capital and investment levels), which is supported by high export demand growth. Currently the export supply to domestic ratio is 60:40, with this ratio expected to grow to approximately 70:30 in the future, depending on the opportunities available.

Enablers for Future Expansion



Export Demand: Trade negotiations can influence Nutrano's production plans substantially due to the increasing dependence on export commodities.



Road: Quality road infrastructure is required to transport produce efficiently out of the region. Therefore, road infrastructure upgrades on key road freight corridors will impact the operations of Nutrano.



Port: Nutrano's goods are currently exported through the Port of Brisbane. The PoB is not seen as an option as it does not have the correct storage and loading facilities and equipment. The requirement for consistent and reliable shipping times for freight goods internationally is important and not always achievable at the point at the PoB.

Companies with expansion plans in the Wide Bay Region include transport and agriculture businesses

Richers Transport

Organisation Description & Operations

Richers Transport is a Queensland company operating since 1935, with its head office located in Maryborough. The company primarily transports timber from the Tin Can Bay area to Melbourne. Approximately 48,000 tonnes per day of goods are transported by Richers Transport, with an estimated 50 tonnes of alcohol being transported to Bundaberg.

Future Market Opportunities in the Wide Bay Region

Growth has been experienced each month since January 2018 with expectations that this growth will continue in the future. It is believed that road transport will continue to be the main mode of freight transport in the region due to its established competitive advantages over other transport modes with regards to reliability/timeliness of delivery.

Expansion Plans

At present, there are no publicly announced expansion plans for Richers Transport. However, expanding operations has been a point of discussion with head office. It is likely that expansion of operations, if it were likely to occur, would include acquiring more equipment/trucks. At current, the depots in use are not at capacity and have room to accommodate more trucks if required.

Enablers for Future Expansion



Road: Richers Transport mainly utilises the Bruce Highway, therefore the quality of this highway has a significant impact on the cost-efficiency of the company's operations. In particular, roads north of Gympie require additional upgrades to support operations of the company.

Golden Mile Farms

Organisation Description & Operations

Golden Mile Farms (GMF) operates in the citrus industry in the Wide Bay Burnett region.

Future Market Opportunities in the Wide Bay Region

The outlook for the citrus industry is considered positive, with GMF already committing to recent investment to expand the capacity of its farmland in the region. Exports have been a big driver for the company, with the largest export market being China, followed by other South-East Asian nations. Currently, citrus exports make up \$20m (60-65%) of the produce exported. The proportion of exports has increased compared to 5 years ago where exports were 35% of total produce sold. Furthermore, a \$10m (50%) increase in sales is expected over the next 3-5 years.

Expansion Plans

GMF is currently in the development phase, planting new trees such as, lemons and murcotts. Other growers are looking at new plant varieties and new products to take advantage of future market growth. However, the largest source of investment by GMF has been in the mandarin and lemon markets.

Enablers for Future Expansion



Export Demand: As exports are a key driver of industry growth, trade barriers tend to be the largest inhibitor to expansion. In particular Indonesia has recently taken a hard-line against citrus imports. Therefore, improved trade relationships will influence the investment plans GMF commodities, noting that trade negotiations can take a long time to resolve.



Road: As much of GMF production is transported via road freight, road quality has an impact on the operations of GMF. Road upgrades, such as to the Burnett Highway and to the Bruce Highway, would have the largest positive impact on the company— in terms of changes to transport costs.



Port: Exporting directly from the PoB would be desirable for GMF, however, greater road freight access to the PoB, in addition to adequate storage facilities are required to make this more feasible in the future.

Macadamia production and trade levels are expected to expand rapidly in the future while the outlook for sugar is more challenging

Macadamias Australia

Organisation Description & Operations

Macadamias Australia is a family owned business founded in 1957. The company operates in the macadamia commodity industry and currently maintains approximately 130,000 macadamia trees in the Bundaberg region.

Future Market Opportunities in the Wide Bay Region

Future growth of the industry in the Wide Bay region is dependent on a number of factors, including water accessibility, climate, world food security and foreign investment for land. The Wide Bay Burnett region is expected to experience strong growth in the future, particularly in the macadamia industry, which is growing rapidly. This is driven by consumers outside of Australia increasing consumption of nuts for health reasons.

Expansion Plans

Currently, Macadamia Australia produces 20,000 tonnes of macadamias annually. Based on future growth plans, trade levels could expand significantly to reach 50,000 tonnes over the next 7-10 years. Around 2,000 tonnes of raw product per day is transported by road to Gympie for processing where the nuts are hulled and packaged. The shelled macadamia product is then transported directly to Port of Brisbane. Considering the expected future growth of the region, Macadamia Australia is looking to construct a facility in Bundaberg to be ready in 2020, which will remove the need for an external processor. Expanding the business will also include expanding its workforce from 72 to 100 employees.

Enablers for Future Expansion



Export Demand: As the industry is driven largely by exports (almost 100% of Macadamias Australia produce is exported), positive trade relations between Australia's trading partners are essential to support future export potential.



Road: Improvements to the Bruce Highway, Burnett Highway and Isis Highway would increase the efficiency of road freight movements of macadamia commodities.



Rail: Improvements in the rail network could induce Macadamias Australia to switch to rail freight as there could be potential cost savings in making this switch.



Port: Switching to the PoB instead of Port of Brisbane could potentially save approximately \$2.2 million of road transport costs. However, PoB would require regular, consistent and reliable shipping, as well as adequate container loading facilities.

Bundaberg Sugar

Organisation Description & Operations

Bundaberg Sugar Limited (BSL) is a sugar company operating in the Bundaberg region.

Future Market Opportunities in the Wide Bay Region

In recent times, the sugar price has declined and this has been accompanied by a rise in macadamia commodity prices, inducing a transition of agriculture land from sugar cane to macadamias. Hence there is a high degree of uncertainty surrounding the future of the sugar industry in Wide Bay Burnett.

