CHAPTER 6

SKILLS

Key points

- In 2016, Professionals were the largest occupational group (328,587), followed by Clerical and administrative workers (221,379) and Technicians and trades workers (184,255) in the 12 LGAs of SEQ. The Brisbane LGA had the highest proportion of Professionals (27.0 per cent), followed by the Sunshine Coast (20.0 per cent) and Toowoomba (19.5 per cent) LGAs.
- Professionals was the largest occupation in every BCARR ring, comprising 21.1 per cent of the SEQ total occupations in 2016. Inner Brisbane has the highest proportion of both Managers and Professionals occupations in the region, at 14.5 and 35.1 per cent respectively.
- From 2016 to 2021, Professionals were the single biggest occupational contributor to SEQ's employment growth, with an increase of 82,200 employed persons, representing 43.9 per cent of the total increase in employed residents for SEQ.
- From 2016 to 2021, the number of Machinery operators and drivers in SEQ increased by 22.4 per cent, Professionals by 21.0 per cent and Managers by 19.5 per cent.
- From 2016 to 2021, most Brisbane Statistical Area Level 4s (SA4s) have positive changes in Professionals and Managers except Brisbane-East. The Gold Coast SA4 has the largest increases in Managers (13,700) and Professionals (21,600), followed by Brisbane Inner City SA4.
- In 2016, together the 12 LGAs had 30.2 per cent of the working population with a Bachelor's degree or higher qualification.
- Overall, Greater Brisbane had 33.1 per cent of its working population with a Bachelor's degree or higher qualification in 2016. The Inner Brisbane ring has 48.4 per cent of its working population with a Bachelor's degree or higher qualification. This shows the significance of the ring to SEQ's knowledge economy.
- Similar to national trends, Queensland is becoming more educated, with almost two million workers possessing a post-school qualification. By 2024–25, the Postgraduate degree qualifications are projected to experience the highest growth at 26.9 per cent, followed by Bachelor's degree (15.9 per cent) and Graduate diploma and graduate certificate (14.2 per cent).
- In Queensland, Professionals, the largest major occupational group, are projected to increase by 16.1 per cent by 2024 (compared to 2019), followed by Community and personal service workers (14.3 per cent) and Managers (12.1 per cent).

6.1 Introduction

This chapter analyses the skilled workforce of SEQ, including occupational snapshots, changes in the occupational mix from 2016 to 2021, educational attainment snapshots, national projections of occupations and skills, and an assessment of changes in SEQ skills based on recent trends and prospects. The skilled workforce is identified as one of the enablers of economic growth in the SEQ Economic Foundations Paper, along with land availability, access to market and population growth (Queensland Government 2018a).

This chapter uses ABS Census of Population and Housing Place of Work data for 2016 for the occupational and educational snapshots. Most of the spatial analysis is based on the following geographies: the 12 LGAs, the SEQ BCARR rings and sub-regions and SA2s, similar to other chapters. Only the changes in occupational mixes are provided at the SA4 scale due to data availability.

6.2 Occupations of the workforce

This section analyses the skills of the workforce in the SEQ region, with both occupational and educational attainment data providing useful insight into available skills. A skilled workforce and knowledge economy are key determinants for economic growth and prosperity. Occupational diversity and changes over time are important measures of any skilled workforce. Educational attainment is a measure of human capital and the capacity of the knowledge economy (Tuli et al. 2019). Therefore, this chapter analyses these two indicators to understand the skilled workforce in SEQ.

Occupational snapshot of SEQ in 2016: LGAs

Table 6.1 shows the occupational distribution across the LGAs of SEQ in 2016, based on the Australian and New Zealand Standard Classification of Occupations (ANZSCO). Box 6.1 provides an overview of this classification. Figure 6.1 and Table 6.1 show that Professionals were the largest occupational group, with 328,587 Professionals in 2016. The second and third largest occupations among the 12 LGAs were Clerical and administrative workers (221,379) and Technicians and trades workers (184,255).

Box 6.1: What are the Australian and New Zealand Standard Classification of Occupations (ANZSCO) classification and occupation major groups?

ANZSCO is the skill-based classification used to categorise all occupations and jobs undertaken for profit in the Australian and New Zealand labour markets. It is used in the collection and dissemination of all official statistics on occupation and is a key tenet of Australia's statistical infrastructure. ANZSCO is applied to a range of data sets, including the Census of Population and Housing, that inform and support government policy settings and programs – from vocational education and training to skilled migration programs (ABS 2021). ANZSCO is a hierarchical classification system that categorises occupations according to one of 8 major groups and then into increasingly smaller sub-categories: sub-major group; minor group; unit group, before resulting in the specific occupation (ABS 2021). The 8 major groups are:

- Managers
- Professionals
- Technicians and trades workers
- Community and personal service workers
- Clerical and administrative workers
- Sales workers
- Machinery operators and drivers
- Labourers

These hierarchical levels have a corresponding reference number ('code') with a specific number of digits:

- major groups are represented by a single digit code
- sub-major groups by a 2 digit code
- minor groups by a 3 digit code
- unit groups by a 4 digit code
- occupations by a 6 digit code.

This chapter uses the major groups from the 2013 edition of ANZSCO. Appendix C, Table C.1 and C.2 has a full list of occupations that are included in the Managers and Professionals major groups at the 4 digit level.

The Brisbane LGA has the highest number of Managers (91,805) and Professionals (189,773) with a place of work in the LGA, followed by the Gold Coast LGA, which had 28,452 Managers and 43,355 Professionals in 2016. As discussed in the previous chapter, the Brisbane and Gold Coast LGAs have several major employment precincts, including knowledge and technology precincts. Therefore they have the highest number of Managers and Professionals too.

Table 6.1: Snapshot of occupations by place of work in the LGAs of SEQ in 2016

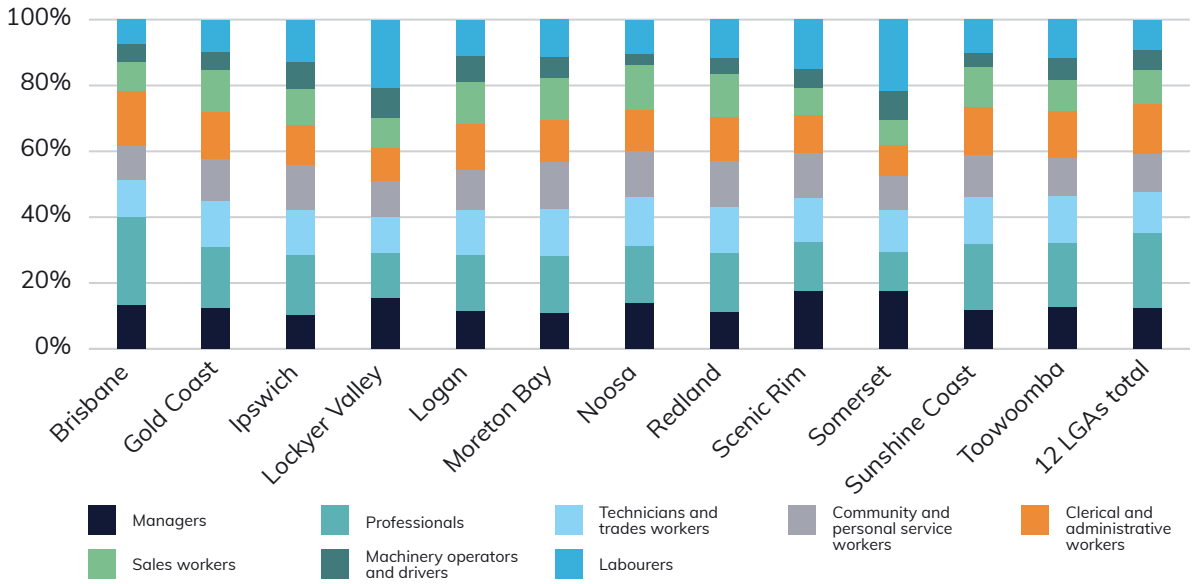
LGAs	Managers	Professionals	Technicians and trades workers	Community and personal service workers	Clerical and administrative workers	Sales workers	Machinery operators and drivers	Labourers	Total
Brisbane	91,805	189,773	78,413	72,107	117,973	60,442	40,031	52,111	702,655
Gold Coast	28, 452	43,355	32,110	29,062	33,172	29,716	12,592	23,123	231,582
Ipswich	6,198	11,239	8,269	8,540	7,348	6,570	5,065	7,975	61,204
Lockyer Valley	1,695	1,505	1,222	1,188	1,130	988	994	2,306	11,028
Logan	9,863	14,929	12,102	10,680	12,238	11,194	6,752	9,836	87,594
Moreton Bay	11,933	19,359	15,979	15,550	14,462	14,225	6,851	12,892	111,251
Noosa	2,727	3,460	2,938	2,805	2,439	2,705	650	2,103	19,827
Redland	4,475	7,166	5,534	5,694	5,247	5,260	1,929	4,697	40,002
Scenic Rim	2,146	1,801	1,633	1,677	1,378	1,015	727	1,820	12,197
Somerset	1,051	710	767	621	556	467	524	1,305	6,001
Sunshine Coast	12,916	21,889	15,545	13,983	15,689	13,291	4,956	10,977	109,246
Toowoomba	8,595	13,381	9,749	7,899	9,741	6,514	4,588	8,019	68,486
12 LGAs total	181,864	328,587	184,255	169,817	221,379	152,387	85,649	137,167	1,461,105

Note: The 12 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. Excludes persons with occupation not stated or inadequately described.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Figure 6.1 shows the proportional distribution of occupations in the 12 LGAs in 2016. The 12 LGAs have 22.5 per cent Professionals, 15.2 per cent Clerical and administrative workers, 12.6 per cent Technicians and trades workers and 12.4 per cent Managers. The Scenic Rim and Somerset LGAs have the highest proportion of Managers at 17.6 and 17.5 per cent, respectively. In Scenic Rim, Somerset and Lockyer Valley LGAs, over 40 per cent of Managers are Farmers and farm managers, showcasing the agriculture and rural characteristics of the areas. The Brisbane LGA has the highest proportion of Professionals (27.0 per cent) with a place of work in the LGA, followed by the Sunshine Coast (20.0 per cent) and Toowoomba (19.5 per cent) LGAs.

Figure 6.1: Occupational mix of employment by place of work across the LGAs of SEQ in 2016



Note: The 12 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. Excludes persons with occupation not stated or inadequately described.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Occupational snapshot of SEQ in 2016: sub-regions

Table 6.2 shows the occupational distribution in BCARR rings and sub-regions in 2016. Professionals are the largest occupational group in SEQ, with 327,326 Professionals in 2016. Clerical and administrative workers (220,411) and Technicians and trades workers (182,455) are the second and third largest occupations in SEQ. The Middle Brisbane ring has the highest number of Managers (47,301) among the rings and sub-regions. The Inner Brisbane ring has the highest number of Professionals (107,777), followed by the Middle Brisbane ring, which had 81,983 Professionals in 2016.

Professionals was the major occupational group in the Rest of SEQ region, with 84,849 Professionals in 2016. The other major occupations in Rest of SEQ were Clerical and administrative workers (63,114), Technicians and trades workers (62,179) and Community and personal service workers (56,284). Within the Rest of SEQ, the Gold Coast sub-region has the highest number of Professionals (43,371), Managers (28,431) and Clerical and administrative workers (33,182), followed by Sunshine Coast and Toowoomba.

Figure 6.2 shows the proportional distribution of occupations in BCARR rings and sub-regions in 2016. Professionals was the largest occupation in every ring, comprising 21.1 per cent of the SEQ all occupations total. Inner Brisbane has the highest proportion of both Managers and Professionals occupations in the region, at 14.5 and 35.1 per cent, respectively. Inner Brisbane also has the highest proportion of Clerical and administrative workers (20.0 per cent). The Outer Brisbane ring has the largest proportion of Technicians and trades workers, which is 14.0 per cent.

Table 6.2: Snapshot of occupations by place of work in the BCARR rings and sub-regions of SEQ in 2016

BCARR rings/sub-regions	Managers	Professionals	Technicians and trades workers	Community and personal service workers	Clerical and administrative workers	Sales workers	Machinery operators and drivers	Labourers	Total
INNER Brisbane*	44,464	107,777	26,367	26,634	61,428	19,657	5,486	15,190	307,003
MIDDLE Brisbane – TOTAL*	47,301	81,983	51,994	45,404	56,526	40,748	34,540	36,875	395,371
Middle East	5,158	5,773	6,257	3,347	5,569	3,061	4,851	5,270	39,286
Middle North	12,991	20,363	15,298	11,889	16,585	12,338	9,946	11,322	110,732
Middle South	18,213	34,811	18,827	16,067	23,375	15,822	13,850	12,210	153,175
Middle West	10,939	21,036	11,612	14,101	10,997	9,527	5,893	8,073	92,178
OUTER Brisbane – TOTAL	32,503	52,717	41,915	40,547	39,343	37,296	20,617	35,479	300,417
Ipswich	6,190	11,257	8,269	8,538	7,370	6,570	5,071	7,994	61,259
Redland	4,475	7,172	5,535	5,691	5,244	5,264	1,920	4,707	40,008
Logan	9,877	14,919	12,095	10,704	12,242	11,190	6,759	9,832	87,618
Moreton Bay	11,961	19,369	16,016	15,614	14,487	14,272	6,867	12,946	111,532
TOTAL – GREATER BRISBANE	124,268	242,477	120,276	112,585	157,297	97,701	60,643	87,544	1,002,791
Rest of SEQ	54,682	84,849	62,179	56,284	63,114	54,103	23,777	47,085	446,073
Gold Coast	28,431	43,371	32,098	29,061	33,182	29,694	12,604	23,114	231,555
Sunshine Coast	12,806	21,729	15,415	13,942	15,588	13,243	4,927	10,903	108,553
Noosa	2,833	3,630	3,070	2,845	2,540	2,764	664	2,175	20,521
Toowoomba (urban part)	5,719	12,094	7,970	6,947	8,736	5,932	3,327	5,462	
Scenic Rim	2,144	1,803	1,636	1,675	1,375	1,012	734	1,822	12,201
Lockyer Valley	1,694	1,507	1,221	1,189	1,134	987	999	2,309	11,040
Somerset	1,055	715	769	625	559	471	522	1,300	6,016
TOTAL – SOUTH EAST QUEENSLAND	178,950	327,326	182,455	168,869	220,411	151,804	84,420	134,629	1,448,864

Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications. ^ The SEQ total differs from the 12 LGAs total in the preceding table, which includes the whole of Toowoomba LGA. This table includes only the urban parts of Toowoomba LGA.

Employment total differs from that in Table 5.3 because this table excludes persons with occupation not stated or inadequately described.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 6.2: Snapshot of occupations by place of work in the BCARR rings of SEQ in 2016

Note: Excludes persons with occupation not stated or inadequately described.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Changes in the occupational mix, 2016 to 2021

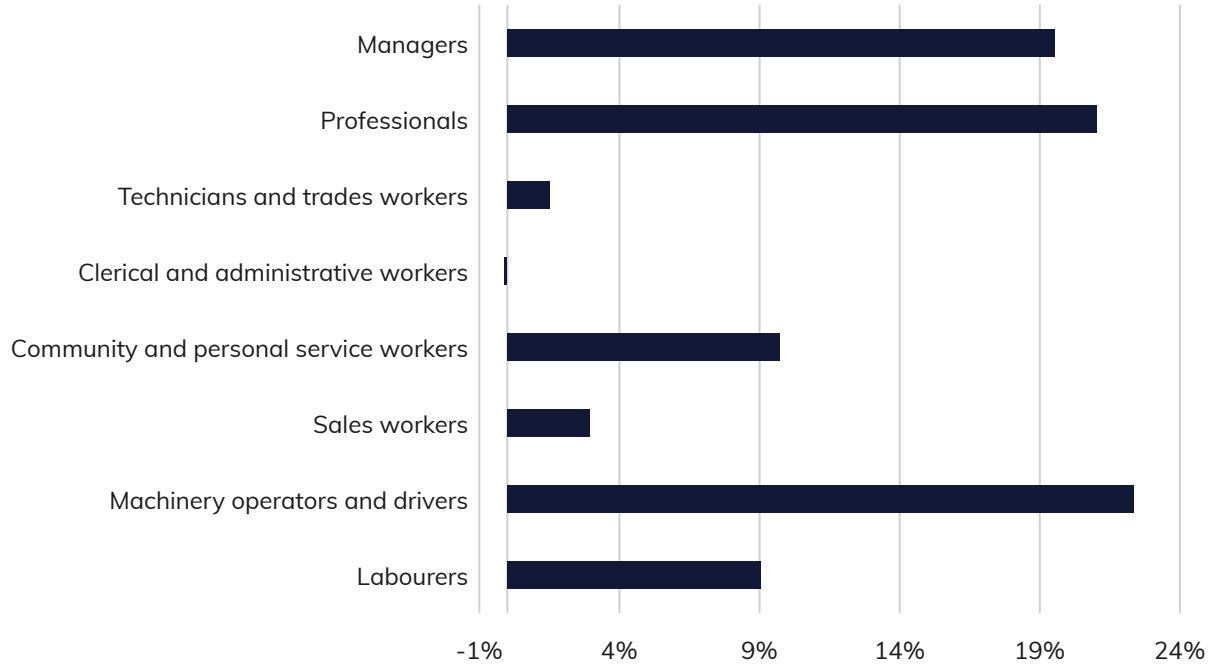
Using the ABS *Labour Force Survey*, Chapter 5 reported that the number of employed residents of SEQ increased by 186,800 persons between 2016 and 2021, representing an average annual growth rate of 2.1 per cent (see Table 5.6). In terms of occupations, Professionals were the single biggest contributor to this growth, with an increase of 82,200 employed persons, representing 43.9 per cent of the total increase for SEQ. There were also significant increases in the number of Managers (40,200) and Machinery operators and drivers (22,800).

In terms of the overall occupational mix in SEQ, the biggest changes between 2016 and 2021 were:

- Professionals increased their employment share by 2.0 percentage points from 22.4 to 24.4 per cent
- The employment share of Clerical and administrative workers declined from 15.1 to 13.6 per cent
- The employment share of Technicians and trade workers declined from 14.9 to 13.7 per cent.

Figure 6.3 shows the percentage changes in the occupational mix from 2016 to 2021 in SEQ. The number of persons employed as Managers and Professionals have increased by 19.5 and 21.0 per cent over the past five years. Machinery operators and drivers have also increased by 22.4 per cent over this period. The number of Clerical and administrative workers residing in SEQ remained virtually unchanged between 2016 and 2021.

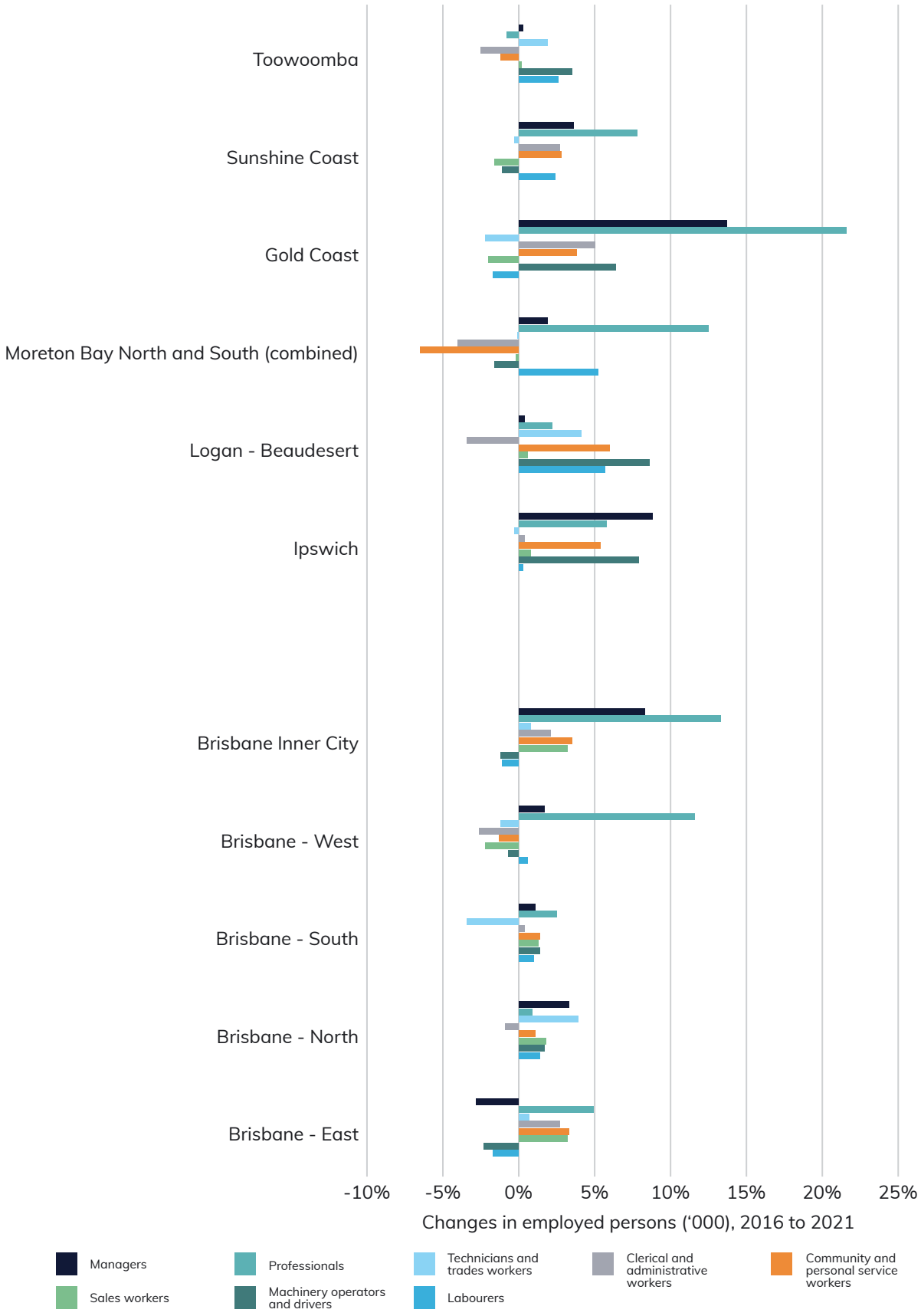
Figure 6.3: Changes in the occupational mix by place of residence of SEQ from 2016 to 2021



Source: BCARR analysis of ABS Cat. 6291.0.55.001 RQ2 – Employed persons by Labour market region (ASGS), Occupation major group (ANZSCO) and Sex, Annual averages of the preceding four quarters, Year to August 1999 onwards.

Figure 6.4 shows the changes in the occupational mix from 2016 to 2021 for SA4s of usual residence in SEQ. The Gold Coast SA4 has the largest increase in Managers and Professionals occupational groups in the last five years, at 13,700 and 21,600 employed persons, followed by Brisbane Inner City SA4. Most of the SA4s in Brisbane have positive changes in Professionals and Managers except Brisbane- East (decrease of 2,800 Managers). Toowoomba SA4 is the only area that has experienced negative growth in the Professionals occupation, which is a loss of 800 residents employed as Professionals between 2016 to 2021. Brisbane South has experienced a significant adverse change in Technicians and trades workers in this period (–3,400), as has Gold Coast (–2,200).

Figure 6.4: Changes in the occupational mix by place of residence in the SA4s of SEQ from 2016 to 2021



Source: BCARR analysis of ABS Cat. 6291.0.55.001 RQ2 – Employed persons by Labour market region (ASGS), Occupation major group (ANZSCO) and Sex, Annual averages of the preceding four quarters, Year to August 1999 onwards.

6.3 Educational attainment of the workforce

Educational attainment snapshot of SEQ in 2016: LGAs

Table 6.3 provides a snapshot of educational attainment in the LGAs of SEQ by place of work in 2016. The 12 LGAs have 298,044 working population[22] with a Bachelor's degree, 40,832 with a Graduate diploma or graduate certificate level qualification and 88,693 with a Postgraduate degree, which taken together comprise 30.2 per cent of the working population. Any city with 30 per cent or more Bachelor's degrees is called a creative or knowledge city (Florida, 2003). This threshold was set nearly 20 years ago, and not many Australian cities were qualified as knowledge cities at that time. Over time, the Australian population has become more qualified, and only a few cities have reached that threshold.

Of the 12 LGAs, the Brisbane LGA has the largest number of people with Bachelor's degree (176,011), Graduate diploma or graduate certificate level qualification (23,750) and Postgraduate degree (58,895) qualifications, which is over 35 per cent of the working population. The Gold Coast LGA has the second-largest university-qualified working population, having 39,479 Bachelor's degrees, 4,717 Graduate diplomas or graduate certificates and 10,479 Postgraduate degrees. In the 12 LGAs, 33.4 per cent of the working population has their highest educational attainment at the Year 10 and above secondary school level.

Educational attainment snapshot of SEQ in 2016: sub-regions

Table 6.4 presents a snapshot of educational attainment for the BCARR rings and sub-regions of SEQ. SEQ had a 296,826 working population with a Bachelor's degree, 40,607 with a Graduate diploma or graduate certificate and 88,535 with a Postgraduate degree. Together, this represents 30.4 per cent of SEQ employed persons with a bachelor degree or higher qualification.

The Inner Brisbane ring has the largest number of people with Bachelor's degrees (98,790), Graduate diploma or graduate certificate (13,721) and Postgraduate degree (32,902) qualifications. Inner Brisbane also has the most educated workforce in relative terms, with 48.4 per cent of employed persons having a Bachelor degree or higher qualification. The Middle South and Middle West sub-regions also have relatively educated workforces, with 32.4 and 32.8 per cent of their workforce having a Bachelor degree or higher qualification, respectively. Only these three SEQ sub-regions make the 30 per cent cutoff referred to above. Across SEQ, the sub-region with the lowest proportion holding a Bachelor degree or higher qualification was Somerset (16.4 per cent), followed by Lockyer Valley (18.5 per cent).

22 Working population refers to when the data is based on Census, Place of Work.

Table 6.3: Snapshot of educational attainment by place of work in the LGAs of SEQ in 2016

LGAs	Postgraduate degree	Graduate diploma and graduate certificate	Bachelor degree	Advanced diploma and diploma	Certificate III & IV	Secondary: Years 10 and above	Certificate I & II	Years 9 and below	No educational attainment	Total
Brisbane	58,895	23,750	176,011	82,549	121,859	207,883	288	12,183	1,068	684,486
Gold Coast	10,479	4,717	39,479	29,733	52,200	79,106	129	6,149	298	222,290
Ipswich	2,491	1,437	9,537	6,728	14,888	21,634	57	2,223	153	59,148
Lockyer Valley	365	181	1,411	932	2,411	4,327	9	760	56	10,452
Logan	3,305	1,967	13,532	9,663	20,995	31,687	62	2,872	290	84,373
Moreton Bay	3,511	2,600	16,551	12,497	28,379	39,777	73	3,645	158	107,191
Noosa	672	435	3,178	2,555	4,806	6,820	12	471	11	18,960
Redland	1,387	888	6,212	4,793	9,543	14,413	26	1,208	45	38,515
Scenic Rim	364	271	1,572	1,341	2,844	4,514	5	645	15	11,571
Somerset	108	111	705	486	1,433	2,333	12	446	19	5,653
Sunshine Coast	4,132	2,813	18,750	13,774	26,620	35,991	67	2,873	66	105,086
Toowoomba	2,991	1,661	11,104	7,202	16,896	23,281	54	2,728	66	65,983
12 LGAs total	88,693	40,832	298,044	172,259	302,865	471,769	779	36,197	2,253	1,413,691

Note: The 12 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. Excludes persons with educational attainment not stated or inadequately described, which is why the total differs from that in Table 6.1.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Table 6.4: Snapshot of educational attainment by place of work in the BCARR rings and sub-regions of SEQ in 2016

BCARR rings/sub-regions	Postgraduate degree	Graduate diploma and graduate certificate	Bachelor degree	Advanced diploma and diploma	Certificate III & IV	Secondary: Years 10 and above	Certificate I & II	Years 9 and below	No educational attainment	Total
INNER Brisbane*	32,902	13,721	98,790	37,149	38,772	76,064	85	2,695	301	300,479
MIDDLE Brisbane – TOTAL*	25,980	9,979	77,167	45,369	83,048	131,781	160	9,497	749	383,730
Middle East	1,453	710	6,044	4,288	9,921	14,199	20	1,193	63	37,891
Middle North	4,982	2,496	19,888	13,658	25,364	38,093	41	2,668	148	107,338
Middle South	11,107	4,078	32,957	17,185	29,783	49,616	70	3,597	354	148,747
Middle West	8,438	2,695	18,278	10,238	17,980	29,873	29	2,039	184	89,754
OUTER Brisbane – TOTAL	10,764	6,892	45,878	33,689	73,838	107,606	186	9,967	646	289,466
Ipswich	2,510	1,448	9,550	6,746	14,877	21,636	51	2,220	152	59,190
Redland	1,384	879	6,212	4,780	9,541	14,404	23	1,214	61	38,498
Logan	3,333	1,966	13,544	9,654	20,986	31,702	58	2,887	282	84,412
Moreton Bay	3,537	2,599	16,572	12,509	28,434	39,864	54	3,646	151	107,366
TOTAL – GREATER BRISBANE	69,646	30,592	221,835	116,207	195,658	315,451	431	22,159	1,696	973,675
Rest of SEQ	18,889	10,015	74,991	54,856	104,048	151,609	257	13,093	512	428,270
Gold Coast	10,473	4,703	39,500	29,747	52,201	79,098	125	6,161	310	222,318
Sunshine Coast	4,097	2,792	18,589	13,683	26,454	35,792	49	2,859	54	104,369
Noosa	702	454	3,318	2,644	4,951	7,022	16	485	13	19,605
Toowoomba (urban part)	2,774	1,514	9,900	6,038	13,754	18,519	36	1,734	40	54,309
Scenic Rim	365	276	1,574	1,336	2,842	4,514	6	644	18	11,575
Lockyer Valley	363	170	1,403	929	2,414	4,330	14	764	62	10,449
Somerset	115	106	707	479	1,432	2,334	11	446	15	5,645
TOTAL – SOUTH EAST QUEENSLAND	88,535	40,607	296,826	171,063	299,706	467,060	688	35,252	2,208	1,401,945

Notes:

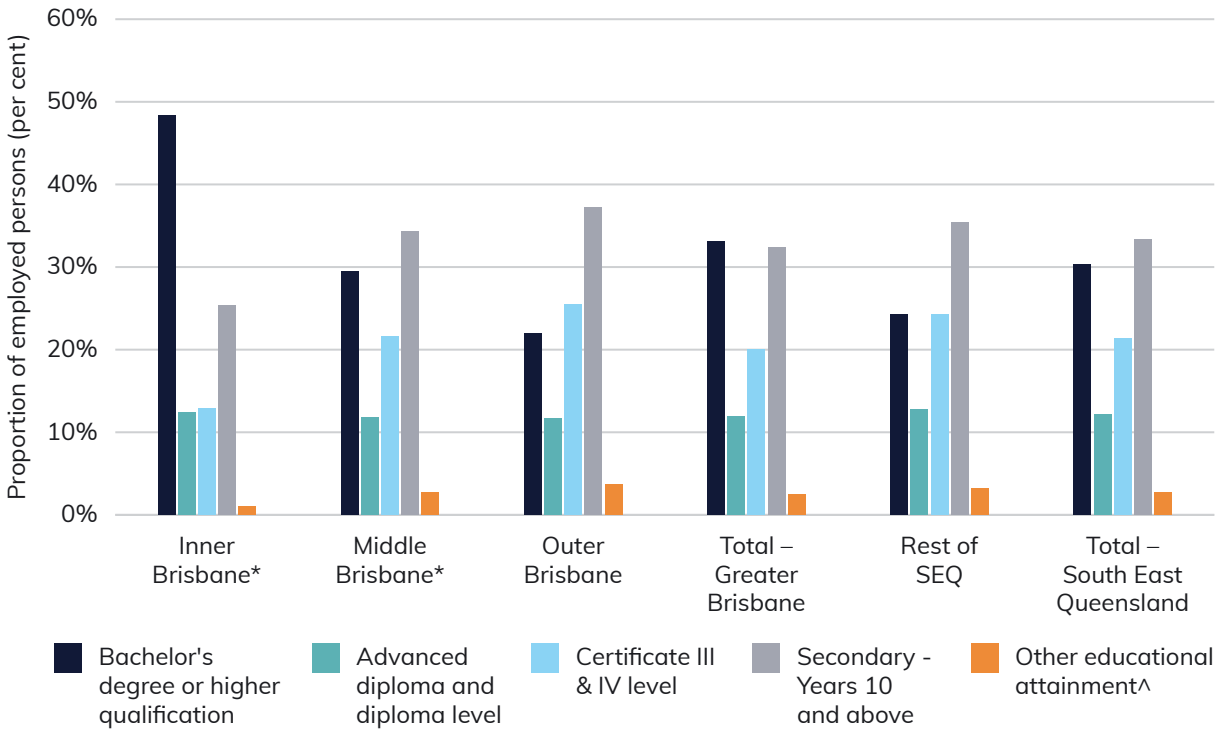
* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ The SEQ total differs from the 12 LGAs total in the preceding table, which includes the whole of Toowoomba LGA. This table includes only the urban parts of Toowoomba LGA. Excludes persons with educational attainment not stated or inadequately described, which is why the total differs from that in Table 6.2.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 6.5 shows educational attainment across the BCARR rings in 2016. As previously noted, the Inner Brisbane ring has 48.4 per cent of the working population with a Bachelor's degree or higher qualification. This knowledge-intensive workforce means Inner Brisbane is the key focal point of SEQ's knowledge economy. The proportion of employed persons with a Bachelor's degree or higher qualification tends to decline with distance from the CBD, standing at 29.5 per cent for the Middle Brisbane ring and 21.9 per cent for Outer Brisbane. However, the Rest of SEQ ring has a slightly higher proportion with a Bachelor's degree or higher qualification than Outer Brisbane, at 24.3 per cent. Overall, Greater Brisbane has 33.1 per cent of its working population with a Bachelor's degree or higher qualification.

Figure 6.5: Employed persons by educational attainment by place of work in the BCARR rings of SEQ in 2016



Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

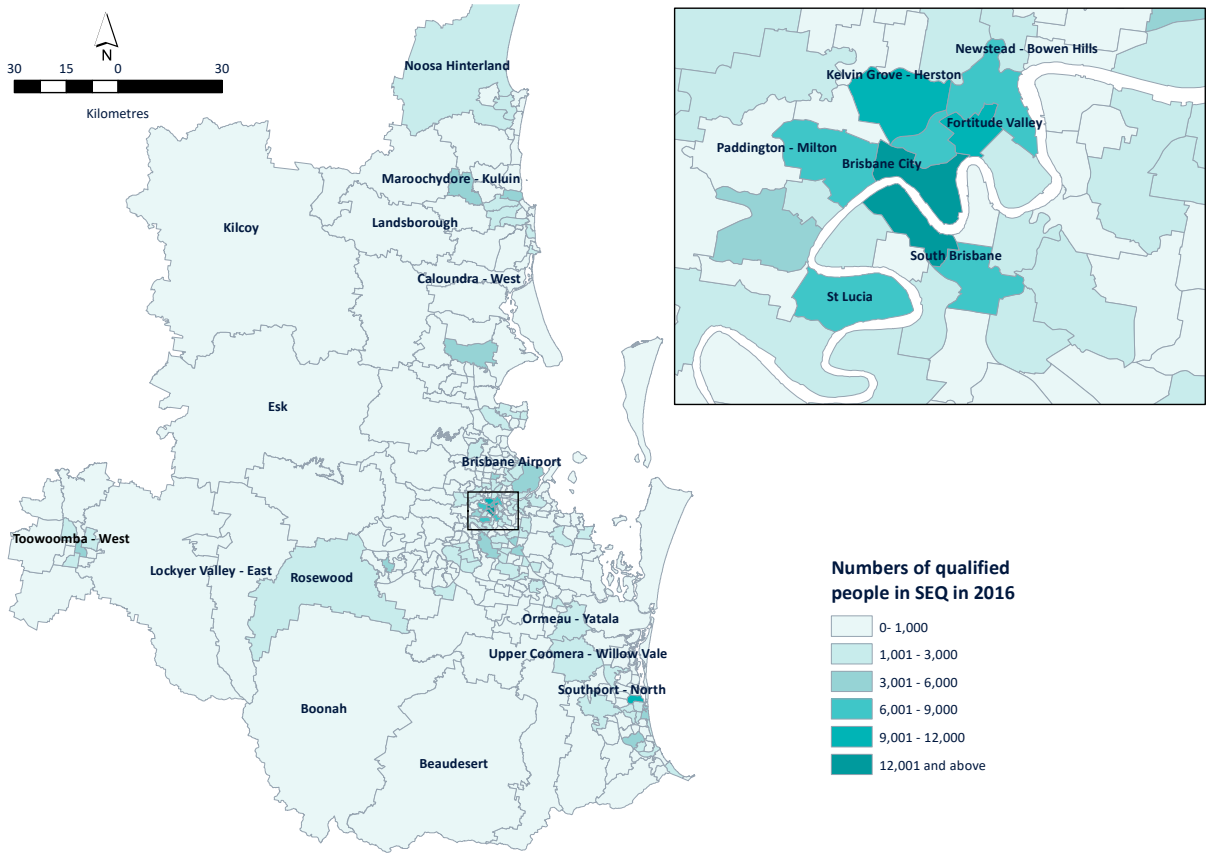
^ Other educational attainment includes: Year 9 and below, Certificate I and II level, and No educational attainment.

Excludes persons with educational attainment not stated or inadequately described,

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 6.6 shows the distribution of the university qualified (Bachelor degree and above) employed population who work in each of the SA2s of SEQ in 2016. The figure shows the university qualified workforce is heavily concentrated in the Inner Brisbane, Gold Coast and Sunshine Coast areas.

Figure 6.6: University qualified employed persons by place of work in the SA2s of SEQ in 2016



Note: University qualified was defined as employed persons with a highest educational attainment of a Postgraduate degree, Graduate certificate or graduate diploma or Bachelor degree qualification.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

6.4 Future projections of the skilled workforce

This section discusses the future projections of the skilled workforce, including national projections for occupations and skill levels and Queensland government projections for occupations and educational attainment. Box 6.2 explains the concept of skill levels. These occupation, education and skill level projections are important for understanding economic growth and prosperity in the future.

Box 6.2: What is meant by skill levels?

Each ANZSCO occupation is assigned a skill level. The skill level reflects the range and complexity of the set of tasks undertaken in the occupation. These skill levels measure the level or amount of formal education and training, the amount of previous experience in a related occupation and the amount of on-the-job training required to competently perform the set of tasks required for that occupation (ABS 2021). The 5 broad skill levels used in ANZSCO are:

- Skill level 1 – Occupations that have a level of skill commensurate with a bachelor degree or higher qualification. At least five years of relevant experience may substitute for the formal qualification.
- Skill level 2 – Occupations that have a level of skill commensurate with NZQF Diploma or AQF Associate Degree, Advanced Diploma or Diploma. At least three years of relevant experience may substitute for the formal qualifications listed above.
- Skill level 3 – Occupations that have a level of skill commensurate with NZQF Level 4 qualification, AQF Certificate IV or AQF Certificate III including at least two years of on-the-job training. At least three years of relevant experience may substitute for the formal qualifications listed above.
- Skill level 4 – Occupations that have a level of skill commensurate with NZQF Level 2 or 3 qualification or AQF Certificate II or III. At least one years of relevant experience may substitute for the formal qualifications listed above.
- Skill level 5 – Occupations that have a level of skill commensurate with NZQF Level 1 qualification, AQF Certificate I or compulsory secondary education. For some occupations a short period of on-the-job training may be required in addition to or instead of the formal qualification.

National projections by occupation and skills

Over the last 20 years, Australia has shifted towards a higher-skilled, more services-based economy which is reflected in the changing industry, occupational and skill mix of jobs (National Skills Commission 2021). Automation and computing have varying effects within occupations and industries, and the key skills that will be needed for future jobs are care, computing, cognitive and communication skills (National Skills Commission 2021).

Table 6.5 provides National Skills Commission (NSC) projections for all occupations for five years to November 2025. NSC projected that employment is expected to increase by 7.8 per cent in total in the 5 year period. Community and personal service workers are projected to see the largest growth in 5 years (14.7 per cent), followed by Professionals (13.2 per cent) and Managers (6.2 per cent). Sales workers (2.0 per cent) is projected to be the lowest growth occupation in the next 5 years, followed by Clerical and administrative workers (3.5 per cent). These two occupations are particularly subject to automation and are expected to shrink in most developed nations (Frey and Osborne 2013).

Table 6.6 shows the top 10 growth occupations by 4 digit level, regardless of skill levels. Waiters is the highest projected growth occupation to 2025 (with projected employment growth of

42.3 per cent), followed by Cafe and restaurant managers (35.0 per cent), ICT support and test engineers (34.0 per cent) and Computer network professionals (30.4 per cent). Other non ICT-related occupations with high growth projections are Midwives, Aged and disabled carers, and Audiologists and speech pathologists/therapists.

Table 6.5: National Skills Commission projections for one-digit level occupations to 2025

Occupations		National Skills Commission Projections		
One digit level occupation	Employment level – November 2020	Projected employment level – November 2025	Projected employment growth – five years to November 2025	
	('000)	('000)	('000)	per cent
Community and personal service workers	1,272.7	1,459.1	186.4	14.7
Professionals	3,331.4	3,770.9	439.5	13.2
Managers	1,599.2	1,697.5	98.3	6.2
Technicians and trades workers	1,770.5	1,866.8	96.8	5.4
Machinery operators and drivers	814.6	850.8	36.1	4.4
Labourers	1,176.5	1,228.6	51.7	4.4
Clerical and administrative workers	1,763.1	1,824.6	61.5	3.5
Sales workers	1,070.1	1,091.8	21.8	2.0
All occupations	12,740.6	13,732.3	991.6	7.8

Source: National Skills Commission Projections, 2021

Table 6.6: Top 10 growth occupations, Australia, 5 years to November 2025

Occupation		National Skills Commission Projections		
4 digit level occupation	Employment level – November 2020	Projected employment level – November 2025	Projected employment growth – five years to November 2025	
	('000)	('000)	('000)	per cent
Waiters	100.0	142.3	42.3	42.3
Cafe and restaurant managers	60.7	82.0	21.3	35.0
ICT support and test engineers	12.1	16.3	4.1	34.0
Computer network professionals	49.1	64.0	14.9	30.4
Software and applications programmers	153.7	199.8	46.1	30.0
ICT business and systems analysts	34.1	43.5	9.4	27.7
Midwives	18.2	22.8	4.6	25.1
Multimedia specialists and web developers	21.7	27.1	5.4	25.0
Aged and disabled carers	221.4	276.1	54.7	24.7
Audiologists and speech pathologists/ therapists	14.5	18.0	3.5	24.1

Source: National Skills Commission Projections, 2021

Table 6.7 shows NSC's projection for the top 5 growth occupations (4 digit level) with skill level 1, which is equivalent to a Bachelor's degree or higher qualification. Four out of 5 of these occupations are ICT related. ICT support and test engineers is projected to increase by 34.0 per cent compared with the 2020 level, followed by Computer network professionals (30.4 per cent) and Software and applications programmers (30.0 per cent). Midwives are the only non ICT related occupation in the top five, which is projected to increase by 25.1 per cent in 2025 compared to the 2020 level.

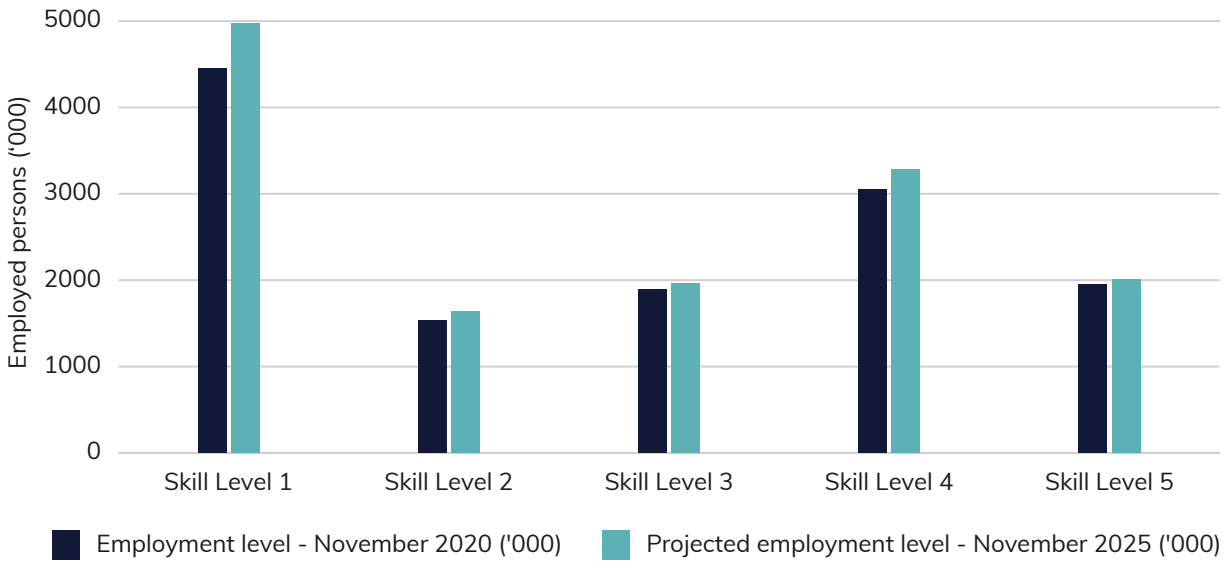
Table 6.7: Top 5 growth occupations with skill level one, Australia, five years to November 2025

Occupations		National Skills Commission Projections		
4 digit level occupation and skill level one	Employment level – November 2020	Projected employment level – November 2025	Projected employment growth – five years to November 2025	
	('000)	('000)	('000)	per cent
ICT support and test engineers	12.1	16.3	4.1	34.0
Computer network professionals	49.1	64.0	14.9	30.4
Software and applications programmers	153.7	199.8	46.1	30.0
ICT business and systems analysts	34.1	43.5	9.4	27.7
Midwives	18.2	22.8	4.6	25.1

Source: National Skills Commission Projections, 2021

Figure 6.7 compares NSC projections for different skill levels in 2020 and 2025. Skill level 1, which is commensurate with a Bachelor's degree or higher qualification, is projected to increase by 11.8 per cent, which is around 523,000 extra employed persons in 5 years. Skill level 4 is expected to grow 7.7 per cent (102,300 employed persons), while skill level 2 is expected to grow 6.6 per cent (233,700 employed persons). Overall, the stronger growth of the skill level 1 occupations represents a shift towards a more highly skilled workforce.

Figure 6.7: National Skills Commission projections for skills in 2020 and 2025 in Australia



Source: National Skills Commission Projections, 2021

Assessment of changes in skills base in recent years and prospects

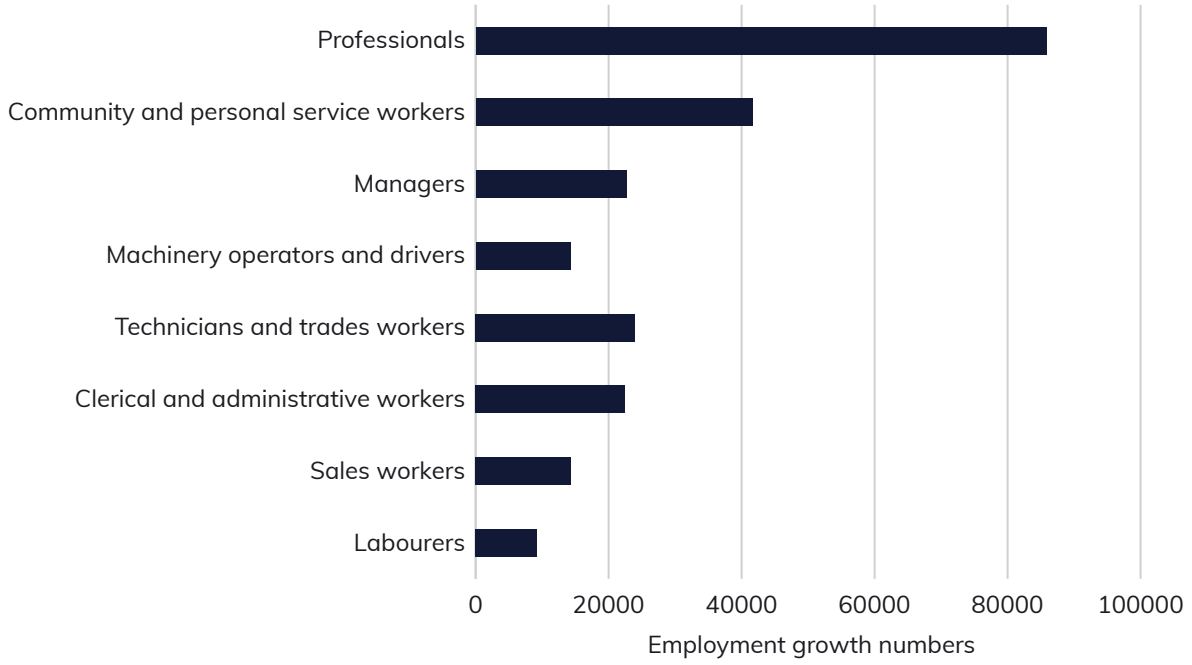
Like national trends, Queensland is becoming more educated, with almost two million workers projected to possess a post-school qualification (Queensland Government 2021a). According to Queensland Government projections, by 2024–2025, more than 2.8 million people are expected to be employed in Queensland, with 280,000 more employed persons expected to be added from 2020–2021 (a 10.9 per cent increase) under the baseline scenario (Queensland Government 2021a). More than 50 per cent of all new workers are projected to be employed in three industries:

- Health care and social assistance;
- Professional, scientific and technical services; and
- Education and training.

The highest growth industries in Queensland match with Australia's projection, previously shown in Figure 5.11. The projections presented in this section all relate to Queensland as a whole. SEQ makes up about two-thirds of the Queensland population. While SEQ currently has a more skilled workforce than Queensland as a whole, it is expected that the broad trends projected for Queensland will also be relevant for SEQ.

By 2024, it is projected that there will be almost 620,000 Professionals employed in Queensland, over 1.5 times more than the next largest major occupation of Technicians and trades workers. Professionals, the largest major occupational grouping, are projected to increase by almost 85,000 people or 16.1 per cent by 2024 (Figure 6.8). Community and personal service workers is projected to grow by 14.3 per cent or almost 42,000 workers. Another major occupation group of Managers is projected to increase by around 23,000 (12.1 per cent) compared to 2019.

