South East Queensland Regional Plan 2017 *ShapingSEQ*

Background paper 2: Prosper

October 2017

Queensland Government

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Introduction

Purpose

The purpose of this paper is to inform, support and provide background material for the policy and implementation of the South East Queensland Regional Plan 2017, called *ShapingSEQ*, in relation to the prosper theme. This theme considers the land use approach to supporting improved economic and employment outcomes for the region.

Another four interrelated background papers have been prepared to support *ShapingSEQ*, including those covering the themes of:

- Grow – considering the preferred pattern of settlement changes to best manage projected regional growth.
- Connect – considering the infrastructure demands and integrating land use and transport planning to improve outcomes in the region.
- Sustain – considering issues for the protection and management of our natural environment and sustainable social outcomes for our communities.
- Live – looking at ways to improve the quality of design and amenity in our urban areas.

Figure 1: South East Queensland region

Combined, the papers provide the foundation upon which *ShapingSEQ* has been prepared.

Theme defined

The South East Queensland (SEQ) region plays an extremely influential role in Queensland's growth and prosperity. As the state's largest region, in terms of both population and economic activity, SEQ serves as a socioeconomic hub to the rest of Queensland, as well as interstate and foreign markets. SEQ's strong lifestyle factors help drive high levels of population growth, while its diverse and advanced economy promote a variety of broader economic and investment opportunities.

The prosper theme seeks to strengthen and raise the region's economic profile to ensure it remains prosperous and continues to compete globally. To do this, we will need to be able to keep pace with the rest of the world. We will have to continue to invest in and support our economic strengths, and seek out new and emerging opportunities.

The prosper theme also seeks to identify and describe appropriate land use responses to support the growth of the regional economy. It focuses on how *ShapingSEQ* advances the region's global and national relationships to ensure SEQ remains economically competitive.

Relationship with other themes

The prosper theme has a very strong interrelationship with the connect theme, particularly in relation to transport and digital infrastructure. Sustaining economic growth requires the provision of supporting infrastructure, which can stimulate economic growth in a number of ways:

- increasing productivity by improving efficiencies
- attracting business activity
- facilitating market access
- enhancing competition.

There is also a strong relationship to the grow theme as employment location and access to skilled workers are key considerations for business location. The live theme also plays a role in attracting and maintaining skilled workers by ensuring workplaces provide appropriate levels of amenity and access to services within close proximity to places of employment.

Context

Previous regional plans

Over the last 20 years, economic policies in regional plans for SEQ have placed emphasis on employment location. These policies have sought to influence employment and investment primarily in discreet areas, such as centres and major industrial areas.

Previous regional plans for SEQ have encouraged good planning practice through:

- co-locating value-adding uses
- focusing employment in accessible locations (primarily focused on public transport)
- separating industrial and commercial uses
- supporting emerging knowledge intensive industries.

However, previous regional plans have not typically considered the broader economic relationships that exist between these (and other) areas of economic activity. They have also not characterised land use planning solely from an economic needs perspective.

How the regional plan better supports economic growth

Under the *Planning Act 2016*, economic development is identified as a fundamental and necessary step to achieving ecological sustainability. *ShapingSEQ* is part of the Queensland planning framework and as such must also ensure that planning for the region advances and facilitates the achievement of this purpose. The visions for SEQ is to strengthen and raise the region's economic profile to ensure it remains prosperous and continues to globally compete.

Some of the ways *ShapingSEQ* supports the continued economic prosperity of SEQ is by:

- ensuring there is sufficient supply of appropriately zoned land so supply is not constrained
- identifying and protecting strategic locations that have potential to provide future employment
- identifying and protecting infrastructure corridors required to sustain and strengthen economic growth
- identifying areas to focus regional economic growth
- identifying regional and subregional opportunities
- identifying infrastructure priorities to support areas of regional economic activity or significance
- acknowledging that economic activity occurs across local government boundaries
- supporting connections between place of residence and place of employment.

Current regional economic strengths

SEQ today

SEQ is an economically diverse region with a range of economic drivers. These include, but are not limited to:

- a major capital city
- major port (sea and air) assets
- an extensive land based freight network
- a network of regionally significant industry and enterprise areas
- a network of higher order activity centres providing retail, commercial and personal services to their communities
- major health and scientific research hubs
- natural and developed tourism assets
- fertile agricultural production areas.

SEQ has many of the ingredients necessary to strengthen its global and national competitiveness and is considerably well positioned to continue to prosper as a region.

Historically, SEQ's economic strengths have been in manufacturing, agriculture, tourism, health, education, retail and construction. To remain economically diverse, SEQ will need to build upon its existing strengths and seek to foster and support new industries and sectors, particularly those that have, and are continuing to show, strong growth.

Current strengths

Services based economy

SEQ, like many advanced economies, is primarily a services based economy. The majority of SEQ's economic activity is driven by service type industries, which includes, for example, finance, professional services, health, education, hospitality, arts and recreation services.

According to employment estimates prepared by Queensland Treasury, SEQ's services sector accounts for approximately three-quarters of Queensland's services sector workforce (as at 2015–16). The Queensland Treasury also estimates that the services sector accounts for just over 60 per cent of all employment within SEQ. In terms of its contribution to the economy, the services industries contributed to an estimated $96.6 billion to nominal gross regional product.

In some ways this is not surprising given that the services industries accounts for 13 of the 19 Australian and New Zealand Standard Industrial Classifications (ANZSIC) divisions being:

- wholesale trade
- retail trade
- accommodation and food services
- information media and telecommunications
- financial and insurance services
- rental, hiring and real estate services
- professional, scientific and technical services
- administrative and support services
- public administration and safety
- education and training
- health care and social assistance
- arts and recreation services and

- other services.

While businesses that represent services based sectors are dispersed throughout SEQ they are generally concentrated in and around our activity centres. The very nature of services industries (being the sale of a service of a product to a consumer) means it is logical and makes good business sense to locate near other businesses or near concentrated populated areas as the demand for services and goods is at its highest. In a technical sense, this concentration of businesses, activities and people is known as 'agglomeration' or put more simply 'clustering'.

There are many complex and simple reasons why agglomeration occurs. This is discussed in more detail later on in this paper.

Tourism

Another traditional strength for the SEQ economy is tourism. Measuring the impact of tourism on the economy is difficult as it is not an industry category for official statistics. Tourism transects multiple industries such as accommodation, retail trade, food and beverages, and transport. However, the Department of Tourism, Major Events, Small Business and the Commonwealth Games estimates the contribution of tourism to the Queensland economy in June 2014 is around $11.2 billion, representing significant growth compared with 2010-11 estimates of $7.8 billion[1]. In addition, the Brisbane Airport Corporation estimated 5.2 million international passengers passed through the airport in 2015–16, which represents a doubling since 2000–01.

Tourism in SEQ is diverse and varied with each sub-region offering unique tourism opportunities and experiences for a visitor. Tourism places range from natural places, rural production areas, towns or townships, suburban or urban neighbourhood to cities. Collectively, the vast array of tourist options and experiences contribute significantly to the overall attractiveness and appeal of SEQ.

SEQ has a number of key attributes that differentiate itself from other tourist destinations and that give the region a strong comparative advantage. For instance, the region contains three existing airports that accommodate international and domestic airline carriers with all three also currently undergoing planned expansions:

- Sunshine Coast Airport- new runway planned for completion by 2020, will be able to cater for aircraft such as the Airbus A330 and Boeing 787[2]
- Gold Coast Airport- expansion of the existing terminal, additional apron parking, consolidated ground transport facility anticipated for completion in 2019[3]
- Brisbane Airport- completion of second parallel runway, International Terminal apron and concourse expansions, and completion of the 25ha Airport Industrial Park by the year 2021. The addition of the new runway will see Brisbane Airport operate on the same level of capacity as airports in Singapore and Hong Kong[4].

Brisbane West Wellcamp also offers domestic flights and is designed to cater for large jets up to 747 size, facilitating the largest of airfreight into and out of the region[5]. Situated amongst Australia's most valuable food producing regions, Brisbane West Wellcamp Airport supports an

[1] Tourism Research Australia, Tourism Satellite Accounts 2008-2009: Summary Spreadsheets
[2] Sunshine Coast Airport http://www.sunshinecoastairport.com.au/Corporate/Expansion-Project/Project-Features, visited May 2017
[3] Gold Coast Airport https://www.goldcoastairport.com.au/latest-news/gold-coast-airport-reviews-redevelopment-plans/, visited September 2017
[4] Brisbane Airport Corporation http://www.bne.com.au/corporate/bne-major-projects/brisbanes-new-runway, visited May 2017
[5] Brisbane West Wellcamp Airport http://www.wellcamp.com.au/industry-pilot-info/australias-new-air-cargo-hub, visited May 2017

emerging freight cargo operations service.

SEQ is also at least an hour closer to Asia than southern states and time difference of only two to three hours. The Port of Brisbane is also investigating a new cruise terminal at the mouth of the Brisbane River. Such a facility will be able to cater for cruise vessels[6] of all sizes enabling the region to compete with other ports for mega cruise ships. This proposal is currently being assessed under the Government's Market-led proposal process[7].

Strong growth is anticipated to continue for SEQ towards 2041. Disposable incomes will grow in emerging Asian countries such as China, India, Indonesia and Thailand. As a result, an increase in expenditure in tourism travel is anticipated. By 2020, it is estimated that 200 million Chinese people will travel outside their country for leisure[8]. Australia, including SEQ, is well positioned to capitalise on this growing market as we offer a unique cultural experience and natural landscape sought after by the Asian market.

Moving towards 2041, travel and global mobility will only become easier and cheaper. Strong competitive advantage in tourism has significantly enhanced international awareness of SEQ. There is significant opportunity to leverage off this brand awareness and continue to develop international markets for other sectors, such as education. To remain a leading tourist destination, SEQ will need to keep pace with investment and continue to differentiate itself from other tourist destinations.

This type of investment must consider the needs of the tourist and the experience being sought. This can range from convenient public transport that will promote mobility within the region to highly accessible and inexpensive internet. The ease of being able to connect online to research a destination in real time, identify nearby restaurants or cages, look up transport timetables or allow them to connect and share their experiences with home. We live in a world where the demand for information is immediate. International visitors will expect international standard of infrastructure and experiences.

Agriculture

Agriculture traditionally has been a strong export sector for Queensland, and SEQ contains some of the most productive soils in Australia. This, combined with our climate, makes SEQ capable of supporting a diverse range of crops and agricultural commodities. While the agriculture, forestry and fishing industry only contributes a small share of SEQ's economic growth, recent years has seen strong growth in this sector[9].

The combination of fertile soils, ideal climate and short transportation distances to major national and global export transport hubs, makes the agricultural sector an important contributor to the region's continued economic growth. The value of agricultural commodities produced in SEQ in 2015-16 was estimated at more than $1.5 billion[10], representing around 12 per cent of the state's value of agricultural commodities.

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[6] Port of Brisbane factsheet https://www.portbris.com.au/PortBris/media/General-Files/Factsheets%20and%20brochures/POB-1813-Fact-sheet_Cruise-Terminal_HR_1.pdf, visited May 2017.

[7] Queensland Treasury https://www.treasury.qld.gov.au/growing-queensland/market-led-proposals/, visited May 2017

[8] Federal Minister for Trade and Investment 2013 Media Release http://trademinister.gov.au/releases/Pages/2014/ar_mr_141218.aspx?ministerid=3

[9] Department of State Development, Infrastructure and Planning, *SEQ Economic Baseline Final Draft*, August 2013

[10] Value of Agricultural Commodities Produced, Australia, 2015-16, Australian Bureau of Statistics

The dominant agricultural commodities in SEQ were:

- horticulture
- poultry
- fruit.

Another highly sought after commodity is beef. Australia is the third largest exporter of beef[11], with Queensland producing almost 50 per cent of the nation's beef.

Ongoing protection of agricultural lands and activities in SEQ, along with better support to facilitate efficient movement of these important commodities to global markets, is needed.

Agglomeration benefits

The benefits of agglomeration are well documented and researched in academia. Essentially, agglomeration is the concentration of businesses, industry, education and research facilities and a diverse but skilled worker base in a defined geographical location.

This high concentration of economic activity is driven by the need to maximise the size of the available workforce catchment through a centralised location. There are also significant benefits and efficiencies that enterprises gain through proximity to each other. The ability to conduct business and interact, share information and knowledge is convenient. Despite technological advancements, being able to walk the next block for a meeting or workshop remains an efficient and sustainable business model. This incentive, coupled with accessible and high frequency public transport connections to residential areas, are significant drawcards for businesses when deciding where to locate.

The Grattan Institute in '*City Limits: Why Australia's cities are broken and how we can fix them*' (City Limits)[12] articulates some of the key benefits and drivers for agglomeration in the context of our cities. Despite the age of the internet and common held beliefs this will drive decentralisation, the evidence suggests otherwise. Once example discussed is that of the financial sector in Australia, where head offices of major banks and financial institutions have their Australian headquarters located in Sydney. Despite the significantly high rents, heavy traffic congestion and almost 'prohibitively expensive parking'. City Limits explains that 'face to face' interactions in a business sense is still the most beneficial means to communicate.

[11] Cattle Council (2013), http://www.cattlecouncil.com.au/assets/Beef%20Fast%20Facts%202013_EMAIL.PDF (accessed 15 April 2016)

[12] Kelly, J-F., Donegan, P., 2015, *City Limits: why Australia's cities are broken and how we can fix them*, Grattan Institute Melbourne University Press

Policy directions in *ShapingSEQ*

Employment projections

Prior to *ShapingSEQ*, there was no government endorsed or regionally agreed employment forecasts by industry sector at the SEQ region and local government level. Previous regional plans did not set employment targets for each local government area but included sufficient land within the Urban Footprint land category to cater for employment needs within the planning horizon.

The department recognises that there are many alternative points of view regarding future employment outcomes for SEQ, and these alternative inputs assist in formulating regional policy. To inform *ShapingSEQ*, a high level review of employment projections currently used in local government infrastructure plans (LGIP) was undertaken against the Queensland Treasury and National Institute of Economic Industry Research (NIEIR) figures (refer to Table 1 and

Table 2).