Expansion Plans

At the current time, some mills are operating under-capacity. Therefore, BSL are attempting to find more sugar cane land. However, this is difficult as sugar cane land needs to be in close proximity to mills and requires irrigation accessibility.

Enablers for Future Expansion

- The sugar price and demand outlook are the largest enablers of expansion for the company.

Factors impacting on the Sugar Outlook

- According to BSL the current sugar price is marginal and could be below production costs, not only for millers but also growers
- On the flipside, macadamia prices are high, so land is being transformed for growing macadamias at the expense of sugar cane area. It was uncertain if this trend will persist but it is believed to depend on the outlook for macadamias
- This will make it challenging for under capacity mills, trying to find additional cane land and this also needs to be close to mills, close to irrigation etc.
- Cane farmers are looking at value adding to their land by doing different crops (i.e. ginger, broccoli, sweet potato) given the tough conditions in the sugar market and high level of export competition.

If this transition to other crops continue, it is possible that one of the sugar mills in the area could potentially close in the future. If Bingar were to close there would be large amounts of cane that would need to go to Millaquin and would therefore require either (a) a rail bridge over the Burnett river (have permit for this but expensive) or (b) put on trucks through town (would cause/add to congestion). Historical production statistics show that back in 2000 the mill crushed about 3.8m tonnes of cane, and this year crushed only 1.5 million tonnes. Molasses business – there is a value adding factory at Oakey that supplies feedlots and southern part of state.

Appendix F

Literature review

Review of Relevant Trade, Economic, and Infrastructure Studies

Bundaberg Port Rail Link Study

Author: GHD – 2009

Report Scope and Methodology:

This report was commissioned by the Department of Transport and Main Roads to identify a rail corridor connecting the Port of Bundaberg to the North Coast Line, and the feasibility of the possible construction of the corridor.

Key Findings:

The following key findings were identified by the study;

- The report identified the most appropriate route linking the North Coast Line to the PoB, considering private land and flooding risks, amongst other criteria.
- A high level cost estimate of building the railway corridor was \$70.3 million, with a 30% contingency.
- The report also identified that a north bank berth would likely need to be associated with increased mining throughput. The costs of upgrading the north bank berth were - construction: \$42 million, and materials handling equipment for the new berth; \$82 million.
- Alternatively to the construction of a Northern berth, the study also considered the feasibility of building a bridge over the Burnett River.
- Report found that increases in trade at PoB are unlikely in the future, and therefore there was no economic justification for construction of this rail freight line.

North Burnett Minerals Transport and Logistic Study

Author: Orion Advisory – 8th July 2011

Report Scope and Methodology:

The report was commissioned by the North Burnett Minerals Group to analyse the infrastructure required to facilitate potential low-value mineral mining projects that would occur in the North Burnett minerals province to determine the viability of investments in the province. Specifically, this report determines the rail options and associated costs from the North Burnett minerals province to export ports, and the annual tonnage needed to achieve competitive rail/port outcomes. The study considers both Gladstone and Bundaberg ports as being potential destinations for the rail line.

Key Findings:

The following key findings were identified by the study;

- The report determined that a new line is likely too expensive. However, upgrades to existing lines and the coordination of mineral exports to one destination so that costs are shared, is likely a feasible option.
- There was determined to be three main rail uses that had large enough commodity deposits and expected mining operations to support rail investments, these were; Monto Carlo's coal deposit near Monto, Eastern Iron's Hawkwood magnetite deposit west of Mundubbera, and ABX bauxite deposit east of Mundubbera.
- It was determined that Port of Bundaberg is unlikely to handle large quantities of bulk product due to development issues in expanding the port to accommodate larger ship loads, and the shorter and established routes to Gladstone for coal. Further, there is an alumina plant in Gladstone, which may serve as a potential market for Bauxite.
- Further, the overall capex cost of rail upgrades is \$90 million greater than the Gladstone corridor option.
- Therefore, this report considers Gladstone as the most likely destination for the North Burnett Minerals province.

Review of Relevant Trade, Economic, and Infrastructure Studies

A Review of Potential Trade and Port Development Opportunities: Port of Bundaberg

Author: Buningham and Associate – 9th March 2014

Report Scope and Methodology:

The report reviews the trade potential and port development opportunities for the Port of Bundaberg. Trade opportunities and forecasts were developed through a series of targeted consultations to establish a baseline projection of activity at the port for prospective and current uses of the Port of Bundaberg. A key assumption of the analysis was that infrastructure does not serve as a constraint to potential trade. However, to take into account uncertainty, the researchers weighted each company and commodity trade projection by a probability (Prob).

Key Findings & Recommendations:

Table E.1: Port of Bundaberg Trade Forecasts

Commodities	Prob	2013/14	2014/15	2015/16	2016/ 17	2017/18
Sugar & Molasses	90%	295,000	295,000	295,000	295,000	295,000
Wood Pellets	50%	30,000	100,000	125,000	125,000	125,000
Ilmenite	50%	20,000	130,000	210,000	210,000	210,000
Ilmenite & Feldspar	50%	-	100,000	250,000	500,000	600,000
Magnetite	50%	-	75,000	150,000	150,000	150,000
Phosphate Rock	50%	-	25,000	50,000	50,000	50,000
Silica Sand	50%	-	75,000	75,000	75,000	75,000
Gypsum	80%	-	-	-	120,000	120,000
Total Throughput		307,500	558,000	745,500	966,500	1,016,500

Bundaberg Port: Based on the trade forecasts results, it was determined that capital dredging would not be required. Further, the report recommended feasibility studies be conducted on an SDA, transport corridors connected Bundaberg with the North Burnett mineral province, and infrastructure and methods to reduce the costs of accessibility and tugs at the port. Further, it was noted that any development on the northern side of the Burnett river will likely require flood studies to determine the impacts of potential flooding.

