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Executive Summary

**KEY POINTS**

**The Moreton Bay region requires more local jobs** to ensure that the growing population has sufficient number of local employment opportunities.

Across the South East Queensland region, there is a general imbalance between supply and demand of industrial land, which has kept prices for land relatively high. Relative high land cost, access to capital and general economic activity has resulted in relatively low levels of industrial development.

Industrial land in the Moreton Bay region has similar characteristics as the rest of South East Queensland, with a general lack of larger, high quality industrial land. **Caboolture is currently undersupplied for industrial land**, showing minimal sales over the last four years and achieving prices at the upper end of the scale for the Brisbane North region.

During construction, the McNaught Road Precinct would generate $16.9 million in value-added economic activity (similar to GRP), 125 jobs and $9.6 million in increased local incomes.

Once operational, the businesses operating out of the McNaught Road Precinct are estimated to directly support approximately $47.9 million in gross value added activity with a further $35.7 million in gross value added activity through flow-on activity. This level of direct and flow-on activity (total of $83.6 million) would be equivalent to 0.7% of total Moreton Bay GRP in 2011 - 2012.

**The total (direct and flow-on) 605 full time equivalent jobs** supported by the businesses located in the precinct would be equivalent to 0.3% of total Moreton Bay Regional Council jobs in 2013.

Once operational, the businesses are estimated to support some $46.6 million in incomes (wages and salaries) including both direct and flow-on activity.

The subject site would provide considerable synergies for industrial development, given the adjacent land uses (existing industrial area and existing Caboolture waste transfer station), its location and access (both the transport and utility infrastructure) as well as various natural buffers to other surrounding land uses. The current owners are in favour of a change of use to industrial activities.

Project Background

PGA Projects Pty Ltd, acting on behalf of owners of 100 to 116 McNaught Road, 118 McNaught Road and 120 to 138 McNaught Road Caboolture require an industrial needs analysis and economic impact assessment for a proposed industrial subdivision at the aforementioned address.

Existing Economic Environment

MBRC is the third largest local government area in Australia (on a population basis) and has a current (2012) population of 400,000. Since 2004, 83,000 people have moved to the area and with an expected 143,000 people to come, the population of the MBRC region is likely to reach 550,000 by 2031. The local economy represents $12.6 billion (in 2011-12 Gross Regional Product) and is driven significantly by the recent (and expected future) population growth. Four of the top five industry sectors (in terms of GRP) are population-driven and make up over a third of total GRP. Construction is the single largest sector. This reliance on population growth leaves the economy exposed if the recent levels of growth were to recede.

Industrial activities make up a quarter of the economy (in terms of GRP) and provide 18,000 jobs in the region.
In order to ensure a sustainable future, MBRC is focused in increasing local jobs for local residents. Council’s Community Plan, Corporate Plan and Economic Development Strategy show a strong commitment and support for growing local jobs. The Economic Development Strategy has even established an aspirational goal of achieving a 70% self-containment rate (i.e. proportion of local residents that work locally) above the current 43%.

**Industrial Market Assessment**

The price of industrial land in MBRC has held up well in recent years, buoyed by demand from the transport, logistics and mining sector as well as an imbalance of supply (i.e. general lack of high quality, well positioned industrial land in various sizes). Current prices show an average of $250-$325 per sqm for the Brisbane North zone, which includes MBRC (Savills, 2013). This level of cost requires a certain lease rate for the development to be viable and attract the necessary debt funding. The overall cost of the delivered industrial product often means that certain industry sectors are cannot afford new developments. Businesses in the waste, transport and many manufacturing sectors function on very thin profit margins and have been often priced out of the current market.

In the MBRC area in the 2012-13 financial year, approximately 11.4 hectares were taken up, half the five year average for the region. Between 2009FY and 2013FY, an average of 27.7 hectares of industrial land was consumed (m3 Property, 2013). Take up rates have been volatile as a result of some large individual take-ups occurring including Caterpillar, the Super Retail Group and Hastings Deering in Northeast Business Park.

The Caboolture industrial land market centres upon the industrial lands around the Caboolture Aerodrome. Land sales are nearly non-existent with only three land sales over the last four years. There is a lack of high quality, attractive industrial lots, which has driven prices high (Caboolture Commercial, 2013). There is anecdotal evidence of a pending sale of one of the last remaining blocks in the Corporate Park Industrial Estate for $320 per sqm. This level of pricing is the upper end of the current average for industrial land in the Brisbane North region and highlights the shortage of industrial land in the immediate area.

Considering current (and future potential) industrial land supply in the MBRC region as well as historical take up rates and economic modelling to identify demand from achieving the aspirational goal of 70% self-containment shows that more industrial land in the market would help to better balance supply and demand, particularly in the short-term.

**Figure E.1: Industrial Land Demand and Supply, Moreton Bay Regional Council**

Source: m3 Property (2013), AECgroup
As highlighted above (Figure E.1), using historical take up rates, all of the currently available industrial land in the MBRC region would be exhausted after 2015.

Providing more industrial land to the market would help to ensure a sufficient supply of affordable industrial land for specific industrial uses. Specifically, providing additional land in the Caboolture area would assist development in this locality.

**Economic Impact Assessment**

An economic impact assessment was carried out to identify the future economic impact (both direct and indirect) of the development of the planned precinct during both construction and operational phases. In consultation with PGA Projects, the following types of industrial uses are likely for the planned precinct:

- Waste transfer
- Bus depot
- Drill rig yard
- Concrete batching
- Crane yard
- Storage and transport
- Transport services (i.e. truck wash, depots, weighbridge, etc.).

These types of businesses would create a capital investment of $27.2 million during their construction. The following tables highlight the economic impact during both the construction phase (Table E.1) and operational phase (Table E.2).

**Table E.1. Total Economic Impacts of Construction Activity**

<table>
<thead>
<tr>
<th>Impact</th>
<th>Output ($M)</th>
<th>Gross Value Add ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTEs)</th>
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<tr>
<td>Direct Impact</td>
<td>$25.2</td>
<td>$7.5</td>
<td>$4.1</td>
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<tr>
<td>Indirect Impact</td>
<td>$23.7</td>
<td>$9.4</td>
<td>$5.5</td>
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<tr>
<td>Total Impact</td>
<td>$48.9</td>
<td>$16.9</td>
<td>$9.6</td>
<td>125</td>
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</table>

Note: Numbers may not sum due to rounding
Source: AECgroup

**Table E.2. Total Economic Impacts Once Operational, Moreton Bay**

<table>
<thead>
<tr>
<th>Impact</th>
<th>Output ($M)</th>
<th>Gross Value Add ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$118.6</td>
<td>$47.9</td>
<td>$25.9</td>
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<tr>
<td>Indirect Impact</td>
<td>$89.9</td>
<td>$35.7</td>
<td>$20.7</td>
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<tr>
<td>Total Impact</td>
<td>$208.6</td>
<td>$83.6</td>
<td>$46.6</td>
<td>605</td>
</tr>
</tbody>
</table>

Note: Numbers may not sum due to rounding
Source: AECgroup

**Key Findings**

This assessment has identified the following important key findings:

- The Moreton Bay Regional Council area is experiencing strong population growth, which has impacted the structure of the local economy, putting a strong focus on population-driven parts of the economy. Construction, retail, health and education are in the top five largest sectors of the local economy (in terms of GRP).