Table 1: Employment projections 2011

2011 employment projections			
	Queensland Treasury	**LGIP**	**NIEIR**
Brisbane	789,440	787,072	794,274
Logan	97,681		97,988
Redland	44,781	36,394	45,045
Ipswich	63,789	63,184	61,646
Moreton Bay	114,828	106,059	114,297
Gold Coast	241,831	211,366	240,133
Sunshine Coast	112,544	24,538	110,218
Toowoomba	61,523		60,037
Noosa	21,680	20,586	23,689
Lockyer	12,122		12,461
Somerset	6838	5029	6767
Scenic Rim	13,824	7,441	13,871
Total	1,568,759	1,261,669	1,567,965

Table 2: Employment projections to 2041

2041 employment projections			
	Queensland Treasury	**LGIP**	**NIEIR**
Brisbane	1,247,608		1,128,609
Logan	168,128	277,126	137,248
Redland	69,193	50,009	61,479
Ipswich	128,800	314,364	120,127
Moreton Bay	189,182		149,217
Gold Coast	433,431		329, 651
Sunshine Coast	193,092		149,355
Toowoomba	86,641		73,288
Noosa	33,454		30,342
Lockyer	19,178		14,718
Somerset	10,015	9174	7840
Scenic Rim	21,780		14,536
Total	2, 581, 324	650, 673	1, 872, 041

Despite what the various figures show, the main conclusion drawn from this work was the degree of inconsistencies that existed across the region with respect to future employment, being:

- councils are planning to different timeframe horizons, projections and ultimate years
- growth assumptions varied
- extent of data available varied.

Early in the review, there was general agreement from stakeholders that employment projections would provide a good shared basis for coordinating planning for economic growth across the region. Feedback from stakeholders revealed a desire to not create a false expectation to measure success that is outside the sole influence of land use planning, recognising that land use planning cannot drive job creation.

In formulating *ShapingSEQ*, employment projections were sourced from Queensland Treasury's 2015 version (medium series projections). These projections were reviewed and interrogated by the department, officers seconded from other Queensland Government departments and SEQ local governments, and external parties.

To support the regional employment projections, Queensland Treasury prepared and released a paper that provides an overview of the methodology and assumptions used in preparing the projections[13]. This can be accessed from their website however a summary of regional assumptions include:

- differences in the industrial composition of regions

[13] Regional employment projections, 2010-2011 to 2040-41: Methodology and assumptions, http://www.qgso.qld.gov.au/products/reports/reg-employment-proj-methodology-assumptions/index.php

- local and external drivers of industry demand, including separate drivers for construction, government services, international and foreign tourism, and other service industries
- differences in the regional rates of demographic change, including changes to the age structure of regional populations and the implications for workforce participation
- international and domestic tourism demand
- significant investment projects
- differences in drivers of growth for regions within SEQ relative to the rest of Queensland
- the availability of industrial land to support changes in industry activity[14].

Employment projections represent an anticipated outlook at a given point in time based on available information and an understanding of economic and social policy interactions. These projections are intended to form the basis for a discussion of economic and employment planning within SEQ. They are not intended to represent an employment target and as such local government can aim for increased levels of employment if they choose to. It is important to note that *ShapingSEQ* does not adopt a policy position of employment 'self-containment', recognising that economic and employment activity occurs across local government boundaries, influenced by the complex 'push and pull' nature of economic activity. It is hoped however that over time *ShapingSEQ* policy will help influence regional employment outcomes, particularly in the context of Regional Economic Clusters.

The role of the regional plan is to provide a long-term land use framework and broad prioritisation of development to enable infrastructure planning agencies to undertake their activities in the short-medium term with confidence. The employment projections prepared by Queensland Treasury 2015 version (medium series) are to be used as a baseline to inform infrastructure and land use planning.

State and regional infrastructure agencies will also use these employment projections to inform their planning and coordination in delivering infrastructure for the region. Local governments are required to ensure that they have adequate employment land to accommodate the projected employment to 2041.

Local governments are also strongly encouraged to base their infrastructure planning on the same LGA totals as for state and regional agencies, but may adopt different projections if required to reflect specific local circumstances and planning objectives.

The regional plan also provides the opportunity to establish a consistent set of population and employment growth assumptions through the SEQ Growth Monitoring Program. This will provide a framework for coordinating land use and infrastructure planning by state and local government and regional and sub-regional infrastructure agencies. The consistent set of growth assumptions will be developed in collaboration with Queensland Treasury, the Department of Transport and Main Roads, SEQ councils and other state agencies.

ShapingSEQ outlines in greater detail how these growth assumptions will be used, including the intent to update with each new round of state government population, dwelling and employment projections.

The employment planning baselines in *ShapingSEQ* have also been aggregated into land use type to better align with planning schemes and infrastructure planning (refer Table 3). Schemes and transport modelling generally allocate employment into use types rather than ANZSIC categories. While it's acknowledged there are multiple ways the employment baselines can be aggregated, it's

[14] It was considered that, for the large regions being considered in the exercise, it is unlikely that land supply would constrain industry growth.

decided that the aggregation shown below, is the most appropriate for *ShapingSEQ* based on similar trips and land requirements generated by common uses.

Table 3: Aggregated employment projections by land use

Construction	Industry	Offices	Retail and leisure	Natural Resources	Health and education
Construction	Manufacturing	Information, media and telecommunications	Rental, hiring and real estate services	Agriculture, forestry and fishing	Education and training
	Wholesale trade	Administrative and support services	Retail trade	Electricity, gas, water and waste services	Health care and social assistance
	Transport, postal and warehousing	Public administration and safety	Accommodation and food services	Mining	
		Financial and insurance services	Arts & recreation services		
		Other services			
		Professional, scientific and technical services			

It's important to note that aggregating the employment into land use categories has not interfered with the overall figures. These figures are still as per Queensland Treasury projections.

Regional economic clusters

Regional Economic Clusters (RECs) emerge out of the confluence of a mix of different land uses, high levels of employment and specialisation in outwardly focused clusters. RECs demonstrate existing, significant concentrations of sectors that support the tradeable economy or business-to-business interactions. This type of trade generates employment and economic activity above what can be generated by local consumption alone. The identification of RECs in *ShapingSEQ* represent the ideal economic interrelationships required to support a thriving, competitive regional economy.

Sectors of the economy predominantly focused on local consumption or business-to-household interactions are still important to the region and will continue to be reflected in the local planning framework. The diagram below demonstrates the varying economic focus between *ShapingSEQ* and planning schemes. The confluence of multiple land uses within RECs provides reinforcing critical mass (or agglomeration) and opportunities for synergy. The benefits of which are discussed previously in this paper. However, some examples include, a knowledge precinct adjacent to an industrial area creates opportunities for commercialisation, similarly access to centres provides access to necessary business and commercial services as well as worker amenities. It is hoped that by 2041 the ideal economic outcome from RECs is the emergence of synergies between centres, major enterprise and industrial areas, and knowledge and technology precincts.

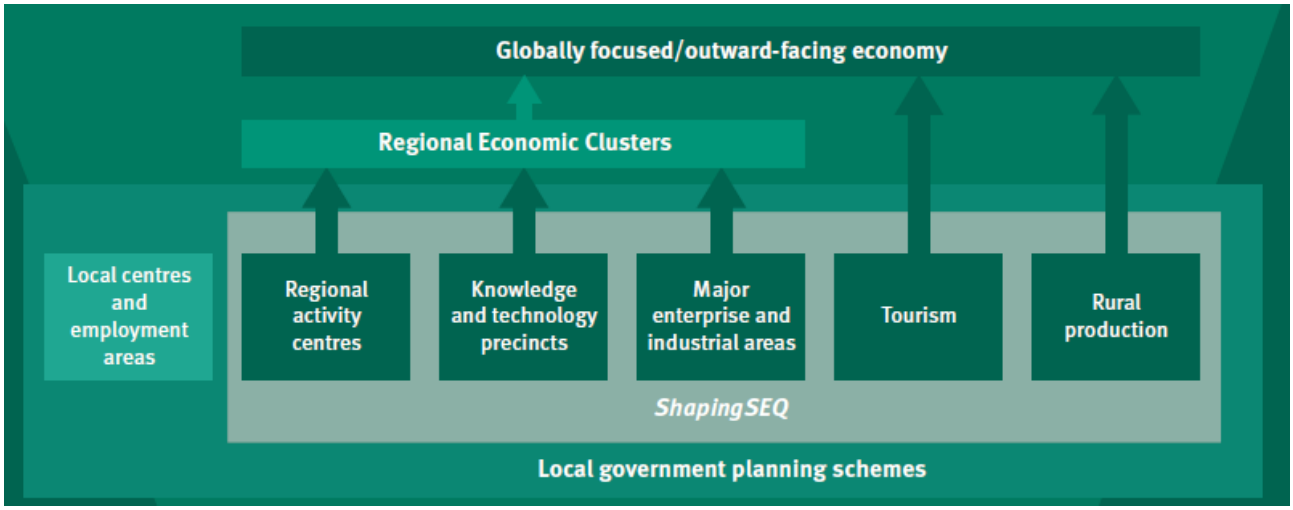


Figure 2: Different economic focus of *ShapingSEQ*

To support the draft *ShapingSEQ*, a guideline on the methodology for identifying RECs was prepared and released. This guideline has been updated to expand upon the methodology and additional work undertaken by the department between the draft and final regional plan. For further details on RECs please refer to *ShapingSEQ* Regional Economic Clusters Guideline. This guideline should be read in the context of *ShapingSEQ* policy.

As part of the RECs analysis, a number of key lessons were identified. These include the:

- significance of the CBD
- importance of agglomerations or corridors as opposed to centres
- role of enabling regional assets.

Significance of the CBD

The most significant concentration of employment activity occurred within or in close proximity to the Brisbane Central Business District (CBD), employing approximately 320,000 workers[15]. This highlights the economic significance of the CBD to the region, and the state more broadly. This is supported by work undertaken by the Grattan Institute[16] that state 'the intense of economic contribution of CBDs occurs partly because of the concentration of jobs in these areas'. The evidence collated by Grattan Institute suggests that Australia's largest cities account for at least half the economic activity in their state[17]:

- Sydney 73 per cent of New South Wales economy
- Melbourne 81 per cent of Victoria's economy
- Brisbane 52 per cent of Queensland's economy
- Perth 64 per cent of Western Australia's economy
- Adelaide 79 per cent of South Australia's economy.

Figure 3 illustrates the comparisons between location of economic activity with respect to the Brisbane CBD.

[15] Figures based on 2011 census, 2016 census data was not available at the time of publishing.
[16] Kelly, J-F., Donegan, P., Chisholm, C., Oberklaid, M., 2014, *Mapping Australia's Economy: Cities as engines of prosperity*, Grattan Institute
[17] Sourced from Grattan Institute, economic activity 2011-2012 as a percentage of state economy

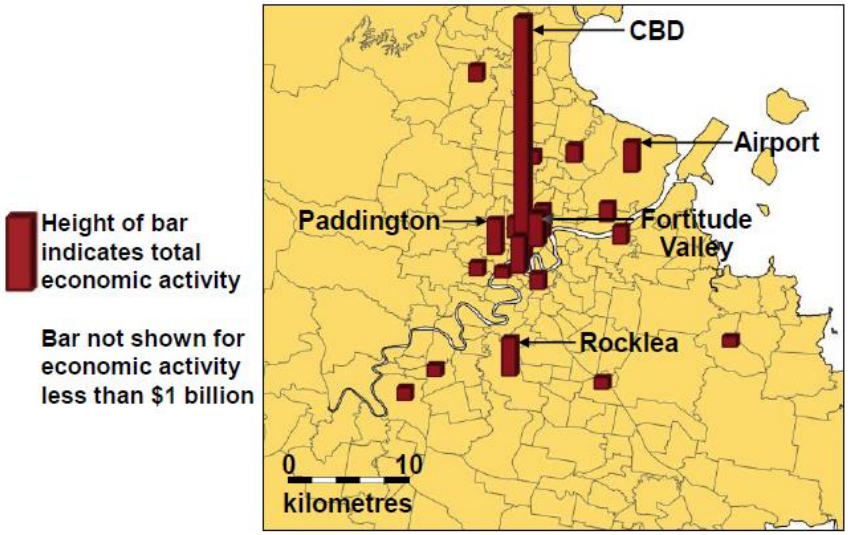


Figure 3: Economic activity by location, 2011-2012 (Grattan Institute)

While the working population of the CBD is increasing, the CBD's share of total employment within Brisbane City (and hence SEQ) has not kept pace with the rapid employment growth in city fringe suburbs. The wind back of the resources sector could see this become more pronounced. The rapid employment growth in the city fringe suburbs identifies the need to take a broad view of the central economic agglomeration within Brisbane to ensure that planning responds to the increasing economic footprint of inner Brisbane as a whole.

Agglomerations or corridors as opposed to centres

Economic interactions do not conform to specific planning boundaries. The typical planning response is to identify discrete centres or industrial areas, and at a statutory planning level this is appropriate. However, at a strategic level the confluence of economic activity across a broader geography than individual centres and industrial areas must be recognised. The RECs analysis identified that at a broad level economic activity occurs across corridors or within agglomerations.

Corridors have clearly arisen around major transport infrastructure. Obviously, industrial land uses benefit from freight corridors (i.e. road and rail corridors) and major freight assets (i.e. airports, ports, intermodal terminals, etc). Knowledge or professional services corridors have arisen around transport nexuses and transport corridors. A historically car based network has seen corridors emerge around motorways, which have been subsequently reinforced by line haul public transport.

ShapingSEQ only identifies existing clustering or agglomerations of economic activity. This is because it is easier to build on existing agglomerations or their identified trajectories, rather than creating entirely new ones. However, it's important to note that RECs are dynamic and always evolving. This is in contrast to planning approaches that can be very static. This emphasises the need for ongoing monitoring of development activity, within or near existing or potential RECs, which might result in an expansion of an existing RECs or the realisation of the potential for a new RECs to emerge.

Role of enabling regional assets

It is well known the critical role infrastructure plays to stimulating the economy and major regional assets often contribute to the underlying strength of RECs. Examples include tertiary education institutions, hospitals, airports, ports and intermodal terminals. Concentrating these regional assets in logical locations or as part of a corridor extension can lead to more significant agglomerations. It was evident from the analysis that RECs occurred around or near major transport infrastructure, particularly major freight routes and assets (Figure 4).