Investigation into a potential state Development Area around the Port of Bundaberg: SDA Port of Bundaberg

Author: GHD –2016

Report Scope and Methodology:

This report analyses the infrastructure and land requirements of a SDA area surrounding the Port of Bundaberg. The report was formed on a number of investigative analyses, some of which included consultations with key current and potential stakeholders. Firstly, spatial requirements are identified through an economic analysis that reviews regional economic development opportunities and their implications for future volumes of trade, as well as assessment of potential new industries that could be attracted by an SDA. Next, the study looks at the land requirements for the projected economic outlook, and how this can be accommodated. An infrastructure requirements analysis is then conducted, which looked at the effects on surrounding communities.

Key Findings & Recommendations:

The following key findings & recommendations were identified by the study;

- Potential of Bundaberg becoming a major regional servicing centre is dependent on development of current and future development potential of mineral deposits throughout the Wide Bay Burnett region. Mining is expected to drive exports from the region (and imports associated with infrastructure and mining extraction). However, mining development is largely dependent on transport costs and accessibility to the Bundaberg port (which requires greater roadside logistical infrastructure and port access due to size of mineral cargos - B doubles are not able to access port).
- Electricity and communications infrastructure are also identified as key constraints to the development of the mining sector.
- Cost effective access to port throughout the Wide Bay Burnett region is essential for export demand increases.
- Supported the development of an SDA.

Review of Relevant Trade, Economic, and Infrastructure Studies

Trade and transport study for the Port of Bundaberg catchment area

Author: Jacobs – 11th July 2016

Report Scope and Methodology:

Report investigates the transport and infrastructure requirements to facilitate potential new and expanded commodity throughput through the Port of Bundaberg. The report looks at demand for port facilities over a 10-year time horizon from a number of economic outlook scenarios. The implication of each scenario on port and logistic infrastructure is then examined. Trade forecasts were determined through targeted consultations with current and prospective trade users.

Trade and transport study for the Port of Bundaberg catchment area (cont.)

Key Findings:

Trade: The trade forecasts are presented in the table below. Specifically, Jacobs (2016) forecast a trade throughput increase at the Port of Bundaberg of CAGR 9.4% over the 10 years following 2015 in the most likely scenario. Further, medium scenarios project throughput to increase to over 2.4 mtpa in 10 years, and to 4.4 mtpa in longer-term Medium outlooks.

Table E.2: Port of Bundaberg Trade Forecasts

Commodities	Export/Import	Actual p.a. (2015)	10-year Outlook			Long-term Medium
			Pessimistic	Most Likely	Medium	
Sugar & Molasses	Export	375,810	200,000	350,000	400,000	450,000
Silica Sand	Export	-	50,000	150,000	250,000	250,000
Wood Pellets	Export	52,608	50,000	75,000	125,000	200,000
Logs	Export		100,000	200,000	200,000	200,000
Compost	Export	-	-	50,000	200,000	350,000
Ilmenite	Export	-	-	75,000	220,000	490,000
Bauxite	Export	-	-	150,000	550,000	1.5 – 10 million
Biofuel	Export	-	-	-	100,000	200,000
Molasses	Import	60,936	-	25,000	60,000	60,000
Gypsum	Import	-	60,000	120,000	180,000	250,000
Fertiliser	Import	-	-	10,000	120,000	240,000
Bulk Liquid	Import	-	-	-	80,000	200,000
Total Throughput		489,354	460,000	1,205,000	2,485,000	4,390,000

Review of Relevant Trade, Economic, and Infrastructure Studies

Trade and transport study for the Port of Bundaberg catchment area (cont.)

Infrastructure: The infrastructure implications of the trade projections are as follows;

Port : At current, the port infrastructure is considered to be adequate to accommodate trade projections in the most likely scenario. However, the report finds that increasing berth utilisation would reduce tug costs through economies of scale, which are one of the largest deterrents of port use identified by companies. Further, a sustainable mining throughput through the port would only be viable through increasing the accessibility for larger ships, as well as new developments on the north bank if commodity throughput exceeds 1.5 mtpa.

Land-side Transport: The current port access road is likely to experience issues with public disdain and accessibility in the most likely scenario due to traffic projections.

Key Recommendations:

- Appropriate areas should be designated for storage of commodities for exporters/importers.
- A new conveyor should be built to link the sugar ship loader to a new mobile bunk loader.
- Port channel and berth depths should be maintained at maximum gazetted depths.
- New port access road bypassing Power street residential area should be assessed and constructed.

Wide Bay Burnett Regional Transport Plan

Author: Jacobs & KPMG –2016

Report Scope and Methodology:

Port

This working paper consolidates the current transport issues of the Wide Bay Burnett region in 2017 with the goals stated in the Wide Bay Transport Plan, which was released in 2011. This paper is comprehensive in its analysis of the region and its transport needs.

Key Findings:

The following key findings & recommendations were identified by the study;

Infrastructure

- The region is heavily reliant on the road network for transport of goods to markets or interim facilities.
- Rail freight movements are generally reserved for exporting out of the region, rather than transport within the region.
- Heavy vehicle corridors are limited to major routes across the region, which impacts the efficiency of supply chains.
- Mobile telephone connectivity is incomplete across the region

Economics

- The region is a large producer of agriculture, contributing to 11% of total QLD agriculture production, and 27% of total QLD fruit and vegetable production.
- The region has large potential for an expanded mining sector due to its large mineral deposits, particularly within North and South Burnett regions.
- There is a bubbling solar and wind industry, with recent large-scale projects approved in the South Burnett and Gympie regions.

Port of Bundaberg

- The Port of Bundaberg require greater roadside transport and port infrastructure to facilitate greater throughput. However, potential opportunities arise, particularly from the mineral provinces, due to capacity limitations at Gladstone port.