- The industrial sector (including manufacturing, wholesale trade and transport) currently contributes nearly a quarter of the economy (in terms of GRP). Industrial activities provide over 18,000 jobs in the region.

- The Moreton Bay region is currently trying to manage the strong population growth and rebalance the economy to provide more local jobs for local residents. Currently, only 43% of local residents work locally. The Moreton Bay Regional Council has identified the importance of creating local jobs in its Community and Corporate Plan as well as identifying the aspirational goal of increasing self-containment (i.e. the
proportion of local residents who work locally) to 70% in its Economic Development Strategy.

- Current industrial sales and pricing data would indicate some shortage of industrial land as prices remain high relative to other parts of Australia. **Current prices for the Brisbane North area average between $250-$325 per sqm.** Many businesses that require industrial land (i.e. transport, waste, recycling, heavy machinery and concreting businesses) operate on thin margins. Despite growing demand for their products and services, they cannot afford to expand due to the relative high cost of land.

- Recent research has identified that **industrial land in the Moreton Bay Regional Council area has been consumed at the average rate of 27.7 hectares per year since 2009.** Currently, there are 60 hectares of industrial land available and an additional **571 of future potential industrial land in the Moreton Bay Regional Council area.** According to the Queensland Government, there is only 50 ha of industrial land available over the next five years for 'high impact' industries (such as waste, recycling, heavy machinery and concreting).

- Using these recent statistics, **supply and demand modelling shows that Moreton Bay Regional Council will use up its currently available industrial land after 2015.** The land earmarked for future potential industrial activity will have to come on line to meet future demand. Much of the future planned industrial land (i.e. North East Business Park, Elimbah East, etc.) require considerable infrastructure development and require time before they are available to the market.

- **The local industrial property market in Caboolture is currently undersupplied** as evidenced by only having three land sales over the last four years. Pricing levels would also indicate a shortage with anecdotal evidence of one of the last available lots selling for $325 per sqm. **These pricing levels are very restrictive to future industrial development** as the significant land cost prevents a developer from generating a profit (based on current rents). Increasing the amount of local industrial land would help to address this situation.

- **Across the Moreton Bay region there is a lack of industrial land for heavy industry or high impact industrial uses** (such as waste, recycling, heavy machinery and concreting businesses). The southern industrial precincts (i.e. Brendale, North Lakes and other industrial precincts along the Bruce Highway) cater for lower impact industrial users that can often afford to pay a higher lease rate, given the nature of their business. In the northern industrial precincts, there is a limited availability of larger industrial sites (larger than 3,000 sqm) that are suitable for heavy industry or high impact industrial activities. Many of these activities are important for the overall economy and should be accommodated within the region.

- The **proposed development would generate significant local economic impacts,** including:
  - **Construction Phase:** during the construction of the precinct, it would generate $16.9 million in value-added economic activity (in GRP terms), 125 jobs and $9.6 million in increased local incomes (including direct and indirect impacts)
  - **Operational Phase:** once operations, the precinct would annually contribute $83.6 million in value-added economic activity (in GRP terms), 605 jobs and $46.6 million in increased local incomes (including direct and indirect impacts)

- The **identified site has numerous characteristics that would cater for transport and other general industrial uses,** including:
  - Site is adjacent to existing industrial lands at the Caboolture Aerodrome
  - Site is next to the existing Caboolture waste transfer station, which would preclude many other alternative land uses on the site
  - Site has a natural buffer (wetlands) reducing the impacts on surrounding land uses
  - Site has access to existing infrastructure services, which means that the land can be brought to market without the need for expensive upgrades in infrastructure by Council
  - Site has good transport access for B-Doubles
Existing owners are in favour of a change of use in the land

- Many of the site's characteristics will allow for a lower cost development and provide the land at a lower price point than the current market, which increases the affordability of it for intended industrial users.
- Site offers land to industries and businesses that cannot be accommodated in other areas.
- Site will offer visibility along Caboolture-Bribie Island Road, which will be attractive to future industrial tenants.

- Given the subject site’s characteristics, it can provide a boost to the economy in the short-term, unlocking investment and jobs sooner than other identified industrial precincts in the northern part of the region.
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1. Introduction

1.1 Project Background

PGA Projects Pty Ltd, acting on behalf of owners of 100 to 116 McNaught Road, 118 McNaught Road and 120 to 138 McNaught Road, Caboolture requires an industrial needs analysis and economic impact assessment for a proposed industrial subdivision at the aforementioned address.

1.2 Purpose of the study

The purpose of this study is to review and assess the industrial property market in the Moreton Bay Regional Council area (and specifically in Caboolture) as well as identify the future economic impact of an industrial subdivision at the McNaught Road site.

1.3 Project Approach

The project included three key phases, as outlined in the image below, as well as regular consultation and communication with the client.

Figure 1.1. Project Approach

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<th>Stage III</th>
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<td>Research and Data Collation</td>
<td>Analysis</td>
<td>Reporting</td>
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<td>Approach</td>
<td>Identify &amp; define development requirements for proposed users.</td>
<td>Conduct an analysis of the industrial property market.</td>
<td>Identify implications for the subject site including the development need of the project and economic benefit.</td>
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<tr>
<td></td>
<td>Identify, collect and collect relevant site, market and economic information.</td>
<td>Conduct an economic impact assessment of the proposed development.</td>
<td>Develop a final report highlighting all research, analysis and findings.</td>
</tr>
<tr>
<td></td>
<td>Collate baseline information for the development of subject project projections.</td>
<td></td>
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</table>
2. Subject Site: McNaught Rd, Caboolture

2.1 McNaught Road Site

The 75.55 hectare subject site is located directly to the east of (and adjacent to) the existing Caboolture Industrial Estate and is currently zoned 'Rural'. The site is currently used for a number of uses including a small transport related repair business, a residential residence and grazing for a limited number of livestock.