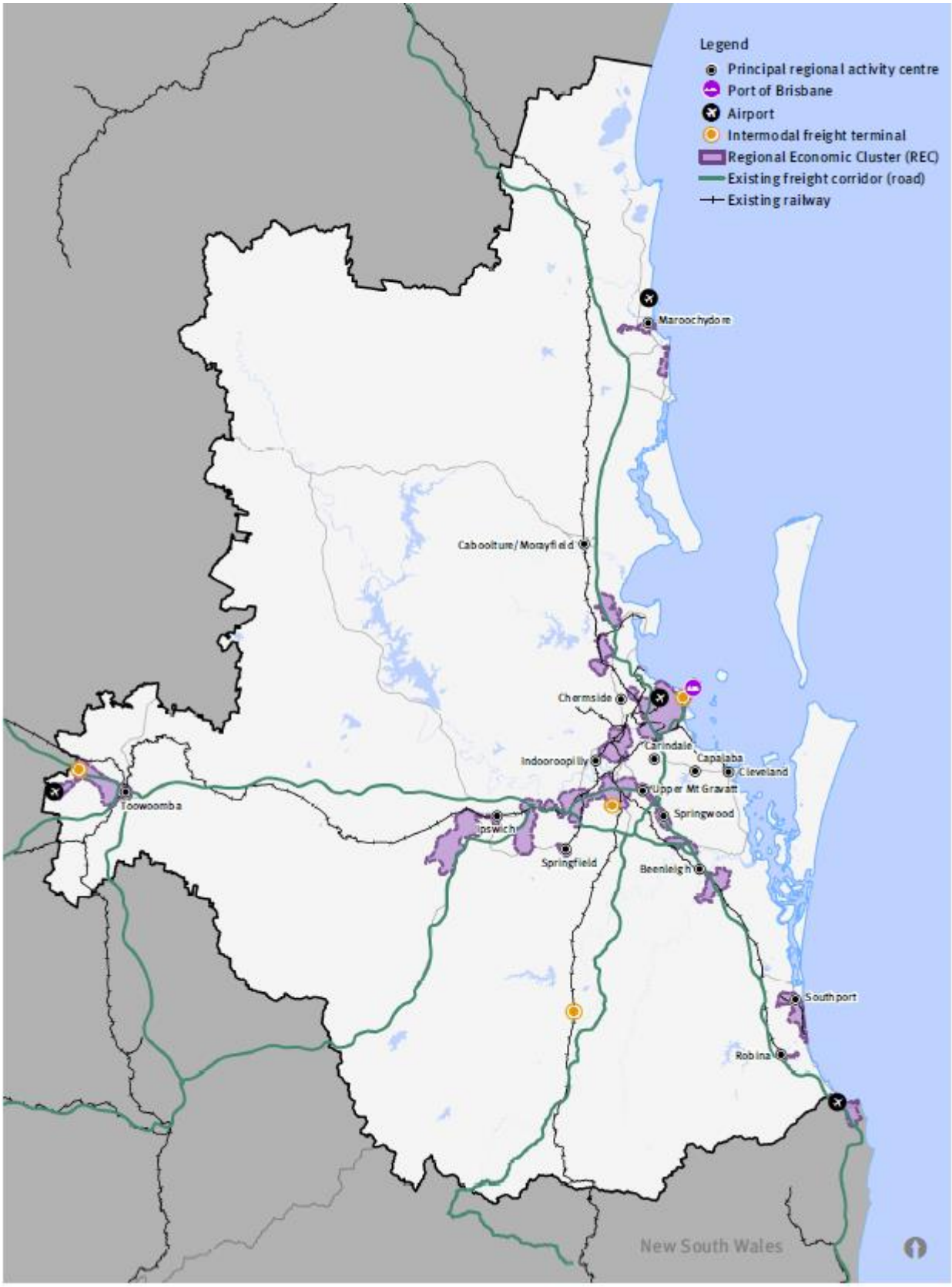


Figure 4: Major enabling infrastructure and RECs

Through the prosper theme, *ShapingSEQ* focuses not only on the importance of transport infrastructure for commuting to and from work but also the impact infrastructure has on enabling economic activity. *ShapingSEQ* also gives greater emphasis to the role of freight and the supply chain network to the economy by spatially identifying these and their relationship to RECs. Freight and the supply chain network ensures goods are delivered to businesses and to external markets. As the population grows so to the importance of an efficient and effective freight system. Recognising the relationship between RECs and their enabling infrastructure is important to ensuring the region maximises economic opportunities.

Regional activity centres network

The regional activity centres network (RACN) is intended to play a key role in the delivery of SEQ's desired settlement pattern and development outcomes. Appendix A lists the centres historically identified in SEQ.

The current RACN largely reflects local government planning schemes at the time when the 2005 regional plan was prepared. The centres policy in the 2005 regional plan and 2009 regional plan shifts priority to a community focus and mandates centres be mixed use and multi-functional to meet the broader needs of the community. Out-of-centre development was discouraged and employment opportunities were to be concentrated in centres. Stronger focus was placed on raising in-centre residential population to achieve compact, self-contained communities. However, business needs and consideration of business to business interactions were given less focus.

The majority of centres are predominantly focused on supporting retail and commercial activities or population-serving uses. These sectors have traditionally been strong economic performers. However, moving towards 2041, other sectors and industries will emerge to outperform these traditional sectors. The current centres network will need to adapt to support the transitioning economy and facilitate growth of emerging industries.

Within SEQ, employment growth in the health care and professional services sectors will provide a major economic driver for the state and regional economy. From a land use perspective, knowledge intensive companies and organisations tend to prefer urban locations[18] to capitalise on the benefits of agglomeration. Centres in SEQ also tend to double as transport inter-changes and can provide higher levels of amenity and services, which appeal to workers. They also tend to attract other enterprises or mutually-supportive activities that benefit from the creation (and sale) of knowledge.

Population growth will drive the growth and increase the importance of activity centres in the region, largely due to a greater demand for access to the services located in these centres. The current activity centres network services a particular geographical catchment of the population. However, as this population grows and intensifies, the need for access to more common, everyday services will likely increase (e.g. visiting a doctor, buying groceries, or seeking assistance from financial services). These types of population-serving uses are predominantly located in activity centres.

Therefore, activity centres help support the regional economy in two important ways:

- they provide the everyday services and facilities that allow the community to perform domestic tasks and activities
- they allow the colocation of businesses and companies in a concentrated area that boosts significant economic productivity and efficiencies.

[18] Paul Bishop (2007) Spatial Spillovers and the Growth of Knowledge Intensive Services, *Journal of Economic and Social Geography*, 99(3), 281-292

Review of regional activity centres network

The regional plan recognises the growing importance of an effective RACN. As SEQ grows, the importance of an effective RACN will also increase. An effective RACN will support:

- compact, orderly and economically efficient settlements
- local job creation and diversity
- agglomeration economies
- prioritised service and infrastructure investment.

To inform *ShapingSEQ*, a preliminary, high level review of the RACN was undertaken. This included interviewing a number of key stakeholders and undertaking research on best practice centres planning overseas and in Australia.

Best practice research

London Town Centre health check analysis

The Greater London Authority regularly undertakes a '*London Town Centre Health Check (TCHC) Analysis Report*'. The last analyses were undertaken in 2013 and 2009.

The health check is part of an on-going series of London-wide strategic health checks undertaken with agreed indicators and illustrates how these have changed over time. It provides a snapshot of over 200 of London's town centres, and their performance against objectives and indicators, which is then collated and made publicly available.

This information then informs alterations to the London Plan and contributes to the evidence base for local development plan policies, development proposals, and implementation of town centre and local strategies. Specifically, this information informs changes to London-wide centre network designations.

A Plan for Growing Sydney (2014)

A Plan for Growing Sydney provides a strategy for accommodating Sydney's forecast population growth of 1.6 million people (from 4.3 to 5.9 million people) and a framework for strengthening the global competitiveness of Sydney over the next 20 years. The plan applies to the Sydney Metropolitan Area comprising 41 local government areas (LGAs).

The plan recognises that Sydney's global reputation is built around its dominant CBD and iconic harbour setting, and refers to the CBD as 'Global Sydney'. The plan supports new and innovative ways to grow CBD office space, and improve accessibility to the CBD, and how people move around within it, to aid investment attraction and draw capital and skilled workers from around the world.

The plan identifies 28 strategic centres including:

- two CBDs
- three regional cities
- 23 (other) strategic centres.

Of note, the 23 (other) strategic centres appear to be a mix of what SEQ would consider to be regional activity centres and knowledge and technology precincts. In addition, the plan identifies four knowledge hubs that occur both within and outside the identified metropolitan centres network.

Plan Melbourne (Metropolitan Planning Strategy 2014)

Plan Melbourne provides a strategy for accommodating Melbourne's forecast population growth of 3.4 million people (from 4.5 to 7.9 million people) to the year 2051. It supports the vision for Melbourne to become a global city of opportunity and choice. The plan applies to the Melbourne

Metropolitan Area comprising 31 LGAs.

The plan identifies the following state significant employment clusters and activity centres:
- one central city area
- two existing and five emerging national employment and innovation clusters
- nine existing and two emerging metropolitan activity centres.

National employment and innovation clusters are focused on knowledge based businesses. Metropolitan activity centres provide subregional communities with good access to a range of major retail, community, government, entertainment, cultural and transport services. These centres are a focus of public transport networks. Supporting strong subregional economies, each subregion is anchored by a national employment cluster and has at least one metropolitan activity centre.

Historic principal, major and specialised activity centres that are not designated as national employment and innovation clusters, metropolitan activity centres or transport gateways are now recognised as activity centres or health/education precincts. The plan recognises the continuing importance of activity centres to local communities and the role of local government to manage these places.

Best practice case studies for the planning and delivery of employment precincts in suburban locations (Federal Government, 2014)

This study considered five successful employment precincts across Australia for detailed review. These precincts included: Macquarie Park, NSW; City of Joondalup, WA; Techport Australia, SA; Central Dandenong and Hume City, Victoria. The findings identified characteristics of successful precincts, of which the following are relevant:
- Governments should provide clear leadership and demonstrate ongoing commitment to the employment precinct. In many cases this took the form of improvements in local amenity, along with transport, pedestrian and social infrastructure to address perceptions of safety, ageing and accessibility.
- The precincts need to provide a pathway for small to medium sized businesses to grow in the local area.
- Specific sector based clustering needs to be balanced with business diversification to mitigate against any economic downturn.
- The employment precinct must be an appealing place for employees to work.

Critically, the study found each employment precinct was underpinned initially by strong state government leadership, with effective ongoing management of the precinct by local government and the local business sector. The study also highlighted the importance of collaboration, communication and coordination with key stakeholders.

Key stakeholder interviews

Nineteen stakeholders were offered the opportunity to be interviewed to inform this paper. The stakeholders include representatives from key state government agencies and SEQ local governments.16 interviews and two briefings were conducted. No engagement occurred with industry bodies or other stakeholders.

The preliminary findings from the interviews are summarised below:
- The RACN has been highly effective at setting the high-order centres hierarchy in local planning schemes. In some cases, the RACN restricted innovations and changes to centre hierarchy positions during state interest review processes.
- There is general consensus the RACN contains centres that are not regionally significant. Opinions regarding the risks associated with this and the likely numbers of centres vary.

- There is strong consensus it would be beneficial to review the RACN. However, there is no common view that a review of the RACN is urgent or critical at this time. Concern was raised with impacts on new planning schemes if a review was done now.
- There is strong consensus that any review of the RACN should be consultative and evidence based.
- Better positioning centres to support innovation and knowledge based businesses as a critical emerging driver of future prosperity was a common theme raised.
- Differences of opinion exist about the primary purpose, role and function of the RACN. This occurs across both state and local government stakeholders.
- There is some confusion (amongst local government stakeholders) on what a regional centres designation means in terms of the state government's commitment to it and how it is used?
- Differences of opinion exist about the characteristics of regionally significant centres. Most agree that a one size fits all approach is not appropriate and regional significance should be considered at both a regional and subregional context.
- There is strong consensus the RACN should be complemented with centre context, attribute tables or narratives that articulate a centre's regional significance, its regional role and function, and unique strengths and opportunities. These should not inhibit innovation.
- There is some confusion between specialist centres and knowledge and technology precincts. Some stakeholders also recognised the lack of distinction between network settings generally.
- There is a lack of awareness or confidence in the RACN by state agencies. This relates to investment with one stakeholder stating 'we simply can't service all that' and other stakeholders questioning the likelihood of some centres meeting regional policy aspirations, which would make them poor investment locations.
- Local government responses to date have been largely supportive of the regional centre designations within their boundaries.
- There is strong consensus that a regular, evidence-based centres monitoring program, like the London Town Centres health check model, would be beneficial.

Preliminary findings

The expectations of centres identified in the 2005 regional plan and the 2009 regional plan are quite comprehensive and clear. Over the last 10-year period, a number of centres have not reached their expected capacity to be mixed use, support higher density living or provide the social infrastructure required to meet the demands of the community. Anecdotal evidence suggests that the likelihood of some centres to ever be truly mixed use or have significant in-centre residential population is doubtful.

Exacerbating the issue is the unsustainable number of centres currently in the network, which is likely diluting focus from critical planning outcomes and investment in priority infrastructure and services. It is suggested that there is a clear role and function for the RACN to signal government prioritisation and inform regional infrastructure investment. However, as stated, it is likely that SEQ's current approach to centres planning is missing economic opportunities and affecting this investment.

In light of the growth challenges facing SEQ and the benefits of an improved RACN, a key implementation of *ShapingSEQ* is to undertake a detailed, collaborative and thorough review of the RACN.

The review will consider how we capitalise on the broader capacity of centres to contribute to economic growth through consideration of business to business activities and interactions (i.e. centres to industrial areas, knowledge precincts etc). Some fundamental questions the review could investigate include:

- Why does the RACN exist and what is its primary purpose?
- What has been the success of the RACN to date?

