INDUSTRIAL LAND SUPPLY & DEMAND

MORETON BAY REGIONAL COUNCIL

APRIL, 2017

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EXECUTIVE SUMMARY

BACKGROUND

Moreton Bay Regional Council (MBRC) is the third largest local government in Australia by population, with approximately 425,500 residents in 2015, and is experiencing faster growth than any other local government area in South East Queensland other than Ipswich. As a consequence of this growth, there is competition for the use of available industrial land between industry, other non-residential and residential activities in the region. There is also significant debate surrounding the contribution of industry, and associated land requirements, to the future local economy of Moreton Bay.

PURPOSE AND APPROACH

The primary reasons for undertaking this project are to:

- Establish the future demands of business and industry for land in MBRC to support appropriate long term (to 2041 and beyond) growth and development of the Moreton Bay region.
- Provide advice on the suitability or otherwise of the existing and planned industry land to accommodate that growth.
- Ensure MBRC continues to provide sufficient land to support job creation, business expansion and attraction that is appropriate for the region.
- Identify the minimum requirement of land that would ensure provision of suitable industrial land to support industry growth to 2041.

The study also notes that whilst the brief for this project was to examine the period 2041, there will be a strategic and precautionary need for industrial land beyond 2041.

In undertaking this study, AEC undertook background research and consultation to understand the historic demand and consumption of industrial land, the availability of industrial land currently zoned for future development, and market and macro-economic forces anticipated to drive demand to 2041. Projections of employment demand for industrial land were then developed using AEC's employment projections model, factoring in findings from desktop research and consultation, and these results were converted to future land demand requirements to 2041 for comparison to industrial zoned land supply.

FINDINGS AND IMPLICATIONS

A summary of the key findings and implications of the study is as follows:

- Moreton Bay Regional Council area has sufficient land zoned for industrial uses to accommodate projected growth until 2041, although industrial land in the south is anticipated to be taken up by 2050.
- Given the strong population growth and projected growth of industries that are linked to population growth Council will need to consider the accommodation of other uses for land currently zoned as industry. This study identifies that as at 2041 over 950 hectares of land currently zoned for industrial uses will still be available for development, primarily in the northern precincts. Council needs to consider whether this land should be preserved to accommodate industrial type uses beyond 2041 or whether it should be opened up to other forms of development more in line with the projected growth of the region.
- Given a large proportion of industrial land demand (and jobs) is projected for the southern precincts, there is potential that residents in the northern parts of Moreton Bay may need to commute for work. This is particularly likely for residents in the northern areas employed in traditional industrial style industries.

- Global trends and influencing factors highlight that what we know and understand today about the traditional industrial and manufacturing uses and the environment they operate in are unlikely to exist in 2041 and beyond, so it is important the right balance between a range of industries and potentially residential development that compliments a mixed industry environment should be considered going forward.
- The industries and land uses consistent with mixed industry precincts are considered to generate higher value and lower impact jobs and are consistent with the findings relating to the workforce and production trends in the future.
- One of the considerations for Council going forward is the level of flexibility that should be built into the planning scheme to accommodate different types of uses within precincts currently only zoned for industrial uses.

Additional details of findings from the study are presented below.

Projected Economic Activity

Total employment in the Moreton Bay Regional Council area is projected to increase from 113,321 jobs in 2016 to nearly 182,000 jobs by 2041, which is an increase of approximately 60% or approximately 69,000 jobs. The key sectors that will drive this growth are all population driven industries that include:

- Health care and social assistance.
- Construction.
- Accommodation and food services.
- Education and training.

Industries that traditionally demand industrial land, such as manufacturing, wholesale trade, transport, postal and warehousing and other services (primarily repair and maintenance services), combined are only projected to account for 11.0% of total jobs growth in the Moreton Bay region between 2016 and 2041, or approximately 7,550 jobs, and not all of these jobs will demand industrial land.

Table ES.1. Total Employment by Industry, Moreton Bay LGA, 2016 to 2041 (Place of Work) – With Petrie Mill Redevelopment

1-Digit ANZSIC	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	1,104	1,066	1,043	1,024	1,007	992
Mining	452	483	509	533	556	577
Manufacturing	9,208	9,545	9,770	10,022	10,285	10,600
Elect., Gas, Water & Waste Services	1,336	1,379	1,440	1,510	1,580	1,663
Construction	12,738	14,822	16,660	18,494	20,290	22,087
Wholesale Trade	3,442	3,557	3,730	3,927	4,131	4,383
Retail Trade	16,352	16,939	17,955	19,090	20,230	21,612
Accommodation & Food Services	9,114	10,366	11,870	13,471	15,101	16,912
Transport, Postal & Warehousing	4,166	4,500	4,852	5,206	5,551	5,925
Information Media & Telecomms.	609	639	696	765	840	935
Financial & Insurance Services	2,422	2,477	2,607	2,771	2,945	3,169
Rental, Hiring & Real Estate Serv.	2,044	2,212	2,385	2,564	2,741	2,937
Prof., Scientific & Technical Services	5,480	6,338	7,098	7,799	8,503	9,258
Administrative & Support Services	3,537	4,028	4,561	5,126	5,716	6,368
Public Administration & Safety	4,898	5,781	6,705	7,678	8,698	9,829
Education & Training	10,991	12,390	13,812	15,283	16,783	18,494
Health Care & Social Assistance	18,048	21,029	24,057	26,998	29,984	33,078
Arts & Recreation Services	1,439	1,761	2,171	2,635	3,134	3,715
Other Services	5,939	6,477	7,152	7,868	8,587	9,402
Total	**113,321**	**125,788**	**139,074**	**152,765**	**166,661**	**181,935**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), AEC.

In relation to the **aggregate precinct employment by industry** in 2026 and 2041, as the construction industry is projected to be the strongest growing more traditional industrial land user, this industry is projected to be the largest growth industry within the precincts to 2041. Despite projections indicating relatively subdued growth in manufacturing in Moreton Bay overall, this industry is projected to record the second largest growth industry within the precincts. Subject to flexibility within the planning scheme other services and retail trade are also projected to be key growth industries for the precincts. This is primarily expected to be for repair and maintenance (other services) and bulky goods retail (retail trade).

Given the comparatively low growth in traditional industries that demand industrial land, it is expected that an increasing proportion of the demand for land in the precincts will be generated through non-traditional uses, in particular commercial uses. The Petrie Mill site is also expected to attract a considerable health care and education presence.

The implications of the above key findings is that, subject to a supportive and flexible planning scheme the appearance of the precincts and the type of development they accommodate over the next 25 years could change significantly to accommodate these growing and consistently evolving industries.

Table ES.2. Employment by Industry (1-Digit ANZSIC), Aggregate of Precincts and Share of Moreton Bay Regional Council Area Total, 2016, 2026 and 2041 (Place of Work) – With Petrie Mill Redevelopment

Industry (1-Digit ANZSIC)	2016		2026		2041	
	No.	% of MBRC	No.	% of MBRC	No.	% of MBRC
Agriculture, Forestry and Fishing	32	2.9%	30	2.9%	29	2.9%
Mining	90	19.9%	99	19.6%	110	19.0%
Manufacturing	7,429	80.7%	8,210	84.0%	9,198	86.8%
Electricity, Gas, Water and Waste Services	255	19.1%	287	19.9%	348	20.9%
Construction	3,065	24.1%	4,540	27.3%	6,488	29.4%
Wholesale Trade	1,923	55.9%	2,139	57.3%	2,639	60.2%
Retail Trade	1,758	10.8%	2,256	12.6%	3,007	13.9%
Accommodation and Food Services	413	4.5%	822	6.9%	1,225	7.2%
Transport, Postal and Warehousing	777	18.7%	1,075	22.2%	1,489	25.1%
Information Media and Telecommunications	94	15.4%	112	16.1%	167	17.8%
Financial and Insurance Services	355	14.7%	396	15.2%	528	16.7%
Rental, Hiring and Real Estate Services	344	16.8%	451	18.9%	622	21.2%
Professional, Scientific and Technical Services	812	14.8%	1,509	21.3%	2,393	25.8%
Administrative and Support Services	638	18.0%	953	20.9%	1,522	23.9%
Public Administration and Safety	395	8.1%	541	8.1%	822	8.4%
Education and Training	201	1.8%	587	4.2%	825	4.5%
Health Care and Social Assistance	289	1.6%	1,603	6.7%	2,412	7.3%
Arts and Recreation Services	133	9.3%	307	14.1%	531	14.3%
Other Services	1,882	31.7%	2,481	34.7%	3,422	36.4%
Total	**20,884**	**18.4%**	**28,399**	**20.4%**	**37,776**	**20.8%**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

At an **employment by precinct** level, in 2016, the precincts of Brendale and Narangba–North Lakes accounted for 54.6% of all employment in the industrial precincts in Moreton Bay region. This share is projected to increase to 55.3% through to 2041 as these precincts continue to be built out and other existing precincts such as Clontarf, Old Gympie Road Narangba, and Paisley Drive Lawnton reach capacity. The Petrie Mill precinct is also projected to record considerable growth to 2041 (4,231 jobs), primarily driven by health care, education and research activities.

Projected Land Demand

In total, land demand in Moreton Bay LGA's industrial precincts is projected to increase from 978 ha in 2016 to 1,670.7 ha in 2041 (an increase of 693 ha, or 27.7 ha per annum). The southern precincts are projected to account 80% of this increase, and the northern precincts 20%. Demand is projected to strongest in the south as these precincts are generally preferred due to their closer proximity to key markets to the south and connecting transport and export infrastructure. It is considered unlikely that high levels of demand will be generated for the northern precincts over the next 10 to 20 years without some form of intervention, for example additional infrastructure enhancing connectivity between the northern precincts and southern markets/ transport infrastructure.

Brendale is projected to account for 263 ha (37.9% of total increase, equating to 10.5 ha per annum) and Narangba–North Lakes is projected to account for 121 ha (17.4% of total; 4.8 ha per annum).

Table ES.3. Gross Land Demand by Precinct, 2016 to 2041 (Ha) – With Petrie Mill Redevelopment

Area	Precinct	2016	2021	2026	2031	2036	2041
North							
M1	Sandstone Point	0.9	1.2	1.6	1.9	2.2	2.2
B1	Bribie, First Avenue	8.7	9.6	9.7	9.7	9.6	9.7
1	Aerodrome Caboolture	216.4	237.8	258.2	277.9	288.5	288.5
2	Caboolture, Henzell Rd	31.1	35.3	40.0	45.0	47.9	47.9
3	Elimbah East	19.9	20.7	21.6	22.5	25.1	27.1
4	North East Business Park	1.3	2.1	2.9	5.6	8.5	12.0
5	Caboolture West LP	0.0	0.0	0.0	0.0	0.0	0.1
6	PAC Morayfield	15.8	18.1	20.5	22.5	22.5	22.5
7	Burpengary, Bruce Hwy	25.3	29.1	33.1	37.3	42.4	48.0
	North Sub-Total	***319.4***	***353.8***	***387.5***	***422.3***	***446.7***	***458.0***
South							
8b	Narangba, Old Gympie Rd	88.8	101.9	111.0	111.0	110.8	110.7
9	Deception Bay Rd	2.3	2.6	2.9	3.4	3.9	4.6
8a	Boundary Rd, Narangba-North Lakes	89.8	116.3	140.2	164.3	186.4	210.6
10	Dakabin, Kerr Rd West	0.0	3.8	7.9	12.9	18.4	24.8
11	Clontarf	80.6	83.1	83.1	83.0	82.6	82.4
M2	Marina – Scarborough	9.6	11.4	13.2	14.8	14.8	14.8
RA1	Redcliffe Aerodrome	40.9	41.6	42.0	42.3	44.1	45.5
13	Petrie	13.5	44.4	71.9	85.8	100.8	118.1
14	Lawnton, Paisley Drv	40.4	44.9	44.9	44.9	44.7	44.7
15	Brendale	275.6	317.6	363.6	415.5	471.6	538.5
16	The Hills District	17.0	17.9	17.9	17.9	17.8	17.9
	South Sub-Total	***658.5***	***785.5***	***898.7***	***995.8***	***1,095.9***	***1,212.7***
Moreton Bay LGA							
	Total Precincts	**977.9**	**1,139.4**	**1,286.3**	**1,418.1**	**1,542.6**	**1,670.7**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

Development Mix

The projected share of land demand within precincts by land use category suggest that traditional industrial style activities are projected to account for a smaller share of precinct growth over the next 25 years, declining from 72% in 2016 to approximately 60% by 2041. Construction activities are projected to record the largest increase (13.5% in 2016 to 18.1% in 2041), but retail, commercial and community are all also expected to record considerable increases in share of precinct uses.

Supply-Demand Gap Analysis

The comparison of land supply and demand by precinct to 2041 highlights that the amount of land remaining in precincts in the southern parts of the Moreton Bay region is projected to be nearing exhaustion by 2041. The total remaining land in southern precincts is projected to be 238.3 ha in 2041 when the Petrie Mill redevelopment scenario is included. At projected take up rates of 22.2 ha per annum for southern precincts to 2041, this would be sufficient until approximately 2050 without material distribution of demand into northern precincts.

While demand for the northern precincts in Moreton Bay is not projected to be high to 2041, areas such as Elimbah East, North East Business Park and Caboolture West LP could provide important land banks for ongoing industrial growth and development in Moreton Bay LGA beyond 2050. Projections suggest there is sufficient land in the northern precincts to meet annual demand in Moreton Bay to approximately 2075.

Table ES.4. Comparison of Land Supply and Demand (Ha) by Precinct, 2041, With Petrie Mill Redevelopment

Area	Precinct	Supply	Demand	Remaining
North				
M1	Sandstone Point	2.2	2.2	0.0
B1	Bribie, First Avenue	9.7	9.7	0.0
1	Aerodrome Caboolture	288.5	288.5	0.0
2	Caboolture, Henzell Rd	47.9	47.9	0.0
3	Elimbah East	397.5	27.1	370.4
4	North East Business Park	173.5	12.0	161.5
5	Caboolture West LP	158.8	0.1	158.7
6	PAC Morayfield	22.5	22.5	0.0
7	Burpengary, Bruce Hwy	72.4	48.0	24.4
	North Sub-Total	***1,173.1***	***458.0***	***715.1***
South				
8b	Narangba, Old Gympie Rd	111.0	110.7	0.3
9	Deception Bay Rd	23.4	4.6	18.8
8a	Boundary Rd, Narangba-North Lakes	224.4	210.6	13.8
10	Dakabin, Kerr Rd West	49.0	24.8	24.2
11	Clontarf	83.1	82.4	0.7
M2	Marina – Scarborough	14.8	14.8	0.0
RA1	Redcliffe Aerodrome	45.5	45.5	0.0
13	Petrie	224.5	118.1	106.4
14	Lawnton, Paisley Drv	44.9	44.7	0.2
15	Brendale	612.4	538.5	73.9
16	The Hills District	17.9	17.9	0.0
	South Sub-Total	***1,450.9***	***1,212.7***	***238.3***
Moreton Bay LGA				
	Total Precincts	**2,624.0**	**1,670.7**	**953.3**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), Google Earth (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

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1. INTRODUCTION

1.1 BACKGROUND

The Moreton Bay Regional Council (MBRC) area is experiencing rapid urban growth. As a consequence of this growth there is competition for the use of available industrial land between industry, other non-residential and residential activities in the region. There is also significant debate surrounding the contribution of industry, and associated land requirements, to the future local economy of Moreton Bay. The planning implications of growth and change need to be investigated and better understood to inform ongoing planning by the MBRC.

1.2 PURPOSE OF THE STUDY

The primary reasons for undertaking this project are to:

- Establish the future demands of business and industry for land in MBRC to support appropriate long term (to 2041 and beyond) growth and development of the Moreton Bay region.
- Provide advice on the suitability or otherwise of the existing and planned industry land to accommodate that growth.
- Ensure MBRC continues to provide enough land to support job creation, business expansion and attraction that is appropriate for the region.
- Identify the minimum requirement of land that would ensure provision of suitable industrial land to support industry growth to 2041.

The study also notes that whilst the brief for this project was to examine the period 2041, there will be a strategic and precautionary need for industrial land beyond 2041.

Once demand for appropriate levels of industrial land in local and regional areas is identified, it is important that these lands are protected from incompatible development. The knowledge gained from this project will also help Council avoid unduly tying up land that could be used for other purposes.

1.3 APPROACH

Research	Analysis	Reporting
• **Building the evidence base**	• **Defining the future**	• **Providing the evidence base**
• Analyse local and national trends in industrial development and their impact on the Moreton Bay region	• Identify the current and planned future supply of industrial land in the Moreton Bay region	• Bring together all the core components of the study in a clear framework, highlighting the outcomes of each element of the project
• Undertake an analysis of the property market in the Moreton Bay region	• Utilising a range of methodologies determine demand for industrial land required across the region	• Present all aspects of the study to Council for consideration and feedback
• Consult with key industry and government stakeholders	• Compare and analyse industrial land supply and demand and the Moreton Bay regions capacity to meet future needs	• Incorporate all relevant feedback and finalise the study for submission
• Conduct a desktop audit of industrial land in the Moreton Bay region		

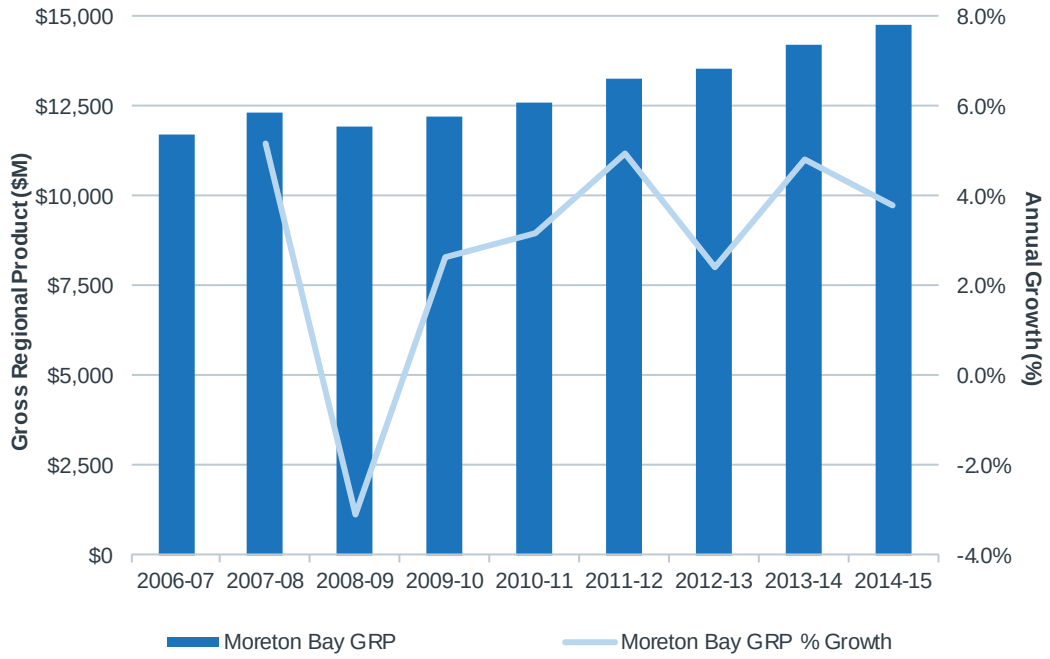
Source: AEC.

2. MORETON BAY ECONOMIC PROFILE

2.1 GROSS REGIONAL PRODUCT

Estimates of Gross Regional Product (GRP) are produced annually by AEC using the approach outlined in Appendix A. Between 2006-07 and 2014-15 the Moreton Bay economy recorded average annual growth in GRP of 2.9%, to reach $14.8 billion in 2014-15. In the latest year, the economy expanded by 3.8%. The local economy has expanded every year since 2006-07 with the exception of 2008-09, when the economy contracted by 3.1%.

Figure 2.1. Gross Regional Product, 2006-07 to 2014-15



Source: AEC (unpublished).

The structure of the economy suggests population growth is a key driver of economic growth in the region, and this will have a flow on effect into population driven industries such as construction, education, retail and health care. The most prominent sectors in the Moreton Bay economy, in terms of contribution to Gross Value Add in 2014-15, were:

- Construction: $1,960 million (16.8% of total Industry Value Add[1])
- Healthcare and social assistance: $1,388 million (11.9%)
- Retail trade: $1,159 million (9.9%)
- Manufacturing: $1,116 million (9.6%)
- Education and training: $793 million (6.8%).

The top five growth sectors between 2006-07 and 2014-15 were:

- Mining (97.3% growth)
- Construction (64.2%)
- Financial and insurance services (57.8%)
- Arts and recreation services (53.2%)
- Healthcare and social assistance (51.9%).

[1] Industry Value Add (IVA) – the total value of all goods and services produced by an industry after deducting the cost of goods and services used in the process of production.

The most prominent sectors which detracted from growth over this timeframe were:

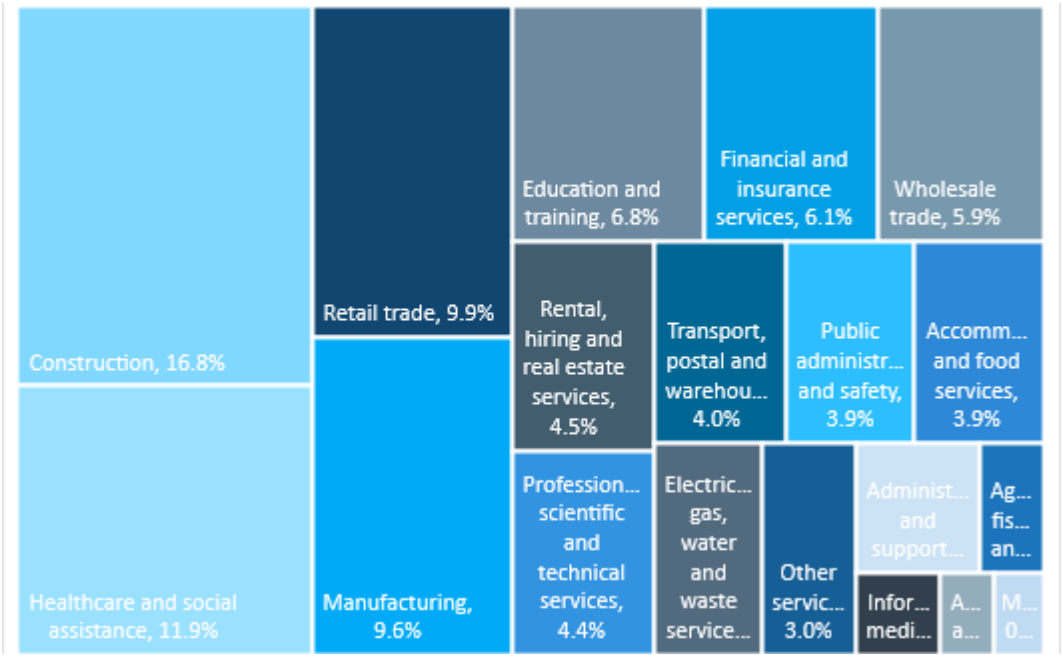
- Manufacturing (-14.4%)
- Administrative and support services (-12%)
- Agriculture, fishing and forestry (-7.3%).

Table 2.1. Gross Regional Product by Industry, 2014-15

Industry	% of Industry Value Add	% Growth from 2006-07
Agriculture, fishing and forestry	1.3%	-7.3%
Mining	0.6%	97.3%
Manufacturing	9.6%	-14.4%
Electricity, gas, water and waste services	3.4%	38.2%
Construction	16.8%	64.2%
Wholesale trade	5.9%	6.5%
Retail trade	9.9%	28.2%
Accommodation and food services	3.9%	18.4%
Transport, postal and warehousing	4.0%	36.8%
Information media and telecommunications	1.0%	40.6%
Financial and insurance services	6.1%	57.8%
Rental, hiring and real estate services	4.5%	32.0%
Professional, scientific and technical services	4.4%	24.7%
Administrative and support services	2.4%	-12.0%
Public administration and safety	3.9%	36.2%
Education and training	6.8%	23.8%
Healthcare and social assistance	11.9%	51.9%
Arts and recreation services	0.7%	53.2%
Other services	3.0%	-7.3%
Total	**100.0%**	**27.8%**

Source: AEC (unpublished).

Figure 2.2. Industry Value Add, % Contribution by Industry, 2014-15



Source: AEC (unpublished).

2.2 EMPLOYMENT BY INDUSTRY

There were a total of 106,657 persons working in Moreton Bay in 2011 (by place of work). Since 2006, the level of employment by industry (by place of work) increased by 26.4% from almost 85,000. The industries which provided the most jobs in Moreton Bay in 2011 also reflect the importance of population growth to the economy, including:

- Retail Trade (15.1% of total)
- Health Care and Social Assistance (13.9%)
- Construction (11.7%)
- Manufacturing (9.8%)
- Education and Training (9.5%).

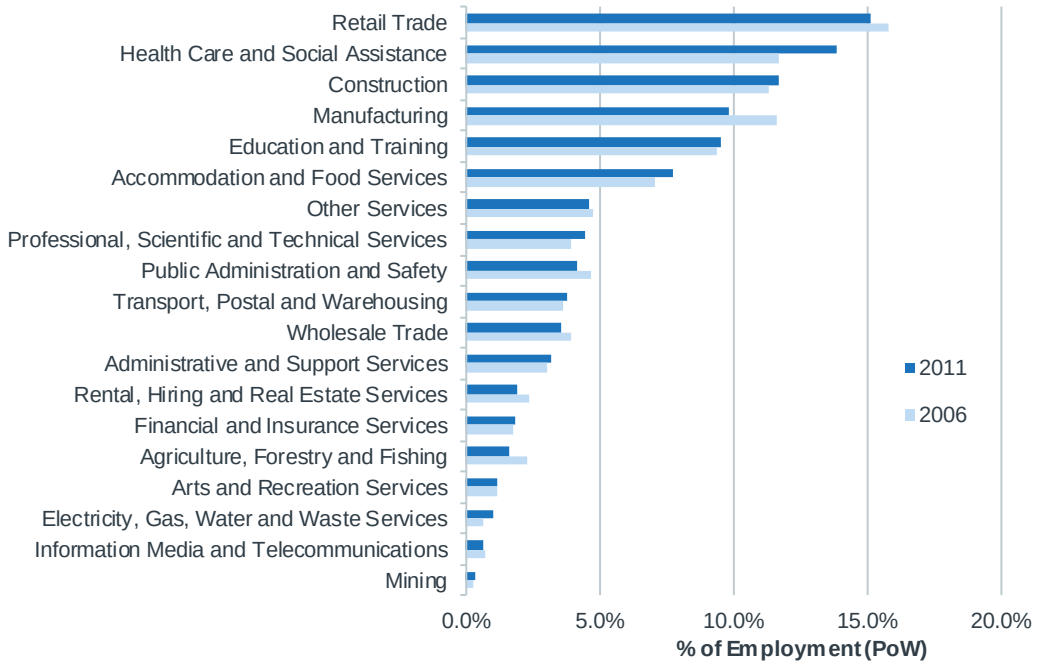
The employment structure within Moreton Bay has remained relatively stable between 2006 and 2011. Over this time, the most prominent changes in the structure were the health care sector's increased share of total employment by 2.2% and the manufacturing sector's reduced share by 1.8%.