Figure 2.1: Map of Moreton Bay Regional Council

Source: AECgroup (2013)

Figure 2.2 shows an indicative site plan for the precinct.
2.2 Site Assessment

The 75.55 hectare subject site is located directly to the east of (and adjacent to) the existing Caboolture Industrial Estate and is currently zoned 'Rural'. The site is currently used for a number of uses including a small transport related repair business, a residential residence and grazing for a very limited number of livestock.

The price of land in the Moreton Bay Regional Council (MBRC) area has held up well driven by demand from mining, wholesale, transport and logistics sectors requiring access to medium to large parcels of land in well accessible locations. In addition, supply for certain types of industrial requirements has contributed to pricing in the region remaining robust.

Current available supply of industrial land in the southern and central MBRC area is generally limited to larger scale, light industrial and warehouse type developments such as in Brendale or smaller business park projects such as in North Lakes, Interchange or others that cater more for business and specialised industries. As a result, there is limited affordable industrial land supply that is currently available for general industrial or transport users across the MBRC area.

Alternative locations within the northern MBRC area provide limited if any opportunities for the type of users proposed for the subject site. Industrial land located in Burpengary is located between the Bruce Highway and existing residential areas that limits the type of users as a result of its proximity to residential areas and is priced to reflect its exposure to the Bruce Highway. The remaining available industrial lots that are in Narangba are generally uneven and will require further development costs that the type of proposed users for the subject site will not be able to afford over and above the existing land purchase. Remaining industrial lots in the adjacent Corporate Business Park are too small for the type of proposed users averaging 2,000 square metres and are priced to attract a higher intensity or warehouse type user.
The subject site on McNaught Road, Caboolture is a flat, level and cleared property that assists with a lower development cost and lower price point. It is located on the same road to access the Caboolture Waste Facility and in close proximity to the Corporate Park Estate and Caboolture Aero Club. The site is suitable for development of both smaller and larger lots to cater for a wide variety of end users. It is surrounded by vegetation and wetland buffers to the North, East and South and located well away from existing residential development, which will ensure its impact on surrounding users will be limited. Vehicle accessibility for the site is good with B-Double access to the Bruce and D’Aguilar Highways and a controlled intersection with Bribie Island Road.

The types of users identified in the economic impact assessment require access to land at prices below benchmarks currently set for most general industrial land in the market. Furthermore, potential uses such as those related to waste recycling will operate more effectively if located near the waste transfer station.
3. Regional Overview

3.1 Moreton Bay Regional Council

Moreton Bay Regional Council Area (MBRC) is the third largest Local Government Area within Australia (on a population basis). The region has experienced strong population growth over recent years and is expected to continue to expand over the coming 20 years.

MBRC is the catchment area for this study. MBRC is located within South East Queensland and has been formed by the amalgamation of the former Caboolture, Redcliffe and Pine Rivers shires. The region is a short distance from Brisbane, the capital city of Queensland.

3.2 Economic Overview

Gross Regional Product (GRP) is a measure of a region’s economy representing the total market value of final goods and services produced in a region. The GRP of MBRC was estimated to be $12.607 billion in 2011-12, an increase of 2.6% on the previous year and a five year average growth rate of 2.3%. The overall South East Queensland (SEQ) region recorded a more stable growth profile to the MBRC while SEQ and QLD GRP growth has increased on average by 2.5% and 2.2% per annum respectively in the last five years.

Figure 3.1: Gross Regional Product – Moreton Bay Regional Council, 2006-12

![Graph showing Gross Regional Product](image)

Source: AECgroup (2013)

A breakdown of GRP by Industry for 2011-12 (Figure 3.2) indicates that four out of the top five sectors of the economy are population driven (i.e. the sector is reliant on the population for growth). This economic structure presents some risks to the future as many parts of the economy are very reliant on the population continuing to grow. For Moreton Bay, the reliance on the construction sector is of particular concern, given that it is the largest sector in the economy and construction, by its nature, is a temporary activity.

Interestingly, industrial activity, which is made up of manufacturing, wholesale trade and transport sectors, makes up nearly a quarter of the economy. Industrial activities provide over 18,000 jobs in the region, which is 17% of the total.
3.3 Population Growth

The MBRC had an estimated population of 399,406 in 2012, representing an annual growth rate of 2.5% compared to the previous year. MBRC has recorded an increase of more than 83,000 residents since 2004 with the annual population growth rate having fluctuated between 2.0% in 2011 to 3.8% in 2008, resulting in an average annual growth rate of 3.0% during the eight year period. This was well above the South east Queensland (SEQ) average of 2.2% and Queensland (QLD) average of 2.0% respectively over the same period.

As noted above, population growth has contributed greatly to the economy growing and has had a major impact on the resultant structure of the economy (i.e. construction and other population-driven sectors are among the largest in the economy).
The MBRC area is projected to record population growth of over 143,000 from 2011 to 2031, equating to an annual growth rate of 1.9%. An important component to accommodating the quantum of residents in the area will be increasing the number of local jobs available. Increased local jobs and higher employment self-containment rates will assist traffic congestion and the region's high dependency on private transport whilst also reducing the need for large-scale infrastructure spending in the area.
The issue of ensuring that residents have access to local jobs is highlighted across numbers Moreton Bay Regional Council planning and strategy documents, including:

- **Moreton Bay Region Community Plan 2011-2021**: The economy features prominently in the community plan under the first major theme of *Creating Opportunities*, where Council highlights the important of having “residents, business and industry enjoy the benefits of a strong, growing and diverse economy (pg 4)”. By 2021, the plan highlights providing “Local jobs for residents (pg 4)” as a major goal for the community.

- **Corporate Plan 2012-2017**: The economy is mentioned numerous times by the Mayor and the CEO. There are numerous goals for Council in regards to business development and tourism, which highlight the importance of supporting economic development in the region.

- **Moreton Bay Regional Council Economic Development Strategy**: The economic development strategy highlights the fact that many resident workers leave the region each day for work (estimated at 43%). The strategy sets out the aspirational goal of increasing self-containment (i.e. the ratio of local residents who also work locally) to 70%.

Numerous Council publications and initiatives are focused on promoting the region as a place for business, in order to support investment attraction and employment generation.
4. Industrial Market Assessment

4.1 Sales and Pricing

Industrial sales across the Brisbane region totalled $479 million in the year ending September 2013, which is below the five year average of $551 million. Industrial sales peaked at $1.2 billion in 2007 and have eroded after this point (Savills, 2013). Slower sales can be explained through reduced economic activity after the GFC and the end of the mining investment boom as well as a lack of modern facilities that meet the needs of industrial companies today. Construction and delivery of industrial facilities has not kept pace with demand for these types of premises over recent years (Savills, 2013).

