

QUEENSLAND TREASURY

Population change in Queensland resource regions

1st Edition: 1991 to 2015

**Queensland Government Statistician's Office**

Queensland Treasury

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Executive summary

Queensland experienced an extended period of resource industry investment and growth between 2003 and 2014. This boom period was characterised by an unprecedented expansion of coal production in the Bowen Basin, which coincided with the establishment of a large scale coal seam gas (CSG) extraction industry in the Surat Basin. These developments also spurred construction of liquefied natural gas (LNG) processing and export projects in the Gladstone region, along with new coal exporting facilities and expansions to existing infrastructure.

Although it was not the sole influence, employment growth associated with the resources boom contributed to population change in all three regions. For local government areas (LGAs) with a high concentration of resource industries, the most visible indication of this was the rapid growth (and subsequent decline) of their non-resident populations, which consist of fly-in/fly-out and drive-in/drive-out (FIFO/DIDO) workers. Equally important is the extent to which the resident populations of these resource areas also changed during the same period.

This publication examines changes to the resident and non-resident populations of all LGAs in the Bowen Basin, Surat Basin and Gladstone region, using information produced by the Queensland Government Statistician's Office (QGSO) and other sources. In addition to the three existing resource regions, the report also includes baseline data for the emerging resource region of the Galilee Basin. Time series data and contextual information provide a longer term perspective on influences underlying these changes, including the decade that preceded the boom period.

In addition to its focus on population issues, the publication also provides information on accommodation arrangements commonly used to house FIFO/DIDO workers in resource regions.

Non-resident population change

A defining characteristic of population patterns in Queensland's resource regions since the early 2000s has been the increasing use of non-resident workforces for both construction and production. As a result, the non-resident populations of the Bowen Basin, Surat Basin, Gladstone region and Galilee Basin reached a cumulative peak of 40,400 persons at the height of the boom in June 2013, declining to 26,550 persons by June 2015.

Construction workforces are usually larger than production workforces, so non-resident populations tend to grow and decline quickly where they consist predominantly of FIFO/DIDO construction workers. In the Surat Basin, simultaneous construction of three large CSG projects saw the region's cumulative non-resident population grow rapidly from 3,265 persons in June 2011 to a peak of 14,490 persons in June 2014. The region's non-resident population then fell to 5,425 persons by June 2015, as large construction workforces were replaced by smaller production workforces. Likewise, the non-resident population of the Gladstone region grew from 1,205 persons in 2011 to 6,655 persons in 2014, then began to decline in 2015 as project construction activity wound down.

Use of non-resident *production* workforces for coal mining in the Bowen Basin, which commenced in the 1990s, increased substantially during the boom of the 2000s. The region's non-resident population more than doubled between 2006 and 2012, reaching a peak of 25,035 persons in June 2012. This growth was also influenced by large FIFO/DIDO workforces engaged in the construction of new mining projects and operational expansions. The subsequent decline in the Bowen Basin's non-resident population to 15,665 persons by June 2015 largely reflects the winding down of construction activity, although losses of non-resident production jobs due to mine closures and workforce restructuring were also contributing factors.

Overall, the recent moderation of the non-resident populations for all three resource regions is consistent with the transition of resource projects from the construction phase to the production phase, rather than a substantial downturn in the resource sector.

Resident population change

Resident populations grow or decline according to a combination of natural increase and net migration. Net migration is influenced by a number of push/pull factors, which include local employment opportunities, the availability of services and amenities, and lifestyle choices of workers and their dependants. Climatic influences, such as drought, can also have an effect on outward migration from rural areas.

On a regional scale, the resident populations of the Bowen Basin, Surat Basin and Gladstone region increased overall between 1991 and 2015, while the population of the Galilee Basin declined. Within these regions, population change has varied between LGAs and over time. All LGAs in this report, other than Toowoomba (R) and Gladstone (R), experienced population decline between 1991 and 2001, largely through outward migration. Most LGAs in the Bowen Basin were affected by a cyclical downturn in coal mining during this period, as well as jobs lost through restructuring of other



industries. Rural depopulation, which continued to affect LGAs with predominantly pastoral and agricultural economies, was further exacerbated by prolonged drought periods.

All LGAs, except Banana (S) and Barcaldine (R), subsequently recorded resident population growth between 2001 and 2015, reversing population losses that occurred during the 1990s. Jobs created through resource industry development contributed strongly to this growth. The populations of Isaac (R) and Central Highlands (R) increased in line with expansion of coal mining in the Bowen Basin, while growth in Gladstone (R) and the Surat Basin LGAs of Western Downs (R) and Maranoa (R) coincided with the introduction of gas, coal and energy generation projects.

Regions with a high reliance on resource industry employment are particularly susceptible to fluctuations in their resident populations through net migration, owing to the cyclical nature of these industries. The use of FIFO/DIDO workforces in the resource sector has also been a mitigating factor on resident population change in these areas.

Preliminary ERPs (estimated resident population) indicate that population growth for LGAs in the Surat Basin and Gladstone region has slowed since 2013, while slight population losses were recorded for all LGAs in the Bowen Basin and in the Galilee Basin in 2014–15.

Relationship between resident and non-resident populations

The magnitude of an area's non-resident population relative to its resident population is an important consideration when planning for the provision of services and infrastructure. A large non-resident population can have a more pronounced impact on demand where the host area has a relatively small resident population and a limited range of services. On the other hand, resource regions with large resident populations are more likely to be better serviced than smaller areas, and more capable of meeting increased demand from non-resident populations. The non-resident to resident population ratio provides a convenient means of comparing the impact of FIFO/DIDO populations across different local government areas and over time.

Isaac (R) has consistently recorded the largest non-resident to resident population ratio of all resource LGAs in this study. This ratio reached a peak of 72 non-residents for every 100 residents in 2012, falling to 43 per 100 in 2015. Maranoa (R) had a non-resident to resident population ratio of 13 per 100 in 2015. This was well below its peak level of 38 per 100 in 2014, when the area's non-resident population was boosted by construction workforces.

Although Central Highlands (R), Gladstone (R) and Western Downs (R) all have sizeable non-resident populations, the impacts of these populations on service demand are moderated by their relatively large resident populations. In 2015, the non-resident to resident population ratio for these LGAs was 13 per 100, 8 per 100 and 11 per 100 respectively.

Changes to the resident populations of resource regions in this report have not always occurred in line with changes to their non-resident populations, as both are subject to different growth influences. Resident population change, which is due to natural increase and net migration, has tended to occur more gradually and over a longer term, whereas non-resident populations have grown and declined rapidly within a relatively short period. As a result, much attention has been given to changes in the non-resident populations of resource regions over the short term, while longer term resident population movements tend to receive less attention.