Table 2.2. Employment by Industry, 2006 and 2011, Place of Work

2011 Rank	Industry	2006	2011
1	Retail Trade	15.8%	15.1%
2	Health Care and Social Assistance	11.7%	13.9%
3	Construction	11.3%	11.7%
4	Manufacturing	11.6%	9.8%
5	Education and Training	9.4%	9.5%
6	Accommodation and Food Services	7.0%	7.7%
7	Other Services	4.7%	4.6%
8	Professional, Scientific and Technical Services	3.9%	4.5%
9	Public Administration and Safety	4.7%	4.2%
10	Transport, Postal and Warehousing	3.7%	3.8%
11	Wholesale Trade	3.9%	3.5%
12	Administrative and Support Services	3.0%	3.1%
13	Rental, Hiring and Real Estate Services	2.4%	1.9%
14	Financial and Insurance Services	1.7%	1.9%
15	Agriculture, Forestry and Fishing	2.3%	1.6%
16	Arts and Recreation Services	1.1%	1.2%
17	Electricity, Gas, Water and Waste Services	0.7%	1.0%
18	Information Media and Telecommunications	0.7%	0.6%
19	Mining	0.3%	0.4%
	Total	**84,412**	**106,657**

Source: ABS (2007, 2012).

Figure 2.3. Employment by Industry, % of Total, 2006 and 2011, Place of Work



Source: ABS (2007, 2012).

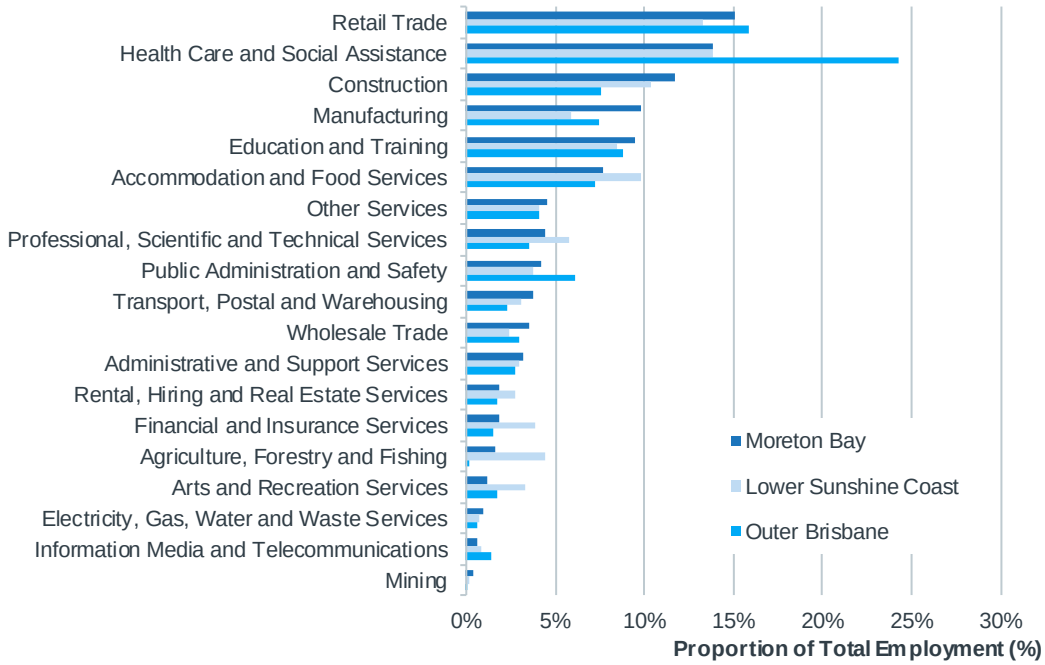
For the purposes of the local context, Moreton Bay has been compared to the areas immediately north and south of the local government border. These areas are referred to as the Lower Sunshine Coast[2] and Outer Brisbane[3].

By comparison to the Lower Sunshine Coast and Outer Brisbane, Moreton Bay has a relatively similar employment structure. The major exceptions were the greater presence of the health care and social assistance sector in Outer Brisbane (as a proportion of total employment) and the greater presence of the manufacturing sector in Moreton Bay.

[2] Comprised of the SA2s of Caloundra Hinterland, Beerwah, Glass House Mountains, Landsborough, Caloundra – West, Golden Beach – Pelican Waters, Moffat Beach – Battery Hill, Wurtulla – Birtinya, Aroona – Currimundi, and Caloundra – Kings Beach.

[3] Comprised of the SA2s of Aspley, Bald Hills, Bridgeman Downs, Bracken Ridge, Boondall, Deagon, Brighton (Qld), Carseldine, Chermside, Chermside West, Geebung, McDowall, Sandgate – Shorncliffe, Taigum – Fitzgibbon, and Zillmere.

Figure 2.4. Employment by Industry, % of Total, 2011, Place of Work, Moreton Bay and Comparison Areas

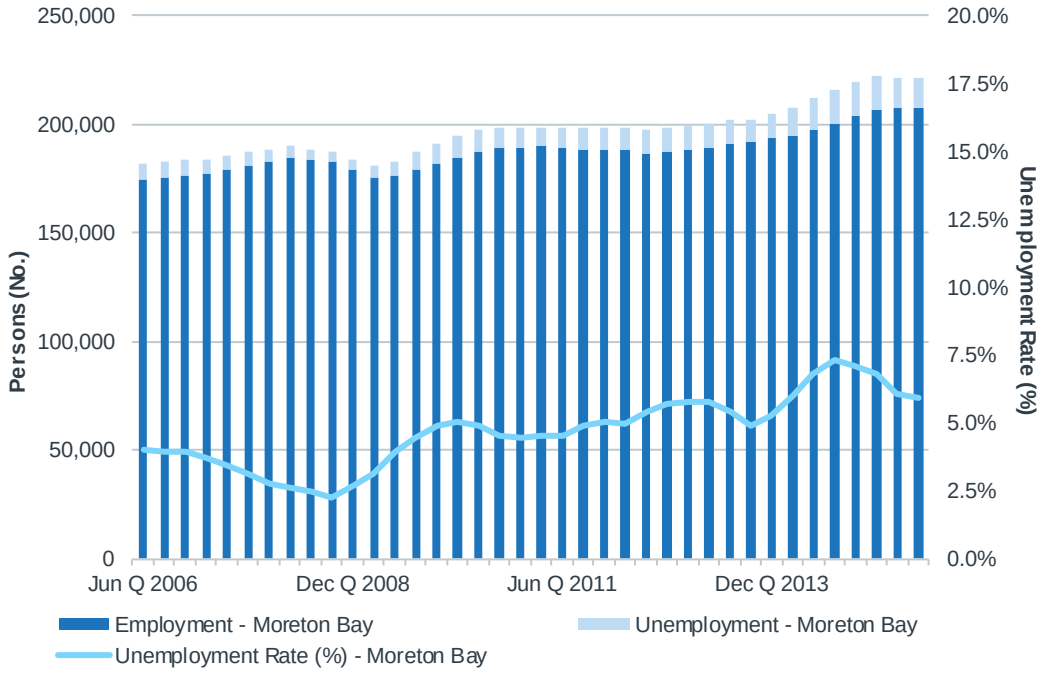


Source: ABS (2012).

2.3 WORKFORCE

In the latest quarter, (September 2015) the Moreton Bay labour force remained steady at 220,968. Over the past 5 years, the local labour force has expanded by 11.6%. Over the same time frame, the number of persons unemployed in Moreton Bay has expanded by 44.6%. As a result, over the past 5 years, the unemployment rate in Moreton Bay has increased by 1.4% points. In the last quarter, the unemployment rate decreased by -0.1% points, to 5.9%.

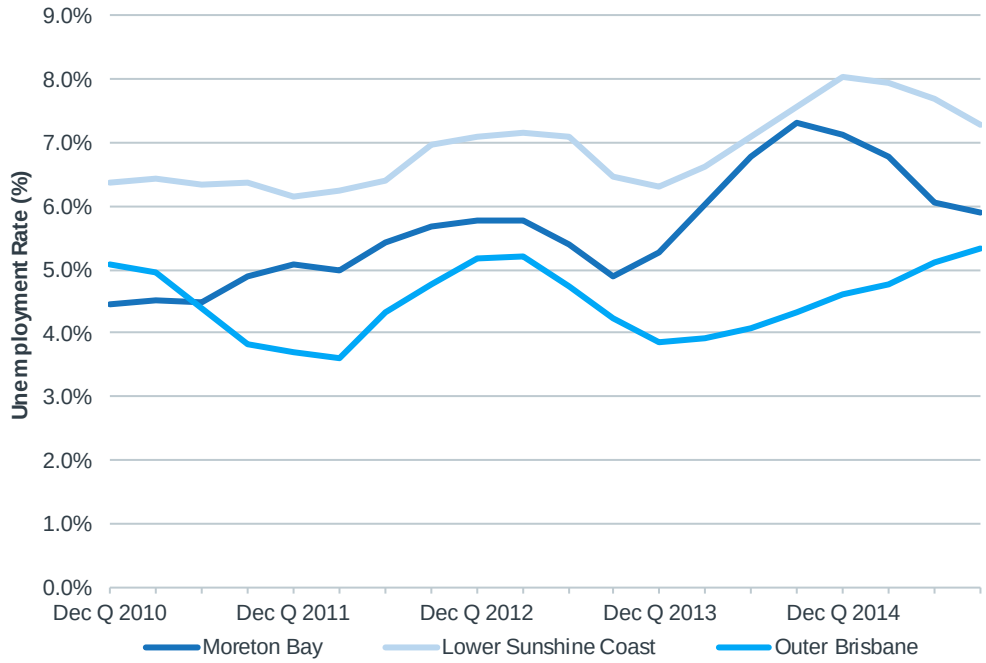
Figure 2.5. Unemployment and Labour Force



Source: DoE (2016)

Moreton Bay has a tendency to record higher unemployment rates than Outer Brisbane, but lower unemployment rates than the Sunshine Coast. The only period in which this was not the case since December 2010 was in the first three quarters of this period, when Moreton Bay recorded lower unemployment rates than both comparison areas. Though the difference between Moreton Bay's unemployment rate and Outer Brisbane's widened considerably between December 2013 and December 2014, the gap has narrowed in recent quarters.

Figure 2.6. Unemployment and Labour Force, Moreton Bay and Comparison Areas



Source: DoE (2016)

2.4 BUSINESS COUNTS

In 2015 there were a total of 25,395 businesses in operation in Moreton Bay. In term of business volumes, the most prominent sectors in Moreton Bay were:

- Construction (24.3% of total)
- Professional, Scientific and Technical Services (11.3%)
- Rental, Hiring and Real Estate Services (9.5%)
- Transport, Postal and Warehousing (7.3%)
- Financial and Insurance Services (6.4%).

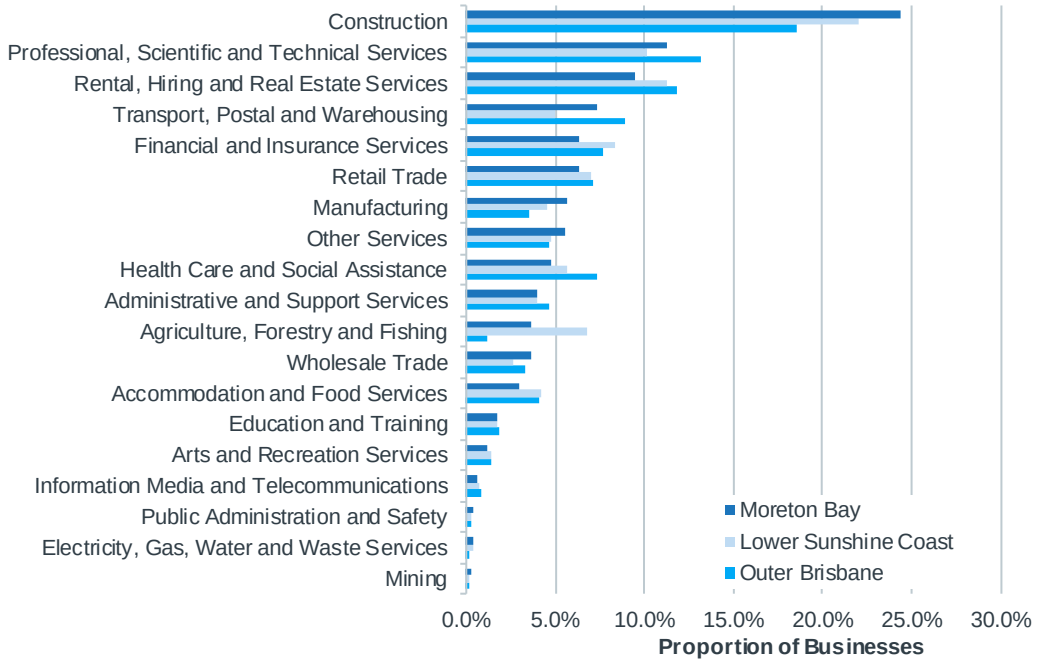
Table 2.3. Business Counts by Industry, 2015

Industry	Moreton Bay	Lower Sunshine Coast	Outer Brisbane
Agriculture, Forestry and Fishing	3.7%	6.8%	1.2%
Mining	0.3%	0.1%	0.2%
Manufacturing	5.6%	4.6%	3.5%
Electricity, Gas, Water and Waste Services	0.4%	0.4%	0.2%
Construction	24.3%	22.0%	18.5%
Wholesale Trade	3.6%	2.7%	3.3%
Retail Trade	6.4%	7.0%	7.1%
Accommodation and Food Services	3.0%	4.2%	4.1%
Transport, Postal and Warehousing	7.3%	5.0%	8.9%
Information Media and Telecommunications	0.6%	0.8%	0.9%
Financial and Insurance Services	6.4%	8.4%	7.7%
Rental, Hiring and Real Estate Services	9.5%	11.2%	11.9%
Professional, Scientific and Technical Services	11.3%	10.1%	13.2%
Administrative and Support Services	4.0%	4.0%	4.7%
Public Administration and Safety	0.4%	0.3%	0.3%
Education and Training	1.8%	1.8%	1.8%
Health Care and Social Assistance	4.8%	5.7%	7.4%
Arts and Recreation Services	1.1%	1.4%	1.4%
Other Services	5.6%	4.8%	4.7%
Total	**25,395**	**7,688**	**8,268**

Source: ABS (2015)

By comparison with the Lower Sunshine Coast and Outer Brisbane, Moreton Bay has a greater number of businesses and a greater proportion of businesses in construction and manufacturing industries. Though Moreton Bay has a high proportion of professional, scientific and technical services and rental, hiring and real estate businesses, the proportion of its businesses in these sectors tends to be lower than the comparison regions.

Figure 2.7. Business Counts by Industry, 2015, Moreton Bay and Comparison Areas



Source: ABS (2015)

The most prominent size of businesses in Moreton Bay in 2015 was sole traders (no employees) which formed 57.9% of businesses. This result is moderately lower than the comparison regions, where sole traders accounted for over 60% of businesses.

Table 2.4. Business Counts by Employment, 2015

Industry	Moreton Bay	Lower Sunshine Coast	Outer Brisbane
Non-Employing	57.9%	61.4%	62.1%
1 to 4	30.1%	27.6%	27.0%
5 to 19	9.6%	9.1%	8.6%
20 to 199	2.2%	1.7%	2.1%
200+	0.1%	0.2%	0.1%
Total	**100.0%**	**100.0%**	**100.0%**

Source: ABS (2015)

The turnover category that is most common of local businesses is the zero to $50,000 category. This category accounted for 23.5% of businesses in 2015. This result was moderately lower than the comparison regions. Both comparison regions have a marginally higher rate of businesses in the $50,000 to $100,000 category.

Table 2.5. Business Counts by Turnover, 2015

Industry	Moreton Bay	Lower Sunshine Coast	Outer Brisbane
Zero to $50k	23.5%	24.2%	26.8%
$50k to less than $100k	16.9%	17.0%	17.3%
$100k to less than $200K	20.5%	20.9%	18.9%
$200k to less than $500k	20.3%	19.7%	19.1%
$500k to less than $2m	13.4%	13.7%	12.6%
$2m or more	5.4%	4.5%	5.3%
Total	**100.0%**	**100.0%**	**100.0%**

Source: ABS (2015)

3. INDUSTRIAL PRECINCTS

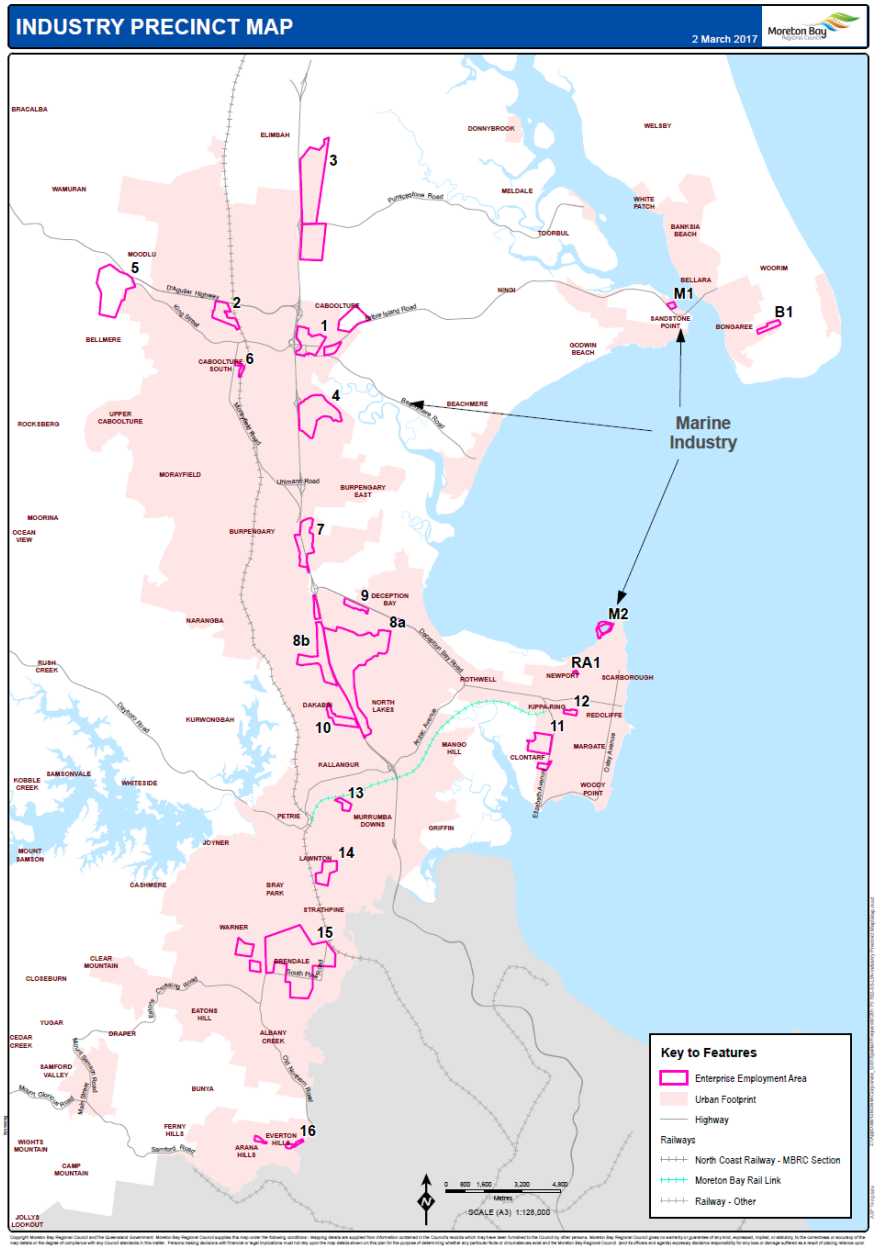
3.1 OVERVIEW

Moreton Bay Regional Council (MBRC) is the third largest local government in Australia by population, with approximately 425,500 residents in 2015 (ABS, 2016c), and is experiencing faster growth than any other local government area in South East Queensland other than Ipswich (at 2.2% per annum between 2010 and 2015).

Land designated for industrial purposes in the Moreton Bay Regional Council area is largely broken up into two areas, the north and the south. The southern area includes major precincts such as Brendale and North Lakes and the northern area includes major precincts such as North East Business Park and Elimbah East.

The following diagram graphically represents the geographic spread of land zoned for industrial purposes across the Moreton Bay Regional Council area. This diagram also represents the majority of the industry precincts analysed as part of this study.

Figure 3.1. Map of Moreton Bay Highlighting Land Zoned Industrial



Source: MBRC.

In total there are twenty (20) precincts zoned for industrial uses examined in this study, these include:

- North:
  - Sandstone Point (M1)
  - Bribie, First Avenue (Area not numbered)
  - Aerodrome Caboolture (Area 1)
  - Caboolture, Henzell Road (Area 2)
  - Elimbah East (Area 3)
  - North East Business Park (Area 4)
  - Caboolture West (Area 5)
  - PAC Morayfield (Area 6)
  - Burpengary, Bruce Highway (Area 7).
- South:
  - Narangba, Old Gympie Road (Area 8b)
  - Deception Bay Road (Area 9)
  - Boundary Road, Narangba-North Lakes (Area 8a)
  - Dakabin, Kerr Road West (Area 10)
  - Clontarf (Area 11)
  - Marina Scarborough (M2)
  - Redcliffe Aerodrome (RA1)
  - Petrie Mill (Area 13)
  - Lawnton, Paisley Drive (Area 14)
  - Brendale (Area 15)
  - The Hills District (Area 16).

The precinct of Kippa-Ring (Area 12) is also presented on the map, but has been excluded from this study as this precinct is well established with very limited industrial growth potential.

3.2 PLANNING SCHEME

The MBRC Planning Scheme was adopted by Council on 24 November 2015 and commenced on 1 February 2016. The Planning Scheme sets out Council's intention for the future development of the region over the next 20 years. The Planning Scheme is intended to be reviewed periodically in accordance with the Sustainable Planning Act 2009 to ensure it responds appropriately to the changes of the community at a local, regional and state level.

3.2.1 Strategic Framework

The Strategic Framework sets the policy direction for the Planning Scheme and forms the basis for ensuring appropriate development occurs in the area for the life of the scheme. The vision for the region is expressed through the following twelve themes that work together to articulate the policy direction within the MBRC Planning Scheme:

- Sustainability and resilience
- Natural environment and landscape
- Strong communities
- Settlement pattern and urban form
- Employment location
- Rural futures
- Natural resources
- Integrated transport
- Infrastructure

- Water management
- Planning area structuring
- MBRC Place Model.

The above themes are based on desired regional outcomes in the SEQ Regional Plan 2009, which provides a direct connection between the two key strategic documents that guide the development and growth of the region.

3.2.2 Zones

Zones organise the Planning Scheme area in a way that facilitates the location of preferred or acceptable land uses. Following are the zones for the area within the MBRC Planning Scheme:

- Centre zone
- Community facilities zone
- Emerging community zone
- Environmental management and conservation zone
- Extractive industry zone
- General residential zone
- Industry zone
- Limited development zone
- Recreation and open space zone
- Rural zone
- Rural residential zone
- Township zone.

The following table provides the zoning of all the precincts included in this study.

Table 3.1. Moreton Bay Precinct Zoning

Area	Precinct	Zone	Zone Precincts	Local Plan Precinct
M1	Sandstone Point	Industry	Marine Industry	-
B1	Bribie, First Avenue	Industry	Light Industry	-
1	Aerodrome Caboolture	Industry	General Industry & Light Industry	-
2	Caboolture, Henzell Rd	Industry	General Industry & Light Industry	-
3	Elimbah East	Industry	General Industry Light Industry	-
4	North East Business Park	Industry	Mixed Business and Industry	-
5	Caboolture West LP	Emerging Community	-	Enterprise and Employment
6	PAC Morayfield	Centre	Specialised Centre & Light Industry	-
7	Burpengary, Bruce Hwy	Industry	Mixed Industry and Business & Light Industry	-
8b	Narangba, Old Gympie Rd	Industry	General Industry & Light Industry	-
9	Deception Bay Rd	Industry	Mixed Business and Industry	-
8a	Boundary Rd, Narangba- North Lakes	Industry/ Mango Hill Infrastructure DCP	Restricted Industry & General Industry & Light Industry & Mixed Industry and Business	Mixed Industry and Business (North Lakes Precincts and Sector Plans)
10	Dakabin, Kerr Rd West	Industry	Mixed Industry and Business	-
11	Clontarf	Industry	General Industry & Light Industry	-
M2	Marina – Scarborough	Industry	Marine Industry	-
RA1	Redcliffe Aerodrome	Community Facilities	Airfield	-
13	Petrie Mill	Industry	General Industry & Mixed Industry and Business	-
14	Lawnton, Paisley Drv.	Industry	Light Industry & Mixed Industry and Business & Specialised Centre	-
15	Brendale	Brendale	General Industry & Light Industry & Mixed Industry and Business	-
16	The Hills District	Industry	Light Industry	-

Source: MBRC.

3.3 INDUSTRIAL LAND SUPPLY

A virtual supply audit was conducted of each precinct to identify total land available for industrial uses, how much was currently in use, and how much remained for future development. The approach used in conducting the land audit is outlined in Appendix B, and a summary of land availability for industrial development in each precinct is presented in Table 3.2.

A total of 1,646 ha of land remains available within the identified precincts for future development, including the Petrie Mill redevelopment site. Of this, it was assumed 70% is available for employment uses (1,152 ha) with the remaining 30% required for infrastructure (e.g. internal roads), environmental set asides, etc.[4]

Table 3.2. Land Area Available for Industrial Uses by Precinct (2016)

Area	Precinct	Total Area Zoned for Industrial Uses (Ha)	Area Zoned for Industrial Use Currently Developed and in Use (Ha)	Land Area Remaining for Future Industrial Development (Ha)
North				
M1	Sandstone Point	2.206	0.882	1.323
B1	Bribie, First Avenue	9.678	8.710	0.968
1	Aerodrome Caboolture	288.550	216.412	72.137
2	Caboolture, Henzell Rd	47.863	31.111	16.752
3	Elimbah East	397.490	19.874	377.615
4	North East Business Park	173.532	1.301	172.230
5	Caboolture West LP	158.848	0.000	158.848
6	PAC Morayfield	22.520	15.764	6.756
7	Burpengary, Bruce Hwy	72.411	25.344	47.067
	North Sub-Total	***1,173.097***	***319.400***	***853.697***
South				
8b	Narangba, Old Gympie Rd	110.972	88.778	22.194
9	Deception Bay Rd	23.433	2.343	21.090
8a	Boundary Rd, Narangba-North Lakes	224.400	89.760	134.640
10	Dakabin, Kerr Rd West	48.993	0.000	48.993
11	Clontarf	83.139	80.645	2.494
M2	Marina – Scarborough	14.829	9.639	5.190
RA1	Redcliffe Aerodrome	45.471	40.924	4.547
13	Petrie Mill [(a)]	224.470	13.468	211.001
14	Lawnton, Paisley Drv	44.896	40.407	4.490
15	Brendale	612.433	275.595	336.838
16	The Hills District	17.867	16.974	0.893
	South Sub-Total	***1,450.903***	***658.532***	***792.371***
Moreton Bay LGA				
	TOTAL	**2,623.999**	**977.931**	**1,646.066**

Note: (a) This reflects the land available in the scenario including the Petrie Mill site for redevelopment. Without the Petrie Mill site, this precinct has 66.76 ha of land zoned for industrial uses.
Source: Google Earth (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

3.4 HISTORIC INDUSTRIAL LAND DEMAND

An *Industrial Land Development Activity Profile* developed by Queensland Treasury and Trade (2012) indicates average annual industrial land consumption recorded a pace of approximately 8 ha per annum on average over the period from 2006 to 2011. This consumption rate is considered to be an underestimate as it is based on building approvals of over $0.5 million in construction value that consume vacant industrial land. As this land consumption is for buildings, it is expected to primarily be net of land required for internal (and external) roads and other supporting infrastructure that is required to support industrial precincts, or undevelopable areas of industrial precincts due to environmental constraints.