As a function of supply and demand, prices for land remain relatively high at between $250-$325 per sqm for the Brisbane North region, which includes most of the industrial precincts in the Moreton Bay Regional Council area (Savills, 2013). These elevated prices have been maintained over the last four years. Relatively high land costs, together with financing issues and a general mismatch of supply and demand has led to lower levels of development activity for new industrial facilities. Much of the current and future demand for industrial premises will be transport related, as the population continues to grow and requires more goods, which must be transported from abroad and domestically. Many industries, such as transport, waste, recycling, heavy machinery and concreting businesses, operate on very thin margins as these industries can be very competitive. As such, many of these industries cannot afford to develop new facilities, despite strong and growing demand for their products and services.

Figure 4.1: Industrial Land Values, Brisbane North and Metropolitan Regions

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4.2 Supply

The Outer North precinct encompasses the Moreton Bay Regional Council area and specifically includes BIZ, Brendale Connect, Caboolture Industrial Estate, Former Doyle Group Land, Interchange Industrial Estate, Kerr Road Dakabin, Mordar Investments Motorway Business Park, Narangba Industrial Estate, Newbase Business Park, Nielsens

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1 Morayfield, Caboolture, Brendale, Strathpine, Petrie, North Lakes, Burpengary, Deception Bay and Narangba
Gravel Quarry, North East Business Park, North Lakes Business Park, North Point Business Park and Stockland Site Mango Hill.

Currently, the Outer North makes up 23% of the total currently available industrial land in the Greater Brisbane Region.

Table 4.1: Industrial Land Supply, Greater Brisbane Region (2013)

<table>
<thead>
<tr>
<th>Precinct</th>
<th>Currently Available Industrial Land Supply</th>
<th>Estimated Potential Future Industrial Land Supply</th>
<th>Total</th>
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<tbody>
<tr>
<td>Australia TradeCoast</td>
<td>84</td>
<td>245</td>
<td>329</td>
</tr>
<tr>
<td>Ipswich</td>
<td>55</td>
<td>632</td>
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<td>Logan Motorway Corridor</td>
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<tr>
<td>Western Corridor</td>
<td>-</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>258</strong></td>
<td><strong>2,012</strong></td>
<td><strong>2,270</strong></td>
</tr>
</tbody>
</table>

Source: m3 Property (2013)

In 2012, the Queensland Government conducted an analysis of industrial land in South East Queensland. The assessment considered current and future supply as well as consumption. The Queensland Government estimates that there are only 50 ha of industrial land for ‘high impact’ industrial uses across the entire Southeast Queensland region for the next five years. Industrial activities such as waste transfer, recycling, concreting and heavy machinery may often require this zoning.

Table 4.2: Industrial Land Supply by Zoning, South East Queensland (2011)

<table>
<thead>
<tr>
<th>Zoning</th>
<th>Industrial Land Supply (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-5 years</td>
</tr>
<tr>
<td>Low Impact Industry</td>
<td>537</td>
</tr>
<tr>
<td>Medium Impact Industry</td>
<td>963</td>
</tr>
<tr>
<td>High Impact Industry</td>
<td>50</td>
</tr>
<tr>
<td>Noxious &amp; Hazardous Industry</td>
<td>3</td>
</tr>
<tr>
<td>Waterfront Marine Industry</td>
<td>2</td>
</tr>
<tr>
<td>High Technology Industry</td>
<td>16</td>
</tr>
<tr>
<td>Industry Equivalent</td>
<td>55</td>
</tr>
<tr>
<td>Non-Industry Zones</td>
<td>634</td>
</tr>
<tr>
<td><strong>South East Queensland</strong></td>
<td><strong>2,262</strong></td>
</tr>
</tbody>
</table>


The Queensland Government found that in December 2011, the Moreton Bay Regional Council had a total of 599 ha of current and future industrial lands, which is in line with the more current estimate of 627 ha from m3 Property.

4.3 Current Industrial Locations

Below are details of current industrial locations within the MBRC region:

**Brendale:** Currently the largest industrial precinct in the region. Strong existing industrial uses and available greenfield sites (including large sites) for future industrial development. There is a mix of large manufacturing operations (CSR Bradford, Iplex, VIP Packaging) as well as, smaller industrial operators. The precinct also has a variety of bulky goods retail shops as well as other smaller warehouse/retail operations selling tiles, plumbing fixtures, garden supplies and other traditional bulky goods/trade goods.

**Burpengary:** Older, established industrial area, primarily offering bulky goods retailing and service industries. Some large lots are occupied by vehicle sale yards. Greenfield opportunities exist directly across the Bruce Highway in the Motorway Business Park. There is anecdotal evidence that some of this land may be earmarked for a change of use.

**Caboolture Aerodrome:** Service industry for local aircraft as well as other industrial activities, but limited capacity to expand given most of the available land has been consumed.

**Clontarf:** Older, established industrial area providing primarily serviced industries with limited opportunities for growth. Area does include relatively new construction, providing smaller building areas for service industries.
Interchange Industrial Estate: a new 23ha site in the process of development by the DeLuca Corporation. This master planned 13 lot subdivision is located between Boundary Road and the Bruce Highway. A Bunning’s Trade Centre is one of the occupiers.

Kallangur: Adjacent to the Petrie Paper Mill with some capability to expand with more high technology driven industrial operations. Amcor currently operates the mill and the adjacent land provides the necessary buffer zones from the mill activity. However, east of the mill on Bickle Road (near the waste water treatment plant), there is available Greenfield land.

Lawnton: Older, established industrial area with no capability for expansion. Existing businesses include many service industries and BCF and Super Cheap Auto have significant corporate facilities.

Narangba Industrial Estate: The Narangba Industrial Estate is a regional scale industrial estate covering 530ha (based on the entire Development Control Plan area). The estate is zoned for light, general and special industry, and is also the location for large scale and difficult to locate industries, including those which use hazardous materials and/or processes. The Queensland Government manages the estate and the sale of development land. The estate is the location for a range of medium sized businesses and nearing full development.

North East Business Park: Greenfield business area available for future development. The 169 ha development is located on the east side of the Bruce Highway near Morayfield, approximately 45 km from the Brisbane CBD. The developer of North East Business Park, Port Binnli, have recently secured their first commercial tenant Hastings Deering. The area still requires infrastructure upgrades and servicing.