Figure 6.8: Projected major occupations employment growth numbers from 2019 to 2024 in Queensland

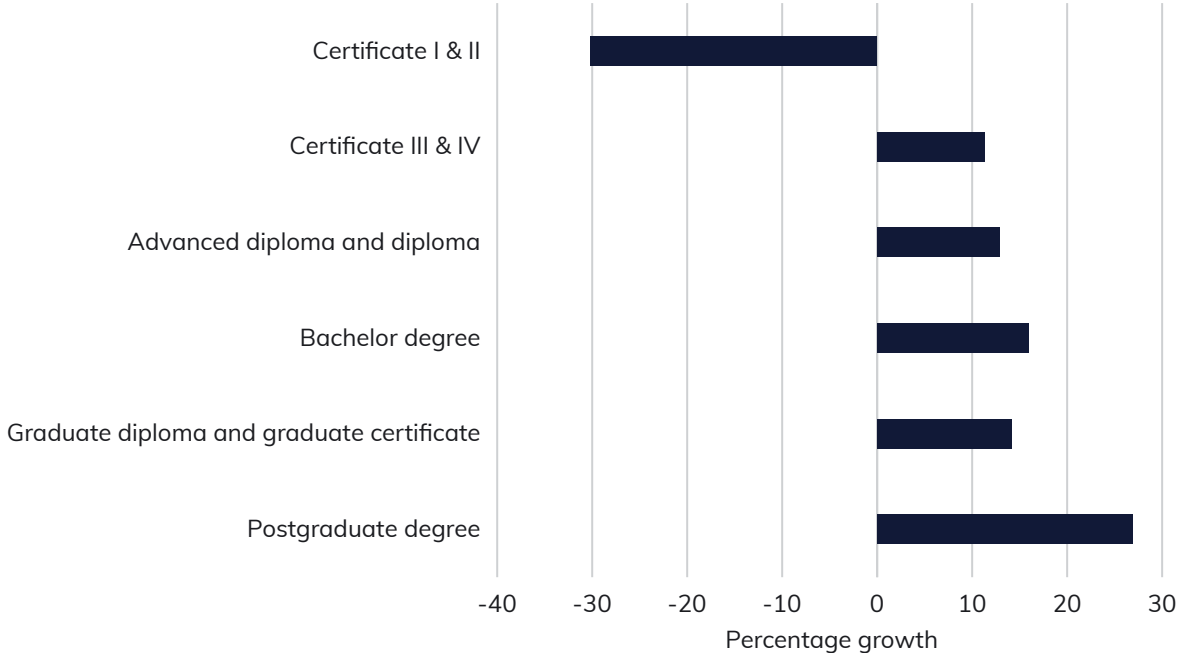


Source: Queensland Government, 2020

The Queensland workforce is becoming more educated, with the number of workers with a post-school qualification expected to increase by 13.9 per cent by 2024. Figure 6.9 shows that the Postgraduate degree qualifications are projected to experience the highest growth at 26.9 per cent, while Bachelor degree qualifications are projected to increase by a more moderate 15.9 per cent. Certificate level I and II qualifications are projected to decline in importance over the next few years.

Table 6.8 shows the qualification levels of the Queensland workforce in 2024–25 compared with 2020–21. It is projected that Queensland workers will become more educated, with 71.7 per cent having a post-school qualification by 2024–25, compared with 69.9 per cent in 2020–21 (Queensland Government 2021a).

Figure 6.9: Projection of Queensland workforce by level of highest qualification from 2019 to 2024



Source: Queensland Government, 2021

Table 6.8: Change in qualification level (per cent) in Queensland workforce from 2020–21 to 2024–25

	Postgraduate degree	Graduate diploma and graduate certificate	Bachelor degree	Advanced diploma and diploma	Certificate III & IV	Certificate I & II	No post-school
2020–21	7.7	2.9	3.0	11.9	24.6	1.1	30.1
2024–25	8.6	3.0	22.4	12.2	24.8	0.8	28.3

Source: Queensland Government, 2021

Nationally, Community and personal service workers is the occupation that is projected to see the fastest rate of growth over the next five years, followed by Professionals and Managers. In Queensland, the Professionals major occupation group is projected to grow at the fastest rate to 2024, followed by Community and personal service workers and Managers.

6.5 Conclusion

This chapter has provided a snapshot of the skilled workforce in SEQ, including by occupational mix and educational attainment. It also discussed future projections of skills at the national and state level.

Inner Brisbane has the most qualified workforce within the SEQ region and has the highest number of Managers and Professionals among all occupations. Within the Rest of SEQ, Gold Coast has the largest increase in Managers and Professionals over the last 5 years, followed by Inner Brisbane.

Professionals are projected to increase by 16.1 per cent in Queensland to 2024, which is the largest increase in any major occupation group. Queensland is also projected to become more educated in future, with a large increase of people with Bachelor's degrees and higher qualifications.

In general, countries or cities with a greater portion of their population with higher educational qualifications and skilled workforces see faster economic growth than countries or cities with less-educated and less-skilled workers in the age of the knowledge economy (Tuli et al. 2019). With technological advancement, cities are becoming more competitive around the world. With a better-qualified and higher-skilled workforce, SEQ will be better prepared to adopt technological advancements.

CHAPTER 7

TRANSPORT

Key points

- Private vehicle was the most frequently used transport mode in South East Queensland (SEQ). About 79 per cent of employed residents travelled to work by private vehicle in 2016, while about 10 per cent used public transport and just below 6 per cent worked at home.
- Amongst employed residents of the Brisbane LGA, 70 per cent journeyed to work by private vehicles and 18 per cent by public transport in 2016. The public transport mode was much less popular in other LGAs. In Lockyer Valley, Scenic Rim, Somerset and Toowoomba LGA, less than 2 per cent of employed residents used public transport.
- Transport mode use varies across the BCARR rings. Only 57 per cent of Inner Brisbane employed residents journeyed to work by private vehicle, whereas about 85 per cent did so in the Rest of SEQ in 2016. About 21 per cent of Inner Brisbane employed residents travelled to work by public transport, but the public transport mode share was just 3 per cent for the Rest of SEQ. The Rest of SEQ had a higher proportion of employed residents who worked at home (7 per cent).
- The Inner Brisbane sub-region had the highest public transport mode use by place of work (36 per cent). Inner Brisbane was the place of work for 73 per cent of all journeys to work by public transport in SEQ in 2016.
- From 2011 to 2016, across the LGAs of SEQ, commuting to work by private vehicle increased by 0.9 per cent points and working at home increased by 0.5 percentage points. The public transport mode share declined by 1.1 percentage points across the SEQ LGAs. The decline was evident in most of the LGAs, but was the most pronounced for the Brisbane LGA (–1.8 percentage points). The active transport mode share fell by 0.3 percentage points across the SEQ LGAs between 2011 and 2016.
- The pandemic has caused SEQ passengers to switch from public transport to private vehicles in recent years.
- During the pandemic, the total passenger trips recorded in the SEQ public transport network dropped and only partially recovered in 2021.
- Work from home uptake by employees in Brisbane was 35 per cent at the peak of the pandemic, compared to 27 per cent for the whole of SEQ. SEQ employees preference for future work from home uptake is well above pre-pandemic uptake (21 per cent and 15 per cent, respectively).

7.1 Introduction

This chapter investigates the use of different travel modes across the decade from 2011 to 2021 in SEQ. Specifically, Australian Bureau of Statistics (ABS) 2011 and 2016 Census of Population and Housing data are used to understand patterns in journey to work by place of residence and place of work. Additionally, changes in transport mode use after 2016 are examined using data from the Queensland government, Google COVID–19 Community Mobility Reports and the University of South Australia iMOVE project (see Vij et al. 2021). Only passenger transport and not freight transport is covered in this chapter.

This chapter first provides a snapshot of transport mode use in 2016. Secondly, changes in transport mode use between 2011 and 2021 are discussed.

7.2 Snapshot of transport mode use in 2016

Place of residence

This section investigates the journey to work data by place of residence for different geographical classifications of SEQ. Box 7.1 provides contextual information about the journey to work data. As shown in Table 7.1, private vehicle mode was the most popular accounting for 79.3 per cent of the SEQ total. About 10 per cent of employed residents journeyed to work by public transport, while 5.7 per cent worked at home and 4.3 per cent used active transport.

Table 7.1: Journey to work by transport modes for usual residents in SEQ in 2016

Modes of transport	Place of usual residence	
	Employed persons	Share of total (per cent)
Private vehicle	1,104,731	79.3
Car (as driver)	998,613	71.7
Car (as passenger)	77,996	5.6
Truck	13,655	1.0
Motorbike/scooter	14,467	1.0
Public transport	139,555	10.0
Train	66,919	4.8
Bus	64,135	4.6
Ferry	3,628	0.3
Tram	2,002	0.1
Taxi	2,871	0.2
Active transport	59,549	4.3
Bicycle	15,712	1.1
Walked only	43,837	3.1
Worked at home	79,530	5.7
Other mode	9,891	0.7
Total	**1,393,256**	**100**

Notes: Total excludes did not go to work, not stated and not applicable responses.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

The car (as driver) mode was the key contributor to the private vehicle mode in the detailed travel modes. Buses and trains are the most frequently used of the public transport modes. Taxis are used less frequently (i.e. about 0.2 per cent mode share).[23] For active transport, bicycle travel was less commonly reported than walk only trips to work.

23 The 2016 Census does not report ride-share services like Uber. Hence, the taxi data in 2016 cannot distinguish taxi use from ride-share service use. In the 2021 Census, taxi and ride-share services together are considered to be the same travel method under the public transport mode. The 2021 census data was released by ABS in October 2022, after the completion of this research project.

Box 7.1 What is the Journey to Work data?

According to the ABS, a journey to work captures individuals' location of usual residence and the location of the workplace along with the mode by which they commuted. As Table 7.2 shows, there are 11 detailed modes of transport in the journey to work data, which is categorised into the following 5 modes of transport for the analysis of this chapter.

Table 7.2: Modes of transport

Modes of transport	Detailed modes of transport
Private Vehicle	Car (as driver), Car (as passenger), Truck and Motorbike/scooter
Public Transport	Train, Bus, Ferry, Tram and Taxi
Active Transport	Bicycle and Walk only
Worked at Home	N/A
Other Mode	N/A

To calculate each of the 5 transport mode shares, the total trips recorded by these 5 modes are computed first. Next, each mode share is equal to its recorded trips divided by the total recorded trips of these 5 modes. For example, if the total trips made by these 5 transport modes were 100 among which 10 were made by vehicles in 2016, the vehicle mode share was therefore 10 per cent. Hence, the total of the 5 mode shares is always equal to 100 per cent in the analysis of this chapter, as 'did not go to work' and 'not applicable' responses are excluded.

Individuals can report that they used multiple transport modes when responding to the census (e.g. car as driver and train). Where multiple methods of work are used, ABS has used a priority hierarchy to make assumptions for the 'main mode'. The priority hierarchy underlying the data in this chapter is:

- Train
- Bus
- Ferry
- Tram
- Taxi
- Vehicle driver
- Vehicle passenger
- Truck
- Motorbike or motor scooter
- Bicycle
- Other mode (not elsewhere specified
- Walked only

For example, if a person selected, 'Train' and 'Car driver', their mode of transport would be coded to 'Train' for Mode of travel to work (15 modes). 'Train' forms part of BCARR's 'Public transport' category.

Transport modes by place of residence in 2016: LGAs

Table 7.3 summarises transport mode shares by LGAs of usual residence in SEQ in 2016. As shown, use of the 5 transport modes varies significantly among the 12 LGAs. For example, 69.5 per cent of residents in Brisbane LGA used a private vehicle to journey to work. This was the lowest of all the LGAs, and was considerably lower than the 12 LGAs total of 79.1 per cent. In Ipswich and Logan, about 86 per cent of employed residents travelled to work by private vehicle.

Use of public transport was relatively uncommon in the outlying LGAs. In Lockyer Valley, Scenic Rim, Somerset and Toowoomba, less than 2 per cent of employed residents used public transport for the journey to work. In contrast, about 18 per cent of Brisbane LGA employed residents travelled to work by public transport. In the outer suburban LGAs of Ipswich, Logan, Redland and Moreton Bay, about 5 per cent of employed residents used public transport. These results show a pattern whereby public transport use tends to decline in line with the distance of the LGA from central Brisbane.

Among the 12 LGAs, the Brisbane LGA had the highest share of employed residents who travelled to work by active transport in 2016 (6.6 per cent). About 4.6 per cent of Toowoomba's employed residents used active transport to travel to work, which was slightly above the 12 LGAs total of 4.3 per cent. Over 10 per cent of Noosa and Scenic Rim employed residents worked at home on the 2016 census day. Their work at home mode share was higher than the 12 LGA total of 5.8 per cent.

Table 7.3: Transport mode share for the journey to work by LGAs of residence in SEQ in 2016

LGAs	Private vehicle	Public transport	Active transport	Worked at home	Other mode
			(per cent)		
Brisbane	69.5	18.0	6.6	5.3	0.6
Gold Coast	84.0	4.9	3.8	6.6	0.8
Ipswich	86.3	7.9	1.9	3.3	0.6
Lockyer Valley	88.5	1.3	3.0	6.6	0.6
Logan	87.0	6.7	1.5	4.2	0.6
Moreton Bay	83.0	9.0	2.2	5.2	0.7
Noosa	79.9	2.7	4.4	11.8	1.3
Redland	83.6	8.0	2.1	5.6	0.7
Scenic Rim	82.7	1.5	4.2	10.7	0.9
Somerset	83.7	2.0	4.0	9.5	0.8
Sunshine Coast	84.5	2.8	3.7	8.1	1.0
Toowoomba	87.3	1.0	4.6	6.4	0.7
12 LGAs Total	79.1	10.1	4.3	5.8	0.7

Note: The 12 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. Total excludes did not go to work, not stated and not applicable responses.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Transport modes by place of residence in 2016: BCARR rings and sub-regions

Several noticeable patterns show in Table 7.4 and Figure 7.1. The first pattern was that private vehicle use increased with distance from Inner Brisbane. Only 57.4 per cent of Inner Brisbane residents used private vehicles to journey to work compared to 84.8 per cent of Rest of SEQ residents. About 73.7 per cent of Middle Brisbane residents commuted to work by private vehicles. In Outer Brisbane, it was 84.9 per cent. Within these two rings, the Middle East sub-region and Ipswich sub-region had private vehicle mode share over 78 per cent. The second pattern was that public transport use decreased with distance from Inner Brisbane. About 21 per cent of Inner Brisbane residents travelled to work by public transport, but the public transport mode share dropped to 3.4 per cent in the Rest of SEQ. The third pattern was that the active transport mode share was much higher in Inner Brisbane (14.5 per cent) than elsewhere, and was particularly low in Outer Brisbane (1.9 per cent). The last pattern was that the worked-at-home mode share was highest in the Rest of SEQ (7.1 per cent), reflecting the high rate of working from home in Noosa, Scenic Rim and Somerset.

Table 7.4: Transport mode share for the journey to work by sub-regions of residence in SEQ in 2016

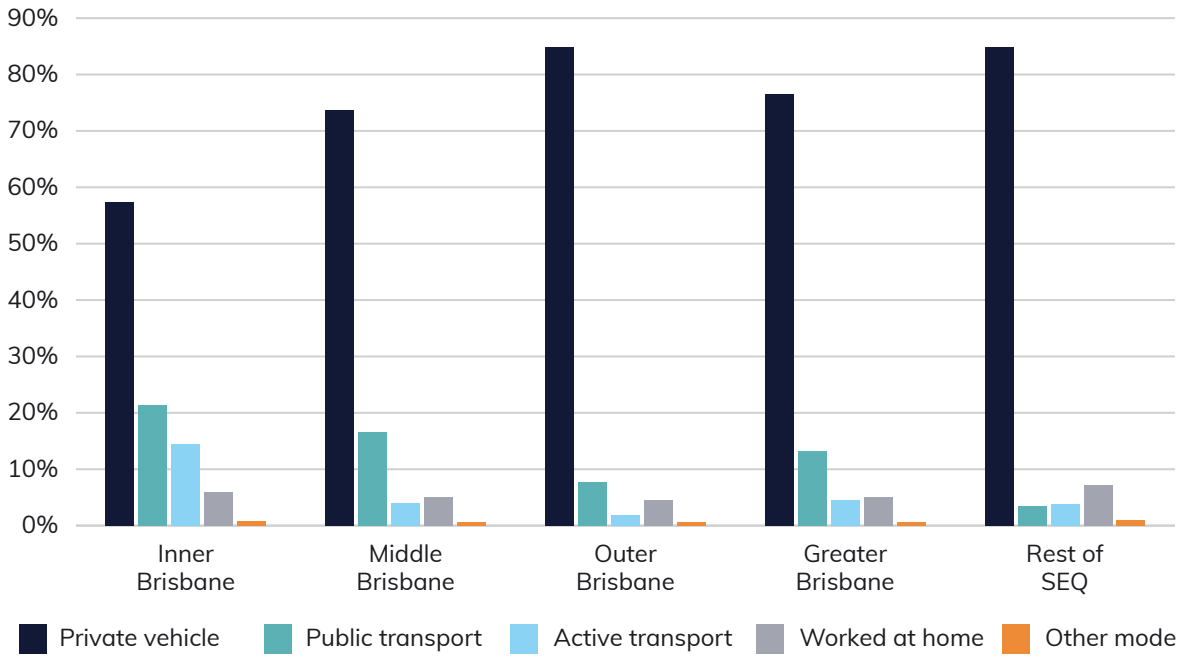
BCARR rings/sub-regions	Private vehicle	Public transport	Active transport	Worked at home	Other mode
			(per cent)		
INNER Brisbane	57.4	21.4	14.5	5.9	0.8
MIDDLE Brisbane – Total	73.7	16.6	4.0	5.1	0.6
Middle East	78.8	12.1	2.7	5.7	0.7
Middle North	74.4	17.3	3.3	4.4	0.6
Middle South	73.0	17.6	4.1	4.8	0.5
Middle West	72.5	15.9	4.9	6.1	0.6
OUTER Brisbane – Total	84.9	7.8	1.9	4.6	0.6
Ipswich	86.6	7.6	1.9	3.3	0.5
Redland	83.8	7.9	2.1	5.6	0.7
Logan	87.2	6.6	1.5	4.2	0.6
Moreton Bay	83.1	8.8	2.2	5.2	0.7
GREATER BRISBANE – Total	76.6	13.3	4.5	5.0	0.6
Rest of SEQ-Total	84.8	3.4	3.8	7.1	0.9
Gold Coast	84.1	4.7	3.8	6.6	0.8
Sunshine Coast	84.7	2.6	3.7	8.0	1.0
Noosa	79.9	2.5	4.3	12.0	1.3
Toowoomba (urban part)	89.7	1.0	4.3	4.4	0.6
Scenic Rim	82.7	1.5	4.2	10.8	0.8
Lockyer Valley	88.7	1.1	3.0	6.6	0.6
Somerset	83.8	1.9	3.9	9.5	0.8
South East Queensland – Total	79.3	10.0	4.3	5.7	0.7

Note: The SEQ total differs from the 12 LGA total in the preceding table, which includes the whole of Toowoomba LGA. This table includes only the urban parts of Toowoomba LGA. Total excludes did not go to work, not stated and not applicable responses.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Overall, the share of private vehicle use in the whole of SEQ was higher than in Greater Brisbane (79.3 versus 76.6 per cent). However, the public transport mode share in the former was lower than in the latter (10.0 versus 13.3 per cent).

Figure 7.1: Transport mode share for journey to work by BCARR rings of residence for SEQ in 2016

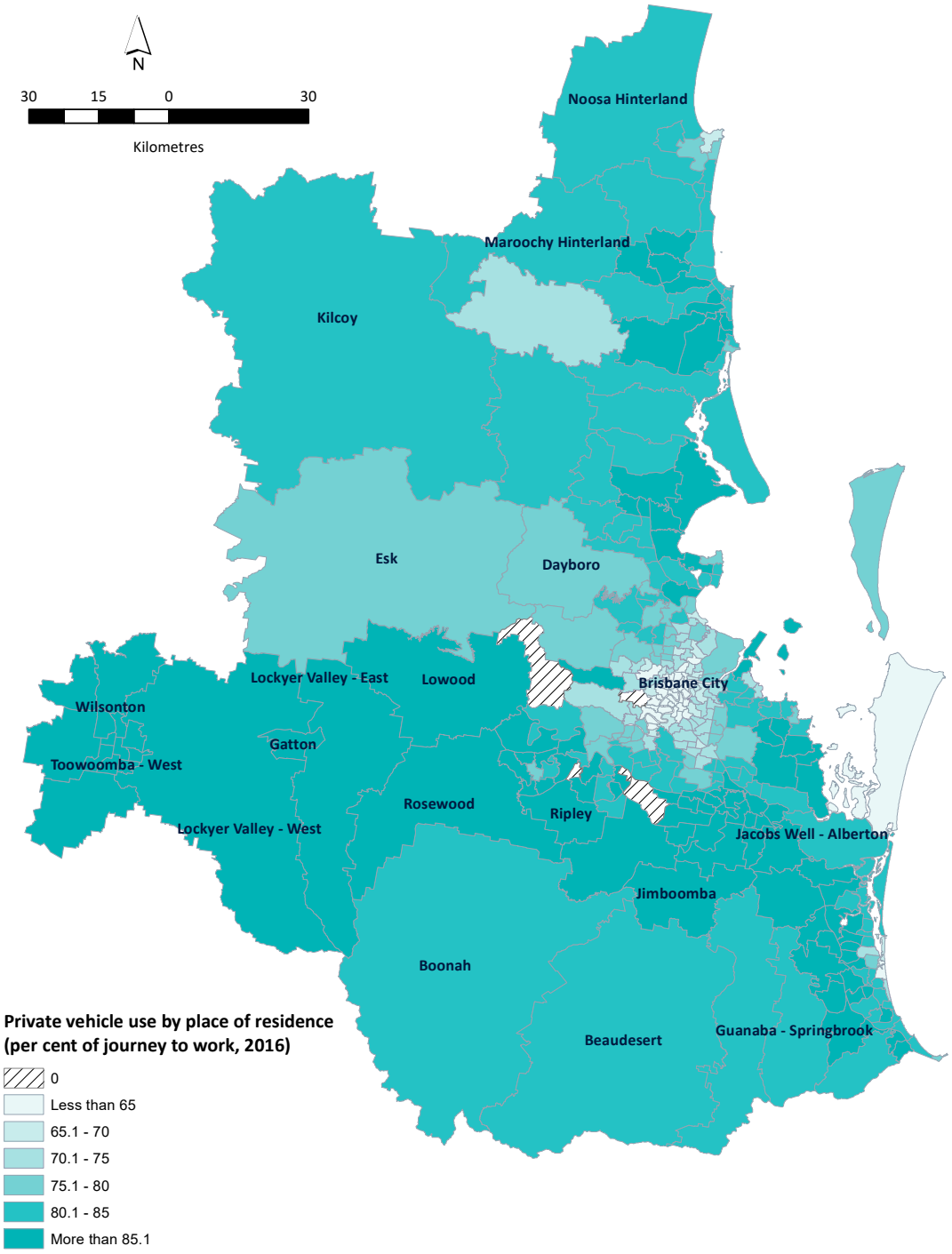


Source: BCARR analysis of ABS Census of Population and Housing, 2016

Transport modes by place of residence in 2016: SA2s

Figure 7.2 shows private vehicle use varied significantly across SA2s in SEQ in 2016. Less than 65 per cent of employed residents in the SA2s of the Inner Brisbane used a private vehicle to get to work. However, over 90 per cent of employed residents in some of the SA2s from the Rest of SEQ did so. As Table 7.5 shows, the private vehicle mode share in Spring Hill in Inner Brisbane was only 29.4 per cent, but, it was 93.7 per cent in Gowrie, which is part of the Rest of SEQ.

Figure 7.2: Private vehicle mode share for the journey to work by SA2s of residence in SEQ in 2016



Note: The values of zero reflect a zero count of employed persons, rather than a genuine zero per cent mode share.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

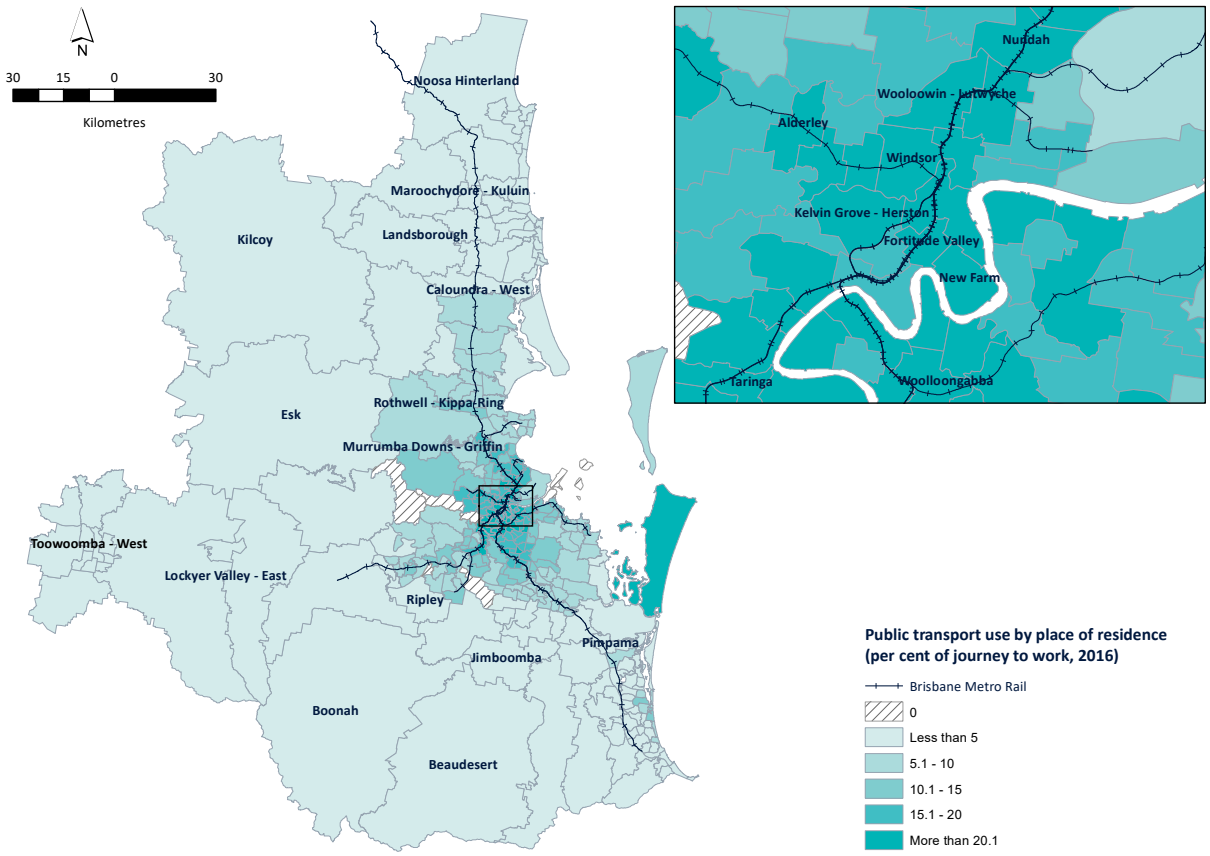
Table 7.5: SA2s of residence with the largest and smallest private vehicle mode share for the journey to work for SEQ in 2016

SA2s	BCARR rings/sub-regions	Private vehicle mode share (per cent)
Top 5 largest		
Gowrie	Toowoomba	93.7
Toowoomba – West	Toowoomba	92.5
Wilsonton	Toowoomba	91.9
Gatton	Lockyer Valley	91.2
Leichhardt – One Mile	Brisbane Outer – Ipswich	91.1
Top 5 smallest		
Spring Hill	Inner Brisbane	29.4
Brisbane City	Inner Brisbane	29.7
Fortitude Valley	Inner Brisbane	35.2
South Brisbane	Inner Brisbane	37.5
West End	Inner Brisbane	47.1

Note: Each of these SA2s above had over 100 residents individually.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 7.3 shows that public transport use is centralised in Brisbane's inner and middle rings. Examples include Woolloongabba and Nundah, which both have public transport mode shares of over 25 per cent as Table 7.6 shows. These SA2s are not far away from the Brisbane Central Business District (CBD). The Outer Brisbane SA2 of Redland Islands is an exception to the pattern, with a very high public transport mode share due to the use of ferries. Public transport is generally used much less in the Rest of SEQ. For example, Cambooya-Wyreema in the Toowoomba sub-region has a public transport mode share of less than 1 per cent.

Figure 7.3: Public transport mode share for the journey to work by SA2s of residence in SEQ in 2016



Noted: The values of zero reflects a small count of employed persons, rather than a genuine zero per cent mode share.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Table 7.6: SA2s of residence with the largest and smallest public transport mode shares for the journey to work in SEQ in 2016

SA2s	BCARR sub-region	Public transport mode share (per cent)
Top 5 largest		
Redland Islands	Outer Brisbane – Redland	33.3
Nundah	Middle Brisbane – North	28.3
Woolloongabba	Middle Brisbane – South	27.9
Wooloowin – Lutwyche	Inner Brisbane	27.2
Taringa	Middle Brisbane – West	26.9
Top 5 smallest		
Cambooya – Wyreema	Toowoomba	0.4
Lockyer Valley – West	Lockyer Valley	0.4
Toowoomba – East	Toowoomba	0.6
Toowoomba – West	Toowoomba	0.7
Gowrie	Toowoomba	0.8

Note: Each of these SA2s above had over 100 residents individually.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Analysis by place of work

This section uses the place of work data from the 2016 Census of Population and Housing to investigate the transport mode shares in SEQ. As shown in Table 7.7, there were over 1.3 million employed persons with an identifiable place of work in SEQ.[24] Over 1 million of them used private vehicles to travel to work (78.8 per cent). The car (as driver) mode represented over 71 per cent of all recorded journeys. The private vehicle mode played a dominant role in the journey to work by place of work (and residence). However, the private vehicle mode share by place of work was a little smaller than by place of residence. This was due to the difference in the spatial distribution of the usual resident population and the distribution of jobs with a fixed place of work in SEQ. Employed SEQ residents with no fixed address of work are excluded from the place of work total, but have a very high rate of private vehicle use.

Public transport consisted of about 10 per cent of total recorded trips. In this mode, trains and buses were used most frequently. The worked-at-home mode accounted for about 6 per cent of the total. Fewer commuters used the active transport mode (4.4 per cent) such as bicycles (1.2 per cent) and walk-only (3.2 per cent).

Table 7.7: Journey to work by transport mode for the place of work in SEQ in 2016

Modes of transport	Place of work	
	Employed persons	Share of total (per cent)
Private vehicle	1,041,482	78.8
Car (as driver)	943,743	71.4
Car (as passenger)	73,443	5.6
Truck	10,111	0.8
Motorbike/scooter	14,185	1.1
Public transport	137,248	10.4
Train	67,032	5.1
Bus	61,475	4.7
Ferry	3,806	0.3
Tram	2,057	0.2
Taxi	2,878	0.2
Active transport	57,440	4.4
Bicycle	15,544	1.2
Walked only	41,896	3.2
Worked at home	77,704	5.9
Other mode	7,353	0.6
Total	**1,321,227**	**100.0**

Note: Date is for employed persons aged 15 years and over. Total excludes did not go to work, not stated and not applicable responses. Total also excludes those who reported no fixed work address.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

24 The total of 1.32 million is lower than the 1.39 million total in Table 7.1 due to about 5 per cent of employed persons reporting they had no fixed address of work. This can include occupations such as truck drivers, couriers, mobile salespeople, construction workers etc.

Transport modes by place of work in 2016: LGAs

Patterns in the place of work data were similar to the place of residence data at the LGA level, although there are some key differences across the 5 travel modes and LGAs. While private vehicle use increased gradually with distance from Brisbane, its use in place of work was smaller than in place of residence. For example, the private vehicle mode share by place of work in Scenic Rim and Somerset were 78.6 and 79.8 per cent, respectively, which were smaller than their shares by place of residence (See Table 7.8). This is not surprising given the different distribution of usual residents and employment. People residing in these LGAs were likely to travel to their workplace in Brisbane or its surrounding areas by private vehicles.

Public transport use by place of work decreased steadily with distance from Brisbane. In the Brisbane LGA the public transport mode share was 18.8 per cent (which was the highest among all the LGAs). However, the Lockyer Valley, Scenic Rim, Somerset and Toowoomba LGAs had less than 1 per cent public transport use. This reflects the focus of the public transport network being to move people in and out of the CBD, with limited public transport services available in outlying and rural areas.

The share of active transport and worked-at-home mode by place of work varied significantly across all the LGAs. In Brisbane, Scenic Rim and Somerset, their active transport use shares were 5.3, 6.1 and 5.5 per cent, individually. However, Logan had less than 2.5 per cent active transport. The worked-at-home mode shares for Scenic Rim and Somerset were 13.9 and 13.4 per cent respectively. However, Brisbane's worked-at-home share was only 4.4 per cent, which was the lowest among all the LGAs.

Table 7.8: Transport mode share for the journey to work by LGA of employment in SEQ in 2016

LGAs	Private vehicle	Public transport	Active transport	Worked at home	Other mode
			(per cent)		
Brisbane	71.0	18.8	5.3	4.4	0.5
Gold Coast	85.1	3.4	3.9	6.9	0.6
Ipswich	90.7	2.3	2.3	4.2	0.5
Lockyer Valley	85.9	0.6	3.9	8.9	0.7
Logan	89.2	2.6	1.9	5.8	0.5
Moreton Bay	86.2	2.3	3.0	7.9	0.6
Noosa	80.8	2.1	4.2	12.1	0.8
Redland	83.9	3.6	3.1	8.8	0.5
Scenic Rim	78.6	0.6	6.1	13.9	0.9
Somerset	79.8	0.5	5.5	13.4	0.8
Sunshine Coast	85.0	1.6	3.9	8.9	0.6
Toowoomba	87.5	0.8	4.6	6.4	0.6
12 LGAs Total	**78.8**	**10.3**	**4.4**	**6.0**	**0.6**

Note: The 12 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. Total excludes did not go to work, not stated and not applicable responses. Total also excludes those who reported no fixed work address.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Transport modes for the place of work in 2016: BCARR rings and sub-regions

Table 7.9 and Figure 7.4 present transport mode shares by place of work for sub-regions and BCARR rings. Private vehicle mode use in Inner Brisbane was 52.6 per cent, whereas Outer Brisbane and the Rest of SEQ were above 80.0 per cent. Ipswich and Toowoomba (urban part) sub-regions had private vehicle mode shares of 90 per cent or above. Public transport use was concentrated in Inner Brisbane. Additionally, public transport use for Inner Brisbane as a place of work was larger than as the place of residence (35.7 versus 21.4 per cent). Inner Brisbane's active transport mode share was the largest (7.7 per cent) whereas its work at home mode share was the smallest (3.5 per cent). In Greater Brisbane, the public transport and active transport mode share was 13.9 and 4.5 per cent respectively, which were higher than relevant mode shares for SEQ.

Inner Brisbane was the place of work for 73 per cent of all journeys to work by public transport in SEQ in 2016. This highlights the radial nature of the public transport network (particularly the rail network), which is focused on transporting commuters to and from the city centre, and is much less useful for cross-suburban travel.

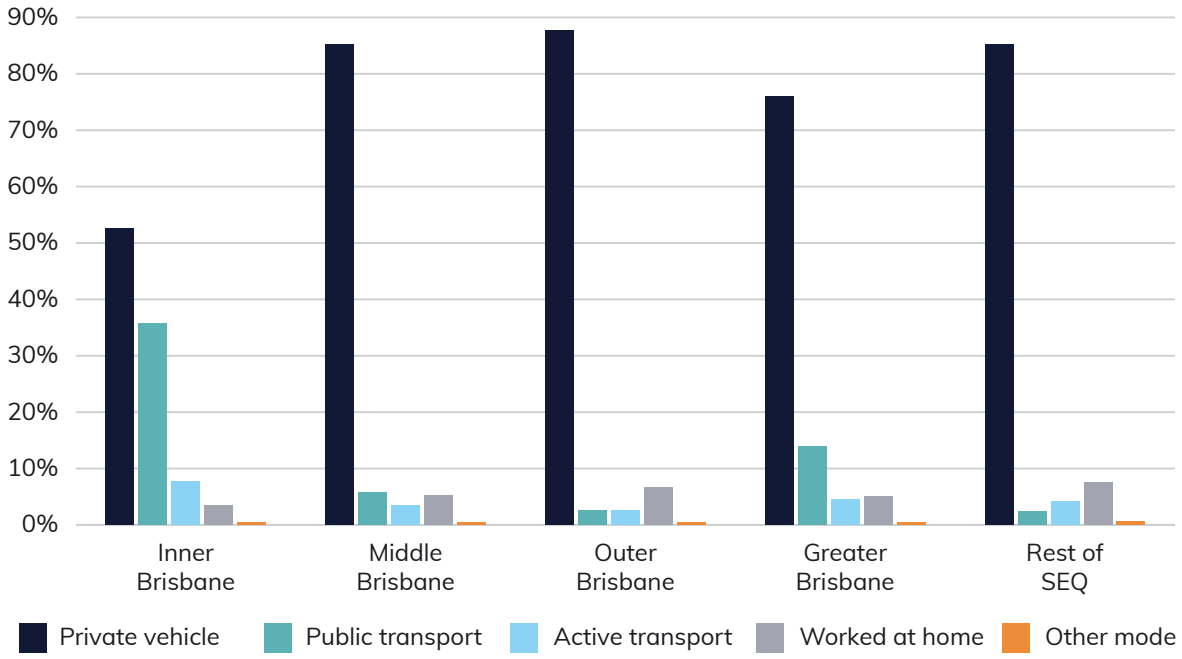
Table 7.9: Transport mode share for the journey to work by sub-regions of employment in SEQ in 2016

BCARR rings/sub-regions	Private vehicle	Public transport	Active transport	Worked at home	Other mode
			(per cent)		
INNER Brisbane	52.6	35.7	7.7	3.5	0.5
MIDDLE Brisbane-Total	85.2	5.7	3.4	5.2	0.5
Middle East	89.5	2.8	2.1	5.0	0.5
Middle North	88.1	4.8	2.7	3.9	0.5
Middle South	85.2	6.2	3.1	5.0	0.5
Middle West	80.0	7.0	5.2	7.1	0.6
OUTER Brisbane – Total	87.7	2.6	2.6	6.7	0.5
Ipswich	90.7	2.2	2.3	4.2	0.5
Redland	83.9	3.6	3.1	8.8	0.6
Logan	89.2	2.6	1.9	5.8	0.5
Moreton Bay	86.1	2.3	3.1	7.9	0.6
GREATER BRISBANE-Total	76.0	13.9	4.5	5.1	0.5
Rest of SEQ – Total	85.3	2.4	4.1	7.6	0.6
Gold Coast	85.1	3.4	3.9	6.9	0.6
Sunshine Coast	85.1	1.6	3.9	8.8	0.6
Noosa	80.1	2.0	4.3	12.8	0.8
Toowoomba (urban part)	90.0	0.9	4.2	4.5	0.5
Scenic Rim	78.5	0.6	6.1	13.9	0.9
Lockyer Valley	85.9	0.6	4.0	8.9	0.6
Somerset	79.8	0.5	5.7	13.4	0.7
South East Queensland – Total	78.8	10.4	4.3	5.9	0.6

Note: Data is for employed persons aged 15 years and over. The SEQ total differs from the 12 LGA total in the preceding table, which includes the whole of Toowoomba LGA. This table includes only the urban parts of Toowoomba LGA. Total excludes did not go to work, not stated and not applicable responses. Total also excludes those who reported no fixed work address.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 7.4: Transport mode share for the journey to work by BCARR rings of work for SEQ in 2016

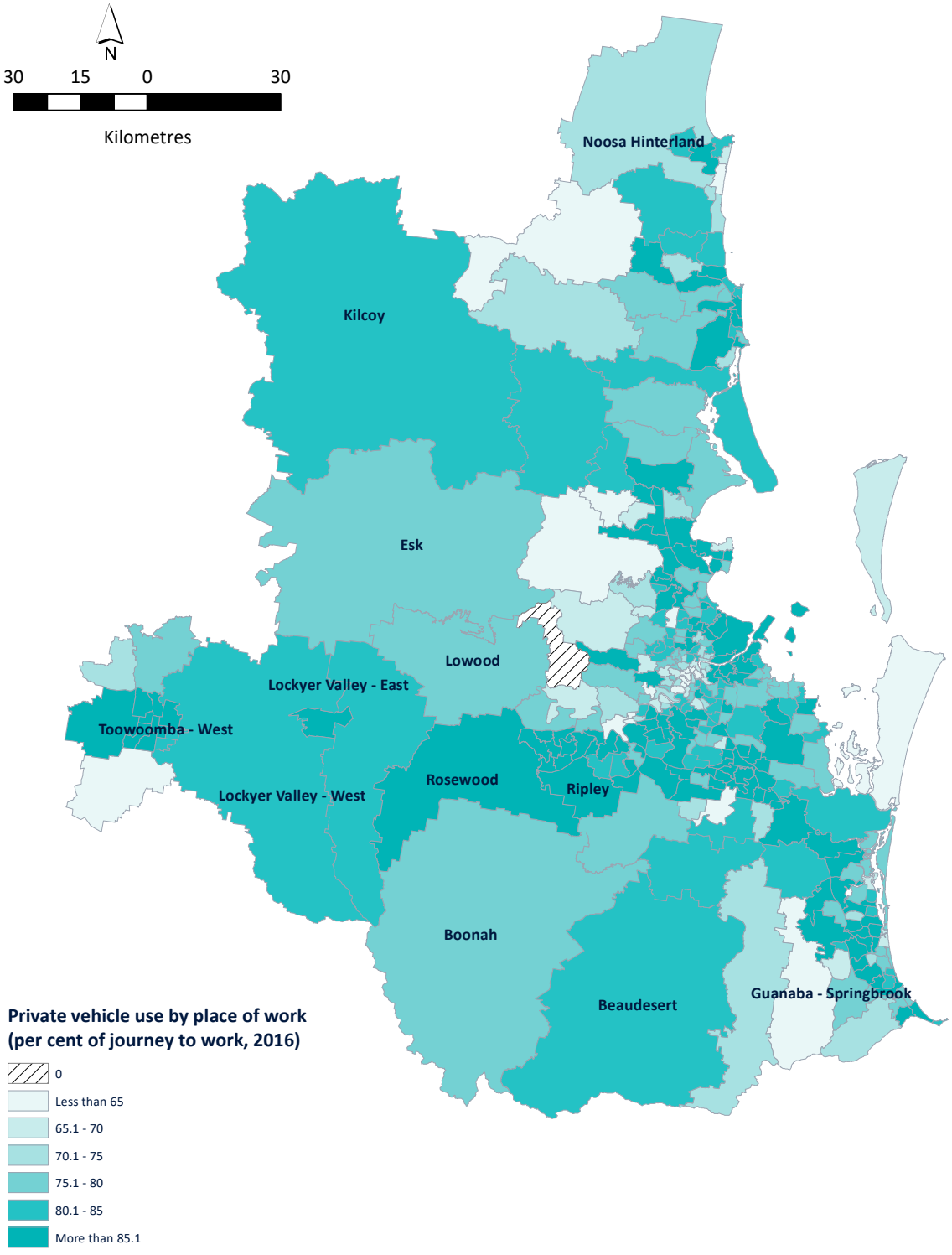


Source: BCARR analysis of 2016 Census of Population and Housing.

Transport modes for the place of work in 2016: SA2s

Figure 7.5 shows that the private vehicle mode shares were relatively low in Brisbane City SA2 and its nearby SA2s. Table 7.10 shows that private vehicle mode shares in Fortitude Valley and Brisbane City were only 53.1 and 29.1 per cent, respectively. SA2s that were more distant from Brisbane City tended to have a higher private vehicle mode share. These SA2s included, but were not limited to, New Chum, Carole Park and Riverview, which each had a private vehicle mode share of over 94.0 per cent. Riverview has a mix of residential and industry land use, with the majority of its jobs in Manufacturing. New Chum and Carole Park are industrial areas, with virtually no residents. Workers in industrial areas tend to be highly reliant on private vehicles. This may be because private vehicles are needed to carry tools and equipment, access their place of work and travel to other locations during the course of their work day. Industrial areas also tend to have limited public transport provision.

Figure 7.5: Vehicle mode share for journey to work by SA2s of employment in SEQ in 2016



Note: The values of zero count of employed persons, rather than a genuine zero per cent mode share.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Table 7.10: SA2s of employment with the largest and smallest private vehicle mode share for the journey to work in SEQ in 2016

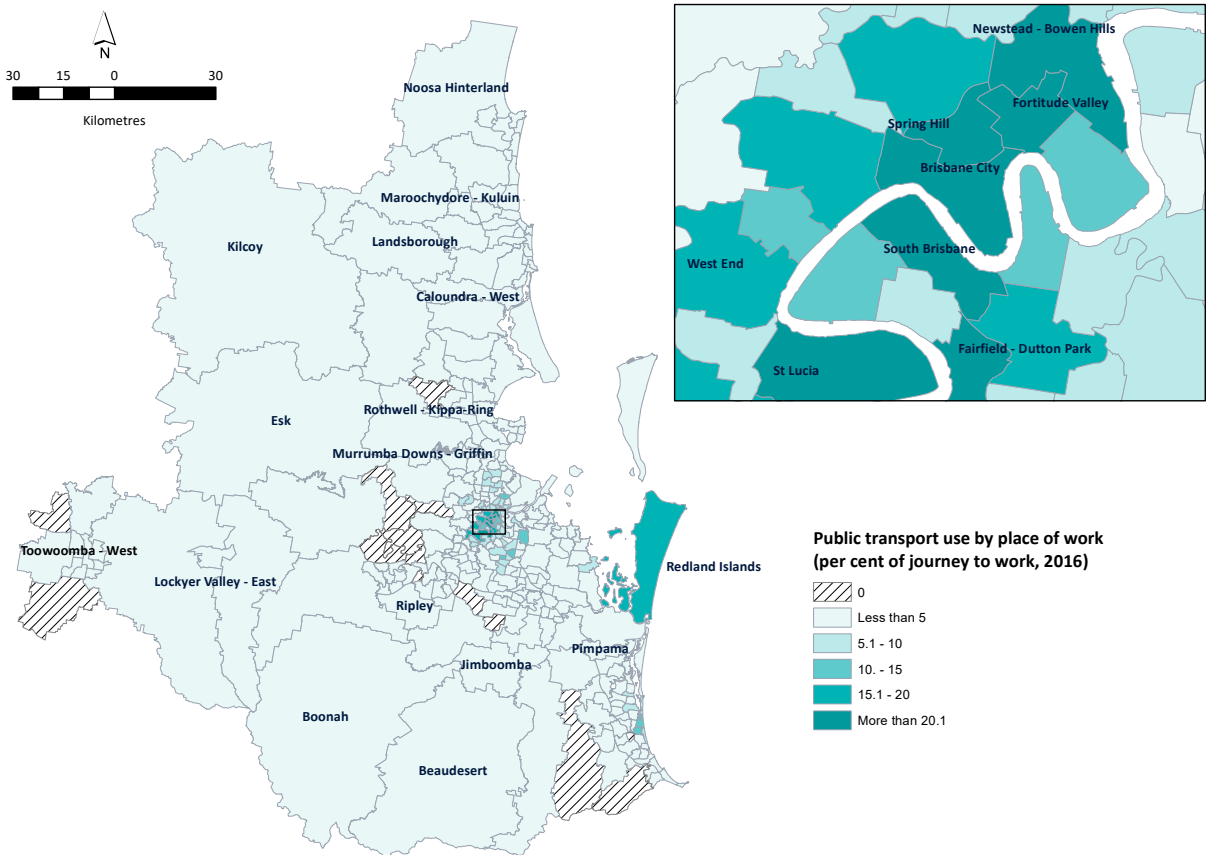
SA2s	BCARR sub-region	Private vehicle mode share (per cent)
Top 5 largest		
New Chum	Brisbane Outer-Ipswich	100.0
Carole Park	Brisbane Outer-Ipswich	97.9
Riverview	Brisbane Outer-Ipswich	96.0
Brisbane Port – Lytton	Middle Brisbane- East	95.9
Wacol	Middle Brisbane-West	95.9
Top 5 smallest		
Brisbane City	Inner Brisbane	29.1
Westlake	Middle Brisbane-West	40.7
St Lucia	Middle Brisbane-West	50.9
Fortitude Valley	Inner Brisbane	53.1
Upper Caboolture	Outer Brisbane-Moreton Bay	53.5

Note: Date is for employed persons aged 15 years and over and each of these SA2s had over 100 workers individually.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 7.6 illustrates the public transport mode share by SA2s of employment in SEQ in 2016. The patterns here were opposite to the private vehicle mode use discussed previously. Specifically, public transport use was high in Brisbane City (59.8 per cent) and its nearby suburbs. The high public transport mode share of St Lucia, Fairfield and Dutton Park reflects the presence of the University of Queensland and frequent public transport services. SA2s from the Rest of SEQ and Outer Brisbane tended to record very low public transport use. Some of the SA2s with the lowest public transport use included Highfields, Esk, North Toowoomba – Harlaxton, Lockyer Valley–West and Boonah.[25]

25 Each of them has over 100 employed persons working there in 2016.

Figure 7.6: Public transport mode share for the journey to work by SA2s in employment of SEQ in 2016



Note: The value of zero may reflect a small count of employed persons, rather than a genuine zero per cent mode share.
Source: 2016 Census of Population and Housing.

Table 7.11: SA2s of employment with the largest and smallest public transport mode share for the journey to work in SEQ in 2016

SA2s	BCARR sub-region	Public transport mode share (per cent)
Top 5 largest		
Brisbane City	Inner Brisbane	59.8
Fortitude Valley	Inner Brisbane	34.7
South Brisbane	Inner Brisbane	31.1
Spring Hill	Inner Brisbane	30.0
St Lucia	Middle Brisbane- West	28.9
Top 5 smallest		
Highfields	Toowoomba	0.1
Esk	Somerset	0.3
North Toowoomba – Harlaxton	Toowoomba	0.3
Lockyer Valley – West	Lockyer Valley	0.3
Boonah	Scenic Rim	0.3

Note: Date is for employed persons aged 15 years and over and each of these SA2s above had over 100 workers individually.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

7.3 Changes in transport mode use over time in SEQ

This section aims to analyse changes in transport mode use over time in SEQ. Firstly, 2011 and 2016 census data were used to capture mode use change in this five-year period. Secondly, data between 2016 and 2021 from different sources were employed to investigate the most recent mode use changes.

Change of transport modes used from 2011 to 2016

Table 7.12 shows the change of mode use shares for LGAs from 2011 to 2016 on a place of usual residence basis. Please note that at the time of the 2011 census, there was not a separate Noosa LGA, and the Sunshine Coast LGA boundary encompassed what is now the Noosa LGA. Noosa Shire Council was re-established as a local government on 1 January 2014. In the remainder of this chapter, data is reported for the combination of Sunshine Coast and Noosa (i.e. the 2011 Sunshine Coast LGA boundary) to support like-for-like comparisons of changes between 2011 and 2016. Table 7.12 shows that for the SEQ LGAs as a whole there was a significant shift away from public transport between 2011 and 2016 (–1.1 percentage points) and a significant shift towards private vehicles (0.9 percentage points).

Table 7.12 documents four major differences in mode use between 2011 and 2016 at the LGA scale. Firstly, private vehicle use increased in all LGAs except Gold Coast during this period (by between 0.2 and 1.5 percentage points). Secondly, public transport use decreased in all LGAs except Sunshine Coast-Noosa and Gold Coast. Thirdly, active transport use reduced slightly across all LGAs. One exception was Brisbane where its use remained constant. Fourthly, most of the LGAs experienced an increase in the worked-at-home mode share whereas Lockyer Valley and Scenic Rim recorded a modest reduction. In Somerset, the worked-at-home mode share did not change.