[4] Allowance for flood and other hard constraints is assumed to be included within this 30%. Specific site constraints for each precinct were not examined as part of this study, and as such actual land area available for future industrial development on a site by site basis may differ from those presented.

The industrial market has changed significantly over the last five years. Historic industrial sales data between 2012 and 2016 are presented in Appendix C, and suggests the pace of industrial land consumption has slowed considerably in recent years, averaging 1.5 ha per annum in vacant industrial land sales since 2013. While this data is for individual industrial sites rather than larger industrial land parcels (and thereby excludes area required for infrastructure and undevelopable areas), it highlights the currently soft sentiment and demand for vacant industrial land compared to what was recorded between 2006 and 2011.

In addition to vacant land sales, an average of approximately 2.9 ha per annum of industrial land with existing buildings was sold between 2012 and 2016. This is approximately double the rate of vacant land sales, highlighting the majority of industrial land demand over this period came through resale of existing stock, rather than demand for development of new stock.

Consultation with major industrial land developers in Moreton Bay (a summary of consultation findings is presented in Appendix D) supports the findings from historic sales data, with stakeholders indicating that overall demand for industrial land has declined since 2011-12. In particular, the demand for industrial land for traditional manufacturing uses has declined, though demand for land for transport, postal and warehousing has increased. This feedback is consistent with national and global trends (discussed further in section 4.4), with the types of activity being conducted under roof transitioning from production to warehouse and logistics and mixed business uses.

4. DRIVERS OF FUTURE INDUSTRIAL LAND DEMAND

The Moreton Bay economy is in a period of expansion, primarily supported by population growth and subsequent household consumption and demand for jobs. Key sectors contributing to economic growth and employment are population-related, such as construction, retail trade and healthcare and social assistance. The importance of industrial lands-related sectors, such as manufacturing, in terms of proportion of total economic activity and employment has been on a declining trend over the past decade. However, the contribution of these sectors to Moreton Bay employment and business counts remains higher than in Lower Sunshine Coast and Outer Brisbane (see chapter 2).

A raft of national and global influencing factors is currently impacting on local demand conditions for industrial lands. These include:

- **Globalisation and manufacturing**: Exportation of repetitive, simple processes can provide cost benefits to local manufacturers.
- **Robotics technology and Australian industry**: Enabling local businesses to increase productivity and labour mobility through the use of robots.
- **Changing configuration and fitout of industrial facilities**: Structural changes within the manufacturing sector will have an impact on demand for employment lands and the types of lands and buildings required.
- **Changing production trends**: The changing nature of the national economy in response to increased demand for services is impacting on demand for industrial lands and supporting infrastructure.
- **Food security**: Global population growth is fuelling strong demand for food.
- **Home-Based Work**: Improved internet connectivity is providing employees with the option to work from other locations, impacting on demand for employment lands.
- **Global economy**: Fluctuations in the global economy and exchange rate impacts on local businesses.

Additional detail regarding the above influencing factors is provided in the sections below.

Whilst Moreton Bay Regional Council has no control over the above factors, planning and support for local businesses will be essential to ensuring opportunities are leveraged and potential issues are mitigated. Ensuring adequate and appropriate industrial lands are available is needed.

Moving forward, demand for employment lands can be anticipated to continue the trend of transitioning from traditional manufacturing and industrial uses to greater levels of transport and logistics and mixed industry business precincts. The recent downturn in industrial land demand experienced between 2011 and 2016 (see section 3.4) can be partially attributed to the transitioning between traditional industrial uses and transport and logistics. However, this transition has been underway for more than a decade, and the recent decline in industrial land sales cannot be solely attributed to this. Demand has also been impacted over this period by weakened economic conditions both in Queensland and globally, which in the longer term can be expected to stabilise and support economic growth and demand for employment lands.

Consultation with developers indicates an expectation for land demand considerably higher than in recent years. Consultation suggests demand in the precincts is expected by industry to be around 15 hectares per annum moving forward (excluding infrastructure or undevelopable areas of industrial precincts due to environmental constraints), primarily driven by demand for Brendale and Narangba-North Lakes and other precincts in the southern areas of Moreton Bay, with more subdued growth anticipated in the north. However, the nature of this demand (i.e. industry mix) is likely to differ from that seen historically.

4.1 GLOBALISATION AND MANUFACTURING

Description

Leveraging global manufacturing opportunities can translate into increased profitability and high-value add specialisation for Australian businesses. Globalisation of manufacturing has the opportunity to provide local businesses with access to more affordable labour options. Simple, repetitive tasks relating to the manufacturing process can be undertaken by imported labour (i.e. exporting this component of the process) enabling local labour to focus on the high-value add components (such as design). Globalisation has also broadened the market for locally produced products.

Local Context

Manufacturing is a key sector in Moreton Bay, providing 9.8% of local jobs in 2011 (ABS, 2012), and 9.6% of gross value added activity in 2014-15 (AEC, unpublished). The sector also forms 5.6% of all businesses in the region in 2014 (ABS, 2015). Within the manufacturing sector, the most prominent sub-sectors (by employment in 2011) are activities such as machinery and equipment manufacturing, transport equipment manufacturing and fabricated metal product manufacturing.

In 2011, Moreton Bay's manufacturing sector paid relatively affordable wages of $920 on average per week, compared to $1,104 in Brisbane and $835 on the Sunshine Coast (ABS, 2012). Though local wages are relatively attractive on a national comparison, globally, they remain high. By importing labour, local businesses have greater ability to refine their high-value add activities and specialisations.

Over time, the structure of the Moreton Bay manufacturing sector may change, with a greater proportion of businesses undertaking high-value add manufacturing activities and employing associated labour. The structural shift in the local sector will impact on local demand for industrial land. Businesses focusing on design are likely to require lower volumes of industrial floor space than large-scale manufacturing activities, however, this does not necessarily mean less overall space is required, because traditional manufacturing space could be replaced by warehousing or an increased share of office space.

4.2 ROBOTICS AND TECHNOLOGY AND AUSTRALIAN INDUSTRY

Description

Labour replacements from robotics and other computerised technologies can improve profit margins and productivity in Australian industry. Robotic and technological replacement of labour is not a new concept, the introduction of the Automated Teller Machine in Australia in the late-1970s is a widely known example of labour replacement by computerisation. Over time, the nature of processing tasks able to be undertaken by computers and robots has become increasingly sophisticated. Robots are now able to track (and undertake transactions) in financial markets and vacuum our floors. Prototype self-drive cars are already being tested.

For business, robotics and technological advancements can represent significant productivity gains. Robots, and computers in general, are able to undertake repetitive tasks with high levels of accuracy. Businesses also do not need to be concerned about industrial relations legislation (i.e. robots can work 24/7 without breaks other than scheduled maintenance). The use of robotics is logically connected with the manufacturing sector, where repetitive process tasks are replaced by robotic labour. However, other sectors demanding industrial land space, such as wholesale trade and professional services may also benefit from their use (e.g, in wholesale trade, robots can be used to prepare goods for delivery or collect boxes from warehouses etc.).

Alternatively, robotics can be utilised to enable persons working in one location to undertake work in other locations. This is already happening in the defence and health care sectors. A surgical expert in one location can undertake a surgery in another location through the use of robotic hands and virtual reality glasses.

Local Context

In 2011, there were more than 18,300 workers across manufacturing, wholesale trade and transport, postal and warehousing sectors (Refer Table 5.1). There is likely to be some labour-replacement by robotics and computers into the future which would, without any other changes in the economy, result in a lower demand for associated

land. However, increased economic activity in the region could outweigh this shift. Equally, there will be a shift toward higher skill and training base in terms of operations and maintenance of this equipment, but likely a lower overall quantum of jobs.

4.3 CHANGING CONFIGURATION AND FITOUT OF INDUSTRIAL FACILITIES

Description

As the nature of the manufacturing and industrial sectors changes, as will the types of lands and facilities demanded. The confluence of the above-mentioned factors (globalisation and robotics and technology) are likely to change the nature of work within these businesses. Overall, there is likely to be a shift from manufacturing activity (requiring large-scale industrial land premises) towards transport and logistics (requiring large scale premises, of a different nature to manufacturing) and office space (lower land required per employee) activities. Mixed use spaces – combining office space and warehousing space are likely to become more prominent within the sector, particularly as e-Commerce continues to gain traction.

Local Context

In 2011, more than 4,000 workers in Moreton Bay (Refer Table 5.1) were employed by the transport, postal and warehousing sector. If trends continue and the demand for these services continue, it is likely the demand for industrial lands appropriate for these activities will increase. Typically, this sector requires a lower floor space per employee than other industrial land use types.

4.4 CHANGING PRODUCTION TRENDS

Description

Rising demand for services, the industrialisation of East Asia, economic reform and technical change are driving a structural shift in Australia's economy from a reliance on production and processing based activities to a knowledge based economy.

Local Context

Jobs growth in production-based industries, such as agriculture, manufacturing and mining are largely driven by broad macro factors, including global/ national demand, commodity cycles and terms of trade. However, these industries, and the environments in which they will prosper, are changing. Australia is transitioning towards higher levels of services-based activities, with many production-based industries struggling to remain cost competitive in international markets.

This structural shift is also occurring in Moreton Bay. Traditional manufacturing industries have been declining in the region over the past decade, down 14.4% in terms of industry value add (refer to section 2.1) while many of the services-based industries have increased (such as construction and rental, hiring and real estate). The trend towards higher levels of services-based activities is expected to continue into the future.

To remain competitive, successful industrial precincts need place based advantages more than just separation from residential areas, they need first class road and rail connectivity to efficiently access distribution networks and markets, access to high speed telecommunications infrastructure to access and utilise real time data, access to skilled labour as well as underlying demand for transport and logistics activity.

4.5 FOOD SECURITY

Description

With the world's population forecast to reach 8 billion by 2030, interest in the region's agricultural potential is likely to increase over the coming years. Further trade and investment interest in the region from Asia is a possibility, where food security is an increasing concern with world food prices having doubled over the past decade.

Local Context

Accompanying forecast growth in the world's population, income levels in key markets such as Asia are expected to grow significantly. Increased income generally leads to an increase in demand for and consumption of higher quality food. When these factors are combined it is clear that global demand for higher value food products will grow significantly.

Moreton Bay has an existing food manufacturing sector which formed 9.4% of total manufacturing employment in 2011 (ABS, 2012) which may be able to leverage this increased demand for food products at the global level. Ensuring appropriate transportation links to key markets will be essential to enabling optimisation of this driver.

The opportunity also exists for the Moreton Bay region to explore the attraction of a value adding/ processing centre and distribution hub that positions the region as a major contributor to the food manufacturing sector. This type of development is consistent with the need to consider alternative options for future employment lands beyond traditional manufacturing businesses. The keys to being successful in this space include access to land, the availability of a suitable skilled workforce, access to efficient transport networks that are close to export related infrastructure such as Brisbane Airport and the Trade Coast.

4.6 HOME-BASED WORK

Description

A growing proportion of workers around the world are choosing to work from home, as technological advancements have made working from home a more viable option for both employees and employers.

Local Context

The ability for people to work from home is one of the reasons why more people are choosing to live in regional cities as opposed to the major capital cities. One of the key drivers of this trend is access to suitable telecommunications infrastructure that ensures home based businesses are able to operate at the same level as they would expect if they were based in the city.

The increasing prevalence of home-based work options can assist satellite areas such as Moreton Bay improve its retention of working age adults, primarily in industries and professions that historically have been centred in capital cities (e.g. many knowledge-based industries and professional occupations). Approximately 4.7% of all employed residents in Moreton Bay in 2011 indicated they worked from home at the time of the Census (ABS, 2012), and this can be expected to increase into the future as technology advances enable greater work flexibility.

The impact of increased levels of home-based work will be felt in terms of planning requirements. From an infrastructure perspective, access to high-speed broadband connectivity is required to provide suitable substitutability between home and office-based work environments. The increase in home-based work is also resulting in reduced office floorspace requirements for business, and an increasing prevalence for 'hot-desk' or shared workspaces which any employee can readily access as required. Home-based work also has the potential to provide demand for a range of innovative work solutions, such as shared and flexible office-based common use facilities, providing work spaces, meeting spaces and conference facilities available for short term hire as needed. As a result, the increased prevalence of home-based work can act to reduce demand for dedicated employment lands moving forward, particularly for office-based professions.

Additionally, home-based work has the potential to reduce commuter loads each day, reducing transport infrastructure and public transport requirements. At the same time, connectivity is important for mobile workers, and ready access to major long distance transport infrastructure can be an important factor for home-based workers.

4.7 GLOBAL ECONOMY

Description

The value of the Australian dollar influences the competitiveness of Australian businesses in the global economy.

Local Context

The recent decline in the Australia dollar is expected to have a positive impact for export focused Australian producers through an associated increase in competitiveness in the global market. Global competitiveness, particularly around labour rates, also affects Australia's ability to effectively compete across all sectors, in particular in sectors such as agriculture (where Australia is a 'price taker' on the global market) and most low skilled/ process based manufacturing industries, creating the need for Australian production to focus (generally) on higher quality, premium and/ or niche products.

It is not possible for Moreton Bay Regional Council to influence the Australian exchange rate. However, it is an important factor to be aware of and consider in relation to the impact it can have on the local economy, development programs and the major industries across the area and associated jobs growth.

Similar to the Australian dollar, the prices of commodities in global markets influence the attractiveness of industries in the region and the profitability of businesses. Again, there is little Council can do to influence this, but it is important to be aware of the industries/ businesses that are susceptible to this and understand the overarching impact this can have on the economy, both positive and negatively, during times of change and uncertainty.

5. PROJECTED INDUSTRIAL LAND DEMAND

5.1 PROJECTED ECONOMIC ACTIVITY

5.1.1 Moreton Bay LGA

Five yearly projections of employment for Moreton Bay LGA between 2011 and 2041 were developed by AEC using the approach outlined in Appendix F.[5] A summary of these projections are presented in Table 5.1, with the following discussion examining projected growth between 2016 and 2041. Total employment in Moreton Bay LGA is projected to increase to nearly 182,000 jobs by 2041, representing an increase of over 60% from 2016. Key growth sectors between 2016 and 2041 are projected to be:

- Health care and social assistance, increasing by approximately 15,000 jobs, or 21.9% of the total jobs growth.
- Construction, increasing by approximately 9,350 jobs, or 13.6% of total jobs growth.
- Accommodation and food services, increasing by approximately 7,800 jobs, or 11.4% of total jobs growth.
- Education and training, increasing by approximately 7,500 jobs, or 10.9% of total jobs growth.

Of the above sectors, only the construction industry represents an industry that traditionally supports demand for industrial land. And even so, a large proportion of the construction industry employment is not typically based in industrial areas, with much of the employment in this sector a mobile workforce of self-employed sub-contractors.

Other industries that traditionally demand industrial land include manufacturing, wholesale trade, transport, postal and warehousing, and other services (primarily reflected in the repair and maintenance services sub-industry). These industries combined are only projected to account for 11.0% of total jobs growth in Moreton Bay LGA to 2041 (approximately 7,500 jobs), of which not all of these jobs will demand industrial land. Retail trade, in particular bulky goods retail trade, is also traditionally a large demander of industrial land. While employment projections for traditional industrial uses are relatively ‘soft’, demand for industrial land may be impacted by new technology adoption and capital replacement of labour (i.e. the rate of growth in demand for industrial land could be above the growth in employment).

[5] A comparison of AEC’s projections to Queensland Government employment projections to 2041 is provided in Appendix G.

Table 5.1. Total Employment by Industry, Moreton Bay LGA, 2011 to 2041 (Place of Work) – With Petrie Mill Redevelopment

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	1,752	1,104	1,066	1,043	1,024	1,007	992
Mining	380	452	483	509	533	556	577
Manufacturing	10,493	9,208	9,545	9,770	10,022	10,285	10,600
Elect., Gas, Water & Waste Services	1,072	1,336	1,379	1,440	1,510	1,580	1,663
Construction	12,459	12,738	14,822	16,660	18,494	20,290	22,087
Wholesale Trade	3,764	3,442	3,557	3,730	3,927	4,131	4,383
Retail Trade	16,106	16,352	16,939	17,955	19,090	20,230	21,612
Accommodation & Food Services	8,216	9,114	10,366	11,870	13,471	15,101	16,912
Transport, Postal & Warehousing	4,051	4,166	4,500	4,852	5,206	5,551	5,925
Information Media & Telecomms.	651	609	639	696	765	840	935
Financial & Insurance Services	1,988	2,422	2,477	2,607	2,771	2,945	3,169
Rental, Hiring & Real Estate Serv.	2,035	2,044	2,212	2,385	2,564	2,741	2,937
Prof., Scientific & Technical Services	4,769	5,480	6,338	7,098	7,799	8,503	9,258
Administrative & Support Services	3,356	3,537	4,028	4,561	5,126	5,716	6,368
Public Administration & Safety	4,457	4,898	5,781	6,705	7,678	8,698	9,829
Education & Training	10,152	10,991	12,390	13,812	15,283	16,783	18,494
Health Care & Social Assistance	14,789	18,048	21,029	24,057	26,998	29,984	33,078
Arts & Recreation Services	1,273	1,439	1,761	2,171	2,635	3,134	3,715
Other Services	4,893	5,939	6,477	7,152	7,868	8,587	9,402
Total	**106,657**	**113,321**	**125,788**	**139,074**	**152,765**	**166,661**	**181,935**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), AEC.

A second scenario of projections were also developed, examining the potential growth if the Petrie Mill redevelopment does not proceed. Under this scenario it is expected there would be a reduction in employment growth in key sectors projected to locate to the Petrie Mill site (e.g. health care, education, research, accommodation). However, some employment in these sectors would also be expected to locate to other areas within Moreton Bay LGA. In total, a reduction of approximately 1,250 jobs within Moreton Bay LGA is projected if the Petrie Mill redevelopment does not proceed (this is lower than the projected employment for the Petrie Mill site, as is was assumed some employment projected to locate to this precinct would still occur within Moreton Bay LGA if the Petrie Mill redevelopment does not occur, but in an alternative location).

Table 5.2. Total Employment by Industry, Moreton Bay LGA, 2011 to 2041 (Place of Work) – Without Petrie Mill Redevelopment

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	1,752	1,104	1,066	1,043	1,024	1,007	992
Mining	380	452	483	509	533	556	577
Manufacturing	10,493	9,208	9,546	9,770	10,022	10,285	10,590
Elect., Gas, Water & Waste Services	1,072	1,336	1,379	1,440	1,510	1,580	1,663
Construction	12,459	12,738	14,822	16,660	18,494	20,290	22,087
Wholesale Trade	3,764	3,442	3,557	3,730	3,927	4,131	4,383
Retail Trade	16,106	16,352	16,939	17,955	19,090	20,230	21,612
Accommodation & Food Services	8,216	9,114	10,327	11,820	13,419	15,047	16,857
Transport, Postal & Warehousing	4,051	4,166	4,500	4,852	5,206	5,551	5,925
Information Media & Telecomms.	651	609	639	696	765	840	935
Financial & Insurance Services	1,988	2,422	2,477	2,607	2,771	2,945	3,169
Rental, Hiring & Real Estate Serv.	2,035	2,044	2,212	2,385	2,564	2,741	2,937
Prof., Scientific & Technical Services	4,769	5,480	6,183	6,869	7,549	8,232	8,965
Administrative & Support Services	3,356	3,537	4,028	4,561	5,126	5,716	6,368
Public Administration & Safety	4,457	4,898	5,781	6,705	7,678	8,698	9,829
Education & Training	10,152	10,991	12,059	13,433	14,916	16,425	18,145
Health Care & Social Assistance	14,789	18,048	20,569	23,458	26,437	29,431	32,535
Arts & Recreation Services	1,273	1,439	1,761	2,171	2,635	3,134	3,715
Other Services	4,893	5,939	6,477	7,152	7,868	8,587	9,402
Total	**106,657**	**113,321**	**124,806**	**137,818**	**151,535**	**165,425**	**180,684**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), AEC.

5.1.2 Precinct Employment Projections

5.1.2.1 Aggregate Precinct Employment by Industry

Projections of demand in the precincts were developed by AEC using the approach outlined in Appendix H. A summary of projections of employment within the precincts in 2026 and 2041 by industry are presented in Table 5.3, with a comparison to 2016.

As the construction industry is projected to be the strongest growing traditional industrial land user, this industry is projected to be the largest growth industry within the precincts to 2041. A total of approximately 3,400 additional construction industry jobs are projected within the precincts between 2016 and 2041, accounting for 20.3% of total jobs growth in the precincts.

While overall growth in manufacturing in Moreton Bay LGA is projected to be relatively subdued to 2041, the majority of growth in this industry is anticipated to locate to the industrial precincts. Approximately 1,750 additional manufacturing jobs are projected to be located in the precincts in 2041 compared to 2016, accounting for 10.5% of total jobs growth in the precincts. Other services and retail trade are also projected to be key growth industries for the precincts, with approximately 1,550 additional jobs (9.1% of total) and 1,250 additional jobs (7.4% of total), respectively. This is primarily expected to be for repair and maintenance (other services) and bulky goods retail (retail trade).

Given the comparatively low growth in traditional industries that demand industrial land, it is expected that an increasing proportion of the demand for land in the precincts will be generated through non-traditional uses, in particular commercial uses. A combined total of approximately 2,650 jobs (15.6% of total) is projected in the industries of professional, scientific and technical services, administrative and support services, and financial and insurance services, which are typically located within commercial/ office premises.

The Petrie Mill site is also expected to attract a considerable health care and education presence. In total, approximately 2,750 additional jobs (16.3% of total) are projected in these industries within the precincts.

Table 5.3. Employment by Industry (1-Digit ANZSIC), Aggregate of Precincts and Share of Moreton Bay Regional Council Area Total, 2016, 2026 and 2041 (Place of Work) – With Petrie Mill Redevelopment

Industry (1-Digit ANZSIC)	2016		2026		2041	
	No.	% of MBRC	No.	% of MBRC	No.	% of MBRC
Agriculture, Forestry and Fishing	32	2.9%	30	2.9%	29	2.9%
Mining	90	19.9%	99	19.6%	110	19.0%
Manufacturing	7,429	80.7%	8,210	84.0%	9,198	86.8%
Electricity, Gas, Water and Waste Services	255	19.1%	287	19.9%	348	20.9%
Construction	3,065	24.1%	4,540	27.3%	6,488	29.4%
Wholesale Trade	1,923	55.9%	2,139	57.3%	2,639	60.2%
Retail Trade	1,758	10.8%	2,256	12.6%	3,007	13.9%
Accommodation and Food Services	413	4.5%	822	6.9%	1,225	7.2%
Transport, Postal and Warehousing	777	18.7%	1,075	22.2%	1,489	25.1%
Information Media and Telecommunications	94	15.4%	112	16.1%	167	17.8%
Financial and Insurance Services	355	14.7%	396	15.2%	528	16.7%
Rental, Hiring and Real Estate Services	344	16.8%	451	18.9%	622	21.2%
Professional, Scientific and Technical Services	812	14.8%	1,509	21.3%	2,393	25.8%
Administrative and Support Services	638	18.0%	953	20.9%	1,522	23.9%
Public Administration and Safety	395	8.1%	541	8.1%	822	8.4%
Education and Training	201	1.8%	587	4.2%	825	4.5%
Health Care and Social Assistance	289	1.6%	1,603	6.7%	2,412	7.3%
Arts and Recreation Services	133	9.3%	307	14.1%	531	14.3%
Other Services	1,882	31.7%	2,481	34.7%	3,422	36.4%
Total	**20,884**	**18.4%**	**28,399**	**20.4%**	**37,776**	**20.8%**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

In developing the above projections for precincts it was assumed industrial style activities (e.g. manufacturing, construction, utilities, transport and logistics, repair and maintenance) will consolidate in the industrial precincts to 2041. That is, business survival rates for these activities within industrial precincts is assumed to be higher than outside industrial precincts, and new industrial style businesses locating in Moreton Bay are assumed to have an enhanced preference for industrial precincts compared to areas outside industrial precincts. It was also assumed the precincts would transition towards non-traditional uses, in particular commercial and bulky goods uses. This is highlighted by an increase in the proportion of employment in both these traditional and non-traditional industrial uses being located in the precincts in 2041 compared to 2016. Other assumptions made in developing these projections are outlined in Appendix H.

The core goal of this study was to ensure the bank of strategic industrial land was sufficient to meet future needs to 2041, and as such a conservatively high set of demand assumptions were developed and applied. The assumptions applied in developing projections of employment (and land demand, see section 5.2) may be considered to present an optimistic scenario for future demand within Moreton Bay's industrial precincts, in that it is assumed employment growth for both traditional and non-traditional industrial uses will gravitate towards these precincts. This is reflected by the proportion of jobs in industrial precincts increasing as a share of total jobs in Moreton Bay between 2016 and 2041, from 18.4% in 2016 to 20.8% by 2041. While it is considered a reasonable assumption that future jobs growth will be centred to some degree in these key employment nodes, it is possible the assumptions used may overstate future demand for industrial precincts, particularly if non-traditional industrial uses continue to locate outside these precincts.

If the Petrie Mill redevelopment does not proceed, employment growth in precincts is projected to be less than outlined above. In particular, considerably fewer jobs in the industries of health care and education would be expected to locate to precincts without the Petrie Mill redevelopment. Other industries that would also be expected to record fewer jobs within the precincts include professional, scientific and technical services, arts and recreation services, accommodation and food services, and retail trade.

If the Petrie Mill redevelopment does not proceed, the proportion of employment in precincts within Moreton Bay LGA is expected to be lower in 2041 (19.1%) than if the Petrie Mill redevelopment does proceed, though still higher than in 2016 (18.4%).