North Lakes Business Park: North Lakes is located directly adjacent to the Bruce Highway at Anzac Ave, approximately 25 km north of Brisbane. It is a broad residential, retail and commercial development spanning 1,000 ha that has a burgeoning business area. Encompassing 300 ha, the North Lakes Business Park caters to advanced industrial operations, which produce high value-adding, large office component developments. The business park still has significant greenfield areas available for development.

<table>
<thead>
<tr>
<th>Assessment of Existing Industrial Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many of the industrial areas in the MBRC region are well established and fully developed, leaving no room for expansion or new development. For industrial development, Brendale and North Lakes will remain the most attractive to the market, as these estates have great proximity to major transport routes and the Port of Brisbane as well as the immediate availability of sites. The North East Business Park and planned industrial land at Elimba East will be important to the future of industrial development in MBRC, however, they are likely not to be developed in the short term given their distance from Brisbane (and key transport infrastructure such as the Port) as well as their requirement for significant infrastructure and services. Over the medium and long term as the northern part of the MBRC region grows significantly and industrial lands in the southern part of the region are consumed, these estates are likely to grow at a stronger rate.</td>
</tr>
</tbody>
</table>

There is little room available for high impact industries as these uses cannot be accommodated in Brendale, North Lakes or any of the newer estates along the Bruce Highway.

4.4 Industrial Development and Land Consumption

There has been limited industrial development activity in the Brisbane North region due to a lack of prime space, access to finance and a general mismatch between supply and demand. Much of the current demand is from logistics based operations that require generally larger industrial sites, which are in short supply. There is only 22,000 sqm of industrial space that is expected for 2013. These figures do not include Aldi’s planned distribution centre in Brendale, expected to be 56,000 sqm.

Current trends show the strongest interest from transport and logistics firms as well as from mining related businesses.
Take up of industrial land for development$^2$ in the greater Brisbane region remains relatively weak in comparison to the lead up to the GFC. In the 2012-13 financial year, approximately 67 hectares was taken up across the greater Brisbane region, almost 20% below the five year average.

Note: Greater Brisbane Region includes Moreton Bay Regional Council, Brisbane City Council, Ipswich City Council, Logan City Council and the Yatala Enterprise Area. Take-up includes recently created land that has been sold or leased to a tenant. Source: m3property (2013), AECgroup

$^2$ Take up is defined as "recently created land that has been sold or leased to a tenant, and does not include re-sales."
In the Moreton Bay Regional Council area in the 2012-13 financial year, approximately 11.4 hectares were taken up, half the five year average for the region. Between 2009FY and 2013FY, an average of 27.7 hectares of industrial land was consumed. Take up rates have been volatile as a result of some large individual take-ups occurring including Caterpillar, the Super Retail Group and Hastings Deering in Northeast Business Park.

4.5 Caboolture Industrial Land Market

The Caboolture industrial land market centres upon the industrial lands around the Caboolture Aerodrome. Consultation with local real estate professionals would indicate that the area is currently undersupplied. Land sales are nearly non-existent with only three land sales over the last four years (Table 4.3). There is a lack of high quality, attractive industrial lots, which has driven prices high and unaffordable for many businesses interested in the area. There is anecdotal evidence of a pending sale of one of the last remaining blocks in the Corporate Park Industrial Estate for $320 per sqm. This level of pricing is the upper end of the current average for industrial land in the Brisbane North region (refer to Section 4.1) and highlights the shortage of industrial land in the immediate area. These pricing levels are very restrictive to future industrial development as the significant land cost prevents a developer from generating a profit (based on current rents).

Table 4.3: Caboolture Industrial Land Sales (2009-2013)

<table>
<thead>
<tr>
<th>Address</th>
<th>Size</th>
<th>Sale Price (Total)</th>
<th>Sale Price (per SQM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-13 Johnson Street, Caboolture</td>
<td>8,078 sqm</td>
<td>$1,680,000</td>
<td>$208</td>
</tr>
<tr>
<td>38 Piper Street, Caboolture</td>
<td>2,021 sqm</td>
<td>$550,000</td>
<td>$272</td>
</tr>
<tr>
<td>32 Piper Street, Caboolture</td>
<td>2,040 sqm</td>
<td>$600,000</td>
<td>$294</td>
</tr>
</tbody>
</table>

Source: Caboolture Commercial (2013)

4.6 Future Market Demand and Requirements

4.6.1 Future Industrial Land Demand

Based on the most recent consumption figures and existing industrial land supply information, Figure 4.4 shows the future supply and demand balance in the Moreton Bay Regional Council area. This analysis assumes the most recent trends continue and demand averages 27.7 ha per year with a current supply of 60 ha and a future potential supply of 571 ha.

Figure 4.4: Industrial Land Demand and Supply, Moreton Bay Regional Council

Source: m3 Property (2013), AECgroup
As highlighted in Figure 4.4, currently available land will be consumed after 2015. While there is considerable future potential supply, there will be an intermediate need for more industrial land supply to become available in the market.

4.6.2 Achieving 70% Self-Containment

As highlighted in Section 3, the Moreton Bay Regional Council has the aspirational goal of achieving 70% self-containment by 2031, increasing from the current rate of 43%. In order to achieve this goal, considerable jobs will need to be created locally. AECgroup used is growth model framework to model the future economy of the Moreton Bay region. This framework mimics the existing structure of the economy and allows both future population as well as future economic growth to impact the growth of individual sectors. Further explanation regarding the modelling is included in Appendix A.

This modelling was used to identify the range of jobs that would be required locally across the economy. An average of 97 hectares (gross) would be required to achieve the target of 70% self-containment, which equates to a total of 1,754 ha hectares (gross) of industrial land over the period. It should be noted that this modelling assumes not all of the employment growth will come from the industrial sector and has identified what component would likely come from industrial activities, based on the drivers of the modelling.

Figure 4.5: Industrial Land Demand and Supply (to Achieve 70% Self-Containment), Moreton Bay Regional Council
5. Economic Impact Assessment

5.1 Methodology and Assumptions

The Input-Output assessment outlined in this section estimates the direct and flow-on economic activity likely to be supported by the project within the Moreton Bay regional economy. A description of the Input-Output modelling framework used is provided in Appendix B.

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

- **Output**: Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.

- **Value added**: Refers to the value of output after deducting the cost of goods and services inputs in the production process. Value added defines the true net contribution and is subsequently the preferred measure for assessing economic impacts.

- **Income**: Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.