- How should the role and function of the RACN differ from local centres networks?
- How does SEQ compare with global best practice for metropolitan centres planning?
- How would a regionally significant centre be distinguished from other important centres?
- What will be the state government's commitment to the improved network?

It would be premature to change the RACN until the review has been completed. Therefore *ShapingSEQ* has not included any additional centres and retains the 52 activity centres[19].

Knowledge and technology precincts

Within SEQ, employment growth in health, education, and scientific and technical services sectors is expected to serve the growing and changing community. Research and innovation are key aspects of these sectors. These high value sectors are important to supporting a more outward focused regional economy.

Enterprises active within these sectors tend to agglomerate around core health, education or research facilities. In terms of these agglomerations, the 2009 regional plan identified nine specialist centres. Acknowledging some overlap with specialist centres, the plan also identified 23 innovation and technology precincts (or employment opportunity areas comprising 21 science and technology centres, and 28 health, education and training precincts).

The duplication between these categories warranted the need to collapse these employment areas into a more defined and meaningful list. It is still important to acknowledge the role of these areas in supporting the knowledge economy, and the opportunities for private enterprise and business to be co-located with key facilities are important for building this sector of the economy. In *ShapingSEQ*, the areas where co-location of these mutually-supportive activities are encouraged and referred to as knowledge and technology precincts (as outlined in Table 4)

Queensland has a number of purpose-built world-class research facilities that are helping to position the state and SEQ as a centre of excellence in the life sciences industry, and the health and medical, agricultural, environment, and industrial sectors. Knowledge and technology precincts leverage off individual health or education facilities to develop or emerge into dynamic hubs. These hubs occur when two or more organisations are working together using world-class equipment and facilities that bridge the gap between research and industry. In these locations, physical infrastructure combined with highly skilled researchers and a culture of commercialisation and development is generating economic activity and securing SEQ's competitive advantage into the future.

Table 4: Knowledge and technology precincts

Precinct (sectors)	Core health, education or cultural facility	Key components or associated facilities
Dutton Park/Buranda (Health, environment and education)	• Princess Alexandra Hospital • Ecosciences Precinct	• Translational Research Institute • Patheon scale up manufacturing facility • University of Queensland Pharmacy Australian Centre of Excellence (PACE) • Centres for Health Research
Herston (Health and medical)	• Royal Brisbane and Women's Hospital	• QIMR Berghofer Medical Research Institute

[19] Note: location of Noosa's major regional activity centre was moved in *ShapingSEQ* to align with Noosa's planning scheme.

Precinct (sectors)	Core health, education or cultural facility	Key components or associated facilities
	• University of Queensland, Herston campus	• Australian eHealth Research Centre • University of Queensland Centre for Clinical Research (UQCCR) • University of Queensland Oral Health Centre
St Lucia (Education, health, environment and mining)	• University of Queensland, St Lucia campus	• Qld Biosciences Precinct (QBP) • Qld Brain Institute (QBI) • Australian Institute for Bioengineering and Nanotechnology (AIBN) • Sustainable Minerals Institute (SMI)
South Brisbane (Health, creative industries and education)	• Mater Private and Public Hospitals • Lady Cilento Children's Hospital • Griffith University, South Bank campus • Southbank Institute of Technology • Queensland Cultural Precinct • Brisbane Convention and Exhibition Centre	• Centre for Children's Health Research • Mater Research • Griffith University Queensland Conservatorium, Film School, College of Art
Kelvin Grove (Health, creative industries and education)	• Queensland University of Technology, Kelvin Grove campus	• QUT Creative Industries Precinct • Institute of Health and Biomedical Innovation (IHBI) • Qld Academy for Creative Industries
Gardens Point (Education, science and technology)	• Queensland University of Technology, Gardens Point campus	• QUT Science and Technology Precinct
Auchenflower/Toowong (Health and technology)	• Wesley Hospital	• Wesley Research Institute
Nathan/Coopers Plains (Health, education, food sciences and technology)	• Griffith University, Nathan campus • Health and Food Sciences Precinct, Coopers Plains • Queen Elizabeth II Jubilee Hospital • Forensic and Scientific Services campus	• Brisbane Innovation Park • Griffith Institute for Drug Discovery • Queensland Micro- and Nanotechnology Centre
Eight Miles Plains (Technology and Science)	• Brisbane Technology Park	
Chermside (Health and education)	• Prince Charles Hospital	• Queensland University of Technology Medical Engineering Research Facility (MERF) • University of Queensland, Northside Medical School
Pinjarra Hills (Technology and mining)	• Queensland Centre for Advanced Technology (QCAT)	• Mining3 • Solar Biofuels Research Centre
Australia TradeCoast (Aviation and aerospace)	• Queensland University of Technology Da Vinci Precinct	

Precinct (sectors)	Core health, education or cultural facility	Key components or associated facilities
	• Aviation Australia	
Southport (Health, education and environment)	• Griffith University Gold Coast campus • Gold Coast University Hospital • Queensland Academy for Health Sciences • Gold Coast Private Hospital	• Griffith Health Institute • GU Institute for Glycomics • Smart Water Research Facility
Robina (Health and education)	• Robina Hospital	• Clinical Education and Research Centre (CERC)
Varsity Lakes (Education)	• Bond University	
Coomera (Film and media)	• Gold Coast Institute of TAFE, Coomera Campus	• Village Roadshow studios
Ipswich (Health and education)	• University of Southern Queensland, Ipswich campus • Ipswich Hospital • St Andrews Private Hospital, Ipswich	
Springfield (Health and education)	• University of Southern Queensland, Springfield campus • Mater Private Hospital Springfield	
Meadowbrook (Health and education)	• Logan Hospital • Griffith University, Logan campus • TAFE Queensland, Logan Campus	
Gatton (Animal sciences)	• University of Queensland, Gatton Campus	• Queensland Animal Science Precinct (QASP)
Sippy Downs (Education and technology)	• University of Sunshine Coast, Sippy Downs campus	• Innovation Centre Sunshine Coast
Kawana Waters (Health and education)	• Sunshine Coast Public University Hospital	• Sunshine Coast Health Institute
Toowoomba (Science and technology, Health and education)	• University of Southern Queensland, Toowoomba campus • St Vincent's Private Hospital • St Andrew's Private Hospital • TAFE South West Queensland • Toowoomba Hospital	• Australian Digital Futures Institute • Centre for Future Materials • International Centre for Applied Climate Sciences • National Centre for Engineering in Agriculture • University of Queensland Rural and Remote Clinical School
Cleveland	• Redlands Hospital • Mater Private Hospital	
Caboolture (Health)	• Caboolture Hospital • Caboolture Private Hospital	

Precinct (sectors)	Core health, education or cultural facility	Key components or associated facilities
Redcliffe	• Redcliffe Hospital • Peninsula Private Hospital	• Redcliffe Hospital Private Practice Clinic

While each precinct is different in terms of the specialisation, scale and intensity of uses, these precincts are generally characterised by:

- a core high-level health, education, research or similar facility that provides opportunities for complementary and supporting activities
- a high level of accessibility including proximity to regional transport infrastructure
- the ability to accommodate a mix of uses and activities, and for development to intensify over time
- the opportunity for public and private sector investment and cooperation.

ShapingSEQ aims to protect and foster the attributes that characterise these precincts by encouraging local governments to recognise these areas and the potential for complementary and supporting activities surrounding core uses/areas, rather than treating them in isolation from a land use perspective.

Nationally and internationally there is significant competition for knowledge and technology precinct workers and entrepreneurs. The significant synergies between knowledge and technology precincts and other employment areas, such as centres and major industrial areas, are recognised in *ShapingSEQ* in the context of RECs. However, land use planning for such precincts are to reflect the level of amenity and access to services that knowledge and technology workers seek within close proximity to their place of work. Supporting and enabling land uses to, or within, knowledge and creative precincts range from providing land for private sector funded knowledge or creative enterprises to the provision of high-quality public open space or recreational facilities.

Planning for industrial land

Major industrial areas in SEQ generate significant economic activity and are high employment generators. They are significant to supporting the production of goods and material, and facilitating the movement and exportation of goods. Industrial uses tend to also have specific requirements that determine where they locate, for example:

- extensive land requirements
- separation from sensitive uses
- proximity to freight network or transport infrastructure
- proximity to other complementary industrial uses.

Key success factors for an industrial area in SEQ may include:

- proximity to local markets
- access to transport routes and/or Brisbane Airport and Port of Brisbane
- access to large areas of flat unconstrained land
- availability of services
- proximity to labour force
- land cost competitiveness
- consolidated land ownership.

The former Department of State Development, Infrastructure and Planning (DSDIP) commissioned an assessment[20] of the SEQ industrial land supply to confirm and update the last Industrial Land

[20] Jackson Planning, *Assessment of SEQ Industrial Land Supply and Employment Yields Stages 1 and 2*, November 2013

Monitoring Program report (as at 31 December 2011) to support the review of the SEQRP. This assessment involved consultation with each LGA to confirm broad-hectare industrial land supply and investigation areas. Overall, this study found that there is approximately 8160 hectares of developable zoned land within SEQ for industrial uses. Brisbane, Ipswich, Scenic Rim and Toowoomba contain the largest holdings by LGA.

Ensuring adequate supply of future industrial land is important for the regional economy. Given the specific locational needs for industrial uses discussed above, finding appropriate suitable land can be difficult. It is critical that suitable future supply of industrial land is protected from encroachment by incompatible uses and that this type of land it is not redeveloped for other purposes. Once industrial land is rezoned or redeveloped it is lost and unlikely to accommodate industrial uses again.

It is intended that industrial land supply and monitoring will be undertaken through the SEQ Growth Monitoring Program, which will help inform future reviews and track availability of industrial land within the region.

To inform *ShapingSEQ*, consultants were commissioned to provide an independent economic review of key assumptions underpinning the review, including a review of employment projections prepared by Queensland Treasury. This review identified an over-representation of anticipated industrial employment within Brisbane in Queensland Treasury's 2013 employment projections. Summary of the findings of the review are in Appendix B.

Warehousing, transport and logistics is anticipated to be a strong growth sector moving towards 2041. It will continue to be critical to the on-going support of the exportation of SEQ goods to maintain the region's global competitiveness.

In December 2015, the Department of State Development (DSD) prepared a report on the availability of land suitable for accommodating difficult or hard to locate industries across five regions in Queensland (see Figure 5 for the geographical scope of the assessment). The assessment applied the following criteria:

- appropriate zoning to accommodate high impact/special industry uses
- a planning assessment that indicated land should be available for immediate use (i.e. future industry or investigation areas were not generally included)
- assessed buffer distances (i.e. 500 metres from a sensitive land use for high impact industry and 1500 metres for special industry)
- serviced site (i.e. sewer, water, electricity, etc.) nearby or evidence of the ability to service site in the short-term
- property ownership (i.e. both private and state land were included)
- no environmental and flooding constraints apparent from a desktop analysis.

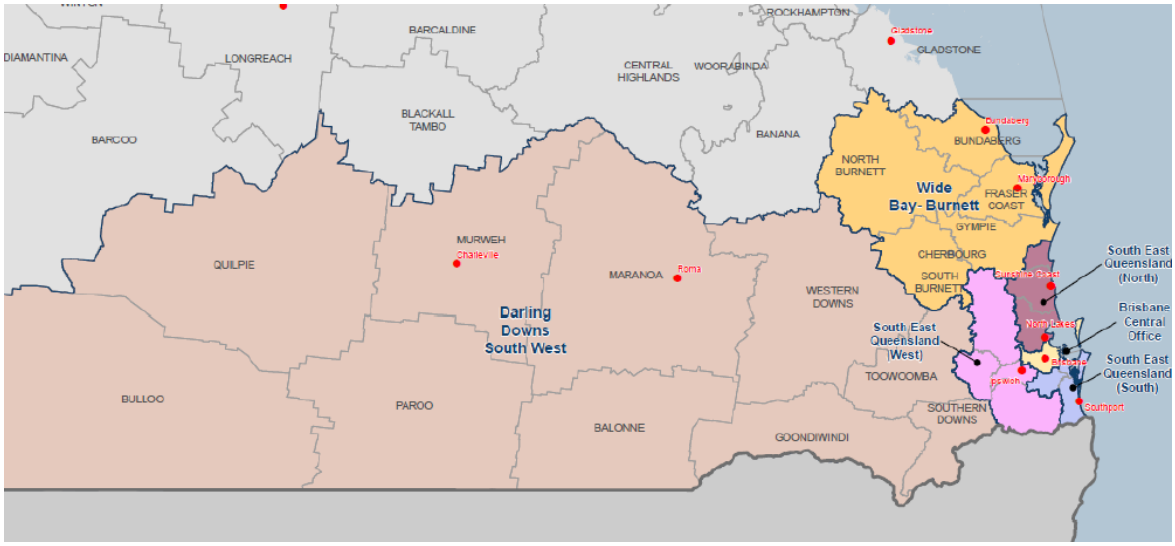


Figure 5: Regions investigated in hard to locate industry study

Areas identified in the assessment located in SEQ include Bromelton, Ebenezer, Swanbank, Yatala, Narangba, Brendale, Elimbah, and Australia TradeCoast.

The findings of the assessment are provided in Figure 6. Note that the assessment was undertaken according to state development regions.

Regional Supply – By Lot size and Area								
Region	less than 2ha		2-5ha		5 - 10ha		10ha+	
	ha	lots	ha	lots	ha	lots	ha	lots
SEQ North	65.61	103	27.19	10	6.16	1	82.13	6
SEQ West	0	0	13.8	4	20	3	905	30
DDSW	80.74	122	32.61	10	0	0	0	0
SEQ South	10.21	12	28.55	8	0	0	23.9	2
WBB	9.032	33	9	2	13	2	614.6	12
Total	**165.59**	**270**	**111.15**	**34**	**39.16**	**6**	**1625.63**	**50**

Figure 6: Difficult to locate regional supply

As part of the review, it was agreed that only regionally significant industrial areas would be identified in *ShapingSEQ*. This was agreed to by representatives from local government, industry/peak bodies and state agencies. There was not a high level of support for the mapping of locally significant industrial or enterprise areas. The review has sought to establish appropriate criteria for identifying regionally significant industrial areas based on:

- global trends and emerging economic opportunities
- size and scale
- type of activities undertaken in industrial areas
- proximity to freight network and major transport corridors.