As data in this report show, the resident populations of all resource LGAs (except Maranoa (R)) actually outgrew their non-resident populations in net terms between 2006 and 2015.

Workforce accommodation arrangements

Non-resident workforce arrangements for resource industry construction and production rely on the use of commercial accommodation, including worker accommodation villages (WAVs), hotel/motel and caravan park accommodation. Where commercial accommodation is not available, rental housing may also be used.

The non-resident population of a resource region can grow at a faster rate than the capacity of accommodation needed to house it, particularly WAVs. Data for all three resource regions show that there have been occasions where high occupancy of non-WAV accommodation by non-resident workers has limited the availability of that accommodation for other users, including tourists. These situations have usually occurred during the early stages of construction for new projects, or where operational expansions resulted in temporary growth in non-resident worker numbers.

In all instances, the supply of WAV accommodation eventually caught up with growing demand, reducing reliance on other forms of accommodation. The number of hotel/motel rooms that are vacant and available has increased substantially across all three regions since 2011. By June 2015, between half and two-thirds of all hotel/motel rooms in the Bowen Basin, Surat Basin and Gladstone region were vacant and available.

1.0 Introduction

1.1. Overview

This report is a compendium of information on changes to the resident and non-resident populations of key resource regions of Queensland from 1991 to 2015, based on data collected by QGSO and other sources. These resource regions are the Bowen and Surat Basins, as well as the Gladstone region. Information is also provided for the Galilee Basin, although resource industry development has yet to occur there (Figure 1.1). Time series population data are included, as well as an account of factors that influence changes to resident and non-resident populations.

The period covered by this report includes the decade that preceded the coal mining and CSG/LNG boom cycle between 2003 and 2014. Inclusion of these earlier data provides a context for understanding population change in the Bowen and Surat Basins, as the population growth experienced by many rural LGAs during the boom years followed a protracted period of population decline.

A particular focus of this report is the changing size, composition and location of non-resident populations. With the exception of the Galilee Basin, all of the regions and most LGAs in this report saw growth in their non-resident populations during the boom years, and subsequent decline. Most of that change was influenced by FIFO/DIDO construction workforces engaged in operational expansions and construction of new projects, although the number of FIFO/DIDO workers engaged in resource industry operations has also increased.

The report collates time series data for the non-resident populations of all four resource regions, which are usually reported separately in QGSO's annual publications. It also provides contextual information that associates non-resident population change with timelines for resource project construction, expansions of existing operations, and other major events. This approach is useful since:

- the nature and influence of the resource industry differs according to region (e.g. coal production is the dominant resource industry in the Bowen Basin, the Surat Basin is largely influenced by upstream development of the CSG/LNG industry, while the Gladstone region is subject to the construction and operations of downstream LNG facilities, ports and other resource-related infrastructure)
- some elements of resource projects span more than one region (e.g. gas exploration, gas field development, and gas pipeline construction from Surat Basin projects also occur in the Bowen Basin and Gladstone region).

Data are also presented on accommodation for non-resident workers, including the relationship between availability of WAV beds and occupancy by non-resident workers of other forms of accommodation, such as hotels, motels, caravan parks and rented housing.

1.2. Rationale

This report addresses an identified need for up-to-date and comprehensive data on population change in resource regions (Queensland Parliament, 2015), taking into account changes to non-resident populations relative to changes in resident populations. Information provided in this report is intended as a resource to assist government, private industry and community organisations involved in planning for change in resource regions, including assessment of future projects.

Data and background information contained in the report are intended to address several commonly asked questions:

- How have the non-resident populations of resource regions and LGAs changed over the past decade? What was the influence of FIFO/DIDO construction workforces on non-resident population growth and decline during this period?
- How have the resident populations of resource regions and LGAs changed in resource regions and LGAs?
- What factors have contributed to resident population change in resource regions?
- What is the relationship between resident and non-resident populations? Does this differ from one area to the next?
- Do changes in the non-resident population follow a similar trajectory to changes in the resident population?
- How does demand for commercial accommodation from non-resident workers affect availability for other users?
- Is there a time lag between commencement of a project and availability of additional WAV accommodation?

1.3. Population concepts

Two different population concepts are used in this report (for more information refer to Technical notes and Glossary):

- The *resident population*, which is a population estimate based on the place where people usually live. A person is regarded as a usual resident of an area if they identify that they have lived or intend to live there for six months or more in a reference year. This definition is consistent with that used by the ABS in its annual estimated resident population (ERP), which is the official measure of the Australian population.
- The *non-resident population*, which is the number of non-resident workers on-shift in the area at a given point in time. In resource regions, these are FIFO/DIDO¹ workers who live in the local area while rostered on, but who return to their place of usual residence elsewhere when rostered off. This group includes construction workers as well as production workers employed in resource industries. Non-resident workers do not meet the ABS criteria for a usual resident of the area where they work, so are not included in the area's official resident population estimate.

Non-resident population estimates are based on surveys conducted annually by QGSO. Data for the Bowen Basin have been collected and published from 2006 onward, the Surat Basin from 2008 and Gladstone region from 2011.

1.4. Resource regions

Resource regions are those that host resource industry activities, including mining, gas, and associated infrastructure developments. The geographical scope of this report encompasses four of Queensland's existing and emerging resource regions (see Technical Notes), and the nine LGAs within them (Figure 1.1):

- The **Bowen Basin**, which includes the LGAs of Banana (S), Central Highlands (R), Isaac (R) and Whitsunday (R) (Bowen only), is Queensland's major coal mining region. The Bowen Basin has a sizeable population of non-resident resource industry workers, who are largely engaged in coal and gas production, maintenance and construction.
- The **Surat Basin** contains the LGAs of Maranoa (R), Western Downs (R) and Toowoomba (R). While the region's economy has traditionally revolved around grain growing and grazing, recent years have seen massive expansion of the CSG industry, along with construction of new power generation facilities and coal mines. Many of the resource industry jobs that have been created in the Surat Basin are undertaken by FIFO/DIDO workers.
- The **Gladstone region** comprises the LGA of Gladstone (R), which includes the city and port of Gladstone, as well as other residential centres and the rural hinterland. Construction of three LNG processing plants, a new coal export terminal and associated infrastructure has substantially boosted the population of non-resident workers in the region since 2011.
- The **Galilee Basin** in Queensland's central west is represented by the LGA of Barcaldine (R). While the region's economy is predominantly based on cattle grazing, several large projects to mine its extensive thermal coal deposits have been approved but are yet to reach final investment decision (FID). To date, resource industry development in the region has been limited to exploration and testing activities.