- **Employment**: Refers to the part-time and full-time employment positions generated by the economic shock, both directly and indirectly through flow-on activity, expressed in FTE positions.

5.2 Economic Impact of Construction Phase

**Construction Drivers**

Estimates of the various construction costs associated with business developments proposed for the McNaught Road Precinct are highlighted in Table 5.1. The Table shows that capital expenditure on construction related activities will total approximately $27.2 million.

<table>
<thead>
<tr>
<th>Business Type</th>
<th>Cost ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Transfer</td>
<td>$9.45</td>
</tr>
<tr>
<td>Bus Depot</td>
<td>$3.73</td>
</tr>
<tr>
<td>Drill Rig Yard</td>
<td>$8.88</td>
</tr>
<tr>
<td>Concrete Batching Depot</td>
<td>$0.89</td>
</tr>
<tr>
<td>Pre-Cast Panel Yard</td>
<td>$1.45</td>
</tr>
<tr>
<td>Crane Yard</td>
<td>$0.50</td>
</tr>
<tr>
<td>Storage Yards</td>
<td>$0.20</td>
</tr>
<tr>
<td>Transport Depots</td>
<td>$0.42</td>
</tr>
<tr>
<td>Weigh Bridge</td>
<td>$0.48</td>
</tr>
<tr>
<td>Truck Wash Facility</td>
<td>$0.44</td>
</tr>
<tr>
<td>Ancillary Transport Business</td>
<td>$0.78</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$27.20</strong></td>
</tr>
</tbody>
</table>

Note: Numbers may not sum due to rounding.
Source: AECgroup and Rawlinsons (2013)

3 Type I and Type II flow-on impacts have been presented in this report, which represent the production induced industrial support activity (Type I) and household induced consumption activity (Type II) associated with the direct activity enabled by the project.
The capital expenditure estimates presented above were allocated to relevant sectors within the Input-Output model structure in order to appropriately assess the likely impacts resulting from construction activity in the Moreton Bay region. Table 5.2 shows the aggregated value of capital expenditure by Input-Output sector:

- 10.0% of the total capital expenditure for each component was assigned to design costs and design management which was classified as ‘professional, scientific and technical services’.
- The remaining 90.0% of capital expenditure was allocated to construction related industries including:
  - 42.5% allocated to ‘non-residential construction’;
  - 42.5% allocated to ‘heavy and civil engineering’;
  - 5.0% allocated to ‘construction services’.

It has been assumed that 75.0% of design activity would occur outside of the Moreton Bay region and as a result this portion of total design activity would not generate any economic activity within the region. All construction activity is assumed to occur within the Moreton Bay region. A significant portion of the labour may need to be imported into the region, however Input-Output analysis examines the impacts of a project based on where activity occurs and as such this activity is wholly included as direct activity in the modelling regardless of whether labour is imported or local.

Table 5.2. Input-Output Sector Aggregate Value of Stimulus

<table>
<thead>
<tr>
<th>IO Sector</th>
<th>Value of Stimulus ($M)</th>
<th>% Occurring in Moreton Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional, Scientific and Technical Services</td>
<td>$2.72</td>
<td>25.0%</td>
</tr>
<tr>
<td>Non-Residential Construction</td>
<td>$11.56</td>
<td>100.0%</td>
</tr>
<tr>
<td>Heavy &amp; Civil Engineering</td>
<td>$11.56</td>
<td>100.0%</td>
</tr>
<tr>
<td>Construction Services</td>
<td>$1.36</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$27.20</strong></td>
<td><strong>92.5%</strong></td>
</tr>
</tbody>
</table>

Note: Items may not sum due to rounding.
Source: EECgroup

**Construction Modelling Results**

The construction of the various business developments planned for the McNaught Road Precinct are estimated to directly support approximately $7.5 million in gross value added activity. The developments are estimated to support a further $9.4 million in gross value added activity through type I (production induced) flow-on activity (refer to Appendix A for a description of type I flow-on effects). This level of direct and flow-on activity would be equivalent to 0.1% of total Moreton Bay GRP in 2011 - 2012.

From an employment perspective, the construction phase is estimated to directly employ 42 full time equivalent employees and indirectly support a further 83 full time equivalent jobs through flow-on activity. The total (direct and flow-on) 125 full time equivalent jobs supported by the economic infrastructure would be equivalent to 0.1% of total Moreton Bay jobs in 2013. The construction activity is estimated to support some $9.6 million in incomes (wages and salaries) including both direct and flow-on activity.

Table 5.3. Total Economic Impacts of Construction Activity

<table>
<thead>
<tr>
<th>Impact</th>
<th>Output ($M)</th>
<th>Gross Value Add ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$25.2</td>
<td>$7.5</td>
<td>$4.1</td>
<td>42</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$23.7</td>
<td>$9.4</td>
<td>$5.5</td>
<td>83</td>
</tr>
<tr>
<td><strong>Total Impact</strong></td>
<td><strong>$48.9</strong></td>
<td><strong>$16.9</strong></td>
<td><strong>$9.6</strong></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

Note: Numbers may not sum due to rounding
Source: EECgroup
Figure 5.1 outlines the estimated direct and flow-on contribution of the project to gross value added activity within the Moreton Bay economy by industry. The figure highlights:

- Flow-on activity from the project is estimated to primarily support gross value added activity in the construction industry. This result is primarily an indication of likely subcontractors being engaged to support construction activity.
- Other sectors expected to be supported include manufacturing and professional, scientific and technical services. Each of these sectors are estimated to produce over $1.5 million in gross value added activity in supporting the construction phase of the project.

**Figure 5.1. Gross Value Add by Industry, Construction Phase**

Source: AECgroup

### 5.3 Impact of Enabled Economic Activity

**Operational Drivers**

The McNaught Road Precinct developments will support additional businesses within the region as well as ongoing employment opportunities. Table 5.4 shows direct operational employment estimates for each of the businesses to be developed in the Precinct as provided by PGA Projects Pty Ltd.
Table 5.4. Direct Operational Employment Estimates

<table>
<thead>
<tr>
<th>Business Type</th>
<th>Direct Operational Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Transfer</td>
<td>70</td>
</tr>
<tr>
<td>Bus Depot</td>
<td>100</td>
</tr>
<tr>
<td>Drill Rig Yard</td>
<td>50</td>
</tr>
<tr>
<td>Concrete Batching Depot</td>
<td>20</td>
</tr>
<tr>
<td>Pre-Cast Panel Yard</td>
<td>20</td>
</tr>
<tr>
<td>Crane Yard</td>
<td>10</td>
</tr>
<tr>
<td>Storage Yards</td>
<td>5</td>
</tr>
<tr>
<td>Transport Depots</td>
<td>5</td>
</tr>
<tr>
<td>Weigh Bridge</td>
<td>2</td>
</tr>
<tr>
<td>Truck Wash Facility</td>
<td>2</td>
</tr>
<tr>
<td>Ancillary Transport Business</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>289</strong></td>
</tr>
</tbody>
</table>

Source: PGA Projects Pty Ltd and AECgroup (2013)

The direct operational employment estimates provided can be used in an Input-Output model to estimate the direct and indirect gross value-add, income and employment estimates associated with the businesses within the McNaught Road Precinct.