Table 7.12: Change in modes share for the journey to work by LGAs of residence in SEQ from 2011–2016

LGAs	Private vehicle	Public transport	Active transport	Worked at home	Other mode
	(percentage point)				
Brisbane	1.0	–1.8	0.0	0.7	0.1
Gold Coast	–0.4	0.2	–0.4	0.5	0.1
Ipswich	1.0	–0.8	–0.5	0.3	0.0
Lockyer Valley	1.4	–0.4	–0.3	–0.6	–0.1
Logan	1.3	–1.4	–0.4	0.4	0.0
Moreton Bay	1.5	–1.7	–0.4	0.5	0.1
Redland	0.9	–1.0	–0.2	0.4	0.0
Scenic Rim	1.5	–0.2	–0.7	–0.4	–0.1
Somerset	0.8	–0.1	–0.7	0.0	–0.1
Sunshine Coast & Noosa	0.2	0.1	–0.8	0.4	0.1
Toowoomba	0.7	–0.1	–0.8	0.2	0.0
11 LGAs Total	**0.9**	**–1.1**	**–0.3**	**0.5**	**0.1**

Note: The 11 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. The Sunshine Coast and Noosa LGAs are combined in the table, to reflect census data only being available on a combined basis for 2011.

Source: BCARR analysis of ABS Census of Population and Housing, 2011 and 2016.

Change of transport mode use from 2016 to 2021

Table 7.13 presents the change in mode use by total passenger kilometres travelled for the Brisbane GCCSA from 2016 to 2021. There are 6 transport modes in the dataset, with active transport excluded – these transport modes are passenger cars, commercial vehicles, motorcycles, heavy rail, bus and ferry. In the Brisbane GCCSA, transport use reduced dramatically in 2019–2020, reflecting the impact of COVID–19 and associated lockdowns and travel restrictions. As shown, passenger cars, commercial vehicles and heavy rail use increased from 2016 to 2019. When the pandemic started in 2019–2020, passenger car, commercial vehicles, heavy rail and bus saw reduced activity. Among them, passenger car use experienced the most significant drop. In 2020–2021, passenger cars and commercial vehicles use improved whereas heavy rail and bus use continued to decline. The cumulative change from 2019 to 2021 for the passenger cars mode was positive, whereas heavy rail and bus modes experienced a negative cumulative change. Hence, the COVID–19 pandemic caused passengers to switch from public transport to private vehicles.

Table 7.13: Change from current to the previous financial year in transport mode use by total passenger kilometres travelled in Brisbane from 2016–2021

Financial year	Passenger cars	Commercial vehicles	Motor cycles	Heavy Rail	Bus	Ferry
	(billion passenger kilometres)					
Change relative to previous financial year						
2016–17	0.2	0.2	0.0	0.0	0.0	0.0
2017–18	0.2	0.1	0.0	0.0	0.0	0.0
2018–19	0.2	0.1	0.0	0.1	0.0	0.0
2019–20	–1.1	–0.1	0.0	–0.2	–0.3	0.0
2020–21	1.8	0.1	0.0	–0.2	–0.2	0.0
Cumulative change						
2019–2021	0.7	0.0	0.0	–0.4	–0.5	0.0
2016–2021	1.3	0.4	0.0	–0.3	–0.5	0.0

Source: BCARR analysis of Table 5.3c of the Australian Infrastructure and Transport Statistics Yearbook 2021 from the Bureau of Infrastructure, Transport and Regional Economics (2021b).

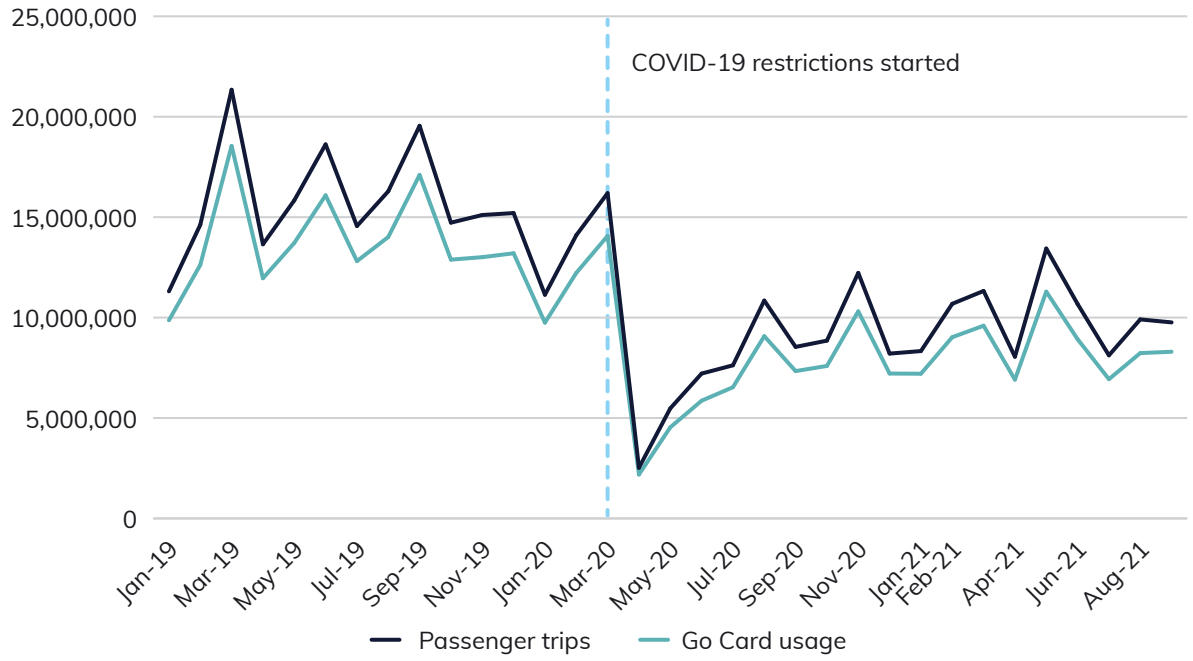
To understand the reduction of public transport use in the whole of SEQ during the pandemic, the number of monthly passenger trips made and Go card usage were analysed.[26] Figure 7.7 shows that passenger trips and Go card usage reduced dramatically after restrictions were imposed on border movements and business operations in March 2020.[27] Although they improved slowly from May 2020 to September 2021, as restrictions were eased, they did not reach the pre-restriction level.

26 This data recorded by TransLink's South East Queensland public transport network, which can be download from the Department of Transport and Main Roads. Go Card trips record the usage of bus, train, ferry and light rail.

27 Restricted entry into Queensland from other states was introduced from 26 March. Some non-essential businesses were required to stop operating or operate under new restrictions from 23 March, including sporting facilities, licensed premises, churches, restaurants, cafés and fast-food outlets. It was also announced on 26 March that state schools would be student-free until the end of term 1 (which was subsequently extended). Stay at home restrictions were introduced in Queensland on 2 April 2020. Further details available from Storen and Corrigan (2020).

To stop the spread of the virus during the pandemic, governments ordered people to work from home where it was reasonable to do so. For example, on 2 April 2020, the Queensland Government introduced a home confinement direction that prevented people from leaving their residence, except for permitted purposes. People were permitted to leave home to work for an employer engaged in an essential business or activity, or if the work could not reasonably be performed from home (Queensland Government 2020b). A significant proportion of the workforce did not meet these criteria and were therefore required to work from home. As restrictions eased, many employees chose to continue to work from home. Therefore, there was a positive link between the pandemic and working from home in SEQ.

Figure 7.7: Public transport patronage and Go card usage in SEQ from January 2019 to September 2021



Source: BCARR analysis of public transport patronage and Go card usage data from Queensland Government (2022).

To provide more evidence on the role of working from home and impacts on transport use, two different data sources are employed. The first data source is the Google COVID–19 Community Mobility Reports. These reports tracked people's daily movements to 6 different categories of places. These places were retail and recreation, groceries and pharmacies, parks, public transport stations, workplaces and residential. These reports measured changes in the length of stay at these six categories of places compared to a pre-COVID baseline (3 January 2020 to 6 February 2020) at country, state and LGA levels in Australia. Details of how the data was transformed are provided in Box 7.2.

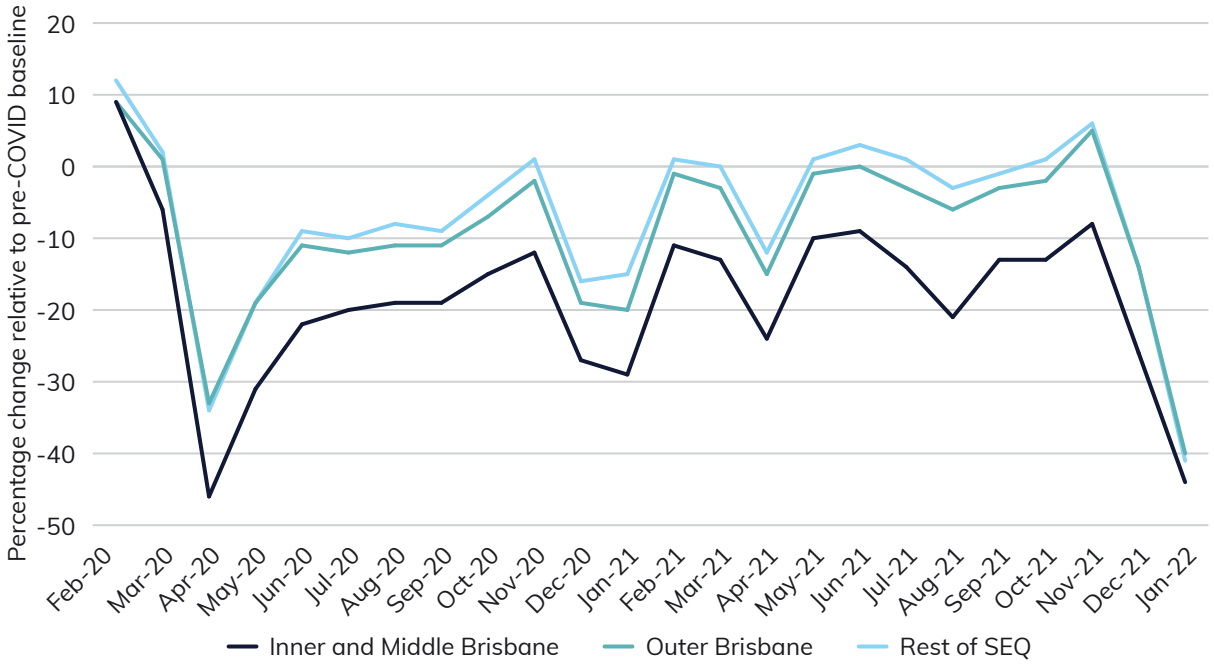
Box 7.2 Data transformation

Google mobility data presented in Figure 7.8 and 7.9 has undergone some transformations by BCARR. Firstly, the daily data in these reports was transformed into monthly data by using the average of daily values. Secondly, the LGA data in these reports was transformed into BCARR ring data by using the average of the associated LGA values. For example, the LGAs of Ipswich, Redland, Logan and Moreton Bay belong to Outer Brisbane. The average of these LGA values is used to represent Outer Brisbane.

As Figure 7.8 shows, compared to the pre-COVID baseline, people visited their workplace much less during the early stages of the pandemic than before the pandemic. However, the impact was less pronounced in Outer Brisbane and the Rest of SEQ than it was for the Brisbane LGA (i.e. Inner and Middle Brisbane). Throughout the winter and spring of 2021, time spent at workplaces was around pre-pandemic levels for Outer Brisbane and the Rest of SEQ, but remained significantly lower than pre-pandemic levels in the Brisbane LGA.

Figure 7.9 shows the other side of the picture, focusing on time spent at home. It shows that people stayed at home longer after the onset of the pandemic than before the pandemic, which would be consistent with stay-at-home restrictions and increased working from home. Again, the impact is greatest for Inner and Middle Brisbane, and gradually declines after peaking in April of 2020, with short-term spikes occurring during 2021 and early 2022 as restrictions were temporarily tightened in SEQ. Throughout 2021, time spent at home remained above pre-COVID levels in all 3 rings, but the difference is most pronounced for Inner and Middle Brisbane.

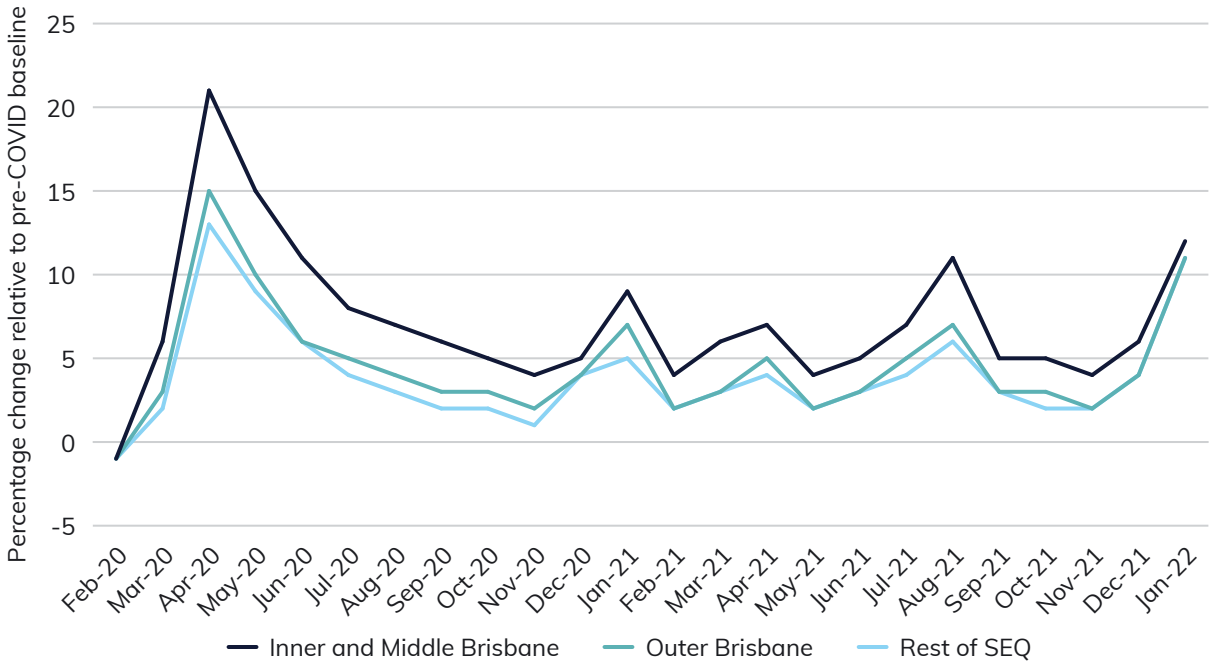
Figure 7.8: Mobility change for workplace by BCARR rings in SEQ from February 2020 to January 2022



Note: The blue line represents the Brisbane LGA, which corresponds to the combination of the BCARR Inner and Middle Brisbane rings

Source: BCARR analysis of Google COVID–19 Community Mobility Reports (2022)

Figure 7.9: Mobility change for residence by BCARR rings in SEQ from February 2020 to January 2022

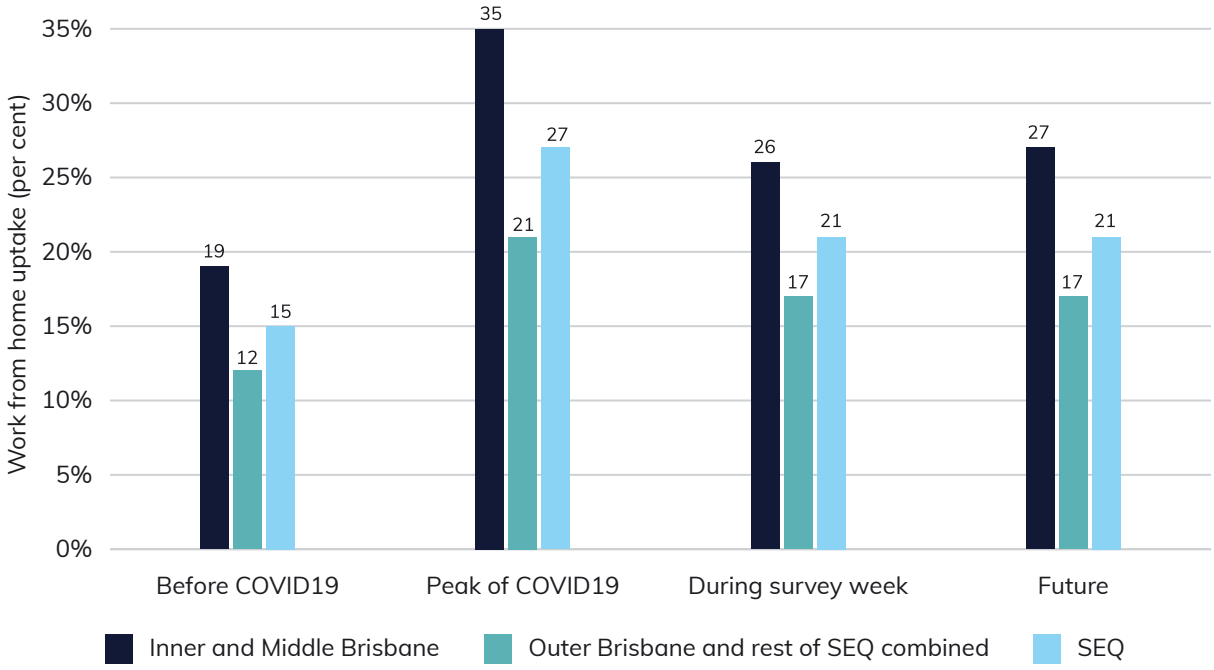


Note: The blue line represents the Brisbane LGA, which corresponds to the combination of the BCARR Inner and Middle Brisbane rings
Source: BCARR analysis of Google COVID–19 Community Mobility Reports (2022)

The second data source is the University of South Australia iMOVE survey data (Vij et al. 2021). In this dataset, over 3000 employed individuals from 17 Australian cities were surveyed about their work from home practice between 11 December 2020 and 4 May 2021. Particularly, people were asked about their work from home uptake during four time periods (i.e. before COVID–19, at the peak of COVID–19, during survey week and in the future/after the pandemic is gone).

Figure 7.10 documents the work from home uptake in the Brisbane LGA, Outer Brisbane and the Rest of SEQ combined and for the whole of SEQ. Work from home uptake is consistently higher for the Brisbane LGA across all four time periods. The three regions all show a similar pattern with uptake lowest pre-COVID, surging during the initial COVID peak, and then lower but remaining above pre-COVID levels during survey week and into the future. For instance, Brisbane's work from home uptake increased from 19 to 35 per cent at the pandemic's peak, but then declined to 26 per cent during survey week, with desired future uptake standing at 27 per cent.

Figure 7.10: Change in work from home practice in SEQ from December 2020 to May 2021



Note: The Brisbane LGA corresponds to the combination of the BCARR Inner and Middle Brisbane rings.

Source: BCARR analysis of University South Australia iMOVE survey data extracted from 2020–2021

7.4 Conclusion

This chapter analysed the transport modes used for journeys to work in SEQ over time. Private vehicle, public transport and active transport modes use varied significantly within SEQ. Private vehicle was the most dominant transport mode for both SEQ residents and workers (over 79 per cent). Public transport was less widely used in SEQ (with a mode share of around 10 per cent). Inner Brisbane residents used public transport the most, whereas the Rest of SEQ residents used it the least.

From 2011 to 2016, there was a significant shift away from public transport (–1.1 percentage points) and a significant shift towards private vehicles (0.9 percentage points) for the SEQ LGAs as a whole. Public transport and private vehicle use both declined dramatically in 2019–2020 due to the COVID–19 pandemic outbreak and associated restrictions on movement, and public transport use has not yet returned to pre-pandemic levels. The pandemic was also associated with an increase in working from home, and while the incidence of working from home has declined from its initial COVID peak, it remains above pre-pandemic levels into early–2022.

While this chapter has focused on the transport modes used by commuters in SEQ, the next chapter provides a more in-depth analysis of these commuter flows, including analysis of self-containment rates, the main types of commuter flows, commuting distances and durations, 30 and 45 minute job access, and traffic congestion.

CHAPTER 8

COMMUTER CONNECTIVITY

Key points

- Self-containment is described as the proportion of employed residents of a given region that report the same region as their place of work. The average self-containment rate across SEQ at the LGA level was 69.9 per cent in 2016. The Toowoomba and Brisbane LGAs showed the highest self-containment rates of 88.6 per cent and 84.6 per cent, respectively.
- The Logan and Redland LGAs showed the lowest self-containment rates across SEQ in 2016 at 39.9 per cent and 42.9 per cent, respectively. This is likely due to the proximity of the Brisbane LGA, which was identified as the place of work for around half of SEQ's working population.
- Over 70 per cent of Inner Brisbane's workforce commuted to work from outside the ring in 2016 – the largest proportion across the four BCARR rings of SEQ.
- On census day 2016, the largest single flow of commuters between different LGAs was 78,311 commuters, which described employed residents from the Moreton Bay LGA who commuted to the Brisbane LGA for work. This flow represents 41.3 per cent of commuting flows from the Moreton Bay LGA – the largest probability of commuting to another specific LGA of work across SEQ.
- In 2016, there were 1.44 million total commuter flows between SA2s within SEQ. The majority of these flows were ambiguous in direction with 65.7 per cent of all commuting flows occurring within the same BCARR ring, while 26.5 per cent of commuter flows occurred in an inwards direction across rings, and only 7.8 per cent of commuter flows occurred across rings in an outward direction.
- Across SEQ, 9.9 per cent of all workers in 2016 commuted to the Brisbane CBD for work. The largest portion of these workers reside within the Brisbane LGA. While 30.7 per cent of Inner Brisbane residents commuted to the CBD for work, this proportion dropped to 16.9 per cent for Middle Brisbane, 6.9 per cent for Outer Brisbane and just 1.3 per cent for the Rest of SEQ.
- The average commuting distance across SEQ was 17.5km by place of residence. Employed residents in the Inner Brisbane ring had the lowest commuting distance of 8.7km, followed by an average of 13.7km for Middle Brisbane, 20.6km for Outer Brisbane and 24.3km for residents in the Rest of SEQ.
- Employed residents in the Esk and Lockyer Valley – East SA2s had the longest average commuting distances in 2016 at 36.5km and 35.6km respectively.
- The 45-minute job access across SEQ decreased in 2019 to 42.7 per cent compared to 43.1 per cent in 2016, reflecting an increase in congestion and travel times throughout the region. Brisbane and Logan LGAs showed the strongest 45-minute job access, providing employed residents with access to an average of 65 per cent and 61 per cent of all SEQ jobs in 2019, respectively.
- Underwood and Springwood SA2s had the highest job access in 2019, with 72.7 per cent and 71.4 per cent of all SEQ jobs accessible in 45 minutes, respectively. Both SA2s are located in the Logan LGA.
- According to the Household, Income and Labour Dynamics in Australia (or HILDA) survey, the average commuting trip duration for Greater Brisbane increased from 31 minutes in 2010 to 34 minutes in 2019.
- When compared to other major Australian cities, Greater Brisbane's average commuting trip duration of 32.1 minutes (averaged across the entire 2010 to 2019 period) ranked 3rd after Greater Sydney (37.2 minutes) and Greater Melbourne (34.0 minutes).
- Brisbane and Gold Coast experience similar levels of traffic congestion, but the Sunshine Coast has relatively low levels of traffic congestion.

8.1 Introduction

This chapter conducts an evidence-based analysis of commuter behaviour in SEQ, exploring the movements of commuters between places of residence and places of work to provide insights into commuting flows, distances and times. The analysis of connectivity across SEQ provides insight into how workers are currently using the existing road and public transport networks as part of their daily commuting patterns. This chapter is split into seven different sections, which include:

- Self-containment
- Origin-destination commuter flows
- Commuting distance
- Changes in commuting flows
- 30- and 45- minute cities
- Average commuting trip duration
- Congestion metrics.

The first four sections of this chapter utilise the ABS Census of Population and Housing 2016 data to investigate where employed residents live and work. This data highlights the major commuting connections within SEQ, and shows differences in commuting distances for various places of work and residence.

In addition, HoustonKemp job access data is used to analyse job access for all LGAs and SA2s within SEQ. Analysis of commuting trip duration has been conducted using time-series data collected from the Household, Income and Labour Dynamics in Australia (HILDA) annual survey. Finally, this chapter collates traffic congestion data from a range of sources such as TomTom and the Queensland Government to illustrate the evolution of traffic congestion across Brisbane and other major population bases in SEQ.

8.2 Self-containment

This section analyses the self-containment of the SEQ region. Self-containment is described as the number of employed residents whose commuting trips are within their locality of residence. As a measure, the self-containment rate is calculated as the proportion of employed residents within a given region that report the same region as their place of work (PoW).

Self-containment is an important indicator due to its possible implications for sustainability goals. Increasing self-containment within urban areas is often associated with reduced emissions resulting from shorter commuting distances. However, such benefits are only realised when self-containment coincides with reduced vehicle kilometres travelled and/or uptake of sustainable transport modes.

Self-containment of SEQ in 2016: LGAs

Self-containment rates vary across the SEQ region. The average self-containment rate across the 12 LGAs of SEQ is 69.9 per cent, resulting from the majority of employed residents in the region residing in the four most self-contained LGAs (see Table 8.1). The remaining 30.1 per cent of all employed residents across the 12 LGAs either work in another LGA in SEQ, commute to a workplace outside SEQ or have no fixed work address. Toowoomba and Brisbane LGAs demonstrate the highest self-containment rates of 88.6 per cent and 84.6 per cent, respectively. Other LGAs with relatively high self-containment rates are the Gold Coast and Sunshine Coast, both of which show a self-containment rate of roughly 78 per cent.

Logan and Redland LGAs reported particularly low self-containment rates relative to the other LGAs (39.9 per cent and 42.9 per cent, respectively). This is likely a result of their proximity to the Brisbane LGA, which was identified as the PoW for almost half of the working population across the 12 LGAs.

Table 8.1 also shows the proportion of commuters who commute from outside each LGA. For Logan LGA, 40.9 per cent of the total workforce commutes from outside the LGA – the largest proportion across the 12 LGAs. These results for Logan LGA suggest a skill mismatch may exist between local residents and jobs. Ipswich and Brisbane LGAs also possess significant portions of their workforces who commute from outside the LGA (36.3 per cent and 32.4 per cent respectively). The Toowoomba and Sunshine Coast LGAs reported the lowest proportions of workers who commuted from outside the LGA at 9.1 per cent and 9.2 per cent respectively, followed closely by the Gold Coast LGA at 13.8 per cent.

Table 8.1: Self-containment and proportion who commute from outside by LGAs in SEQ in 2016

LGAs	Workers	Employed Residents	Work in home region	Self-containment rate (per cent)	Proportion of LGA's workers who commute from outside LGA (per cent)
Brisbane	714,221	570,454	482,723	84.6	32.4
Gold Coast	235,526	260,550	202,936	77.9	13.8
Ipswich	62,312	84,281	39,695	47.1	36.3
Lockyer Valley	11,201	15,765	8,417	53.4	24.9
Logan	89,097	131,953	52,636	39.9	40.9
Moreton Bay	112,980	189,495	90,401	47.7	20.0
Noosa	20,130	22,009	14,307	65.0	28.9
Redland	40,573	70,165	30,080	42.9	25.9
Scenic Rim	12,362	16,927	9,032	53.4	26.9
Somerset	6,094	9,267	4,355	47.0	28.5
Sunshine Coast	110,848	129,638	100,636	77.6	9.2
Toowoomba	69,350	71,191	63,066	88.6	9.1
12 LGAs total	**1,484,696**	**1,571,693**	**1,098,284**	**69.9**	**26.0**

Note: The 12 LGAs total differs from the total for SEQ, as the rural areas of Toowoomba LGA are excluded from the definition of SEQ. The self-containment rate is the proportion of employed residents of the LGA who also have a place of work in that LGA. The remaining employed residents of the LGA could work in other SEQ LGAs, work outside SEQ, or have no fixed work address.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Self-containment of SEQ in 2016: BCARR rings and sub-regions

The self-containment rate across SEQ at the sub-region level is 54.7 per cent (see Table 8.2). Across Greater Brisbane, the Inner Brisbane ring reported the largest self-containment rate of 65.5 per cent. Sub-regions within the Middle Brisbane ring demonstrated significantly lower self-containment rates. The Middle sub-regions' self-containment rates are lower than those reported in any other sub-region across SEQ.

Within the Rest of SEQ, Toowoomba produced the highest self-containment rate of 83.9 per cent, followed by both Gold Coast and Sunshine Coast (77.9 per cent each). Noosa produced a self-containment rate of 65.3 per cent, the only other sub-region with a self-containment rate equal to or greater than Inner Brisbane.

Despite a high self-containment rate, Inner Brisbane's workforce possessed the largest proportion of workers who commute from outside the sub-region of 70.6 per cent. This result is consistent with the low self-containment rates produced by the sub-regions surrounding Inner Brisbane, and indicates that Inner Brisbane is a significant employment destination. Inner Brisbane has a ratio of workers to employed residents of 2.2, suggesting a high commercial focus in the area. The Middle East and Middle North are the only other sub-regions with a ratio of workers to employed residents above 1.0.

There is a general trend across SEQ that the proportion of workers who commute from outside the sub-region decreases with increasing distance from Inner Brisbane. Across the Rest of SEQ, the average proportion of workers who commute from outside their sub-region of employment is 14.2 per cent, which is significantly lower than the Greater Brisbane average of 54.5 per cent.

Table 8.2: Self-containment and proportion who commute from outside by sub-regions in SEQ in 2016

BCARR rings/sub-regions	Workers	Employed Residents	Work in home region	Self-containment rate (per cent)	Proportion of workers who commute from outside sub-region (per cent)
INNER Brisbane*	312,060	140,265	91,869	65.5	70.6
MIDDLE Brisbane – TOTAL*	401,874	429,940	159,153	37.0	60.4
Middle East	39,976	37,966	12,384	32.6	69.0
Middle North	112,511	104,614	41,015	39.2	63.5
Middle South	155,718	167,704	64,814	38.6	58.4
Middle West	93,669	119,656	40,940	34.2	56.3
OUTER Brisbane – TOTAL	305,243	476,144	213,033	44.7	30.2
Ipswich	62,331	84,333	39,727	47.1	36.3
Redland	40,573	70,165	30,080	42.9	25.9
Logan	89,097	131,953	52,636	39.9	40.9
Moreton Bay	113,242	189,693	90,590	47.8	20.0
TOTAL – GREATER BRISBANE	**1,019,177**	**1,046,349**	**464,055**	**44.3**	**54.5**
Rest of SEQ	453,031	512,354	388,763	75.9	14.2
Gold Coast	235,526	260,550	202,936	77.9	13.8
Sunshine Coast	110,157	128,020	99,761	77.9	9.4
Noosa	20,823	23,627	15,418	65.3	26.0
Toowoomba (urban part)	56,862	58,196	48,844	83.9	14.1
Scenic Rim	12,362	16,927	9,032	53.4	26.9
Lockyer Valley	11,203	15,765	8,417	53.4	24.9
Somerset	6,097	9,265	4,355	47.0	28.6
TOTAL – SOUTH EAST QUEENSLAND	**1,472,208**	**1,558,703**	**852,818**	**54.7**	**42.1**

Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ The SEQ total differs from the 12 LGA total in the preceding table, which includes the whole of Toowoomba LGA. This table includes only the urban parts of Toowoomba LGA.

The self-containment rate is the proportion of employed residents of the region who also have a place of work in that region. The remaining employed residents of the region could work in other SEQ regions, work outside SEQ, or have no fixed work address.

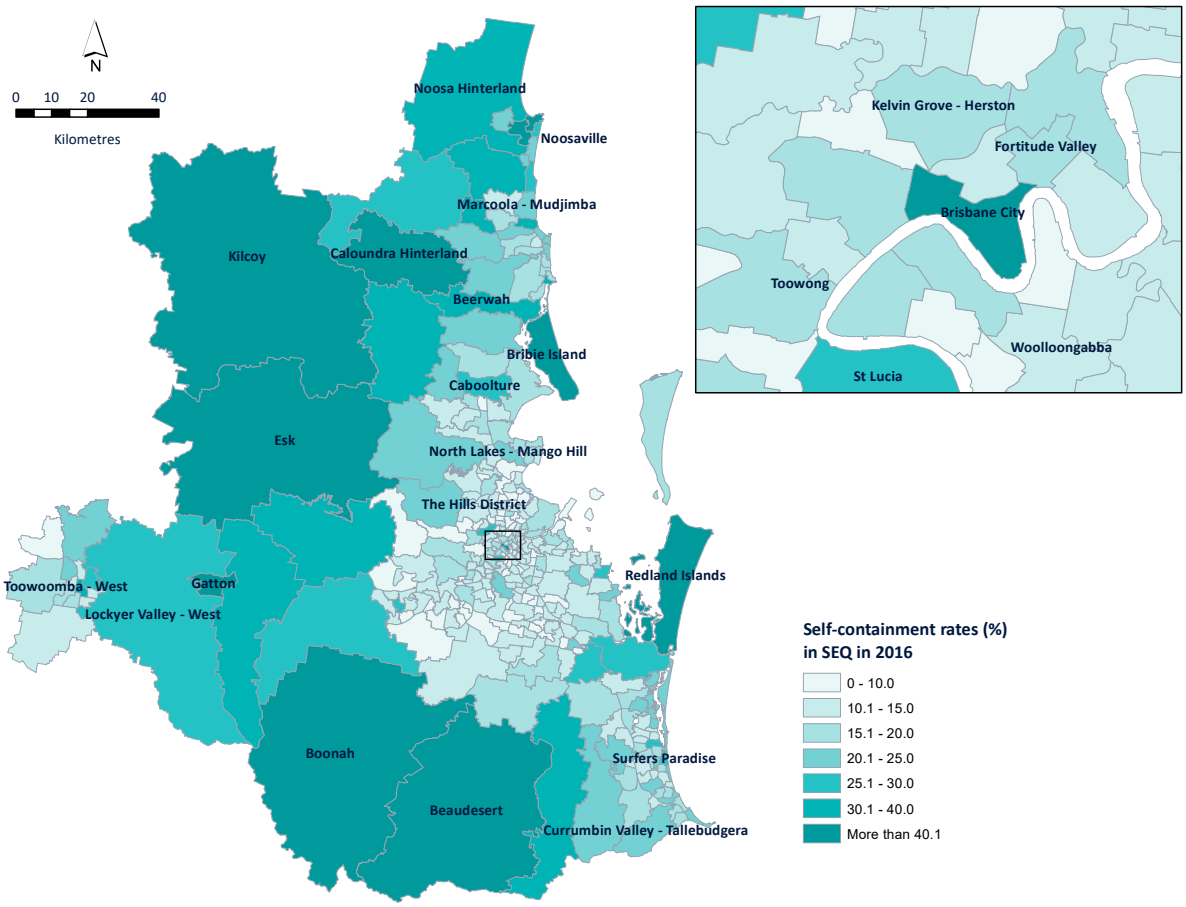
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Self-containment of SEQ in 2016: SA2s

Self-containment rates at the SA2 level vary significantly across SEQ. Figure 8.1 shows the variation in self-containment rates, and highlights those SA2s with the highest reported self-containment rates. The SA2s with the highest self-containment rates are Kilcoy (60.7 per cent), Beaudesert (59.8 per cent) and Esk (56.7 per cent). Of the ten SA2s with the highest self-containment rates, eight of them are located outside the Greater Brisbane area, with only Brisbane City and Redland Islands SA2s featuring from Greater Brisbane.

Table 8.3 provides further insight into those SA2s with the largest self-containment rates, highlighting their respective regions as well as detailed resident and worker numbers. Somerset and Scenic Rim sub-regions are well-represented among SA2s with the highest self-containment rates. From Somerset, both Kilcoy and Esk SA2s feature in the three SA2s with the highest self-containment. Beaudesert and Boonah SA2s are located in the Scenic Rim sub-region, both of which feature amongst the four highest SA2s for self-containment.

Figure 8.1: Self-containment rates by SA2s of SEQ in 2016



Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Other well-represented sub-regions include Sunshine Coast, Noosa and Lockyer Valley, each of which has multiple SA2s in the largest 20 for self-containment rates. Across the 332 SA2s of SEQ, only 12 SA2s possessed a self-containment rate of 40.0 per cent or above. Despite a large self-containment rate for Toowoomba and Brisbane at the LGA level (as shown in Table 8.1), Brisbane City is the only SA2 from either LGA that features in the highest ten self-containment rates at the SA2 level.

Table 8.3: Top 10 SA2s of SEQ with the highest self-containment rates in 2016

SA2s	BCARR rings/ sub-regions	Workers	Employed Residents	Work in home region	Self-containment rate (per cent)
Kilcoy	Somerset	2,032	2,196	1,333	60.7
Beaudesert	Scenic Rim	5,151	5,360	3,205	59.8
Esk	Somerset	1,306	1,689	957	56.7
Boonah	Scenic Rim	3,477	5,234	2,893	55.3
Gatton	Lockyer Valley	4,423	2,947	1,609	54.6
Caloundra Hinterland	Sunshine Coast	2,624	3,297	1,768	53.6
Redland Islands	Redland	1,571	2,491	1,253	50.3
Brisbane City	Inner Brisbane	122,488	5,391	2,586	48.0
Noosa Heads	Noosa	4,379	1,902	887	46.6
Noosaville	Noosa	7,008	3,479	1,570	45.1

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

The high self-containment rate for Brisbane City SA2 can be attributed to the ratio of workers to employed residents of 22.7. This abundance of jobs ensures sufficient employment opportunities for local residents. Both Noosa Heads and Noosaville SA2s have ratios of workers to employed residents larger than 2.0. This result is consistent with a large proportion of local workers having been 'priced-out' of the residential market, requiring them to commute from elsewhere for work.

In contrast, the ten SA2s with the lowest self-containment rates are all located within Greater Brisbane (see Table 8.4). The Ripley SA2 reported only 133 employed residents who work within the area, producing a self-containment rate of 5.3 per cent. One reason for these SA2s possessing particularly low self-containment rates is their proximity to Brisbane, and as a result, proximity to numerous other major employment hubs/destinations. In addition, Ripley SA2 has been identified as a location for major expansion development into the future. As such, significant employment opportunities may yet to be established for local residents.

Other SA2s with relatively low self-containment rates include Riverhills, Morayfield – East, Durack, Regents Park – Heritage Park and Zillmere, all of which demonstrate a self-containment rate of around 7.0 per cent. In total, 40 SA2s demonstrate a self-containment rate below 10.0 per cent.

Table 8.4: Top 10 SA2s of SEQ with the lowest* self-containment rates in 2016

SA2s	BCARR rings/ sub-regions	Workers	Employed Residents	Work in home region	Self-containment rate (per cent)
Ripley	Ipswich	703	2,532	133	5.3
Riverhills	Middle West	235	2,146	145	6.8
Morayfield – East	Moreton Bay	991	3,613	256	7.1
Durack	Middle West	973	3,038	219	7.2
Regents Park – Heritage Park	Logan	1,167	7,865	587	7.5
Zillmere	Middle North	2,025	4,182	313	7.5
Alderley	Inner Brisbane	1,021	3,490	270	7.7
Bald Hills	Middle North	1,258	3,642	282	7.7
Carina Heights	Middle South	1,228	3,562	284	8.0
Thorneside	Redland	396	1,838	149	8.1

* Those SA2s with zero workers who work in the home region have been excluded.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

One possible reason for the low self-containment rates in Table 8.4 is the ratio of workers to employed residents. All ten SA2s have a ratio lower than 0.5 – less than one job available for every two employed residents in the SA2. Riverhills and Regents Park – Heritage Park SA2s have less than one job available for every five employed residents living in the locality.

8.3 Origin-destination commuter flows

Summary of origin-destination commuter flows: LGAs

Origin-destination commuter flows show the number of commuters who commute between a given residence area and employment area. Table 8.5 illustrates the total number of commuters for each origin-destination pair based on LGAs. The shaded values in Table 8.5 show the self-contained commuters, those who both reside and work within the same LGA, as discussed previously.

While Table 8.5 is focused on commuting flows within the 12 SEQ LGAs, there are also some sizeable flows occurring to regions in other parts of Australia. According to BITRE (2013a), the most sizeable flows in and out of the region were from the Tweed LGA to a place of work in SEQ (6,300 in 2006), from SEQ to a place of work in the Tweed LGA (3,700) and from SEQ to a place of work in Sydney (2,200). The Tweed LGA has a particularly strong commuting connection with the Gold Coast.

The Brisbane LGA is a significantly larger place of work than a place of residence – 705,335 flows terminate in the LGA compared to only 542,670 flows that originate in the LGA.

Significant commuter flows exist between the Brisbane LGA and those LGAs in the Outer Brisbane ring. The single largest flow of commuters between different LGAs is 78,311 commuters who travel from Moreton Bay LGA to Brisbane LGA for work. Only four individual origin-destination flows between different LGAs are larger than 20,000 commuters. These four flows originate in the Outer Brisbane ring (Moreton Bay, Logan, Ipswich and Redland LGAs) and feature Brisbane LGA as their destination.

The largest origin-destination flow outside of the Brisbane LGA is the flow of 8,984 commuters from the Logan LGA to the Gold Coast LGA.

Table 8.6 highlights the probabilities of employed residents in a given LGA commuting to a place of work in each LGA. Across the 12 LGAs, the majority of significant commuting probabilities involve self-containment flows within an LGA. The four largest commuting probabilities are shown by employed residents commuting within the Toowoomba (88.6 per cent), Brisbane (84.6 per cent), Gold Coast (77.9 per cent) and Sunshine Coast (77.6 per cent) LGAs.

Employed residents in Moreton Bay LGA have the largest probability of commuting to another LGA for work, with 41.3 per cent of residents commuting to the Brisbane LGA for work. The Logan LGA has the largest probability for residents to work outside their LGA with only 39.9 per cent of residents self-contained. Major work destinations for Logan residents include Brisbane LGA (39.7 per cent) and Gold Coast LGA (6.8 per cent).

Outside the Brisbane LGA, the most significant flow between different LGAs occurs between the Noosa and Sunshine Coast LGAs with employed residents in Noosa LGA showing an 18.2 per cent probability of commuting to the Sunshine Coast LGA for work. Other large flows include 17.4 per cent of employed residents in Somerset LGA who commute to the Ipswich LGA for work, and 17.3 per cent of employed residents in Lockyer Valley LGA commuting to the Toowoomba LGA.

Table 8.5: Commuting flows between the 12 LGAs of SEQ in 2016

Place of Residence	Place of Work												
	Brisbane	Gold Coast	Ipswich	Lockyer Valley	Logan	Moreton Bay	Noosa	Redland	Scenic Rim	Somerset	Sunshine Coast	Toowoomba	Total
Brisbane	**482,723**	6,664	11,646	342	17,995	14,684	117	6,143	353	192	1,173	637	542,672
Gold Coast	18,908	**202,936**	1,029	39	8,172	748	29	826	961	19	200	203	234,070
Ipswich	33,355	960	**39,695**	575	2,752	355	13	268	357	405	84	257	79,069
Lockyer Valley	1,271	74	1,358	**8,417**	131	42	3	26	27	379	20	2,724	14,466
Logan	52,338	8,984	3,533	114	**52,636**	681	8	2,396	1,338	22	109	102	122,254
Moreton Bay	78,311	884	617	29	1,083	**90,401**	78	429	33	420	2,657	171	175,085
Noosa	527	42	10	–	27	147	**14,307**	6	8	8	3,996	38	19,115
Redland	28,355	1,494	540	12	3,978	413	7	**30,080**	33	3	54	40	65,012
Scenic Rim	1,737	2,099	1,186	22	1,193	28	–	46	**9,032**	6	15	26	15,393
Somerset	1,247	42	1,608	452	103	452	5	11	13	**4,355**	49	130	8,470
Sunshine Coast	5,635	299	138	30	216	3,913	4,926	82	14	127	**100,636**	176	116,191
Toowoomba	924	165	196	997	69	59	9	18	13	44	58	**63,066**	65,618
Total	705,335	224,642	61,554	11,026	88,350	111,921	19,497	40,325	12,174	5,987	109,055	67,566	**1,457,426**

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Table 8.6: Probability of employed residents commuting to each LGA of work throughout SEQ in 2016

Place of Residence	Place of Work (per cent of employed residents)													
	Brisbane	Gold Coast	Ipswich	Lockyer Valley	Logan	Moreton Bay	Noosa	Redland	Scenic Rim	Somerset	Sunshine Coast	Toowoomba	Other	Total
Brisbane	**84.6**	1.2	2.0	0.1	3.2	2.6	0.0	1.1	0.1	0.0	0.2	0.1	4.9	100.0
Gold Coast	7.3	**77.9**	0.4	0.0	3.1	0.3	0.0	0.3	0.4	0.0	0.1	0.1	10.2	100.0
Ipswich	39.6	1.1	**47.1**	0.7	3.3	0.4	0.0	0.3	0.4	0.5	0.1	0.3	6.2	100.0
Lockyer Valley	8.1	0.5	8.6	**53.4**	0.8	0.3	0.0	0.2	0.2	2.4	0.1	17.3	8.2	100.0
Logan	39.7	6.8	2.7	0.1	**39.9**	0.5	0.0	1.8	1.0	0.0	0.1	0.1	7.4	100.0
Moreton Bay	41.3	0.5	0.3	0.0	0.6	**47.7**	0.0	0.2	0.0	0.2	1.4	0.1	7.6	100.0
Noosa	2.4	0.2	0.0	0.0	0.1	0.7	**65.0**	0.0	0.0	0.0	18.2	0.2	13.1	100.0
Redland	40.4	2.1	0.8	0.0	5.7	0.6	0.0	**42.9**	0.0	0.0	0.1	0.1	7.3	100.0
Scenic Rim	10.3	12.4	7.0	0.1	7.0	0.2	0.0	0.3	**53.4**	0.0	0.1	0.2	9.1	100.0
Somerset	13.5	0.5	17.4	4.9	1.1	4.9	0.1	0.1	0.1	**47.0**	0.5	1.4	8.6	100.0
Sunshine Coast	4.3	0.2	0.1	0.0	0.2	3.0	3.8	0.1	0.0	0.1	**77.6**	0.1	10.4	100.0
Toowoomba	1.3	0.2	0.3	1.4	0.1	0.1	0.0	0.0	0.0	0.1	0.1	**88.6**	7.8	100.0

Note: Other column includes people with no fixed work address, as well as those with a place of work outside SEQ.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Summary of origin-destination commuter flows: BCARR rings and sub-regions

Examining origin-destination commuter flows at the BCARR ring and sub-regions level shows the largest flows occur within the Greater Brisbane region. Table 8.7 shows all commuter flows between each origin-destination pair across SEQ. The largest individual flows are self-contained flows within the Middle Brisbane and Outer Brisbane rings with 219,170 and 230,077 commuters, respectively. In terms of flows between different rings/sub-regions, the largest flow describes employed residents in the Middle Brisbane ring commuting to the Inner Brisbane ring for work, with 137,950 total commuters. The flow of employed residents from the Outer Brisbane ring to the Middle Brisbane ring for work is also significant, with 126,857 commuters.

Large population bases in the Sunshine Coast and Gold Coast also demonstrated significant flows into the Greater Brisbane region. A total of 29,687 employed residents from the Gold Coast region commuted to work destinations across the three rings of Greater Brisbane, whilst 9,903 employed residents commuted to these same areas from the Sunshine Coast region. For origin-destination commuter flows outside the Greater Brisbane region, the largest flows occurred between Noosa and the Sunshine Coast. Employed residents in the Sunshine Coast region were responsible for 4,481 commuter flows into Noosa. Conversely, employed residents in the Noosa region accounted for 4,199 commuter flows into the Sunshine Coast.

Table 8.7 also indicates the total amount of employed residents and workers across the rings and sub-regions. Only the Inner Brisbane ring and Toowoomba were larger destinations than origins in terms of commuter flows. The Inner Brisbane ring was a destination for 308,074 commuters whilst only an origin for 133,807 commuters, demonstrating a worker to employed resident ratio of 2.3.

Table 8.8 describes the probabilities of employed residents in each ring/sub-region commuting to another ring/sub-region in SEQ. Self-containment flows across the various sub-regions of SEQ showed the highest probabilities, particularly those commuter flows within Toowoomba (83.9 per cent), Gold Coast (77.9 per cent) and Sunshine Coast (77.9 per cent).

There are high probabilities for employed residents in Greater Brisbane to commute across its various rings. For example, employed residents in the Middle Brisbane ring have a 32.1 per cent chance to commute to the Inner ring, while employed residents in the Outer Brisbane ring have a 26.6 per cent chance to commute to the Middle Brisbane ring for work.

There is a significant proportion of employed residents in Somerset who commute to Greater Brisbane for work, with a 23.5 per cent probability of commuting to the Outer Brisbane ring in particular. Other significant probabilities include employed residents from Noosa commuting to the Sunshine Coast (17.8 per cent) and employed residents in Lockyer Valley commuting to Toowoomba (16.5 per cent).

Table 8.7: Commuting flows between the BCARR rings and sub-regions of SEQ in 2016

	Place of Work										
Place of Residence	**Inner Brisbane**	**Middle Brisbane**	**Outer Brisbane**	**Gold Coast**	**Sunshine Coast**	**Noosa**	**Toowoomba**	**Scenic Rim**	**Lockyer Valley**	**Somerset**	**Total SEQ**
Inner Brisbane	**91,869**	33,472	6,522	1,318	332	36	117	77	43	23	133,807
Middle Brisbane	137,950	**219,170**	43,977	5,340	841	83	378	275	296	169	408,479
Outer Brisbane	65,505	126,857	**230,077**	12,323	2,897	104	419	1,754	720	849	441,510
Gold Coast	8,299	10,601	10,787	**202,936**	202	29	141	961	39	19	234,013
Sunshine Coast	2,711	2,866	4,326	299	**99,761**	4,481	131	14	30	127	114,750
Noosa	270	310	212	42	4,199	**15,418**	28	8	–	8	20,506
Toowoomba	334	444	286	139	43	8	**48,844**	7	944	26	51,079
Scenic Rim	517	1,221	2,453	2,099	15	–	23	**9,032**	22	6	15,387
Lockyer Valley	330	946	1,558	74	20	3	2,605	27	**8,417**	379	14,356
Somerset	306	946	2,173	42	49	5	99	13	449	**4,355**	8,437
Total SEQ	308,074	396,840	302,371	224,618	108,364	20,172	52,782	12,169	10,976	5,967	**1,442,322**

Notes: These values differ from the values shown in Table 8.5, which includes the whole of the Toowoomba LGA. This table includes only the urban parts of Toowoomba.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

Table 8.8: Probability of employed residents commuting to each BCARR ring and sub-region of SEQ for work in 2016

Place of Residence	Place of Work (per cent of employed residents)											
	Inner Brisbane	Middle Brisbane	Outer Brisbane	Gold Coast	Sunshine Coast	Noosa	Toowoomba	Scenic Rim	Lockyer Valley	Somerset	Other	Total
Inner Brisbane	**65.5**	23.9	4.6	0.9	0.2	0.0	0.1	0.1	0.0	0.0	4.6	100.0
Middle Brisbane	32.1	**51.0**	10.2	1.2	0.2	0.0	0.1	0.1	0.1	0.0	5.0	100.0
Outer Brisbane	13.8	26.6	**48.3**	2.6	0.6	0.0	0.1	0.4	0.2	0.2	7.3	100.0
Gold Coast	3.2	4.1	4.1	**77.9**	0.1	0.0	0.1	0.4	0.0	0.0	10.2	100.0
Sunshine Coast	2.1	2.2	3.4	0.2	**77.9**	3.5	0.1	0.0	0.0	0.1	10.4	100.0
Noosa	1.1	1.3	0.9	0.2	17.8	**65.3**	0.1	0.0	0.0	0.0	13.2	100.0
Toowoomba	0.6	0.8	0.5	0.2	0.1	0.0	**83.9**	0.0	1.6	0.0	12.2	100.0
Scenic Rim	3.1	7.2	14.5	12.4	0.1	0.0	0.1	**53.4**	0.1	0.0	9.1	100.0
Lockyer Valley	2.1	6.0	9.9	0.5	0.1	0.0	16.5	0.2	**53.4**	2.4	8.9	100.0
Somerset	3.3	10.2	23.5	0.5	0.5	0.1	1.1	0.1	4.8	**47.0**	8.9	100.0

Note: Other column includes people with no fixed work address, as well as those with a place of work outside SEQ.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Major commuting flows in SEQ: between SA2s

Examination of origin-destination flows at the SA2 level shows that only 6 individual flows involve more than 3,000 commuters. All of these flows are self-contained flows and included Nambour in the Sunshine Coast LGA, Surfers Paradise in the Gold Coast LGA and Noosa Hinterland in the Noosa LGA as the three largest.