1.5. Industry activity

The years from 2003 to 2014 saw a major expansion of resource industry investment and activity across Queensland. During this period, improvements to the price of metalliferous coal and thermal coal spurred expansion of coal production, largely in the Bowen Basin. The drive to increase coal production was further stimulated by unprecedented demand for coal from China, which coincided with tripling of the contract price for hard coking and semi-soft coking coal (Queensland Treasury, 2009). A number of new coal projects were approved and constructed during this period, including new mines, rail and other supporting infrastructure.

Growth in the coal industry from 2003 to 2014 overlapped with significant exploration and development of Queensland's CSG industry in the Bowen and Surat Basins. While the initial focus of the CSG industry from the late 1990s was on production for domestic markets and electricity generation, rising LNG prices in the mid to late 2000s encouraged a number of large scale proposals to develop CSG reserves for export (DNRM, 2016). Three of these proposals reached

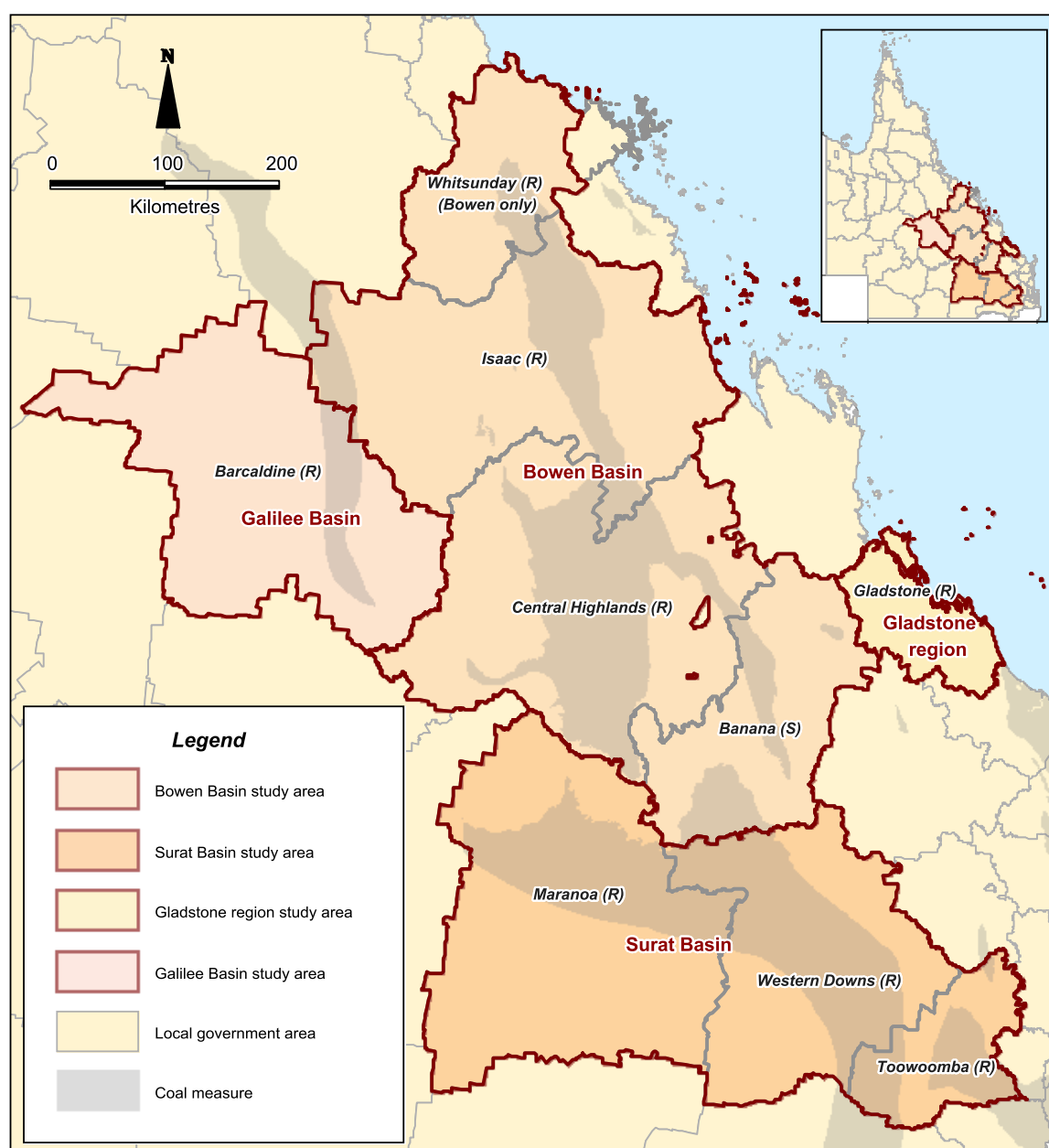
¹ The terms FIFO/DIDO/BIBO (bus in/bus out) refer to long distance commuting arrangements, where a person's place of work is sufficiently distant from their place of usual residence to make daily commuting impractical. The duration of their stay in the area is extended and regular. This usually takes the form of a working shift followed by a rest interval at their place of usual residence.

FID in 2010–11, and commenced construction of upstream drilling, collection and pipeline infrastructure across the Surat Basin the following year.

In parallel with development of the CSG industry, three large LNG processing and export projects commenced construction in the Gladstone region during 2010–11. Other resource projects were also under construction during this period, including a new coal exporting facility, and expansions to alumina refining and aluminium smelting facilities.

The construction phase of new resource projects and expansion of existing operations began to wind down from 2012 in the Bowen Basin and from 2014 in the Surat Basin and Gladstone region. The tapering off of construction activity has seen the size of the non-resident populations of these regions fall accordingly, while productivity pressures from a softening of coal prices also contributed to workforce losses from 2012 onward. Changes to the resident populations of resource regions are more recent, although it is evident that the sustained growth seen by some LGAs since the early 2000s is now slowing. Resource industry development has yet to occur in the Galilee Basin, although a number of large coal mining and rail projects have been approved (Appendix A). To date, none of these projects has reached FID.

Figure 1.1 Resource regions and LGAs in study area



Source: Queensland Government Statistician's Office, Queensland Treasury, 2016

2.0 Non-resident population change

2.1. Introduction

The term *non-resident population* refers to the number of FIFO/DIDO workers who are present in the same area as they work at a given point in time². These workers are not included in the resident population of that area (see Glossary).

Typically, FIFO/DIDO arrangements³ utilise alternating roster arrangements, whereby workers travel to the area of their workplace and stay for a fixed time while rostered on, then return to their home base when rostered off. Rosters vary widely according to company policies, occupational groupings, and whether the activity is construction or operations. Many operations work on an around-the-clock basis, with two teams of workers alternating mid-roster between day and night shift (Storey, 2009).