Table 5.4. Employment by Industry (1-Digit ANZSIC), Aggregate of Precincts and Share of Moreton Bay Regional Council Area Total, 2016, 2026 and 2041 (Place of Work) – Without Petrie Mill Redevelopment

Industry (1-Digit ANZSIC)	2016		2026		2041	
	No.	% of MBRC	No.	% of MBRC	No.	% of MBRC
Agriculture, Forestry and Fishing	32	2.9%	30	2.9%	29	2.9%
Mining	90	19.9%	99	19.6%	110	19.0%
Manufacturing	7,429	80.7%	8,222	84.1%	9,198	86.9%
Electricity, Gas, Water and Waste Services	255	19.1%	287	19.9%	348	20.9%
Construction	3,065	24.1%	4,540	27.3%	6,488	29.4%
Wholesale Trade	1,923	55.9%	2,139	57.3%	2,639	60.2%
Retail Trade	1,758	10.8%	2,197	12.2%	2,887	13.4%
Accommodation and Food Services	413	4.5%	680	5.8%	1,000	5.9%
Transport, Postal and Warehousing	777	18.7%	1,075	22.2%	1,489	25.1%
Information Media and Telecommunications	94	15.4%	112	16.1%	167	17.8%
Financial and Insurance Services	355	14.7%	396	15.2%	528	16.7%
Rental, Hiring and Real Estate Services	344	16.8%	451	18.9%	622	21.2%
Professional, Scientific and Technical Services	812	14.8%	1,267	18.4%	1,967	21.9%
Administrative and Support Services	638	18.0%	953	20.9%	1,522	23.9%
Public Administration and Safety	395	8.1%	541	8.1%	822	8.4%
Education and Training	201	1.8%	267	2.0%	402	2.2%
Health Care and Social Assistance	289	1.6%	380	1.6%	591	1.8%
Arts and Recreation Services	133	9.3%	205	9.4%	355	9.6%
Other Services	1,882	31.7%	2,451	34.3%	3,367	35.8%
Total	**20,884**	**18.4%**	**26,292**	**19.1%**	**34,531**	**19.1%**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

5.1.2.2 Employment by Precinct

The employment estimates in section 5.1.2.1 outline aggregate employment within all precincts in Moreton Bay LGA by industry. This section presents a breakdown of employment within each precinct. For additional details regarding the industry split of employment by precinct, refer to Appendix I.

The approach for developing projections by precinct is outlined in Appendix H. Key assumptions applied in developing precinct by precinct projections included:

- Consultation indicates the southern areas of Moreton Bay are expected to continue to receive the most interest in growth over the foreseeable future, in particular the industrial precincts of Brendale and Narangba – North Lakes. The southern industrial precincts are generally preferred due to their closer proximity to key markets to the south and connecting transport and export infrastructure. Until these areas are built out there is not expected to be significant interest for industrial uses in the northern precincts such as Elimbah East, North East Business Park or Caboolture West. A summary of consultation findings is presented in Appendix D.
- Mild growth for industrial style industries as well as some commercial and bulky goods style industries is projected for the North East Business Park in the latter part of the projection period (2031 onwards), primarily supporting local population and reflecting the southern areas are projected to be approaching capacity at this point (i.e., above 70% of capacity).

Other assumptions applied in the modelling are outlined in Appendix H.

In 2016, the precincts of Brendale and Narangba – North Lakes accounted for 54.6% (11,404 jobs) of all employment in the industrial precincts in Moreton Bay LGA. This share is projected to increase to 55.3% through

to 2041 (20,876 jobs) as these precincts continue to be built out and other existing precincts such as Clontarf, Old Gympie Road Narangba, and Paisley Drive Lawnton reach capacity (see section 5.2).

The Petrie Mill precinct is also projected to record considerable growth to 2041 (4,231 jobs), primarily driven by health care, education and research activities.

The southern precincts are projected to account for 14,629 additional jobs between 2016 and 2041, or approximately 86.6% of total additional jobs in industrial precincts in Moreton Bay LGA. By comparison, northern precincts are projected to account for 2,263 additional jobs (13.4% of total additional industrial precinct jobs). This is reflective of both historic demand and consultation findings, which indicated demand is anticipated to primarily be directed towards southern precincts while suitable land remains available in these areas.

Table 5.5. Total Employment by Precinct, 2011 to 2041 (Place of Work) – With Petrie Mill Redevelopment

Area	Precinct	2011	2016	2021	2026	2031	2036	2041
North								
M1	Sandstone Point	22	22	27	32	38	43	43
B1	Bribie, First Avenue	152	156	168	169	169	168	169
1	Aerodrome Caboolture	1,893	1,941	2,248	2,542	2,825	2,981	2,981
2	Caboolture, Henzell Rd	648	655	723	802	888	937	937
3	Elimbah East	99	95	106	116	128	154	171
4	North East Business Park	7	17	30	60	152	254	378
5	Caboolture West LP	0	0	0	0	0	0	2
6	PAC Morayfield	206	212	243	276	305	305	305
7	Burpengary, Bruce Hwy	424	478	537	604	674	757	854
	North Sub-Total	***3,451***	***3,576***	***4,081***	***4,601***	***5,178***	***5,600***	***5,840***
South								
8b	Narangba, Old Gympie Rd	1,419	1,388	1,543	1,653	1,653	1,650	1,650
9	Deception Bay Rd	49	51	56	63	71	80	93
8a	Boundary Rd, Narangba-North Lakes	2,088	2,449	3,185	3,827	4,450	5,004	5,600
10	Dakabin, Kerr Rd West	0	0	72	156	264	382	523
11	Clontarf	1,889	1,849	1,894	1,894	1,892	1,885	1,880
M2	Marina – Scarborough	270	291	339	393	441	441	441
RA1	Redcliffe Aerodrome	125	137	145	149	153	170	182
13	Petrie	511	232	1,437	2,576	3,080	3,622	4,231
14	Lawnton, Paisley Drv	1,211	1,227	1,306	1,306	1,306	1,303	1,303
15	Brendale	9,032	8,954	9,930	11,025	12,279	13,648	15,276
16	The Hills District	704	730	756	756	756	755	756
	South Sub-Total	***17,298***	***17,308***	***20,663***	***23,797***	***26,343***	***28,940***	***31,937***
Moreton Bay LGA								
	Total Precincts	**20,749**	**20,884**	**24,744**	**28,399**	**31,521**	**34,540**	**37,776**
	Outside Precincts	85,908	92,437	101,044	110,676	121,244	132,122	144,159
	Total Moreton Bay	**106,657**	**113,321**	**125,788**	**139,074**	**152,765**	**166,661**	**181,935**
	Precincts as % of Moreton Bay	***19.5%***	***18.4%***	***19.7%***	***20.4%***	***20.6%***	***20.7%***	***20.8%***

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

If the Petrie Mill redevelopment does not proceed, employment growth in the precinct is projected to be mild between 2016 and 2041. In this scenario, the precincts of Brendale and Narangba – North Lakes are projected to account for 62.0% (21,120 jobs) of total jobs in industrial precincts within Moreton Bay LGA by 2041.

Table 5.6. Total Employment by Precinct, 2011 to 2041 (Place of Work) – Without Petrie Mill Redevelopment

Area	Precinct	2011	2016	2021	2026	2031	2036	2041
North								
M1	Sandstone Point	22	22	27	32	38	43	43
B1	Bribie, First Avenue	152	156	168	169	169	168	169
1	Aerodrome Caboolture	1,893	1,941	2,251	2,554	2,843	2,985	2,985
2	Caboolture, Henzell Rd	648	655	724	806	894	939	939
3	Elimbah East	99	95	106	117	128	155	171
4	North East Business Park	7	17	25	58	150	253	379
5	Caboolture West LP	0	0	0	0	0	0	2
6	PAC Morayfield	206	212	244	277	305	305	305
7	Burpengary, Bruce Hwy	424	478	538	606	678	764	863
	North Sub-Total	***3,451***	***3,576***	***4,082***	***4,618***	***5,205***	***5,612***	***5,856***
South								
8b	Narangba, Old Gympie Rd	1,419	1,388	1,549	1,653	1,653	1,650	1,648
9	Deception Bay Rd	49	51	56	63	72	81	95
8a	Boundary Rd, Narangba-North Lakes	2,088	2,449	3,205	3,899	4,574	5,197	5,873
10	Dakabin, Kerr Rd West	0	0	74	161	271	395	541
11	Clontarf	1,889	1,849	1,894	1,894	1,892	1,885	1,879
M2	Marina – Scarborough	270	291	340	397	443	443	443
RA1	Redcliffe Aerodrome	125	137	145	150	154	173	183
13	Petrie	511	232	265	301	339	382	434
14	Lawnton, Paisley Drv	1,211	1,227	1,306	1,306	1,306	1,303	1,303
15	Brendale	9,032	8,954	9,950	11,095	12,396	13,835	15,519
16	The Hills District	704	730	756	756	756	755	756
	South Sub-Total	***17,298***	***17,308***	***19,540***	***21,674***	***23,854***	***26,100***	***28,674***
Moreton Bay LGA								
	Total Precincts	**20,749**	**20,884**	**23,621**	**26,292**	**29,059**	**31,711**	**34,531**
	Outside Precincts	85,908	92,437	101,184	111,526	122,476	133,714	146,153
	Total Moreton Bay	**106,657**	**113,321**	**124,806**	**137,818**	**151,535**	**165,425**	**180,684**
	Precincts as % of Moreton Bay	***19.5%***	***18.4%***	***18.9%***	***19.1%***	***19.2%***	***19.2%***	***19.1%***

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

5.2 PROJECTED LAND DEMAND

Gross floor area (GFA) projections were developed by applying standard GFA per employee ratios by industry to employment projections for each precinct (see Table H.1 in Appendix H for these ratios). These standard ratios were adjusted for each precinct following comparison to building footprint data (MBRC, unpublished[d]), to ensure the estimated GFA in 2016 matched the actual building footprint.

Projections of GFA were then converted to land demand using the following approach:

- For 2016, the 2016 ratio between building footprint and currently developed industrially zoned land in each precinct (see Appendix B).
- For each time period thereafter, a similar ratio was applied. However for some locations the existing ratio was not considered appropriate as the existing ratio may include areas or uses that are unlikely to change. For example, the ratios for Caboolture and Redcliffe Aerodrome's include runways, leading to a very high ratio of developed land area per sqm of building footprint. As such, the future ratio was adjusted downward to reflect a more intensive ratio into the future as industrial areas develop. See Table H.2 in Appendix H for the ratios applied.

Land demand estimates presented in this section are for raw land, inclusive of areas set aside for infrastructure and environmental constraints.

In total, land demand in Moreton Bay LGA's industrial precincts is projected to increase from 977.9 ha in 2016 to 1,670.7 ha in 2041 (an increase of 692.8 ha, or 27.7 ha per annum).

Of this increase, the southern precincts are projected to account for 554.1 ha (approximately 80% of additional industrial land demand) and the northern precincts are projected to account for 138.6 ha (20% of additional industrial land demand).

Within the southern precincts additional land demand is projected to be strongest in Brendale, which is projected to account for 262.9 ha (37.9% of total increase, equating to 10.5 ha per annum), and Narangba – North Lakes, which is projected to account for 120.9 ha (17.4% of total; 4.8 ha per annum).

Table 5.7. Gross Land Demand by Precinct, 2011 to 2041 (Ha) – With Petrie Mill Redevelopment

Area	Precinct	2011	2016	2021	2026	2031	2036	2041
North								
M1	Sandstone Point	0.9	0.9	1.2	1.6	1.9	2.2	2.2
B1	Bribie, First Avenue	8.7	8.7	9.6	9.7	9.7	9.6	9.7
1	Aerodrome Caboolture	217.8	216.4	237.8	258.2	277.9	288.5	288.5
2	Caboolture, Henzell Rd	31.6	31.1	35.3	40.0	45.0	47.9	47.9
3	Elimbah East	23.3	19.9	20.7	21.6	22.5	25.1	27.1
4	North East Business Park	0.2	1.3	2.1	2.9	5.6	8.5	12.0
5	Caboolture West LP	0.0	0.0	0.0	0.0	0.0	0.0	0.1
6	PAC Morayfield	15.5	15.8	18.1	20.5	22.5	22.5	22.5
7	Burpengary, Bruce Hwy	22.5	25.3	29.1	33.1	37.3	42.4	48.0
	North Sub-Total	***320.6***	***319.4***	***353.8***	***387.5***	***422.3***	***446.7***	***458.0***
South								
8b	Narangba, Old Gympie Rd	91.2	88.8	101.9	111.0	111.0	110.8	110.7
9	Deception Bay Rd	2.4	2.3	2.6	2.9	3.4	3.9	4.6
8a	Boundary Rd, Narangba-North Lakes	84.1	89.8	116.3	140.2	164.3	186.4	210.6
10	Dakabin, Kerr Rd West	0.0	0.0	3.8	7.9	12.9	18.4	24.8
11	Clontarf	83.3	80.6	83.1	83.1	83.0	82.6	82.4
M2	Marina – Scarborough	9.6	9.6	11.4	13.2	14.8	14.8	14.8
RA1	Redcliffe Aerodrome	37.9	40.9	41.6	42.0	42.3	44.1	45.5
13	Petrie	26.5	13.5	44.4	71.9	85.8	100.8	118.1
14	Lawnton, Paisley Drv	41.0	40.4	44.9	44.9	44.9	44.7	44.7
15	Brendale	286.4	275.6	317.6	363.6	415.5	471.6	538.5
16	The Hills District	16.9	17.0	17.9	17.9	17.9	17.8	17.9
	South Sub-Total	***679.2***	***658.5***	***785.5***	***898.7***	***995.8***	***1,095.9***	***1,212.7***
Moreton Bay LGA								
	Total Precincts	**999.8**	**977.9**	**1,139.4**	**1,286.3**	**1,418.1**	**1,542.6**	**1,670.7**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

Without redevelopment of the Petrie Mill site, the Petrie Mill precinct is projected to record demand for 26.4 ha of land to 2041, compared to 118.1 ha with redevelopment. Overall, total land demand in precincts is projected to be 1,596.1 ha compared to 1,670.7 ha with Petrie Mill redevelopment.

Table 5.8. Gross Land Demand by Precinct, 2011 to 2041 (Ha) – Without Petrie Mill Redevelopment

Area	Precinct	2011	2016	2021	2026	2031	2036	2041
North								
M1	Sandstone Point	0.9	0.9	1.2	1.6	1.9	2.2	2.2
B1	Bribie, First Avenue	8.7	8.7	9.6	9.7	9.7	9.6	9.7
1	Aerodrome Caboolture	217.8	216.4	238.0	258.9	278.9	288.5	288.5
2	Caboolture, Henzell Rd	31.6	31.1	35.3	40.1	45.2	47.9	47.9
3	Elimbah East	23.3	19.9	20.7	21.6	22.5	25.1	27.1
4	North East Business Park	0.2	1.3	1.9	2.8	5.5	8.5	12.2
5	Caboolture West LP	0.0	0.0	0.0	0.0	0.0	0.0	0.1
6	PAC Morayfield	15.5	15.8	18.1	20.6	22.5	22.5	22.5
7	Burpengary, Bruce Hwy	22.5	25.3	29.1	33.2	37.5	42.7	48.5
	North Sub-Total	***320.6***	***319.4***	***354.0***	***388.5***	***423.8***	***447.1***	***458.7***
South								
8b	Narangba, Old Gympie Rd	91.2	88.8	102.4	111.0	111.0	110.8	110.6
9	Deception Bay Rd	2.4	2.3	2.6	3.0	3.4	3.9	4.7
8a	Boundary Rd, Narangba-North Lakes	84.1	89.8	116.9	142.1	167.4	191.2	217.1
10	Dakabin, Kerr Rd West	0.0	0.0	3.9	8.2	13.3	18.9	25.6
11	Clontarf	83.3	80.6	83.1	83.1	83.0	82.6	82.3
M2	Marina – Scarborough	9.6	9.6	11.4	13.3	14.8	14.8	14.8
RA1	Redcliffe Aerodrome	37.9	40.9	41.6	42.0	42.4	44.4	45.5
13	Petrie	26.5	13.5	15.6	17.9	20.3	23.1	26.4
14	Lawnton, Paisley Drv	41.0	40.4	44.9	44.9	44.9	44.7	44.7
15	Brendale	286.4	275.6	318.6	366.6	420.4	479.3	547.8
16	The Hills District	16.9	17.0	17.9	17.9	17.9	17.8	17.9
	South Sub-Total	***679.2***	***658.5***	***758.9***	***850.0***	***938.8***	***1,031.6***	***1,137.4***
Moreton Bay LGA								
	Total Precincts	**999.8**	**977.9**	**1,112.9**	**1,238.4**	**1,362.7**	**1,478.7**	**1,596.1**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

5.3 DEVELOPMENT MIX

The following table presents the projected share of land demand within precincts (aggregate of all precincts) by Local Government Infrastructure Plan (LGIP) category (a correspondence between 70 industry and LGIP Category is provided in Table H.1 of Appendix H). Traditional industrial style activities are projected to account for a smaller share of precinct growth over the next 25 years, declining from 72.1% in 2016 to 60.2% by 2041. Construction activities are projected to record the largest increase (13.5% in 2016 to 18.1% in 2041), but retail, commercial and community are all also expected to record considerable increases in share of precinct uses.

Table 5.9. Share of Gross Land Demand by Land Use Type, Aggregate of Precincts, 2011 to 2041 (Ha) – With Petrie Mill Redevelopment

LGIP Category	2011	2016	2021	2026	2031	2036	2041
Rural & Resources	3.4%	2.7%	2.3%	2.1%	1.9%	1.8%	1.7%
Industry	73.8%	72.1%	67.5%	64.6%	62.8%	61.4%	60.2%
Construction	12.6%	13.5%	15.3%	16.3%	17.1%	17.7%	18.1%
Retail	3.4%	4.0%	4.4%	4.8%	5.0%	5.2%	5.4%
Commercial	5.3%	5.8%	6.5%	7.1%	7.9%	8.4%	8.9%
Community	1.6%	1.9%	3.9%	5.0%	5.3%	5.5%	5.8%
Total	**999.8**	**977.9**	**1,139.4**	**1,286.3**	**1,418.1**	**1,542.6**	**1,670.7**

Notes: A correspondence between 70 industry and LGIP Category is provided in Table E.1 of Appendix E.
Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

Without the Petrie Mill redevelopment, the industrial precincts are projected to have a higher reliance on industry and construction type activities and less reliance on community type activities.

Table 5.10. Share of Gross Land Demand by Land Use Type, Aggregate of Precincts, 2011 to 2041 (Ha) – Without Petrie Mill Redevelopment

LGIP Category	2011	2016	2021	2026	2031	2036	2041
Rural & Resources	3.4%	2.7%	2.4%	2.2%	2.0%	1.9%	1.7%
Industry	73.8%	72.1%	69.2%	67.1%	65.4%	64.0%	62.9%
Construction	12.6%	13.5%	15.7%	16.9%	17.8%	18.5%	18.9%
Retail	3.4%	4.0%	4.3%	4.6%	4.8%	4.9%	5.1%
Commercial	5.3%	5.8%	6.5%	7.1%	7.8%	8.3%	8.9%
Community	1.6%	1.9%	2.0%	2.1%	2.2%	2.4%	2.5%
Total	**999.8**	**977.9**	**1,112.9**	**1,238.4**	**1,362.7**	**1,478.7**	**1,596.1**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

5.4 SUPPLY – DEMAND GAP ANALYSIS

A comparison of land supply and demand by precinct in 2041 for both the with and without Petrie Mill redevelopment scenarios is presented in Table 5.11.

In both scenarios, the amount of land remaining in precincts in the southern parts of Moreton Bay LGA is projected to be nearing exhaustion by 2041. The table shows total remaining land in the south is projected to be 238.3 ha in 2041 in the with Petrie Mill redevelopment scenario, or 155.8 ha without redevelopment. At projected take up rates of 22.2 ha per annum between 2016 and 2041 in the south, this would be sufficient for another 8 to 12 years without distribution of demand into northern precincts. The southern precincts can thereby be considered to have sufficient capacity to meet demand until approximately 2050.

While demand for the northern precincts in Moreton Bay is not projected to be high to 2041, areas such as of Elimbah East, North East Business Park and Caboolture West LP will provide important land banks for ongoing industrial growth and development in Moreton Bay LGA beyond 2050, as projections indicate the southern precincts should be nearing exhaustion by this timeframe. With land demand of approximately 5.5 ha per annum in the north between 2016 and 2041, by 2050 the northern precincts could be assumed to have approximately 665 ha remaining available. This would provide sufficient industrial land in Moreton Bay until approximately 2075 at projected industrial land demand rates of 27.7 ha per annum for the LGA.

As noted in section 5.1.2.1, the assumptions used in developing employment and land demand projections may be considered to present a conservatively high view of demand for industrial precincts. Where land take up is lower/ slower, the quantum of available industrial land supply remaining will be greater than that presented, further highlighting the significant forward bank of industrial zoned land supply, particularly in the northern portion of Moreton Bay.

Table 5.11. Comparison of Land Supply and Demand (Ha) by Precinct, 2041, Both Scenarios

Precinct		With Petrie Mill Redevelopment			Without Petrie Mill Redevelopment		
Area		Supply	Demand	Remaining	Supply	Demand	Remaining
North							
M1	Sandstone Point	2.2	2.2	0.0	2.2	2.2	0.0
B1	Bribie, First Avenue	9.7	9.7	0.0	9.7	9.7	0.0
1	Aerodrome Caboolture	288.5	288.5	0.0	288.5	288.5	0.0
2	Caboolture, Henzell Rd	47.9	47.9	0.0	47.9	47.9	0.0
3	Elimbah East	397.5	27.1	370.4	397.5	27.1	370.4
4	North East Business Park	173.5	12.0	161.5	173.5	12.2	161.4
5	Caboolture West LP	158.8	0.1	158.7	158.8	0.1	158.7
6	PAC Morayfield	22.5	22.5	0.0	22.5	22.5	0.0
7	Burpengary, Bruce Hwy	72.4	48.0	24.4	72.4	48.5	23.9
	North Sub-Total	***1,173.1***	***458.0***	***715.1***	***1,173.1***	***458.7***	***714.4***
South							
8b	Narangba, Old Gympie Rd	111.0	110.7	0.3	111.0	110.6	0.4
9	Deception Bay Rd	23.4	4.6	18.8	23.4	4.7	18.7
8a	Boundary Rd, Narangba-North Lakes	224.4	210.6	13.8	224.4	217.1	7.3
10	Dakabin, Kerr Rd West	49.0	24.8	24.2	49.0	25.6	23.4
11	Clontarf	83.1	82.4	0.7	83.1	82.3	0.8
M2	Marina – Scarborough	14.8	14.8	0.0	14.8	14.8	0.0
RA1	Redcliffe Aerodrome	45.5	45.5	0.0	45.5	45.5	0.0
13	Petrie	224.5	118.1	106.4	66.8	26.4	40.4
14	Lawnton, Paisley Drv	44.9	44.7	0.2	44.9	44.7	0.2
15	Brendale	612.4	538.5	73.9	612.4	547.8	64.6
16	The Hills District	17.9	17.9	0.0	17.9	17.9	0.0
	South Sub-Total	***1,450.9***	***1,212.7***	***238.3***	***1,293.2***	***1,137.4***	***155.8***
Moreton Bay LGA							
	Total Precincts	**2,624.0**	**1,670.7**	**953.3**	**2,466.3**	**1,596.1**	**870.2**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), Google Earth (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

6. FINDINGS AND IMPLICATIONS

In determining the projected land demand for the Moreton Bay region over the next 25 years to 2041 a range of factors and projections were taken into consideration, including:

- **Projected economic activity** – which projects key growth sectors and overall employment numbers to 2041, and then the distribution of these projected job numbers into the precincts and outside the precinct areas.
- **Projected land demand** – which projects the increased demand for industrial land and the locations most likely to accommodate this demand.
- **Development mix** – this looks at the projected share of land demand by land use type.
- **Supply – demand gap analysis** – this provides a comparison of the land supply and demand by precinct to 2041.

Provided below is a summary of the key findings and implications associated with each of these contributing factors.

Projected Economic Activity

Total employment in the Moreton Bay Regional Council area is projected to increase from 113,321 jobs in 2016 to nearly 182,000 jobs by 2041, which is an increase of approximately 60% or approximately 69,000 jobs. The key sectors that will drive this growth are all population driven industries that include:

- Health care and social assistance.
- Construction.
- Accommodation and food services.
- Education and training.

Industries that traditionally demand industrial land, such as manufacturing, wholesale trade, transport, postal and warehousing and other services (primarily repair and maintenance services), combined are only projected to account for 11.0% of total jobs growth in the Moreton Bay region between 2016 and 2041, or approximately 7,550 jobs, and not all of these jobs will demand industrial land.

In relation to the **aggregate precinct employment by industry** in 2026 and 2041, as the construction industry is projected to be the strongest growing more traditional industrial land user, this industry is projected to be the largest growth industry within the precincts to 2041. Despite projections indicating relatively subdued growth in manufacturing in Moreton Bay overall, this industry is projected to record the second largest growth industry within the precincts. Subject to flexibility within the planning scheme other services and retail trade are also projected to be key growth industries for the precincts. This is primarily expected to be for repair and maintenance (other services) and bulky goods retail (retail trade).

Given the comparatively low growth in traditional industries that demand industrial land, it is expected that an increasing proportion of the demand for land in the precincts will be generated through non-traditional uses, in particular commercial uses. The Petrie Mill site is also expected to attract a considerable health care and education presence.

The implications of the above key findings is that subject to a supportive and flexible planning scheme the appearance of the precincts and the type of development they accommodate over the next 25 years could change significantly to accommodate these growing and consistently evolving industries.

At an **employment by precinct** level, in 2016, the precincts of Brendale and Narangba–North Lakes accounted for 54.6% of all employment in the industrial precincts in Moreton Bay region. This share is projected to increase to 55.3% through to 2041 as these precincts continue to be built out and other existing precincts such as Clontarf, Old Gympie Road Narangba, and Paisley Drive Lawnton reach capacity. The Petrie Mill precinct is also projected to record considerable growth to 2041 (4,231 jobs), primarily driven by health care, education and research activities.

Projected Land Demand

In total, land demand in Moreton Bay LGA's industrial precincts is projected to increase from 978 ha in 2016 to 1,670.7 ha in 2041 (an increase of 693 ha, or 27.7 ha per annum). The southern precincts are projected to account 80% of this increase, and the northern precincts 20%. Demand is projected to strongest in the south as these precincts are generally preferred due to their closer proximity to key markets to the south and connecting transport and export infrastructure. It is considered unlikely that high levels of demand will be generated for the northern precincts over the next 10 to 20 years without some form of intervention, for example additional infrastructure enhancing connectivity between the northern precincts and southern markets/ transport infrastructure.

Brendale is projected to account for 263 ha (37.9% of total increase, equating to 10.5 ha per annum) and Narangba–North Lakes is projected to account for 121 ha (17.4% of total; 4.8 ha per annum).

Development Mix

The projected share of land demand within precincts by land use category suggest that traditional industrial style activities are projected to account for a smaller share of precinct growth over the next 25 years, declining from 72% in 2016 to approximately 60% by 2041. Construction activities are projected to record the largest increase (13.5% in 2016 to 18.1% in 2041), but retail, commercial and community are all also expected to record considerable increases in share of precinct uses.

Supply-Demand Gap Analysis

The comparison of land supply and demand by precinct to 2041 highlights that the amount of land remaining in precincts in the southern parts of the Moreton Bay region is projected to be nearing exhaustion by 2041. The total remaining land in southern precincts is projected to be 238.3 ha in 2041 when the Petrie Mill redevelopment scenario is included. At projected take up rates of 22.2 ha per annum for southern precincts to 2041, this would be sufficient until approximately 2050 without distribution of demand into northern precincts.