Review of Relevant Trade, Economic, and Infrastructure Studies

Bundaberg Port Road – Concept Realignment Concept Scoping Report

Author: RMA– 5th October 2017

Report Scope and Methodology:

Report analyses the costs and feasibility of a new road corridor that bypasses Powers St (a residential area and only port access as there is a high risk of residential dissatisfaction with increases in truck volumes due to trade increases). The analysis looks at a number of corridor options and their costs. A corridor is seen as necessary due to expected increases in Port of Bundaberg activities, in part due to the newly established (February 2017) Bundaberg SDA.

Key Findings:

The proposed new port access road will look to connect the Bundaberg Port with Burnett Heads Rd through the Bundaberg Port Rd, a large portion of which is located within the SDA (see image). This corridor may require a bridge or draining structure that would mitigate flooding (length of this structure was not determined by the study). A high level analysis determined traffic volumes in 20 years to reach approximately 1700-2300 vehicles per day for the existing road, up from 1192 today. Further, it is expected that a large driver of this traffic is due to port-related activities. Projected infrastructure costs of between 123 and 189 million, depending on drainage infrastructure needed, and construction costs.

Figure E.1: Proposed corridor location bypassing power street; RMA (2017)



Transport and Utility Corridor Assessment: Bundaberg state development area and Port of Bundaberg

Author: GHD –2017

Report Scope and Methodology:

This report looks at a number of infrastructure options that would assist in facilitating greater traffic into the Bundaberg SDA and Port. Analysis is in response to projected increases in demand for the Port of Bundaberg, associated with the establishment of the SDA, in itself a response to increased demand for Port services.

Key Findings & Recommendations:

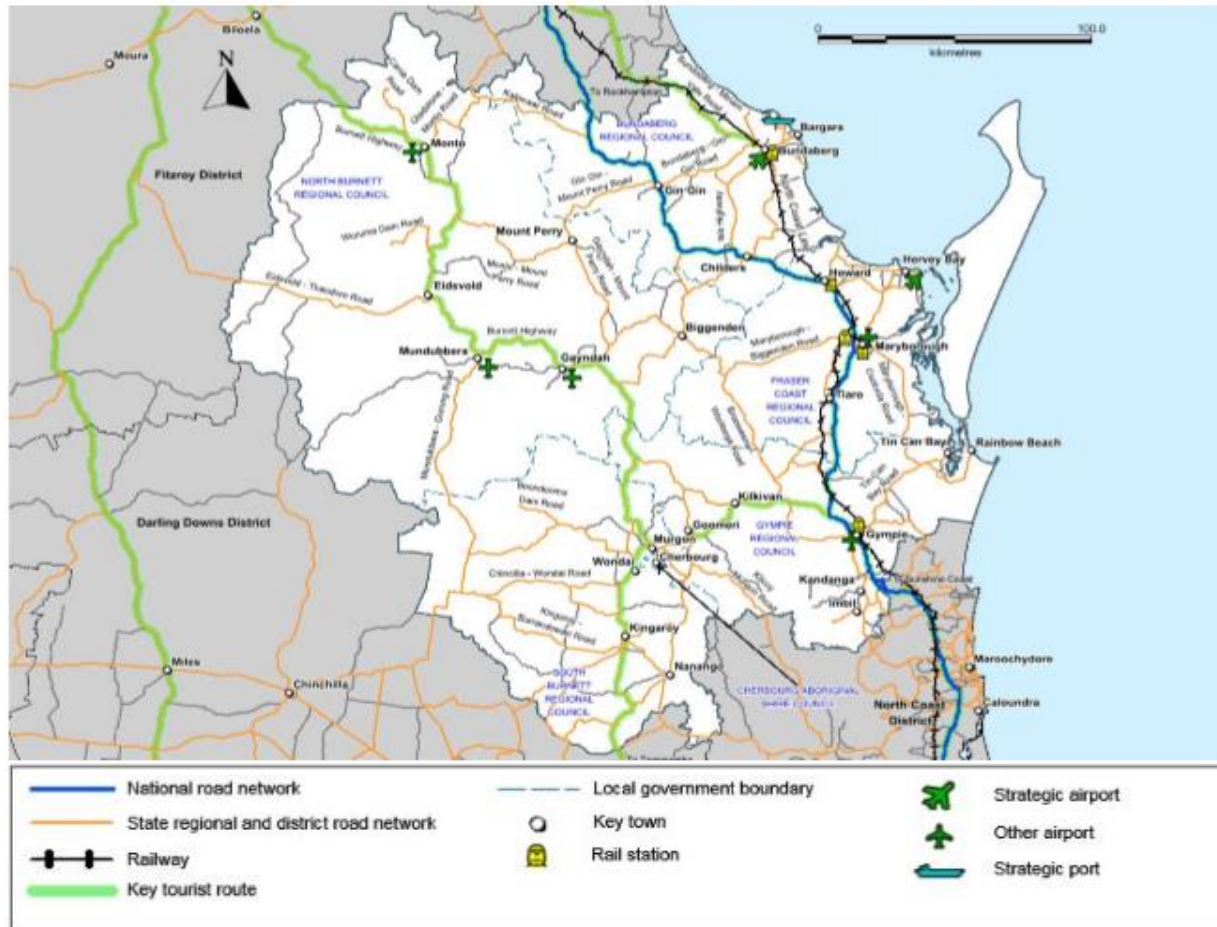
The following key findings & recommendations were identified by the study;

- A literature review concluded that there is no expected demand for a rail connection to the existing Port of Bundaberg from the north coast rail line, or the North Burnett minerals province. However, previous studies have recommended planning to be undertaken to identify low-cost multi-modal transport solutions to give greater access to PoB facilities.
- The western side of the port has less defined transport connections. A 2009 GHD report considers a rail spur alignment within the western side of the Bundaberg SDA. However, it was identified that flooding is a major issue in constructing a rail line.
- It is not clear what the demand for a rail link would be. Previous studies have not clearly identified demand forecasts, as project proposals are subject to a large degree of uncertainty. There is also a consideration to the use of a slurry pipeline for the transport of bauxite to the Port of Bundaberg.
- A pre-feasibility study is recommended to determine the most feasible corridor connecting major route facilities to the western side of the Bundaberg SDA.