The widespread application of FIFO/DIDO work arrangements in the coal and gas industries of Queensland is relatively recent, although it has been utilised for metalliferous mining operations in remote areas for some time (Hogan and Berry, 2000). Changes to employment patterns within the coal industry, such as increasing use of contractor workforces, introduction of longer working hours and block shifts, are often seen as enabling factors in the emergence of FIFO/DIDO work arrangements in the Bowen Basin during the late 1990s and beyond (Rolfe and O'Dea, 2007). More recently, resource companies have cited limited availability of skilled local labour during peak demand periods, and particularly during construction phases, as further reason for adopting non-resident workforces (Queensland Parliament, 2015).

2.2. Factors influencing change in non-resident populations

The non-resident population consists of workers who are engaged in activities associated with the resource industry, such as exploration, construction of new projects, expansions of existing operations, and ongoing production and maintenance. Also included are non-resident workers involved in the construction of resource-related infrastructure, including roads, rail and ports.

Resource industry projects typically have a construction phase, which is comparatively labour intensive and short-term, and a production phase, which usually has a relatively smaller workforce that is ongoing for the life of the operation. As production proceeds, some operations may also undergo major expansions in order to incorporate improved infrastructure, increase production capacity, or to replace tenements that are approaching the end of their economic life. Operational expansions are commonly undertaken by temporary contract workforces, rather than by workers diverted from normal production activities.

Construction workforces are usually larger than production workforces, and tend to be predominantly non-resident. The size of the construction workforce relative to the production workforce also varies according to the type of resource industry. One estimate suggests that the ratio of construction workers to production workers for LNG projects could be as high as 5:1, compared with 3:2 for coal projects (NAB, 2016).

The construction and expansion of resource industry projects requires a mix of skilled and semi-skilled labour that may not always be readily available in local areas, so FIFO/DIDO workforces are commonly utilised to meet that need. As a result, fluctuations in the non-resident population of an area are linked closely to levels of construction and expansion activity. Where more than one construction project or expansion overlap, the area's cumulative non-resident population may expand or contract rapidly according to the scale and timing of each stage.

The use of non-resident *production* workforces is now commonplace for many mining operations in the Bowen and Surat Basins, and for CSG operations in the Surat Basin. Non-resident production workforces can fluctuate in size according to changing production demand, roster and shift arrangements, maintenance periods, and unforeseen events such as industrial action and adverse weather conditions. From 2012–13 onward, moderating coal prices sparked a search for productivity gains by mining companies, leading to a decline in the non-resident production workforces of Surat and Bowen Basin mines through mine closures and workforce restructuring (QGSO, 2014a; QGSO, 2015a).

² Sometimes referred to as the number of *non-resident workers on-shift*. Due to shift and roster arrangements, not all of the non-resident workforce is present in the local area at any one time.

³ 'FIFO/DIDO' is one of many terms used to describe these work arrangements. Others include 'long distance commuting' and 'commute work'.

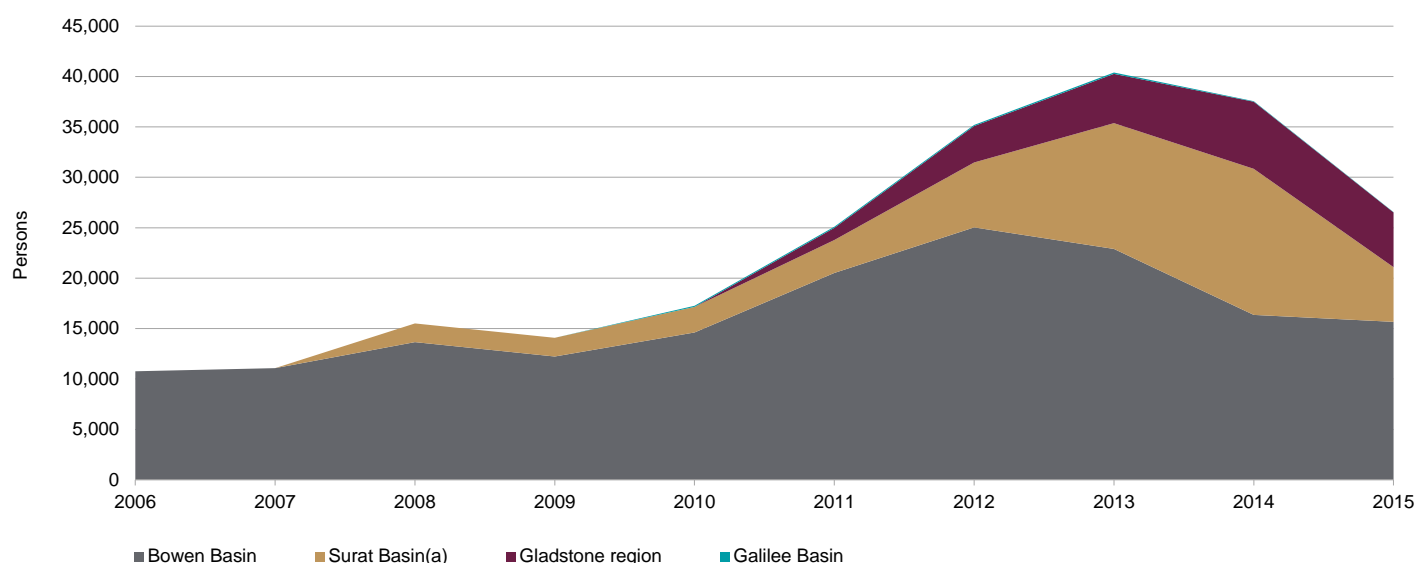
Extreme weather events can also have a severe impact upon resource industry activity and employment, leading to temporary fluctuations in the non-resident population. Prolonged rainfall over central and southern Queensland in 2007–08 and again in 2010–11 led to extensive flooding in the Bowen and Surat Basins, disrupting resource industry production and causing extensive damage to supporting infrastructure (Appendix B). The resultant loss of production following these events temporarily reduced the non-resident production workforces of affected mines in the Bowen Basin, although these losses were balanced out by an influx of non-resident workers engaged in post-flood reconstruction.

2.3. Non-resident population change – all regions

The resource sector in Australia experienced a period of unprecedented expansion in the decade between 2003 and 2013, which is often referred to as the “millennium mining boom” (BREE, 2013). In Queensland, this boom was characterised by significant expansions to the coal industry, particularly in the Bowen Basin, which overlapped with development of large-scale CSG/LNG projects in the Surat Basin and Gladstone region (Appendix B). During this period, high demand for skilled construction and production workers saw a rapid increase in the number of non-resident workers drawn to resource regions from other parts of the state, interstate and overseas (Appendix C).