While demand for the northern precincts in Moreton Bay is not projected to be high to 2041, areas such as Elimbah East, North East Business Park and Caboolture West LP could provide important land banks for ongoing industrial growth and development in Moreton Bay LGA beyond 2050. Projections suggest there is sufficient land in the northern precincts to meet annual demand in Moreton Bay to approximately 2075.

The overall implications of the above key findings include:

- Moreton Bay Regional Council area has sufficient land zoned for industrial uses to accommodate projected growth until 2041, although industrial land in the south is anticipated to be taken up by 2050.
- Given the strong population growth and projected growth of industries that are linked to population growth Council will need to consider the accommodation of other uses for land currently zoned as industry. This study identifies that as at 2041 over 950 hectares of land currently zoned for industrial uses will still be available for development, primarily in the northern precincts. Council needs to consider whether this land should be preserved to accommodate industrial type uses beyond 2041 or whether it should be opened up to other forms of development more in line with the projected growth of the region.
- Given a large proportion of industrial land demand (and jobs) is projected for the southern precincts, there is potential that residents in the northern parts of Moreton Bay may need to commute for work. This is particularly likely for residents in the northern areas employed in traditional industrial style industries.
- Global trends and influencing factors suggest that what we know today about the traditional industrial and manufacturing uses are unlikely to exist in 2041 and beyond, so it is important that the right balance between a range of industries and potentially residential development that compliments a mixed industry environment should be considered going forward.
- The industries and land uses consistent with mixed industry precincts are considered to generate higher value and lower impact jobs and are consistent with the findings relating to the workforce and production trends in the future.
- One of the considerations for Council going forward is the level of flexibility that should be built into the planning scheme to accommodate different types of uses within precincts currently only zoned for industrial uses.

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APPENDIX A: GRP METHODOLOGY

This Appendix outlines the methodology utilised by AEC Group Pty Ltd (AEC) for developing Gross Regional Product (GRP) estimates for all Australian Local Government Areas (LGAs) and Statistical Divisions (SDs).

RATIONALE

Gross Domestic Product (GDP) and Gross State Product (GSP) figures are produced on a regular basis and published by the Australian Bureau of Statistics and the relevant State and Territory Government departments. However, regular official estimates of production for sub-State regions do not exist (Gross Regional Product, GRP).

The Australian Bureau of Statistics (ABS) use three approaches to calculate GDP / GSP:

- Value added approach (or Production approach): represents the difference between taking the market value of the goods and services produced by an industry (gross output) and deducting the cost of goods and services used up by the industry in the productive process (intermediate consumption).
- Income approach: calculates the cost of producing GRP by summing the incomes accruing from domestic production. These income components can be viewed as the market costs of production consisting of the compensation of employees (wages, salaries and supplements), provision for the consumption of fixed capital (depreciation), net operating surplus, and net indirect taxes.
- Expenditure approach: sums all final expenditures (ignoring expenditure on intermediate consumption) on goods and services, add on the contribution of exports and deduct the value of imports. Final expenditures are known as final demand and include final consumption expenditure by households, gross fixed capital expenditure by producers (i.e. durable assets), investment stocks and exports to the rest of the world.

Due to data limitations it is not possible to calculate GRP using the same approach as national or State values. AEC estimates of GRP at factor cost use an indirect method to disaggregate official State GSP totals. As such, all GRP estimates are subject to a combination of any errors in the State GSP estimates as well as those introduced by the methodology and data limitations used to allocate GSP to the constituent regions.

AEC GRP MODEL APPROACH

AEC's GRP model utilises the ABS's national Input-Output (IO) transaction tables to develop GRP estimates by 114 industries for each LGA and SD in Australia for the latest IO release year at time of development. For the 2014-15 GRP estimates used in this study, this used the 2012-13 IO transaction tables (ABS, 2015c).

Development of LGA and SD estimates uses AEC's IO transaction table regionalisation process, which uses employment by industry by place of work data (from the 2006 and 2011 Censuses (ABS, 2012)) to identify percentage contributions of employment by industry for a specified region to Australia, and applies these percentages to develop indicative estimates of a region's differentiated structure to that of the national economy.

In developing the regional transaction table, two alternative approaches are used and the average of the two approaches taken. The two processes used are the "Cross Industry Location Quotient" (CILQ) approach and the "Demand-Supply Pool" (DSP) approach.

The premise of the CILQ approach is that those sectors that are proportionally larger within a region compared to Australia (i.e., have a location quotient (LQ) above 1) will typically need to import a higher share of their input requirements than the Australian average, and vice versa. The premise of the DSP approach is that industries will look to source inputs first and foremost from the local economy. Only where required inputs are not available locally will an industry seek to import goods/ services. Conversely, industries will look to sell locally first and foremost, and only where there is no demand locally will they look to export. Both approaches are examined in detail in West (1993).

GRP estimates from the transaction tables are aggregated to the 19 industry classifications listed in ANZSIC, plus ownership of dwellings, and rebased to State Accounts estimates of value add by industry. Estimates of GRP for

other years are developed based on industry growth in GVA at the State level, disaggregated to an LGA level primarily based on employment by industry estimates developed using a range of data sources (including quarterly labour force survey data by labour force region and industry (ABS, 2016b), small area labour market data (DoE, 2016), and Census data (ABS, 2012)).

LIMITATIONS AND ASSUMPTIONS

AEC's methodology for estimating GRP uses a number of key assumptions to disaggregate GVA by industry across each LGA and SD. The model is limited by the accuracy and relevance of these assumptions. Key assumptions include:

- In calculating 2012-13 estimates using the IO model, it is assumed the production function for each individual industry is the same across every region (i.e., each region requires the same inputs in the same quantities per unit of output).
- The employment by place of work to employment by place of usual residence from the 2011 Census of Population and Housing has held constant.
- Growth in industry contribution for each LGA has grown at the same growth rate as the SD in which it is located.
- The value add per employee is assumed to be the same in each region and the State.
- Price growth in the State is assumed to be the same across regions; GVA is split out based on the equivalent GVA per employee, assuming the price growth of each LGA is the same as the State.

Additional limitations in the model include:

- The relative difference between each regions' value add per employee and that of Australia is assumed to remain relatively constant over time, which may not be an accurate reflection of changes in the actual economy.
- Employment estimates are based off the 2012-13 transaction tables, with the breakdown of employment within each region in 2012-13 based off a straight line growth path between the 2006 and 2011 Census employment by industry by place of work estimates, extended to 2013.

These limitations can act to artificially inflate (or deflate) a region's or industry's GRP contributions. As such, the GRP estimates provided by AEC's model should be used with caution, and are intended as a guide to the level of economic activity and growth in the region relative to other areas in Australia.

APPENDIX B: APPROACH TO ESTIMATING AVAILABLE LAND SUPPLY

Estimates of total available land within each precinct were developed using a range of datasets provided by Council, as well as a visual audit using Google Earth. The approach used is described below.

TOTAL LAND AVAILABILITY/ CAPACITY

GIS shapefiles for were provided by Council identifying precinct boundaries (MBRC, unpublished[a]), land zoning (MBRC, unpublished[b]) and land use (MBRC, unpublished[c]). These files were used to construct an estimate of total area available within each precinct that was zoned for industrial purposes.

The following zonings outlined in these files were included for industrial uses:

- Areas zoned:
  - General industry
  - Light industry
  - Marine industry
  - Mixed industry and business
  - Restricted industry
  - Utilities
  - Airfield (for Caboolture and Redcliffe Aerodromes)
  - Petrie Mill (for the scenario examining redevelopment of Petrie Mill)
- Areas with no zoning, but an LP precinct code of:
  - Enterprise and employment
- Areas with no zoning or LP precinct code, but a level 1 zone code of:
  - Industry.

Table B.1. Total Land Area Available for Industrial Uses

Area	Precinct	Total Land Area (Ha)	Total Area Zoned for Industrial Uses (Ha)	% of Land for Industrial Uses
M1	Sandstone Point	2.206	2.206	100.0%
B1	Bribie, First Avenue	29.317	9.678	33.0%
1	Aerodrome Caboolture	425.899	288.550	67.8%
2	Caboolture, Henzell Rd	69.410	47.863	69.0%
3	Elimbah East	448.396	397.490	88.6%
4	North East Business Park	389.588	173.532	44.5%
5	Caboolture West LP	219.766	158.848	72.3%
6	PAC Morayfield	193.165	22.520	11.7%
7	Burpengary, Bruce Hwy	124.212	72.411	58.3%
8b	Narangba, Old Gympie Rd	304.048	110.972	36.5%
9	Deception Bay Rd	69.767	23.433	33.6%
8a	Boundary Rd, Narangba-North Lakes	523.259	224.400	42.9%
10	Dakabin, Kerr Rd West	58.893	48.993	83.2%
11	Clontarf	106.646	83.139	78.0%
M2	Marina – Scarborough	14.829	14.829	100.0%
RA1	Redcliffe Aerodrome	45.471	45.471	100.0%

Area	Precinct	Total Land Area (Ha)	Total Area Zoned for Industrial Uses (Ha)	% of Land for Industrial Uses
13	Petrie Mill [(a)]	336.445	224.470	66.7%
14	Lawnton, Paisley Drv	59.635	44.896	75.3%
15	Brendale	734.721	612.433	83.4%
16	The Hills District	20.748	17.867	86.1%

Note: (a) This reflects the land available in the scenario including the Petrie Mill site for redevelopment. Without the Petrie Mill site, this precinct has 66.76 ha of land zoned for industrial uses.
Source: MBRC (unpublished[a]; unpublished[b]; unpublished[c]).

LAND CURRENTLY DEVELOPED AND IN USE

No data was available to identify how much land was currently developed and in use within each precinct. In order to estimate this, AEC undertook a visual audit of each precinct using Google Earth during November 2016, with the GIS layers overlaid. An indicative estimate of the amount of land currently (2016) developed and in use is presented in Table B.2.

Table B.2. Land Area Currently Developed and in Use

Area	Precinct	Total Area Zoned for Industrial Uses (Ha)	Indicative Estimate of % of Area Currently Developed and In Use	Area Zoned for Industrial Use Currently Developed and in Use (Ha)
M1	Sandstone Point	2.206	40.0%	0.882
B1	Bribie, First Avenue	9.678	90.0%	8.710
1	Aerodrome Caboolture	288.550	75.0%	216.412
2	Caboolture, Henzell Rd	47.863	65.0%	31.111
3	Elimbah East	397.490	5.0%	19.874
4	North East Business Park	173.532	0.8%	1.301
5	Caboolture West LP	158.848	0.0%	0.000
6	PAC Morayfield	22.520	70.0%	15.764
7	Burpengary, Bruce Hwy	72.411	35.0%	25.344
8b	Narangba, Old Gympie Rd	110.972	80.0%	88.778
9	Deception Bay Rd	23.433	10.0%	2.343
8a	Boundary Rd, Narangba-North Lakes	224.400	40.0%	89.760
10	Dakabin, Kerr Rd West	48.993	0.0%	0.000
11	Clontarf	83.139	97.0%	80.645
M2	Marina – Scarborough	14.829	65.0%	9.639
RA1	Redcliffe Aerodrome	45.471	90.0%	40.924
13	Petrie Mill	224.470	6.0%	13.468
14	Lawnton, Paisley Drv	44.896	90.0%	40.407
15	Brendale	612.433	45.0%	275.595
16	The Hills District	17.867	95.0%	16.974

Source: Google Earth (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]), AEC.

BUILDING FOOTPRINT

An estimate of the total building footprint within currently developed industrial areas was developed using a building footprints GIS shapefile (MBRC, unpublished[d]), in combination with the layers used to identify total land available for industrial uses. A review using Google Earth was also undertaken to identify areas where the estimate of building footprints from the GIS file was considered inappropriate. A summary of the building footprint is presented in Table B.3.

Table B.3. Building Footprint

Area	Precinct	Area Zoned for Industrial Use Currently Developed and in Use (Ha)	Building Footprint in Area Currently Developed and In Use (Ha)	Building Footprint as a % of Land Currently Developed and in Use
M1	Sandstone Point	0.882	0.285	32.2%
B1	Bribie, First Avenue	8.710	2.504	28.7%
1	Aerodrome Caboolture	216.412	21.252	9.8%
2	Caboolture, Henzell Rd	31.111	7.147	23.0%
3	Elimbah East	19.874	1.838	9.2%
4	North East Business Park	1.301	0.329	25.3%
5	Caboolture West LP	0.000	0.000	0.0%
6	PAC Morayfield	15.764	2.489	15.8%
7	Burpengary, Bruce Hwy	25.344	5.097	20.1%
8b	Narangba, Old Gympie Rd	88.778	20.151	22.7%
9	Deception Bay Rd	2.343	0.436 (a)	18.6%
8a	Boundary Rd, Narangba-North Lakes	89.760	27.109	30.2%
10	Dakabin, Kerr Rd West	0.000	0.000	0.0%
11	Clontarf	80.645	25.127	31.2%
M2	Marina – Scarborough	9.639	1.318 (b)	13.7%
RA1	Redcliffe Aerodrome	40.924	1.900	4.6%
13	Petrie Mill	13.468	2.529 (c)	18.8%
14	Lawnton, Paisley Drv	40.407	10.567	26.2%
15	Brendale	275.595	100.341	36.4%
16	The Hills District	16.974	5.165	30.4%

Notes: (a) The building footprint estimate was halved as many of the buildings in this precinct are dwellings. (b) The building footprint in this precinct was doubled as many of the buildings are multi-storey. (c) The building footprint in this precinct was reduced by two thirds as much of the current building footprint represents the unoccupied Petrie Mill site.
Source: Google Earth (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

AREA AVAILABLE FOR FUTURE INDUSTRY DEVELOPMENT

Of the remaining land zoned for industrial uses but not currently developed and in use, it was assumed 70% would be available for employment uses, with the remaining 30% required for infrastructure (e.g. internal roads). This provided the maximum land capacity for additional employment uses in each precinct, summarised in Table B.4.

Table B.4. Land Area Currently Developed and in Use

Area	Precinct	Land Area Remaining for Future Industrial Development (Ha)	% of Area Not Available for Industrial Development	Remaining Area Available for Future Industrial Development (Ha)
M1	Sandstone Point	1.323	30%	0.926
B1	Bribie, First Avenue	0.968	30%	0.677
1	Aerodrome Caboolture	72.137	30%	50.496
2	Caboolture, Henzell Rd	16.752	30%	11.726
3	Elimbah East	377.615	30%	264.331
4	North East Business Park	172.230	30%	120.561
5	Caboolture West LP	158.848	30%	111.193
6	PAC Morayfield	6.756	30%	4.729
7	Burpengary, Bruce Hwy	47.067	30%	32.947
8b	Narangba, Old Gympie Rd	22.194	30%	15.536
9	Deception Bay Rd	21.090	30%	14.763
8a	Boundary Rd, Narangba-North Lakes	134.640	30%	94.248
10	Dakabin, Kerr Rd West	48.993	30%	34.295
11	Clontarf	2.494	30%	1.746
M2	Marina – Scarborough	5.190	30%	3.633
RA1	Redcliffe Aerodrome	4.547	30%	3.183
13	Petrie Mill	211.001	30%	147.701
14	Lawnton, Paisley Drv	4.490	30%	3.143
15	Brendale	336.838	30%	235.787
16	The Hills District	0.893	30%	0.625

Source: Google Earth (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]), AEC.

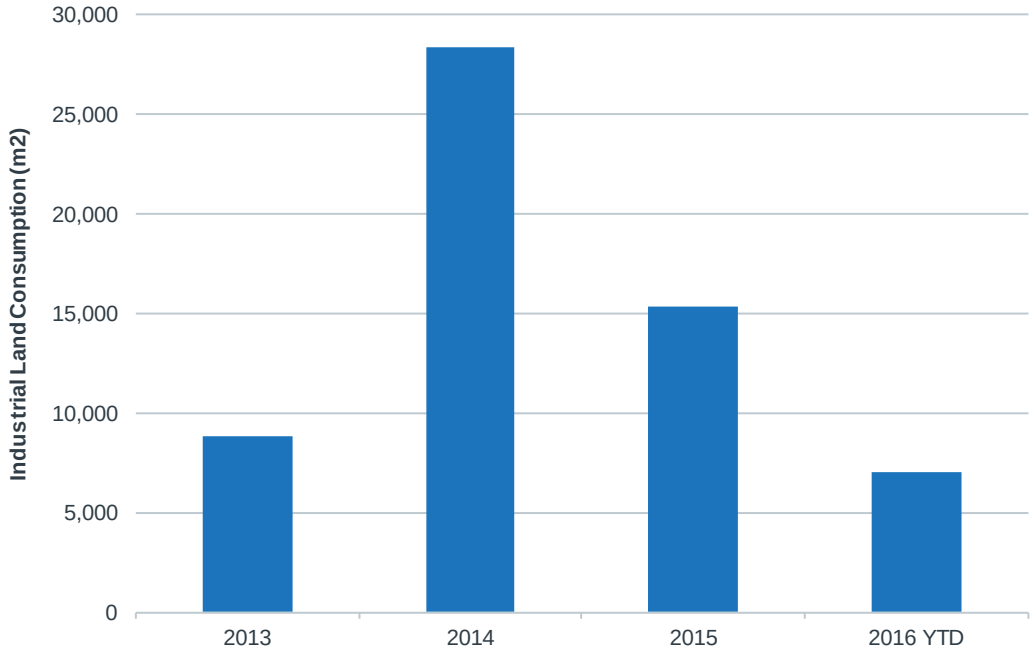
APPENDIX C: INDUSTRIAL SALES DATA

VACANT INDUSTRIAL LAND SALES

Information on vacant industrial land sales outlines vacant industrial land sales have averaged approximately 1.5 ha per annum since 2013. These sales are based on single site transactions (and thereby exclude roads, etc), rather than large parcel sales to developers (for development and resale) which are likely to be larger in size. Sales were strong in 2014, with a total of 2.8 ha transacted, driven by the sale of a large parcel in Brendale (1.8 ha). A number of transactions within the North Lakes precinct in 2015 contributed to a stronger than average year also. Transactions undertaken in the last four years were all centred on four major precincts within Moreton Bay:

- Brendale: 2.47 ha
- North Lakes (Dakabin, Kerr Rd West): 0.91 ha
- Deception Bay (Boundary Rd, Narangba-North Lakes): 0.70 ha
- Aerodrome Caboolture: 0.48 ha.

Figure C.1. Vacant Industrial Land Sales, Size of Land, 2013 to 2016



Source: realcommercial (2016).

In the past year, since September 2015, there have been four sales transactions on vacant lots. The average area of these lots was 2,780 sqm. Sales were recorded in the Caboolture and Pine Rivers areas.

Table C.1. Moreton Bay Industrial Land Sales, September 2015 to October 2016

Street	Locality	Area	Sale Price
Caboolture			
30 Piper Street	Caboolture	2,040 m²	n.a.
81-83 Kabi Ct	Deception Bay	2,659 m²	n.a.
Pine Rivers			
Unknown	Brendale	2,473 m²	$950,000
Lot 5 Flinders Pde	North Lakes	3,970 m²	n.a.

Source: Real Commercial (2016).

Yields on industrial lands in Northside Brisbane[6] are firm, with potential yields of up to 7.5% for prime industrial lands and 9.75% for secondary industrial lands in September 2016. Industrial rents are lower than the Trade Coast, but on par with those on the Southside of Brisbane at a mid-point of $101 per sqm.

Table C.2. Market Indicators, September Quarter 2016

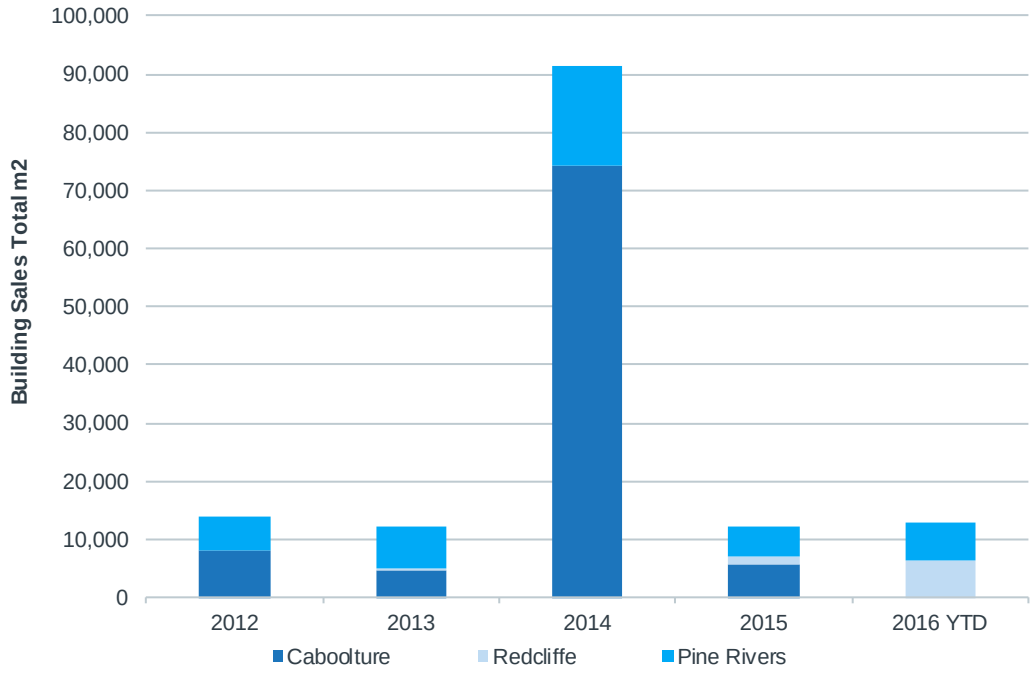
Indicator	Prime		Secondary	
	Low	High	Low	High
Rental Net Effective ($ per sqm)	$110	$130	$65	$100
Yield – Market (%)	6.75%	7.50%	8.25%	9.75%
IRR (%)	8.50%	9.00%	9.25%	10.00%
Outgoings – Total ($ per sqm)	$20	$25	$15	$20
Capital Values ($ per sqm)	$1,450	$1,950	$750	$1,250

Source: Savills (2016).

INDUSTRIAL BUILDING SALES

On average, since 2012 (to October 2016), sales of industrial buildings suggest demand for an average of 2.9 ha per annum (site area). Strong demand was recorded in 2014, driven by sales transactions on two large sites in Bongaree (3.76 ha) and Caboolture (1.08ha). Caboolture and Pine Rivers regions are the most prominent locations for industrial building sales, representing 95% of the market since 2012 (in terms of land size).

Figure C.2. Industrial Building Sales, Size of Land, 2012 to 2016



Source: Pricefinder (2016).

Since the end of September 2015, sales transactions have taken place for approximately 13 existing industrial buildings in the Moreton Bay region. The Moreton Bay region recorded an average price of $946 per sqm in the period. More than half (7) of these transactions were for properties located in Pine Rivers, where sales occurred in Brendale, Everton Hills, Arana Hills, Kallangur and Joyner. The average price in this sub-region was $1,144 per sqm over the period. Redcliffe recorded four transactions over the period, the majority of which (3 of the 4 transactions) were located in Clontarf. The average price in this sub-region was $627 per sqm over the period. Caboolture recorded two transactions in the period, both in the Caboolture suburb (Aerodrome Caboolture).

[6] Includes the suburbs of: Zillmere, Geebung, Northgate, Banyo, Virginia, Morayfield, Caboolture, Brendale, Strathpine, Petrie, North Lakes, Burpengary, Deception Bay and Narangba.

Transactions for which days to sell data was available is sparse (three of the transactions), however, suggests industrial lands tends to sell relatively quickly, at an average of 24.3 days.

Table C.3. Moreton Bay Industrial Building Sales, September 2015 to October 2016

Street	Locality	Area	Sale Price
Caboolture			
15 Lear Jet Dr	Caboolture	1 m² *	$375,000
23 To 25 Lear Jet Dr	Caboolture	5,800 m²	$4,865,000
Pine Rivers			
1 Francis Rd	Arana Hills	1,012 m²	$370,000
1399 ANZAC Ave	Kallangur	1,743 m²	$1,705,000
1 Youngs Crossing Rd	Joyner	2,268 m²	$2,460,000
35 Queens Rd	Everton Hills	137 m²	$335,000
3 Camelia Ave	Everton Hills	2,190 m²	$3,500,000
40 Kremzow Rd	Brendale	2,115 m²	$1,700,000
19 Mackie Way	Brendale	2,037 m²	$1,485,000
Redcliffe			
4-38 Grice St	Clontarf	2,609 m²	$826,540
353 Macdonnell Rd	Clontarf	1,375 m²	$1,100,000
76 High St	Kippa-Ring	2,014 m²	$1,500,000
29 Tubbs St	Clontarf	486 m²	$315,000

Note: * this transaction has been omitted from all price per sqm calculations.
Source: Pricefinder (2016).

APPENDIX D: CONSULTATION SUMMARY

Consultation was conducted with a range of industry stakeholders to inform the development of the modelling of employment and land projections going forward. This appendix provides a summary of the findings from consultation undertaken.

STAKEHOLDERS CONSULTED

Consultation was undertaken with the following stakeholders.

- Council established Industry Reference Group:
    - Tim Connolly (representing UDIA)
    - Adam Renai (representing UDIA)
    - Cameron Hoffman (representing PCA)
    - Sean Cullen (representing PCA)
    - Stan Spyrou, Australian Institute of Building Surveyors
    - Michael Roberts, Housing Industry Australia
    - Karen Haworth, Master Builders Qld
    - Leisa Sinclair (representing Queensland Environmental Law Association)
    - Peter Gill (representing Queensland Environmental Law Association)
    - Matthew Fry, Surveying & Spatial Sciences Institute
    - Ian McEwan, Engineers Australia
    - Don Grehan, Royal Institute of Chartered Surveyors.
- Development Industry contacts that were consulted separately:
    - Dan Felton, Vanriet
    - Andrew McKenzie, GM Property, CSR Ltd
    - Chad Walker, Walker Corp
    - Bruce Harper, Investa Land Qld
    - Peter Lightbody, North East Business Park
    - Michael McErlean, NEBP
    - Craig Doyle, Indigo Group
    - Gary Poole, Caboolture Property Developments
    - Bruce Simons, Pradella Development P/L
    - Adam Renai, Stockland.
- MBRC:
    - Peter Rawlinson, Regional Strategic Planner
    - Kate Isles, Manager Strategic Planning.
- State Government:
    - John Brun, DILGP.

GENERAL COMMENTS

The industrial market has changed significantly over the last five years. The demand for industrial land for manufacturing uses has declined, however the demand for land for transport, postal and warehousing has increased. This feedback is consistent with national and global trends previously discussed, with the types of activity being conducted under roof moving away from production to warehouse and logistics.

The industrial land market in Moreton Bay appears to be divided between the north and the south. The southern area includes major industrial areas such as Brendale and North Lakes and the northern area includes major precincts such as North East Business Park (NEBP) and Elimbah East.

The feedback from the market is that there is good demand for land in the southern area, driven largely by the local/ regional market. There is also demand for larger lots to accommodate warehousing and similar uses, but at present the main areas such as Brendale lack the larger lots required to accommodate this.

PRECINCT COMMENTS

The Brendale precinct continues to receive good interest from a mix of large and smaller users. Feedback from the market is that other challenges in this precinct are impacting sales other than demand, e.g. a lack of large lots.