Appendix G

Infrastructure analysis including indicative costings

Wide Bay has a range of key transport infrastructure that supports the movement of trade and people as well as to key markets/destinations outside the region. Regional connectivity is key for trade growth



Key enabling transport infrastructure in Wide Bay:

Road (including but not limited to)

- Bruce Highway (National road network)
- Isis Highway
- Wide Bay Highway
- Burnett Highway (key drive tourism route)
- D'Aguilar Highway
- Other key regional roads including those that provide access to the Port and transport routes

Rail

- North Coast Line

Port

- Port of Bundaberg

Airports (including but not limited to)

- Bundaberg
- Hervey Bay

Source: Jacobs & KPMG 2016

Key regional freight routes including North-South (Bruce and Burnett Highways) and East-West (Isis Highway). Important for agricultural commodities, resources, trade and also tourism (drive)



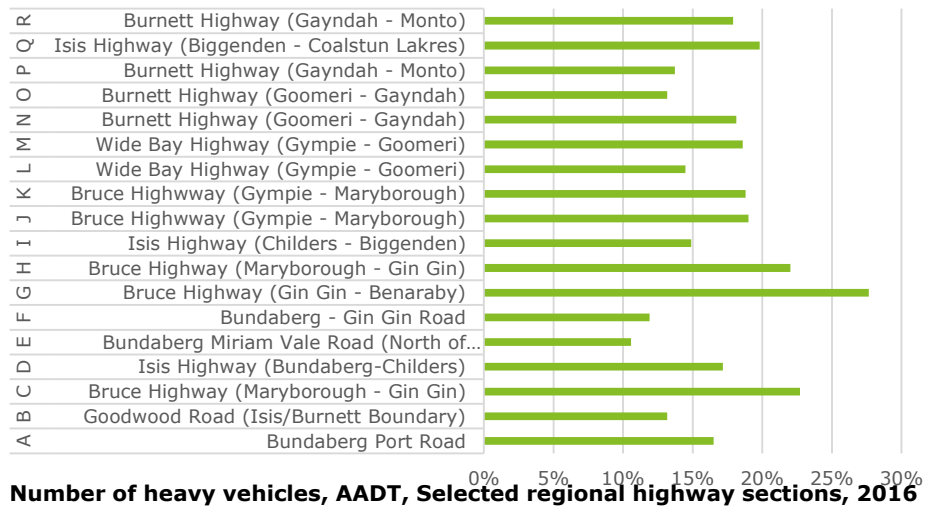
Names of selected traffic sections:

- A- Bundaberg Port Road** (West/Port & Burnett Hds Rds)
- B- Goodwood Road** (Isis/Burnett Boundary)
- C- Bruce Highway, Maryborough – Gin Gin**
- D- Isis Highway, Bundaberg to Childers**
- E- Bundaberg Miriam Vale Road** (280m north of Invicta Rd)
- F- Bundaberg – Gin Gin Road** (2.5Km N.E of Bingara Mill)
- G- Bruce Highway, Gin Gin- Bernaby**
- H- Bruce Highway (Maryborough – Gin Gin)**
- I- Isis Highway (Childers – Biggenden)**
- J- Bruce Highway, Gympie – Maryborough** (Sth side of Glenorchy Straight)
- K- Bruce Highway, Gympie – Maryborough** (North of Aitkinsen Road)
- L- Wide Bay Highway, Gympie – Goomeri** (North East of Widgee Creek)
- M- Wide Bay Highway, Gympie – Goomeri** (West of Tansey Road)
- N- Burnett Highway, Goomeri – Gayndah** (Nth of Watchbox Rd)
- O- Burnett Highway, Goomeri – Gayndah** (Sth of Ban Springs)
- P- Burnett Highway, Gayndah – Monto** (N/E of Wetheron Road)
- Q- Isis Highway, Biggenden Coalstun Lake**
- R- Burnett Highway (Gayndah – Monto)** (Nth of Mundubbera)

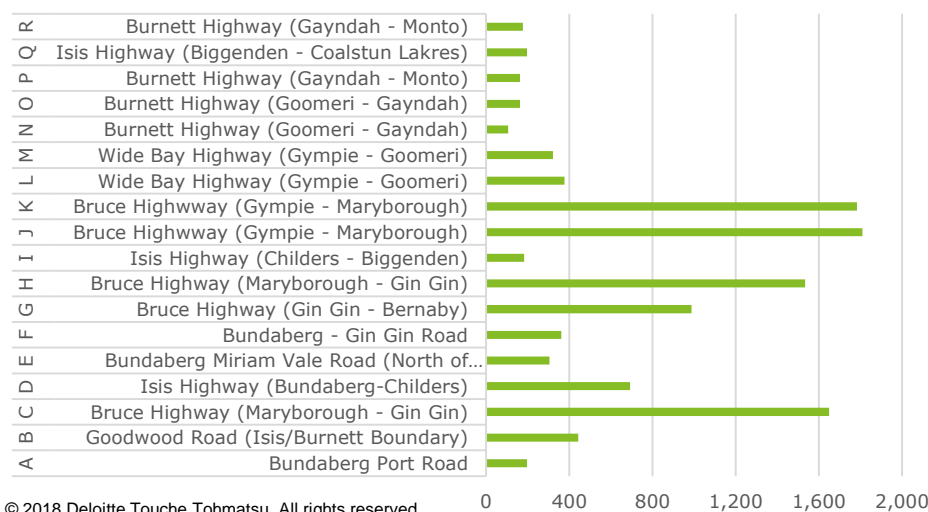
Source: Queensland Government – Transport and Main Roads