Figure 2.1 shows that the cumulative non-resident populations of the Bowen Basin, Surat Basin, Gladstone region and Galilee Basin reached a peak of 40,400 persons in 2013, before declining to 26,550 by June 2015. While the Bowen Basin's non-resident population reached its highest level (25,035 persons) in 2012, the populations of the Surat Basin and Gladstone region did not peak until 2014, when construction of the upstream and downstream elements of the three CSG/LNG projects was most labour-intensive. At that point, the combined non-resident population of these two regions (21,145 persons) exceeded that of the Bowen Basin (16,355 persons).

Figure 2.1 Non-resident population by region



(a) Surat Basin estimates for 2008 do not include Toowoomba (R). Surat Basin estimates for 2009 are extrapolated from 2008 data. See Technical notes for details.

Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

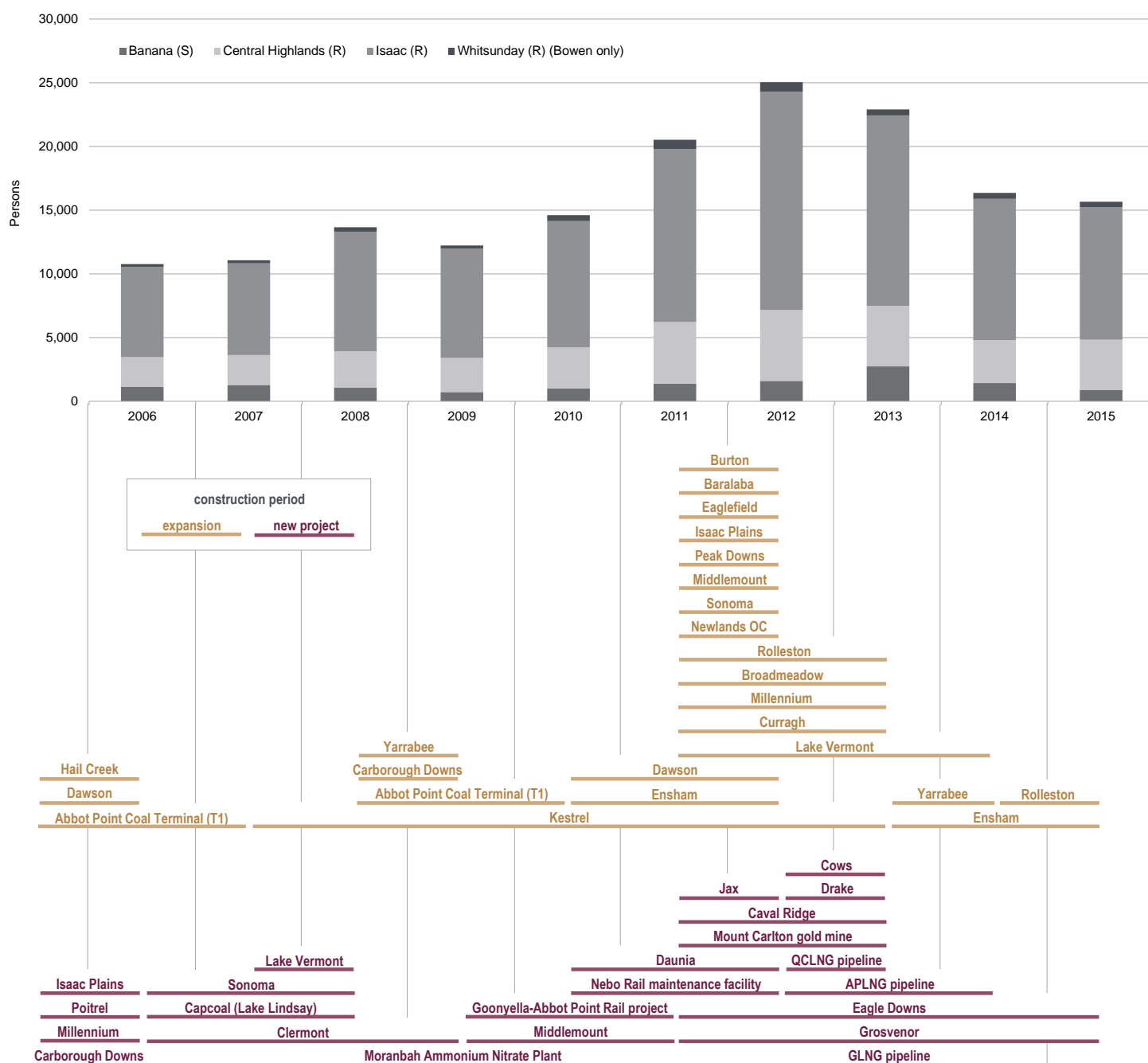
2.4. Bowen Basin

Construction of new mines, and expansions to existing operations, saw the non-resident population of the Bowen Basin more than double between 2006 and 2012 (Appendix C).

In 2006, the Bowen Basin's non-resident population was estimated at 10,765 persons. Apart from a temporary decline in 2009, the region's non-resident population experienced constant growth until 2012, where it peaked at 25,035 persons, before falling to 15,665 persons in 2015 (Figure 2.2). While the use of FIFO/DIDO workforces for production increased during this period, much of the growth in the Bowen Basin's non-resident population was due to workforces engaged in mine expansions, as well as construction of new mines and supporting infrastructure. Most of the Bowen Basin's

non-resident population growth since 2006 occurred in the LGAs of Isaac (R) and Central Highlands (R). Banana (S) had a temporary increase in its non-resident population in 2013, due to construction of three pipeline projects.

Figure 2.2 Non-resident population, Bowen Basin LGAs, and construction timeframes^(a)



(R) – Regional Council (S) – Shire

(a) Non-resident population estimates are as at the end of June of the indicated year. Expansion and new project construction periods are for financial years. These timeframes are indicative only and could extend beyond the period shown.

Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

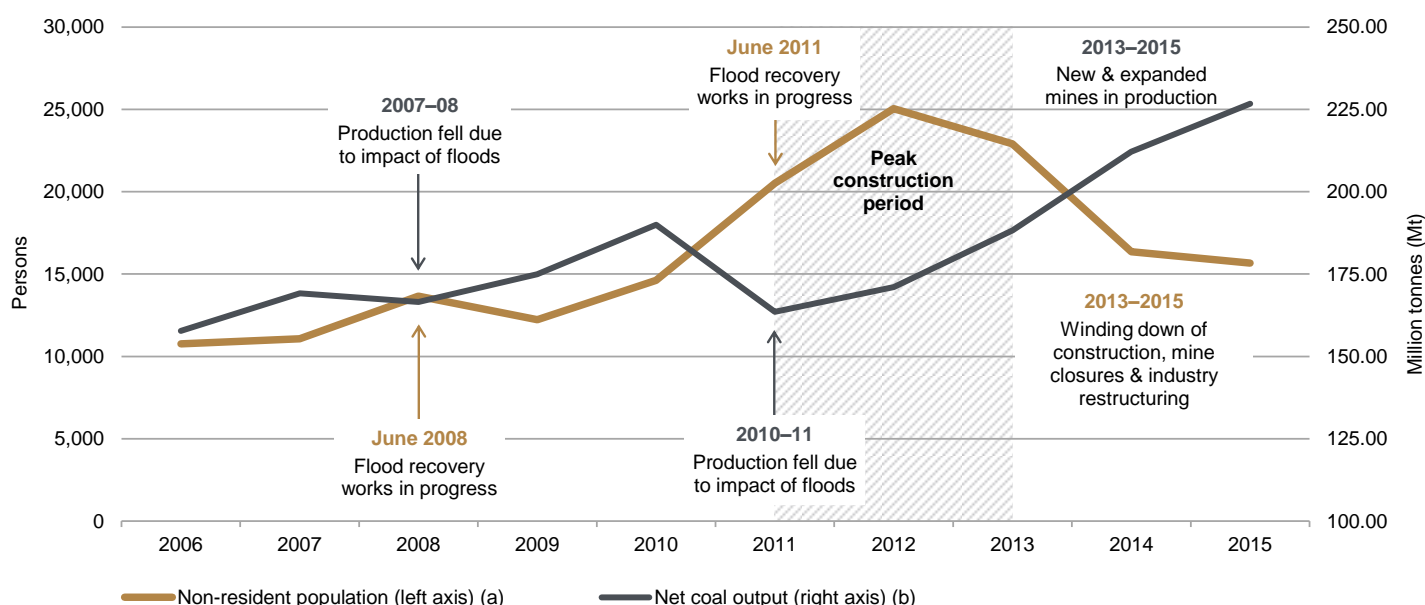
Changes to the size of the Bowen Basin's non-resident population since 2006 have not always been aligned with levels of coal production. Severe flooding events in early 2008 and early 2011 forced the temporary closure of many Bowen Basin mines, and caused widespread damage to road and rail networks (Queensland Floods Commission of Inquiry, 2012; QRC 2008). As a result, production output from the region declined in 2007–08 and in 2010–11 (Figure 2.3). Despite these losses, the non-resident population of the Bowen Basin actually increased in the months following both flood events, in response to the need to pump out flooded mines, open new pits, and repair damaged equipment and other infrastructure (OESR, 2012a).

The period between 2011 and 2013 was characterised by intense resource industry activity in the Bowen Basin, largely in the form of new coal mines under construction and expansions of existing coal operations. Other non-coal projects, including the Mount Carlton gold mine, three CSG pipelines, the Moranbah Ammonium Nitrate plant, and rail projects, were also under construction during this period (Figure 2.2). Construction workforces from all of these activities were a major influence on growth in the region's non-resident population, which peaked in 2012.

Coal output in the Bowen Basin increased rapidly from 2012 onward, as new and expanded mines gradually came on line and moved towards full production. In contrast to this increase in output, the region's non-resident population has fallen substantially since 2012 (Figure 2.3). Much of this population decrease was expected, and consistent with the winding down of construction activity and transition of largely non-resident construction workforces to smaller production workforces. The fall in the region's non-resident population from 2013 onwards was also influenced by production jobs lost due to workforce rationalisation (QGSO, 2015a; Appendix B), as the coal industry pursued efficiency gains through smaller and more flexible workforce arrangements, and the introduction of less labour-intensive technologies.

While it has declined since the peak reached in 2012, the Bowen Basin's non-resident population of 15,665 persons in 2015 was nevertheless higher than that for all years preceding 2011. With construction of most major projects substantially complete, the region's non-resident population by mid-2015 consisted largely of workers engaged in production and maintenance activities, and relatively few construction workers. In that regard, the downward movement in the Bowen Basin's non-resident population from 2013 onward is more consistent with "a transition from the investment phase of the resources boom to the production phase" (BREE, 2013), rather than representing a substantial downturn in coal industry activity.

Figure 2.3 Non-resident population and net coal production, Bowen Basin



(a) As at 30 June

(b) Year to June

Source: Department of Natural Resources and Mines (DNRM), unpublished data; Queensland Government Statistician's Office, Queensland Treasury, estimates

2.5. Surat Basin

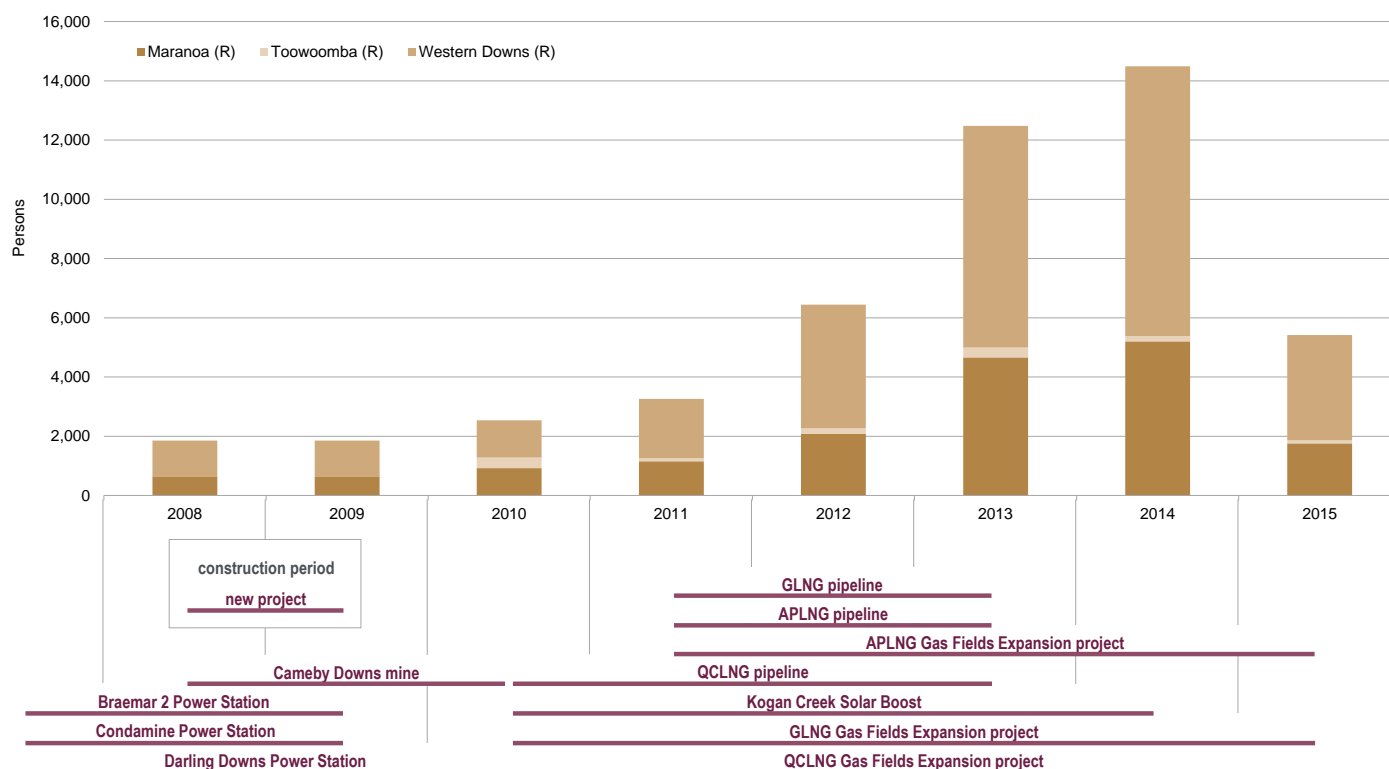
Development of the CSG industry began in the Surat Basin during the early 2000s, with gas production used for domestic markets and electricity generation. Construction of three major CSG/LNG export projects commenced in late 2010, with upstream elements located across the Surat Basin, and downstream processing and port facilities in the Gladstone region. A high proportion of construction workers involved in these projects were FIFO/DIDO, due to shortages of skilled labour.