In response to the above characteristics the following definition was applied to regionally significant industrial areas, identified as major enterprise and industrial areas under *ShapingSEQ*:

- Major enterprise and industrial areas accommodate medium and high impact industries and other employment uses associated with key transport infrastructure.
- These areas are major drivers of economic growth.

- They are significant in size, or have the potential to expand in the longer term to provide for regionally and state significant agglomerations of industry and business activity.

Through discussions with local governments and government agencies, Table 5 identifies major enterprise and industrial areas.

Table 5: Major enterprise and industrial areas

Area	Key areas and facilities	
Australia TradeCoast	• Port of Brisbane • Brisbane Airport • Brisbane Multimodal Terminal • Murarrie/Colmslie • Hemmant • Pinkenba/Bulwer Island	• Eagle Farm • Lytton • Geebung • Virginia/Northgate • Nudgee/Banyo
South West corridor	• Archerfield Airport • Acacia Ridge Multimodal Terminal • Acacia Ridge • Bundamba/Riverview • Heathwood/ Larapinta • Crestmead • Rocklea/Brisbane Markets • Coopers Plains	• Carole Park • Redbank • Richlands • Salisbury • Sumner/Darra • Swanbank/New Chum • Wacol • Willawong
Western corridor	• RAAF Base Amberley • Amberley • Wulkuraka/Karrabin • Ebenezer MDA	• Gatton North • Brisbane West Wellcamp Airport • Charlton/Wellcamp Industrial Park • Intermodal facility
Southern corridor	• Yatala/Staplyton • Gold Coast Airport	• Bromelton SDA • Park Ridge • North Maclean
Northern corridor	• Narangba • Morayfield • Caloundra • Coolum	• Elimbah East • Yandina east • Brendale

Any new areas that arise from additional investigations that have the potential to be regionally significant should be considered and discussed with the department. New and existing locations should be prioritised for economic development. To maximise the opportunity for economic growth, *ShapingSEQ* protects the longevity of major enterprise and industrial areas from encroachment, which includes the protection and facilitation of the whole-of-life cycle for the transport of goods (i.e. freight corridors and freight hubs).

ShapingSEQ also requires local governments to consider workers needs and reduce trips on the road network when planning for major enterprise and industrial areas by supporting the location of convenient services within or surrounding these areas. This could include small scale convenience shopping, cafes and restaurants, child care facilities, or health care services.

The increasing knowledge intensity and sophistication of industrial processes and enterprises is giving rise to increasing demand for both business support services and worker amenities within major industrial areas. As such, major enterprise and industrial areas represent a growing market for services found in centres and knowledge and technology precincts (and vice versa). The co-location of major enterprise and industrial areas, centres and knowledge and technology

precincts has the potential to generate significant economic synergies.

Special uses

Throughout SEQ there are a number of major economic or industrial facilities that are not located within the urban areas of the region. These uses typically have locational specific requirements and/or fulfil a special purpose. Frequently, these facilities need to be located away from sensitive land uses, or a more naturally suited to being located within the rural zone. In some instances, the location of these facilities is a legacy of previous policies and/or decision making processes.

Often these are highly specialised land uses and service a particular need that if sourced interstate could compromise business operations through increased costs or reduced productivity. These are identified as 'special uses' in *ShapingSEQ* and examples uses include, but are not limited to facilities like:

- Helidon Explosives Reserve (Lockyer Valley): the Helidon explosives reserve is one of only two explosives reserves within Queensland (the other being located at Bajool in Central Queensland). It is a highly specialised land use with very significant buffering requirements. It is integral for the ongoing supply of explosives for use in resource and extractive industries and construction.
- Defence facilities: a number of Australia Defence Force facilities are located in SEQ and critical to operational and training requirements of the defence forces.
- Raceways: including Ipswich motorsport precinct located at Willowbank and Lakeside Park located at Lake Kurwongbah.
- Ace Waste Medical Incinerator: Queensland's only commercial medical incinerator is located at Willawong in Brisbane's south and represents a regional and state significant facility that ensures the efficient and management of medical waste. Without such a facility, Queensland's hospitals and health facilities would need to transport their medical waste interstate.
- Correctional facilities.

The scale of these special uses can vary significantly, sometimes these facilities can be large and service a broad area. Because of their specialised nature these facilities can be difficult to plan for in advance. In some instances these facilities have had sympathetic land use zonings applied under local government planning schemes, while in other cases these facilities are located in the rural zone.

Many of these uses make a significant contribution to the regional economy and are at risk or under threat from land use competition or encroachment, warranting their identification and protection in the regional plan.

It is not possible to identify all uses that may fall into special uses that are regionally significant however the above examples should provide local governments with direction on the uniqueness of some uses that should be protected. Other uses could include marine industry, defence land, extractive resources, airport land or difficult to locate industry.

Rural industries

Rural industries help to diversify the economy and build capacity in the region. SEQ's rural areas play a vital and significant role in building a prosperous and sustainable region.

The region's primary industries benefit from ready access to a growing urban market for agricultural products for consumption and further processing. As the population of SEQ grows and living standards increase, so will demand for high-quality fresh and processed produce. The region's advanced infrastructure services allow produce to be easily shipped to markets throughout the state, interstate and overseas. New export opportunities stemming from the Brisbane West

Wellcamp Airport are also an important part of the rural future of SEQ.

The region contains production native forests, plantations and processors, including a major sawmill. The forest and timber industry component of the regional economy is significant. Statewide the gross value for the forest growing and first round processing industry totalled $536 million in 2013–14 of which a significant proportion was provided by the region.

Agricultural commodities, more broadly throughout the country, face rising competitive challenges in an increasingly globalised market. Key issues affecting the profitability of the rural sector include:

- the accessibility and cost of water
- the availability and affordability of labour
- increasing regulation
- challenges surrounding climate change and climate variability
- declining terms of trade.

Rising knowledge and capital intensity in primary industries is facilitating increased labour productivity. While increased labour productivity is economically positive, it ultimately leads to a reduction in the quantity of labour demanded. This presents a challenge to rural communities within SEQ to further diversify and pursue additional value-adding and on-farm opportunities to generate ongoing employment opportunities.

Rural communities must be adaptable, which means remaining responsive to key economic drivers and being open to opportunity. Our rural communities can build on their access to SEQ's established and emerging knowledge and creative industries, as well as on their historic strengths in primary production. They can:

- lead the way in discovery and innovation, particularly in the fields of agriculture, grazing, forestry, tourism and recreation
- explore new and innovative ways for adapting to the effects of climate change, particularly with regard to water security
- attract and retain younger generations, while providing for older generations to remain in their community, by maximising the economic potential of ecotourism, logistics and freight, heavy industries, training and skill diversification, health services, and other potential fields of employment.

A key consideration of the review was how *ShapingSEQ* can contribute to thriving rural communities by continuing to recognise their importance, and by putting best practice policies in place to support sustainable growth and healthy and resilient rural communities.

Planning for the SEQ region can support rural communities to identify, celebrate and capitalise on their unique characteristics. Rural industries and enterprises can be supported to diversify, adjust, innovate and value-add. Changes in rural areas provide opportunities to develop new activities based on rural and ecotourism, carbon sequestration, green energy production, new agricultural products, sport and recreation activities, the region's unique cultural and heritage values, and local arts and crafts.

Current provisions in the 2009 regional plan along with state-wide protection through the State Planning Policy successfully protect existing agricultural land. The next evolution in regional land use policy for SEQ is to enhance and support rural production activities through the use of innovative and advanced technological practices.

ShapingSEQ encourages rural communities to develop strong economies and benefit fully from regional population growth. Rural landscapes and the natural assets they contain must remain intact and healthy to support profitable and sustainable communities. Strategies in *ShapingSEQ*

encourage diversification of agricultural activities and provide flexibility for rural productive lands to support intensive agriculture and on-farm value-adding through rural precincts. Rural precincts are a planning tool that can assist rural communities to capitalise on new economic opportunities without compromising the value of productive lands[21]. Recognising different drivers, opportunities and challenges across the region, different approaches will be required to achieve outcomes for our rural communities, based on context and place.

Infrastructure planning

Sustaining economic growth requires the provision of supporting infrastructure, which can stimulate economic growth in a number of ways:

- increasing productivity by improving efficiencies
- attracting business activity
- facilitating market access
- enhancing competition.

As the economy transitions to a more knowledge intensive economy, the demands and requirements for infrastructure varies. The State Infrastructure Plan recognises the need for infrastructure to adapt to economic changes and defines the varying economic needs based on economic zones.

For SEQ, infrastructure that best leads and supports growth and productivity for the regional economy is summarised as improving, creating and facilitating SEQ's connectivity through:

- freight (road, air and rail)
- public transport (journey to work trips)
- digital infrastructure.

Supporting the freight network

Freight in SEQ is categorised as general freight (i.e. containers, pallets, etc) or commodities moved in bulk (i.e. coal, grain, sugar, etc). There is concentrated movement in SEQ due to population, economic activity and access to processing, value-adding and port facilities. Road transport supports the majority of general freight movement in Queensland. Rail has a key role in moving commodities in bulk, with coal exports currently dominating rail freight in SEQ.

Containerised freight is a notable component of import/export freight and 94 per cent of all container freight in Queensland goes through the Port of Brisbane. Imports are generally containerised and the value has grown tenfold over the last 25 years to around $42.7 billion in 2012–13. More than 90 per cent of container imports have a destination in SEQ. This heightens demand and competition on urban rail and road connections between the Port of Brisbane and key industrial precincts.

Further, the Australian Government's National Urban Policy background paper on Our Cities in 2010 stated that ports and freight are one of the most pressing current transport concerns in Australia. This paper indicated that the handling of freight impacts on every major city in Australia, including on roads, rail and public transport. These concerns are considered to be of national significance. In November 2016, the Australian Government announced it will develop a national freight and supply chain strategy. An inquiry was established in March 2017 to investigate and determine how best to improve the supply chain network across the country. A draft report is anticipated for public release by March 2018.

SEQ's strategic freight network is critical to the ongoing economic growth of the region and the

[21] For more information regarding rural precincts please review to the *ShapingSEQ* Rural Precinct Guideline.

state. Export commodities from other regions pass through SEQ (e.g. grain) on their way to the Port of Brisbane for export, or via processing facilities for value-adding prior to export. The Warrego Highway, and to a lesser extent the Cunningham Highway, represent the major freight corridors connecting SEQ to agricultural regions, with this export-bound freight moving onto the Logan Motorway and Gateway Motorway for haulage to the Port of Brisbane.

The importance of the freight network and its role in SEQ is further outlined in the connect theme background paper.

Increasing the use of public transport

Journey to work trips account for more than one-quarter of all trips and 42 per cent of all kilometres travelled. Of journey to work trips, about four in five people commute to work by private vehicle[22]. Journey to work commuter trips combined with freight movements are putting pressure on SEQ's road network. The State Infrastructure Plan states that road connections within SEQ are increasingly under pressure, with congestion and delays reducing economic efficiency and costing industry millions per year. The Australian Infrastructure Audit estimates the cost of delays on the Brisbane – Gold Coast – Sunshine Coast transport network caused by congestion in 2011 was around $2 billion. In the absence of any additional capacity, the cost of delays across the region is projected to grow to around $9 billion in 2031[23].

This highlights the importance of an efficient public transport system to maximise efficiencies and worker productivity.

Access to centres via public transport is generally well planned and considered. However, public transport connections to industrial areas are not as efficient. An investigation into working population employment at an SA2 level for locations hosting a principal activity centre, major activity centre, and major industrial areas/corridors was undertaken to compare levels of employment[24]. Of the areas investigated, half of the top 10 areas by employment had an industrial focus (refer to Table 6).

Table 6: SEQ centres and industrial areas ranked based on employment (2011 census)

Rank	Area	Jobs	Retail	Office	Industry	Health	Education	Other	
1	Brisbane CBD Primary activity centre	116,132	8.5%	68.9%	10.0%	2.5%	3.3%	6.9%	
2	Near City Primary activity centre	102,523	11.0%	36.8%	18.0%	19.6%	4.7%	10.0 %	Fortitude Valley, South Brisbane, Spring Hill, Newstead–Bowen Hills, Paddington–Milton and Woolloongabba
3	South West industrial corridor ndustrial area	63,463	7.8%	11.7%	61.8%	5.9%	5.5%	7.3%	Rocklea – Acacia Ridge, Coopers Plains, Darra –Sumner, Oxley, Wacol, Carole Park and Salisbury – Nathan
4	Australia	49,455	9.4%	14.5%	66.0%	3.4%	1.8%	4.9%	

[22] Journey to work mode share 1981-2011 provided by Department of Transport and Main Roads
[23] Australian Infrastructure Audit 'Our Infrastructure Challenges' Report, volume 2, Infrastructure Australia, April 2015
[24] Economic Associates, Advice Centres Network Technical Note, 3 February 2016.

Rank	Area	Jobs	Retail	Office	Industry	Health	Education	Other	
	TradeCoast Industrial area								
5	Southport Principal activity centre	24,856	15.8%	24.5%	12.4%	27.2%	13.3%	6.8%	
6	Virginia Geebung IA Area Industrial area	16,472	8.9%	9.7%	70.8%	3.5%	1.9%	5.2%	Virginia and Geebung
7	Upper Mount Gravatt Principal activity centre	15,751	22.1%	32.1%	20.1%	13.4%	4.4%	8.0%	Upper Mount Gravatt and Eight Mile Plains
8	Springwood and surrounds Principal activity centre and industrial area	15,501	25.5%	18.0%	36.9%	6.9%	4.4%	8.4%	Springwood, Underwood/ Slacks Creek
9	Maroochydore Principal activity centre	14,108	32.2%	31.2%	15.2%	10.5%	4.2%	6.7%	
10	Yatala/ Stapylton Industrial area	12,988	11.1%	8.3%	68.2%	1.5%	3.7%	7.2%	

Some industrial areas generate more employment (and trips) than some commercial based areas (particularly centres). However, investment and planning for public transport focuses less on servicing industrial areas. It will be important for planning and investment to provide innovative public transport solutions for significant employment areas, which would include some industrial areas.