The main mode of transport for freight and people in the region is road. There are a number of key transport infrastructure projects highlighted in the 2018 State Budget as well as strategic projects in the pipeline

Share of heavy vehicles, AADT, Selected regional highway sections, 2016



Number of heavy vehicles, AADT, Selected regional highway sections, 2016

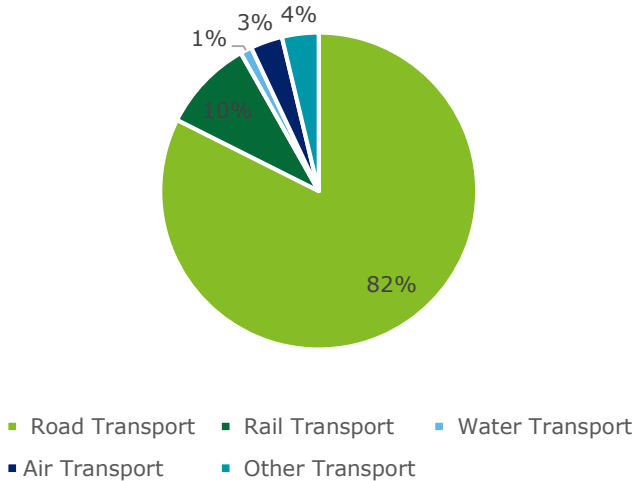


Case Box: RACQ submission to Queensland Government highlighted the following key transport priorities:

- Accelerated delivery of Bruce Highway upgrades in the region
- Motorists, local government and the freight industry have long campaigned for an alternative to the Bruce Highway. Road closures due to incidents and flooding on the Bruce Highway are a major issue as there are no alternative routes of a suitable standard. Many inland sections of road, including the D’Aguilar and Burnett Highways and Gregory and Kennedy Development Roads, require significant attention such as road widening and removal of roadside hazards. The RACQ sees value in upgrading an alternative route for road safety, productivity and efficiency improvements, as well as delivering much needed network redundancy when the Bruce Highway is closed.

Source: RACQ Pre-Budget Submission to the Queensland Treasury 2018-19

Chart F.1: Employment by industry in transport (% shares) in Wide Bay, 2016



Port infrastructure and rail infrastructure is necessary for regional connectivity and to support trade opportunities and the regional economy

Port

The Port of Bundaberg is located near to the mouth of the Burnett River. The port occupies an area of 507 hectares, which was boosted significantly by the designation of an SDA surrounding the port, and includes land on both the north and south banks of the Burnett River. Management of the port was passed to Gladstone Ports Corporation in 2009.

The port is currently served by two main wharves as follows:

The Sir Thomas Hiley Wharf is currently used for the shipment of sugar, and is available for the shipment of other dry bulk commodities. It is 191 metres in length with 11.0 metres LAT available depth at berth. The Sir Thomas Hiley Wharf services the terminal operated by Queensland Sugar Limited for the storage and loading of sugar. The terminal has a storage capacity of 300,000 tonnes of bulk raw sugar in two sheds, one of which is 425 metres in length. The belt conveyor system has an average loading capacity of 1400 tonnes per hour. The loading facilities can be utilised for the loading of other dry bulk commodities.

An Approach Wharf, 63 metres in length was constructed by the Port for general cargo users, to provide access to the Sir Thomas Hiley Wharf for laden semi and B-double vehicles and forklifts.

The John T. Fisher Wharf is used for the loading and unloading of bulk liquids. The wharf is 240 metres in length including dolphins and has a berth depth of 9.7 metres LAT. The John T. Fisher Wharf currently services the bulk molasses terminal which has three storage tanks with a total capacity of 36,641 tonnes. A loading rate of 285 tonnes per hour is attained through a 375 millimetre pipeline connected to five electrically operated pumps. This wharf is currently occupied by the HMAS Tobruk until mid June 2018. The wharf area is generally in poor condition.

Capital expenditure: Capital investment will be required in the future to maintain the port, including the bulk liquids terminal that is run down and with potential redevelopment in the future by private sector investors.

There is also a \$35 million ship repair and maintenance facility under construction at the moment at the port to service Pacific Tug's 24 boats. Dredging to 10.5 metre depth has also been discussed to accommodate larger ships of up to 45,000 tonnes.



Rail

In the past a rail connection has been proposed from the North Burnett Minerals Province to the Port of Bundaberg. The cost of the rail connection was estimated to be \$480 million at the time (North Burnett Minerals Transport and Logistics Study (2011)). The feasibility of this connection is currently being reconsidered, however at this stage no updates are available on the capital cost of such a connection.

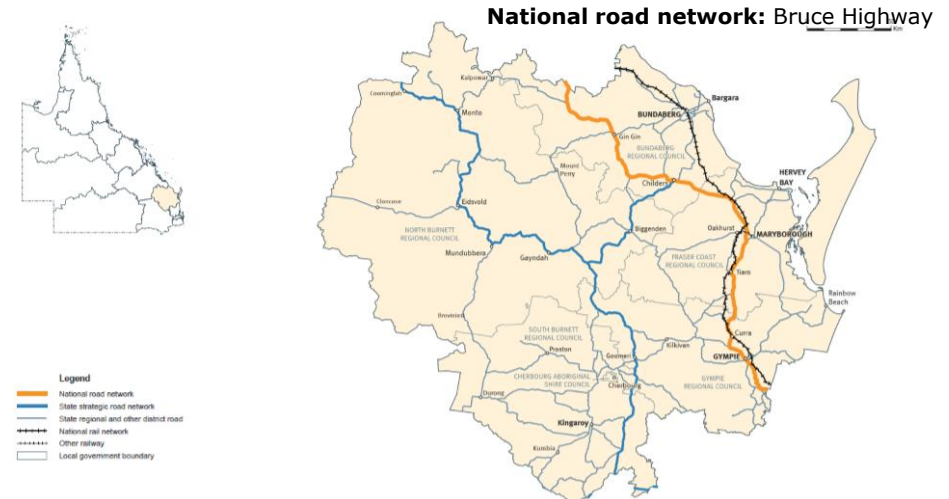
Significant regional investments identified in QTRIP are planned for the Wide Bay Transport District including mainly the National and State Networks (which are vital for transports goods and people in the region)