Operational Results

Once operational, the businesses operating out of the McNaught Road Precinct are estimated to directly support approximately $47.9 million in gross value added activity. The businesses are estimated to support a further $35.7 million in gross value added activity through flow-on activity. This level of direct and flow-on activity would be equivalent to 0.7% of total Moreton Bay GRP in 2011 - 2012.

From an employment perspective, the operational phase of the businesses are estimated to directly employ 289 full time equivalent employees and indirectly support a further 316 full time equivalent jobs through flow-on activity. The total (direct and flow-on) 605 full time equivalent jobs supported by the businesses located in the precinct would be equivalent to 0.3% of total Moreton Bay jobs in 2013. Once operational, the businesses are estimated to support some $46.6 million in incomes (wages and salaries) including both direct and flow-on activity.

Table 5.5. Total Economic Impacts Once Operational, Moreton Bay

<table>
<thead>
<tr>
<th>Impact</th>
<th>Output (SM)</th>
<th>Gross Value Add (SM)</th>
<th>Income (SM)</th>
<th>Employment (FTEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$118.6</td>
<td>$47.9</td>
<td>$25.9</td>
<td>289</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$89.9</td>
<td>$35.7</td>
<td>$20.7</td>
<td>316</td>
</tr>
<tr>
<td><strong>Total Impact</strong></td>
<td><strong>$208.6</strong></td>
<td><strong>$83.6</strong></td>
<td><strong>$46.6</strong></td>
<td><strong>605</strong></td>
</tr>
</tbody>
</table>

Note: Numbers may not sum due to rounding
Source: AECgroup

Figure 5.2 outlines the estimated direct and flow-on contribution to gross value added activity within the Moreton Bay economy by industry. The figure highlights that direct and flow-on activity is estimated to primarily support gross value added activity in the sectors of construction, manufacturing, transport, postal and warehousing and electricity, gas, water and waste services. Each of these sectors are estimated to produce over $9.0 million in gross value added activity as a result of the new businesses within the McNaught Road Precinct becoming operational.
Figure 5.2. Gross Value Add by Industry, Operational Phase

Source: AECgroup
6. Key Findings

This assessment has identified the following important key findings:

- The Moreton Bay Regional Council area is experiencing strong population growth, which has impacted the structure of the local economy, putting a strong focus on population-driven parts of the economy. Construction, retail, health and education are in the top five largest sectors of the local economy (in terms of GRP).

- The industrial sector (including manufacturing, wholesale trade and transport) currently contributes nearly a quarter of the economy (in terms of GRP). Industrial activities provide over 18,000 jobs in the region.

- The Moreton Bay region is currently trying to manage the strong population growth and rebalance the economy to provide more local jobs for local residents. Currently, only 43% of local residents work locally. The Moreton Bay Regional Council has identified the importance of creating local jobs in its Community and Corporate Plan as well as identifying the aspirational goal of increasing self-containment (i.e. the proportion of local residents who work locally) to 70% in its Economic Development Strategy.

- Current industrial sales and pricing data would indicate some shortage of industrial land as prices remain high relative to other parts of Australia. Current prices for the Brisbane North area average between $250-$325 per sqm. Many businesses that require industrial land (i.e. transport, waste, recycling, heavy machinery and concreting businesses) operate on thin margins. Despite growing demand for their products and services, they cannot afford to expand due to the relative high cost of land.

- Recent research has identified that industrial land in the Moreton Bay Regional Council area has been consumed at the average rate of 27.7 hectares per year since 2009. Currently, there are 60 hectares of industrial land available and an additional 571 of future potential industrial land in the Moreton Bay Regional Council area. According to the Queensland Government, there is only 50 ha of industrial land available over the next five years for ‘high impact’ industries (such as waste, recycling, heavy machinery and concreting).

- Using these recent statistics, supply and demand modelling shows that Moreton Bay Regional Council will use up its currently available industrial land after 2015. The land earmarked for future potential industrial activity will have to come on line to meet future demand. Much of the future planned industrial land (i.e. North East Business Park, Elimbah East, etc.) require considerable infrastructure development and require time before they are available to the market.

- The local industrial property market in Caboolture is currently undersupplied as evidenced by only having three land sales over the last four years. Pricing levels would also indicate a shortage with anecdotal evidence of one of the last available lots selling for $325 per sqm. These pricing levels are very restrictive to future industrial development as the significant land cost prevents a developer from generating a profit (based on current rents). Increasing the amount of local industrial land would help to address this situation.

- Across the Moreton Bay region there is a lack of industrial land for heavy industry or high impact industrial uses (such as waste, recycling, heavy machinery and concreting businesses). The southern industrial precincts (i.e. Brendale, North Lakes and other industrial precincts along the Bruce Highway) cater for lower impact industrial users that can often afford to pay a higher lease rate, given the nature of their business. In the northern industrial precincts, there is a limited availability of larger industrial sites (larger than 3,000 sqm) that are suitable for heavy industry or high impact industrial activities. Many of these activities are important for the overall economy and should be accommodated within the region.
The proposed development would generate significant local economic impacts, including:

- **Construction Phase**: during the construction of the precinct, it would generate $16.9 million in value-added economic activity (in GRP terms), 125 jobs and $9.6 million in increased local incomes (including direct and indirect impacts)

- **Operational Phase**: once operations, the precinct would annually contribute $83.6 million in value-added economic activity (in GRP terms), 605 jobs and $46.6 million in increased local incomes (including direct and indirect impacts)

The identified site has numerous characteristics that would cater for transport and other general industrial uses, including:

- Site is adjacent to existing industrial lands at the Caboolture Aerodrome

- Site is next to the existing Caboolture waste transfer station, which would preclude many other alternative land uses on the site

- Site has a natural buffer (wetlands) reducing the impacts on surrounding land uses

- Site has access to existing infrastructure services, which means that the land can be brought to market without the need for expensive upgrades in infrastructure by Council