Focusing only on the flows between different SA2s, Brisbane City SA2 and Toowoomba – Central SA2 feature as predominant destinations for commuter flows. Figure 8.2 illustrates the major commuter flows into Brisbane City SA2 from surrounding SA2s. The largest individual flow occurs from employed residents in the New Farm SA2 commuting to Brisbane City for work, with 1,966 commuters. Employed residents from Newstead – Bowen Hills (1,803 commuters), Coorparoo (1,772 commuters), The Hills District (1,670 commuters) and Paddington – Milton (1,558 commuters) SA2s also have sizeable commuter flows to the Brisbane City SA2.

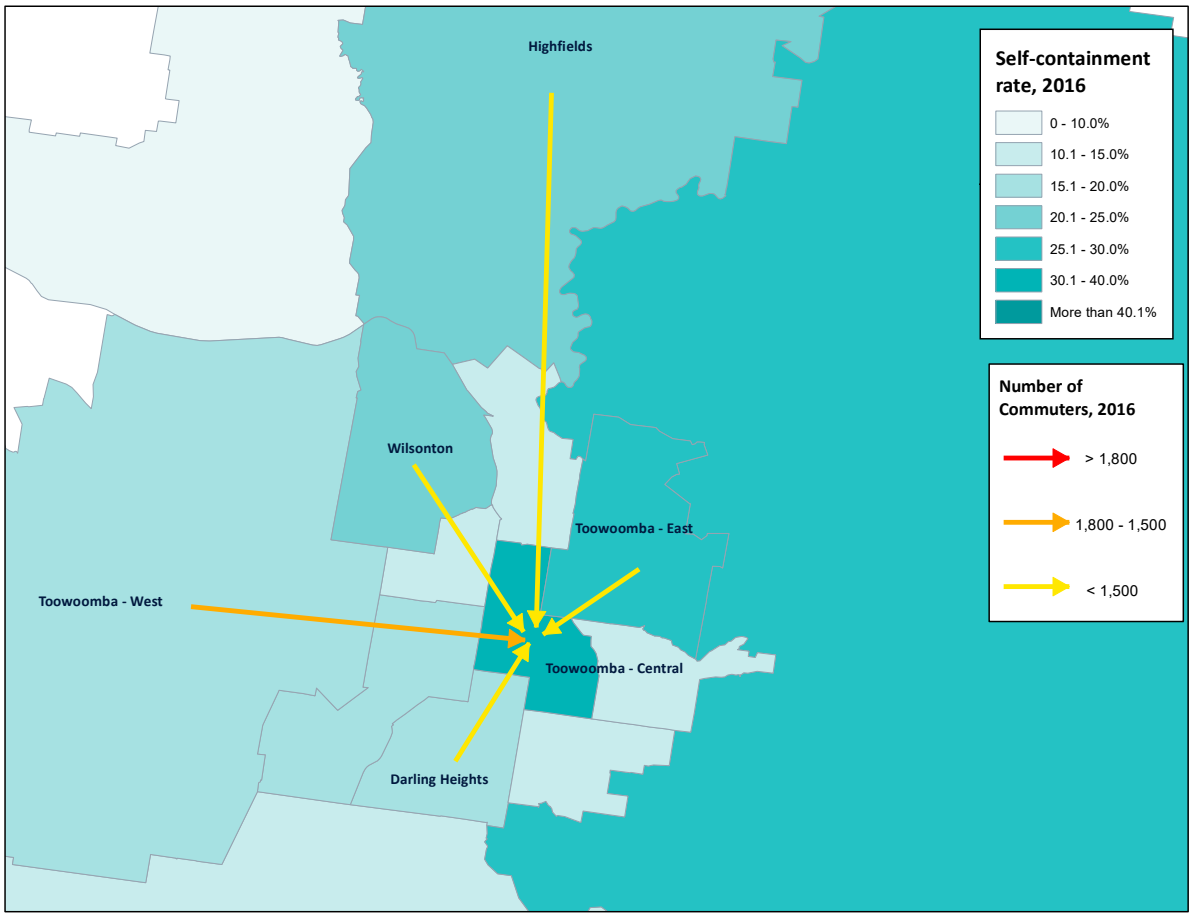
Of these flows, only The Hills District SA2 to Brisbane City SA2 involves SA2s from different LGAs – Moreton Bay LGA and Brisbane LGA, respectively. The four other commuter flows mentioned above are self-contained to the Brisbane LGA.

Figure 8.2: Top 5 largest SA2 commuting flows to Brisbane City SA2 within SEQ in 2016

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 8.3 shows the major origin-destination commuter flows around the Toowoomba – Central SA2. The largest individual flow involves employed residents in the Toowoomba – West SA2 commuting to Toowoomba – Central SA2 for work with 1,509 commuters. Other major commuter flows in the area involves employed residents from Darling Heights (1,465 commuters), Highfields (1,406 commuters), Toowoomba – East (1,385 commuters) and Wilsonton (1,286 commuters) SA2s all commuting to the Toowoomba – Central SA2 for work.

Figure 8.3: Top 5 largest SA2 commuting flows to Toowoomba – Central SA2 within SEQ in 2016



Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Types of commuting flows between SA2s

This section provides information on the types of commuting flows occurring throughout SEQ at the SA2 level. The different types of flows have been presented for all of SEQ, as well as only the Greater Brisbane region. Each individual flow at the SA2 level has been classified as either occurring within a BCARR ring, or across these rings. Flows occurring across different rings have been further identified as either 'inwards' flows (e.g. from a sub-region in the Outer Brisbane ring, to a sub-region in the Middle Brisbane ring), or 'outwards' flows (e.g. from the Inner Brisbane ring to a sub-region in the Middle Brisbane ring). The rings used in this analysis are the BCARR rings previously discussed in this report, which include four separate rings: Inner Brisbane, Middle Brisbane, Outer Brisbane and Rest of SEQ.

Commuting flows that originate and terminate within the boundaries of the same ring have been classified as ambiguous in direction. Each of these flows has been further categorised into one of the following categories:

- Within the same SA2
- Different SA2, same sub-region, same ring
- To a different sub-region in the same ring
  - For those who live in Rest of SEQ
  - For those who live in Outer Brisbane
  - For those who live in Middle Brisbane

Table 8.9 illustrates the different types of flows across SEQ. In 2016, there were 1.44 million total commuter flows between SA2s within SEQ. The vast majority of these flows were ambiguous in direction with 65.7 per cent of all flows occurring within the same BCARR ring. Of these, 18.2 per cent of total flows were self-contained to the same SA2.

An additional 41.0 per cent of all flows were self-contained to the same sub-region but between different SA2s. The largest volume contributors to this category were flows from New Farm and Newstead – Bowen Hills SA2s to the Brisbane City SA2. Commuter flows between different sub-regions within the same BCARR ring contributed to a significantly smaller portion of total flows. Those commuter flows between different sub-regions within the Middle ring formed the largest portion of this category, with 4.2 per cent of total flows. Flows between different sub-regions across the Outer ring and the Rest of SEQ comprised only 1.2 per cent of all flows across the SEQ region.

Commuting flows classified as Inwards flows comprised a significant portion of all commuting flows at 26.5 per cent. The largest volume contribution to this category was the commuting flow from Coorparoo SA2 in the Middle ring to the Brisbane City SA2 in the Inner ring. Those flows classified as Outwards flows comprised only 7.8 per cent of total commuting flows across the region.

Table 8.9: Total commuting flows within SEQ by type of flow in 2016

Types of Commuting Flows	Number of Commuters	Proportion (per cent)
Inwards (across rings)	382,199	26.5
Outwards (across rings)	112,385	7.8
Ambiguous in direction (within a ring)	947,738	65.7
One region to another in Rest of SEQ	17,855	1.2
One sub-region to another in Outer ring	17,052	1.2
One sub-region to another in Middle ring	60,013	4.2
Within same SA2	261,892	18.2
Different SA2, same sub-region, same ring	590,926	41.0
Total	**1,442,322**	**100.0**

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Table 8.10 examines the total commuting flows within Greater Brisbane only. When compared with Table 8.9, it can be seen that the majority of both Inwards and Outwards type flows are contained within Greater Brisbane. Inwards commuting flows within Greater Brisbane comprise 22.9 per cent of total flows across SEQ, yet account for 34.6 per cent of flows within the Greater Brisbane region.

Table 8.10: Total commuting flows within only Greater Brisbane by type of flow in 2016

Types of Commuting Flows	Number of Commuters	Proportion of Greater Brisbane (per cent)	Proportion of total SEQ (per cent)
Inwards (across rings)	330,312	34.6	22.9
Outwards (across rings)	83,971	8.8	5.8
Ambiguous in direction (within a ring)	541,120	56.6	37.5
One sub-region to another in Outer ring	17,052	1.8	1.2
One sub-region to another in Middle ring	60,013	6.3	4.2
Within same SA2	144,316	15.1	10.0
Different SA2, same sub-region, same ring	319,739	33.5	22.2
Total	**955,403**	**100.0**	**66.2**

Note: Table includes only those who both live and work within Greater Brisbane.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Proportion of employed residents who commute to the CBD: LGAs

This section provides information on the proportion of employed residents across SEQ who commute to the Brisbane CBD for work. For this purpose, Brisbane CBD has been defined as the combination of 3 SA2s in the Brisbane LGA. The three SA2s that comprise the CBD are Brisbane City, Fortitude Valley and Spring Hill.[28]

Table 8.11 summarises the proportion of employed residents from each of the 12 LGAs within SEQ who commute to the Brisbane CBD for work. Brisbane CBD is a significant work destination for SEQ, with almost 10 per cent of all employed residents working across the three SA2s of the CBD. Of these residents, the majority reside within the Brisbane LGA at nearly 75 per cent of all Brisbane CBD workers.

Table 8.11: Proportion of employed residents who commute to Brisbane CBD by LGAs in 2016

LGAs	Employed Residents	Work in Brisbane CBD	Proportion who commute to Brisbane CBD (per cent)
Brisbane	570,454	115,654	20.3
Gold Coast	260,550	4,622	1.8
Ipswich	84,281	5,093	6.0
Lockyer Valley	15,765	127	0.8
Logan	131,953	7,489	5.7
Moreton Bay	189,495	15,419	8.1
Noosa	22,009	123	0.6
Redland	70,165	4,899	7.0
Scenic Rim	16,927	261	1.5
Somerset	9,267	148	1.6
Sunshine Coast	129,638	1,400	1.1
Toowoomba	71,191	196	0.3
Total	**1,571,693**	**155,420**	**9.9**

Note: Brisbane CBD is defined as the combination of the Brisbane City, Fortitude Valley and Spring Hill SA2s.

Source: BCARR analysis of ABS Census of Population and Housing, 2016

The Brisbane LGA has the largest proportion of workers across the 12 LGAs of SEQ who commute to the Brisbane CBD for work (20.3 per cent). This is due to the proximity of residents within the LGA to the Brisbane CBD. Significant portions of employed residents from the Moreton Bay, Redland, Ipswich and Logan LGAs commute to the Brisbane CBD for work, ranging from 8.0 per cent for the Moreton Bay LGA to 5.7 per cent for Logan LGA.

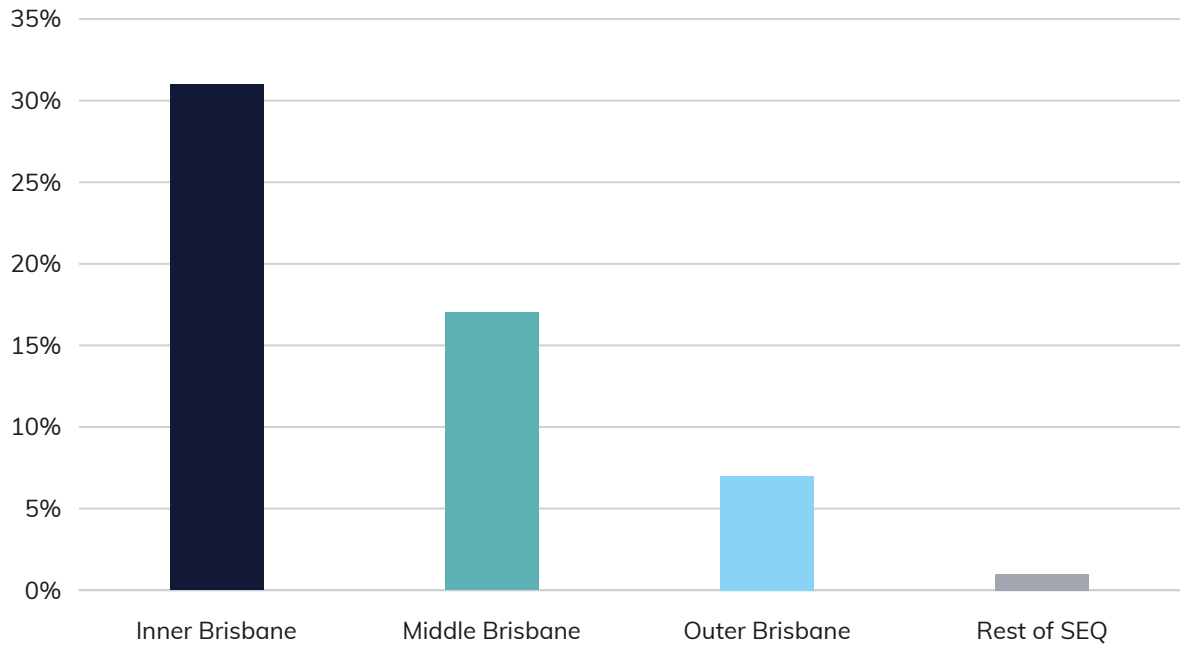
28 BCARR has defined the CBD using a functional approach. The definition starts with the central SA2, and adds adjoining SA2s that have a similar function to the central SA2, as reflected in a CBD-like industry structure and high job density. Using this functional approach, Sydney and Melbourne's CBDs contain 7 SA2s, Brisbane's contains 3, and Perth and Adelaide's CBDs both contain only the central SA2.

Proportion of employed residents who commute to the CBD: BCARR rings and sub-regions

Figure 8.4 illustrates the variation of the proportion of employed residents who commute to the CBD across the BCARR rings. Those employed residents living within the Inner Brisbane ring had the highest proportion who commute to the Brisbane CBD for work at 30.7 per cent of all employed residents. This proportion decreases to an average of 16.9 per cent across the Middle Brisbane ring, and decreases further to an average of 6.9 per cent across the Outer Brisbane ring. The Rest of SEQ ring features the smallest proportion of employed residents who commute to the Brisbane CBD at only 1.3 per cent.

There is a clear inverse relationship between the distance from Brisbane CBD and the proportion of employed residents who commute to the Brisbane CBD for work. This trend is highlighted by the results from the Toowoomba and Noosa sub-regions. As the two sub-regions furthest from the Brisbane CBD, the proportion of workers who commute there for work are only 0.3 and 0.6 per cent, respectively.

Figure 8.4: Proportion of employed residents who commute to Brisbane CBD by BCARR ring in 2016



Note: Brisbane CBD is defined as the combination of the Brisbane City, Fortitude Valley and Spring Hill SA2s.
Source: BCARR analysis of ABS Census of Population and Housing, 2016.

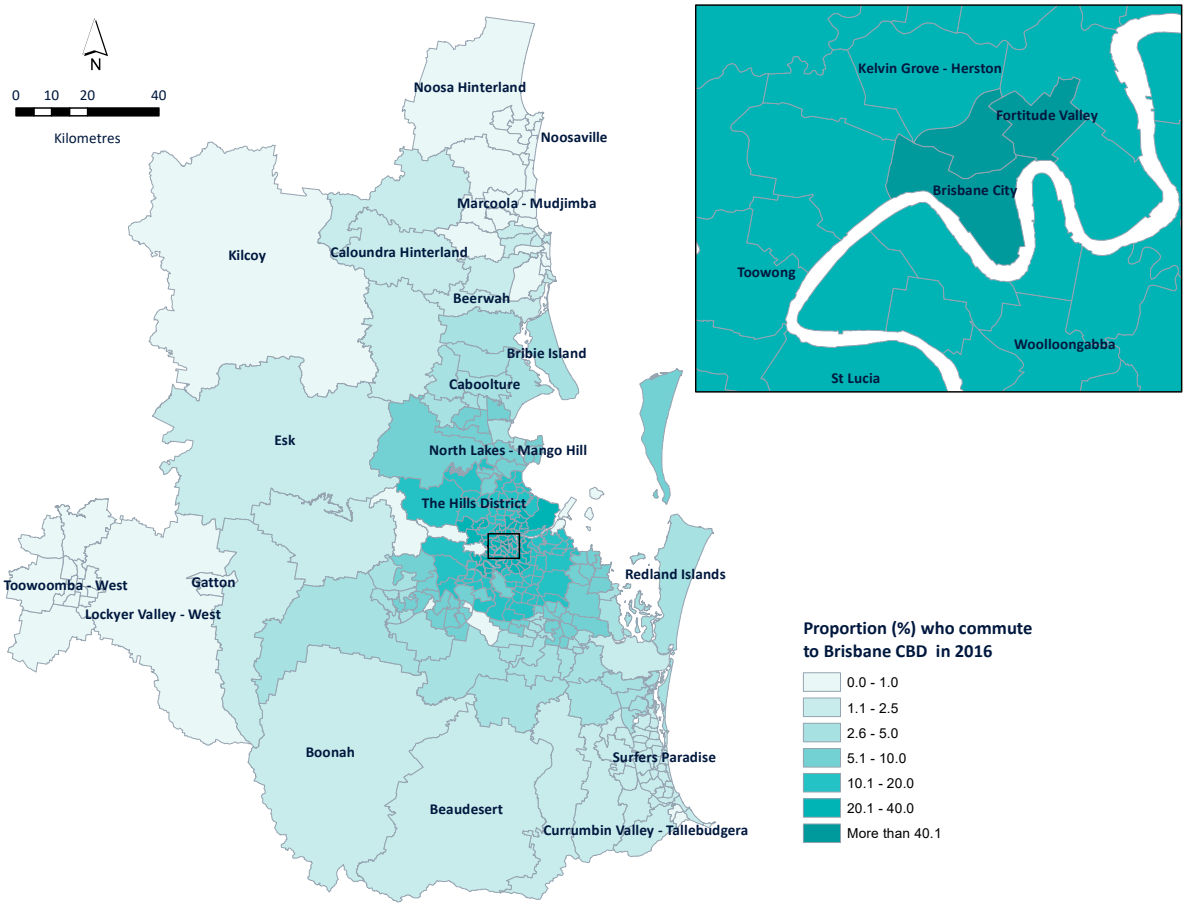
Proportion of employed residents who commute to the CBD: SA2s

Figure 8.5 shows the proportion of employed residents who commute to the Brisbane CBD across SEQ by SA2s. The SA2s with the largest proportions of employed residents commuting to Brisbane CBD for work all lie within the Inner Brisbane ring, with Brisbane City, Spring Hill and Fortitude Valley SA2s featuring proportions larger than 50.0 per cent. These SA2s stand out as they are the three SA2s that comprise the Brisbane CBD.

The New Farm and Newstead – Bowen Hills SA2s also feature large proportions of their employed residents commuting to the Brisbane CBD at 38.0 per cent and 36.3 per cent, respectively. Across sub-regions in the Outer Brisbane ring, The Hills District, Eatons Hill and Underwood SA2s showed significant proportions of their employed residents commuting to the CBD – ranging between 12.0 and 18.0 per cent.

SA2s across the Rest of SEQ ring showed minimal proportions of employed residents commuting to the Brisbane CBD for work. The Coomera and Glass House Mountains SA2s had among the largest proportions across this ring, with 4.0 and 3.1 per cent of all employed residents making the commute to the Brisbane CBD for work, respectively.

Figure 8.5: Proportion of employed residents who commute to Brisbane CBD by SA2s of SEQ in 2016



Note: Brisbane CBD is defined as the combination of the Brisbane City, Fortitude Valley and Spring Hill SA2s.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

8.4 Commuting distance

Commuting distance was calculated based on the Distance to Work variable from the 2016 ABS Census. This is a range-based variable that presents the number of commuters whose commuting distance falls within a given range.

Those commuters with 'Nil distance' or 'not applicable' have been excluded from the analysis. In addition, commuting distances above 250km have been excluded. The assumption is that 250km encompasses all reasonable daily commuting distances for road users. This approach is consistent with the method previously used to construct commuting distances for Australian cities in BITRE (2015). To convert each distance range to a distance value in order to construct an average, the midpoint for each range was used.

Commuting distance across SEQ in 2016: LGAs

Table 8.12 shows average commuting distances by place of residence and place of work. For example, employed residents of Brisbane LGA travelled an average distance of 12.3km to work, while people whose place of work is in the Brisbane LGA had an average commuting distance of 17.9km.

Across the 12 LGAs of SEQ, the average commuting distance based on place of residence was 17.5km in 2016 (Table 8.12). Of the 12 LGAs, only two LGAs produced an average commuting distance lower than 17.5km – Brisbane LGA (12.3km) and Toowoomba LGA (16.8km). These results show that employed residents in these LGAs are on average, more likely to live closer to major employment destinations. These results are consistent with the high self-containment rates previously presented in this chapter for the Brisbane and Toowoomba LGA, showing that employed residents have a high probability of commuting within the LGA for work.

Conversely, LGAs that displayed significantly larger commuting distances based on place of residence were Somerset, Scenic Rim and Lockyer Valley. These LGAs produced average commuting distance for employed residents of 33.9km, 31.0km and 28.3km respectively.

Table 8.12: Average commuting distances by LGAs of SEQ in 2016

LGAs	Place of Residence (km)	Place of Work (km)
Brisbane	12.3	17.9
Gold Coast	19.3	16.3
Ipswich	20.9	19.5
Lockyer Valley	28.3	23.2
Logan	20.8	18.6
Moreton Bay	21.4	16.8
Noosa	21.9	17.3
Redland	19.3	13.9
Scenic Rim	31.0	23.3
Somerset	33.9	27.7
Sunshine Coast	21.1	17.0
Toowoomba	16.8	16.9
Total 12 LGAs	**17.5**	**17.6**

Note: BCARR's calculation of average commuting distance excludes individuals with zero commuting distance and those with a commuting distance of more than 250km.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

When looking at average commuting distance in terms of place of work, Redland LGA stands out as having the lowest average commuting distance with 13.9km. Across the 12 LGAs of SEQ, average commuting distance was 17.6km. Average commuting distance for the Brisbane LGA exceeds 17.6km, with workers commuting an average distance of 17.9km. The result is consistent with the larger number of workers than employed residents in Brisbane LGA showing a high propensity for the workforce to commute from outside the LGA.

The Somerset, Scenic Rim and Lockyer Valley LGAs remain outliers for average commuting distance by place of work, with average commuting distances of 27.7km, 23.3km and 23.2km respectively.

Commuting distance across SEQ in 2016: BCARR rings and sub-regions

Commuting distances showed significant variations across the BCARR rings of SEQ, particularly between the place of residence and place of work classifications, as illustrated in Figure 8.6. In terms of place of residence, the average commuting distance across SEQ was 17.4km. The Inner Brisbane ring is a noticeable outlier for place of residence commuting distance with employed residents only commuting 8.7km to work, on average. This is likely due to their proximity to major employment destinations, namely the Brisbane CBD.

Across the four BCARR rings, there is a clear trend of average commuting distance tending to increase for employed residents the greater the distance from Inner Brisbane. The Middle Brisbane ring produced an average commuting distance based on place of residence of 13.7km – lower than the average commuting distance for Outer Brisbane residents of 20.6km. Employed residents in the Rest of SEQ displayed the longest average commuting distance across the four BCARR rings at 24.3km.

Commuting distances based on place of work vary less across the BCARR rings than by place of residence. Across the four rings, Inner Brisbane produced the lowest average commuting distance of 17.0km compared to the Rest of SEQ, which produced the longest average commuting distance of 19.8km. The significantly larger variation in commuting distance based on place of residence suggests that place of residence is a greater factor is dictating individual commuting distance than place of work.

Figure 8.6: Average commuting distance by BCARR rings across SEQ in 2016

Note: BCARR's calculation of average commuting distance excludes individuals with zero commuting distance and those with a commuting distance of more than 250km.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Between the two measures of commuting distance, the Inner Brisbane ring showed the largest difference with employed residents commuting 8.3km less than workers on average. In contrast, workers within the Rest of SEQ commuted 4.5km less on average than employed residents in the region.

Commuting distance across SEQ in 2016: SA2s

At the SA2 level, large variation in commuting distance exists for both place of residence and place of work measures. Figure 8.7 shows the differences in average commuting distance by place of residence across SEQ. Particular SA2s in the Inner Brisbane sub-region show lower commuting distances. The Spring Hill, Brisbane City and Fortitude Valley SA2s (those that comprise the Brisbane CBD) stand out with employed residents in these areas commuting 5.6km, 6.3km and 6.4km on average, respectively.

The five longest and five shortest average commuting distances across all SA2s are summarised in Table 8.13. Esk and Lockyer Valley – East SA2s demonstrated the longest average commuting distances for their employed residents of 36.5km and 35.6km respectively. Only 13 SA2s produced an average commuting distance for employed residents in excess of 30km, with these SA2s concentrated amongst the Outer Brisbane and Rest of SEQ rings.

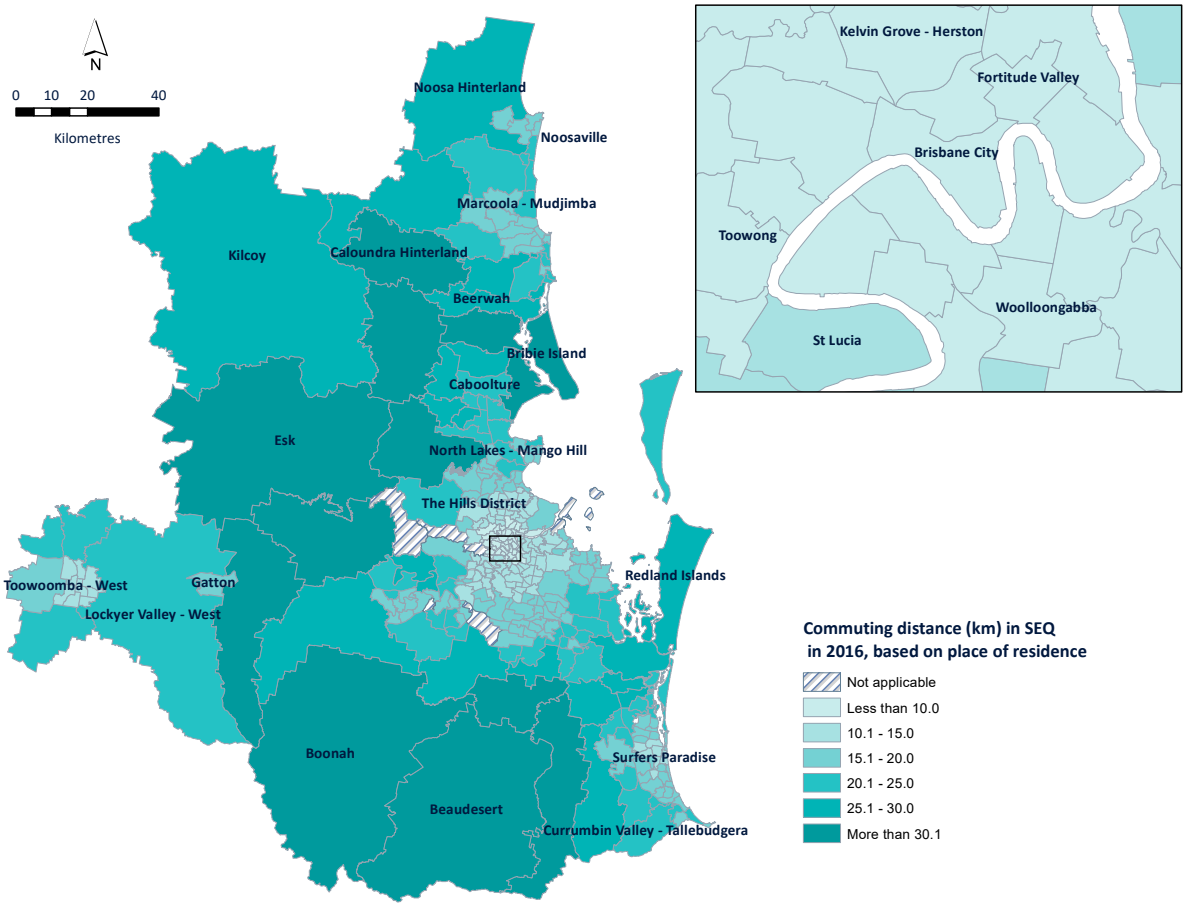
Table 8.13: Top 5 SA2s with longest and shortest average commuting distances for place of residence of SEQ in 2016

SA2 of residence	Sub-region of residence	Commuting Distance (km)
Top 5 SA2s (Longest)		
Esk	Somerset	36.5
Lockyer Valley – East	Lockyer Valley	35.6
Lowood	Somerset	34.9
Woodford – D' Aguilar	Moreton Bay	34.4
Jimboomba	Logan	33.8
Top 5 SA2s (Shortest)		
Spring Hill	Inner Brisbane	5.6
Brisbane City	Inner Brisbane	6.3
Fortitude Valley	Inner Brisbane	6.4
South Brisbane	Inner Brisbane	7.2
Auchenflower	Inner Brisbane	7.4

Note: BCARR's calculation of average commuting distance excludes individuals with zero commuting distance and those with a commuting distance of more than 250km.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Figure 8.7: Average commuting distance across SEQ SA2s as place of residence in 2016

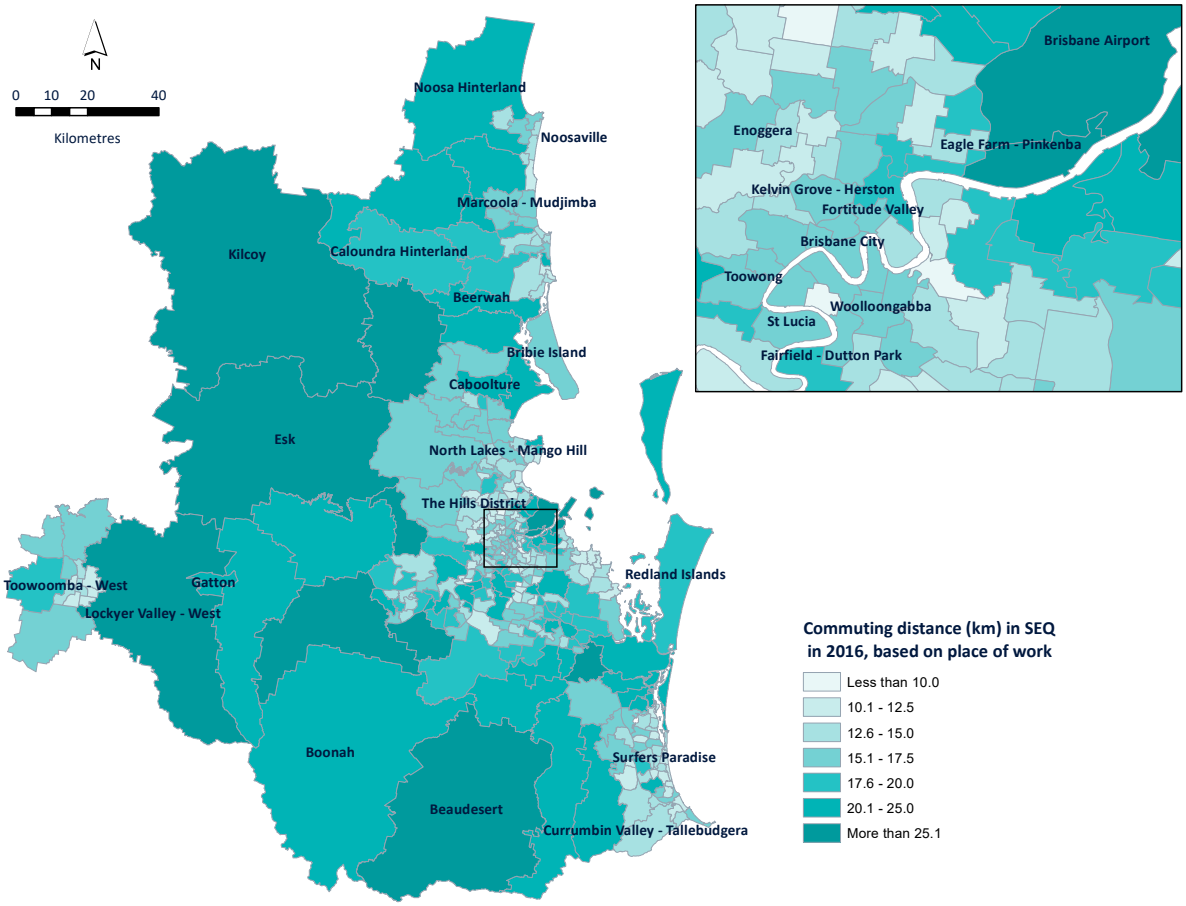


Note: BCARR's calculation of average commuting distance excludes individuals with zero commuting distance and those with a commuting distance of more than 250km.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Average commuting distance is less varied for place of work than place of residence at the SA2 level. As illustrated in Figure 8.8, workers in the Norman Park SA2 experienced the shortest average commuting distance of 9.3km, as compared to workers in the Brisbane Port – Lytton SA2 who faced an average commuting distance of 35.0km. The Brisbane Airport SA2 also demonstrated a long average commuting distance (about 29.6 km) for its workers. The long commuting distances for both port and airport workers is due to the specialised nature of the employment precinct.

Figure 8.8: Average commuting distance across SEQ SA2s as place of work in 2016



Note: BCARR's calculation of average commuting distance excludes individuals with zero commuting distance and those with a commuting distance of more than 250km.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

Table 8.14 summarises the longest and shortest commuting distances for places of work at the SA2 level across SEQ. Unlike the previous table, the longest and shortest SA2 are distributed throughout the various BCARR rings. While Brisbane Port and Brisbane Airport SA2s demonstrated high commuting distances for their workers, other SA2s in the Middle Brisbane ring featured very short commuting distances. Middle Park – Jamboree Heights, Chermside West and Robertson SA2s were among only five SA2s to produce an average commuting distance for their workers below 10.0km.

Table 8.14: Top 5 SA2s with longest and shortest average commuting distances for place of work of SEQ in 2016

SA2 of employment	Sub-region of employment	Commuting Distance (km)
Top 5 SA2s (Longest)		
Brisbane Port – Lytton	Middle East	35.0
Kilcoy	Somerset	31.5
Ripley	Ipswich	30.5
Brisbane Airport	Middle North	29.6
Rosewood	Ipswich	29.3
Top 5 SA2s (Shortest)		
Norman Park	Inner Brisbane	9.3
Highgate Hill	Inner Brisbane	9.5
Middle Park – Jamboree Heights	Middle West	9.6
Chermside West	Middle North	9.8
Robertson	Middle South	9.9

Note: BCARR's calculation of average commuting distance excludes individuals with zero commuting distance and those with a commuting distance of more than 250km.

Source: BCARR analysis of ABS Census of Population and Housing, 2016.

8.5 Changes in commuting flows

The information presented in Chapter 5 showed that the largest absolute increase in employed residents from 2016 to 2021 was for the Gold Coast SA4 (44,700), while Inner Brisbane, Logan-Beaudesert and Ipswich each added between 24,000 and 30,000 new employed residents. The Gold Coast and Inner Brisbane regions tend to have high self-containment, so it is likely there were very substantial increases in commuter flows within those two regions. Significant increases in commuter flows within Logan and Ipswich, and between Gold Coast and Logan are also likely. The rate of growth of employed residents was highest for Inner Brisbane, Logan-Beaudesert and Ipswich SA4s (which were each between 17 and 19 per cent), and so we should expect relatively rapid growth in commuter flows originating in these regions between 2016 and 2021. The 2021 ABS Census of Population and Housing data was released by ABS in October 2022, after the completion of this research project.

BITRE has undertaken some historic research into trends in commuting flows in SEQ and other large Australian cities (BITRE 2013a, b). A common trend that was identified across all four cities between 2001 and 2006 was that inward commuting flows had a below-average rate of growth, so the proportion of all commutes that were inward commutes declined (BITRE 2013b). In Sydney, Melbourne and Brisbane, outward flows grew most rapidly. For SEQ, inward flows declined from 30.2 per cent in 2001 to 28.6 per cent in 2006 (BITRE 2013a), and the 26.5 per cent share for 2016 in Table 8.9 suggests it has fallen further since then.[29]

29 Comparison of data across censuses needs to be treated with caution as changes in methodology can impact on estimates.

8.6 30-minute and 45-minute job access

This section analyses 30-minute and 45-minute job access across SEQ. Box 8.1 provides detail on the construction and interpretation of these measures. Job access within 30 and 45 minutes has been constructed at the LGA and SA2 level in SEQ. This section includes 30- and 45-minute job access analysis for the growth area SA2s, with HoustonKemp producing job access data for 2016, 2019 and 2020 (consolidation and expansion, see Box 8.1 for details). Due to the impacts of the pandemic on average road speed, this analysis will omit the results from 2020, focusing on the data presented for 2016 and 2019 only.

Box 8.1 What is 30-minute and 45-minute job access?

The economic consultancy firm, HoustonKemp, were commissioned by the Department to collect data describing the job access conditions within 30 minutes and 45 minutes for residents in a given SA2 or LGA. These job access indicators describe the average number of jobs within SEQ that a working-age resident can access by car within 30 or 45 minutes during the morning peak. Based on the average number of jobs accessible, a value for the proportion of total jobs accessible is provided for each SA2 and LGA.

Starting at the SA2 level, a population-weighted centre is calculated for each SA2, which is combined with estimated traffic speed data on individual roads during morning peak periods to form a commute area for each SA2 for both 30 minutes and 45 minutes. Based on census data, the number of jobs in each destination zone in SEQ (smallest area for which job counts are available) is calculated. By calculating the proportion of each destination zone that lies within an SA2's commute area, the number of jobs accessible can be estimated.

Taking a population-weighted average number of jobs available across all SA2s within a given LGA, an estimate for the average number of jobs accessible for residents within the LGA is collated. The number of jobs available in SEQ is held constant across years, so changes observed in job access represent changes in the road network and speeds observed over individual roads.

What is connectivity to growth areas?

For the purpose of this analysis, growth areas involve the 23 consolidation SA2s and 25 expansion SA2s previously identified, which have shown particularly high growth in recent years. Connectivity to growth areas has been presented in this chapter as the 30-minute and 45-minute job access indicators for each growth area – providing insight into the ability for current and future employed residents in these areas to access major employment destinations throughout SEQ.

What is the definition of consolidation and expansion SA2s?

Growth area SA2s are defined as those for which the population increased by over 1600 persons between 2016 and 2020. These growth areas SA2s are classified as either consolidation or expansion SA2s. Consolidation SA2s are the SA2s where development is occurring on land inside the existing urban area boundary. Expansion SA2s are the SA2s where development is occurring on land outside the existing urban area boundary.

30 and 45-minute job access: LGAs

30 minute job access

Figure 8.9 illustrates the average proportion of SEQ jobs available within 30 minutes for each of the 12 LGAs across SEQ between 2016 and 2019. On average, across the 12 LGAs, working age residents have access to 25.4 per cent of SEQ jobs in 2016 and 24.5 per cent in 2019.

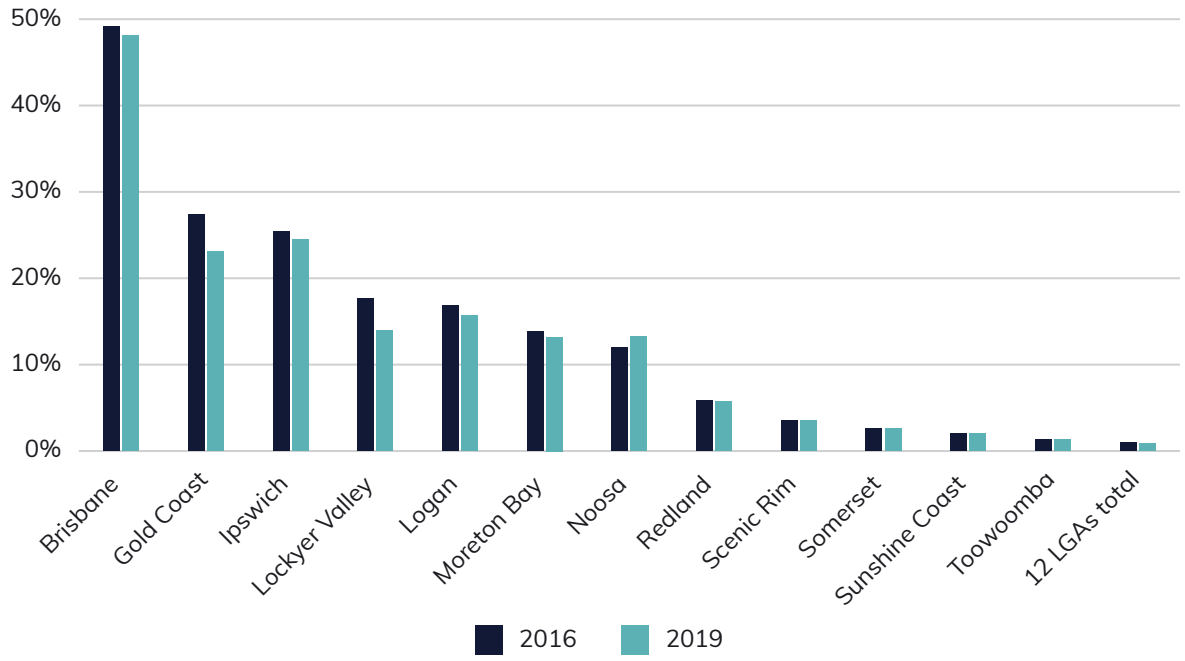
For both 2016 and 2019, Brisbane LGA stands out in particular as the LGA with the highest job access indicators (49.1 per cent in 2016 and 48.1 per cent in 2019). The Logan LGA performs better on the job access indicators than the other LGAs in Greater Brisbane.

Outside Greater Brisbane, the Gold Coast and Sunshine Coast LGAs showed the strongest job access. For the Gold Coast LGA, 13.8 per cent of all jobs were accessible to working-age residents in 2016 and 13.2 per cent in 2019. Somerset and Scenic Rim LGAs showed the lowest access to jobs, with residents having access to roughly 1 per cent of all SEQ jobs within 30 minutes across both 2016 and 2019.

Generally, job access declined between 2016 and 2019 with 11 of the 12 LGAs showing a reduction in the proportion of jobs accessible within 30 minutes. Only the Moreton Bay LGA showed an increase in job access growing from 12 per cent in 2016 to 13 per cent in 2019. As jobs are held constant across the years, this increase represents a positive change in the road network or individual road speeds for residents in the Moreton Bay LGA.

The Logan and Redland LGAs experienced significant declines in job access over the three years. Both Logan and Redland LGAs saw a 4-percentage point decline in the average proportion of jobs accessible between 2016 and 2019, decreasing from 27.4 per cent to 23.1 per cent and 17.7 per cent to 13.9 per cent respectively.

Figure 8.9: 30-minute job access across the 12 LGAs of SEQ from 2016 to 2019



Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

45 minute job access

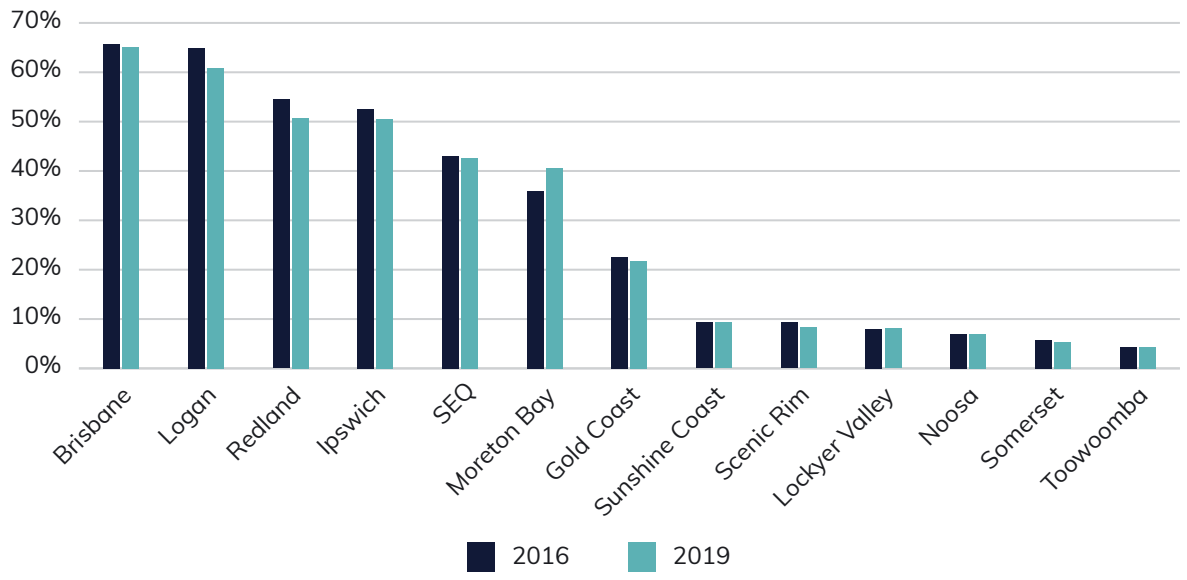
Figure 8.10 shows the proportion of SEQ jobs accessible within 45 minutes for working-age residents across the 12 LGAs between 2016 and 2019. Across the 12 LGAs, working-age residents in SEQ had access to an average of roughly 43.0 per cent of all SEQ jobs within 45 minutes in 2016 and 2019. Brisbane LGA demonstrated the strongest access to jobs across both 2016 and 2019 with residents having access to 65.8 per cent and 65.2 per cent of all SEQ jobs, respectively.

The four LGAs in the Outer Brisbane ring (Logan, Redland, Ipswich and Moreton Bay) also showed relatively strong job access indicators. Working-age residents of the Logan LGA had average proportions of accessible jobs similar to residents in Brisbane LGA at 64.9 per cent in 2016 and 60.9 per cent in 2019. LGAs further away from Brisbane showed notably lower 45-minute access to jobs. The Toowoomba LGA showed the lowest proportions of jobs accessible within 45 minutes with only 4.4 per cent of all SEQ jobs accessible in both 2016 and 2019.

Between 2016 and 2019, only the Moreton Bay and Lockyer Valley LGAs saw notable increases in 45-minute job access. The average proportion of jobs accessible within 45 minutes for Moreton Bay residents increased from 36.0 per cent to 40.6 per cent between 2016 and 2019.

The Logan and Redland LGAs both experienced significant decreases in 45-minute job access between 2016 and 2019, of around 4-percentage points.

Figure 8.10: 45-minute job access across the 12 LGAs of SEQ from 2016 to 2019



Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

Comparing 30-minute and 45-minute job access, the largest differences in job access are seen amongst the four LGAs of the Outer Brisbane ring (Logan, Redland, Ipswich and Moreton Bay). In 2016, residents in these four LGAs had access to more than twice as many jobs within 45 minutes than they had within 30 minutes. For example, residents in the Logan LGA only had access to 27.4 per cent of all SEQ jobs within 30 minutes in 2016, yet had access to 64.9 per cent within 45 minutes.

Residents within the LGAs across the Rest of SEQ ring saw significantly smaller differences in job accessibility between the 30-minute and 45-minute measures. The Gold Coast LGA exhibited the largest increase in the proportion of SEQ jobs accessible with an additional 8.8 per cent accessible within 45 minutes. The Toowoomba LGA showed the smallest increase in the proportion of SEQ jobs accessible with only an additional 0.9 per cent accessible within 45 minutes. These results show that an additional 15 minutes of commuting time for residents in these LGAs doesn't significantly improve their access to other major employment zones, particularly those centred in Greater Brisbane.

30 and 45-minute job access: SA2s

30 minute job access

At the SA2 level, there is large variability across both 30-minute and 45-minute job access indicators. Table 8.15 highlights the five SA2s with the largest proportion of jobs accessible across SEQ within 30 minutes. Each of these SA2s lie within either the Inner Brisbane or Middle Brisbane ring, showing strong job access for these areas within 30 minutes. The Murarrie SA2 in the Middle East sub-region had access to the largest proportion of all jobs in SEQ within 30 minutes at 56.6 per cent. Eagle Farm – Pinkenba, Annerley and Upper Mount Gravatt SA2s, all located in the Middle Brisbane ring also showed particularly high 30-minute job access. Hendra SA2 was the only SA2 from the Inner Brisbane ring amongst the five highest SA2s for 30-minute job access. Of the 332 SA2s in SEQ, only eight SA2s were able to access more than 55.0 per cent of all SEQ jobs within 30 minutes.

Table 8.15: Top 5 SA2s with the largest 30-minute job access across SEQ in 2019

SA2s	BCARR rings / Sub-regions	Average SEQ jobs accessible in 30 minutes	Proportion of SEQ jobs accessible in 30 minutes (per cent)
Murarrie	Middle East	840,542	56.6
Eagle Farm – Pinkenba	Middle North	830,650	55.9
Annerley	Middle South	821,729	55.3
Hendra	Inner Brisbane	820,806	55.3
Upper Mount Gravatt	Middle South	819,855	55.2

Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

45 minute job access

Table 8.16 shows the SEQ SA2s with the highest 45-minute job access indicators. SA2s from the Logan and Middle South sub-regions performed noticeably well in 45-minute job access, with all SA2s shown in Table 8.16 located within these two sub-regions. Additionally, 19 of the 20 SA2s with the strongest 45-minute job access indicators were located within the Logan and Middle South sub-regions.

The Underwood and Springwood SA2s showed the highest 45-minute job access across all of SEQ, providing working-age residents with access to an average of 72.7 per cent and 71.4 per cent of all SEQ jobs within a 45-minute commute, respectively. These are two adjoining SA2s in the Logan LGA from which residents within 45 minutes will typically be able to access the CBD, as well as most of the Brisbane suburbs south of the river (including Ipswich) and much of the Gold Coast. Eight Mile Plains, Rochedale – Burbank and Wishart SA2s provided the highest 45-minute job access from the Middle South sub-region with each SA2 providing the average resident with access to more than 1,050,000 jobs.