Queensland Transport and Roads Investment Program (QTRIP)

Analysis of QTRIP for the Wide Bay Burnett Transport District highlights around \$150 million in road infrastructure in 2018-19 (approved) and a further \$825 million as indicative over 2019-20 to 2021-22. This highlights a significant proportion of this spend on key roads in the region including the national and state network based roads.

Table F.1: QTRIP Listed Approved and Indicative Road Infrastructure Projects in the Wide Bay Region

Projects	2018-19 (\$'000), [approved]	2019-20 (\$'000) [indicative]	2020-21 to 2021-22 (\$'000) [indicative]	Total (\$'000)
National network Bundaberg (9) Fraser Coast (6) Gympie (3) Various (1)	51,272	61,050	496,797	609,119
State network Bundaberg (13) Fraser Coast (3) Gympie (9) North Burnett (3) South Burnett (9) Various (2)	87,239	82,858	163,517	333,614
Local network Bundaberg (22) Fraser Coast (24) Gympie (16) North Burnett (23) South Burnett (15)	12,140	7,290	13,837	33,627
Total	150,651	151,198	674,151	976,000



State strategic road networks: Isis and Burnett Highways

Overview

48,599 km²
Area covered
by district*

6.0%
Population of
Queensland*

2689 km
Other
state-controlled
road network

272 km
National
Land Transport
Network



Order of magnitude infrastructure costings are presented for key infrastructure. Long term trade expansion could require road infrastructure upgrades along key roads such as the Burnett Highway which provide a key freight route for agricultural products (such as citrus) and also drive tourism

Indicative costings for Burnett Highway and Port Access Road

Burnett Highway and other regional highways: The Burnett Highway is a key inland road for freight vehicles and there are potentially significant benefits in terms of improved transport connectivity in the region and catering for future regional growth in production and trade. It is also key for drive tourism and agriculture freight. The cost has been estimated indicatively to be **\$900 million** (refer to the right hand panel for our approach). These costs should be considered a proxy for similar regional road upgrades that could be required in the future including roads such as the Isis highway which is a key freight route on top of work that is already occurring in the region on the Bruce Highway.

Bundaberg Port Access Road: A review of past studies highlighted that upgrading the port access road will be a key strategic investment for the region with plans to increase throughput through the Port of Bundaberg in the future and with the recently established State Development Area. The existing average annual daily traffic (AADT) for the Existing Bundaberg Port Road between the Burnett Heads Road intersection and Bundaberg Port is 1,192 vehicles per day in 2016 and this could in the next 20 years range from 1,700 and 2,300 and will need traffic modelling to get a precise estimate. The indicative cost of the road is estimated to be in the range of the **\$110 million to \$190 million** based on a concept alignment. For the purposes of this study an estimate of **\$150 million** (the midpoint) is used.

Table F.2: Indicative cost of the Bundaberg Port Access Road

Costing by Element \$M	Low Estimate	High Estimate	Mid Point
Administration	\$12.8	\$25.4	
Property and land acquisition	\$13.9	\$13.9	
Construction costs	\$73.3	\$125	
Escalation	\$9.8	\$24.6	
Total	\$110	\$189	\$150

Source: RMA Engineers

Key assumptions from BITRE

Order of magnitude costs have been estimated for upgrading the Burnett highway using benchmarks estimates by BITRE that provide estimates of per kilometre upgrades to roads in both rural and urban areas.

An indicative estimate for Burnett Highway upgrade works is up to \$900M for around 300km of potential upgrades (noting this is a proxy for potential upgrades to other key sections of regional highways that could be required over the long term to support trade expansion and broader industry growth as well as connectivity of the region). The Burnett Highway is around 550 km in total running up to near Rockhampton (with around an estimated 300km in the region). These estimates are subject to more detailed studies and analysis of service need/feasibility.

The Burnett Highway looks to have components of Class 1-3, so the average of this is around \$3M per km (Class 2 standardised cost is \$3.3 M per lane km).

Table F.3: Costing benchmarks for the Burnett Highway (regional highways)

Cost	Class 1	Class 2	Class 3	Class 6	Class 7
	(\$ per lane kilometre)				
Average total cost	5.4 (4.0)	3.8 (2.1)	1.0 (1.2)	6.8 (8.2)	6.3 (4.3)
Standardised average cost ^a	5.0 (4.0)	3.3 (1.8)	0.9 (1.1)	6.2 (7.4)	6.0 (4.1)

a. Average total cost less property acquisition and supplementary costs.

Note: Standard deviations are presented in parentheses.