In relation to the North Lakes precinct (Boundary Road) the location is viewed as being good for the types of uses discussed, there are good levels of interest from North Brisbane but nothing that is scheduled to happen in the immediate future.

In relation to the NEBP there is currently no demand based on market opinion that the precinct is too far north and current demand for growth in industries such as transport, postal and warehousing is being met in areas closer to Brisbane due to the need to be closer to key infrastructure such as the Port. Based on feedback from various stakeholders it is believed that demand for industrial land in this area is more likely to be in the 10 to 20 year timeframe at a minimum.

The feedback in relation to other precincts in the north is similar to NEBP. The belief is that as North Lakes and Brendale reach capacity there will be more demand for land in this area.

APPENDIX E: INDUSTRIES EXAMINED

In undertaking this study, 70 industries were examined and modelled. These 70 industries were a mix of 2-digit ANZSIC (Sub-Division level) and some aggregated 2-digit ANZSIC industries. The reason some 2-digit ANZSIC industries were aggregated was to ensure all industries corresponded with both the ANZSIC classifications (ABS, 2013) as well as the industries represented in the national Input-Output transaction tables (ABS, 2016a), as transaction tables were used in developing employment projections (see Appendix F).

The following table outlines all 2-digit ANZSIC industries and their correspondence to the 70 industries modelled, as well as 1-digit ANZSIC industries.

Table E.1. Industry Correspondence, 2-Digit ANZSIC to 70 Industries Modelled

2-Digit ID	2-Digit Industry Name	70 Industry ID	70 Industry Name	1-Digit ID	1-Digit Industry Name
1	Agriculture	1	Agriculture	A	Agriculture, Forestry and Fishing
2	Aquaculture	2	Aquaculture	A	Agriculture, Forestry and Fishing
3	Forestry and Logging	3	Forestry and Logging	A	Agriculture, Forestry and Fishing
4	Fishing, Hunting and Trapping	4	Fishing, Hunting and Trapping	A	Agriculture, Forestry and Fishing
5	Agriculture, Forestry and Fishing Support Services	5	Agriculture, Forestry and Fishing Support Services	A	Agriculture, Forestry and Fishing
6	Coal Mining	6	Coal Mining	B	Mining
7	Oil and Gas Extraction	7	Oil and Gas Extraction	B	Mining
8	Metal Ore Mining	8	Metal Ore Mining	B	Mining
9	Non-Metallic Mineral Mining and Quarrying	9	Non-Metallic Mineral Mining and Quarrying	B	Mining
10	Exploration and Other Mining Support Services	10	Exploration and Other Mining Support Services	B	Mining
11	Food Product Manufacturing	11	Food Product Manufacturing	C	Manufacturing
12	Beverage and Tobacco Product Manufacturing	12	Beverage and Tobacco Product Manufacturing	C	Manufacturing
13	Textile, Leather, Clothing and Footwear Manufacturing	13	Textile, Leather, Clothing and Footwear Manufacturing	C	Manufacturing
14	Wood Product Manufacturing	14	Wood Product Manufacturing	C	Manufacturing
15	Pulp, Paper and Converted Paper Product Manufacturing	15	Pulp, Paper and Converted Paper Product Manufacturing	C	Manufacturing
16	Printing (including the Reproduction of Recorded Media)	16	Printing (including the Reproduction of Recorded Media)	C	Manufacturing
17	Petroleum and Coal Product Manufacturing	17	Petroleum and Coal Product Manufacturing	C	Manufacturing
18	Basic Chemical and Chemical Product Manufacturing	18	Basic Chemical and Chemical Product Manufacturing	C	Manufacturing
19	Polymer Product and Rubber Product Manufacturing	19	Polymer Product and Rubber Product Manufacturing	C	Manufacturing
20	Non-Metallic Mineral Product Manufacturing	20	Non-Metallic Mineral Product Manufacturing	C	Manufacturing
21	Primary Metal and Metal Product Manufacturing	21	Primary Metal and Metal Product Manufacturing	C	Manufacturing
22	Fabricated Metal Product Manufacturing	22	Fabricated Metal Product Manufacturing	C	Manufacturing

2-Digit ID	2-Digit Industry Name	70 Industry ID	70 Industry Name	1-Digit ID	1-Digit Industry Name
23	Transport Equipment Manufacturing	23	Transport Equipment Manufacturing	C	Manufacturing
24	Machinery and Equipment Manufacturing	24	Machinery and Equipment Manufacturing	C	Manufacturing
25	Furniture and Other Manufacturing	25	Furniture and Other Manufacturing	C	Manufacturing
26	Electricity Supply	26	Electricity Supply	D	Electricity, Gas, Water and Waste Services
27	Gas Supply	27	Gas Supply	D	Electricity, Gas, Water and Waste Services
28	Water Supply, Sewerage and Drainage Services	28	Water Supply, Sewerage and Drainage Services	D	Electricity, Gas, Water and Waste Services
29	Waste Collection, Treatment and Disposal Services	29	Waste Collection, Treatment and Disposal Services	D	Electricity, Gas, Water and Waste Services
30	Building Construction	30	Building Construction	E	Construction
31	Heavy and Civil Engineering Construction	31	Heavy and Civil Engineering Construction	E	Construction
32	Construction Services	32	Construction Services	E	Construction
33	Basic Material Wholesaling	33	Wholesale Trade	F	Wholesale Trade
34	Machinery and Equipment Wholesaling	33	Wholesale Trade	F	Wholesale Trade
35	Motor Vehicle and Motor Vehicle Parts Wholesaling	33	Wholesale Trade	F	Wholesale Trade
36	Grocery, Liquor and Tobacco Product Wholesaling	33	Wholesale Trade	F	Wholesale Trade
37	Other Goods Wholesaling	33	Wholesale Trade	F	Wholesale Trade
38	Commission-Based Wholesaling	33	Wholesale Trade	F	Wholesale Trade
39	Motor Vehicle and Motor Vehicle Parts Retailing	34	Retail Trade	G	Retail Trade
40	Fuel Retailing	34	Retail Trade	G	Retail Trade
41	Food Retailing	34	Retail Trade	G	Retail Trade
42	Other Store-Based Retailing	34	Retail Trade	G	Retail Trade
43	Non-Store Retailing and Retail Commission-Based Buying and/or Selling	34	Retail Trade	G	Retail Trade
44	Accommodation	35	Accommodation	H	Accommodation and Food Services
45	Food and Beverage Services	36	Food and Beverage Services	H	Accommodation and Food Services
46	Road Transport	37	Road Transport	I	Transport, Postal and Warehousing
47	Rail Transport	38	Rail Transport	I	Transport, Postal and Warehousing
48	Water Transport	39	Water, Pipeline and Other Transport	I	Transport, Postal and Warehousing

2-Digit ID	2-Digit Industry Name	70 Industry ID	70 Industry Name	1-Digit ID	1-Digit Industry Name
49	Air and Space Transport	40	Air and Space Transport	I	Transport, Postal and Warehousing
50	Other Transport	39	Water, Pipeline and Other Transport	I	Transport, Postal and Warehousing
51	Postal and Courier Pick-up and Delivery Services	41	Postal and Courier Pick-up and Delivery Services	I	Transport, Postal and Warehousing
52	Transport Support Services	42	Transport Support Services and Storage	I	Transport, Postal and Warehousing
53	Warehousing and Storage Services	42	Transport Support Services and Storage	I	Transport, Postal and Warehousing
54	Publishing (except Internet and Music Publishing)	43	Publishing (except Internet and Music Publishing)	J	Information Media and Telecommunications
55	Motion Picture and Sound Recording Activities	44	Motion Picture and Sound Recording Activities	J	Information Media and Telecommunications
56	Broadcasting (except Internet)	45	Broadcasting (except Internet)	J	Information Media and Telecommunications
57	Internet Publishing and Broadcasting	46	Internet Publishing, Services Providers and Data Processing Services	J	Information Media and Telecommunications
58	Telecommunications Services	47	Telecommunications Services	J	Information Media and Telecommunications
59	Internet Service Providers, Web Search Portals and Data Processing Services	46	Internet Publishing, Services Providers and Data Processing Services	J	Information Media and Telecommunications
60	Library and Other Information Services	48	Library and Other Information Services	J	Information Media and Telecommunications
62	Finance	49	Finance	K	Financial and Insurance Services
63	Insurance and Superannuation Funds	50	Insurance and Superannuation Funds	K	Financial and Insurance Services
64	Auxiliary Finance and Insurance Services	51	Auxiliary Finance and Insurance Services	K	Financial and Insurance Services
66	Rental and Hiring Services (except Real Estate)	52	Rental and Hiring Services (except Real Estate)	L	Rental, Hiring and Real Estate Services
67	Property Operators and Real Estate Services	53	Property Operators and Real Estate Services	L	Rental, Hiring and Real Estate Services
69	Professional, Scientific and Technical Services (except Computer System Design and Related Services)	54	Professional, Scientific and Technical Services	M	Professional, Scientific and Technical Services
70	Computer System Design and Related Services	55	Computer System Design and Related Services	M	Professional, Scientific and Technical Services
72	Administrative Services	56	Administrative Services	N	Administrative and Support Services

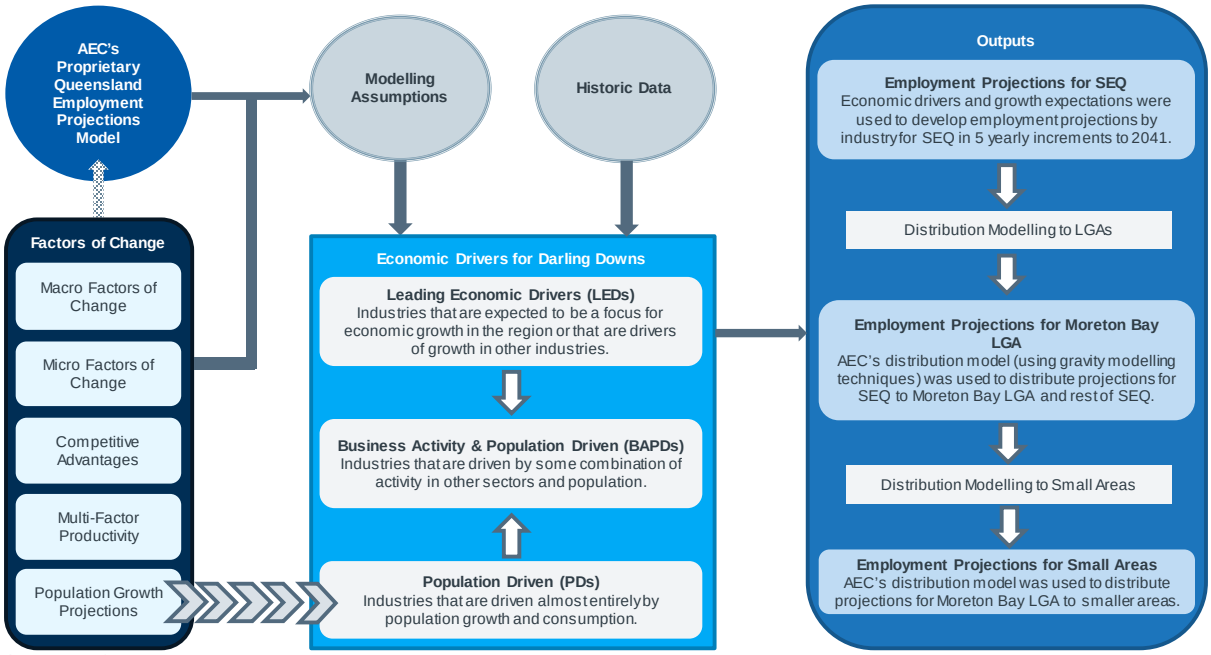
2-Digit ID	2-Digit Industry Name	70 Industry ID	70 Industry Name	1-Digit ID	1-Digit Industry Name
73	Building Cleaning, Pest Control and Other Support Services	57	Building Cleaning, Pest Control and Other Support Services	N	Administrative and Support Services
75	Public Administration	58	Public Administration	O	Public Administration and Safety
76	Defence	59	Defence	O	Public Administration and Safety
77	Public Order, Safety and Regulatory Services	60	Public Order, Safety and Regulatory Services	O	Public Administration and Safety
80	Preschool and School Education	61	Preschool and School Education	P	Education and Training
81	Tertiary Education	62	Tertiary Education	P	Education and Training
82	Adult, Community and Other Education	63	Adult, Community and Other Education	P	Education and Training
84	Hospitals	64	Health Care Services	Q	Health Care and Social Assistance
85	Medical and Other Health Care Services	64	Health Care Services	Q	Health Care and Social Assistance
86	Residential Care Services	65	Residential Care and Social Assistance Services	Q	Health Care and Social Assistance
87	Social Assistance Services	65	Residential Care and Social Assistance Services	Q	Health Care and Social Assistance
89	Heritage Activities	66	Heritage, Creative and Performing Arts	R	Arts and Recreation Services
90	Creative and Performing Arts Activities	66	Heritage, Creative and Performing Arts	R	Arts and Recreation Services
91	Sports and Recreation Activities	67	Sports and Recreation Activities	R	Arts and Recreation Services
92	Gambling Activities	68	Gambling Activities	R	Arts and Recreation Services
94	Repair and Maintenance	69	Repair and Maintenance	S	Other Services
95	Personal and Other Services	70	Personal and Other Services	S	Other Services
96	Private Households Employing Staff and Undifferentiated Goods and Service-Producing Activities of Households for Own Use	70	Personal and Other Services	S	Other Services

Source: ABS (2013), ABS (2016a), AEC.

APPENDIX F: MBRC EMPLOYMENT PROJECTIONS APPROACH

The approach used in developing employment projections for the Moreton Bay Regional Council local government area (LGA) is summarised in Figure F.1, and described in more detail below.

Figure F.1. Overview of Employment Projections Modelling Approach



Source: AEC.

DATA INPUTS

- Research regarding existing, emerging and expected future change factors (e.g. micro- and macro- factors, competitive advantages of the South East Queensland (SEQ) region (relative to other regions in Queensland), multi-factor productivity and population growth and projections).
- AEC's proprietary Employment Projections Model (EPM) for Queensland was used to generate state-level projections of employment to 2041 by 1-digit ANZSIC (Division level). This provided a baseline for employment and economic growth in the state, as well as baseline expectations for productivity changes.

The EPM applies statistical regression techniques to project future employment, using historical relationships between employment, gross value added production and productivity, combined with published future projections for Australian and Queensland economic growth (i.e. Gross Domestic Product and Gross State Product).

Employment growth projections are also tied to projections of population (and labour force participation) to ensure projections of employment remain within an acceptable bound.

The EPM intrinsically incorporates historic trends in the regression analysis, however, the model is sufficiently flexible to include, and was adjusted to incorporate, the findings and understanding from research surrounding the emerging and expected macro trends into the modelling by adjusting future productivity curves according to expectations for change.

- Historic/ current employment and economic activity (using AEC's proprietary Gross Regional Product model, see Appendix A) for SEQ and Moreton Bay regions.

REGIONAL EMPLOYMENT BY INDUSTRY PROJECTIONS

Overview

AEC's Regional Employment Projections Model (REPM) was used to develop projections of economic activity and employment across 70 industries for the SEQ region, based on expected real growth rates in production by industry, changes in productivity per employee, projected population growth, and inter-industry relationships. In developing industry growth rates, industries were classified into one of three categories:

- **Leading Economic Drivers (LEDs)**, which 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)**, which are industries that are driven almost entirely by population growth and consumption.
- **Business Activity + Population Driven (BAPDs)**, which are industries that are driven by some combination of activity in other sectors and population (this relationship was determined using an Input-Output transaction table developed specifically for the SEQ region using AEC's Regional Transaction Table Builder).

AEC's Regional Transaction Table Builder uses the national Input-Output transaction table from the Australian Bureau of Statistics and employment by industry data for the region and Australia from the Census of Population and Housing. A range of mathematical formulae are used to 'regionalise' the national table based on the proportion of national employment the region of interest contributes in each industry. The formulae used are in line with the 'Demand-Pool' and 'Cross Industry Location Quotient' approaches outlined by Dr Guy West (1993).

The REPM was used to develop employment projections for the SEQ region. These projections were then disaggregated to Moreton Bay and rest of SEQ in a separate process. See the following sub-section titled 'Distribution to Moreton Bay LGA and Localities' for details of this process.

Queensland 1-Digit ANZSIC Industry Growth Rates

Industry growth rates for value added and employment at the 1-digit ANZSIC level were developed using AEC's Queensland EPM. A summary of historic (ABS, 2016b; ABS 2015b) and projected (from the Queensland EPM) value added activity and employment for Queensland are presented in Table F.1.

Table F.1. Queensland Historic and Projected Growth (Value Added Activity and Employment), Average Annual, 1-Digit ANZSIC

Industry	Value Added Activity			Employment		
	2000 to 2015	2015 to 2026	2026 to 2041	2000 to 2015	2015 to 2026	2026 to 2041
Agriculture, forestry and fishing	3.1%	1.6%	1.3%	-2.6%	-0.6%	-0.3%
Mining	4.0%	2.9%	2.4%	8.3%	0.8%	0.9%
Manufacturing	1.4%	2.1%	1.2%	0.1%	0.8%	0.2%
Electricity, gas, water and waste services	2.9%	2.0%	1.6%	6.2%	0.3%	0.3%
Construction	4.7%	4.0%	2.8%	2.3%	2.8%	1.8%
Wholesale trade	3.7%	2.7%	1.8%	0.2%	0.6%	0.3%
Retail trade	4.0%	3.2%	2.3%	1.6%	1.7%	1.2%
Accommodation and food services	2.2%	1.9%	1.7%	2.9%	1.5%	1.4%
Transport, postal and warehousing	4.4%	3.4%	2.6%	1.9%	1.9%	1.4%
Information media and telecommunications	4.7%	3.7%	2.6%	0.2%	1.5%	1.0%
Financial and insurance services	4.7%	3.9%	2.7%	1.5%	1.6%	1.0%
Rental, hiring and real estate services	4.2%	3.7%	2.6%	2.8%	2.7%	1.8%
Professional, scientific and technical services	5.6%	3.8%	3.2%	4.7%	3.1%	2.6%
Administrative and support services	3.4%	3.0%	2.2%	4.4%	3.0%	2.2%
Public administration and safety	2.9%	2.5%	1.9%	3.5%	2.4%	1.9%
Education and training	2.6%	2.1%	1.6%	3.1%	1.5%	1.1%
Health care and social assistance	4.5%	3.3%	2.6%	4.1%	2.6%	2.1%
Arts and recreation services	4.4%	2.7%	2.1%	3.1%	2.8%	2.3%
Other services	2.9%	2.0%	1.6%	2.0%	1.2%	1.0%

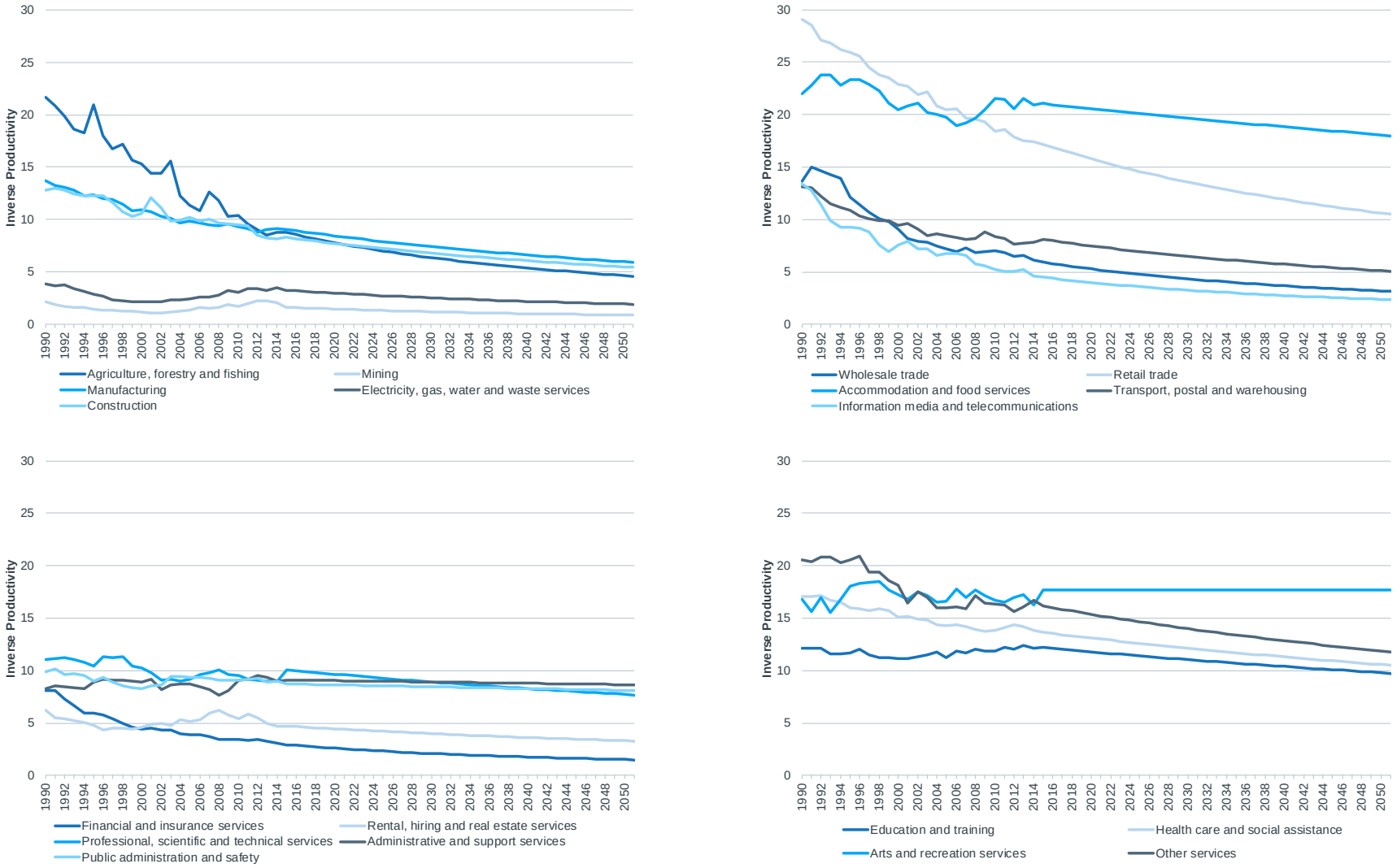
Source: ABS (2016b), ABS (2015b), AEC.

In developing the employment projections in Table F.1, projections of productivity per employee (value added activity per employee) were developed using linear regressions based primarily on historic productivity increases between 1990 and 2015. Depictions of projected productivity increases for each 1-digit ANZSIC industry are provided in Figure F.2 below. Note the inverse productivity is shown, i.e., the number of employees required to produce $1M in value added activity for each industry (where a decline in inverse productivity translates to an improvement or increase in production per employee).

In developing these productivity curves, micro- and macro- factors were considered and implications applied as appropriate, in addition to the historic trends observed in the data. Adjustments were made to the following industries:

- Mining: Regression from 1990 to 2015 estimated declining productivity. Productivity calculation for projection period amended to reflect historic change between 1990 and 2005, as this excludes much of the significant fluctuation introduced by the commodity price boom in mid to late 2000s.
- Rental, hiring and real estate services: The property boom during the 2000s encouraged high levels of employment to this industry, resulting in a decline in productivity post 2003. Projections have therefore included productivity change between 1990 and 2003 only.
- Administrative and support services: Large decline in productivity for this industry in 2009 significantly impacted the projections. Projections of productivity were therefore amended to reflect productivity change between 1990 to 2008.
- Education and training: Productivity has been declining in this industry since 2001. However, expected that productivity will improve in this industry in the long term, as improved ICT infrastructure enables greater and more efficient levels of services delivery. Projections of productivity growth therefore amended to reflect changes between 1990 and 2001.

Figure F.2. Inverse Productivity Curves, Queensland, Historic and Projected (Employees per $1M in Value Added Production)



Source: AEC.

Productivity is a key component in the modelling for projecting future employment. Modelling in the first instance projects future economic growth in terms of gross value added activity (i.e., industry contribution to Gross Regional Product). Future gross value added activity is then converted to an employment estimate based on the projections of productivity outlined in Figure F.2.

Industries that are projected to record high productivity growth (represented by a curve declining more rapidly towards an inverse productivity of 0 in Figure F.2, e.g. retail trade) reflect industries that are expected to see the largest decrease in the number of employees required to produce every $1 million of the goods and services produced by that industry. Conversely, those industries presented in Figure F.2 that have a relatively small change in productivity (e.g. arts and recreation services) reflect industries that are expected to continue to require similar levels of employment to produce every $1 million of the goods and services produced by that industry.

Over time, this means every additional $1 million in economic activity (i.e. gross value added) produced by the arts and recreation services industry would generate more jobs in the SEQ and Moreton Bay economies than for the same value of growth in economic activity in retail trade.

Industries Modelled in the REPM

The 70 industries modelled are outlined in Appendix E.

Industry Category Classification

Each of the 70 industries were classified into one of three categories for modelling – LEDs, PDs or BAPDs. See the 'Overview' sub-section above for descriptions of these categories.

The table below provides a summary of how each industry was classified in the modelling, including rationale as to why these classifications were chosen.