Table 8.16: Top 5 SA2s with the largest 45-minute job access across SEQ in 2019

SA2s	BCARR rings / Sub-regions	Average SEQ jobs accessible in 45 minutes	Proportion of SEQ jobs accessible in 45 minutes (per cent)
Underwood	Logan	1,079,472	72.7
Springwood	Logan	1,060,085	71.4
Eight Mile Plains	Middle South	1,058,497	71.3
Rochedale – Burbank	Middle South	1,055,173	71.1
Wishart	Middle South	1,053,872	71.0

Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

30 and 45-minute job access: Consolidation and expansion SA2s

Consolidation and expansion areas are two different types of growth areas that have been identified at the SA2 scale, and are described in more detail in Chapter 4. In this section we consider whether 30- and 45-minute job access differ between the different types of growth areas in SEQ. Table 8.17 compares 30- and 45-minute job access across the three types of SA2. As a whole, the expansion SA2s have markedly lower 30-minute job access than the consolidation and remaining SA2s (at 15.3 per cent, versus 26.7 and 27.5 per cent, respectively). However, when it comes to 45-minute job access, the expansion areas can access 42.5 per cent of all SEQ jobs, which is above the average for consolidation areas (38.9 per cent) and only slightly below the average for the other (non-growth) SA2s (45.3 per cent).

Table 8.17: 30-minute and 45-minute job access in growth areas of SEQ in 2019

Growth area type	Proportion of SEQ jobs accessible in 30 minutes (per cent)	Proportion of SEQ jobs accessible in 45 minutes (per cent)
Consolidation	26.7	38.9
Expansion	15.3	42.5
Other	27.5	45.3
SEQ	24.5	42.7

Note: Consolidation is development occurring on land inside the existing urban area boundary. This was previously known as 'infill development' . Expansion is development occurring on land outside the existing urban area boundary. This was previously known as 'greenfield development' . As defined on page 175 (Figure 32, *Shaping SEQ*), the existing urban area is a statistical boundary used to measure consolidation and expansion development.

Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

Consolidation areas

There are 23 consolidation SA2s across SEQ. Table 8.18 presents the 30-minute and 45-minute job access for each consolidation area. For 30-minute job access, the consolidation SA2s of Brisbane City, Fortitude Valley, South Brisbane and Coorparoo showed the highest job access by providing residents with access to an average of 54 per cent of all SEQ jobs. Of these SA2s, the first three are located within Inner Brisbane, reflecting the region's strong 30-minute job access. The consolidation SA2s displayed a wide range of 30-minute job access, essentially falling into two groups:

- Consolidation SA2s in Inner and Middle Brisbane had 30-minute job access of 40.0 per cent or more.
- Consolidation SA2s in the Gold Coast, Sunshine Coast and Moreton Bay LGAs had job access of 16.1 per cent or less, with job access being particularly low in consolidation areas within the latter two LGAs.

Table 8.18: 30-minute and 45-minute job access for consolidation SA2s across SEQ in 2019

SA2s	BCARR rings / sub-regions	Proportion of SEQ jobs accessible in 30 minutes (per cent)	Proportion of SEQ jobs accessible in 45 minutes (per cent)
Brisbane City	Inner Brisbane	**54.4**	**68.4**
Fortitude Valley	Inner Brisbane	53.8	67.8
South Brisbane	Inner Brisbane	53.7	66.7
Coorparoo	Middle South	53.7	67.0
Newstead – Bowen Hills	Inner Brisbane	52.0	67.2
Morningside – Seven Hills	Inner Brisbane	51.2	65.9
West End	Inner Brisbane	50.1	66.3
Calamvale – Stretton	Middle South	49.6	68.1
Forest Lake – Doolandella	Middle West	44.7	62.0
Taigum – Fitzgibbon	Middle North	40.5	61.9
Oxenford – Maudsland	Gold Coast	16.1	27.7
Robina	Gold Coast	13.4	17.3
Surfers Paradise	Gold Coast	13.4	17.5
Hope Island	Gold Coast	11.6	22.5
Biggera Waters	Gold Coast	11.5	19.3
Scarborough – Newport – Moreton Island	Moreton Bay	7.2	39.4
Mountain Creek	Sunshine Coast	6.7	10.8
Bli Bli	Sunshine Coast	6.4	8.4
Caboolture	Moreton Bay	6.2	25.1
Peregian Springs	Sunshine Coast	5.7	7.6
Wurtulla – Birtinya	Sunshine Coast	5.6	9.9
Caboolture – South	Moreton Bay	5.3	20.9
Bribie Island	Moreton Bay	**1.8**	**7.1**
Consolidation SA2s – Average		**26.7**	**38.9**

Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

For 45-minute job access, Brisbane City and Fortitude Valley SA2s continue to display relatively strong job access, providing residents with access to 68.4 per cent and 67.8 per cent of SEQ jobs, respectively. The Calamvale – Stretton SA2 from the Middle South sub-region also provided residents with access to 68.1 per cent of all jobs in SEQ. Again, 45-minute job access tends to be much lower for consolidation SA2s in the Gold Coast, Sunshine Coast and Moreton Bay LGAs. Particularly poor 45-minute job access in Bli Bli, Peregian Springs and Bribie Island SA2s contributed to the low overall job access values for consolidation SA2s.

Expansion areas

Table 8.19 shows the 30-minute and 45-minute job access for the 25 expansion SA2s identified across SEQ. For 30-minute job access, the Rochedale – Burbank and Pallara – Willawong SA2s showed relatively higher job access than other expansion SA2s, providing working-age residents with access to an average of 51.8 per cent and 47.2 per cent of all SEQ jobs respectively. Of the 25 expansion SA2s, 21 SA2s showed 30-minute job access below 20.0 per cent, providing residents with access to less than one in every five jobs across SEQ.

Table 8.19: 30-minute and 45-minute job access for expansion SA2s across SEQ in 2019

SA2s	BCARR rings / sub-regions	Proportion of SEQ jobs accessible in 30 minutes (per cent)	Proportion of SEQ jobs accessible in 45 minutes (per cent)
Rochedale – Burbank	Middle South	**51.8**	**71.1**
Pallara – Willawong	Middle South	47.2	64.5
Murrumba Downs – Griffin	Moreton Bay	31.1	61.8
Bellbird Park – Brookwater	Ipswich	22.4	57.9
Springfield Lakes	Ipswich	18.2	58.4
Boronia Heights – Park Ridge	Logan	17.2	59.0
Pimpama	Gold Coast	17.1	42.7
Dakabin – Kallangur	Moreton Bay	15.3	51.0
Ormeau – Yatala	Gold Coast	14.7	57.9
Redbank Plains	Ipswich	14.4	55.3
North Lakes – Mango Hill	Moreton Bay	14.4	50.3
Chambers Flat – Logan Reserve	Logan	13.6	60.3
Upper Coomera – Willow Vale	Gold Coast	13.4	28.9
Coomera	Gold Coast	13.2	28.4
Cashmere	Moreton Bay	11.6	45.8
Thornlands	Redland	11.4	54.5
Narangba	Moreton Bay	10.7	42.8
Ripley	Ipswich	7.4	41.2
Redland Bay	Redland	7.0	29.4
Greenbank	Logan	6.1	36.3
Caloundra – West	Sunshine Coast	5.8	10.8
Landsborough	Sunshine Coast	5.7	10.5
Jimboomba	Logan	5.6	30.8
Toowoomba – West	Toowoomba	4.1	**4.7**
Noosa Hinterland	Noosa	**2.9**	7.7
Expansion SA2s – Average		**15.3**	**42.5**

Source: Customised data based on HERE GPS speed probe data and ABS Census of Population and Housing 2016, provided by HoustonKemp.

For 45-minute job access, the Rochedale – Burbank SA2 showed the highest proportion of jobs accessible with 71.1 per cent. The Pallara – Willawong, Murrumba Downs-Griffin and Chambers Flat-Logan Reserve SA2s also showed particularly high 45-minute job access providing residents with access to more than 60 per cent of SEQ jobs on average.

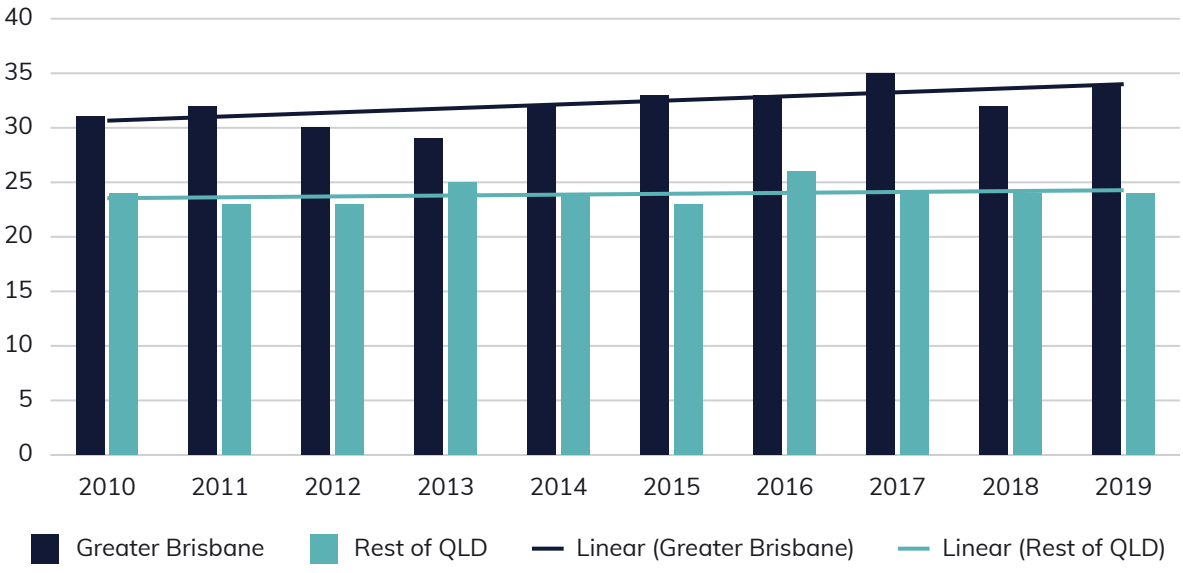
Expansion SA2s showed relatively low 30-minute job access as a whole, averaging an accessible job proportion of 15.3 per cent across all 25 SA2s. This was due to 16 of the 25 expansion SA2s producing 30-minute job access indicators below 15 per cent. However, expansion SA2s performed notably better in 45-minute job access, averaging 42.5 per cent of jobs being accessible across the 25 SA2s. A key reason for the stronger 45-minute job access is the distribution of the expansion SA2s amongst those LGAs in the Outer Brisbane ring (Logan, Ipswich, Redland and Moreton Bay), all of which performed noticeably better in 45-minute job access measures.

8.7 Average commuting trip duration

This section analyses the average commuting trip duration for workers in Greater Brisbane. This section is based on data collected from the HILDA annual survey. For the purpose of this analysis, annual HILDA data has been collected from 2010 to 2019 and is not available at the LGA, BCARR ring or SA2 levels.

Figure 8.11 shows the time series data for average commuting trip duration between 2010 and 2019 for the Greater Brisbane area and the Rest of Queensland. Over the ten years, average commuting times in the Greater Brisbane area have grown slightly, increasing from 31 minutes in 2010 to 34 minutes in 2019. This growth has not been steady and consistent. Throughout the ten years, average commuting times peaked in 2017, reaching an average of 35 minutes for Greater Brisbane residents. The lowest average commuting trip duration was 29 minutes, occurring in 2013. Residents in the Rest of Queensland experienced consistently lower average commuting times between 2010 and 2019 – averaging 8 minutes shorter commuting trips over the ten-year period. Commuting trip duration in the Rest of Queensland remained relatively stable between 2010 and 2019, with commuters reporting average trip durations of 24 minutes in both 2010 and 2019.

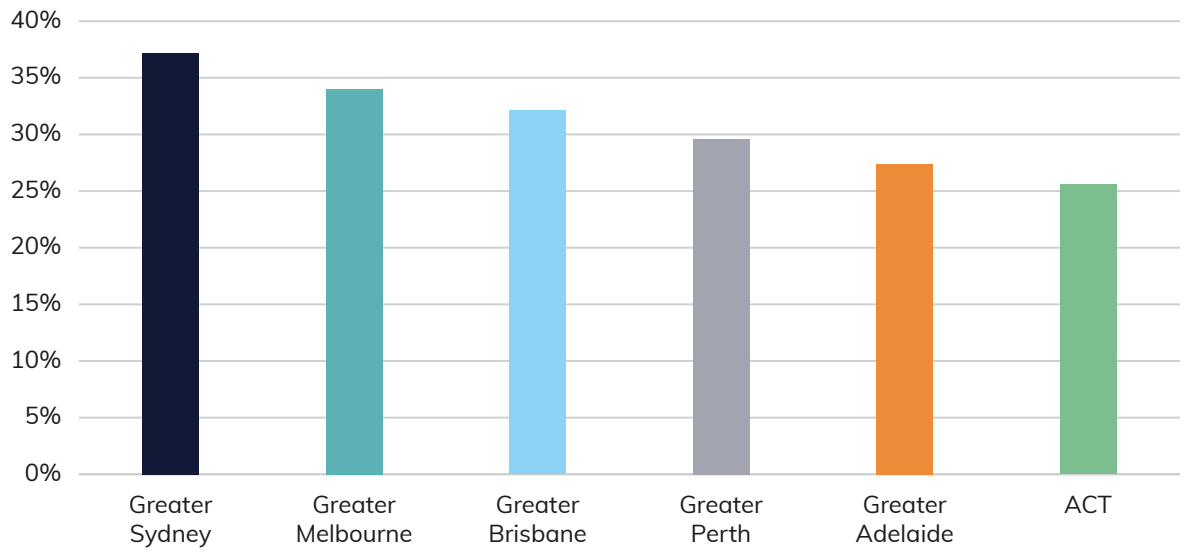
Figure 8.11: Average commuting trip duration in Queensland from 2010 to 2019



Source: BCARR analysis of Household, Income and Labour Dynamics in Australia (HILDA) annual survey, 2010 to 2019.

Figure 8.12 provides greater context for the average commuting trip duration in Greater Brisbane by comparing average trip duration between 2010 and 2019 with five other major Australian cities. Greater Brisbane's average commuting trip duration of 32.1 minutes over the ten-year period ranks third-longest amongst the six areas chosen. Only commuting trips in Greater Sydney and Greater Melbourne were longer than Greater Brisbane with an average of 37.2 and 34.0 minutes respectively.

Figure 8.12: Average commuting trip duration between 2010 and 2019 for six major population areas



Note: The presented figure for each city is an average of the duration estimates for the 10 year period.
Source: BCARR analysis of data from the Household, Income and Labour Dynamics in Australia (HILDA) annual survey, 2010 to 2019.

8.8 Congestion Metrics

This section provides a brief insight into the current congestion levels within SEQ, focusing on the Greater Brisbane area. In addition to Greater Brisbane, other major population centres across SEQ, namely the Gold Coast, the Sunshine Coast and Toowoomba, have been considered where possible. The data sources considered include TomTom (see Box 8.2) and HoustonKemp congestion metrics.

HoustonKemp has collected a range of data exploring congestion levels experienced in large population centres across Australia. Of this data, one of the indicators collected calculates the proportion of the road network in a given city or town that is congested. Figure 8.14 shows the proportion of the road network congested amongst Australia's seven capital cities over 38 weeks in 2019. HoustonKemp also provided data for this indicator during 2020. This data has been omitted from the analysis due to the significant impacts of COVID–19 restrictions on congestion data.

Of the seven capital cities, Greater Melbourne has shown consistently higher levels of congestion across its road network – reaching a maximum of 19.5 per cent of the road network congested. Greater Brisbane ranks fairly well according to this indicator, with only Greater Darwin and Greater Hobart producing consistently lower levels of congestion across their respective road networks.

Through 2019, Greater Brisbane experienced an average congestion of 10.7 per cent of its total road network, comparable to the level of congestion in Greater Perth of 11.4 per cent. However, this result is considerably lower than the average congestion across Greater Melbourne of 18.3 per cent, Greater Sydney of 14.4 per cent, and Greater Adelaide of 14.3 per cent.

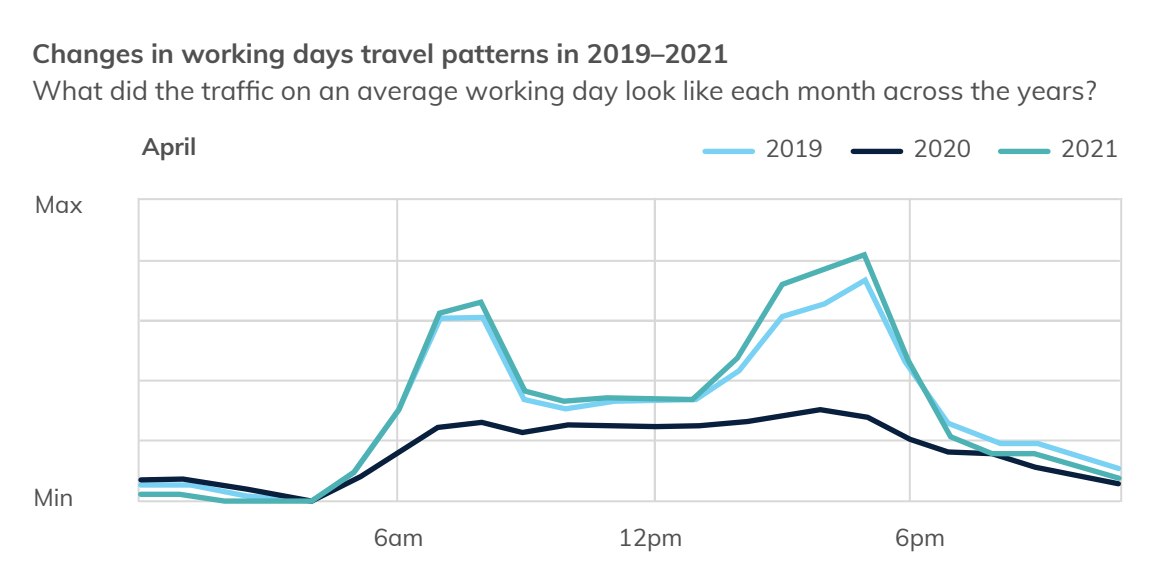
Box 8.2 A snapshot of Brisbane congestion in 2021 – TomTom

TomTom, a large digital navigation company, collects a wide range of data on road incidents, traffic, emissions and congestion. The TomTom traffic Index, produced by the company, provides real-time insight into the movement patterns on both a local and global scale.

According to the TomTom Traffic Index, Brisbane ranks 131 in the world for congestion – with a reported congestion level of 25 per cent in 2021. This result shows that average travel times across the city in 2021 were 25 per cent longer compared to baseline non-congested conditions. The only Australian city to rank higher than Brisbane was Sydney at 97, with a congestion level of 28 per cent in 2021. Gold Coast had similar levels of congestion to Brisbane, with a reported congestion level of 24 per cent in 2021.

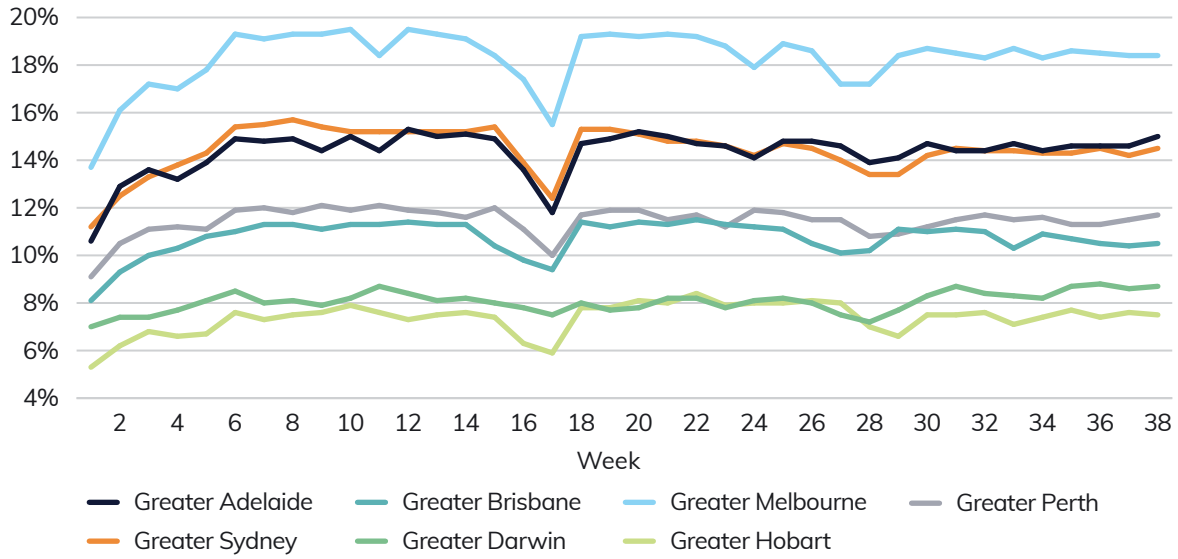
Figure 8.13 shows the average traffic during a working day between 2019 and 2021 in April. In 2021, traffic levels returned to a similar level experienced in 2019. Evening traffic levels for the month of April appear to have grown beyond the 2019 baseline. Over 2021, commuters in Brisbane lost 108 hours by driving during rush hour conditions – an increase on the 107 hours from 2019.

Figure 8.13: Brisbane traffic levels during the month of April through 2019 – 2021



Source: TomTom analysis of traffic levels (2022).

Figure 8.14: Percentage of congested roads amongst Australian capital cities through 2019

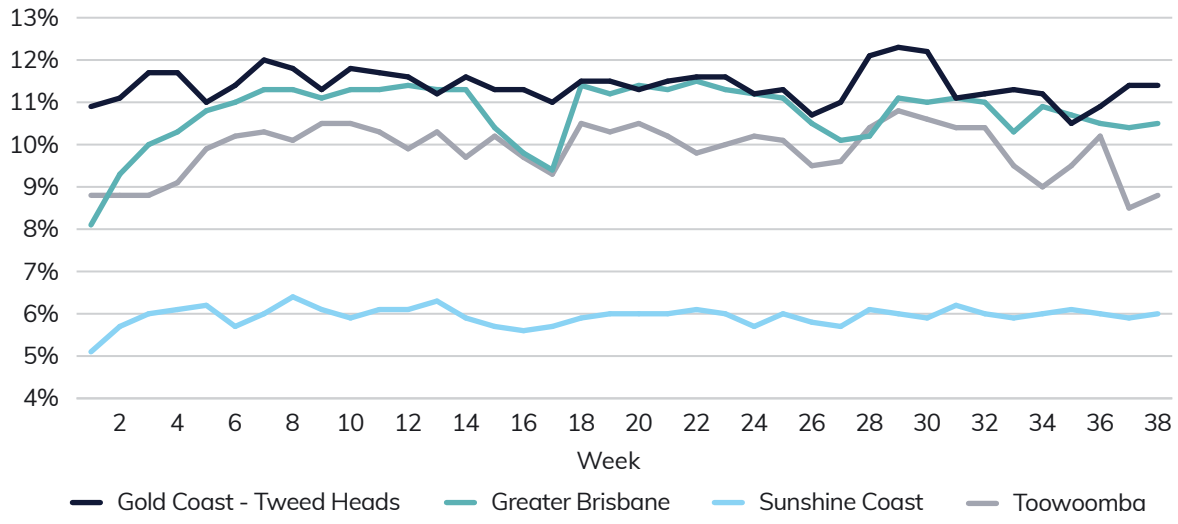


Source: BCARR analysis of congestion metric data provided by HoustonKemp (2020).

Figure 8.15 provides additional insight into the congestion levels experienced in Greater Brisbane in 2019 by comparing it with other major population centres in SEQ. Among the four areas in SEQ for which data was collected, Gold Coast – Tweed Heads showed the highest congestion levels over 2019. Average congestion in Gold Coast – Tweed Heads of 11.4 per cent of its road network exceeds the average of 10.7 per cent in Greater Brisbane.

The road networks throughout Toowoomba and the Sunshine Coast showed lower average congestion levels in 2019. An average congestion of 9.9 per cent experienced in Toowoomba is reasonably comparable to the level of congestion in Greater Brisbane. The Sunshine Coast showed significantly less congestion than the other three population centres throughout 2019, producing an average of 5.9 per cent across the dataset.

Figure 8.15: Percentage of congested roads between major population centres in SEQ through 2019



Source: BCARR analysis of congestion metric data provided by HoustonKemp (2020).

8.9 Conclusion

This chapter analysed the movement of workers and employed residents within the SEQ region. Across the 12 LGAs of SEQ, over 70 per cent of employed residents work within their LGA of residence. Toowoomba and Brisbane LGAs possessed the highest self-containment rates across the region at 88.6 and 84.6 per cent respectively.

In 2016, total commuter flows within SEQ were 1.44 million. Of these commuter flows, the majority remained within their respective BCARR ring at 65.7 per cent of all flows. Particularly important within this category of commuter flows were flows to a different SA2 in the home sub-region, which accounted for 41.0 per cent of all commuter flows in SEQ. Overall, 26.5 per cent of commuter flows operated across rings in an inward direction and 7.8 per cent operated across rings in an outward direction.

Employed residents in the SEQ region have an average commuting distance of 17.5km. As commuting distance increased with distance away from the Inner Brisbane ring, employed residents in Outer Brisbane and the Rest of SEQ experienced significantly longer average commuting distances of 20.6km and 24.3km respectively. In terms of commuting trip duration, employed residents in Greater Brisbane faced an average duration of 31.0 minutes in 2019. This value ranks Greater Brisbane behind only Greater Melbourne and Greater Sydney in terms of total trip duration.

This chapter also provided some initial insight into the congestion levels in Brisbane and across SEQ. According to data provided by TomTom, Brisbane ranks 131 in the world for total congestion reporting a congestion level of 25 per cent in 2021. The available congestion metrics show that congestion in the Gold Coast is similar to that in Brisbane, but the Sunshine Coast has relatively low congestion levels.

Commuting times and congestion levels are commonly considered to be important contributors to the liveability of a city. The next chapter explores the liveability of SEQ in greater depth, focusing on how access to social infrastructure and services varies across the region.

CHAPTER 9

LIVEABILITY

Key points

- This chapter presents data on three key indicators of liveability from the Australian Urban Observatory (AUO): access to services and social infrastructure (including health, education, arts and culture infrastructure, and community and sports infrastructure), walkability and access to public open space.
- In 2018, for all of the social infrastructure indicators, Brisbane LGA achieved the highest scores (0.47 for access to health infrastructure, 0.65 for education, 0.34 for arts and culture and 0.08 for community and sports – see Box 9.2).
- Toowoomba consistently performed well on all of the social infrastructure measures: ranking second for access to education (0.55) and arts and culture (0.29); and third for access to health (0.35) and community and sports infrastructure (0.05).
- Of the other LGAs, Somerset did well for access to health infrastructure (0.36) and Scenic Rim did well for access to community and sports infrastructure (0.05). Both of these LGAs came second only to Brisbane on these indicators.
- For all of the social infrastructure measures, Inner Brisbane achieved the best results, followed by Middle Brisbane. The expansion growth areas (new and developing areas) scored lower than consolidation (infill) growth areas and other (non-growth) areas.
- In 2018, the LGAs that scored highest on the walkability index were Brisbane (1.29) and Gold Coast (0.48). The LGAs that scored lowest were Scenic Rim (–3.58), Somerset (–4.04) and Lockyer Valley (–5.40). SEQ achieved a score of 0.15 (see Box 9.3).
- Inner Brisbane scored much higher on the walkability index (3.29) than the next highest region, Middle Brisbane (0.59). Outer Brisbane was the least walkable region (–0.82).
- The expansion growth areas scored lower than consolidation growth areas and other areas for walkability (1.12, 1.69 and 0.09, respectively).
- In 2018, 54.5 per cent of dwellings in SEQ had access to public open space. Redland, Noosa and Gold Coast residents had the best access to public open space (64.9 per cent, 60.7 per cent and 58.7 per cent of dwellings, respectively).
- Inner Brisbane scored lowest on this indicator (52.3 per cent). Middle and Outer Brisbane both scored 55.1 per cent.
- The expansion growth areas scored lower than consolidation growth areas for access to public open space, but slightly higher than other areas (56.5 per cent of dwellings in expansion areas had access to public open space, compared with 58.4 per cent of dwellings in consolidation areas and 53.6 per cent in other areas).
- Overall, at the LGA scale, Brisbane scored highest on the access to services and walkability metrics, but was outperformed by Redland, Noosa, Gold Coast and Moreton Bay on access to public open space. In relation to the Brisbane rings, Inner Brisbane scored highest on access to services and walkability metrics, followed by Middle Brisbane. Outer Brisbane achieved the lowest scores for these indicators, however, for access to public open space it did slightly better than Inner Brisbane and was comparable with Middle Brisbane.
- The expansion growth areas scored lower than consolidation growth areas for all of the indicators, but did slightly better than other areas for access to public open space.

9.1 Introduction

Liveability is not defined consistently in the research literature. It may include factors such as access to services and amenities, availability of public open space, walkability, housing affordability and social connectedness.

This chapter presents data on three key indicators of liveability from the Australian Urban Observatory (AUO) (Box 9.1): access to services and social infrastructure (including health, education, arts and culture, and community and sports infrastructure), walkability, and access to public open space. Access to public open space and walkability are important as they provide physical activity and recreation opportunities and facilitate social interaction. These factors can have a positive impact on physical and mental health. Access to health and education services are important to all citizens, and people must have access to these in the areas in which they live. Arts and culture, and community and sports infrastructure provide opportunities for social engagement and community participation. These can be vital factors in attracting and retaining people and ensuring vibrant and sustainable communities.

This chapter will examine each of these indicators in turn. Data are presented by LGAs, BCARR rings and sub-regions, SA2s, and growth areas (for details, please see chapters 1 and 4, sections 1.3 and 4.3). As described in Chapters 1 and 4 (sections 1.3 and 4.3), SEQ growth areas have been divided into 'consolidation' and 'expansion' areas. Consolidation is development occurring on land inside the existing urban area boundary, previously known as 'infill development' . Expansion is development occurring on land outside the existing urban area boundary, previously known as 'greenfield' development. As defined in *ShapingSEQ* (Figure 32, Queensland Government 2017), the existing urban area is a statistical boundary used to measure consolidation and expansion development.

Moreton Bay is a diverse LGA and has been divided into Moreton Bay North and Moreton Bay South. This enables a more nuanced analysis of the characteristics of this LGA. Moreton Bay North consists of SA2s falling under 313 Moreton Bay-North (SA4) (except for Kilcoy, which is part of Somerset), and Moreton Bay South consists of SA2s belonging to 314 Moreton Bay-South (SA4).

Box 9.1: What is the Australian Urban Observatory and liveability data?

The Australian Urban Observatory (AUO) is a digital platform that measures and maps key aspects of liveability across Australia's 21 largest cities. It is located within the Centre for Urban Research at RMIT University.

The indicators use OpenStreetMap road network and points of interest data, and address points from the Geocoded National Address File (G-NAF) to identify and measure proximity to destination points.

The AUO covers urban areas of SEQ, that is, areas that are defined as 'urban' or 'other urban' according to the ABS classification of Section of State (SOS). Areas are only included if they have at least 5 dwellings and more than 10 people at the Mesh Block level. Areas where people do not live, such as parklands, industrial estates and commercial areas are excluded.

Only a small proportion of the Mesh Blocks in the regional LGAs of Lockyer Valley, Scenic Rim and Somerset are captured due to their rural nature. Therefore, only the urban parts of these LGAs are covered in this chapter.

More information about the AUO and the methodology used to compile the liveability indicators can be found on the AUO website: https://auo.org.au/about/

Housing affordability is another important component of liveability, and while it is not covered in this chapter, housing affordability was analysed in some detail in Chapter 4. To gain a broader perspective on liveability, the results of this chapter should be considered in conjunction with the housing affordability findings from Chapter 4.

9.2 Access to services: social infrastructure

This set of indicators consists of four types of social infrastructure: health, education, arts and culture, and community and sports. These are measures of physical proximity only and do not cover factors such as quality, cost or affordability. See Box 9.2 for information on how these indicators are measured. Each indicator will be discussed in turn.

Box 9.2: How is access to social infrastructure measured?

The table below shows the types of services (destination points) that are included in the Social Infrastructure Index developed by the AUO. Binary indicators were used to record the presence (=1) or absence (=0) of the 16 types of social infrastructure destinations (Davern et al. 2017). The index has been divided into four subdomains: arts and culture (3 service types); community and sports (3 service types); education (4 service types) and health (6 service types). The maximum score that can be obtained for health infrastructure is 6 as there are 6 different service types, the maximum that can be obtained for education is 4, and the maximum for both arts and culture and community and sports is 3. For this report, BCARR have scaled the scores to a value between 0 and 1 to allow for comparison between indicators.

Infrastructure type	Destination	Distance
Arts and culture infrastructure	Museum/Art gallery	3200m
	Cinema/Theatre	3200m
	Library	1000m
Community and sports infrastructure*	Community centre	1000m
	Public swimming pool	1200m
	Sports facility	1000m
Education infrastructure	Childcare	800m
	Out of school hours care	1600m
	Government primary school	1600m
	Government secondary school	1600m
Health infrastructure	Residential aged care facility	1000m
	Dentist	1000m
	General practitioners (GP)	1000m
	Maternal, child, family health centre	1000m
	Other community health care centre	1000m
	Pharmacy	1000m

* Private sport and recreation services are not included in this indicator.

Access to health infrastructure

Access to health infrastructure: SEQ LGAs

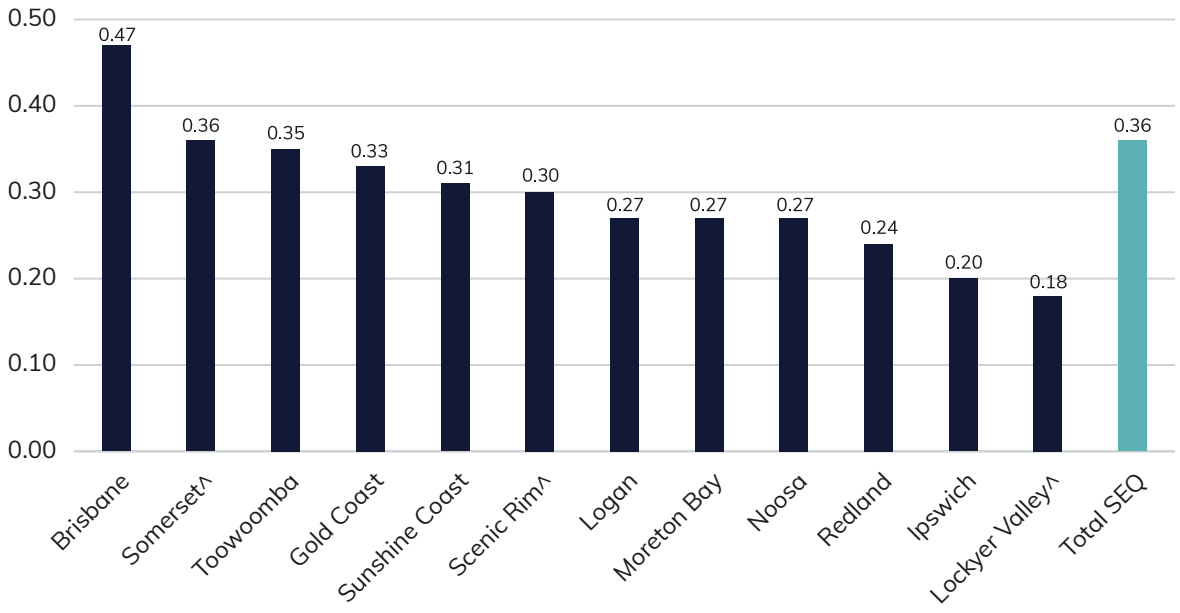
In 2018, the LGAs that scored the highest for access to health infrastructure were Brisbane (0.47), Somerset (0.36) and Toowoomba (0.35) (Figure 9.1). Redland (0.24), Ipswich (0.20) and Lockyer Valley (0.18) scored the lowest. The score for the whole of SEQ was 0.36.

It is not surprising that Brisbane LGA has scored highly on this indicator, consisting of the inner and middle areas of a major capital city and having the highest population size and density of all the LGAs (see Table 3.12). While Toowoomba doesn't have a particularly high population density, it is a major regional centre which may explain its high score for this measure.

Somerset has an ageing population and this could account for its high rank on this indicator – as health services are needed to accommodate an older cohort. As shown in Chapter 3, the proportion of the population aged 65 and over is 20.8 per cent, which compares with 15.5 per cent for all 12 LGAs. In addition, the population of this age group grew by 21 per cent between 2016 and 2020, the second fasted growing LGA with respect to this cohort. The town centre of Kilcoy has a regional hospital, a residential aged care facility, two aged care services and a range of other health services. While some of these services will not be captured in this measure (e.g., hospital) it does suggest that Kilcoy is well–served in this area.

Sunshine Coast and Scenic Rim also did relatively well on this indicator and have high proportions of persons aged 65 and over (20.7 per cent and 21.4 per cent, respectively) (see Chapter 3). Of concern is the low ranking of Noosa which has the highest proportion of older persons of all the LGAs (26.3 per cent). This suggests that Noosa is lacking in this area. Ipswich has the lowest proportion of persons aged 65 and over and is ranked second lowest on the health infrastructure index, however, it has the highest growth rate for this group (23.5 per cent) which may foreshadow increasing demand for health services in the future.

Figure 9.1: Access to health infrastructure by LGAs of SEQ in 2018



Note:

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to health infrastructure: BCARR rings and sub-regions

Inner and Middle Brisbane had the best access to health infrastructure (0.65 and 0.42, respectively) (Table 9.1 and Figure 9.2). Outer Brisbane scored the lowest (0.25). Moreton Bay North scored higher than Moreton Bay South (0.29 compared with 0.24).

Table 9.1: Access to health infrastructure by SEQ rings and sub-regions in 2018

BCARR rings/sub-regions	Health infrastructure score
INNER Brisbane*	0.65
MIDDLE Brisbane – TOTAL*	0.42
Middle East	0.39
Middle North	0.45
Middle South	0.45
Middle West	0.35
OUTER Brisbane – TOTAL	0.25
Ipswich	0.20
Redland	0.24
Logan	0.27
Moreton Bay	0.27
Moreton Bay North	0.29
Moreton Bay South	0.24
TOTAL – GREATER BRISBANE	0.37
Rest of SEQ	0.32
Gold Coast	0.33
Sunshine Coast	0.31
Noosa	0.27
Toowoomba (urban part)	0.35
Scenic Rim^	0.30
Lockyer Valley^	0.18
Somerset^	0.36
TOTAL – SOUTH EAST QUEENSLAND	0.36

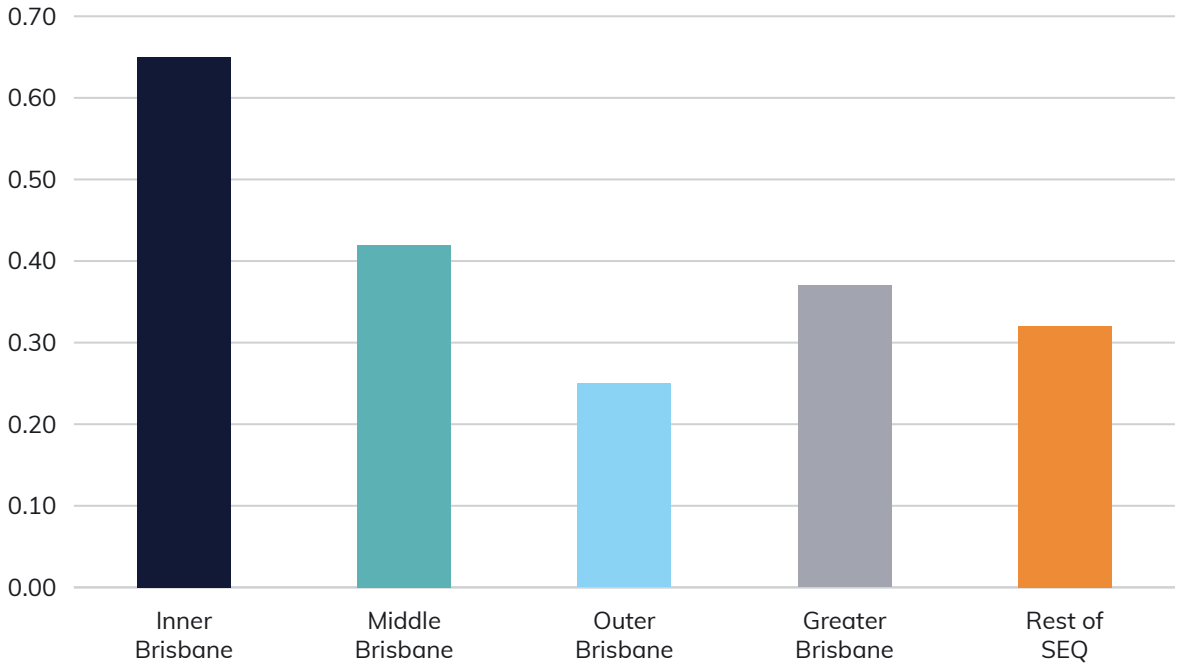
Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Figure 9.2: Access to health infrastructure by SEQ rings in 2018

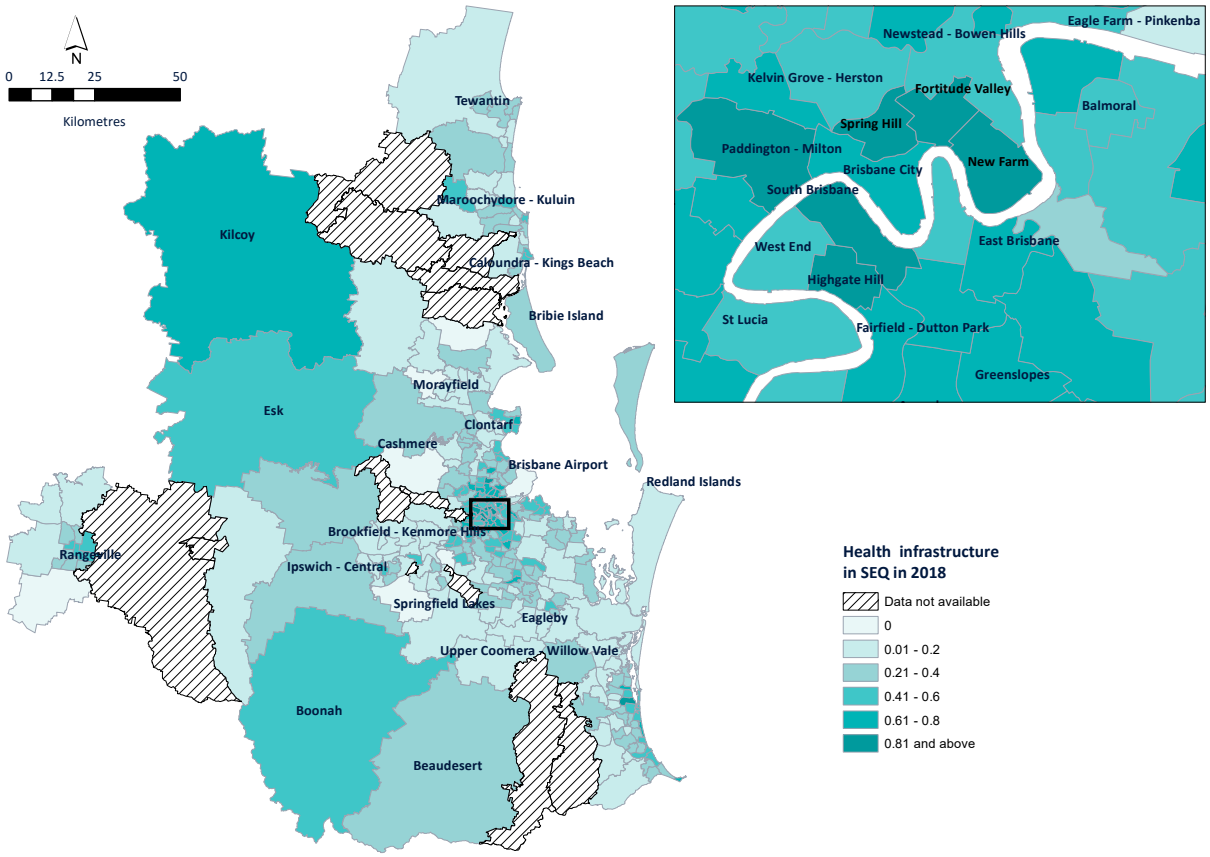


Source: BCARR analysis of data from the Australian Urban Observatory

Access to health infrastructure: SA2s

The map below (Figure 9.3) shows areas of high access to health infrastructure for Inner and Middle Brisbane. The Gold Coast coastal strip (Southport-North, Mermaid Beach and Coolangatta) also had good access, as did Kilcoy in Somerset, Redcliffe and surrounding areas in Moreton Bay North, and the urban areas of the Sunshine Coast (Caloundra and Maroochydore). Table 9.2 shows the top 10 SA2s. Areas of low access include Elimbah, Upper Caboolture and Morayfield in Moreton Bay North, Samford Valley in Moreton Bay South, Diddillibah-Rosemount in Sunshine Coast, Cambooya-Wyreema in Toowoomba, Greenbank in Logan and Ripley in Ipswich.

Figure 9.3: Access to health infrastructure by SA2s in SEQ in 2018



Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.2: Top 10 SA2s with highest access to health infrastructure in SEQ in 2018

SA2s	BCARR rings/sub-regions	Health Infrastructure score
Spring Hill	Inner	0.93
New Farm	Inner	0.87
Chermside	Middle North	0.85
Highgate Hill	Inner	0.85
South Brisbane	Inner	0.83
Fortitude Valley	Inner	0.83
Paddington – Milton	Inner	0.81
Southport – North	Gold Coast	0.81
Annerley	Middle South	0.79
Auchenflower	Inner	0.77

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to health infrastructure: growth areas

Table 9.3 shows the overall scores for the consolidation and expansion areas, while Tables 9.4 and 9.5 show the scores for each SA2 within the consolidation and expansion areas.

Table 9.3: Access to health infrastructure in growth areas of SEQ in 2018

Growth area type	Health Infrastructure score
Consolidation	0.39
Expansion	0.15
Other (non-growth)	0.38

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.4: Access to health infrastructure by SA2 consolidation growth areas in 2018

SA2s	BCARR rings/sub-regions	Health Infrastructure score
Biggera Waters	Gold Coast	0.63
Bli Bli	Sunshine Coast	0.10
Bribie Island	Moreton Bay North	0.33
Brisbane City	Inner	0.76
Caboolture	Moreton Bay North	0.28
Caboolture – South	Moreton Bay North	0.20
Calamvale – Stretton	Middle South	0.32
Coorparoo	Middle South	0.72
Forest Lake – Doolandella	Middle West	0.18
Fortitude Valley	Inner	0.83
Hope Island	Gold Coast	0.20
Morningside – Seven Hills	Inner	0.50
Mountain Creek	Sunshine Coast	0.12
Newstead – Bowen Hills	Inner	0.57
Oxenford – Maudsland	Gold Coast	0.13
Peregian Springs	Sunshine Coast	0.06
Robina	Gold Coast	0.34
Scarborough – Newport – Moreton Island	Moreton Bay North	0.31
South Brisbane	Inner	0.83
Surfers Paradise	Gold Coast	0.49
Taigum – Fitzgibbon	Middle North	0.23
West End	Inner	0.56
Wurtulla – Birtinya	Sunshine Coast	0.15

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

For access to health infrastructure in 2018, the expansion growth areas scored much lower than the consolidation growth areas and other (non-growth) areas (0.15, 0.39 and 0.38, respectively). As will be discussed in subsequent sections of this chapter, this is a typical pattern that emerges for all of the indicators. This may be related to the fact that the expansion areas are newly developed areas and have yet to establish or attract services.

Table 9.4 shows the SA2s that comprise the consolidation growth areas. The health infrastructure scores ranged from 0.83 in South Brisbane to under 0.2 in Forest Lake-Doolandella, Wurtulla-Birtinya, Oxenford-Maudsland, Mountain Creek, Bli Bli and Peregian Springs. The scores for the SA2s that comprise the expansion growth areas ranged from 0.32 in Dakabin-Kallangur, to 0 in Pallara-Willawong, Greenbank and Ripley (Table 9.5).

Table 9.5: Access to health infrastructure by SA2 expansion growth areas in 2018

SA2s	BCARR rings/sub-regions	Health Infrastructure score
Bellbird Park – Brookwater	Ipswich	0.11
Boronia Heights – Park Ridge	Logan	0.24
Caloundra – West	Sunshine Coast	0.19
Cashmere	Moreton Bay South	0.13
Chambers Flat – Logan Reserve	Logan	0.02
Coomera	Gold Coast	0.15
Dakabin – Kallangur	Moreton Bay South	0.32
Greenbank	Logan	0.00
Jimboomba	Logan	0.04
Murrumba Downs – Griffin	Moreton Bay South	0.15
Narangba	Moreton Bay North	0.16
Noosa Hinterland	Noosa	0.19
North Lakes – Mango Hill	Moreton Bay South	0.14
Ormeau – Yatala	Gold Coast	0.07
Pallara – Willawong	Middle South	0.00
Pimpama	Gold Coast	0.04
Redbank Plains	Ipswich	0.12
Redland Bay	Redland	0.23
Ripley	Ipswich	0.00
Rochedale – Burbank	Middle South	0.02
Springfield Lakes	Ipswich	0.18
Thornlands	Redland	0.15
Toowoomba – West	Toowoomba (part)	0.10
Upper Coomera – Willow Vale	Gold Coast	0.20

Notes: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3. AUO data are unavailable for the SA2 locality of Landsborough in Sunshine Coast.

Source: BCARR analysis of data from the Australian Urban Observatory.