Source: BITRE

Class 1: Mostly highways and the freeways that are the principal form of connection between regions

Class 2: Connection between a capital city and regional towns

Class 3: Connection between important cities and class 1 and class 2 roads

Appendix H

Current trade flows and infrastructure mapping and commodity trade flows to North Burnett minerals province

The current trade flows and infrastructure mapping shows that regional connectivity is vital to support trade expansion plans of key export growth industries in the region including agriculture and resources

Wide Bay Commodity Trade Flows and Key Infrastructure

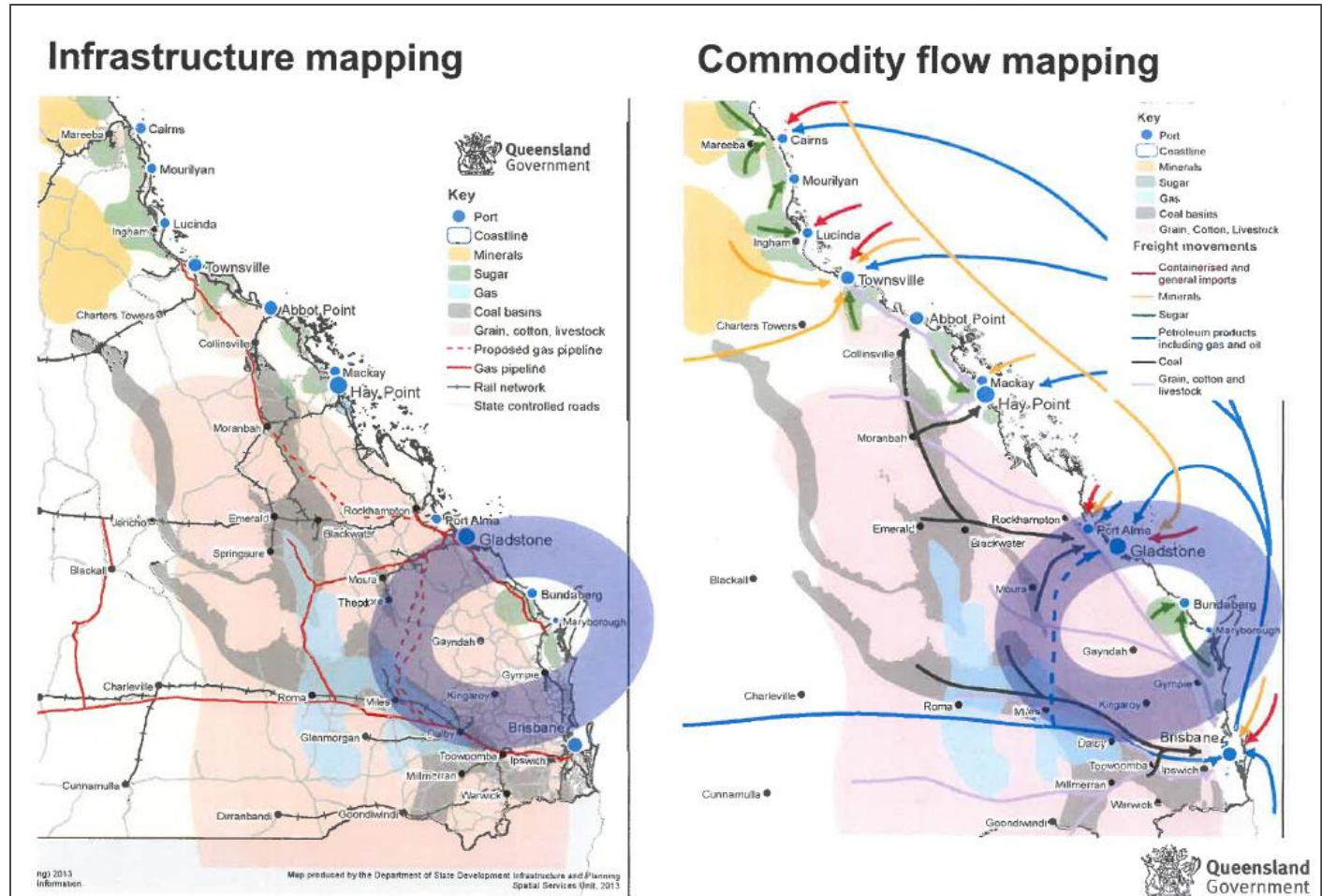
Infrastructure and commodity flow mapping in and around the Wide Bay Burnett region highlights key commodity flows to export ports, as well as the transport infrastructure within the region, and outer neighbouring regions more broadly.

Flows to Port of Brisbane: The majority of Wide Bay Burnett commodities such as, grain, cotton, livestock, and petroleum products, flow out of the region to the Port of Brisbane, utilising key road freight routes and established transport infrastructure and supply chains.

Flows to Port of Gladstone: The Port of Gladstone is the potential destination for some of the mining and minerals commodities produced in the region, where the supply chain efficiencies can be achieved.

Flows to PoB: Sugar is one of the main commodities that flow to the PoB due to the proximity of sugar mills to the Port. There is currently no direct rail link to the Port of Bundaberg to facilitate bulk-mineral commodity freight with goods moved by road to the port.

Figure G.1: Mapping of commodity flows and infrastructure in Wide Bay and surrounding regions



Source: Queensland Government

Figure G.2: Mapping of commodity flows and infrastructure in Wide Bay and surrounding regions.



There are a variety of potential mining commodities that could be exported out of the PoB if transport and other port infrastructure is in place. Each is discussed below, drawing on consultations with companies behind key projects in the region.

Bauxite: There are proposed projects to mine and export bauxite from the North Burnett region – Toondoon and Binjour bauxite mines. PoB is in relatively close proximity to these deposits and was identified as the most likely export destination. Increasing the accessibility to the PoB through a rail corridor, and increased accessibility to the northern side of the SDA, and enhancement to port infrastructure could make this more feasible in the long-run. However this capital is likely to be costly to develop so higher volumes of bauxite exports going through the PoB are only factored into the highly aspirational scenario.

Ilmenite: An ilmenite mining project is proposed close to Gayndah, in North Burnett, with plans to export out of the PoB. A freight movement route has been identified, however, it is an indirect route as more direct routes are more difficult to access from the proposed mine. Further, storage of commodities is not proposed to occur at the SDA. Improvements in the corridor access to the PoB, and access to the northern area of the SDA would improve the efficiencies associated with exporting ilmenite out of the PoB.

Appendix I

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