Planning for digital infrastructure

Digital infrastructure is far reaching and not limited to only a few industries or sectors. It has the potential to benefit all sectors and therefore has the potential to greatly influence the region's economy and global competiveness.

A paper released by the Office of Economic Cooperation and Development summarises the impact of the internet on economic activities:

- significantly improved access to information (connecting jobs with the right employees)
- ICT generated employment (diverse specialities)
- introduced flexibility in the labour market (telework, remote access)
- expanded market reach and access
- created new industries and services (internet based software, financial services).

In most developed economies, digital infrastructure is becoming viewed as fundamental infrastructure similar to electricity, water and transportation[25]. In Australia, Cisco predicts that internet traffic will grow almost threefold by 2019; this is 154 times Australia's internet traffic in 2005. In 2014, Australia's internet traffic grew by 34 per cent, in terms of equivalent data volumes this equates to 1 billion DVDs per year, 101 million DVDs per month, or 138,524 DVDs per hour.

The *State of the Internet Report* (4th Quarter 2015) released by Akamai provides a commentary on global internet speeds and connectivity. Figure 7 shows that Australia's internet speed is globally ranked 48th by average connection speed and 60th by average peak connection speed. However, in terms of average peak mobile[26] connectivity speed, Australia ranked the highest in the Asia–Pacific region, with 99 per cent of users averaging above four Mbps.

Global Rank	Country/Region	Q4 2015 Avg. Mbps	QoQ Change	YoY Change
1	South Korea	26.7	30%	20%
4	Japan	17.4	16%	15%
6	Hong Kong	16.8	5.9%	-0.4%
16	Singapore	13.9	11%	19%
21	Taiwan	12.9	28%	22%
41	New Zealand	9.3	7.5%	27%
42	Thailand	9.3	13%	32%
48	Australia	8.2	4.2%	11%
73	Malaysia	5.2	7.5%	28%
78	Sri Lanka	4.8	-6.4%	12%
89	China	4.1	12%	20%
92	Indonesia	3.9	32%	109%
95	Vietnam	3.8	13%	43%
107	Philippines	3.2	12%	18%
114	India	2.8	11%	36%

Figure 23: Average Connection Speed by APAC Country/Region

Global Rank	Country/Region	Q4 2015 Peak Mbps	QoQ Change	YoY Change
1	Singapore	135.7	0.2%	61%
2	Hong Kong	105.2	4.0%	20%
3	South Korea	95.3	10%	26%
5	Japan	82.9	5.7%	20%
6	Indonesia	79.8	157%	495%
8	Taiwan	78.8	1.2%	23%
18	Thailand	63.7	9.4%	38%
53	New Zealand	42.8	1.8%	25%
55	Malaysia	42.0	9.5%	42%
60	Australia	39.3	-6.3%	6.4%
72	Sri Lanka	34.8	3.9%	40%
81	Vietnam	31.4	23%	81%
91	Philippines	27.0	6.7%	23%
92	China	26.7	16%	50%
115	India	21.2	13%	46%

Figure 24: Average Peak Connection Speed by APAC Country/Region

Figure 7: Global ranking of internet speeds in Asia–Pacific region[27]

The adoption of digital technologies and broadband-enabled business solutions and applications can improve business productivity. Most businesses will need to be able to operate online, in addition to, or instead of, a shopfront.

[25] Organisation of Economic Co-operation ECD (2014), *Skills and Jobs in the Internet Economy*, *OECD Digital Economy Papers*, No. 242, OECD Publishing. http://dx.doi.org/10.1787/5jxvbrjm9bns-en

[26] Smart phones, tablets, computers and other devices that connect through mobile network providers

[27] Akamai, State of the Internet 4th Quarter 2015

The land use implications of digital connectivity are less obvious and are emerging more slowly, perhaps reflected in the take-up of warehousing and increase in home-based on-line businesses. The Commonwealth Department of Communications and the Arts is the primary responsible authority for developing internet policy in Australia. This includes facilitating the rolling out of the NBN as well as other policy initiatives that influence high-quality, reliable and affordable internet services including in SEQ. The Department of Science, Information Technology and Innovation (DSITI) is preparing a Queensland Digital Infrastructure Plan. This plan will outline how to make better use of government owned or controlled digital infrastructure. *ShapingSEQ* highlights the strategic importance of digital infrastructure servicing particular regional areas of economic activity.

Conclusion

ShapingSEQ sets out the long-term vision for the sustainable management of growth of the region and will establish a regional and sub-regional framework to achieve this long-term vision. This paper has provided the basis for the development of the prosper policy framework of *ShapingSEQ*. It demonstrates the role of *ShapingSEQ* to supporting the economy and more importantly, identifies its limitations recognising that other drivers and factors can have a greater influence on economic and employment activity. The primary goal of the prosper theme is to ensure the region remains globally competitive and shifts the focus to a more outward facing economy.

Appendix A: Historical regional activity centres network

Designation	1995	1998	2000	Designation	2005	2009 (current)
Dominant	Brisbane CBD and its frame	Brisbane CBD and its frame	Brisbane CBD and its frame	Primary	Brisbane CBD	Brisbane CBD
Key metropolitan centres	Ipswich Caboolture/ Morayfield Beenleigh	Ipswich Caboolture/ Morayfield Beenleigh	Ipswich Caboolture Beenleigh	Principal	Toowoomba Maroochydore Southport Robina Caboolture/ Morayfield Chermside Ipswich Springfield Indooroopilly Carindale Upper Mount Gravatt Capalaba Cleveland Springwood Beenleigh	Toowoomba Maroochydore Southport Robina Caboolture/ Morayfield Chermside Ipswich Springfield Indooroopilly Carindale Upper Mount Gravatt Capalaba Cleveland Springwood Beenleigh
Key regional activity centres	Toowoomba Maroochydore Robina Southport	Toowoomba Maroochydore Robina Southport	Toowoomba Maroochydore Robina Southport	Major	Noosa Nambour Kawana Waters Caloundra Sippy Downs Beerwah Redcliffe North Lakes Strathpine Mitchelton Toombul Wynnum Central Toowong Goodna Ripley Logan Central Browns Plains Logan Hyperdome Coomera Nerang Surfers Paradise Broadbeach Bundall Coolangatta/ Tweed	Noosa Nambour Kawana Caloundra Caloundra South Sippy Downs Beerwah Redcliffe North Lakes Strathpine Mitchelton Toombul/ Nundah Wynnum Central Toowong Goodna Ripley Logan Central Browns Plains Logan Hyperdome Flagstone Yarrabilba Coomera Helensvale Nerang Surfers Paradise Broadbeach Bundall Coolangatta/ Tweed
				Principal	Gatton	Gatton

				Rural	Beaudesert	Beaudesert
				Major Rural	Kilcoy Esk Fernvale Boonah Laidley	Kilcoy Esk Fernvale Boonah Laidley Jimboomba
Total	8	8	8		47	52

Appendix B: Industrial land supply

Industrial land supply and potential development areas, July 2013

LGA	Developable industrial (hectares)	Investigation areas (hectares)	Additional industrial planned and for investigation (hectares)
Brisbane	1230	22	
Gold Coast	654	395	
Ipswich	1234	2870	500+ [28]
Lockyer Valley	266	616	
Logan	656		380 [29]
Moreton Bay	599	397	615 [30]
Redland	53		50+
Scenic Rim	1604	360	
Somerset	40		[31]
Sunshine Coast	340	219	400+[32]
Toowoomba Study Area	1484[33]	133	100+
TOTAL SEQ	8160	5012	2045

A further 5012 hectares of land is contained within the industry investigation area category. The majority of this land (2870 hectares) is located within Ipswich City. Lockyer Valley Regional Council has the next most sizeable holding with 616 hectares.

An additional 1750 hectares of land, not previously identified in the Industrial Land Monitoring Program as at 30 December 2011, has been identified as currently being considered for investigation or is being investigated as part of the preparation of new planning schemes.

The Jackson Planning assessment summarises the distribution of industrial land supply in SEQ by LGA as follows:

- Brisbane still has a number of areas of undeveloped land. However, continued growth is placing increasing pressure on these and existing developed areas, particularly at the zone interfaces but also through off-site effects of community amenity and safety along transport routes. BCC has indicated that the new City Plan will continue to focus on the protection of existing industrial areas as well as redevelopment opportunities within existing developed industrial areas.
- Gold Coast has significant supply constraints in the southern part of the LGA with the northern areas having sufficient land stock for approximately 15 years.
- Sunshine Coast industrial land supplies appear to be adequate with good forward planning for the short, medium and longer term largely completed.

[28] ICC has indicated Ebenezer as having an additional 500+ hectares of industry investigation land identified as suitable for industrial development over and above the 2,200 Hectares identified by the ILMP. Ripley Valley not included in calculations.

[29] Includes Flagstone Centre and North McLean Potential Industrial Area at 280 hectares with 100+ Ha for Yarrabilba.

[30] Includes Caboolture West (271 hectares), West Brendale (190 hectares) and Narangba West (208 hectares).

[31] Sandy Creek investigation area not included.

[32] Includes Caloundra South additions. Beerwah future investigation area (400 hectares) not included.

[33] Includes 440 hectares now the subject of a private airport development proposal.

- Moreton Bay has good supply in the short to medium-term with planning for longer term being undertaken as part of the preparation of a new planning scheme.
- Logan City has short-term supply however the medium-andlonger-term supplies will be largely dependent on the delivery of development through the Priority Development Areas at Yarrabilba and Flagstone and the market responding to the challenges of fragmentation at Park Ridge.
- Scenic Rim will, in the medium to longer term, have significant areas of both local and regionally significant industrial land supply however in the immediate future local supply in Beaudesert may be an issue.
- Ipswich is very well placed in short, medium and long-term and has significant capacity to accommodate future demands at local and regional level.
- Lockyer Valley appears to be adequately supplied with little current demand and a significant area of industry investigation land available at Gatton North for the future although this may be reduced a little by redefined flood constraints.
- Somerset has modest supplies of industrial land located throughout the main rural centres with relatively low demand.
- Toowoomba has significant supplies of industrial land at both the local and regional level. The development of the new airport will be at the expense of high impact/difficult to locate industry however it should equally be a catalyst for other new industry employment in this area.

Economic Associates other key findings include:

- SEQ is not a major manufacturing region in the same way as say Melbourne. Major assembly plants in Brisbane closed in the late 1970s and early 1980s. Since then the SEQ industrial base has transitioned from a manufacturing base to a transport and logistics base.
- Employment density within Brisbane industrial areas will increase marginally as the future growth profile is dominated by high value and advanced manufacturing, with employment growth in wholesaling and transport and logistics redirecting to other metropolitan LGAs.
- Australia TradeCoast is Brisbane's last greenfield industrial land supply. As availability of this land tightens, land values will likely rise. It is anticipated that lower value industrial uses or uses that require extensive land will consider relocation to less costly sites, likely Moreton Bay, Logan and Ipswich which have ample supply.
- Charlton Wellcamp Enterprise Area west of Toowoomba represents one of the largest areas of readily developable industrial land within SEQ. It is strategically located on Toowoomba Western Bypass and Second Range Crossing and proposed Melbourne–Brisbane Inland Rail corridor.
- Major enterprise precincts within the north subregion include the Sunshine Coast Business and Industry Park, Coolum Business and Industry Park and Kunda Park. The Sunshine Coast Business and Industry Park and Coolum Business and Industry Park represent the largest areas of vacant and serviced industrial land remaining.
- Park Ridge is highly fragmented and faces a range of constraints (mostly environmental and flooding). Undeveloped industrial land within Moreton Bay is dispersed across a number of major industrial areas, however the natural shift of industrial employment from Brisbane to Moreton Bay might place pressure on that land availability. Recommend investigation into the ability to develop as yet undeveloped industrial land within Moreton Bay and Logan.
- Strong growth anticipated to continue westward into Ipswich. However, unresolved geotechnical issues in large scale industrial estates of Swanbank New Chum Enterprise Park and Ebenezer Regional Industrial Area is likely to impact medium-term supply for broad scale industrial land. This warrants investigations to identify additional industrial land supply in Ipswich area.

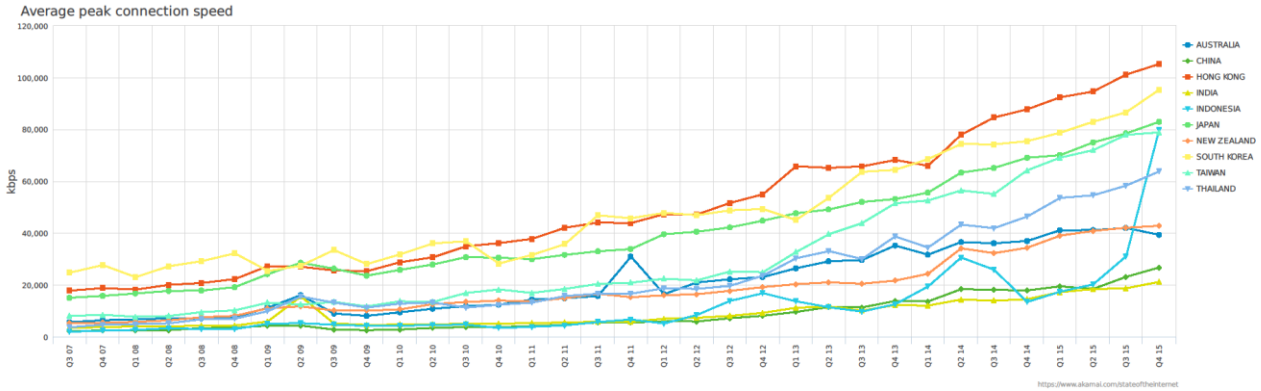
Appendix C: SEQ's freight network

The SEQ strategic freight network includes:

- The Port of Brisbane, including terminal facilities, shipping channel and Port of Brisbane Motorway.
- A network of airports connecting SEQ to regions throughout Australia and the rest of the world, including major airports such as Brisbane Airport, Gold Coast Airport, Sunshine Coast Airport, Archerfield Airport and the region's newest airport Brisbane West Wellcamp Airport (Toowoomba).
- Transport and logistics hubs including:
  - North East corridor (areas adjacent to or readily accessible from the Gateway Motorway including Australia TradeCoast, Eagle Farm, Hendra, Nudgee, Northgate, Geebung, Virginia and Zillmere)
  - South West corridor (areas adjacent to or readily accessible from the Ipswich Motorway including Acacia Ridge, Acacia Ridge Rail Terminal, Archerfield, Rocklea, Darra, Wacol, Richlands, Carole Park, Riverview, Dinmore, Redbank and Amberley with a subsidiary hub located along the Logan Motorway including Browns Plains and Parkinson/Larapinta)
  - South and Gold Coast corridor (areas adjacent to or readily accessible from the Pacific Motorway between Beenleigh and Nerang including Staplyton, Yatala, Coomera, Oxenford and Gaven and along Southport–Nerang Road at Molendinar, Ernest and Ashmore)
  - Sunshine Coast corridor (areas adjacent to or readily accessible from Maroochydore Road and the Bruce Highway at Buderim, Kunda Park, Forest Glen, Woombye, Nambour and Yandina).
- Major rail connections including:
  - dual gauge rail link from the Acacia Ridge Rail Terminal to the Port of Brisbane
  - standard gauge railway linking the Acacia Ridge Rail Terminal to the National Interstate Rail Network and interstate ports (including Sydney, Melbourne and Fremantle)
  - narrow gauge rail network, connecting SEQ to regions throughout Queensland.
- Major road connections including:
  - major highways (including Warrego, Cunningham, Brisbane Valley, D'Aguilar Sunshine, Pacific and Bruce highways)
  - major urban and motorway corridors including Brisbane Urban Corridor and Ipswich, Logan, Gateway and Pacific motorways
  - arterial road linkages between Acacia Ridge and motorways (including Ipswich Motorway and Logan Motorway) and the Brisbane Urban Corridor
  - Maroochydore Road connecting the Bruce Highway and Sunshine Motorway, and Southport–Nerang Road.