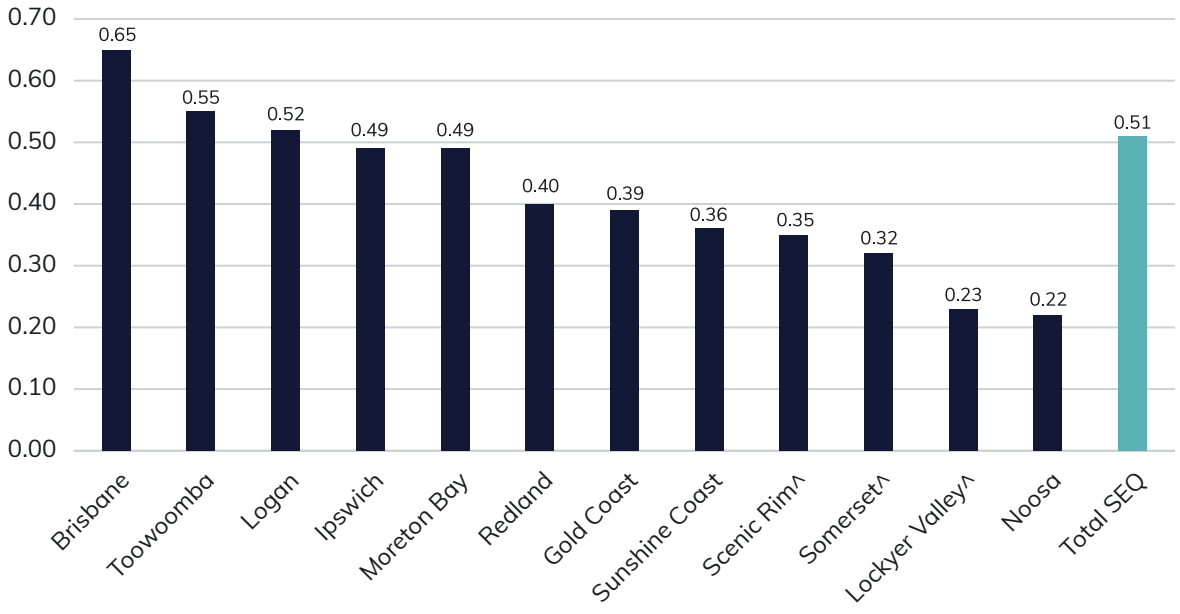
Access to Education infrastructure

Access to education infrastructure: LGAs

Similar to the pattern noted above with regard to access to health infrastructure, Brisbane and Toowoomba scored highest on this indicator (0.65 and 0.55, respectively) (Figure 9.4). Logan is the next highest scoring LGA (0.52), and this is not surprising as it has a high child population (23.0 per cent of the population aged 0–14 years, compared with 19.1 per cent for all 12 LGAs) (see Chapter 3). Ipswich and Moreton Bay have also done well on this indicator and have high school-aged cohorts (23.8 and 20.5 per cent, respectively).

The LGAs that scored the lowest on this indicator were Somerset (0.32), Lockyer Valley (0.23) and Noosa (0.22). Noosa has the lowest proportion of children aged 0–14 years (15.6 per cent), while Somerset and Lockyer Valley are close to the average (around 19 per cent).

Figure 9.4: Access to education infrastructure by LGAs of SEQ in 2018



Note:

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to education infrastructure: BCARR rings and sub-regions

Inner and Middle Brisbane scored the highest for access to education infrastructure (0.73 and 0.62, respectively) (Table 9.6 and Figure 9.5). Outer Brisbane and Rest of SEQ scored the lowest (0.48 and 0.39, respectively). Moreton Bay South scored slightly higher than Moreton Bay North (0.50 compared with 0.48).

Table 9.6: Access to education infrastructure by SEQ rings and sub-regions in 2018

BCARR rings/sub-regions	Education infrastructure score
INNER Brisbane*	0.73
MIDDLE Brisbane – TOTAL*	0.62
Middle East	0.54
Middle North	0.65
Middle South	0.62
Middle West	0.59
OUTER Brisbane – TOTAL	0.48
Ipswich	0.49
Redland	0.40
Logan	0.52
Moreton Bay	0.49
Moreton Bay North	0.48
Moreton Bay South	0.50
TOTAL – GREATER BRISBANE	0.57
Rest of SEQ	0.39
Gold Coast	0.39
Sunshine Coast	0.36
Noosa	0.22
Toowoomba (urban part)	0.55
Scenic Rim^	0.35
Lockyer Valley^	0.23
Somerset^	0.32
TOTAL – SOUTH EAST QUEENSLAND	0.51

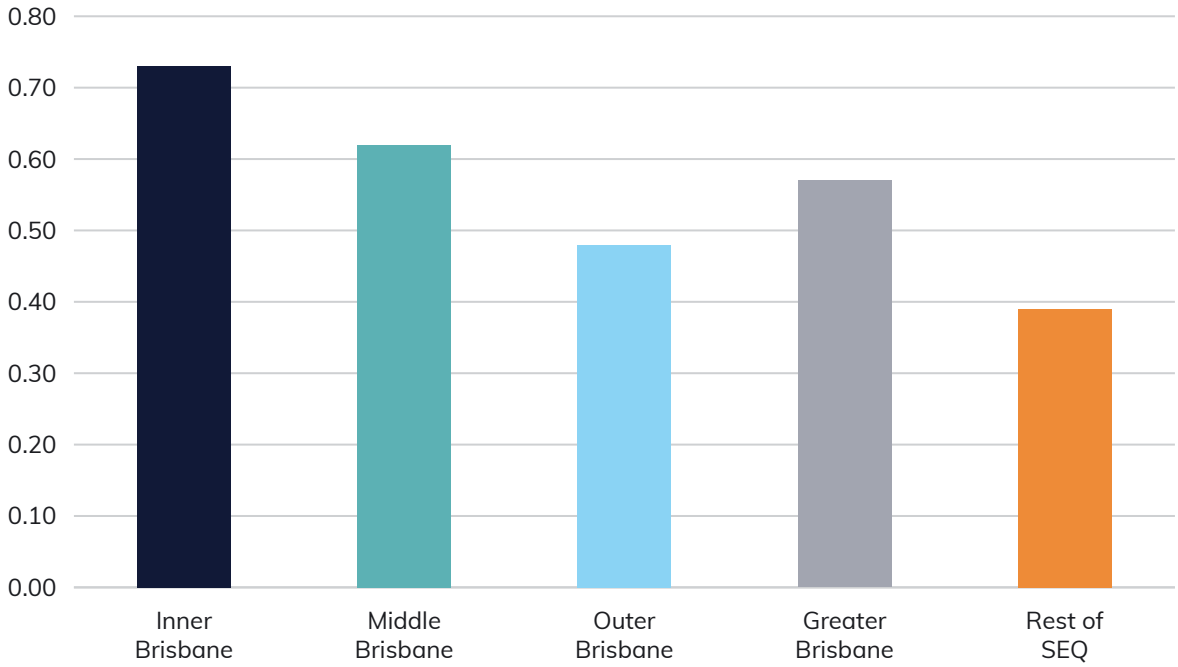
Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Figure 9.5: Access to education infrastructure by SEQ rings in 2018

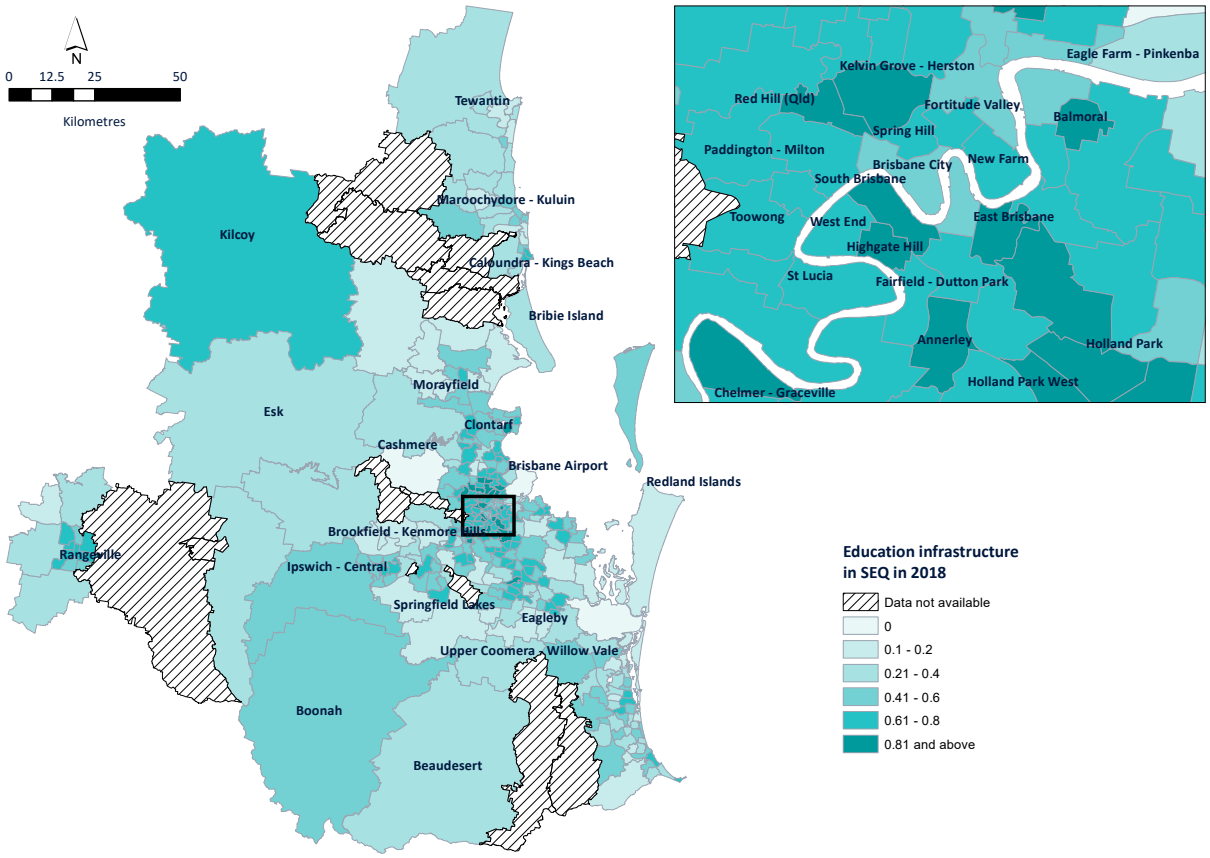


Source: BCARR analysis of data from the Australian Urban Observatory

Access to education infrastructure: SA2s

Areas with high access to education infrastructure can be seen in Inner and Middle Brisbane (Figure 9.6). Other areas with good access include Clontarf and Redcliffe in Moreton Bay North, several areas in Logan (Logan Central, Eagleby, Waterford West, Springwood and Kingston), the central areas of Toowoomba and Ipswich, and Kilcoy in Somerset (see Table 9.7 for the top 10 SA2s). Areas of lower access include Jacobs Well and Main Beach in Gold Coast, Munruben and Greenbank in Logan, Noosa Heads and Peregian Beach in Noosa, Elimbah in Moreton Bay North, Samford Valley in Moreton Bay South and Diddillibah-Rosemount in Sunshine Coast.

Figure 9.6: Access to education infrastructure by SA2s in SEQ in 2018



Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.7: Top 10 SA2s with the highest access to education infrastructure in SEQ in 2018

SA2s	BCARR rings/sub-regions	Education Infrastructure score
Balmoral	Inner	0.99
Wooloowin – Lutwyche	Inner	0.94
South Brisbane	Inner	0.93
Corinda	Middle West	0.91
Holland Park	Middle South	0.90
Chermside West	Middle North	0.90
Logan Central	Logan	0.89
Clayfield	Inner	0.88
Clontarf	Moreton Bay North	0.88
Mitchelton	Middle West	0.87

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to education infrastructure: growth areas

The score for consolidation growth areas was 0.47 and the score for expansion areas was 0.37 (Table 9.8). Both were lower than the score for other (non-growth) areas (0.53). For the SA2 consolidation growth areas, scores ranged from between 0.93 for South Brisbane and under 0.20 for Surfers Paradise, Hope Island and Wurtulla-Birtinya (Table 9.9). For the expansion growth areas, scores ranged from 0.60 in Dakabin-Kallangur and Springfield Lakes to under 0.20 in Pallara-Willawong, Ripley, Redland Bay and Greenbank (Table 9.10).

Table 9.8: Access to education infrastructure in growth areas of SEQ in 2018

Growth area type	Education Infrastructure score
Consolidation	0.47
Expansion	0.37
Other (non – growth)	0.53

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.9: Access to education infrastructure by SA2 consolidation growth areas in 2018

SA2s	BCARR rings/sub-regions	Education Infrastructure score
Biggera Waters	Gold Coast	0.47
Bli Bli	Sunshine Coast	0.32
Bribie Island	Moreton Bay North	0.29
Brisbane City	Inner	0.59
Caboolture	Moreton Bay North	0.58
Caboolture – South	Moreton Bay North	0.47
Calamvale – Stretton	Middle South	0.29
Coorparoo	Middle South	0.84
Forest Lake – Doolandella	Middle West	0.60
Fortitude Valley	Inner	0.74
Hope Island	Gold Coast	0.10
Morningside – Seven Hills	Inner	0.80
Mountain Creek	Sunshine Coast	0.41
Newstead – Bowen Hills	Inner	0.57
Oxenford – Maudsland	Gold Coast	0.39
Peregian Springs	Sunshine Coast	0.43
Robina	Gold Coast	0.32
Scarborough – Newport – Moreton Island	Moreton Bay North	0.45
South Brisbane	Inner	0.93
Surfers Paradise	Gold Coast	0.18
Taigum – Fitzgibbon	Middle North	0.52
West End	Inner	0.79
Wurtulla – Birtinya	Sunshine Coast	0.08

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.10: Access to education infrastructure by SA2 expansion growth areas in 2018

SA2s	BCARR rings/sub-regions	Education Infrastructure score
Bellbird Park – Brookwater	Ipswich	0.42
Boronia Heights – Park Ridge	Logan	0.45
Caloundra – West	Sunshine Coast	0.20
Cashmere	Moreton Bay South	0.22
Chambers Flat – Logan Reserve	Logan	0.26
Coomera	Gold Coast	0.41
Dakabin – Kallangur	Moreton Bay South	0.60
Greenbank	Logan	0.02
Jimboomba	Logan	0.27
Murrumba Downs – Griffin	Moreton Bay South	0.42
Narangba	Moreton Bay North	0.45
Noosa Hinterland	Noosa	0.30
North Lakes – Mango Hill	Moreton Bay South	0.45
Ormeau – Yatala	Gold Coast	0.35
Pallara – Willawong	Middle South	0.18
Pimpama	Gold Coast	0.36
Redbank Plains	Ipswich	0.50
Redland Bay	Redland	0.16
Ripley	Ipswich	0.17
Rochedale – Burbank	Middle South	0.43
Springfield Lakes	Ipswich	0.60
Thornlands	Redland	0.28
Toowoomba – West	Toowoomba (part)	0.22
Upper Coomera – Willow Vale	Gold Coast	0.41

Notes: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3. AUO data are unavailable for the SA2 locality of Landsborough in Sunshine Coast.

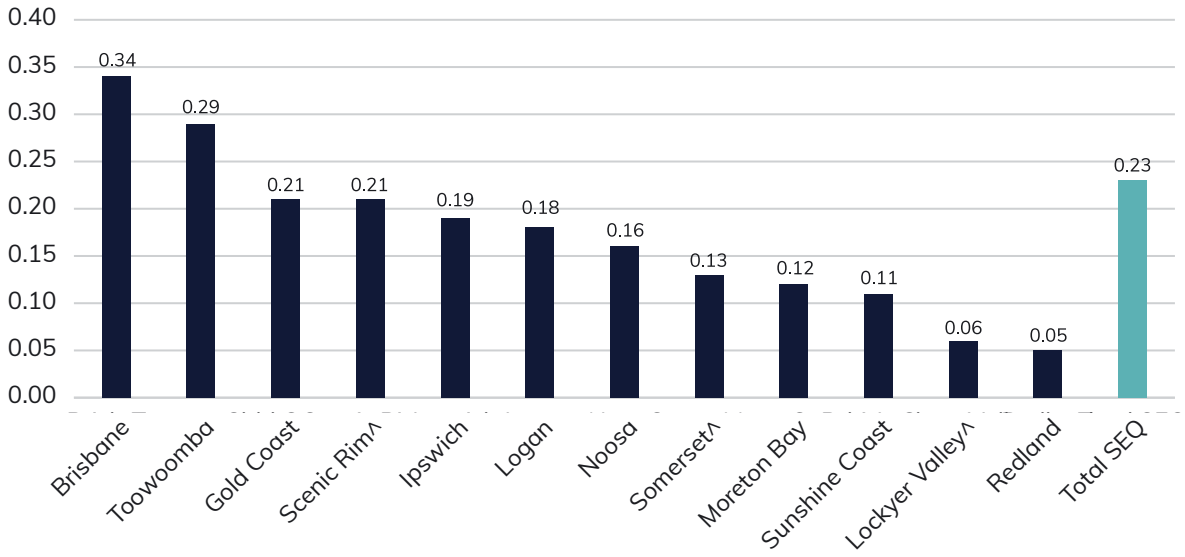
Source: BCARR analysis of data from the Australian Urban Observatory.

Access to arts and culture infrastructure: SEQ LGAs

Brisbane and Toowoomba have again scored the highest for this indicator (0.34 and 0.29), Gold Coast and Scenic Rim have also done well (0.21 each). The LGAs with the lowest scores were Sunshine Coast (0.11), Lockyer Valley (0.06) and Redland (0.05).

The high score for Gold Coast may be related to its function as a tourist and entertainment precinct. This LGA features several cinemas, art galleries and museums.

Figure 9.7: Access to arts and culture infrastructure by LGAs of SEQ in 2018



Note:

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to arts and culture infrastructure: BCARR rings and sub-regions

Inner Brisbane (0.63) scored substantially higher than the other sub-regions for access to arts and culture infrastructure. Outer Brisbane scored the lowest (0.14) (Table 9.11 and Figure 9.8). Moreton Bay North scored higher than Moreton Bay South (0.17 and 0.06, respectively).

Table 9.11: Access to arts and culture infrastructure by SEQ rings and sub-regions in 2018

BCARR rings/sub-regions	Arts and Culture score
INNER Brisbane*	0.63
MIDDLE Brisbane – TOTAL*	0.24
Middle East	0.02
Middle North	0.26
Middle South	0.31
Middle West	0.18
OUTER Brisbane – TOTAL	0.14
Ipswich	0.19
Redland	0.05
Logan	0.18
Moreton Bay	0.12
Moreton Bay North	0.17
Moreton Bay South	0.06
TOTAL – GREATER BRISBANE	0.25
Rest of SEQ	0.19
Gold Coast	0.21
Sunshine Coast	0.11
Noosa	0.16
Toowoomba (urban part)	0.29
Scenic Rim^	0.21
Lockyer Valley^	0.06
Somerset^	0.13
TOTAL – SOUTH EAST QUEENSLAND	0.23

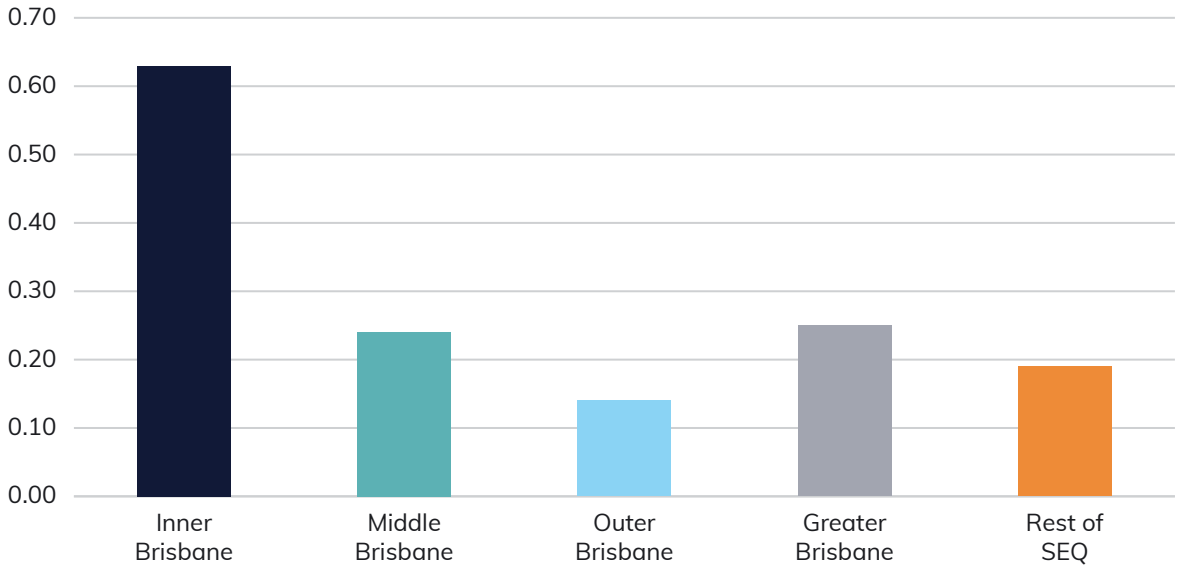
Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ Only a small proportion of Mesh Blocks are captured for these LGAs. Lockyer Valley and Somerset have been excluded from the community and sport indicator due to data quality issues, likely the result of low coverage of these areas.

Source: BCARR analysis of data from the Australian Urban Observatory.

Figure 9.8: Access to arts and culture infrastructure by SEQ rings in 2018



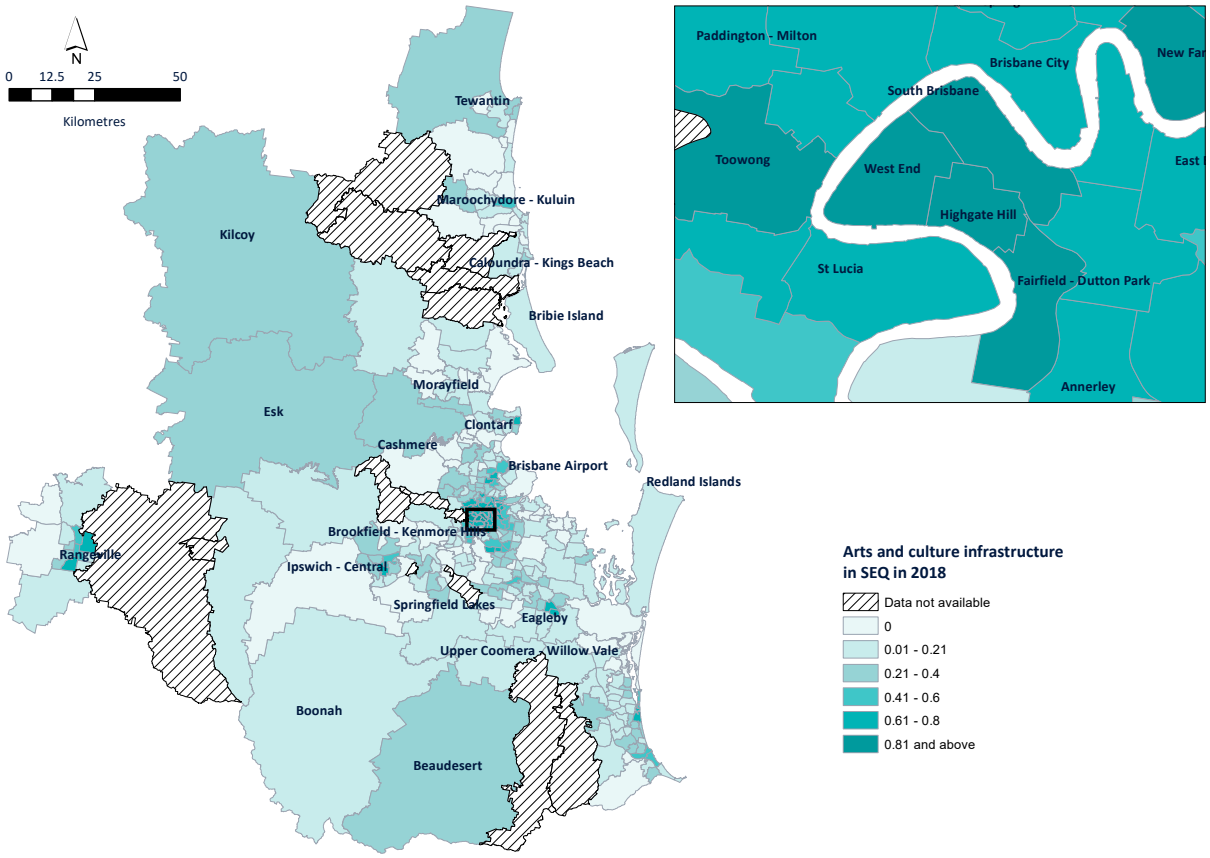
Source: BCARR analysis of data from the Australian Urban Observatory.

Access to arts and culture infrastructure: SA2s

The SA2s around Inner Brisbane had the best access to arts and culture infrastructure (Figure 9.9). Ipswich-Central also had good access, as did: Redcliffe in Moreton Bay North; Beenleigh and Mount Warren Park in Logan; Surfers Paradise and Main Beach in Gold Coast; and the central areas of Toowoomba (Toowoomba-East and Darling Heights). Table 9.12 shows the top 10 SA2s.

The areas with low access include: much of the Sunshine Coast (except for the central band stretching west from Maroochydore); outer areas of Moreton Bay North; northern areas of the Gold Coast and Currumbin Valley; outer Ipswich; some of the outer areas of Logan including Greenbank and Crestmead; and Toowoomba West.

Figure 9.9: Access to arts and culture infrastructure by SA2s in SEQ in 2018



Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.12: Top 10 SA2s with the highest access to arts and culture infrastructure in SEQ in 2018

SA2s	BCARR rings/sub-regions	Arts and Culture Infrastructure score
South Brisbane	Inner	0.87
Toowong	Inner	0.85
Highgate Hill	Inner	0.84
West End	Inner	0.82
Fairfield – Dutton Park	Middle South	0.82
New Farm	Inner	0.81
Brisbane City	Inner	0.80
Woolloongabba	Middle South	0.79
Greenslopes	Middle South	0.77
Ipswich – Central	Ipswich	0.76

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to arts and culture infrastructure: growth areas

For arts and culture infrastructure, the consolidation growth areas (0.32) scored much higher than the expansion growth areas (0.07) and other (non-growth) areas (0.24) (Table 9.13). For consolidation growth SA2s, South Brisbane, West End and Brisbane City scored the highest (0.87, 0.82 and 0.80, respectively) (Table 9.14). There were several SA2s that scored 0, including four SA2s from Sunshine Coast. Scores for the expansion growth areas were much lower, ranging from 0.26 for Noosa Hinterland to 0 for several SA2s (Table 9.15). Three of the lowest scoring SA2s were from Moreton Bay South.

Table 9.13: Access to arts and culture infrastructure in growth areas of SEQ in 2018

Growth area type	Arts and Culture Infrastructure score
Consolidation	0.32
Expansion	0.07
Other (non – growth)	0.24

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.14: Access to arts and culture infrastructure by SA2 consolidation growth areas in 2018

SA2s	BCARR rings/sub-regions	Arts and Culture Infrastructure score
Biggera Waters	Gold Coast	0.33
Bli Bli	Sunshine Coast	0.00
Bribie Island	Moreton Bay North	0.18
Brisbane City	Inner	0.80
Caboolture	Moreton Bay North	0.14
Caboolture – South	Moreton Bay North	0.00
Calamvale – Stretton	Middle South	0.02
Coorparoo	Middle South	0.56
Forest Lake – Doolandella	Middle West	0.00
Fortitude Valley	Inner	0.67
Hope Island	Gold Coast	0.00
Morningside – Seven Hills	Inner	0.60
Mountain Creek	Sunshine Coast	0.00
Newstead – Bowen Hills	Inner	0.68
Oxenford – Maudsland	Gold Coast	0.14
Peregian Springs	Sunshine Coast	0.00
Robina	Gold Coast	0.35
Scarborough – Newport – Moreton Island	Moreton Bay North	0.19
South Brisbane	Inner	0.87
Surfers Paradise	Gold Coast	0.66
Taigum – Fitzgibbon	Middle North	0.14
West End	Inner	0.82
Wurtulla – Birtinya	Sunshine Coast	0.00

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.15: Access to arts and culture infrastructure by expansion growth areas in 2018

SA2s	BCARR rings/sub-regions	Arts and Culture Infrastructure score
Bellbird Park – Brookwater	Ipswich	0.21
Boronia Heights – Park Ridge	Logan	0.00
Caloundra – West	Sunshine Coast	0.16
Cashmere	Moreton Bay South	0.00
Chambers Flat – Logan Reserve	Logan	0.00
Coomera	Gold Coast	0.08
Dakabin – Kallangur	Moreton Bay South	0.00
Greenbank	Logan	0.00
Jimboomba	Logan	0.07
Murrumba Downs – Griffin	Moreton Bay South	0.00
Narangba	Moreton Bay North	0.25
Noosa Hinterland	Noosa	0.26
North Lakes – Mango Hill	Moreton Bay South	0.02
Ormeau – Yatala	Gold Coast	0.02
Pallara – Willawong	Middle South	0.00
Pimpama	Gold Coast	0.00
Redbank Plains	Ipswich	0.02
Redland Bay	Redland	0.02
Ripley	Ipswich	0.00
Rochedale – Burbank	Middle South	0.00
Springfield Lakes	Ipswich	0.24
Thornlands	Redland	0.05
Toowoomba – West	Toowoomba (urban part)	0.00
Upper Coomera – Willow Vale	Gold Coast	0.14

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
AUO data are unavailable for the SA2 locality of Landsborough in Sunshine Coast.

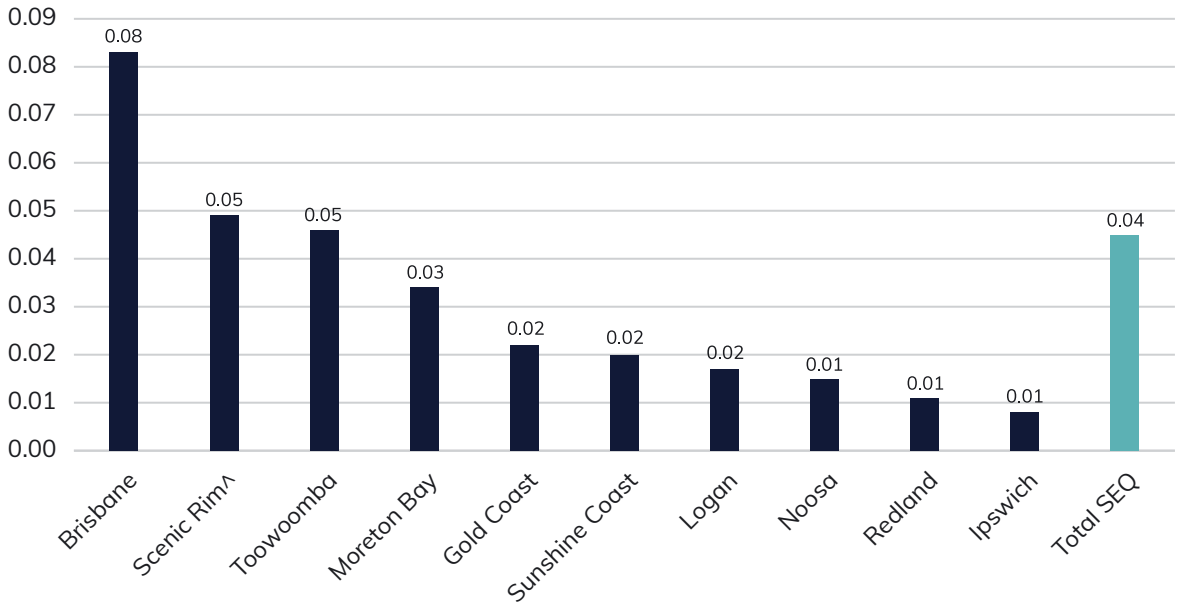
Source: BCARR analysis of data from the Australian Urban Observatory.

Access to community and sports infrastructure: SEQ LGAs

The LGAs that scored highest for access to community and sports infrastructure were Brisbane (0.08), Scenic Rim (0.05) and Toowoomba (0.05) (Figure 9.10). The LGAs that scored lowest were Noosa, Redland and Ipswich (all scored 0.01). The score for the whole of SEQ was 0.04.

It is interesting that while Brisbane is again the highest scoring LGA, Scenic Rim, one of the smallest LGAs, has scored slightly higher than Toowoomba. The main town centre of Beaudesert has an olympic-sized swimming pool and houses a range of sporting clubs and associations (Scenic Rim Regional Council 2022). This may reflect the way in which sporting associations often play an important role in small regional towns in relation to supporting social capital and community engagement (Tonts 2005).

Figure 9.10: Access to community and sports infrastructure by LGAs of SEQ in 2018



Note:

^ Only a small proportion of Mesh Blocks are captured for these LGAs. Lockyer Valley and Somerset have been excluded due to data quality issues, likely the result of low coverage of these areas.

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to community and sports infrastructure: BCARR rings and sub-regions

Inner Brisbane had the best access to community and sports infrastructure (0.12), which was higher than Middle Brisbane (0.07), Rest of SEQ (0.02) and Outer Brisbane (0.02) (Table 9.16 and Figure 9.11). Moreton Bay North scored higher than Moreton Bay South (0.05 compared with 0.02).

Table 9.16: Access to community and sports infrastructure by SEQ rings and sub-regions in 2018

BCARR rings/sub-regions	Community and Sports infrastructure score
INNER Brisbane*	0.12
MIDDLE Brisbane – TOTAL*	0.07
Middle East	0.03
Middle North	0.04
Middle South	0.11
Middle West	0.06
OUTER Brisbane – TOTAL	0.02
Ipswich	0.01
Redland	0.01
Logan	0.02
Moreton Bay	0.03
Moreton Bay North	0.05
Moreton Bay South	0.02
TOTAL – GREATER BRISBANE	0.06
Rest of SEQ	0.02
Gold Coast	0.02
Sunshine Coast	0.02
Noosa	0.01
Toowoomba (urban part)	0.05
Scenic Rim^	0.05
Lockyer Valley^	–
Somerset^	–
TOTAL – SOUTH EAST QUEENSLAND	0.04

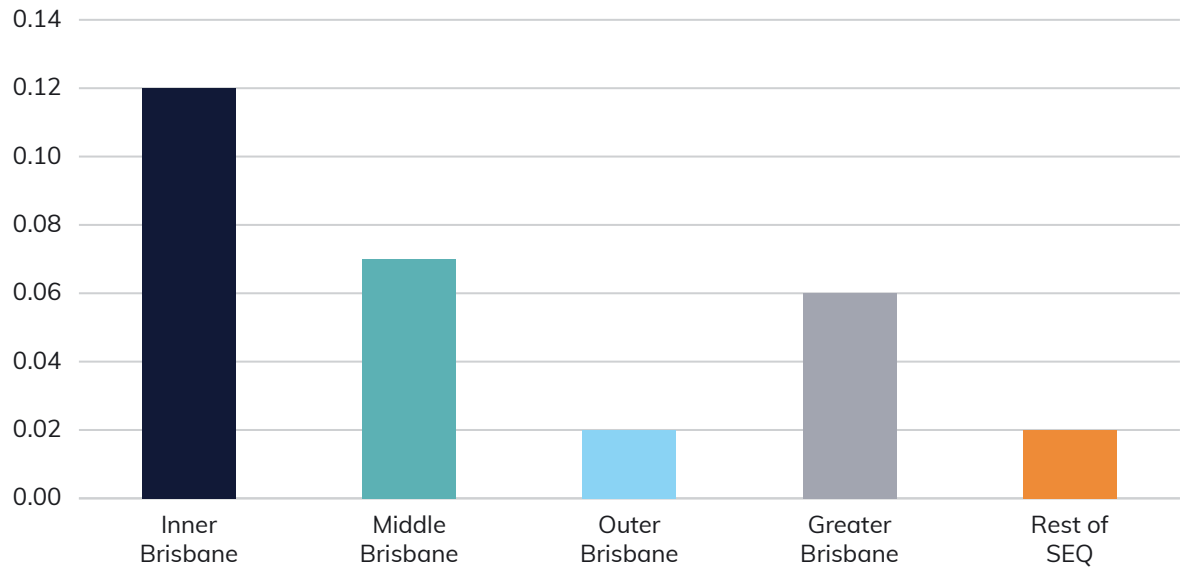
Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ Only a small proportion of Mesh Blocks are captured for these LGAs. Lockyer Valley and Somerset have been excluded from the community and sport indicator due to data quality issues, likely the result of low coverage of these areas.

Source: BCARR analysis of data from the Australian Urban Observatory.

Figure 9.11: Access to community and sports infrastructure by SEQ rings in 2018

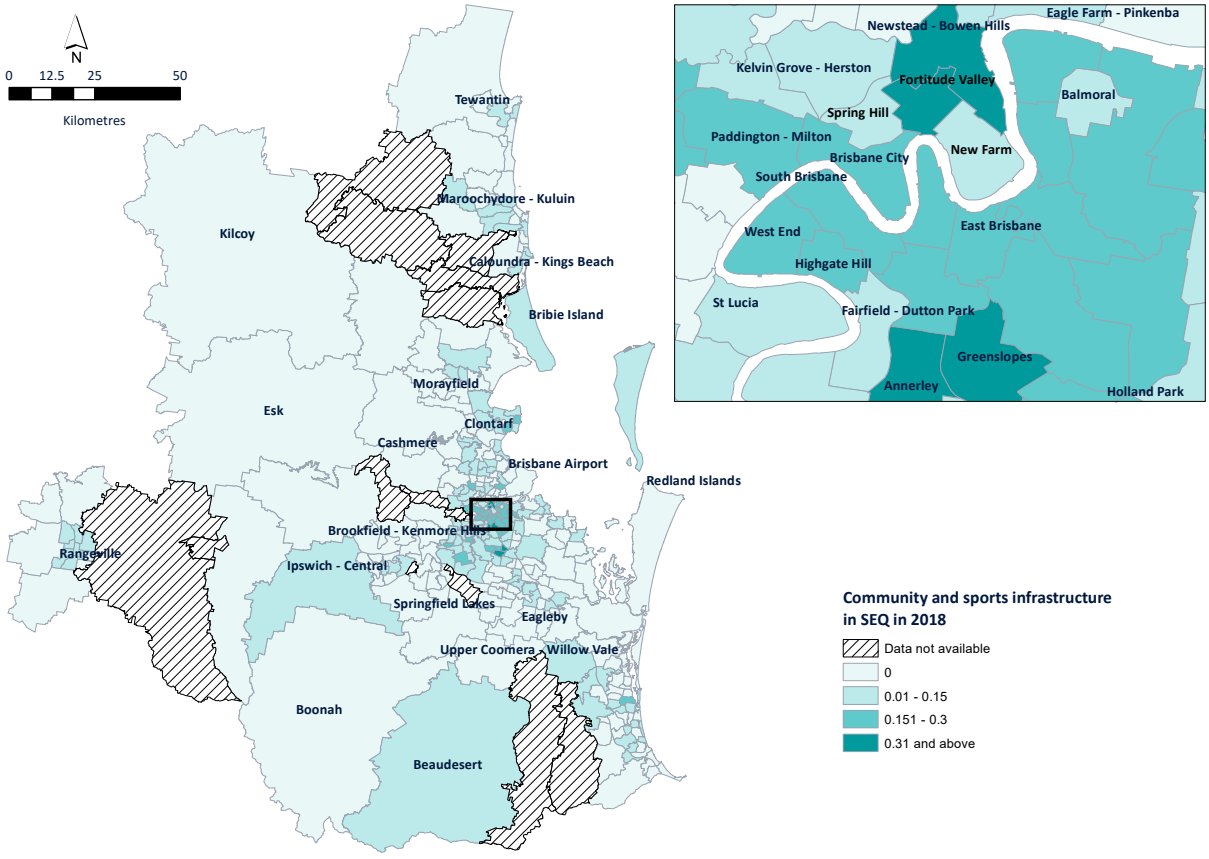


Source: BCARR analysis of data from the Australian Urban Observatory.

Access to community and sports infrastructure: SA2s

The map below (Figure 9.12) shows the highest scoring SA2s centred around Inner Brisbane (see Table 9.17 for the top 10 SA2s).

Figure 9.12: Access to community and sports infrastructure by SA2s in SEQ in 2018



Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.17: Top 10 SA2s with highest access to community and sports infrastructure in SEQ in 2018

SA2s	BCARR rings/sub-regions	Community and sports Infrastructure score
Sunnybank	Middle South	0.37
Annerley	Middle South	0.33
Fortitude Valley	Inner	0.33
Newstead – Bowen Hills	Inner	0.31
Macgregor (Qld)	Middle South	0.30
Greenslopes	Middle South	0.30
East Brisbane	Inner	0.28
Brisbane City	Inner	0.28
South Brisbane	Inner	0.26
Corinda	Middle West	0.26

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to community and sports infrastructure: growth areas

The consolidation growth areas (0.08) scored much higher than expansion growth areas (0.01) and other (non-growth) areas (0.04) (Table 9.18). The highest scoring SA2s from the consolidation growth areas were Fortitude Valley (0.33) and Newstead-Bowen Hills (0.31) (Table 9.19). Several SA2s scored 0, including all of the Sunshine Coast SA2s and most of the Gold Coast SA2s. Only two expansion SA2s scored above 0 – Upper Coomera – Willow Vale (0.08) and North Lakes – Mango Hill (0.01) (Table 9.20).

Table 9.18: Access to community and sports infrastructure in growth areas of SEQ in 2018

Growth area type h area type	Community and sports Infrastructure score
Consolidation	0.08
Expansion	0.01
Other (non – growth)	0.04

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.

Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.19: Access to arts and culture and community and sports infrastructure by SA2 consolidation growth areas in 2018

SA2s	BCARR rings/sub-regions	Community and sports Infrastructure score
Biggera Waters	Gold Coast	0.00
Bli Bli	Sunshine Coast	0.00
Bribie Island	Moreton Bay North	0.04
Brisbane City	Inner	0.28
Caboolture	Moreton Bay North	0.03
Caboolture – South	Moreton Bay North	0.04
Calamvale – Stretton	Middle South	0.00
Coorparoo	Middle South	0.23
Forest Lake – Doolandella	Middle West	0.00
Fortitude Valley	Inner	0.33
Hope Island	Gold Coast	0.00
Morningside – Seven Hills	Inner	0.18
Mountain Creek	Sunshine Coast	0.00
Newstead – Bowen Hills	Inner	0.31
Oxenford – Maudsland	Gold Coast	0.00
Peregian Springs	Sunshine Coast	0.00
Robina	Gold Coast	0.03
Scarborough – Newport – Moreton Island	Moreton Bay North	0.00
South Brisbane	Inner	0.26
Surfers Paradise	Gold Coast	0.00
Taigum – Fitzgibbon	Middle North	0.08
West End	Inner	0.21
Wurtulla – Birtinya	Sunshine Coast	0.00

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.

Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.20: Access to community and sports infrastructure by expansion growth areas in 2018

SA2s	BCARR rings/sub-regions	Community and sports Infrastructure score
Bellbird Park – Brookwater	Ipswich	0.00
Boronia Heights – Park Ridge	Logan	0.00
Caloundra – West	Sunshine Coast	0.00
Cashmere	Moreton Bay South	0.00
Chambers Flat – Logan Reserve	Logan	0.00
Coomera	Gold Coast	0.00
Dakabin – Kallangur	Moreton Bay South	0.00
Greenbank	Logan	0.00
Jimboomba	Logan	0.00
Murrumba Downs – Griffin	Moreton Bay South	0.00
Narangba	Moreton Bay North	0.00
Noosa Hinterland	Noosa	0.00
North Lakes – Mango Hill	Moreton Bay South	0.01
Ormeau – Yatala	Gold Coast	0.00
Pallara – Willawong	Middle South	0.00
Pimpama	Gold Coast	0.00
Redbank Plains	Ipswich	0.00
Redland Bay	Redland	0.00
Ripley	Ipswich	0.00
Rochedale – Burbank	Middle South	0.00
Springfield Lakes	Ipswich	0.00
Thornlands	Redland	0.00
Toowoomba – West	Toowoomba (urban part)	0.00
Upper Coomera – Willow Vale	Gold Coast	0.08

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
AUO data are unavailable for the SA2 locality of Landsborough in Sunshine Coast.

Source: BCARR analysis of data from the Australian Urban Observatory

9.3 Walkability

Walkability is a measure of the extent to which people can 'move around their local neighbourhoods to complete everyday activities' (AUO 2022). It encompasses three key factors: proximity to services of daily living (something to walk to), street connectivity and dwelling density. See Box 9.3 for more information on how this indicator is measured.

Walkability: LGAs

In 2018, SEQ scored 0.15 on the walkability index (Figure 9.13). The LGAs that scored highest were Brisbane (1.29), Gold Coast (0.48) and Sunshine Coast (–0.35). The LGAs that scored lowest were Scenic Rim (–3.58), Somerset (–4.04) and Lockyer Valley (–5.40).

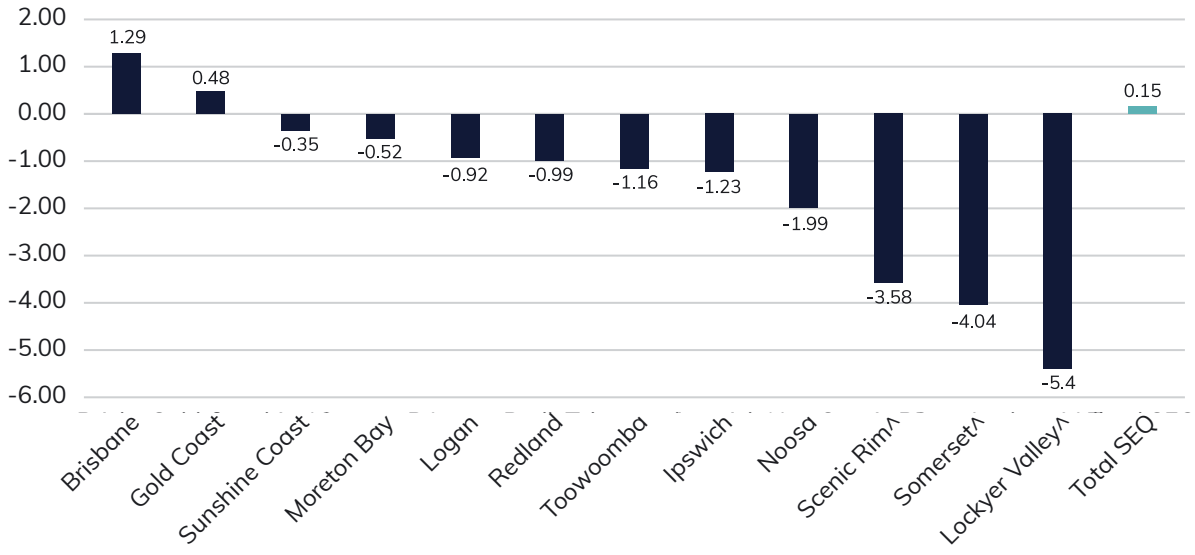
It is likely that population density is a factor here, as dwelling density it is a component of the walkability measure (Box 9.3). The two highest scoring LGAs (Brisbane and Gold Coast) have the highest population densities (see Chapter 3).

Box 9.3: How is walkability measured?

The walkability index is calculated as the sum of normalised scores for three factors: local neighbourhood street connectivity, dwelling density and daily living score (Gunn et al., 2017). Street connectivity is calculated as the number of intersections within the local walkable neighbourhood. Dwelling density is the number of (estimated) dwellings reachable within the local walkable neighbourhood. The AUO estimates dwelling locations by taking the number of dwellings in a Mesh Block and assigning them proportionally to all the GNAF address points within the Mesh Block. A daily living score is based on access to three kinds of basic amenities including a public transport stop, a supermarket, and a convenience location (including convenience stores, newsagents and petrol stations—places where people can get basics like milk and a newspaper) (AUO 2021).

A score of zero on the walkability index represents the mean at the Mesh Block level. The score for each LGA is a weighted average of all the Mesh Blocks in the LGA.

Figure 9.13: Walkability by LGAs of SEQ in 2018



Note:
^ Only a small proportion of Mesh Blocks are captured for these LGAs.
Source: BCARR analysis of data from the Australian Urban Observatory

Walkability: BCARR rings and sub-regions

Inner Brisbane scored substantially higher on the walkability index (3.29) than the next highest region–Middle Brisbane (0.59) (Table 9.21 and Figure 9.14). Outer Brisbane was the least walkable region (–0.82). Moreton Bay South scored higher than Moreton Bay North (0.12 compared with –0.99).

Table 9.21: Walkability by SEQ rings and sub-regions in 2018

BCARR rings/sub-region	Walkability index
INNER Brisbane*	3.29
MIDDLE Brisbane – TOTAL*	0.59
Middle East	0.23
Middle North	0.82
Middle South	0.85
Middle West	0.12
OUTER Brisbane – TOTAL	–0.82
Ipswich	–1.23
Redland	–0.99
Logan	–0.92
Moreton Bay	–0.52
Moreton Bay North	–0.99
Moreton Bay South	0.12
TOTAL – GREATER BRISBANE	0.33
Rest of SEQ	–0.19
Gold Coast	0.48
Sunshine Coast	–0.35
Noosa	–1.99
Toowoomba (urban part)	–1.16
Scenic Rim^	–3.58
Lockyer Valley^	–5.40
Somerset^	–4.04
TOTAL – SOUTH EAST QUEENSLAND	0.15

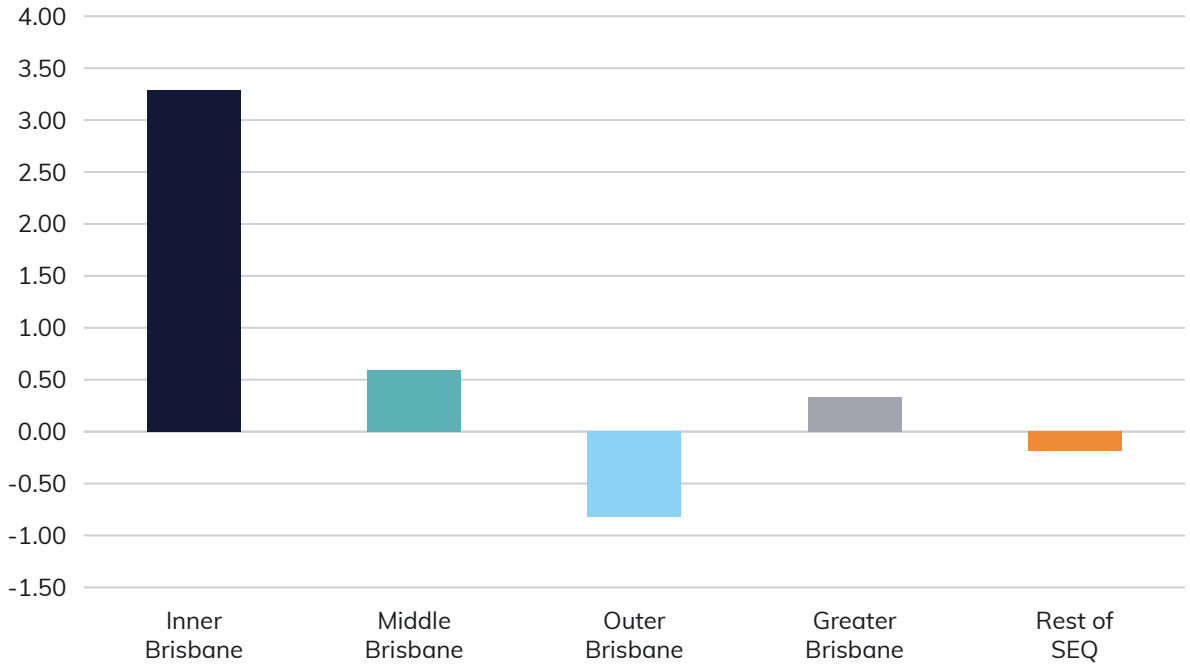
Note:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Figure 9.14: Walkability by SEQ rings in 2018

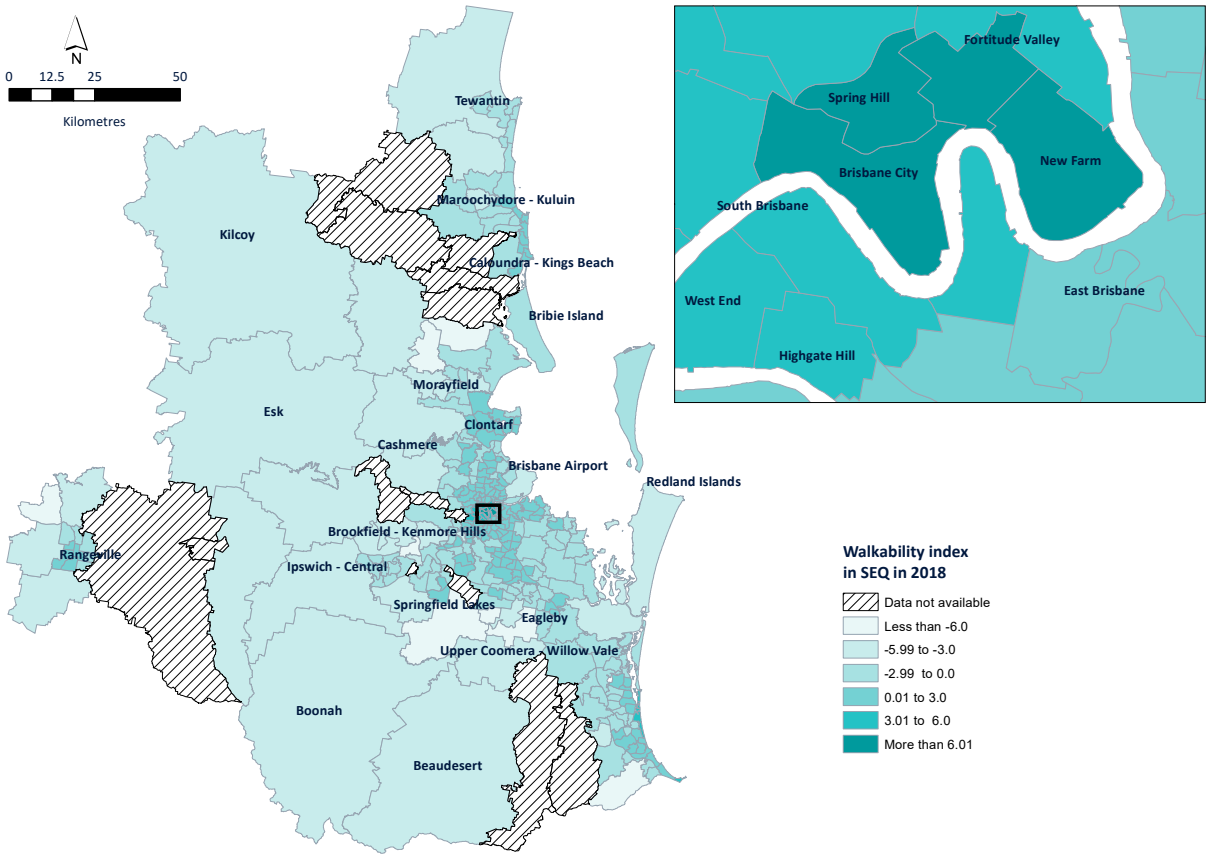


Source: BCARR analysis of data from the Australian Urban Observatory.