Table F.2. Industry Categorisation

70 Industry ID	70 Industry Name	Industry Category	Rationale
1	Agriculture	LED	Typically driven by broader factors, such as global/ national demand, commodity cycles and climate
2	Aquaculture	LED	
3	Forestry and Logging	LED	
4	Fishing, Hunting and Trapping	LED	
5	Agriculture, Forestry and Fishing Support Services	BAPD	Support service to agriculture
6	Coal Mining	LED	Typically driven by broader factors, such as global/ national demand, commodity cycles
7	Oil and Gas Extraction	LED	
8	Metal Ore Mining	LED	
9	Non-Metallic Mineral Mining and Quarrying	BAPD	Typically driven by demand in the construction sector
10	Exploration and Other Mining Support Services	BAPD	Support service to mining
11	Food Product Manufacturing	LED	Typically driven by non-local factors, such as global/ national demand
12	Beverage and Tobacco Product Manufacturing	LED	
13	Textile, Leather, Clothing and Footwear Manufacturing	LED	
14	Wood Product Manufacturing	LED	
15	Pulp, Paper and Converted Paper Product Manufacturing	LED	
16	Printing (including the Reproduction of Recorded Media)	LED	Trend towards digital content resulting in strong decline in industry
17	Petroleum and Coal Product Manufacturing	BAPD	Typically driven by activity in mining, agriculture and transport

70 Industry ID	70 Industry Name	Industry Category	Rationale
18	Basic Chemical and Chemical Product Manufacturing	LED	Typically driven by non-local factors, such as global/ national demand
19	Polymer Product and Rubber Product Manufacturing	LED	
20	Non-Metallic Mineral Product Manufacturing	LED	
21	Primary Metal and Metal Product Manufacturing	LED	
22	Fabricated Metal Product Manufacturing	LED	
23	Transport Equipment Manufacturing	BAPD	Demand expected to largely be driven by growth in transport and logistics
24	Machinery and Equipment Manufacturing	BAPD	
25	Furniture and Other Manufacturing	BAPD	Typically driven by local business and population demand
26	Electricity Supply	BAPD	Typically driven by demand from business and population
27	Gas Supply	BAPD	
28	Water Supply, Sewerage and Drainage Services	BAPD	Support service for business and population
29	Waste Collection, Treatment and Disposal Services	BAPD	
30	Building Construction	LED	Structure of Input-Output tables preclude these industries from being anything other than LEDs for growth modelling purposes [a]
31	Heavy and Civil Engineering Construction	LED	
32	Construction Services	BAPD	Services that primarily support construction activity and population
33	Wholesale Trade	BAPD	Demand typically driven by local industry
34	Retail Trade	PD	Primarily supports population and local household spend
35	Accommodation	LED	Typically driven by demand from non-locals (i.e. tourists)
36	Food and Beverage Services	PD	Primarily supports population and local household spend
37	Road Transport	BAPD	Typically support both industry (freight) and population (passenger) activity
38	Rail Transport	BAPD	
39	Water, Pipeline and Other Transport	BAPD	
40	Air and Space Transport	BAPD	
41	Postal and Courier Pick-up and Delivery Services	BAPD	Service industry supporting business and population
42	Transport Support Services and Storage	BAPD	Support service to transport industry activity
43	Publishing (except Internet and Music Publishing)	BAPD	Service industries supporting business and population
44	Motion Picture and Sound Recording Activities	BAPD	
45	Broadcasting (except Internet)	BAPD	
46	Internet Publishing, Services Providers and Data Processing Services	BAPD	
47	Telecommunications Services	BAPD	
48	Library and Other Information Services	PD	Primarily supports population
49	Finance	BAPD	Service industries primarily supporting business and population in the region
50	Insurance and Superannuation Funds	BAPD	
51	Auxiliary Finance and Insurance Services	BAPD	
52	Rental and Hiring Services (except Real Estate)	BAPD	

70 Industry ID	70 Industry Name	Industry Category	Rationale
53	Property Operators and Real Estate Services	BAPD	
54	Professional, Scientific and Technical Services	BAPD	
55	Computer System Design and Related Services	BAPD	
56	Administrative Services	BAPD	
57	Building Cleaning, Pest Control and Other Support Services	BAPD	
58	Public Administration	BAPD	Provides services primarily aimed at supporting business and population
59	Defence	LED	Typically driven by non-local factors (e.g. Australian Government policy)
60	Public Order, Safety and Regulatory Services	BAPD	Provides services primarily aimed at supporting business and population
61	Preschool and School Education	PD	Primarily supports population
62	Tertiary Education	BAPD	Provides services primarily aimed at supporting business and population
63	Adult, Community and Other Education	PD	Primarily supports population
64	Health Care Services	LED	Expected to be key growth sector Queensland and Australia-wide, driven by demand for higher levels of care and a growing and ageing population
65	Residential Care and Social Assistance Services	PD	Primarily supports population
66	Heritage, Creative and Performing Arts	PD	Primarily supports population and local household spend
67	Sports and Recreation Activities	PD	
68	Gambling Activities	PD	
69	Repair and Maintenance	BAPD	Provides services primarily aimed at supporting business and population
70	Personal and Other Services	PD	Primarily supports population and local household spend

Note: (a) Input-Output transaction tables do not include any purchases of goods/ services from these industries as either inputs to production for local industry or by households. All outputs of these industries are purchased for either gross fixed capital formation or export. As a result, it is not possible to identify a relevant mix of business and population demand for goods/ services in these industries in the model, and these industries must therefore be modelled as LEDs.
Source: AEC.

SEQ Industry Growth Projections

Employment projections for each of the 70 industries were developed across three projection series (low, medium and high). The base reporting is provided for the medium projection series.

The approach for developing the industry growth rates for each of the 70 industries is outlined below.

LEDs

Growth rates for LEDs and assumptions regarding productivity per employee were developed based on the results of the Queensland EPM (outlined in Table F.1 and Figure F.2 above), and in consideration of historic local growth patterns and research regarding the macro- and micro- change factors. The projected growth rate for Queensland (from the EPM, summarised in Table F.1) was adjusted to an SEQ starting point, based on the historic difference in value added growth between 2007 and 2015 outlined in AEC's Gross Regional Product estimates. A summary of these adjusted growth rates are provided in Table F.3 below.

Table F.3. SEQ Historic Difference (to Queensland, 2007 to 2015) and Projected Growth in Value Added Activity, Average Annual, 1-Digit ANZSIC

Industry	Value Added Activity		
	Historic Difference to QLD	2015 to 2026	2026 to 2041
Agriculture, forestry and fishing	97.3%	1.6%	1.3%
Mining	104.7%	2.9%	2.4%
Manufacturing	99.9%	2.1%	1.2%
Electricity, gas, water and waste services	101.2%	2.0%	1.6%
Construction	100.2%	4.0%	2.8%
Wholesale trade	100.0%	2.7%	1.8%
Retail trade	100.3%	3.2%	2.3%
Accommodation and food services	100.5%	1.9%	1.7%
Transport, postal and warehousing	100.8%	3.4%	2.6%
Information media and telecommunications	100.9%	3.7%	2.6%
Financial and insurance services	101.2%	3.9%	2.7%
Rental, hiring and real estate services	100.4%	3.7%	2.6%
Professional, scientific and technical services	100.4%	3.8%	3.2%
Administrative and support services	100.0%	3.0%	2.2%
Public administration and safety	100.4%	2.5%	1.9%
Education and training	100.4%	2.1%	1.6%
Health care and social assistance	100.0%	3.3%	2.6%
Arts and recreation services	99.9%	2.7%	2.1%
Other services	99.9%	2.0%	1.6%

Source: ABS (2016b), ABS (2015b), AEC.

As SEQ contributes the majority of activity and employment in Queensland, the adjustments to Queensland growth rates by industry made in Table F.3 were considered sufficient for projecting LEDs. A summary of final growth rates for each LED based on the adjustments outlined in Table F.3 are presented in Table F.4.

Table F.4. LED Growth Rates

70 Industry ID	70 Industry Name	Growth in Value Added		Growth in Employment	
		2015 to 2026	2026 to 2041	2015 to 2026	2026 to 2041
1	Agriculture	1.6%	1.3%	-0.6%	-0.3%
2	Aquaculture	1.3%	1.0%	-0.9%	-0.6%
3	Forestry and Logging	0.4%	0.5%	-1.7%	-1.0%
4	Fishing, Hunting and Trapping	-0.2%	0.1%	-2.3%	-1.5%
6	Coal Mining	2.5%	2.6%	0.5%	1.1%
7	Oil and Gas Extraction	3.9%	2.1%	1.8%	0.5%
8	Metal Ore Mining	2.5%	2.9%	0.5%	1.4%
11	Food Product Manufacturing	2.2%	1.1%	0.9%	0.1%
12	Beverage and Tobacco Product Manufacturing	2.2%	1.1%	0.9%	0.1%
13	Textile, Leather, Clothing and Footwear Manufacturing	-1.5%	-0.8%	-2.7%	-1.8%
14	Wood Product Manufacturing	0.1%	0.3%	-1.1%	-0.7%
15	Pulp, Paper and Converted Paper Product Manufacturing	-2.1%	-1.2%	-3.3%	-2.1%
16	Printing (including the Reproduction of Recorded Media)	-4.0%	-3.4%	-5.2%	-4.3%
18	Basic Chemical and Chemical Product Manufacturing	2.5%	2.0%	1.2%	1.0%

70 Industry ID	70 Industry Name	Growth in Value Added		Growth in Employment	
		2015 to 2026	2026 to 2041	2015 to 2026	2026 to 2041
19	Polymer Product and Rubber Product Manufacturing	4.2%	1.9%	2.9%	0.9%
20	Non-Metallic Mineral Product Manufacturing	1.0%	0.5%	-0.3%	-0.5%
21	Primary Metal and Metal Product Manufacturing	2.1%	1.3%	0.8%	0.3%
22	Fabricated Metal Product Manufacturing	2.4%	1.3%	1.1%	0.3%
30	Building Construction	3.9%	2.7%	2.6%	1.7%
31	Heavy and Civil Engineering Construction	4.2%	2.8%	2.9%	1.9%
35	Accommodation	2.1%	1.8%	1.8%	1.6%
59	Defence	2.7%	1.7%	2.6%	1.7%
64	Health Care Services	3.3%	2.6%	2.6%	2.0%

Source: ABS (2016b), ABS (2015b), AEC.

PDs

Growth rates of PDs were developed based on the historic (2011) ratio of employment per 1,000 residents for each industry in SEQ compared to a benchmark of Sydney and Melbourne metropolitan areas. The SEQ ratio for each industry was assumed to gradually change over time towards the Sydney and Melbourne metropolitan areas benchmark, with the speed of this change determined by the size of the relative discrepancy in the ratio between SEQ and the Sydney and Melbourne metropolitan areas (the location quotient or LQ)[7].

Ratios estimated using the above approach for each year were applied to medium series population projections for each PD to generate employment growth projections. Medium series population projections used projection data from the Queensland Government Statistician's Office (QGSO, 2015).

BAPDs

Growth rates of BAPDs were calculated using a combination of the LED and PD growth rates for industry estimated above, as well as population growth (using the same approach as for PDs outlined above). The percent contribution of each LED/ PD and population growth rate differed between each BAPD, and this contribution was estimated based on the relationship of sales of goods and services for each BAPD to each LED/ PD industry (for the percent contribution of these industries) as well as to households (for the contribution by population growth) as outlined in the Input-Output transaction table developed for SEQ (see the 'Overview' sub-section above for a description of the Input-Output transaction table used).

Distribution to Moreton Bay LGA

The REPM developed employment projections for the SEQ region. These projections were then distributed to the Moreton Bay LGA and rest of SEQ using AEC's distribution (i.e. gravity) model.

AEC's distribution model uses gravity modelling techniques to distribute employment projections to smaller regions. It applies a combination of projections of population growth and existing industry size to determine where future employment is likely to be located. Adjustments were applied as appropriate based on research regarding emerging and expected change factors.

Additional details regarding the distribution approach are provided below:

- Disaggregation of SEQ regional employment projections by 70 industries was undertaken across Moreton Bay LGA and rest of SEQ, for each industry.

[7] Industries with a greater discrepancy (i.e. LQ further away from 1) were assumed to move more rapidly towards the South East Queensland ratio than those with a smaller discrepancy.

- Distribution modelling is based on disaggregating the additional employment in each industry in each modelled time period. For example, for the 2021 projection, employment for Moreton Bay and rest of SEQ is based on the employment in that industry in 2016 plus the disaggregated component of **additional** employment in SEQ (or, for industries experiencing a decline, the disaggregated component of the reduction in employment in SEQ).
- Distribution (or disaggregation) of employment for each industry is driven by a combination of two components based on size (gravity "pull" effects). The two components influencing this are the proportion of overall SEQ population growth (i.e. additional population) in the time period examined (the population coefficient) and existing size of the industry in the previous time period (the industry coefficient). Coefficients were developed to disaggregate employment based on the mix between (or combination of) the two components. This mix differs between industries based on the proportional demand of industry verses households for goods and services of that industry. This proportion is estimated based on an indicative Input-Output transaction table developed for the SEQ region, with some adjustments made where considered relevant for certain industries.
- Industry coefficients for Moreton Bay and rest of SEQ were developed by:
    - Identifying the proportion Moreton Bay and rest of SEQ makes of total employment in each industry in the previous time period (e.g., for 2021, the 2016 employment in each industry is used).
    - Making manual adjustments to certain proportions where it is anticipated Moreton Bay and rest of SEQ may be expected to attract a greater/ lesser share of employment than the initial share indicates (as determined based on research of macro- and micro- factors, other desktop research and the professional judgement of AEC staff).
    - Rebasing the sum of Moreton Bay and rest of SEQ to total 100% for each industry.
- Population coefficients for Moreton Bay and rest of SEQ were developed by:
    - Estimating the share of total additional population in each time period for Moreton Bay and rest of SEQ (using data from QGSO (2015)).
    - Making manual adjustments to certain coefficients where it is anticipated Moreton Bay and rest of SEQ may be expected to attract a greater/ lesser share of employment through population growth than the initial share indicates (as determined based on research of macro- and micro- factors, other desktop research and the professional judgement of AEC staff).
    - Rebasing the sum of Moreton Bay and rest of SEQ to total 100%.
- The above population and industry coefficients are then summed based on the proportional contribution between population versus industry coefficients (as identified using the transaction table indicated above).
- The combined coefficient for Moreton Bay and rest of SEQ (for each industry) is then rebased to sum to a total of 100% for each industry. These proportions are applied to the additional employment in the SEQ region for each industry to disaggregate additional employment across Moreton Bay and rest of SEQ.

APPENDIX G: COMPARISON TO QUEENSLAND GOVERNMENT PROJECTIONS

The Queensland Government released employment projections for South East Queensland regions in 2016 (Queensland Treasury, 2016). This appendix provides a comparison of the additional employment projected between 2016 and 2041 between AEC's projections for Moreton Bay for this study and those by the Queensland Government, summarised in Table G.1.

Different approaches and assumptions have been applied in the two modelling scenarios. AEC's approach is detailed in Appendix F. A copy of the Queensland Government approach can be downloaded from the following website: http://www.qgso.qld.gov.au/products/reports/reg-employment-proj-methodology-assumptions/index.php.

Of note, the overall increase in employment in Moreton Bay between 2016 and 2041 is projected to be approximately the same in both projection series (68,600 in AEC projections, 66,600 in Queensland Government projections). However, key differences are evident the industry mix in the two projection scenarios, as follows:

- Queensland Government projections include a considerably higher growth rate for manufacturing, with 7,300 additional jobs projected compared to 1,392 jobs in AEC's projections. The increased growth in manufacturing in Queensland Government projections would be expected to translate to considerably higher demand for industrial lands in Moreton Bay than projected by AEC.
- Professional, scientific and technical services jobs are also projected to grow at a faster rate in the Queensland Government projection series, which may also translate to some additional demand for industrial style lands as demand transitions from traditional uses to a greater mix of commercial style uses.
- By comparison, AEC's projections account for considerably higher growth in retail trade, accommodation and food services, public administration and safety, arts and recreation services, and other services industries. Most of the growth in these industries are anticipated to generate demand outside of the industrial precincts examined in this study (though some bulky goods retail and repair and maintenance (other services) will generate demand for industrial precincts).

While it can be expected that different methodologies will result in different projections, it is AEC's opinion that the quantum of growth projected by the Queensland Government in the manufacturing industry can be considered optimistic without considerable intervention and investment to support growth in this industry. Historic data does not support this level of future growth in the industry, and while new and advanced technologies present opportunities for growth in the manufacturing sector, the sector as a whole has generally been declining in share across Australia as domestic production has struggled to compete with lower cost overseas alternatives.

Table G.1. Projections of Additional Employment, 2016 to 2041, AEC Approach vs Queensland Government

1-Digit ANZSIC	AEC Projections	Qld Government Projections
Agriculture, Forestry & Fishing	-113	319
Mining	125	563
Manufacturing	1,392	7,300
Elect., Gas, Water & Waste Services	326	3,697
Construction	9,349	8,521
Wholesale Trade	940	691
Retail Trade	5,261	795
Accommodation & Food Services	7,798	3,498
Transport, Postal & Warehousing	1,759	1,436
Information Media & Telecomms.	325	174
Financial & Insurance Services	748	120
Rental, Hiring & Real Estate Serv.	892	2,285
Prof., Scientific & Technical Services	3,778	5,632
Administrative & Support Services	2,830	3,234
Public Administration & Safety	4,931	2,821
Education & Training	7,503	8,349
Health Care & Social Assistance	15,030	14,829
Arts & Recreation Services	2,276	475
Other Services	3,463	1,887
Total Employment	**68,614**	**66,626**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), AEC, Queensland Treasury (2016).

APPENDIX H: PRECINCT PROJECTIONS APPROACH

Moreton Bay LGA projections were disaggregated to each industrial precinct as well as 'rest of Moreton Bay LGA' (outside precincts). The precincts included were as per those outlined in section 3.1.

The approach used to disaggregate Moreton Bay LGA projections across these precincts is described below.

2011 EMPLOYMENT ESTIMATES BY PRECINCT

There are no publicly available statistics outlining the level of employment within each of the precincts. The smallest geographic levels in which employment statistics is available is Destination Zone (DZ) from the Australian Bureau of Statistics (ABS, 2012). This dataset provides a breakdown by industry at the 4-digit ANZSIC level, which was aggregated to the 70 industries used in this assessment.

Council also provided a dataset of employment at the Travel Zone (TZ) geographic level (MBRC, unpublished[e]), which is smaller than DZ. This data was broken down by land use type rather than industry, but was useful as a second source of data to cross check estimates.

Estimates of employment by industry (70 industries) for each precinct were developed using the following approach:

- GIS shapefiles for DZ boundaries (ABS, 2011) and precinct boundaries (MBRC, unpublished[a]) were used to identify the proportion of each DZ within each precinct (and outside precincts). These files were also overlaid on Google Earth, in addition to land zoning (MBRC, unpublished[b]), land use (MBRC, unpublished[c]) and building footprint (MBRC, unpublished[d]) layers, to provide a visual review of where development is located within each DZ and precinct. Based on this information, employment within each DZ across each of the 70 industries was allocated to precincts (and outside precincts). This provided an initial starting point for employment by industry by precinct.
- A similar process was undertaken using Council's TZ data by land use type (MBRC, unpublished[e]) instead of the DZ data by industry. The results were compared to the initial 2011 starting point above to provide a 'truth test' to the results. Adjustments were made to the 2011 starting point where considered appropriate based on the truth testing.
- The estimates by industry by precinct were used to identify the percent share each precinct contributed to total Moreton Bay LGA employment in each industry from the DZ data. These percentages were then applied to the 2011 estimate of employment for Moreton Bay LGA developed in the approach outlined in Appendix F.

DISAGGREGATION OF MORETON BAY LGA EMPLOYMENT PROJECTIONS

Initial Projection

Moreton Bay LGA projections were disaggregated to each precinct as well as rest of Moreton Bay LGA (outside precincts). This was done using a similar approach to the disaggregation of SEQ projections to Moreton Bay and rest of SEQ outlined in Appendix F, with the exception that only the employment coefficient was used. This was done for a couple of reasons:

- Population projections at such a fine level were not available.
- Location of population growth at such a small geographic level is not a good indicator of where employment will locate, as service hierarchies and networks typically extend beyond such a localised level. For example, population growth in most precincts can be expected to be close to zero, as these precincts are designed to provide employment opportunities that support the surrounding population nodes of the region.

This approach intrinsically allocates additional employment in each industry on a proportional basis to where jobs in each industry were located in the previous time period (for example, if 20% of employment in the repair and maintenance industry was located in Brendale in 2016, then 20% of additional employment in this industry between 2016 and 2021 in Moreton Bay would be allocated to Brendale unless adjustments are made to the allocation

process. This means that precincts with close to zero employment in 2011 would not grow over time (without adjustments being made to the allocation process).

Adjustments were made to allocations in each industry and each time period based on outcomes and findings from consultation, and professional judgement of AEC staff, regarding expectations for growth in each precinct and potential transition in types of uses in precincts over time. In developing the adjustments, the following considerations were made:

- Industrial style activities (e.g. manufacturing, construction, utilities, transport and logistics, repair and maintenance) are assumed to consolidate in the industrial precincts to 2041. That is, business survival rates for these activities within industrial precincts is assumed to be higher than outside industrial precincts, and new industrial style businesses locating in Moreton Bay are assumed to have an enhanced preference for industrial precincts compared to areas outside industrial precincts. This was modelled by adjusting the coefficients for industrial style activities in areas outside the precincts downwards for industries projected to grow, and upwards for industries projected to decline.
- Moreton Bay LGA projections, consultation and research indicates traditional industrial activities are not anticipated to grow strongly relative to other industries to 2041. As such, there is likely to be a transition in the types of uses within traditional industrial precincts, towards transport and logistics, commercial uses and bulky goods. This has been reflected in the modelling by some small adjustment downwards in these industries outside of the precincts (providing a slightly increased preference towards precincts for these uses compared to historic).
- The Petrie Mill closed operations between 2011 and 2016. To reflect this, adjustments were made to reduce employment at this site accordingly for the 2016 time period.
- The proposed Petrie Mill redevelopment is expected to result in considerable growth in health, education and research activities within this precinct, as well as accompanying support industries. Adjustments were made to reflect potential growth and timing of the Petrie Mill site based on previous research undertaken by AEC and desktop research. This adjustment was only made for the projection including redevelopment of Petrie Mill.
- Consultation indicates the southern areas of Moreton Bay are expected to continue to receive the most interest in growth over the foreseeable future, in particular the industrial precincts of Brendale and Narangba – North Lakes. Until these areas are built out there is not expected to be significant interest in the northern precincts such as Elimbah East, North East Business Park or Caboolture West. To this end, small adjustments upwards were made for Brendale and Narangba – North Lakes, as well as Dakabin (Kerr Road West) which currently has no employment.
- A small adjustment was made for industrial style industries as well as some commercial and bulky goods style industries in the North East Business Park in the latter part of the projection period. These adjustments are designed to provide a small increase in demand for the North East Business Park in the latter part of the projection period (2031 onwards), primarily supporting local population and reflecting the southern areas are projected to be approaching capacity at this point (i.e., above 70% of capacity).
- Growth in air transport was assumed to primarily occur in the Caboolture Aerodrome, followed by the Redcliffe Aerodrome. Adjustment were made to allocate growth in this industry accordingly.

Application of Capacity Constraints to Projections

In order to ensure land demand did not exceed supply, capacity constraints were applied to precincts and where demand exceeded supply employment (and land demand) was reallocated to other precincts. Total land available for future growth is identified in Table B.4 of Appendix B.

Projections of future land demand was estimated by applying standard GFA per employee ratios by industry to employment projections for each precinct (see Table H.1 for ratios). Some industries were split between two types of land uses and GFA per employee ratios, where it is expected a mix of use types would be employed within the industry. These standard ratios were then adjusted for each precinct following comparison to building footprint data (MBRC, unpublished[d]), to ensure the estimated GFA in 2016 matched the actual building footprint.

Table H.1. Initial GFA per Employee Ratios

70 Industry	LGIP Category	Major Industry			Minor Industry		
		Land Use Type	% of Industry	GFA per Employee	Land Use Type	% of Industry	GFA per Employee
Agriculture	Rural & Resources	PRI	100%	600	-	-	-
Aquaculture	Rural & Resources	PRI	100%	600	-	-	-
Forestry and Logging	Rural & Resources	PRI	100%	600	-	-	-
Fishing, Hunting and Trapping	Rural & Resources	PRI	100%	600	-	-	-
Agriculture, Forestry and Fishing Support Services	Rural & Resources	PRI	100%	600	-	-	-
Coal Mining	Rural & Resources	PRI	80%	270	OFF	20%	25
Oil and Gas Extraction	Rural & Resources	PRI	80%	270	OFF	20%	25
Metal Ore Mining	Rural & Resources	PRI	80%	270	OFF	20%	25
Non-Metallic Mineral Mining and Quarrying	Rural & Resources	PRI	80%	270	OFF	20%	25
Exploration and Other Mining Support Services	Rural & Resources	PRI	80%	270	OFF	20%	25
Food Product Manufacturing	Industry	IND	100%	110	-	-	-
Beverage and Tobacco Product Manufacturing	Industry	IND	100%	110	-	-	-
Textile, Leather, Clothing and Footwear Manufacturing	Industry	IND	100%	100	-	-	-
Wood Product Manufacturing	Industry	IND	100%	80	-	-	-
Pulp, Paper and Converted Paper Product Manufacturing	Industry	IND	100%	90	-	-	-
Printing (including the Reproduction of Recorded Media)	Industry	IND	100%	90	-	-	-
Petroleum and Coal Product Manufacturing	Industry	IND	100%	170	-	-	-
Basic Chemical and Chemical Product Manufacturing	Industry	IND	100%	170	-	-	-
Polymer Product and Rubber Product Manufacturing	Industry	IND	100%	220	-	-	-
Non-Metallic Mineral Product Manufacturing	Industry	IND	100%	170	-	-	-
Primary Metal and Metal Product Manufacturing	Industry	IND	100%	130	-	-	-
Fabricated Metal Product Manufacturing	Industry	IND	100%	110	-	-	-
Transport Equipment Manufacturing	Industry	IND	100%	100	-	-	-
Machinery and Equipment Manufacturing	Industry	IND	100%	100	-	-	-
Furniture and Other Manufacturing	Industry	IND	100%	120	-	-	-
Electricity Supply	Industry	UTE	100%	120	-	-	-
Gas Supply	Industry	UTE	100%	120	-	-	-
Water Supply, Sewerage and Drainage Services	Industry	UTE	100%	120	-	-	-

70 Industry	LGIP Category	Major Industry			Minor Industry		
		Land Use Type	% of Industry	GFA per Employee	Land Use Type	% of Industry	GFA per Employee
Waste Collection, Treatment and Disposal Services	Industry	UTE	100%	120	-	-	-
Building Construction	Construction	IND	75%	80	OFF	25%	25
Heavy and Civil Engineering Construction	Construction	IND	75%	80	OFF	25%	25
Construction Services	Construction	IND	100%	80	-	-	-
Wholesale Trade	Industry	IND	100%	120	-	-	-
Retail Trade	Retail	RET	100%	30	-	-	-
Accommodation	Retail	ACC	100%	30	-	-	-
Food and Beverage Services	Retail	RET	90%	30	RET	10%	80
Road Transport	Industry	UTE	75%	120	OTH	25%	0
Rail Transport	Industry	UTE	75%	120	OTH	25%	0
Water, Pipeline and Other Transport	Industry	UTE	75%	120	OTH	25%	0
Air and Space Transport	Industry	UTE	75%	120	OTH	25%	0
Postal and Courier Pick-up and Delivery Services	Industry	IND	100%	120	-	-	-
Transport Support Services and Storage	Industry	IND	100%	120	-	-	-
Publishing (except Internet and Music Publishing)	Commercial	OFF	100%	100	-	-	-
Motion Picture and Sound Recording Activities	Commercial	OFF	100%	100	-	-	-
Broadcasting (except Internet)	Commercial	OFF	100%	100	-	-	-
Internet Publishing, Services Providers and Data Processing Services	Commercial	OFF	100%	100	-	-	-
Telecommunications Services	Commercial	OFF	100%	100	-	-	-
Library and Other Information Services	Commercial	INST	100%	100	-	-	-
Finance	Commercial	OFF	100%	23	-	-	-
Insurance and Superannuation Funds	Commercial	OFF	100%	23	-	-	-
Auxiliary Finance and Insurance Services	Commercial	OFF	100%	23	-	-	-
Rental and Hiring Services (except Real Estate)	Commercial	RET	100%	80	-	-	-
Property Operators and Real Estate Services	Commercial	OFF	100%	23	-	-	-
Professional, Scientific and Technical Services	Commercial	OFF	100%	23	-	-	-
Computer System Design and Related Services	Commercial	OFF	100%	23	-	-	-
Administrative Services	Commercial	OFF	100%	23	-	-	-
Building Cleaning, Pest Control and Other Support Services	Commercial	IND	75%	120	OFF	25%	23
Public Administration	Commercial	OFF	100%	23	-	-	-

70 Industry	LGIP Category	Major Industry			Minor Industry		
		Land Use Type	% of Industry	GFA per Employee	Land Use Type	% of Industry	GFA per Employee
Defence	Community	INST	100%	100	-	-	-
Public Order, Safety and Regulatory Services	Community	INST	100%	30	-	-	-
Preschool and School Education	Community	INST	100%	70	-	-	-
Tertiary Education	Community	INST	100%	70	-	-	-
Adult, Community and Other Education	Community	INST	100%	50	-	-	-
Health Care Services	Community	INST	100%	23	-	-	-
Residential Care and Social Assistance Services	Community	INST	100%	23	-	-	-
Heritage, Creative and Performing Arts	Community	INST	100%	60	-	-	-
Sports and Recreation Activities	Community	INST	100%	60	-	-	-
Gambling Activities	Community	OFF	70%	23	RET	30%	30
Repair and Maintenance	Industry	IND	70%	80	RET	30%	30
Personal and Other Services	Retail	RET	75%	30	INST	25%	50

Note: PRI = primary uses; IND = industrial type uses; OFF = commercial/ office type uses; RET = retail uses; INST = institutional type uses (e.g. education, health); ACC = accommodation uses; UTE = utilities uses; OTH = all other uses not elsewhere classified.