Appendix D: Average peak connection speeds

Average peak connection speed 2007–2015 (not all Asia–Pacific countries)



Source: Connectivity Visualisations trends for country or region, Akamai visited 9 May 2016 at: https://www.akamai.com/us/en/our-thinking/state-of-the-internet-report/state-of-the-internet-connectivity-visualization.jsp

Appendix E: Employment projections by local government area (LGA)

Brisbane LGA

Employment within Brisbane LGA is anticipated to increase from 817,004 workers in 2016 to 1,247,608 workers in 2041, representing an average annual growth rate of 1.7 per cent or an absolute increase in employment of 430,604 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in rental, hiring and real estate services; professional, scientific and technical services; administrative and support services; electricity, gas, water and waste services; and manufacturing.

These projections might need to be revised in the event that demand for electricity, gas, water and waste services does not grow at a rate above population growth and in the context of the potential industrial land supply constraints in Brisbane LGA limiting employment growth in industrial land consuming sectors, such as manufacturing, wholesale trade and transport, postal and warehousing.

Table 4: Employment projections for Brisbane LGA, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	1058	1055	1091	1134	1169	1203	0.5%
Mining	12,005	14,479	14,887	14,789	14,637	14,545	0.8%
Manufacturing	65,142	70,830	77,291	87,199	99,421	113,281	2.2%
Electricity, gas, water and waste services	8719	9465	10,427	12,148	13,904	15,460	2.3%
Construction	49,384	64,141	70,526	74,775	78,329	81,964	2.0%
Wholesale trade	31,530	32,756	33,797	34,977	36,168	37,460	0.7%
Retail trade	71,155	70,279	69,050	68,230	67,298	66,276	-0.3%
Accommodation and food services	54,545	59,793	66,399	73,860	81,547	89,893	2.0%
Transport, postal and warehousing	54,220	57,938	62,026	66,607	70,633	74,847	1.3%
Information media and telecommunications	13,856	14,346	15,217	16,216	17,056	17,907	1.0%
Financial and insurance services	38,855	37,519	35,931	35,848	37,570	40,403	0.2%
Rental, hiring and real estate services	12,119	14,484	17,160	20,085	23,024	26,422	3.2%
Professional, scientific and technical services	87,934	102,315	118,808	136,740	154,961	176,984	2.8%
Administrative and support services	24,754	26,963	30,895	35,347	39,902	45,167	2.4%
Public administration and safety	72,621	77,530	84,413	91,918	99,761	107,889	1.6%
Education and training	64,436	70,271	77,648	85,738	93,874	101,991	1.9%
Health care and social assistance	112,778	124,748	138,619	153,788	168,871	183,400	2.0%
Arts and recreation services	11,537	12,017	12,680	13,485	14,371	15,351	1.1%

Other services	30,357	31,708	32,882	34,341	35,756	37,164	0.8%
Total	817,004	892,637	969,746	1,057,224	1,148,253	1,247,608	1.7%

Logan LGA

Employment within Logan LGA is anticipated to increase from 101,979 workers in 2016 to 168,128 workers in 2041, representing an average annual growth rate of two per cent or an absolute increase in employment of 66,149 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; rental, hiring and real estate services; administrative and support services; professional, scientific and technical services; health care and social assistance; and education and training.

These projections might need to be revised in the event that demand for electricity, gas, water and waste services does not grow at a rate above population growth and whether an industrial land supply constraint in Brisbane LGA results in a diversion of economic activity within manufacturing, wholesale trade and transport, postal and warehousing to Logan LGA.

Table 5: Employment projections for Logan LGA, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	696	704	727	759	791	824	0.7%
Mining	129	124	143	172	207	246	2.6%
Manufacturing	10,823	11,687	12,645	14,051	15,809	17,845	2.0%
Electricity, gas, water and waste services	707	845	1099	1473	1809	2070	4.4%
Construction	13,155	18,059	20,842	22,811	24,729	26,617	2.9%
Wholesale trade	4167	4329	4466	4622	4780	4950	0.7%
Retail trade	15,451	15,544	15,919	16,326	16,962	17,624	0.5%
Accommodation and food services	7072	7855	8509	9159	9691	10143	1.5%
Transport, postal and warehousing	4335	4573	4894	5253	5616	6012	1.3%
Information media and telecommunications	684	701	740	786	824	862	0.9%
Financial and insurance services	2099	2036	1954	1951	2060	2233	0.2%
Rental, hiring and real estate services	1589	1887	2234	2616	3006	3459	3.2%
Professional, scientific and technical services	4340	5045	5857	6742	7646	8739	2.8%
Administrative and support services	3541	3904	4598	5392	6300	7389	3.0%
Public administration and safety	4586	4918	5402	5930	6508	7119	1.8%
Education and training	9696	10,704	12,158	13,760	15,595	17,556	2.4%
Health care and social assistance	13,405	15,063	17,417	20,023	23,150	26,519	2.8%
Arts and recreation services	968	1012	1076	1150	1237	1332	1.3%
Other services	4537	4799	5149	5545	6040	6586	1.5%
Total	101,979	113,788	125,827	138,520	152,760	168,128	2.0%

Redland

Employment within Redland LGA is anticipated to increase from 47,284 workers in 2016 to 69,193 workers in 2041, representing an average annual growth rate of 1.5 per cent or an absolute increase in employment of 21,909 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining; rental, hiring and real estate services; professional, scientific and technical services; and administrative and support services.

These projections might need to be revised in the event that demand for electricity, gas, water and waste services does not grow at a rate above population growth. Also, recent investment made by major health institutions at Cleveland also might result in a high growth trajectory for health and social assistance than envisaged by the Queensland Treasury projections.

Table 6: Employment projections for Redland LGA, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	364	357	366	379	391	402	0.4%
Mining	224	211	258	330	419	516	3.4%
Manufacturing	3985	4143	4317	4555	4831	5151	1.0%
Electricity, gas, water and waste services	294	373	579	909	1192	1389	6.4%
Construction	5782	7861	8863	9416	9733	9960	2.2%
Wholesale trade	1425	1480	1527	1580	1634	1693	0.7%
Retail trade	7074	7012	6958	6860	6688	6506	-0.3%
Accommodation and food services	4156	4544	4916	5316	5732	6152	1.6%
Transport, postal and warehousing	1434	1549	1630	1706	1769	1835	1.0%
Information media and telecommunications	589	603	635	674	706	739	0.9%
Financial and insurance services	975	944	902	898	953	1039	0.3%
Rental, hiring and real estate services	760	912	1083	1270	1456	1672	3.2%
Professional, scientific and technical services	2510	2918	3388	3900	4422	5053	2.8%
Administrative and support services	1664	1817	2096	2394	2682	3012	2.4%
Public administration and safety	1887	2018	2202	2400	2602	2812	1.6%
Education and training	4480	4898	5448	6006	6526	7032	1.8%
Health care and social assistance	7019	7766	8683	9570	10,338	11,041	1.8%
Arts and recreation services	524	546	576	611	647	686	1.1%
Other services	2139	2224	2309	2390	2447	2504	0.6%
Total	47,284	52,177	56,736	61,164	65,168	69,193	1.5%

Ipswich LGA

Employment within Ipswich LGA is anticipated to increase from 67,927 workers in 2016 to 128,800 workers in 2041, representing an average annual growth rate of 2.6 per cent or an absolute increase in employment of 60,873 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in health and social assistance; administrative and support services; education and training; rental, hiring and real estate services; construction and professional, scientific and technical services.

These projections might need to be revised in the event that an industrial land supply constraint in Brisbane LGA results in a diversion of economic activity within manufacturing, wholesale trade and transport, postal and warehousing to Ipswich LGA.

Table 7: Employment projections for Ipswich, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	311	284	273	262	251	241	-1.0%
Mining	442	519	600	694	790	889	2.8%
Manufacturing	10,835	11,427	12,341	13,798	15,733	18,008	2.1%
Electricity, gas, water and waste services	793	861	938	1037	1119	1178	1.6%
Construction	4634	6498	7656	8611	9468	10,355	3.3%
Wholesale trade	1714	1780	1837	1901	1966	2036	0.7%
Retail trade	7882	8355	9318	10,341	11,343	12,404	1.8%
Accommodation and food services	4558	4900	5313	5704	6035	6318	1.3%
Transport, postal and warehousing	3314	3468	3687	3960	4224	4520	1.2%
Information media and telecommunications	293	300	316	336	352	370	0.9%
Financial and insurance services	1448	1392	1318	1302	1386	1516	0.2%
Rental, hiring and real estate services	848	1017	1216	1435	1659	1918	3.3%
Professional, scientific and technical services	2521	2930	3401	3915	4441	5079	2.8%
Administrative and support services	1607	1834	2286	2825	3421	4151	3.9%
Public administration and safety	6906	7388	8115	8908	9757	10,655	1.7%
Education and training	6916	7905	9501	11,332	13,314	15,507	3.3%
Health care and social assistance	10,144	12,058	15,272	19,111	23,423	28,357	4.2%
Arts and recreation services	498	529	576	631	690	756	1.7%
Other services	2264	2518	2937	3424	3946	4541	2.8%
Total	67,927	75,962	86,900	99,527	113,315	128,800	2.6%

Moreton Bay LGA

Employment within Moreton Bay LGA is anticipated to increase from 122,555 workers in 2016 to 189,182 workers in 2041, representing an average annual growth rate of 1.8 per cent or an absolute increase in employment of 66,627 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining; rental, hiring and real estate services; professional, scientific and technical services; administrative and support services and health care and social assistance.

These projections might need to be revised in the event that demand for electricity, gas, water and waste services does not grow at a rate above population growth and whether an industrial land supply constraint in Brisbane LGA results in a diversion of economic activity within manufacturing, wholesale trade and transport, postal and warehousing to Moreton Bay LGA.

Table 8: Employment projections for Moreton Bay LGA, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	1662	1689	1747	1825	1901	1981	0.7%
Mining	281	313	398	525	677	844	4.5%
Manufacturing	10,972	12,090	13,133	14,594	16,315	18,272	2.1%
Electricity, gas, water and waste services	1009	1268	1963	3075	4034	4706	6.4%
Construction	15,568	18,169	20,473	21,963	23,077	24,089	1.8%
Wholesale trade	3676	3819	3940	4078	4216	4367	0.7%
Retail trade	18,316	18,545	18,837	19,028	19,088	19,111	0.2%
Accommodation and food services	10,001	10,963	11,660	12,330	12,963	13,499	1.2%
Transport, postal and warehousing	4208	4456	4750	5066	5346	5644	1.2%
Information media and telecommunications	675	692	729	774	811	849	0.9%
Financial and insurance services	2592	2503	2391	2381	2508	2712	0.2%
Rental, hiring and real estate services	1888	2266	2694	3161	3630	4173	3.2%
Professional, scientific and technical services	5554	6456	7494	8627	9785	11,186	2.8%
Administrative and support services	3343	3702	4336	5034	5747	6577	2.7%
Public administration and safety	5346	5748	6310	6909	7526	8167	1.7%
Education and training	11,814	13,098	14,796	16,578	18,356	20,163	2.2%
Health care and social assistance	18,602	21,052	24,127	27,288	30,375	33,431	2.4%
Arts and recreation services	1334	1399	1486	1585	1692	1809	1.2%
Other services	5714	6079	6470	6865	7228	7601	1.1%
Total	122,555	134,305	147,736	161,688	175,274	189,182	1.8%

Gold Coast LGA

Employment within Gold Coast LGA is anticipated to increase from 254,909 workers in 2016 to 433,431 workers in 2041, representing an average annual growth rate of 2.1 per cent or an absolute increase in employment of 178,522 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining; rental, hiring and real estate services; professional, scientific and technical services; administrative and support services and health care and social assistance.

These projections might need to be revised in the event that demand for electricity, gas, water and waste services does not grow at a rate above population growth. Gold Coast LGA employment in tourism related sectors such as retail; accommodation and food services; and rental, hiring and real estate services are exposed to a degree of foreign currency risk, and this might influence outcomes over short-term cycles.