Baseline monitoring of the Surat Basin's non-resident population, which began in 2008⁴, preceded the wide-scale expansion of the CSG industry by several years. At that time, the majority of the 1,855 non-resident workers on-shift in the region were construction crews engaged in building new power stations and the Cameby Downs mine in Western Downs (R), as well as production workers for existing CSG operations in Maranoa (R) and Western Downs (R) (Figure 2.4).

Following government approvals for three CSG/LNG projects⁵ in 2010–11, construction of their gas field infrastructure and trunk pipeline components in the Surat Basin was well underway by the following year. Drilling and construction for all three projects made extensive use of FIFO/DIDO workforces, such that by June 2012 the region's non-resident population reached 6,445 persons, then nearly doubled again by June 2013 (12,480 persons).

CSG construction activity in the Surat Basin peaked in 2014, with the non-resident population reaching 14,490 persons. As these projects transitioned from construction to production, the Surat Basin's non-resident population receded to just 5,425 persons by June 2015. Two thirds (65.7%) of the region's non-resident population in 2015 was located in Western Downs (R), with nearly all of the remainder (32.4%) in Maranoa (R) (QGSO, 2015c).

Figure 2.4 Non-resident population, Surat Basin LGAs, and construction timeframes^(a)



(R) – Regional Council

(a) Non-resident population estimates are as at the end of June of the indicated year. Expansion and new project construction periods are for financial years. These timeframes are indicative only and could extend beyond the period shown.

Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

⁴ The LGA of Toowoomba (R) was not included in monitoring of the Surat Basin until 2010.

⁵ The Queensland Curtis LNG (QCLNG) project received final Commonwealth Government approvals in July 2010; the Gladstone LNG (GLNG) Project was approved in October 2010; and the Australia Pacific LNG (APLNG) project was approved by the Commonwealth Government in February 2011.

2.6. Gladstone region

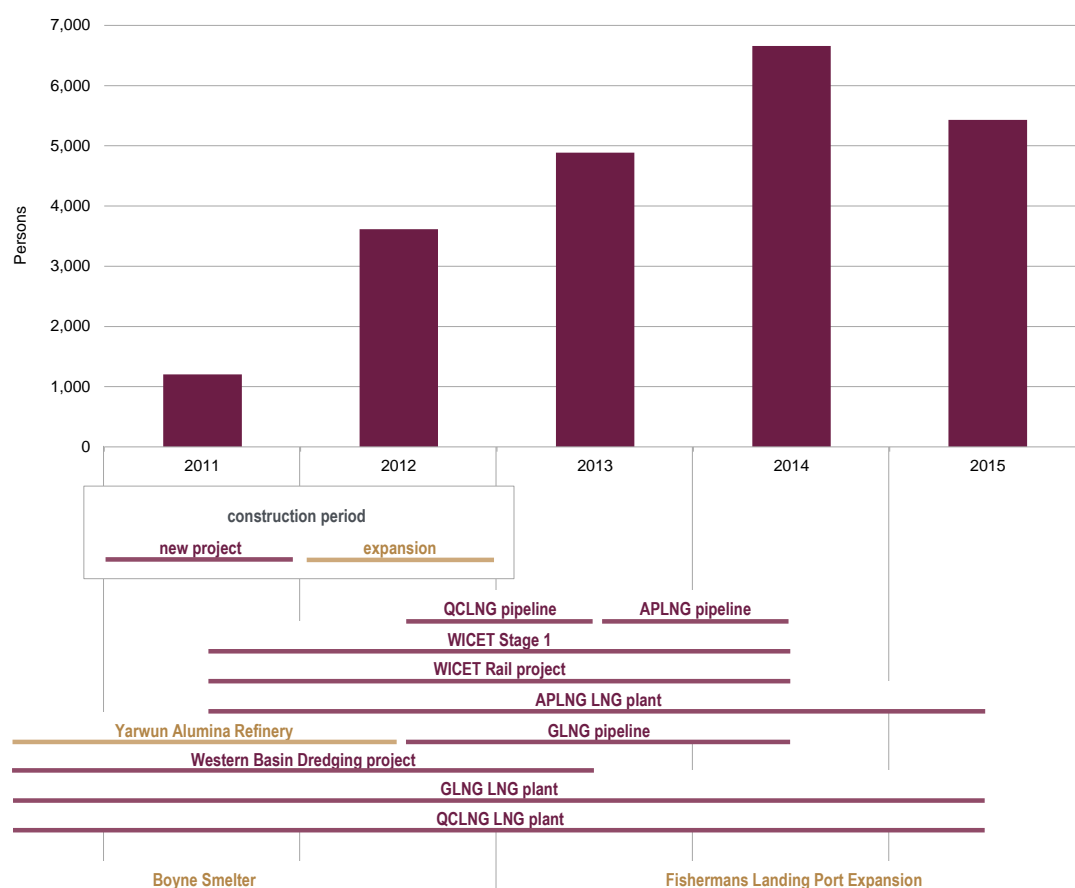
QGSO commenced monitoring the non-resident population of the Gladstone region in 2011. Prior to that, the region's non-resident population was limited to a relatively small number of FIFO/DIDO construction workers engaged in expansion of the Yarwun Alumina Refinery and upgrades to Boyne Smelter (Figure 2.5). Preliminary work was also underway on expansions to the Port of Gladstone.