- Site has good transport access for B-Doubles

- Existing owners are in favour of a change of use in the land

- Many of the sites characteristics will allow for a lower cost development and provide the land at a lower price point than the current market, which increases the affordability of it for intended industrial users

- Site will offer visibility along Caboolture-Bribie Island Road, which will be attractive to future industrial tenants

Given the subject site’s characteristics, it can provide a boost to the economy in the short-term, unlocking investment and jobs sooner than other identified industrial precincts in the northern part of the region.
References


PGA Projects Pty. Ltd. (2013). Site plan for McNaught Road, Caboolture


Appendix A: Growth Model Framework

Projections of labour demand by industry for MBRC have been developed utilising projections of Gross Regional Product (GRP) based on expected real industry growth rates, using 2009-10 as a base. In developing industry growth rates, industries are classified into one of three categories:

- **Leading Economic Drivers (LEDs):** LEDs are the industries that are either expected to be a focus for economic growth in the region or that are drivers of growth in other industries;
- **Population Driven (PDs):** PDs are industries that are driven almost entirely by population growth and consumption; and
- **Business Activity and Population Driven (BAPDs):** BAPDs are industries that are driven by some combination of activity in other sectors and household consumption.

The following types of information were used to develop growth estimates for each industry within the three types of industry categories:

- **LEDs:** Expected real growth rates for LEDs have been developed based on a combination of historic national growth and performance, desktop research regarding growth potential for each LED in MBRC from published sources and the professional judgment of AECgroup staff;
- **PDs:** Projections of population growth for Moreton Bay Regional Council were based on ABS historical data and the latest population projections from the Queensland Government. Industry growth rates for PDs have then been developed based on the historic relationship between population growth in Queensland and overall growth in Gross State Product. This modelling approach supports the assumption that, as the MBRC economy expands, it will trend towards the State economic structure; and
- **BAPDs:** Expected real growth rates for BAPDs are developed based on a combination of growth in demand from households (population) and business activity in other sectors that demand goods and services from BAPDs. The relationship between BAPDs, other industry and household demand has been estimated using an Input Output table specifically developed for MBRC (described below), and this relationship has been applied to growth projections of industry and population to develop individual BAPD industry growth rates.

### Input-Output Transaction Table Development

An Input Output transaction table specific to the MBRC economy has been developed for this project. The process of developing a regional transaction table involves the development of regional estimates of gross production and the development of purchasing patterns based on a parent table, in this case the 2005-06 Australian transaction table.

Estimates of gross production (by industry) for the MBRC economy were developed based on the percent contribution to employment (by place of work) of the MBRC to the Australian economy, and applied to Australian gross output identified in the 2006-07 Australian table. Industry purchasing patterns within the MBRC were then developed using cross industry location quotients and demand-supply pool production functions, consistent with the approach outlined in West (1993).

Employment projections by industry are developed based on GRP projections by industry and historic estimates of value added production per employee from the transaction tables developed specifically for the MBRC, with consideration of any potential changes in productivity in line with historic multi-factor productivity growth.

Land demand estimates by industry are developed based on employment projections by industry and estimates of land use by employee by industry.
Table A. 1: Industrial Land Benchmarks

<table>
<thead>
<tr>
<th>Industry</th>
<th>Employees per ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>36.33</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>22.00</td>
</tr>
<tr>
<td>Transport, postal and warehousing</td>
<td>25.00</td>
</tr>
</tbody>
</table>

Note: Manufacturing benchmark represents an average of all manufacturing ratios from an audit conducted in 2009.
Source: AECgroup, Economic Associates (2011)

The figure below summarises the modelling approach utilised to estimate land demand in MBRC by 2031.

Figure A. 1: MBRC Economic Modelling Approach

Vision / Industry Growth Scenarios

E.g. Status Quo
- Historical growth trends continue
- Medium population growth

E.g. Self-Containment Analysis
- Medium population growth
- Employment growth centred on areas of economic opportunity

Economic Drivers

Leading Economic Drivers (LEDs)
Industries that are expected to be a focus for economic growth in the region or that are drivers of growth in other industries, e.g.:
- Agriculture
- Manufacturing
- Wholesale trade
- Transport, postal and warehousing

Business Activity & Population Driven (BAPDs)
Industries that are driven by some combination of activity in other sectors and population, e.g.:
- Electricity, gas, water and waste services
- Construction
- Financial and insurance services
- Professional, scientific and technical services

Population Driven (PDs)
Industries that are driven almost entirely by population growth and consumption, e.g.:
- Retail trade
- Accommodation and food services
- Education and training
- Health care and social services

Outputs

Gross Regional Product & Containment Projections
Economic drivers and employment growth expectations will be used to develop gross regional production projections by industry through to 2031. Employment projections can then be used to determine the degree of self-containment in the area.

Land Requirements
Economic activity by industry and employment by industry will be used to determine the employment lands required to meet the needs of the economy to 2031.
Appendix B: Input-Output Methodology

Input-Output Model Overview

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

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

- **Direct impacts**, which are the first round of effects from direct operational expenditure on goods and services.
- **Flow-on impacts**, which comprise the second and subsequent round effects of increased purchases by suppliers in response to increased sales.

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

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

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

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

Model Development

Multipliers used in this assessment are derived from sub-regional transaction tables developed specifically for this project. The process of developing a sub-regional transaction table involves developing regional estimates of gross production and purchasing patterns based on a parent table, in this case, the 2008 - 2009 Australian transaction table (ABS, 2012).

Estimates of gross production (by industry) in the study area were developed based on the percent contribution to employment (by place of work) of the study area to the Australian economy (ABS, 2012a), and applied to Australian gross output identified in the 2008 - 2009 Australian table.

Industry purchasing patterns within the study area were estimated using a process of cross industry location quotients and demand-supply pool production functions as described in West (1993).
Where appropriate, values were rebased from 2008 - 2009 (as used in the Australian national Input-Output transaction tables) to 2011 - 2012 values using the Consumer Price Index (ABS, 2012b).

Modelling Assumptions

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

- The inputs purchased by each industry are a function only of the level of output of that industry. The input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs).
- Each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies there is only one method used to produce each commodity and that each sector has only one primary output.
- The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the “additivity assumption”. This generally does not reflect real world operations.
- The system is in equilibrium at given prices. This is not the case in an economic system subject to external influences.
- In the static Input-Output model, there are no capacity constraints so the supply of each good is perfectly elastic. Each industry can supply whatever quantity is demanded of it and there are no capital restrictions. This assumption would come into play depending upon the magnitude of the changes in quantities demanded.

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

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

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