Table 9: Employment projections for Gold Coast LGA, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	716	714	739	772	800	829	0.6%
Mining	418	476	635	875	1167	1487	5.2%
Manufacturing	19,753	21,325	22,881	25,131	27,814	30,885	1.8%
Electricity, gas, water and waste services	1820	2450	4375	7532	10,232	12,074	7.9%
Construction	25,241	33,972	39,032	42,824	46,122	49,250	2.7%
Wholesale trade	8257	8578	8850	9160	9471	9810	0.7%
Retail trade	33,270	33,886	34,860	35,875	36,766	37,511	0.5%
Accommodation and food services	30,731	33,658	36,967	40,510	43,924	47,376	1.7%
Transport, postal and warehousing	8598	9456	10,326	11,227	12,052	12,890	1.6%
Information media and telecommunications	4101	4164	4367	4619	4827	5048	0.8%
Financial and insurance services	7809	7828	7788	8007	8663	9584	0.8%
Rental, hiring and real estate services	6221	7673	9392	11,291	13,242	15,484	3.7%
Professional, scientific and technical services	16,249	19,382	23,160	27,318	31,634	36,778	3.3%
Administrative and support services	9190	10,313	12,245	14,438	16,743	19,395	3.0%
Public administration and safety	9891	10,795	12,100	13,524	15,014	16,544	2.1%
Education and training	20,217	22,683	26,022	29,728	33,584	37,492	2.5%
Health care and social assistance	33,037	37,615	43,501	49,909	56,642	63,351	2.6%
Arts and recreation services	8318	8821	9517	10,309	11,144	12,021	1.5%
Other services	11,075	11,840	12,705	13,673	14,641	15,623	1.4%
Total	254,909	285,631	319,462	356,723	394,482	433,431	2.1%

Somerset LGA

Employment within Somerset LGA is anticipated to increase from 7170 workers in 2016 to 10,015 workers in 2041, representing an average annual growth rate of 1.3 per cent or an absolute increase in employment of 2845 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in mining; electricity, gas, water and waste services; rental, hiring and real estate services; professional, scientific and technical services; and construction.

Employment projections for small economies, such as Somerset LGA, can be heavily influenced by very small changes, for example the relocation of a single business to or from the area.

Table 10: Employment projections for Somerset, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	925	898	884	874	868	867	-0.3%
Mining	24	30	47	71	101	134	7.1%
Manufacturing	1440	1438	1460	1487	1514	1538	0.3%
Electricity, gas, water and waste services	91	104	128	170	224	289	4.7%
Construction	592	807	937	1030	1113	1185	2.8%
Wholesale trade	200	208	215	222	230	238	0.7%
Retail trade	822	830	839	848	856	863	0.2%
Accommodation and food services	359	374	392	408	426	443	0.8%
Transport, postal and warehousing	370	390	413	440	465	492	1.1%
Information media and telecommunications	27	28	29	31	32	34	0.9%
Financial and insurance services	42	40	37	36	38	42	0.0%
Rental, hiring and real estate services	77	92	108	127	145	167	3.1%
Professional, scientific and technical services	152	175	203	234	267	306	2.8%
Administrative and support services	98	108	126	147	168	193	2.8%
Public administration and safety	280	301	330	361	394	428	1.7%
Education and training	737	816	919	1030	1145	1263	2.2%
Health care and social assistance	599	676	770	871	974	1079	2.4%
Arts and recreation services	94	99	105	113	121	130	1.3%
Other services	241	256	272	289	306	325	1.2%
Total	7170	7672	8214	8789	9388	10,015	1.3%

Lockyer Valley LGA

Employment within Lockyer Valley LGA is anticipated to increase from 12,341 workers in 2016 to 19,178 workers in 2041, representing an average annual growth rate of 1.8 per cent or an absolute increase in employment of 6837 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining (from a very small base); manufacturing; rental, hiring and real estate services; professional, scientific and technical services; and administrative and support services.

There is potential for a number of factors to influence Lockyer Valley over the next 25 years, for example the development of the Inland Rail would pass through the Lockyer Valley and this could have catalytic effects for the supply chain of Lockyer Valley exports. Similarly, a rapid uptake of on-farm processing could also shift the dynamic of the local economy. There is also a question as to whether or not demand for electricity, gas, water and waste services is likely to grow more rapidly than the population.

Table 11: Employment projections for Lockyer Valley, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	2113	2131	2172	2237	2309	2389	0.5%
Mining	34	43	66	100	142	188	7.1%
Manufacturing	988	1110	1285	1585	1965	2352	3.5%
Electricity, gas, water and waste services	114	150	265	456	620	731	7.7%
Construction	707	915	1036	1118	1183	1240	2.3%
Wholesale trade	489	509	525	543	561	582	0.7%
Retail trade	1475	1491	1507	1525	1540	1552	0.2%
Accommodation and food services	977	1019	1056	1089	1125	1154	0.7%
Transport, postal and warehousing	758	795	844	900	952	1008	1.1%
Information media and telecommunications	34	36	38	40	42	45	1.1%
Financial and insurance services	125	120	113	111	119	131	0.2%
Rental, hiring and real estate services	124	148	176	206	236	272	3.2%
Professional, scientific and technical services	395	458	532	612	696	797	2.8%
Administrative and support services	229	253	295	343	394	452	2.8%
Public administration and safety	542	581	635	694	757	821	1.7%
Education and training	1641	1817	2046	2295	2552	2816	2.2%
Health care and social assistance	1099	1240	1412	1597	1788	1979	2.4%
Arts and recreation services	82	87	92	98	105	112	1.2%
Other services	415	441	468	497	527	557	1.2%
Total	12,341	13,341	14,562	16,050	17,613	19,178	1.8%

Noosa LGA

Employment within Noosa LGA is anticipated to increase from 22,779 workers in 2016 to 33,454 workers in 2041, representing an average annual growth rate of 1.5 per cent or an absolute increase in employment of 10,675 workers over the 25 year period.

Major growth sectors identified for Noosa LGA (in percentage terms) include electricity, gas, water and waste services; rental, hiring and real estate services; professional, scientific and technical services; and administrative and support services.

Table 12: Employment projections for Noosa LGA, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	246	242	245	249	254	259	0.2%
Mining	29	31	38	49	63	78	4.1%
Manufacturing	992	1060	1125	1210	1302	1406	1.4%
Electricity, gas, water and waste services	118	146	216	329	428	497	5.9%
Construction	2495	3185	3565	3762	3896	3993	1.9%
Wholesale trade	609	633	653	676	699	724	0.7%
Retail trade	3601	3518	3436	3345	3255	3157	-0.5%
Accommodation and food services	3605	3999	4409	4859	5301	5754	1.9%
Transport, postal and warehousing	589	650	686	719	746	774	1.1%
Information media and telecommunications	245	247	257	271	281	293	0.7%
Financial and insurance services	561	560	547	553	591	647	0.6%
Rental, hiring and real estate services	598	732	880	1039	1199	1381	3.4%
Professional, scientific and technical services	1485	1760	2069	2400	2743	3151	3.1%
Administrative and support services	923	1006	1150	1301	1452	1622	2.3%
Public administration and safety	635	684	749	818	890	961	1.7%
Education and training	1801	1958	2156	2359	2565	2759	1.7%
Health care and social assistance	2993	3297	3644	3969	4281	4549	1.7%
Arts and recreation services	314	331	352	375	401	428	1.2%
Other services	942	962	977	992	1008	1022	0.3%
Total	22,779	24,999	27,154	29,274	31,355	33,454	1.5%

Sunshine Coast LGA

Employment within Sunshine Coast LGA is anticipated to increase from 117,851 workers in 2016 to 193,092 workers in 2041, representing an average annual growth rate of two per cent or an absolute increase in employment of 75,241 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining; rental, hiring and real estate services; professional, scientific and technical services; administrative and support services and construction.

These projections might need to be revised in the event that demand for electricity, gas, water and waste services does not grow at a rate above population. Similar to the Gold Coast LGA, the tourism components of the Sunshine Coast economy are exposed to foreign exchange risk and this could result in changes in employment as a result of cyclical changes in exchange rates.

Table 13: Employment projections for Sunshine Coast, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	2197	2220	2288	2379	2467	2559	0.6%
Mining	210	232	289	373	474	584	4.2%
Manufacturing	7437	8053	8654	9453	10,348	11,368	1.7%
Electricity, gas, water and waste services	1003	1284	2091	3407	4540	5326	6.9%
Construction	11,944	16,272	18,653	20,340	21,776	23,096	2.7%
Wholesale trade	3212	3337	3443	3563	3684	3816	0.7%
Retail trade	15,917	16,226	16,521	16,830	17,104	17,312	0.3%
Accommodation and food services	12,270	13,283	14,326	15,402	16,443	17,452	1.4%
Transport, postal and warehousing	3861	4189	4504	4826	5119	5416	1.4%
Information media and telecommunications	1336	1360	1429	1512	1582	1658	0.9%
Financial and insurance services	3708	3676	3587	3621	3827	4137	0.4%
Rental, hiring and real estate services	2355	2881	3466	4094	4732	5457	3.4%
Professional, scientific and technical services	7004	8296	9752	11,318	12,937	14,866	3.1%
Administrative and support services	3568	4004	4703	5482	6299	7235	2.9%
Public administration and safety	5104	5536	6103	6708	7340	7978	1.8%
Education and training	10,633	11,896	13,461	15,181	16,988	18,803	2.3%
Health care and social assistance	19,176	22,073	25,476	29,106	32,846	36,497	2.6%
Arts and recreation services	1947	2073	2228	2404	2598	2805	1.5%
Other services	4967	5310	5637	5998	6361	6725	1.2%
Total	117,851	132,200	146,609	161,999	177,467	193,092	2.0%

Toowoomba City (SEQ)

Employment within Toowoomba City (within SEQ) is anticipated to increase from 163,110 workers in 2016 to 86,641 workers in 2041, representing an average annual growth rate of 1.3 per cent or an absolute increase in employment of 23,531 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining; rental, hiring and real estate services; professional, scientific and technical services; and administrative and support services.

The Toowoomba economy is exposed to commodity risk by virtue of its linkages to the Surat Basin and hence changes in commodity prices are likely to influence the employment profile of Toowoomba City (SEQ). Major infrastructure investments are also likely to catalyse economic changes, these include the Toowoomba Western Bypass and Second Range Crossing, the Brisbane West Wellcamp Airport and potentially the Inland Rail. The potential catalytic effects of these major infrastructure projects might not be adequately reflected in the Queensland Treasury employment projections.

Table 14: Employment projections for Toowoomba City (SEQ)

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	827	800	789	780	775	773	-0.3%
Mining	635	786	876	980	1101	1235	2.7%
Manufacturing	4614	4978	5335	5865	6512	7277	1.8%
Electricity, gas, water and waste services	601	746	1165	1860	2461	2877	6.5%
Construction	4486	5898	6491	6805	7028	7202	1.9%
Wholesale trade	2195	2280	2352	2434	2517	2607	0.7%
Retail trade	7986	7823	7631	7436	7236	7017	-0.5%
Accommodation and food services	4662	4964	5227	5480	5734	5957	1.0%
Transport, postal and warehousing	2648	2732	2811	2893	2951	3006	0.5%
Information media and telecommunications	698	720	762	810	850	891	1.0%
Financial and insurance services	2596	2461	2284	2198	2245	2347	-0.4%
Rental, hiring and real estate services	767	901	1042	1183	1315	1459	2.6%
Professional, scientific and technical services	3023	3454	3912	4374	4819	5340	2.3%
Administrative and support services	1318	1420	1600	1786	1968	2167	2.0%
Public administration and safety	4124	4330	4611	4888	5166	5424	1.1%
Education and training	7093	7493	8043	8616	9191	9699	1.3%
Health care and social assistance	11,273	12,322	13,568	14,873	16,180	17,362	1.7%
Arts and recreation services	663	678	696	717	738	760	0.5%
Other services	2901	2995	3061	3130	3191	3242	0.4%
Total	63,110	67,781	72,256	77,107	81,980	86,641	1.3%

Scenic Rim LGA

Employment within Scenic Rim LGA is anticipated to increase from 14,171 workers in 2016 to 21,780 workers in 2041, representing an average annual growth rate of 1.7 per cent or an absolute increase in employment of 23,531 workers over the 25 year period.

The Queensland Treasury projections anticipate the most significant growth (in percentage terms) to be in electricity, gas, water and waste services; mining; rental, hiring and real estate services; administrative and support services professional, scientific and technical services; and health care and social assistance.

The Queensland Treasury employment projections do not anticipate significant growth within transport, postal and warehousing; wholesale trade; and manufacturing despite Scenic Rim hosting the Bromelton SDA. Recent infrastructure commitments including the Bromelton water pipeline and Beaudesert Bypass allied with major private investment in a private rail terminal (SCT) are likely to see commencement of industrial employment at Bromelton, which might not be adequately reflected in the Queensland Treasury projections.

Table 15: Employment projections for Scenic Rim, 2016–2041

Industry	2016	2021	2026	2031	2036	2041	AAGR %
Agriculture, forestry and fishing	1550	1480	1446	1418	1397	1385	-0.4%
Mining	85	99	132	179	236	297	5.1%
Manufacturing	893	940	990	1058	1131	1210	1.2%
Electricity, gas, water and waste services	149	191	320	533	716	842	7.2%
Construction	1216	1608	1818	1965	2078	2173	2.3%
Wholesale trade	334	347	358	370	383	396	0.7%
Retail trade	1496	1523	1555	1600	1629	1655	0.4%
Accommodation and food services	1570	1630	1737	1851	1972	2097	1.2%
Transport, postal and warehousing	442	466	498	535	568	604	1.3%
Information media and telecommunications	140	141	147	155	162	170	0.8%
Financial and insurance services	194	186	175	172	183	200	0.1%
Rental, hiring and real estate services	173	208	247	290	333	383	3.2%
Professional, scientific and technical services	577	669	776	894	1015	1163	2.8%
Administrative and support services	294	326	384	451	520	601	2.9%
Public administration and safety	1075	1146	1249	1360	1477	1598	1.6%
Education and training	1379	1534	1739	1972	2206	2446	2.3%
Health care and social assistance	1764	2007	2311	2666	3014	3367	2.6%
Arts and recreation services	253	266	285	306	330	356	1.4%
Other services	591	634	679	734	785	838	1.4%
Total	14,171	15,402	16,844	18,510	20,136	21,780	1.7%

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