Walkability: SA2s

The map below (Figure 9.15) shows highly walkable areas around Inner and Middle Brisbane, the coastal strips of Sunshine Coast and Gold Coast, the coastal areas of Moreton Bay (surrounding Clontarf), and central Toowoomba (see Table 9.22 for top 10 SA2s). Areas of lower walkability are evident in Wamuran and Elimbah (upper Moreton Bay North), areas of Logan (Greenbank, Logan Village and Munruben), Gowrie in Toowoomba, Currumbin Valley in the Gold Coast, and Karalee in Ipswich.

Figure 9.15: Walkability in SA2s of SEQ in 2018



Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.22: Top 10 SA2s with the highest walkability scores in SEQ in 2018

SA2s	BCARR rings/sub-regions	Walkability Index
Fortitude Valley	Inner	6.82
Brisbane City	Inner	6.80
Spring Hill	Inner	6.67
New Farm	Inner	6.10
Newstead – Bowen Hills	Inner	5.78
Surfers Paradise	Gold Coast	5.76
Kangaroo Point	Inner	5.19
South Brisbane	Inner	4.66
Main Beach	Gold Coast	4.47
West End	Inner	4.31

Source: BCARR analysis of data from the Australian Urban Observatory.

Walkability: SA2 growth areas

The consolidation growth areas scored higher than the expansion growth areas and other (non-growth) areas (1.69, 1.12 and 0.09, respectively) (Table 9.23). Table 9.24 shows the SA2s for the consolidation growth areas. Scores ranged from 6.82 for Fortitude Valley in Inner Brisbane to –2.19 for Bli Bli in Sunshine Coast. For the expansion areas, walkability scores ranged from 1.19 for North Lakes-Mango Hill in Moreton Bay South, to –6.95 for Greenbank in Logan (Table 9.25).

Table 9.23: Walkability by growth areas in SEQ in 2018

Growth area type	Walkability Index
Consolidation	1.69
Expansion	–1.12
Other (non – growth)	0.09

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.24: Walkability by SA2 consolidation growth areas in 2018

SA2s	BCARR rings/sub-regions	Walkability Index
Biggera Waters	Gold Coast	1.89
Bli Bli	Sunshine Coast	–2.19
Bribie Island	Moreton Bay North	–0.64
Brisbane City	Inner	6.80
Caboolture	Moreton Bay North	–1.22
Caboolture – South	Moreton Bay North	–0.71
Calamvale – Stretton	Middle South	1.17
Coorparoo	Middle South	2.05
Forest Lake – Doolandella	Middle West	1.43
Fortitude Valley	Inner	6.82
Hope Island	Gold Coast	–1.52
Morningside – Seven Hills	Inner	1.82
Mountain Creek	Sunshine Coast	–0.08
Newstead – Bowen Hills	Inner	5.78
Oxenford – Maudsland	Gold Coast	–1.57
Peregian Springs	Sunshine Coast	–1.76
Robina	Gold Coast	0.69
Scarborough – Newport – Moreton Island	Moreton Bay North	–1.52
South Brisbane	Inner	4.66
Surfers Paradise	Gold Coast	5.76
Taigum – Fitzgibbon	Middle North	2.42
West End	Inner	4.31
Wurtulla – Birtinya	Sunshine Coast	0.70

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.25: Walkability by SA2 expansion growth areas in 2018

SA2s	BCARR rings/sub-regions	Walkability Index
Bellbird Park – Brookwater	Ipswich	–1.05
Boronia Heights – Park Ridge	Logan	–1.37
Caloundra – West	Sunshine Coast	–0.08
Cashmere	Moreton Bay South	–1.47
Chambers Flat – Logan Reserve	Logan	–5.41
Coomera	Gold Coast	–0.81
Dakabin – Kallangur	Moreton Bay South	0.91
Greenbank	Logan	–6.95
Jimboomba	Logan	–4.57
Murrumba Downs – Griffin	Moreton Bay South	0.91
Narangba	Moreton Bay North	–0.44
Noosa Hinterland	Noosa	–4.90
North Lakes – Mango Hill	Moreton Bay South	1.19
Ormeau – Yatala	Gold Coast	–2.52
Pallara – Willawong	Middle South	–0.07
Pimpama	Gold Coast	–2.05
Redbank Plains	Ipswich	–0.75
Redland Bay	Redland	–1.72
Ripley	Ipswich	–4.18
Rochedale – Burbank	Middle South	–2.33
Springfield Lakes	Ipswich	0.98
Thornlands	Redland	–1.23
Toowoomba – West	Toowoomba	–3.88
Upper Coomera – Willow Vale	Gold Coast	–0.71

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
AUO data are unavailable for the SA2 locality of Landsborough in Sunshine Coast.
Source: BCARR analysis of data from the Australian Urban Observatory.

9.4 Access to public open space

The AUO defines public open space as 'areas such as parks and recreational reserves, public gardens, nature reserves, civic areas and promenades' (AUO, 2022) that are publicly available for everyone to use. An important aspect of this definition is that public open spaces do not only include green areas such as parklands and nature reserves, but other spaces that may not necessarily have coverage of green canopy. It is also important that such areas are publicly accessible.

There are many benefits to having such spaces in urban environments. Parks and green spaces can support environmental health, create opportunities for recreation and physical activity, facilitate social interaction and have a positive impact upon health and well-being (Davern et al. 2017). Civic spaces that may not include green areas, such as town squares, are also important as they are places where people can gather together, thus affording social benefit.

Box 9.4: How is public open space identified?

GIS analysis was used to identify areas of public open space (POS) greater than 1.5 hectares in area. Access points are not available for Australian POS so the AUO generates potential access points every 20 metres along the road network to create a national POS dataset. POS geometries are then buffered by 20 metres, and any potential access points that intersect those buffers, are treated as an access point. Areas of open space, and those which may be considered publicly accessible, were identified using a detailed set of morphological criterions.

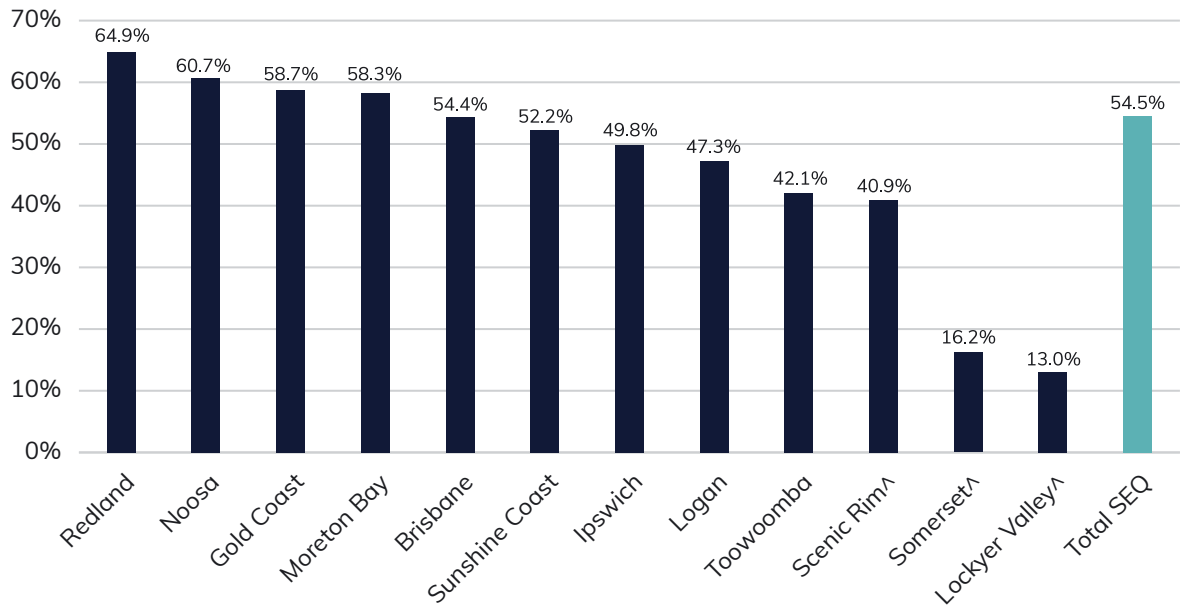
The score for this indicator is a measure of the percentage of dwellings within 400m of public open space greater than 1.5 hectares.

Access to public open space: LGAs

In 2018, 54.5 per cent of dwellings in SEQ had access to public open space (Table 9.16). Redland, Noosa and Gold Coast residents had the best access to public open space (with scores of 64.9 per cent, 60.7 per cent and 58.7 per cent, respectively).

The LGAs that scored lowest on this measure were Scenic Rim (40.9 per cent), Somerset (16.2 per cent) and Lockyer Valley (13.0 per cent). These results may seem surprising as these LGAs are in semi-rural or regional areas and may include rural properties or bushland. Such areas, however, may not be publicly accessible or able to be identified as such (see Box 9.4).

Figure 9.16: Access to public open space by LGAs of SEQ in 2018



Note:

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to public open space: BCARR rings and sub-regions

Figure 9.17 shows that there was little difference with regard to the rings and sub-regions, with Middle and Outer Brisbane scoring the highest (55.1 per cent and 54.8 per cent, respectively), and Inner Brisbane scoring the lowest (52.3 per cent) (Table 9.26). However, it must be noted, that there was a great deal of variation within the sub-regions: ranging from between 52.5 and 58.3 per cent for Middle Brisbane, between 47.3 and 64.9 per cent for Outer Brisbane, and between 13.0 and 60.7 per cent for the Rest of SEQ. Moreton Bay South scored substantially higher than Moreton Bay North (61.7 per cent compared with 55.8 per cent).

Table 9.26: Access to public open space by SEQ rings and sub-regions in 2018

BCARR rings/sub-regions	Access to public open space (per cent of dwellings)
INNER Brisbane*	52.3
MIDDLE Brisbane – TOTAL*	55.1
Middle East	57.2
Middle North	55.0
Middle South	52.5
Middle West	58.3
OUTER Brisbane – TOTAL	54.8
Ipswich	49.8
Redland	64.9
Logan	47.3
Moreton Bay	58.3
Moreton Bay North	55.8
Moreton Bay South	61.7
TOTAL – GREATER BRISBANE	54.7
Rest of SEQ	54.2
Gold Coast	58.7
Sunshine Coast	52.2
Noosa	60.7
Toowoomba (urban part)	42.1
Scenic Rim^	40.9
Lockyer Valley^	13.0
Somerset^	16.2
TOTAL – SOUTH EAST QUEENSLAND	54.5

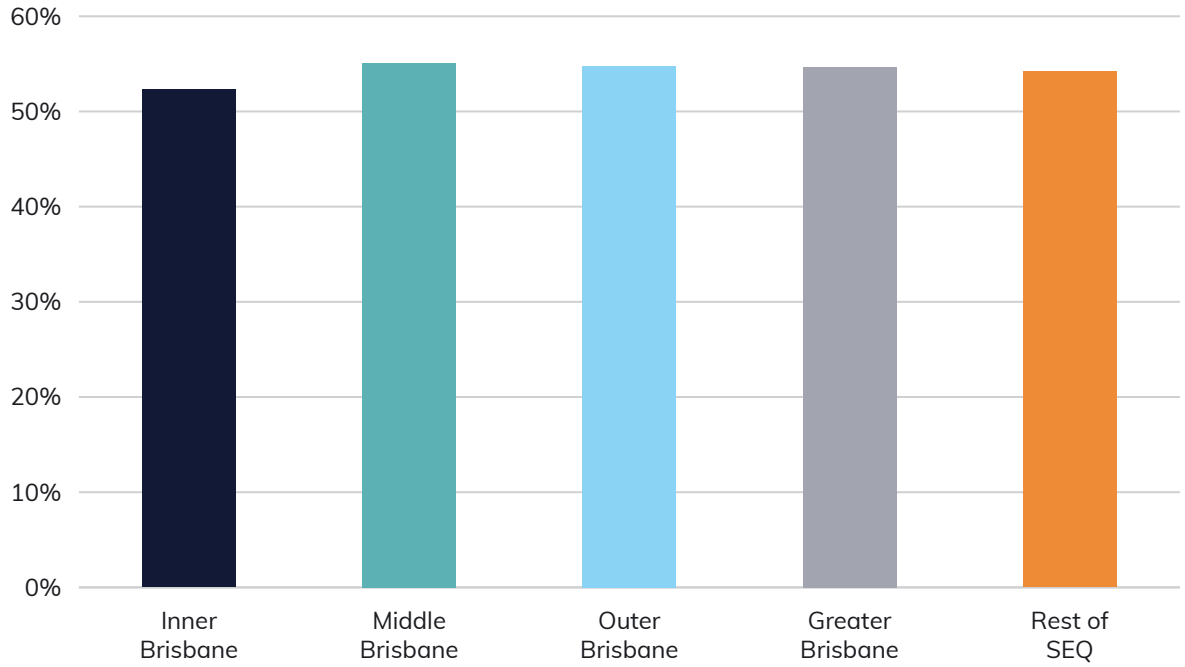
Notes:

* The Inner and Middle Brisbane Rings together comprise the City of Brisbane LGA. See Table 1.3 and Figure 1.2 in Chapter 1 for these classifications.

^ Only a small proportion of Mesh Blocks are captured for these LGAs.

Source: BCARR analysis of data from the Australian Urban Observatory.

Figure 9.17: Access to public open space by SEQ rings in 2018



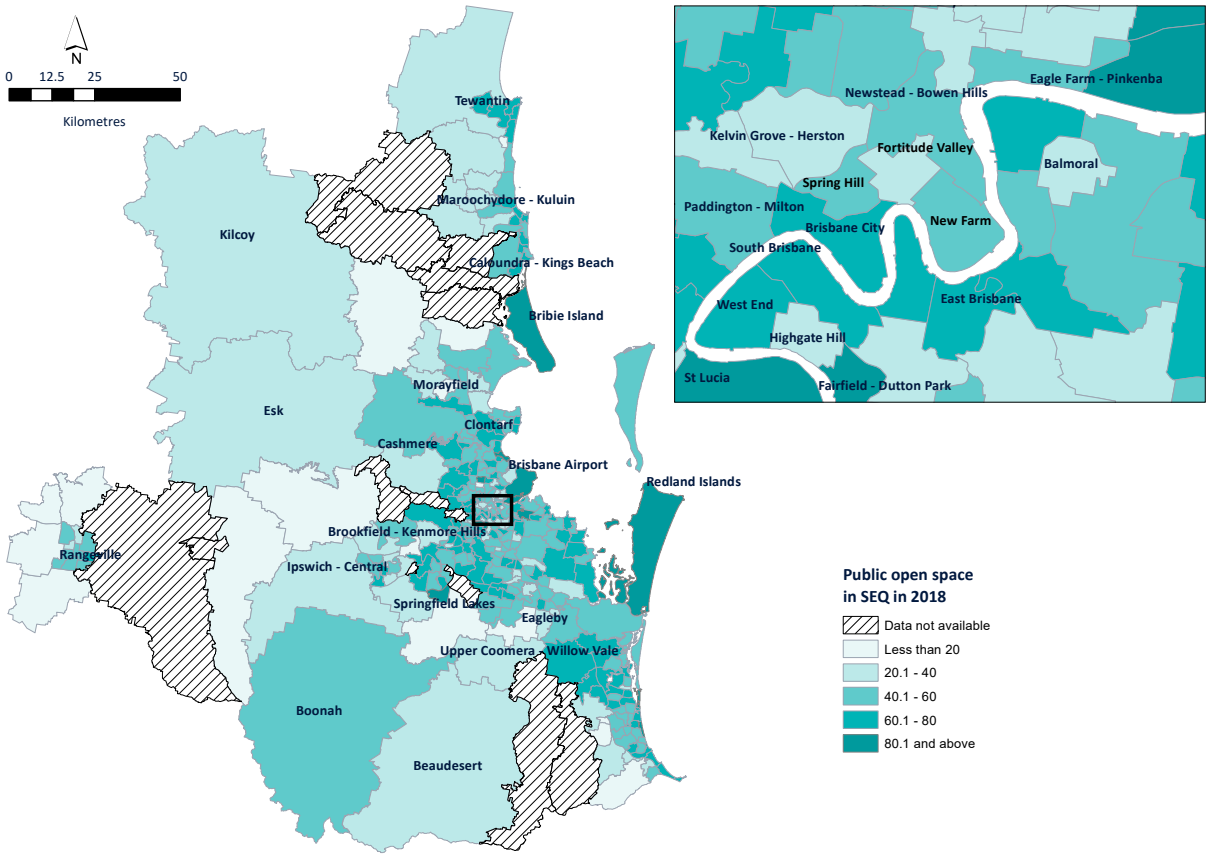
Source: BCARR analysis of data from the Australian Urban Observatory.

Access to public open space: SA2s

Figure 9.18 shows the distribution of scores for the SA2s. As can be seen, the SA2s around Middle Brisbane scored the highest, with areas of good access to public open space extending south through Logan and Redland to the coastal areas of the Gold Coast. Redland Islands and Bribie Island scored well, as did the coastal areas of the Sunshine Coast and Noosa (see Table 9.27 for the top ten SA2s).

SA2s with lower access included areas of Moreton Bay North (Woodford-D' Aguilar, Morayfield and Elimbah), the outer SA2s in Toowoomba (Gowrie, Cambooya-Wyreema, Toowoomba-West and Highfields), the southern inland areas of the Gold Coast (Highland Park, Worongary-Tallai and Currumbin Valley-Tallebudgera), Lowood (south Somerset) and Lockyer Valley-East, and Logan Village and adjacent Greenbank.

Figure 9.18: Access to public open space by SA2s in SEQ in 2018



Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.27: Top 10 SA2s with the highest access to public open space in SEQ in 2018

SA2s	BCARR rings/ sub-regions	Public open space score (per cent of dwellings)
Redland Islands	Redland	99.3
Bribie Island	Moreton Bay North	99.3
Eagle Farm – Pinkenba	Middle North	95.5
Sandgate – Shorncliffe	Middle North	86.6
Tingalpa	Middle East	83.7
Chermside West	Middle North	82.5
St Lucia	Middle West	82.5
Fairfield – Dutton Park	Middle South	81.7
Mermaid Beach – Broadbeach	Gold Coast	81.7
Main Beach	Gold Coast	81.2

Source: BCARR analysis of data from the Australian Urban Observatory.

Access to public open space: growth areas

Table 9.28 shows the results for the growth areas. Both scored higher than other (non-growth) areas (58.4 per cent, 56.5 per cent and 53.6 per cent, respectively). For the SA2 consolidation growth areas, scores ranged from 99.3 per cent in Bribie Island to below 30 per cent in Biggera Waters, Bli Bli and Peregian Springs (Table 9.29). For the SA2 expansion areas, scores ranged from 80.8 per cent in Springfield Lakes to 14.1 per cent in Greenbank (Table 9.30).

Table 9.28: Access to public open space in growth areas of SEQ in 2018

Growth area type	Access to public open space (per cent of dwellings)
Consolidation	58.4
Expansion	56.5
Other (non – growth)	53.6

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.29: Access to public open space by SA2 consolidation growth areas in 2018

SA2s	BCARR rings/ sub-regions	Access to public open space (per cent of dwellings)
Biggera Waters	Gold Coast	27.0
Bli Bli	Sunshine Coast	26.4
Bribie Island	Moreton Bay North	99.3
Brisbane City	Inner	75.3
Caboolture	Moreton Bay North	49.8
Caboolture – South	Moreton Bay North	47.2
Calamvale – Stretton	Middle South	51.6
Coorparoo	Middle South	34.9
Forest Lake – Doolandella	Middle West	65.8
Fortitude Valley	Inner	31.3
Hope Island	Gold Coast	59.3
Morningside – Seven Hills	Inner	40.2
Mountain Creek	Sunshine Coast	69.4
Newstead – Bowen Hills	Inner	57.9
Oxenford – Maudsland	Gold Coast	79.6
Peregian Springs	Sunshine Coast	3.71
Robina	Gold Coast	45.3
Scarborough – Newport – Moreton Island	Moreton Bay North	49.6
South Brisbane	Inner	71.0
Surfers Paradise	Gold Coast	76.8
Taigum – Fitzgibbon	Middle North	66.8
West End	Inner	62.1
Wurtulla – Birtinya	Sunshine Coast	70.8

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
Source: BCARR analysis of data from the Australian Urban Observatory.

Table 9.30: Access to public open space by SA2 expansion growth areas in 2018

SA2s	BCARR rings/sub-regions	Access to public open space (per cent of dwellings)
Bellbird Park – Brookwater	Ipswich	49.6
Boronia Heights – Park Ridge	Logan	40.1
Caloundra – West	Sunshine Coast	51.1
Cashmere	Moreton Bay South	60.9
Chambers Flat – Logan Reserve	Logan	49.3
Coomera	Gold Coast	72.5
Dakabin – Kallangur	Moreton Bay South	57.0
Greenbank	Logan	14.1
Jimboomba	Logan	26.0
Murrumba Downs – Griffin	Moreton Bay South	70.7
Narangba	Moreton Bay North	63.9
Noosa Hinterland	Noosa	23.3
North Lakes – Mango Hill	Moreton Bay South	68.6
Ormeau – Yatala	Gold Coast	47.9
Pallara – Willawong	Middle South	69.8
Pimpama	Gold Coast	68.4
Redbank Plains	Ipswich	66.4
Redland Bay	Redland	65.1
Ripley	Ipswich	21.7
Rochedale – Burbank	Middle South	43.1
Springfield Lakes	Ipswich	80.8
Thornlands	Redland	61.6
Toowoomba – West	Toowoomba (urban part)	19.4
Upper Coomera – Willow Vale	Gold Coast	73.6

Note: Details of consolidation and expansion areas are available in chapters 1 and 4, in sections 1.3 and 4.3.
AUO data are unavailable for the SA2 locality of Landsborough in Sunshine Coast.

Source: BCARR analysis of data from the Australian Urban Observatory.

9.5 Conclusion

Brisbane LGA scored highest for all of the AUO liveability indicators except access to public open space. The most highly liveable areas, in particular, were centred around Middle and Inner Brisbane. Toowoomba also did well on many of the indicators, scoring in the top three for all of the social infrastructure measures. While population size and density may be a factor in accounting for the success of Brisbane, this is not the case with Toowoomba, which may have relatively good access to services due to its historical function as a regional centre.

With regards to health and education infrastructure, it is evident that population structure may be a factor relevant to outcomes. Although Brisbane and Toowoomba were the highest scoring LGAs for these indicators, there are other LGAs that did well which may be related to particular demographic characteristics. Somerset, Sunshine Coast and Scenic Rim, for example, scored well on the health index and these LGAs have older populations. The LGAs with large school–aged cohorts (Logan and Ipswich) scored high on the education index.

While Brisbane and Toowoomba again achieved good results in relation to arts and culture, and community and sports infrastructure, Gold Coast and Scenic Rim did respectively well on these indicators reflecting their unique local characteristics.

In relation to access to public open space, some outer and regional LGAs (Redland, Noosa, Gold Coast and Moreton Bay) achieved the best results. Brisbane and Gold Coast scored highest for walkability, and this may be related to population density.

Outer Brisbane, lagged behind Middle and Inner Brisbane for access to social infrastructure and walkability. It achieved better results, however, for access to public open space – nudging slightly ahead of Inner Brisbane and matching Middle Brisbane.

Notably, the expansion growth areas scored lower than consolidation growth areas and other (non-growth) areas for most indicators. One reason for this, is that as developing or new areas, expansion areas have yet to establish or attract a full range of services.

The implications of this will be discussed in the next chapter, where these and other findings are examined in relation to challenges and opportunities for the future growth and development of SEQ.

CHAPTER 10

IMPLICATIONS OF GROWTH AND CONCLUSION

Key points

- SEQ is expected to reach 5.41 million population by 2041, which is a 44 per cent increase on 2020. This growth is expected to be concentrated in the Ipswich and Gold Coast LGAs, which will each add over 300,000 new residents.
- This population growth will have significant implications for housing, jobs and skills, transport and connectivity, and liveability in SEQ over the coming decades.
- SEQ is projected to add more than 800,000 new dwellings between 2016 and 2041, with the Brisbane, Ipswich and Gold Coast LGAs each projected to add between 146,000 and 156,000 new dwellings.
- Some of the housing implications of accommodating population growth in the way envisaged by the *ShapingSEQ* strategic plan include 60 per cent of new dwellings being located in the existing urban area (consolidation), a shift to more medium and higher density forms of housing, and an ongoing trend towards smaller lot sizes.
- Much of SEQ's future population growth is expected to be concentrated in outer suburban areas that currently offer relatively poor access to services and low walkability to local residents.
- Consolidation growth has far more positive outcomes than expansion growth for resident's level of access to services, access to public open space and walkability. However, housing affordability tends to be better in non-coastal outer-suburban expansion areas.
- The population growth anticipated for SEQ through to 2041 means SEQ will need around one million new jobs. The main industry sources of employment growth are expected to be Health care and social assistance (227,300) and Professional, scientific and technical services (160,000).
- The Brisbane LGA is expected to accommodate 45 per cent of employment growth (on a place of work basis), despite contributing only 19 per cent of SEQ's population growth between 2016 and 2041. The Moreton Bay, Logan and Ipswich LGAs are expected to contribute a much smaller share of SEQ's jobs growth than its population growth.
- This imbalance suggests that many of the future residents of these three outer LGAs will need to spend significant time commuting into the Brisbane LGA to access jobs. The results highlight the importance of initiatives to improve transport connections and facilitate the development of employment precincts in these suburban growth areas.
- In the short term, Professionals are expected to show the most employment growth of all occupations and strong growth is also expected in employed persons with bachelor degrees and higher qualifications. With a more educated and higher-skilled workforce, SEQ will be better prepared to adopt technological advancements.
- Commuter travel in SEQ is currently very car dependent, with the areas that are projected to grow most strongly over the next two decades typically having very low public transport use. Significant and timely investment in public transport will help reduce congestion and manage the impacts of growth on the existing road network.
- The areas that are projected to experience the largest increases in population from 2020 to 2041 (such as Ripley, Greenbank and Coomera) are all located relatively close to at least one of the Queensland Government's five key economic corridors. These corridors contain SEQ's major employment precincts.

10.1 Introduction

This study aims to pull together the evidence on how jobs, connectivity and liveability are functioning in the SEQ region, and by doing so, assist in identifying areas where more focus is needed to improve outcomes. To do this the chapter aims to link the findings of the individual chapters and understand their connections.

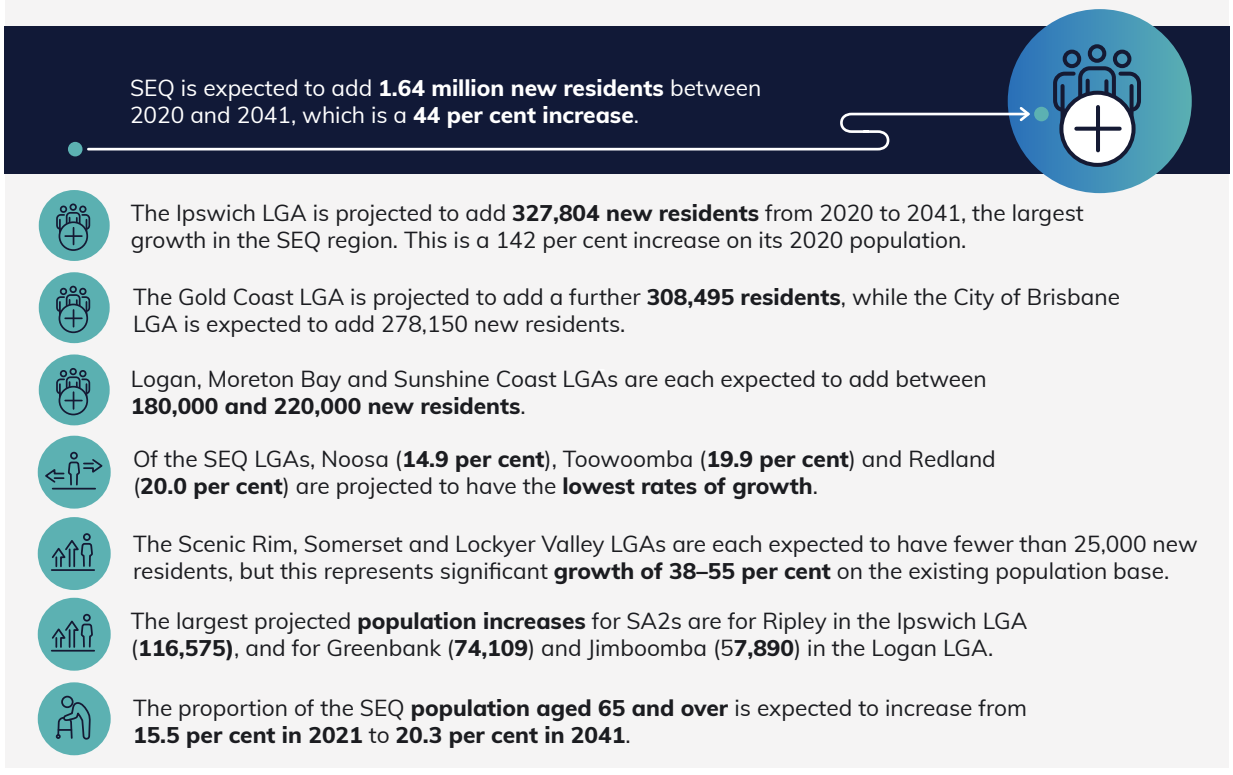
Queensland Government projections show that the population of SEQ is anticipated to grow to 5.41 million people by 2041, requiring more than 800,000 new dwellings and around 1 million new jobs (Queensland Government 2017, 2018a, 2019). This chapter discusses some of the implications of this future population growth in SEQ. It draws together the evidence on current and future focal points for population growth in SEQ, and explores consequences for housing, housing affordability, jobs, skills, liveability, transport and commuter flows.

10.2 Population growth in SEQ

Between 2016 and 2020, the SEQ region added more than 300,000 new residents, with the main growth LGAs being Brisbane (88,247), Gold Coast (59,888) and Moreton Bay (40,347). However, the Ipswich LGA had the highest rate of population growth, averaging 3.5 per cent growth per annum, compared to 2.1 per cent growth for SEQ as a whole.

SEQ's recent strong growth is expected to continue over coming decades. According to the latest Queensland Government projections, SEQ is expected to add 1.64 million new residents between 2020 and 2041, and reach 5.41 million population (Queensland Government 2018a). Figure 10.1 provides further detail on the composition and location of that projected population growth.

Figure 10.1: Projected population growth of SEQ from 2020 to 2041



Source: BCARR analysis of Queensland Government population projections (medium series), 2018.

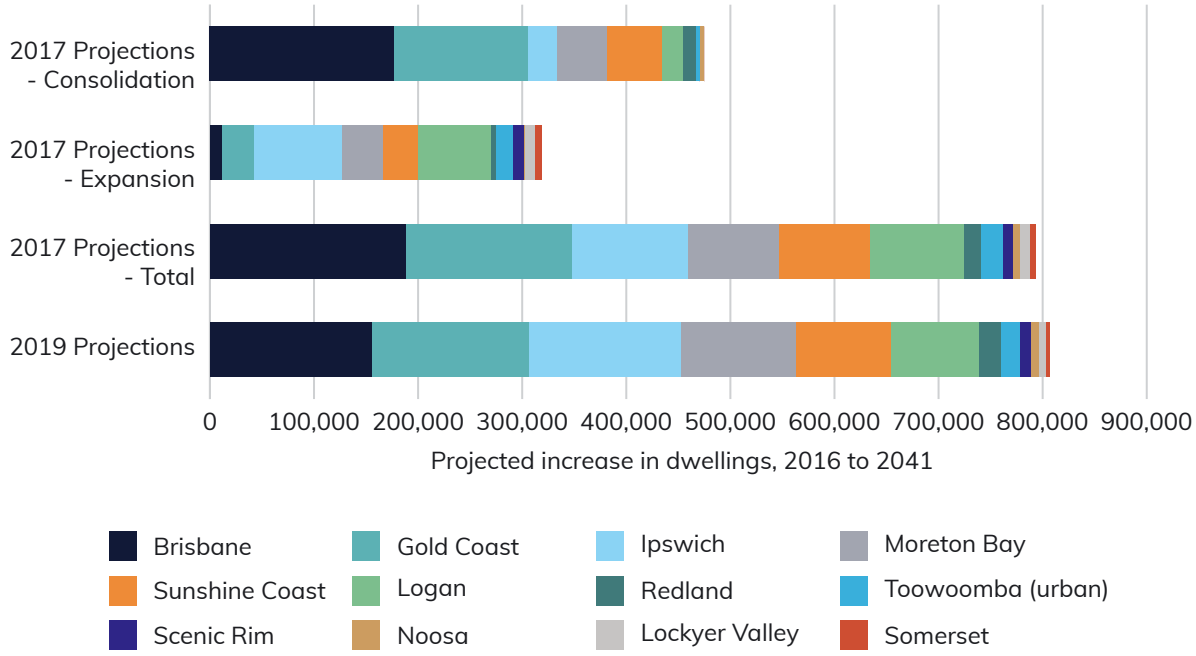
10.3 Implications of population growth for housing

The demand for new housing is primarily driven by new household formation, which is loosely connected to population growth. The source of population growth (i.e. migration or births) is key to whether new housing will be required, while life course changes and second home construction are other important contributors. Nevertheless, over the long-term, the locations in which population growth is expected to occur in SEQ should be quite closely connected to the locations in which dwellings growth occurs.

According to the latest Queensland Government housing projections, more than 800,000 new dwellings will be required in SEQ to accommodate its population growth between 2016 and 2041 (Queensland Government 2019). Figure 10.2 illustrates how these extra dwellings are projected to be distributed across the 12 LGAs. It presents the Queensland Government's 2019 projections alongside the 2017 projections from *ShapingSEQ*, as only the latter include a split between consolidation and expansion areas.

According to the latest (2019) projections, the Brisbane LGA is expected to add the most new dwellings (155,200), closely followed by the Gold Coast LGA (150,900) and the Ipswich LGA (146,000). Note that this is a different order to the population projections summarised in Figure 10.1, but that simply reflects the longer time period, with the dwelling projections having a 2016 baseline.

Figure 10.2: Projected growth in dwellings for SEQ LGAs from 2016 to 2041



Note: In the 2019 projections, the projections for Toowoomba relate to the entire LGA, not just its urban extent. The 2019 projections do not distinguish between consolidation and expansion areas.

Sources: Queensland Government (2019, 2017).

While Figure 10.2 shows that the projected increase in dwellings for SEQ was revised slightly upwards by the Queensland Government between 2017 and 2019, there are some notable differences in the two sets of projections with respect to where the new dwellings will be located. Specifically, in the 2019 projections (relative to the 2017 projections), the Brisbane LGA is projected to accommodate around 33,000 fewer dwellings, while the Ipswich and Moreton Bay LGAs are now expected to accommodate a larger proportion of dwellings growth.

From 2016 to 2021, 59 per cent of SEQ's residential building approvals were within the existing urban area boundary, and thus reflect consolidation rather than expansion growth. This suggests that the *ShapingSEQ* consolidation target of 60 per cent is feasible in the short term. However, ongoing achievement of this consolidation target is likely to become more challenging over time as pre-identified infill opportunities are completed.

Some further implications of accommodating population growth in the way envisaged by the *ShapingSEQ* strategic plan include a shift towards more medium and higher density forms of housing and a continuation of the ongoing trend towards smaller lot sizes.

Figure 10.2 shows that consolidation development is expected to be concentrated in the Brisbane and Gold Coast LGAs, With respect to consolidation development, *ShapingSEQ* aims to focus new housing development in and around activity centres and to achieve increased residential densities in SEQ's centres (Queensland Government 2017). It also aims to deliver a greater range of 'missing middle' forms of housing, which would boost overall densities.[30]

In contrast, SEQ's expansion development is expected to be concentrated in the Ipswich and Logan LGAs (see Figure 10.2). Figure 10.3 presents a map of projected increases in population between 2020 and 2041, which is overlayed with the major expansion areas identified by the Queensland Government in *ShapingSEQ*. The major expansion areas are the main areas in which the Queensland Government plans to accommodate expansion (i.e. greenfields) housing development in SEQ in the period to 2041. The major expansion areas include:

- Ipswich: Springfield, Ripley, Walloon/Rosewood
- Logan: Flagstone/Flinders, Park Ridge, Yarrabilba
- Moreton Bay: Caboolture West
- Redland: Southern Redland Bay
- Sunshine Coast: Caloundra South, Beerwah East, Palmview
- Gold Coast: Coomera, Ormeau.

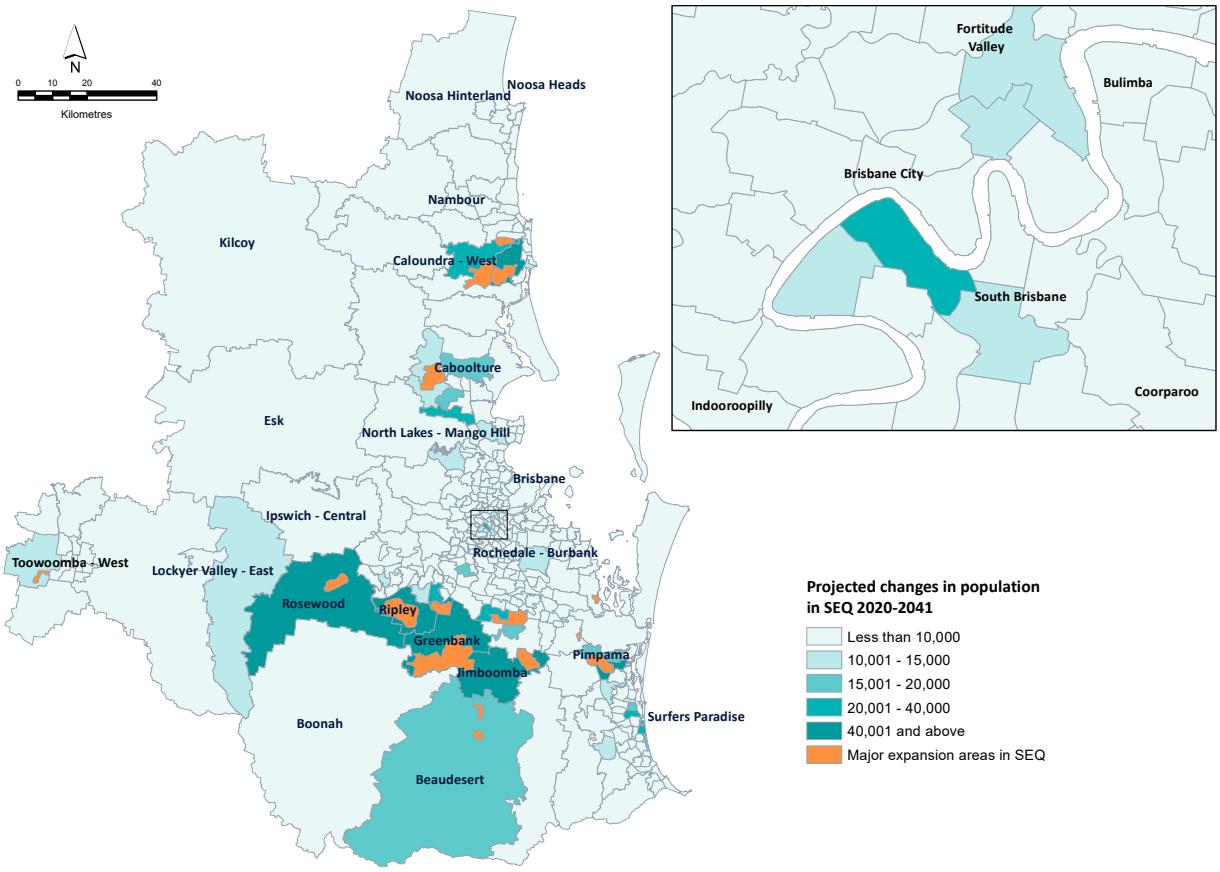
Not surprisingly, the map shows a close connection between the areas that are expected to accommodate the largest population increases to 2041 and the areas that are being planned to accommodate new greenfields housing development. However, some of these major expansion areas are expected to still have a lot of remaining capacity in 2041, particularly the Ripley Valley (30,000 extra dwellings) and Greater Flagstone (19,000 extra dwellings).

There are some supply-side risks that have recently emerged that could impact the construction of new housing in SEQ and how that aligns with targets. Rising material and labour costs and supply difficulties have created challenges across the country, with a number of significant housing construction firms ceasing operations over the last year (Raphael 2022). Skill shortages are also an issue for the industry nationally, with Labourers and Technicians and trades workers having the lowest proportion of advertised vacancies filled across all occupations (National Skills Commission 2022b). Building firms may choose to manage those risks by pivoting to smaller scale residential developments.

The SEQ population is expected to age significantly in coming decades. This ageing of the population will lead to changes in housing preferences and may result in a need for new, more diverse forms of housing. While older Australians generally prefer to age in place in the family home, some may be seeking affordable options for downsizing (Productivity Commission 2015).

30 "'Missing middle' is a form of housing that offers greater density and diversity in a manner compatible with surrounding lower density residential environments. Most 'missing middle' housing is oriented toward the street or laneway. It covers housing types between detached houses and high-rise, and may include 'Fonzie' flats (a small, self-contained apartment on the same land as a house), 'plexes' (duplexes, triplexes, quadplexes etc), row/terrace housing and medium-rise apartments." (Queensland Government 2017 p44).

Figure 10.3: Projected population increase from 2020 to 2041 and major expansion areas



Sources: Queensland Government (2018) population projections – medium series and Queensland Government (2017).

10.4 Implications of population growth for liveability

This section discusses the implication of population growth for liveability. Here liveability includes access to services, as discussed in chapter 9 and housing affordability, as discussed in chapter 4.

Access to services

Since SEQ's future population growth is expected to be concentrated in the Ipswich, Gold Coast and Brisbane LGAs, the level of access to services experienced by existing residents of these LGAs is pertinent.

The Brisbane LGA scored highest of the 12 SEQ LGAs on the 4 access to services metrics (health, education, community and sports, and arts and culture) and the walkability metric, but was outperformed by several LGAs on access to public open space. Therefore, the liveability implications of future growth in the Brisbane LGA appear fairly positive, so long as expansion of service provision keeps pace with the growing population. It does however, highlight a need for future infill development in the Brisbane LGA not to occur at the expense of existing public open space.

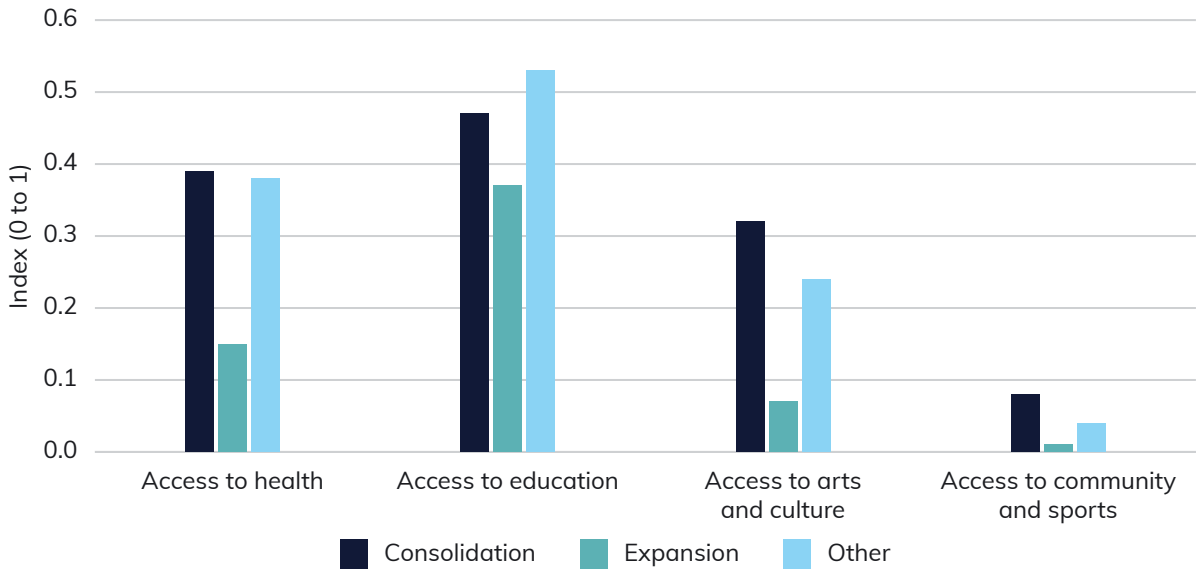
The Gold Coast LGA was ranked below Brisbane on all the metrics apart from access to public open space. However, the Gold Coast LGA typically outranked the Ipswich LGA, and ranked relatively

highly on walkability (2nd), access to public open space (3rd) and access to health services (4th). The Ipswich LGA ranked in the bottom half of the SEQ LGAs for 4 of the 6 measures, but performed relatively strongly with respect to access to education services (for which it was ranked 4th, compared to 7th for Gold Coast). The Ipswich results highlight how a significant proportion of SEQ's future population growth will be concentrated in outer suburban areas that currently offer relatively poor access to services and low walkability to local residents. This would be expected to negatively impact the quality of life of residents.

For this study, BCARR identified a set of growth SA2s that added significant population between 2016 and 2020, and categorised them as consolidation growth areas if they were within the existing urban area boundary and expansion growth areas if they were outside it. Figure 10.4 shows that the expansion growth areas scored lower than consolidation growth areas for all of the access to services indicators, reflecting a limited range of services being established in these newly developing suburbs in their early stages of development. There is less of a gap between the expansion and consolidation areas for education services than for the other types of services, reflecting the relatively early establishment of primary schools in many greenfields developments. The expansion areas also scored lower than the consolidation areas on walkability and access to public open space.

Clearly, consolidation growth has more positive outcomes than expansion growth for resident's level of access to services, access to public open space and walkability. However, this higher level of access does come at a cost, which will be discussed in the upcoming section on housing affordability.

Figure 10.4: Access to services metrics for expansion and consolidation growth areas



Note: Consolidation and expansion growth areas were identified at SA2 scale, based on population growth between 2016 and 2020, and using the Queensland Government's existing urban area boundary.

Source: BCARR analysis of data from the Australian Urban Observatory, Queensland Government (2017) and ABS Cat. 3218.0 (March 2021 release).

Table 10.1 presents the access to services, access to public open space and walkability metrics for the SA2s that are projected to have the largest population increases between 2020 and 2041. The consolidation growth area of Surfers Paradise performs most strongly on walkability, access to health services and access to arts and culture. The expansion areas tend to perform poorly on walkability and access to community and sports infrastructure, but have varying scores across the other metrics. Many of the expansion areas score relatively well on the access to education metric, with the SA2s that are at an earlier stage of development (i.e. Ripley, Greenbank) having a lower score than more progressed developments.

Springfield Lakes is a standout in Table 10.1, scoring higher than the other expansion areas on access to education, access to arts and culture, and walkability. Many of the other expansion areas are at an earlier stage of development, and the availability of services in these areas is likely to increase over time as the area's population expands. However, the initial residents of expansion areas will generally experience quite limited access to services, and improved alignment of growth with the establishment of services will deliver better outcomes for residents.

Table 10.1: Access to services metrics for SA2s with top projected population increase between 2020 and 2041

SA2	Access to health services	Access to education services	Access to arts and culture	Access to community and sports	Walkability index	Access to public open space (per cent)
Ripley	0.00	0.17	0.00	0.00	–4.18	21.71
Greenbank	0.00	0.02	0.00	0.00	–6.95	14.13
Jimboomba	0.04	0.27	0.07	0.00	–4.57	25.96
Coomera	0.15	0.41	0.08	0.00	–0.81	72.46
Rosewood	0.25	0.50	0.00	0.05	–4.03	25.49
Caloundra – West	0.19	0.20	0.16	0.00	–0.08	51.08
Springfield Lakes	0.18	0.60	0.24	0.00	0.98	80.83
Bellbird Park – Brookwater	0.11	0.42	0.21	0.00	–1.05	49.62
Surfers Paradise	0.49	0.18	0.66	0.00	5.76	76.84

Note: The four access to services metrics are an index, with values lying between 0 and 1, with higher values representing better access. In the walkability index 0 represents the mean. Growth areas identified based on Table 3.22, but the Landsborough SA2 is omitted from the table because it was not captured in the AUO dataset.

Source: BCARR analysis of data from the Australian Urban Observatory and Queensland Government (2019).