Estimates of GFA were then converted to land demand using the following approach:

- For 2016, the 2016 ratio between building footprint and currently developed industrially zoned land in each precinct.
- For each time period thereafter, a similar ratio was applied. However for some locations the existing ratio was not considered appropriate as the existing ratio may include areas or uses that are unlikely to change. For example, the ratios for Caboolture and Redcliffe Aerodrome's include runways, leading to a very high ratio of developed land area per sqm of building footprint. As such, the future ratio was adjusted downward to reflect the same ratio will not be continued into the future as industrial areas develop.

Table H.2. Building Footprint to Land Ratios Applied

Area	Precinct	2016	2021	2026	2031	2036	2041
M1	Sandstone Point	3.10	3.00	3.00	3.00	3.00	3.00
B1	Bribie, First Avenue	3.48	3.50	3.50	3.50	3.50	3.50
1	Aerodrome Caboolture	10.18	5.00	5.00	5.00	5.00	5.00
2	Caboolture, Henzell Rd	4.35	4.00	4.00	4.00	4.00	4.00
3	Elimbah East	10.81	5.00	5.00	5.00	5.00	5.00
4	North East Business Park	3.96	4.00	4.00	4.00	4.00	4.00
5	Caboolture West LP	0.00	4.50	4.50	4.50	4.50	4.50
6	PAC Morayfield	6.33	4.00	4.00	4.00	4.00	4.00
7	Burpengary, Bruce Hwy	4.97	4.50	4.50	4.50	4.50	4.50
8b	Narangba, Old Gympie Rd	4.41	4.50	4.50	4.50	4.50	4.50
9	Deception Bay Rd	5.38	4.50	4.50	4.50	4.50	4.50
8a	Boundary Rd, Narangba-North Lakes	3.31	3.25	3.25	3.25	3.25	3.25
10	Dakabin, Kerr Rd West	0.00	4.00	4.00	4.00	4.00	4.00
11	Clontarf	3.21	3.25	3.25	3.25	3.25	3.25
M2	Marina – Scarborough	7.31	5.00	5.00	5.00	5.00	5.00
RA1	Redcliffe Aerodrome	21.54	5.00	5.00	5.00	5.00	5.00
13	Petrie Mill [(a)]	5.33	5.00	5.00	5.00	5.00	5.00
14	Lawnton, Paisley Drv	3.82	4.00	4.00	4.00	4.00	4.00
15	Brendale	2.75	3.25	3.25	3.25	3.25	3.25
16	The Hills District	3.29	3.25	3.25	3.25	3.25	3.25

Source: MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

GLA projections for each precinct were compared to supply capacity for the precinct. Where capacity was exceeded for a precinct, employment in that precinct was reduced (on a proportional basis of industry contribution to total employment in the precinct) to the point land demand no longer exceeded capacity. This 'overflow' of employment was reallocated to other precincts with remaining capacity using the same coefficients used in the initial disaggregation of employment to precincts, excluding those precincts that were at capacity.

APPENDIX I: PRECINCT EMPLOYMENT AND LAND PROJECTIONS

SANDSTONE POINT

Table I.1. Employment and Land Demand Projections, 2011 to 2041, Sandstone Point

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	13	12	13	14	16	17	17
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0
Retail Trade	2	2	2	2	3	3	3
Accommodation & Food Services	4	4	5	6	6	7	7
Transport, Postal & Warehousing	3	4	7	10	13	16	16
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	0	0	0	0	0	0	0
Prof., Scientific & Technical Services	0	0	0	0	0	0	0
Administrative & Support Services	0	0	0	0	0	0	0
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	0	0	0	0	0
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	0	0	0	0	0	0	0
Total Employment	**22**	**22**	**27**	**32**	**38**	**43**	**43**
Total Land Demand (Ha)	**0.9**	**0.9**	**1.2**	**1.6**	**1.9**	**2.2**	**2.2**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

BRIBIE, FIRST AVENUE

Table I.2. Employment and Land Demand Projections, 2011 to 2041, Bribie, First Avenue

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	58	51	52	52	52	51	51
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	20	21	27	28	28	28	28
Wholesale Trade	22	20	21	21	21	21	21
Retail Trade	0	0	0	0	0	0	0
Accommodation & Food Services	0	0	0	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0	0	0	1
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	0	0	0	0	0	0	0
Prof., Scientific & Technical Services	0	0	0	0	0	0	0
Administrative & Support Services	0	0	0	0	0	0	0
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	0	0	0	0	0
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	54	64	68	68	68	68	68
Total Employment	**152**	**156**	**168**	**169**	**169**	**168**	**169**
Total Land Demand (Ha)	**8.7**	**8.7**	**9.6**	**9.7**	**9.7**	**9.6**	**9.7**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

AERODROME CABOOLTURE

Table I.3. Employment and Land Demand Projections, 2011 to 2041, Aerodrome Caboolture

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	12	6	5	5	5	5	5
Mining	9	10	10	11	12	12	12
Manufacturing	637	597	631	658	686	702	702
Elect., Gas, Water & Waste Services	37	46	48	52	55	58	58
Construction	437	462	619	741	842	888	888
Wholesale Trade	162	150	157	170	183	192	192
Retail Trade	100	102	105	111	120	125	125
Accommodation & Food Services	38	41	46	52	59	63	63
Transport, Postal & Warehousing	82	98	131	172	216	241	241
Information Media & Telecomms.	8	7	8	8	9	10	10
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	59	59	69	79	88	94	94
Prof., Scientific & Technical Services	77	88	102	114	126	133	133
Administrative & Support Services	24	25	30	36	42	46	46
Public Administration & Safety	18	19	24	28	33	35	35
Education & Training	23	27	31	37	43	46	46
Health Care & Social Assistance	2	2	3	3	4	4	4
Arts & Recreation Services	16	18	21	25	31	34	34
Other Services	153	183	208	239	273	294	294
Total Employment	**1,893**	**1,941**	**2,248**	**2,542**	**2,825**	**2,981**	**2,981**
Total Land Demand (Ha)	**217.8**	**216.4**	**237.8**	**258.2**	**277.9**	**288.5**	**288.5**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

CABOOLTURE, HENZELL RD

Table I.4. Employment and Land Demand Projections, 2011 to 2041, Caboolture, Henzell Rd

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	223	193	193	194	195	196	196
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	51	54	71	87	104	114	114
Wholesale Trade	33	31	32	35	38	39	39
Retail Trade	68	69	71	76	81	84	84
Accommodation & Food Services	38	42	46	53	60	64	64
Transport, Postal & Warehousing	22	22	27	33	37	40	40
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	3	3	3	3	3	3	3
Rental, Hiring & Real Estate Serv.	15	15	18	20	22	24	24
Prof., Scientific & Technical Services	12	14	17	19	20	21	21
Administrative & Support Services	43	46	56	67	78	85	85
Public Administration & Safety	22	23	28	33	39	42	42
Education & Training	6	7	8	10	11	12	12
Health Care & Social Assistance	17	21	23	25	28	29	29
Arts & Recreation Services	4	4	5	6	8	9	9
Other Services	91	110	124	143	162	174	174
Total Employment	**648**	**655**	**723**	**802**	**888**	**937**	**937**
Total Land Demand (Ha)	**31.6**	**31.1**	**35.3**	**40.0**	**45.0**	**47.9**	**47.9**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

ELIMBAH EAST

Table I.5. Employment and Land Demand Projections, 2011 to 2041, Elimbah East

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	10	7	6	6	6	6	6
Mining	6	6	6	6	6	6	6
Manufacturing	29	28	30	31	32	40	49
Elect., Gas, Water & Waste Services	10	11	12	13	15	17	20
Construction	18	19	25	31	38	45	36
Wholesale Trade	17	16	17	18	19	23	28
Retail Trade	2	2	2	2	2	2	2
Accommodation & Food Services	1	1	1	1	1	1	1
Transport, Postal & Warehousing	4	4	4	4	5	9	16
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	0	0	0	0	0	0	0
Prof., Scientific & Technical Services	0	0	0	0	0	0	0
Administrative & Support Services	0	0	0	0	0	0	0
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	0	0	0	0	0
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	3	3	4	4	5	5	6
Total Employment	**99**	**95**	**106**	**116**	**128**	**154**	**171**
Total Land Demand (Ha)	**23.3**	**19.9**	**20.7**	**21.6**	**22.5**	**25.1**	**27.1**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

NORTH EAST BUSINESS PARK

Table I.6. Employment and Land Demand Projections, 2011 to 2041, North East Business Park

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	3	3	3	3	3	3
Mining	0	3	5	6	7	7	8
Manufacturing	0	0	0	0	1	2	4
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	1
Construction	3	3	4	5	15	27	40
Wholesale Trade	0	0	0	0	3	6	10
Retail Trade	0	0	0	12	34	56	84
Accommodation & Food Services	0	0	0	7	18	32	50
Transport, Postal & Warehousing	0	0	0	0	1	3	6
Information Media & Telecomms.	0	0	0	0	1	1	2
Financial & Insurance Services	0	0	0	0	2	3	6
Rental, Hiring & Real Estate Serv.	0	0	0	0	2	4	7
Prof., Scientific & Technical Services	0	0	0	0	7	15	23
Administrative & Support Services	0	0	0	0	5	12	19
Public Administration & Safety	0	0	0	0	5	10	17
Education & Training	4	8	18	23	29	36	45
Health Care & Social Assistance	0	0	0	0	6	12	18
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	0	0	0	4	14	24	36
Total Employment	**7**	**17**	**30**	**60**	**152**	**254**	**378**
Total Land Demand (Ha)	**0.2**	**1.3**	**2.1**	**2.9**	**5.6**	**8.5**	**12.0**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

CABOOLTURE WEST LP

Table I.7. Employment and Land Demand Projections, 2011 to 2041, Caboolture West LP

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	0	0
Accommodation & Food Services	0	0	0	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0	0	0	2
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	0	0	0	0	0	0	0
Prof., Scientific & Technical Services	0	0	0	0	0	0	0
Administrative & Support Services	0	0	0	0	0	0	0
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	0	0	0	0	0
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	0	0	0	0	0	0	0
Total Employment	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Total Land Demand (Ha)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

PAC MORAYFIELD

Table I.8. Employment and Land Demand Projections, 2011 to 2041, PAC Morayfield

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	41	39	43	46	49	49	49
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	37	39	51	63	73	73	73
Wholesale Trade	23	22	23	24	26	26	26
Retail Trade	24	25	25	27	29	29	29
Accommodation & Food Services	5	5	5	6	7	7	7
Transport, Postal & Warehousing	10	11	14	18	21	21	21
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	30	30	33	36	39	39	39
Prof., Scientific & Technical Services	11	12	14	16	17	17	17
Administrative & Support Services	6	7	8	10	11	11	11
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	0	0	0	0	0
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	19	23	26	30	34	34	34
Total Employment	**206**	**212**	**243**	**276**	**305**	**305**	**305**
Total Land Demand (Ha)	**15.5**	**15.8**	**18.1**	**20.5**	**22.5**	**22.5**	**22.5**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

BURPENGARY, BRUCE HWY

Table I.9. Employment and Land Demand Projections, 2011 to 2041, Burpengary, Bruce Hwy

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	85	105	102	97	95	93	91
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	57	61	79	97	116	138	161
Wholesale Trade	66	68	66	64	62	59	56
Retail Trade	65	65	67	72	77	83	90
Accommodation & Food Services	9	10	11	12	14	16	18
Transport, Postal & Warehousing	37	38	52	67	80	96	111
Information Media & Telecomms.	6	5	5	6	7	7	8
Financial & Insurance Services	2	2	2	2	2	2	2
Rental, Hiring & Real Estate Serv.	18	18	21	24	27	31	36
Prof., Scientific & Technical Services	3	3	4	4	5	5	6
Administrative & Support Services	16	18	21	25	30	35	40
Public Administration & Safety	17	20	24	28	31	36	41
Education & Training	1	1	1	1	2	2	2
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	43	65	82	104	127	155	191
Total Employment	**424**	**478**	**537**	**604**	**674**	**757**	**854**
Total Land Demand (Ha)	**22.5**	**25.3**	**29.1**	**33.1**	**37.3**	**42.4**	**48.0**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

NARANGBA, OLD GYMPIE RD

Table I.10. Employment and Land Demand Projections, 2011 to 2041, Narangba, Old Gympie Rd

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	8	9	10	10	10	10	10
Manufacturing	924	875	939	978	978	975	973
Elect., Gas, Water & Waste Services	7	9	9	10	10	10	10
Construction	189	200	262	306	306	306	306
Wholesale Trade	130	121	126	133	133	133	133
Retail Trade	39	39	40	42	42	42	42
Accommodation & Food Services	0	0	0	0	0	0	0
Transport, Postal & Warehousing	33	34	39	43	43	43	45
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	7	7	8	9	9	9	9
Prof., Scientific & Technical Services	10	12	13	15	15	15	15
Administrative & Support Services	20	21	25	29	29	29	29
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	0	0	0	0	0
Health Care & Social Assistance	1	1	1	1	1	1	1
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	50	60	68	76	76	76	76
Total Employment	**1,419**	**1,388**	**1,543**	**1,653**	**1,653**	**1,650**	**1,650**
Total Land Demand (Ha)	**91.2**	**88.8**	**101.9**	**111.0**	**111.0**	**110.8**	**110.7**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

DECEPTION BAY RD

Table I.11. Employment and Land Demand Projections, 2011 to 2041, Deception Bay Rd

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	6	5	6	6	7	8	8
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	4	5	6	7	9	11	12
Wholesale Trade	16	15	16	17	18	20	22
Retail Trade	4	4	4	4	4	5	5
Accommodation & Food Services	0	0	0	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0	0	0	2
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	0	0	0	0	0	0	0
Prof., Scientific & Technical Services	3	4	4	5	5	6	6
Administrative & Support Services	0	0	0	0	0	0	0
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	3	3	4	4	5	6	7
Health Care & Social Assistance	11	13	14	16	17	19	21
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	2	2	3	3	5	7	10
Total Employment	**49**	**51**	**56**	**63**	**71**	**80**	**93**
Total Land Demand (Ha)	**2.4**	**2.3**	**2.6**	**2.9**	**3.4**	**3.9**	**4.6**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

BOUNDARY RD, NARANGBA-NORTHLAKES

Table I.12. Employment and Land Demand Projections, 2011 to 2041, Boundary Rd, Narangba-Northlakes

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	2	4	5	5	6	6	6
Manufacturing	891	851	927	988	1,048	1,101	1,158
Elect., Gas, Water & Waste Services	37	43	46	51	56	61	68
Construction	174	185	242	298	367	444	527
Wholesale Trade	182	169	177	186	199	214	234
Retail Trade	115	168	299	390	440	491	528
Accommodation & Food Services	20	95	195	256	290	330	359
Transport, Postal & Warehousing	39	39	49	60	71	84	99
Information Media & Telecomms.	20	18	20	24	29	34	40
Financial & Insurance Services	91	135	142	158	180	196	216
Rental, Hiring & Real Estate Serv.	101	102	123	146	172	193	219
Prof., Scientific & Technical Services	92	141	266	378	492	578	673
Administrative & Support Services	108	121	190	268	357	427	511
Public Administration & Safety	22	25	53	81	118	138	162
Education & Training	11	12	14	17	21	25	31
Health Care & Social Assistance	94	115	133	151	183	216	250
Arts & Recreation Services	5	5	6	7	9	10	13
Other Services	85	222	298	363	412	454	507
Total Employment	**2,088**	**2,449**	**3,185**	**3,827**	**4,450**	**5,004**	**5,600**
Total Land Demand (Ha)	**84.1**	**89.8**	**116.3**	**140.2**	**164.3**	**186.4**	**210.6**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

DAKABIN, KERR RD WEST

Table I.13. Employment and Land Demand Projections, 2011 to 2041, Dakabin, Kerr Rd West

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	0	0	11	20	31	40	51
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	1
Construction	0	0	30	60	92	126	163
Wholesale Trade	0	0	2	5	11	17	25
Retail Trade	0	0	6	19	35	51	72
Accommodation & Food Services	0	0	5	12	20	29	41
Transport, Postal & Warehousing	0	0	4	8	13	18	25
Information Media & Telecomms.	0	0	0	1	1	2	3
Financial & Insurance Services	0	0	0	0	2	3	5
Rental, Hiring & Real Estate Serv.	0	0	0	1	2	4	6
Prof., Scientific & Technical Services	0	0	2	4	9	14	20
Administrative & Support Services	0	0	1	3	7	13	19
Public Administration & Safety	0	0	0	0	2	5	8
Education & Training	0	0	0	0	0	1	1
Health Care & Social Assistance	0	0	0	0	3	6	9
Arts & Recreation Services	0	0	2	4	6	10	13
Other Services	0	0	8	18	30	43	60
Total Employment	**0**	**0**	**72**	**156**	**264**	**382**	**523**
Total Land Demand (Ha)	**0.0**	**0.0**	**3.8**	**7.9**	**12.9**	**18.4**	**24.8**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

CLONTARF

Table I.14. Employment and Land Demand Projections, 2011 to 2041, Clontarf

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	6	6	6	6	6	6	6
Manufacturing	1,076	992	1,002	1,002	1,001	994	987
Elect., Gas, Water & Waste Services	51	61	62	62	62	62	62
Construction	209	221	238	238	238	238	237
Wholesale Trade	219	203	205	205	205	205	205
Retail Trade	50	51	51	51	51	51	51
Accommodation & Food Services	19	21	21	21	21	21	21
Transport, Postal & Warehousing	56	56	60	60	60	60	62
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	16	17	17	17	17	17	17
Prof., Scientific & Technical Services	10	12	12	12	12	12	12
Administrative & Support Services	16	17	18	18	18	18	18
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	5	6	7	7	7	7	7
Health Care & Social Assistance	5	6	7	7	7	7	7
Arts & Recreation Services	1	1	1	1	1	1	1
Other Services	149	179	185	185	185	185	185
Total Employment	**1,889**	**1,849**	**1,894**	**1,894**	**1,892**	**1,885**	**1,880**
Total Land Demand (Ha)	**83.3**	**80.6**	**83.1**	**83.1**	**83.0**	**82.6**	**82.4**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

MARINA – SCARBOROUGH

Table I.15. Employment and Land Demand Projections, 2011 to 2041, Marina – Scarborough

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	3	1	1	1	1	1	1
Mining	0	0	0	0	0	0	0
Manufacturing	19	18	20	21	22	22	22
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	37	39	51	62	72	72	72
Wholesale Trade	18	17	18	19	21	21	21
Retail Trade	16	17	17	18	19	19	19
Accommodation & Food Services	63	68	76	86	97	97	97
Transport, Postal & Warehousing	32	35	48	61	70	70	70
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	8	9	10	11	12	12	12
Prof., Scientific & Technical Services	20	22	26	29	32	32	32
Administrative & Support Services	8	9	10	12	14	14	14
Public Administration & Safety	6	7	8	10	11	11	11
Education & Training	7	8	9	11	13	13	13
Health Care & Social Assistance	4	5	6	7	8	8	8
Arts & Recreation Services	2	3	3	4	4	4	4
Other Services	26	32	36	41	46	46	46
Total Employment	**270**	**291**	**339**	**393**	**441**	**441**	**441**
Total Land Demand (Ha)	**9.6**	**9.6**	**11.4**	**13.2**	**14.8**	**14.8**	**14.8**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

REDCLIFFE AERODROME

Table I.16. Employment and Land Demand Projections, 2011 to 2041, Redcliffe Aerodrome

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	36	35	35	35	35	34	34
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	11	12	16	18	20	23	25
Wholesale Trade	2	2	2	2	2	2	2
Retail Trade	5	5	5	6	6	6	7
Accommodation & Food Services	0	0	0	0	1	1	1
Transport, Postal & Warehousing	32	39	39	39	39	51	61
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	3	3	3	3	3	3	3
Prof., Scientific & Technical Services	5	6	7	7	7	7	7
Administrative & Support Services	0	0	0	0	0	0	0
Public Administration & Safety	2	2	3	3	3	3	3
Education & Training	13	15	16	16	17	17	17
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	0	0	0	0	0	0	0
Other Services	16	18	20	20	21	22	22
Total Employment	**125**	**137**	**145**	**149**	**153**	**170**	**182**
Total Land Demand (Ha)	**37.9**	**40.9**	**41.6**	**42.0**	**42.3**	**44.1**	**45.5**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

PETRIE MILL

Table I.17. Employment and Land Demand Projections, 2011 to 2041, Petrie Mill

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	25	25	26	26	26	26	26
Manufacturing	333	42	67	94	125	154	187
Elect., Gas, Water & Waste Services	12	16	16	18	19	20	22
Construction	23	24	31	38	46	54	63
Wholesale Trade	25	23	24	26	28	31	34
Retail Trade	4	4	35	100	142	185	242
Accommodation & Food Services	0	0	73	162	200	244	299
Transport, Postal & Warehousing	10	10	15	20	24	29	35
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	0	0	0	0	0	0	0
Rental, Hiring & Real Estate Serv.	2	2	2	3	3	4	4
Prof., Scientific & Technical Services	0	0	134	255	333	419	515
Administrative & Support Services	47	51	61	73	85	99	116
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	0	0	211	317	354	395	445
Health Care & Social Assistance	0	0	631	1,236	1,434	1,637	1,842
Arts & Recreation Services	0	0	48	110	136	165	203
Other Services	30	35	61	98	126	159	199
Total Employment	**511**	**232**	**1,437**	**2,576**	**3,080**	**3,622**	**4,231**
Total Land Demand (Ha)	**26.5**	**13.5**	**44.4**	**71.9**	**85.8**	**100.8**	**118.1**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

LAWNTON, PAISLEY DRV

Table I.18. Employment and Land Demand Projections, 2011 to 2041, Lawnton, Paisley Drv

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	274	243	248	248	248	245	244
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	163	172	200	200	200	200	200
Wholesale Trade	113	105	109	109	109	109	109
Retail Trade	368	372	380	380	380	380	380
Accommodation & Food Services	16	17	19	19	19	19	19
Transport, Postal & Warehousing	46	47	62	62	62	62	63
Information Media & Telecomms.	3	2	3	3	3	3	3
Financial & Insurance Services	1	2	2	2	2	2	2
Rental, Hiring & Real Estate Serv.	9	9	10	10	10	10	10
Prof., Scientific & Technical Services	46	54	58	58	58	58	58
Administrative & Support Services	17	18	21	21	21	21	21
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	13	15	16	16	16	16	16
Health Care & Social Assistance	5	6	6	6	6	6	6
Arts & Recreation Services	30	34	36	36	36	36	36
Other Services	108	131	138	138	138	138	138
Total Employment	**1,211**	**1,227**	**1,306**	**1,306**	**1,306**	**1,303**	**1,303**
Total Land Demand (Ha)	**41.0**	**40.4**	**44.9**	**44.9**	**44.9**	**44.7**	**44.7**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

BRENDALE

Table I.19. Employment and Land Demand Projections, 2011 to 2041, Brendale

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	21	15	15	14	14	14	13
Mining	21	26	28	29	31	33	35
Manufacturing	3,464	3,158	3,344	3,534	3,740	3,940	4,187
Elect., Gas, Water & Waste Services	63	71	75	82	89	97	108
Construction	1,435	1,484	1,842	2,189	2,575	3,002	3,470
Wholesale Trade	983	911	964	1,054	1,160	1,277	1,432
Retail Trade	703	712	747	820	909	1,001	1,120
Accommodation & Food Services	69	76	84	95	108	124	144
Transport, Postal & Warehousing	325	329	366	407	451	501	559
Information Media & Telecomms.	62	61	64	71	79	89	101
Financial & Insurance Services	162	195	200	212	230	250	276
Rental, Hiring & Real Estate Serv.	57	58	66	76	88	105	125
Prof., Scientific & Technical Services	361	403	481	551	630	716	812
Administrative & Support Services	265	275	314	359	416	483	562
Public Administration & Safety	282	297	327	358	399	446	502
Education & Training	69	79	94	107	122	140	163
Health Care & Social Assistance	98	119	135	151	172	193	216
Arts & Recreation Services	54	63	83	108	138	172	212
Other Services	537	621	701	808	926	1,064	1,239
Total Employment	**9,032**	**8,954**	**9,930**	**11,025**	**12,279**	**13,648**	**15,276**
Total Land Demand (Ha)	**286.4**	**275.6**	**317.6**	**363.6**	**415.5**	**471.6**	**538.5**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

THE HILLS DISTRICT

Table I.20. Employment and Land Demand Projections, 2011 to 2041, The Hills District

1-Digit ANZSIC	2011	2016	2021	2026	2031	2036	2041
Agriculture, Forestry & Fishing	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0
Manufacturing	200	186	190	190	190	189	188
Elect., Gas, Water & Waste Services	0	0	0	0	0	0	0
Construction	63	66	73	73	73	73	73
Wholesale Trade	54	50	51	51	51	51	51
Retail Trade	120	122	123	123	123	123	123
Accommodation & Food Services	30	33	34	34	34	34	34
Transport, Postal & Warehousing	10	10	12	12	12	12	14
Information Media & Telecomms.	0	0	0	0	0	0	0
Financial & Insurance Services	17	19	19	19	19	19	19
Rental, Hiring & Real Estate Serv.	17	17	17	17	17	17	17
Prof., Scientific & Technical Services	34	40	42	42	42	42	42
Administrative & Support Services	28	30	32	32	32	32	32
Public Administration & Safety	0	0	0	0	0	0	0
Education & Training	17	19	20	20	20	20	20
Health Care & Social Assistance	0	0	0	0	0	0	0
Arts & Recreation Services	5	5	5	5	5	5	5
Other Services	110	133	138	138	138	138	138
Total Employment	**704**	**730**	**756**	**756**	**756**	**755**	**756**
Total Land Demand (Ha)	**16.9**	**17.0**	**17.9**	**17.9**	**17.9**	**17.8**	**17.9**

Source: ABS (2016b), ABS (2016c), ABS (2015b), QGSO (2015), MBRC (unpublished[a]; unpublished[b]; unpublished[c]; unpublished[d]), AEC.

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