Housing affordability

Housing affordability is considered part of liveability for this study, and incorporates rental affordability as well as home ownership/mortgage affordability.

Rental affordability is an issue that impacts a significant proportion of SEQ households, more so than home ownership affordability. Within SEQ, rental affordability issues are particularly pronounced on the Gold Coast. The Gold Coast LGA is expected to experience the second largest population increase in SEQ between 2020 and 2041, after Ipswich.

The dwelling price to income ratio provides a guide to affordability for prospective home owners. The Noosa, Sunshine Coast, Middle South and Gold Coast sub-regions have the highest dwelling price-to-income ratios and are the least affordable. The Ipswich LGA has the lowest dwelling price-to-income ratio and is more affordable. Its current affordability to prospective home owners is relevant given that the Ipswich LGA is projected to contribute the largest share of SEQ's population increase through to 2041. The key future growth areas of Ripley and Springfield have some of the lowest dwelling price-to-income ratios in SEQ.

Higher levels of amenity and better access to services will tend to be reflected in higher land and house prices. Land is priced more highly around the city centre and declines with distance from the CBD (Kulish, Richards and Gillitzer 2011). The inner and middle rings of Brisbane have the best access to services and walkability in SEQ, while access to services is lower in Brisbane's outer ring and the Rest of SEQ.

Housing affordability, and rental affordability in particular, is a problem impacting many SEQ residents. Interest rate increases in 2022 have created some uncertainty around the longer-term impacts on housing affordability. For SEQ, the underlying drivers of housing demand remain strong, with no sign of migration flows from the southern states abating.

10.5 Implications of growth for employment and skills

Where in SEQ will those jobs be located?

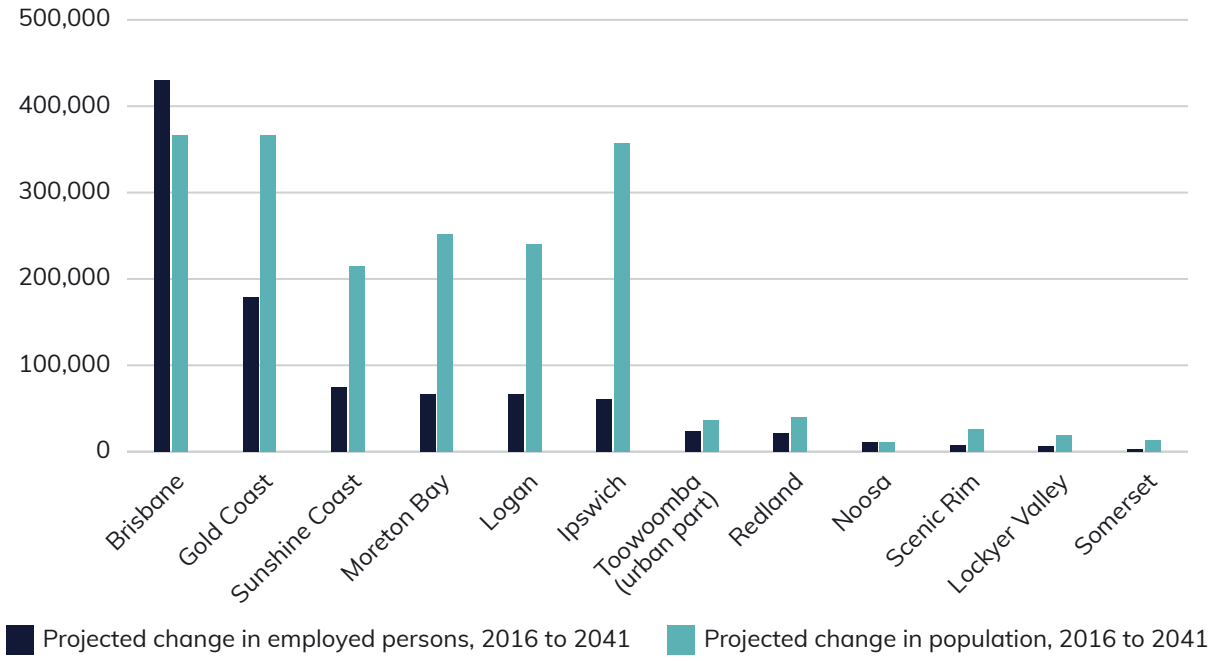
ShapingSEQ anticipates that changing technologies will cause a fundamental shift in the locational distribution of employers and jobs in SEQ over time (Queensland Government 2017). It aims to locate more jobs where people live and in Regional Economic Clusters (RECs), the regional activity centre network, Knowledge and Technology Precincts (KTPs) and Major enterprise and industrial areas (ibid). More recently, the SEQ Economic Foundations paper identified the five economic corridors that will be key to realising the ambitions for employment growth in SEQ. These corridors link the RECs, key urban growth areas and export gateways, and are mapped in Figure 5.9.

ShapingSEQ contains some guidance on the potential spatial distribution of jobs growth in SEQ through to 2041 (Queensland Government 2017). These employment growth projections are on a place of work basis and were prepared by Queensland Treasury in 2016, using a 2010–11 baseline. They do not reflect up-to-date information on the SEQ economy, and need to be treated with corresponding caution. Nevertheless they do provide some indication of where employment growth might be expected to be concentrated over the long-term.

Figure 10.5 presents the projected change in employment for the 2016 to 2041 period and compares it to the Queensland Government's population projections from 2018. Between 2016 and 2041, SEQ's projected growth in employment is 0.95 million persons (Queensland Government 2016). While the Brisbane LGA is expected to have a similar population increase to the Ipswich and Gold Coast LGAs between 2016 and 2041, Figure 10.5 shows that it is expected to accommodate a much larger proportion of jobs growth than the other two LGAs.

- The Brisbane LGA is expected to contribute 19 per cent of SEQ's population growth between 2016 and 2041, but it is expected to accommodate 45 per cent of employment growth (on a place of work basis).
- Gold Coast is expected to contribute 19 per cent of both population and jobs growth.
- The outer suburban growth LGAs of Moreton Bay, Logan and Ipswich (as well as the Sunshine Coast), are expected to contribute a much smaller share of SEQ's jobs growth than its population growth.

Figure 10.5: Projected growth in employment and population from 2016 to 2041



Note: Employment projections are on a place of work basis. The employment projections were prepared prior to the population projections, and will reflect different inputs and assumptions. Projected population growth differs from that presented in Chapter 3 as a 2016 baseline has been used to align with the employment projections (whereas a 2020 baseline is used in Chapter 3, e.g. Table 3.20).

Sources: Queensland Government 2018 population projections (medium series); Queensland Government 2016 employment projections.

This imbalance suggests that many of the future new residents of these outer LGAs will need to spend significant time commuting into the Brisbane LGA to access employment. The imbalance is particularly pronounced for the Ipswich LGA which is projected to account for 18 per cent of SEQ's total population growth but just 6 per cent of employment growth between 2016 and 2041. The results highlight the importance of initiatives to facilitate the development of employment precincts in these outer suburban growth areas, in order to better provide employment opportunities for local residents. Relevant examples include the Ipswich, North Lakes-Mango Hill and Yatala-Stapylton-Beenleigh RECs, and in the longer term the Bromelton State Development Area.

Chapter 5 showed how jobs are not evenly distributed throughout SEQ, but instead are concentrated in Inner Brisbane and in suburban industrial precincts and specialised centres. Some LGAs have plenty of jobs, and attract commuters from further afield, while others do not have sufficient jobs for local residents. There are 6 SEQ LGAs which are expected to add over 180,000 residents between 2020 and 2041 (with the remaining 12 LGAs each adding less than 35,000 new residents). Table 10.2 shows the 2016 ratio of local workers to employed residents for these six significant growth LGAs. The Brisbane LGA is home to many more jobs than needed to employ its local residents, while the Gold Coast and Sunshine Coast both have only a slight deficit of local employment opportunities.

Moreton Bay currently offers only 60 local jobs for every 100 employed residents, and so the projected growth of 181,522 new residents will present significant challenges in terms of boosting local employment opportunities, pressures on the transport network (particularly the key routes to central Brisbane) and impacts on the quality of life of residents. Both Logan and Ipswich LGAs currently offer around 70 local jobs for every 100 employed residents, and the substantial population growth projected for these LGAs may pose similar challenges. However, the Logan LGA currently has relatively good commuter connectivity, enabling residents to access many jobs in neighbouring LGAs within a 45 minute drive.

Table 10.2: Ratio of workers to employed residents in LGAs with significant projected population increases from 2020 to 2041

LGA	Ratio of local workers to employed residents, 2016	Projected population increase, 2020 to 2041
Ipswich	0.74	327,804
Gold Coast	0.90	308,495
Brisbane	1.25	278,150
Logan	0.68	212,342
Moreton Bay	0.60	210,963
Sunshine Coast	0.86	181,522

Note: The ratio of local workers to employed residents averages less than one, mainly because about 5 per cent of workers do not have a fixed address of work.

Source: BCARR analysis of ABS Census of Population and Housing, 2016 and Queensland Government 2018 population projections (medium series)

The strong employment growth forecast for the Professional, scientific and technical services and Health care and social assistance industries (National Skills Commission 2021; Queensland Government 2020a and 2016) is likely to flow through to jobs growth in the Brisbane Capital City precinct and health-oriented employment precincts throughout SEQ (e.g. South Brisbane, Chermside, Ipswich, Southport).

What types of jobs will be created?

Significant population growth typically flows through to create employment growth in population-serving industries, such as Retail trade, Accommodation and food services, Education and training, and Health care and social assistance. Employment in residential building construction, an important component of the Construction industry, is also partly dependent on population growth. Therefore, over the period to 2041, we should expect to see ongoing growth in these industries in the six growth LGAs listed in Table 10.2, and particularly in Ipswich and Gold Coast, which have the largest projected population growth.

Between 2016 and 2041, the Queensland Government predicts that the main industry source of employment growth in SEQ will be Health care and social assistance (227,300), followed by Professional, scientific and technical services (160,000) and Construction (130,100) (Queensland Government 2016). Professional, scientific and technical services is expected to be the main source of growth for employed persons working in the Brisbane LGA. In Gold Coast, Sunshine Coast, Ipswich and Moreton Bay, the Health care and social assistance industry is expected to be the main source of employment growth. In the Logan LGA, the Construction industry is expected to be the main contributor (ibid).

Further sets of state government projections focus on how the skills of the Queensland workforce will change over a five-year timeframe, identifying that Professionals show the most employment growth of all occupations (Queensland Government 2020a), and showing strong growth in those with bachelor degrees and higher qualifications (Queensland Government 2021). Currently, jobs for those with university qualifications are heavily concentrated in the Brisbane LGA (and specifically in the Inner Brisbane ring). However, the future population growth slated for the remaining 11 SEQ LGAs will increasingly involve university-qualified workers, many of whom would prefer to work close to home rather than commute into inner Brisbane for work. In Sydney, office parks (e.g. Norwest) have been set up in suburban locations where they can gain access to an educated and skilled workforce, and this may become an option in SEQ in the future as the resident workforce of the growth LGAs becomes increasingly skilled.

In general, countries or cities with a greater portion of their population with higher educational qualifications and skilled workforces see faster economic growth than countries or cities with less-educated and less-skilled workers (Tuli et al., 2019). With technological advancement, cities are becoming more competitive around the world. With a better-qualified and higher-skilled workforce, SEQ will be better prepared to adopt technological advancements.

The pandemic was also associated with an increase in working from home, and while the incidence of working from home has declined from its initial COVID peak, Chapter 7 showed it remained above pre-pandemic levels in SEQ into early–2022. The incidence of working from home is significantly higher for the Brisbane LGA than the other SEQ LGAs. Working from home capability and uptake tends to be highest for Professionals, Managers and Clerical and administrative workers (Vij et al. 2021). While it is not yet clear where things will settle post-pandemic, there is the potential for working from home arrangements to have an expanded role into the future, particularly for traditionally office-based jobs.

10.6 Implications of growth for commuter transport and connectivity

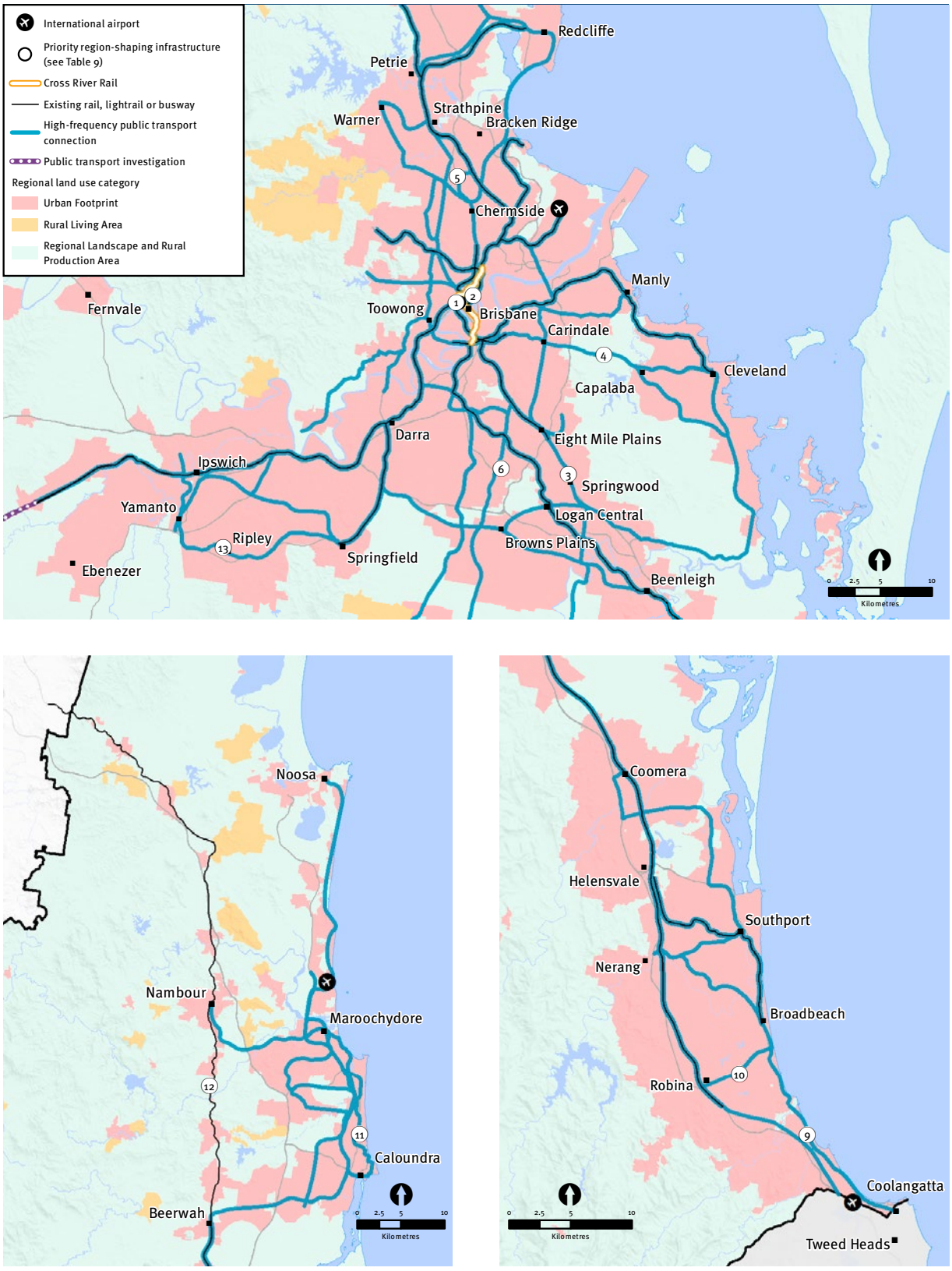
Commuter travel in SEQ is highly car dependent. The Brisbane LGA is the least car dependent of the SEQ LGAs, with a 70 per cent private vehicle mode share and an 18 per cent public transport mode share for the journey to work (see Table 7.3). All of the remaining significant growth LGAs (i.e. Gold Coast, Ipswich, Logan, Moreton Bay and Sunshine Coast) are relatively car dependent, with a private vehicle mode share of between 83 and 87 per cent and a public transport mode share of between 2 and 9 per cent.

As Figure 10.5 showed, the strong population growth in the Ipswich, Moreton Bay, Logan and Sunshine Coast LGAs through to 2041 is expected to generate significant out-commuting by residents of these LGAs, due to limited new job creation within these LGAs. This will create significant pressures on the existing transport network, including the motorway connections to central Brisbane, while likely increases in congestion and travel times will impact the quality of life of residents. Such impacts could be mitigated by investment in the capacity and efficiency of the transport network or by facilitating the development of employment precincts within those LGAs.

ShapingSEQ aims to prioritise public transport and active transport, so that people can move around the region in a healthier, more efficient and sustainable way (Queensland Government 2017). Figure 10.6 shows the vision for 2041 of a strategic transport system that connects people, places and employment efficiently with high-frequency passenger transport services. That vision leads to long-term public transport investment priorities that include:

- Cross River Rail
- Frequent public transport services to major expansion areas, such as Caboolture West and Yarrabilba
- Ipswich to Springfield public transport corridor
- Extension of light rail from Broadbeach to Coolangatta and new connection linking Broadbeach to Robina
- Establishing high frequency public transport services from Maroochydore to Caloundra to Beerwah (ibid).

Figure 10.6: ShapingSEQ's vision for the strategic public transport system in 2041



Source: *ShapingSEQ* Figure 4a (Queensland Government 2017).

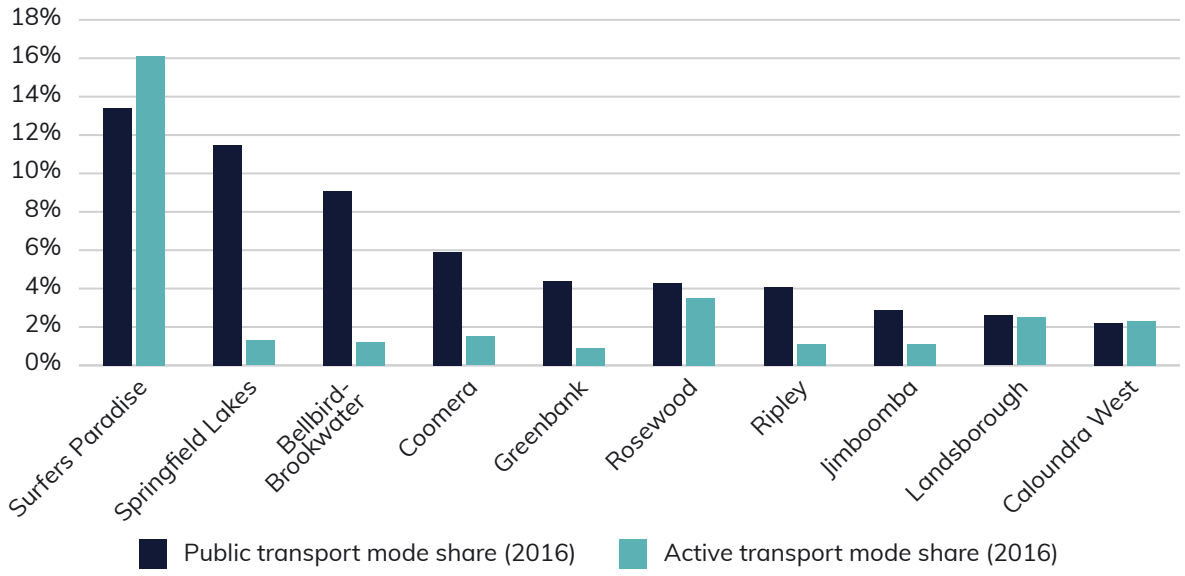
Figure 10.7 shows the public transport and active transport mode shares as of 2016 for the 10 SA2s that are projected to add the most population between 2020 and 2041. These growth SA2s can be grouped into 3 different categories based on their development type and public transport use:

- Higher density infill development with above-average public transport and active transport use: Surfers Paradise
- Expansion area with above-average public transport use: Springfield Lakes and Bellbird-Brookwater[31]
- Expansion area with limited public transport use: Ripley, Rosewood, Greenbank, Jimboomba, Coomera, Landsborough and Caloundra West.

Surfers Paradise is obviously quite a different case from the other growth SA2s. Its high-density housing coupled with significant local employment is conducive to active travel and it is well served by the frequent Gold Coast Light Rail.

The opening of the Springfield Railway Line in 2013 provides residents of Springfield Lakes and Bellbird-Brookwater with a frequent, high-capacity public transport option to central Brisbane. While these two growth areas already have a significant population base, much more growth is expected. The initial investment in the rail connection is already reflected in the commuting behaviour of local residents, in contrast to the other expansion SA2s in which residents are more reliant on cars to access their jobs.

Figure 10.7: Public transport and active transport mode shares for top ten future growth areas



Note: Growth areas identified based on Table 3.22.

Source: BCARR analysis of ABS Census of Population and Housing place of usual residence data.

Numerous studies have highlighted the limited and/or delayed delivery of transport infrastructure and services as a major challenge for new greenfields suburbs (Kroen et al 2021; Victorian Auditor General 2013). Delbosc et al. (2015) highlights the need for early delivery of public transport services in new fringe areas, as transparency about when services will be delivered will enable home buyers and renters to make informed decisions about what locations will support their family's needs. Where public transport is not available, car-based commuting behaviours can

31 While Bellbird-Brookwater does not exceed the SEQ public transport mode share of 10.0 per cent, it is well above the average for the Outer ring of 7.8 per cent.

become entrenched. To help manage the impacts of future population growth on SEQ's road network, consideration should be given to early investment in new or upgraded public transport connections to major expansion areas.

Public transport use declined in SEQ, and other Australian cities, during the pandemic due to health and safety reasons, and has not yet returned to pre-pandemic levels. Public transport patronage in SEQ stood at 73 per cent of pre-pandemic patronage, as of August 2022 (Bailey 2022). The increased public concerns about the health and safety of public transport use are something of a setback to the *ShapingSEQ* plans for prioritising public transport, that would not have been foreseen back in 2017. However, it is not yet clear how persistent this behavioural change will be.

Table 10.3 presents some summary measures of commuter connectivity for the six significant growth LGAs. The Brisbane LGA is relatively self-contained, with residents having good job access and relatively short commuting distances. The Gold Coast and Sunshine Coast LGAs are also relatively self-contained, but commuting distances are higher and residents only have access to a small proportion of SEQ's jobs. The Ipswich, Logan and Moreton Bay LGAs all have much lower self-containment, with around 40 per cent of employed residents commuting into the Brisbane LGA for work. Commuting distances are correspondingly high, but residents can access around half of SEQ's jobs within a 45 minute commute. This reinforces the previous point that the large-scale population increases predicted for these three LGAs will be likely to generate a significant increase in long-distance commuter flows towards the Brisbane LGA in the morning peak (and reverse flows in the afternoon peak), unless the spatial distribution of SEQ's employment is fundamentally transformed.

Table 10.3: Selected indicators of commuter connectivity for SEQ's significant growth LGAs

LGA of residence	Self-containment rate, 2016 (per cent)	Other key destinations (share>5 per cent), 2016	Average commuting distance, 2016 (km)	30-minute job access, 2019 (per cent)	45-minute job access, 2019 (per cent)
Brisbane	85	nil	12	48	65
Gold Coast	78	Brisbane (7 per cent)	19	13	22
Ipswich	47	Brisbane (40 per cent)	21	16	51
Logan	40	Brisbane (40 per cent), Gold Coast (7 per cent)	21	23	61
Moreton Bay	48	Brisbane (41 per cent)	21	13	41
Sunshine Coast	78	nil	21	6	9

Note: The self-containment rate is the proportion of employed residents of the LGA who have a fixed work address in the LGA. The 30 and 45 minute job access measures capture the proportion of total SEQ jobs that can be accessed by residents of the LGA by road within the specified time.

Source: BCARR analysis of ABS Census of Population and Housing, 2016, as presented in Chapter 8.

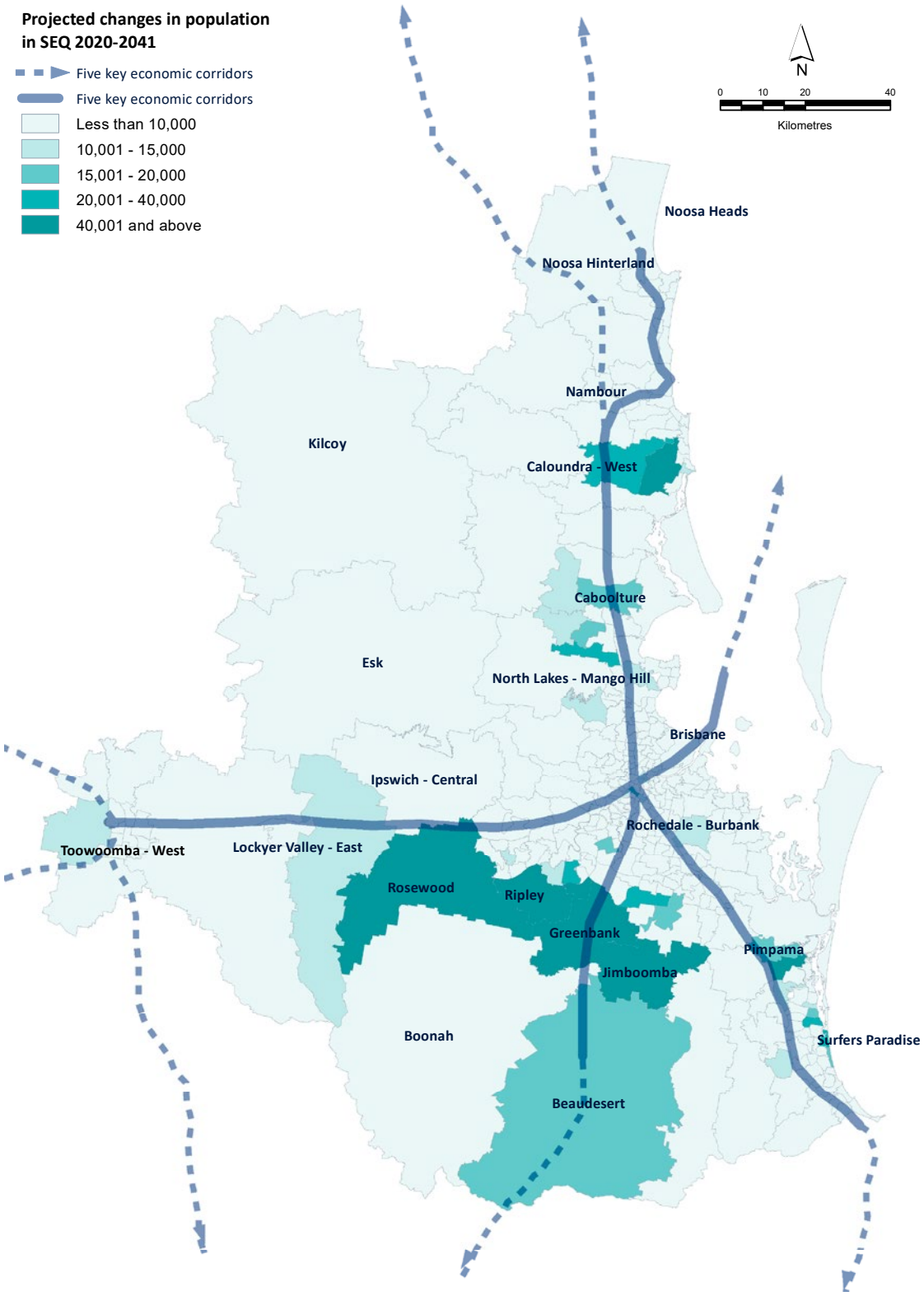
The analysis in Chapter 8 highlighted how the expansion growth areas tended to have much lower 30 minute job access than either the consolidation areas or the remaining SA2s. However, the expansion areas were not at a disadvantage with respect to 45 minute job access. Over the 20 year period to 2041, as the residential growth front shifts further outwards, this may no longer remain the case.

Figure 10.8 presents the projected population increase for SA2s through to 2041, and overlays that with the five key employment corridors from the SEQ Economic Foundations paper. These corridors contain nearly all the major employment precincts of SEQ as identified in Chapter 5. Some of these growth SA2s are directly located on one of the corridors, and all are located within a 10km drive of a corridor.

The Jimboomba and Greenbank SA2s are an interesting case, as although the planned Greater Flagstone and Yarrabiliba residential growth areas are located along the South-West corridor, this corridor is an emerging one, and does not currently contain any significant employment precincts.

The limited current availability of jobs is reflected in employed residents travelling an average distance of 34km to work from Jimboomba and 30km from Greenbank in 2016. The sequencing of residential development at Greater Flagstone and Yarrabilba with economic development at the Bromelton State Development Area will be a key driver of transport and commuting outcomes.

Figure 10.8 Projected increase in population of SEQ SA2s from 2020 to 2041 and five key employment corridors



Source: BCARR analysis of Queensland Government 2018 population projections – medium series and Figure 4.9 from the SEQ Economic Foundations paper (Queensland Government 2018a).

10.7 Conclusion

This report aims to provide an evidence base on the spatial distribution of population and population growth, housing, jobs and skills, connectivity and liveability within SEQ. This research will support the process of sustainably accommodating an additional 1.64 million people through efficient land use, housing diversity and residential density.

The evidence base built for this study can be used to monitor how population, jobs, connectivity and liveability evolve in response to government initiatives. This study provides evidence of recent spatial development trends in SEQ and compares the reality of those trends to the strategic direction for the region's growth set out in the Queensland Government's recent regional plans. In addition, the report also identifies some implications of this population growth for housing, jobs, transport, connectivity and liveability.

This report summarises the population distribution, population growth and population projections for the SEQ region. Brisbane, Gold Coast and Moreton Bay LGAs have contributed significantly to recent population growth. The most densely populated sub-regions were in Inner Brisbane and the Gold Coast, and the largest increases in density also happened in these two sub-regions. By 2041 the population is projected to reach 5.41 million, a 44 per cent population increase over 21 years. Much of this additional population is projected to be accommodated in the Ipswich, Gold Coast and Brisbane LGAs. Also, SEQ is projected to have a much older population by 2041.

Currently, most of the LGAs in the SEQ region are dominated by separate, low-density, detached housing types, except in the Brisbane, Gold Coast and Sunshine Coast LGAs. Between 2016 and 2021, 59 per cent of residential building approvals were for separate houses in SEQ, which indicates some shift towards higher density forms of residential development since 2016. This shift has been most pronounced in the Brisbane and Gold Coast LGAs. Median lot sizes are also getting smaller across the SEQ region.

SEQ is expected to add 60 per cent of its new dwellings through consolidation rather than expansion between 2016 and 2041. The Brisbane and Gold Coast LGAs are expected to add the most dwellings through urban consolidation, while Ipswich and Logan are likely to add the most dwellings through urban expansion. These two LGAs – Ipswich and Logan – have the most available land identified for future development.

Jobs are heavily concentrated in Inner Brisbane. As of 2016, 48 per cent of SEQ's employed persons had a place of work in the Brisbane LGA and 16 per cent worked in the Gold Coast LGA. The outer suburban LGAs of Redland and Moreton Bay had insufficient jobs to employ local residents. Between 2016 and 2021, the Gold Coast, Inner Brisbane and Ipswich SA4s had SEQ's strongest growth in employed residents.

The Brisbane LGA is expected to accommodate 45 per cent of SEQ's jobs growth between 2016 and 2041, despite contributing only 19 per cent of SEQ's population growth. The Moreton Bay, Logan and Ipswich LGAs are expected to contribute a much smaller share of SEQ's jobs growth than its population growth. The implications of this spatial imbalance include more lengthy commutes and increased congestion. The results highlight the importance of initiatives to improve transport connections and facilitate the development of employment precincts in these suburban growth areas.

The Health care and social assistance industry is the top employing industry in SEQ, except in Brisbane Inner City and Brisbane West, where Professional, scientific and technical services is the top employing industry. The industries with the largest projected employment increases in SEQ from 2016 to 2041 are Health care and social assistance, Professional, scientific and technical services and Construction.

Inner Brisbane has the most skilled workforce in the SEQ region, with the highest proportions of Managers and Professionals. Gold Coast has had the largest increase in Managers and Professionals over the last 5 years, followed by Inner Brisbane. Professionals are projected to have the most significant increase of all occupations by 2024. SEQ is also projected to become

more educated in the future, with a large increase of people with Bachelor's degrees and higher qualifications. With a more educated and higher-skilled workforce, SEQ will be better prepared to adopt technological advancements.

In terms of transport, private vehicle was the most dominant commuter transport mode and public transport was less widely used in SEQ. Inner Brisbane residents used public transport the most. As mentioned earlier, Inner Brisbane has the highest concentration of employment too. This is a common trend in Australian cities and most of the developed nations in the world, and SEQ is not an exception. The areas of SEQ that are projected to grow most strongly over the next two decades typically have very low current public transport use, and there may be a role for timely investments in public transport to these areas to help manage the impacts of growth on the existing road network.

Public transport and private vehicle use both declined dramatically in 2019–2020 due to the COVID–19 pandemic outbreak and associated restrictions on movement, and public transport use has not yet returned to pre-pandemic levels. Similarly, while the incidence of working from home has dropped from its peak during the pandemic, it remains well above pre-pandemic levels.

Across the 12 LGAs of SEQ, over 70 per cent of employed residents work within their LGA of residence, with Toowoomba and Brisbane LGAs possessing the highest self-containment rates. Employed residents of Outer Brisbane and the Rest of SEQ experienced significantly longer average commuting distances than residents of Inner Brisbane. The available congestion metrics show that congestion in the Gold Coast is similar to that in Brisbane, but the Sunshine Coast has relatively low congestion levels.

The Brisbane LGA scored highest for most of the access to services indicators. The most highly liveable areas in SEQ, in particular, were centred around Middle and Inner Brisbane. Outer Brisbane lagged behind for many of the access to services indicators. The expansion growth areas scored lower than consolidation growth areas for all six liveability indicators, reflecting expansion areas not yet establishing or attracting a full range of services. This is a common scenario in Australia, where houses are laid out first, then social and other services flow with a significant lag, and SEQ follows the same pattern.

Housing affordability varies across SEQ, but compared to rental stress, mortgage stress is low. The Gold Coast LGA is the least affordable for renters, while the Logan and Scenic Rim LGAs have the highest proportion of households with mortgage stress. The available evidence suggests that rental affordability issues in the Gold Coast and some other SEQ locations have become more pronounced over the last 12 months. Housing affordability (as measured by the ratio of house prices to income) is lower in Inner Brisbane and the Gold Coast and more affordable in outer Brisbane. This, however, is a trade off. If people would like to live closer to the established areas and have good access to services, they are likely to need to pay more for housing. This is also a common picture in Australia, and SEQ is not an exception.

The implications of adding 1.64 million new residents to SEQ over the next two decades are far-reaching. This chapter is by no means comprehensive, but has highlighted some of the implications for housing, jobs and skills, transport and connectivity, and liveability in SEQ, as well as some of the inter-connections between these factors. A particular focus has been exploring the spatial distribution of growth throughout SEQ and how its impacts are likely to play out spatially.

10.8 Limitations and future directions

The report does not make use of the 2021 ABS Census of Population and Housing data, from which initial data was released in June 2022, with further data released in October 2022. The majority of this report was drafted before the release of the relevant census data, and analysis of the 2021 census data was outside of the scope of the study.

A range of issues lie beyond this study's scope, including digital connectivity, freight movements, sustainability (including biodiversity) and major infrastructure projects (e.g. rail, road, water). There is also very limited analysis of urban planning, governance and leadership issues in this report. In order to fit the project within available resourcing, it was necessary to focus on a targeted set of research questions that fell within BCARR's areas of expertise. Through the consultation process for this research report, there was also interest expressed in topics such as community housing and the implications of an ageing population, that lie beyond the scope of the existing study.

The COVID–19 pandemic has had major impacts on working patterns, international and internal migration flows, skill shortages, fuel costs and housing affordability in Australia and throughout the developed world. This Department has partnered with other organisations to conduct research into the future of remote work arrangements (Vij et al. 2021) and post-pandemic settlement patterns (iMOVE 2022). BCARR will use this and other research to monitor the ongoing and expected future impacts for SEQ and other Australian cities.

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List of abbreviations and acronyms

Abbreviation	Meaning
ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classification
ANZSCO	Australian and New Zealand Standard Classification of Occupations
AQF	Australian Qualifications Framework
ASGS	Australian Statistical Geography Standard
AUO	Australian Urban Observatory
BCARR	Bureau of Communications, Arts and Regional Research
BITRE	Bureau of Infrastructure and Transport Research Economics
Cat.	Catalogue number of source citation
CBD	Central Business District
CTT	Cities Transformation Taskforce
DZ	Destination zones
e.g.	For example
ERP	Estimated Residential Population
et al.	Et alia. Used to cite sources with more than 3 authors
etc.	Et cetera. Used at the end of a list to indicate that similar items are included
G-NAF	Geocoded National Address File
HILDA	Household, Income and Labour Dynamics in Australia
ibid.	In the same place – used to indicate reference is from same source as previous reference
ICT	Information and Communications Technology
km²	Square kilometre
KTP	Knowledge and Technology Precinct
LFS	Labour Force Survey
LGA	Local Government Area
m²	Square metre
N/A	Not applicable
NCPF	National Cities Performance Framework
nec	Not elsewhere classified
nfd	No further details
NPD1	Neighbourhood Development Plan 1
NSC	National Skills Commission
NZQF	New Zealand Qualifications Framework
PDA	Priority Development Area
POR	Place of usual residence
POS	Public open space
POW	Place of work
PWD	Population-weighted density

Abbreviation	Meaning
RAI	Rental Affordability Index
REC	Regional Economic Cluster
RPC	Regional Planning Committee
SA1	Statistical Area Level 1
SA2	Statistical Area Level 2
SA4	Statistical Area Level 4
SEQ	South East Queensland
SIP	State Infrastructure Plan
SOI	Statement of Intent
SOS	Section of State

Appendix A

Appendix A provides the complete list of industries that are included under the definition of knowledge intensive industries developed based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) (ABS 2006). The report uses a group of knowledge industries comprising 126 sub-industries (see Table A.1) from eight broad industries.

Table A.1: List of Knowledge Intensive Industries from the Australian and New Zealand Standard Industrial Classification (ANZSIC)

Knowledge intensive industries list
Professional, Scientific and Technical Services
Accounting Services
Advertising Services
Architectural Services
Architectural, Engineering and Technical Services, nfd
Computer System Design and Related Services
Corporate Head Office Management Services
Engineering Design and Engineering Consulting Services
Legal Services
Legal and Accounting Services, nfd
Management Advice and Related Consulting Services
Management and Related Consulting Services, nfd
Market Research and Statistical Services
Other Professional, Scientific and Technical Services nec
Other Professional, Scientific and Technical Services, nfd
Other Specialised Design Services
Professional Photographic Services
Professional, Scientific and Technical Services (except Computer System Design and Related Services), nfd
Professional, Scientific and Technical Services, nfd
Scientific Research Services
Scientific Testing and Analysis Services
Surveying and Mapping Services
Veterinary Services
Information Media and Telecommunications
Book Publishing
Broadcasting (except Internet), nfd
Cable and Other Subscription Broadcasting
Data Processing and Web Hosting Services
Data Processing, Web Hosting and Electronic Information Storage Services, nfd
Directory and Mailing List Publishing
Electronic Information Storage Services

Knowledge intensive industries list
Free-to-Air Television Broadcasting
Information Media and Telecommunications, nfd
Internet Publishing and Broadcasting
Internet Service Providers and Web Search Portals
Internet Service Providers, Web Search Portals and Data Processing Services, nfd
Libraries and Archives
Library and Other Information Services, nfd
Magazine and Other Periodical Publishing
Motion Picture and Sound Recording Activities, nfd
Motion Picture and Video Activities, nfd
Motion Picture and Video Distribution
Motion Picture and Video Production
Motion Picture Exhibition
Music and Other Sound Recording Activities
Music Publishing
Newspaper Publishing
Newspaper, Periodical, Book and Directory Publishing, nfd
Other Information Services
Other Publishing (except Software, Music and Internet)
Other Telecommunications Network Operation
Other Telecommunications Services
Post-production Services and Other Motion Picture and Video Activities
Publishing (except Internet and Music Publishing), nfd
Radio Broadcasting
Software Publishing
Sound Recording and Music Publishing, nfd
Telecommunications Services, nfd
Television Broadcasting, nfd
Wired Telecommunications Network Operation
Financial and Insurance Services
Auxiliary Finance and Insurance Services, nfd
Auxiliary Finance and Investment Services, nfd
Auxiliary Insurance Services
Banking
Building Society Operation
Central Banking
Credit Union Operation
Depository Financial Intermediation, nfd
Finance, nfd

Knowledge intensive industries list
Financial and Insurance Services, nfd
Financial Asset Broking Services
Financial Asset Investing
General Insurance
Health and General Insurance, nfd
Health Insurance
Insurance and Superannuation Funds, nfd
Life Insurance
Non-Depository Financing
Other Auxiliary Finance and Investment Services
Other Depository Financial Intermediation
Superannuation Funds
Education and Training
Higher Education
Technical and Vocational Education and Training
Tertiary Education, nfd
Public Administration and Safety
Central Government Administration
Defence
Domestic Government Representation
Foreign Government Representation
Government Representation, nfd
Justice
Local Government Administration
Public Administration and Safety, nfd
Public Administration, nfd
Public Order, Safety and Regulatory Services, nfd
State Government Administration
Health Care and Social Assistance
Allied Health Services, nfd
Ambulance Services
Chiropractic and Osteopathic Services
Dental Services
General Practice Medical Services
Health Care and Social Assistance, nfd
Medical and Other Health Care Services, nfd
Medical Services, nfd
Optometry and Optical Dispensing
Other Allied Health Services

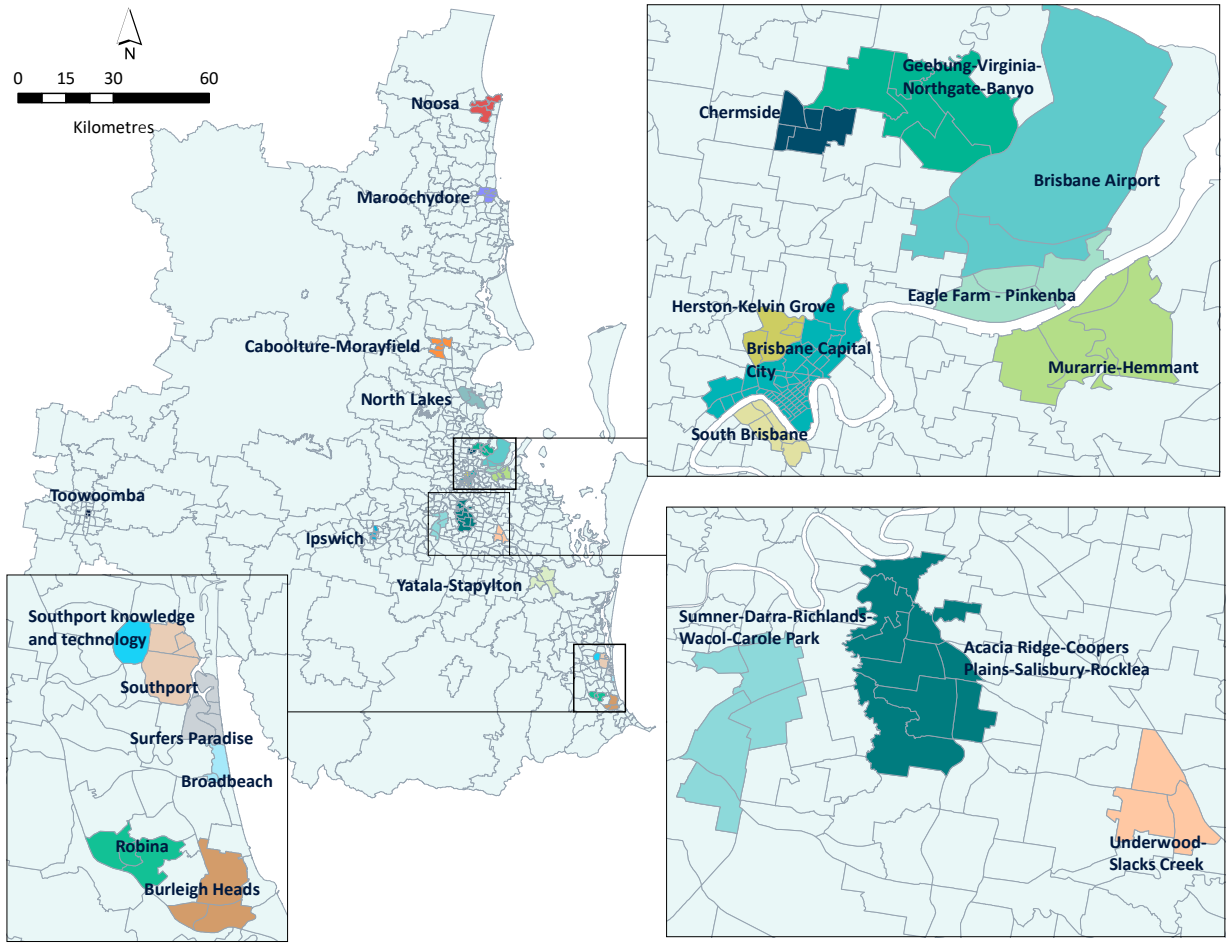
Knowledge intensive industries list
Other Health Care Services nec
Other Health Care Services, nfd
Pathology and Diagnostic Imaging Services
Physiotherapy Services
Specialist Medical Services
Manufacturing
Aircraft Manufacturing and Repair Services
Communication Equipment Manufacturing
Computer and Electronic Equipment Manufacturing, nfd
Computer and Electronic Office Equipment Manufacturing
Electric Cable and Wire Manufacturing
Electric Lighting Equipment Manufacturing
Electrical Equipment Manufacturing, nfd
Medical and Surgical Equipment Manufacturing
Other Electrical Equipment Manufacturing
Other Electronic Equipment Manufacturing
Other Professional and Scientific Equipment Manufacturing
Photographic, Optical and Ophthalmic Equipment Manufacturing
Professional and Scientific Equipment Manufacturing, nfd
Arts and Recreation Services
Creative Artists, Musicians, Writers and Performers
Creative and Performing Arts Activities, nfd
Museum Operation
Performing Arts Operation
Performing Arts Venue Operation

Note: The above listing is based on 4 digit industry classification as applied in the 2016 ABS Census of Population and Housing.
Source: ABS (2006), Tuli and Hu (2019)

Appendix B

Appendix B identifies 24 major employment precincts in SEQ in 2016 by place of work. Appendix B, Figure B.1 maps the 24 major employment precincts as shown below.

Figure B.1: 24 major employment precincts in SEQ as of 2016



Source: BCARR analysis of ABS Census of Population and Housing, 2016 place of work data for destination zones (extracted from Tablebuilder Pro) and key employment precincts identified in SEQ Regional Plan 2017.

Appendix C

Table C.1: List of 4 digit occupations under Managers major group from the Australian and New Zealand Standard Classification of Occupations (ANZSCO)

Managers unit groups
Chief Executives and Managing Directors
General Managers
Legislators
Aquaculture Farmers
Crop Farmers
Livestock Farmers
Mixed Crop and Livestock Farmers
Advertising, Public Relations and Sales Managers
Corporate Services Managers
Finance Managers
Human Resource Managers
Policy and Planning Managers
Research and Development Managers
Construction Managers
Engineering Managers
Importers, Exporters and Wholesalers
Manufacturers
Production Managers
Supply, Distribution and Procurement Managers
Child Care Centre Managers
Health and Welfare Services Managers
School Principals
Other Education Managers
ICT Managers
Commissioned Officers (Management)
Senior Non-commissioned Defence Force Members
Other Specialist Managers
Cafe and Restaurant Managers
Caravan Park and Camping Ground Managers
Hotel and Motel Managers
Licensed Club Managers
Other Accommodation and Hospitality Managers
Retail Managers
Amusement, Fitness and Sports Centre Managers
Call or Contact Centre and Customer Service Managers
Conference and Event Organisers
Transport Services Managers
Other Hospitality, Retail and Service Managers

Source: ABS ANZSCO 2013.

Table C.2: List of 4 digit occupations under Professionals major group from the Australian and New Zealand Standard Classification of Occupations (ANZSCO)

Professionals unit groups
Actors, Dancers and Other Entertainers
Music Professionals
Photographers
Visual Arts and Crafts Professionals
Artistic Directors, and Media Producers and Presenters
Authors, and Book and Script Editors
Film, Television, Radio and Stage Directors
Journalists and Other Writers
Accountants
Auditors, Company Secretaries and Corporate Treasurers
Financial Brokers
Financial Dealers
Financial Investment Advisers and Managers
Human Resource Professionals
ICT Trainers
Training and Development Professionals
Actuaries, Mathematicians and Statisticians
Archivists, Curators and Records Managers
Economists
Intelligence and Policy Analysts
Land Economists and Valuers
Librarians
Management and Organisation Analysts
Other Information and Organisation Professionals
Advertising and Marketing Professionals
ICT Sales Professionals
Public Relations Professionals
Technical Sales Representatives
Air Transport Professionals
Marine Transport Professionals
Architects and Landscape Architects
Surveyors and Spatial Scientists
Fashion, Industrial and Jewellery Designers
Graphic and Web Designers, and Illustrators
Interior Designers
Urban and Regional Planners
Chemical and Materials Engineers

Professionals unit groups
Civil Engineering Professionals
Electrical Engineers
Electronics Engineers
Industrial, Mechanical and Production Engineers
Mining Engineers
Other Engineering Professionals
Agricultural and Forestry Scientists
Chemists, and Food and Wine Scientists
Environmental Scientists
Geologists, Geophysicists and Hydrogeologists
Life Scientists
Medical Laboratory Scientists
Veterinarians
Other Natural and Physical Science Professionals
Early Childhood (Pre-primary School) Teachers
Primary School Teachers
Middle School Teachers (Aus) / Intermediate School Teachers (NZ)
Secondary School Teachers
Special Education Teachers
University Lecturers and Tutors
Vocational Education Teachers (Aus) / Polytechnic Teachers (NZ)
Education Advisers and Reviewers
Private Tutors and Teachers
Teachers of English to Speakers of Other Languages
Nutrition Professionals
Medical Imaging Professionals
Occupational and Environmental Health Professionals
Optometrists and Orthoptists
Pharmacists
Other Health Diagnostic and Promotion Professionals
Chiropractors and Osteopaths
Complementary Health Therapists
Dental Practitioners
Occupational Therapists
Physiotherapists
Podiatrists
Audiologists and Speech Pathologists \ Therapists
General Practitioners and Resident Medical Officers
Anaesthetists

Professionals unit groups
Specialist Physicians
Psychiatrists
Surgeons
Other Medical Practitioners
Midwives
Nurse Educators and Researchers
Nurse Managers
Registered Nurses
ICT Business and Systems Analysts
Multimedia Specialists and Web Developers
Software and Applications Programmers
Database and Systems Administrators, and ICT Security Specialists
Computer Network Professionals
ICT Support and Test Engineers
Telecommunications Engineering Professionals
Barristers
Judicial and Other Legal Professionals
Solicitors
Counsellors
Ministers of Religion
Psychologists
Social Professionals
Social Workers
Welfare, Recreation and Community Arts Workers

Source: ABS ANZSCO 2013.

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