With construction of three LNG processing plant projects, the Wiggins Island Coal Export Terminal (WICET) and associated rail and port projects underway, the non-resident population of the Gladstone region grew from 1,205 persons in 2011 to a peak of 6,655 persons in 2014 (Appendix C). Almost all of these non-residents were construction workers, rather than production workers.

LNG production from the first train of the QCLNG project commenced in late 2014, and from its second train by the middle of the following year. By June 2015, train one of the GLNG plant project was largely completed, while construction continued on the second train and on both trains of the APLNG project. The WICET project reached operational status in early 2015, and first coal was shipped in April of that year (QGSO, 2015b).

The non-resident population of the Gladstone region fell to 5,430 persons by June 2015. As construction of all current major projects approaches completion in 2016, the region's non-resident population is expected to decline even further. Most production workforces for completed port, rail and LNG plant operations are expected to reside locally, and will not contain significant numbers of non-resident workers.

Figure 2.5 Non-resident population, Gladstone region, and construction timeframes^(a)



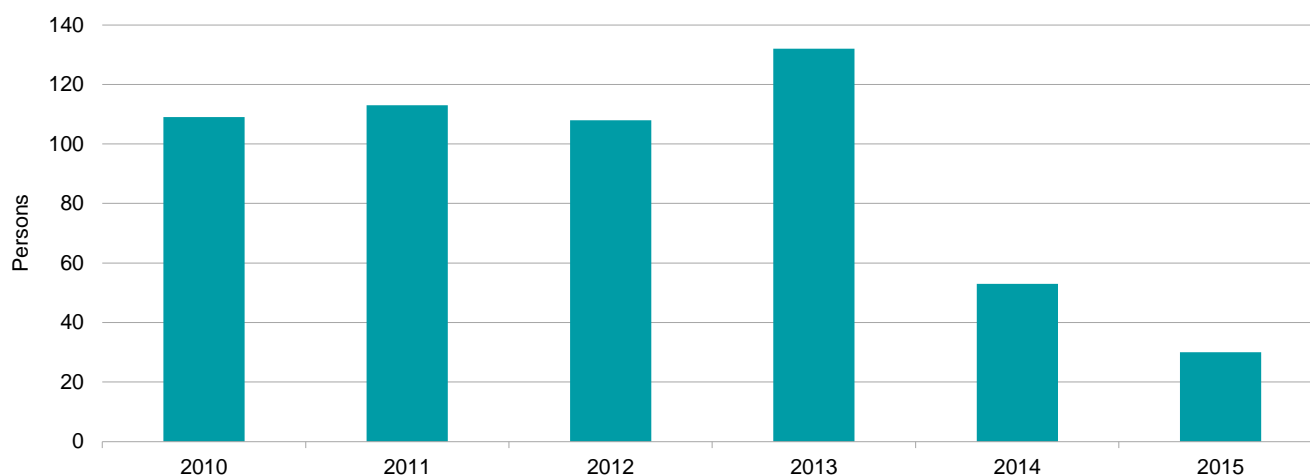
(a) Non-resident population estimates are as at the end of June of the indicated year. Expansion and new project construction periods are for financial years. These timeframes are indicative only and could extend beyond the period shown.

Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

2.7. Galilee Basin

To date, the non-resident population of the Galilee Basin (represented by the LGA of Barcaldine (R)) has been limited largely to FIFO/DIDO exploration crews and workers operating a test pit near the town of Alpha. This temporary non-resident population peaked at 130 persons in June 2013 (Figure 2.6, Appendix C). Although seven resource industry projects located in Barcaldine (R) have been approved to date (Appendix A), none have yet moved towards FID.

Figure 2.6 Non-resident population, Galilee Basin



Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

2.8. Key points

- Non-resident populations in resource regions may comprise a mix of FIFO/DIDO construction and production workers. The size of an area's non-resident population will fluctuate in line with changing levels of construction activity, and in response to varying production conditions. Climatic events, such as floods, can also have a temporary impact on numbers.
- The cumulative non-resident populations of the Bowen Basin, Surat Basin, Gladstone region and Galilee Basin grew to a peak of 40,400 persons in June 2013, before declining to 26,550 persons by June 2015.
- The Bowen Basin's non-resident population more than doubled between June 2006 and June 2012, influenced largely by construction of new mines and infrastructure as well as expansions of existing operations. From a peak of 25,035 persons in June 2012, the region's non-resident population subsequently fell to 15,665 persons by June 2015.
- The decline in the Bowen Basin's non-resident population since 2012 largely reflects the winding down of construction for new projects and existing operations, although losses of non-resident production jobs due to mine closures and workforce restructuring were also contributing factors. By 2015, the majority of non-resident workers in the Bowen Basin were engaged in production and maintenance activities.
- Since 2011, the non-resident populations of the Surat Basin and Gladstone region have consisted largely of workers engaged in construction of new resource projects and supporting infrastructure. By comparison, the production workforces of these projects and existing operations were relatively small, and contained a higher proportion of workers who were locally resident rather than FIFO/DIDO. As a result, changes to the non-resident populations of the Surat Basin and Gladstone region align closely with project construction activity.
- The non-resident populations of the Surat Basin and Gladstone region peaked at 14,490 and 6,655 persons respectively in June 2014, then fell to 5,425 persons and 5,430 persons in June 2015.
- Overall, the recent moderation of the non-resident populations for all three resource regions is consistent with the transition of resource projects from the construction phase to the production phase, rather than representing a substantial downturn in the resource sector.

3.0 Resident population change

3.1. Introduction

The ERP, as derived by the ABS, is the official population measure used in Australia. The ERP is based on adjusted counts of persons by usual residence, taken from the five-yearly Census of Population and Housing (ABS, 2016b). *Usual residence* is the location within Australia at which a person has lived or intends to live for six months or more in a given year (ABS, 2016c). The ERP does not include visitors or other people who temporarily live in that area, including non-resident workers.

Resident populations grow or decline according to a combination of two factors—*natural increase* (births minus deaths) and *net migration* (the difference between residents moving into and out of an area). Resident population change through net migration is influenced by a number of push/pull factors, which include local employment opportunities, the availability of services and amenities, and lifestyle choices (ABS, 1998).

Three recognised patterns of net migration are evident in the regions covered by this report. The concentration of services and employment opportunities in regional centres has contributed to *regional centre growth*, typified by Emerald and Toowoomba. *Industry-related population change* is linked to changes in local employment levels, including jobs created by new projects and expansions to existing industries, or jobs lost due to closures, industry downturns or technological change. However, changes to the resident workforce will only affect the area's ERP if they result in workers and dependants migrating into or out of the area (ABS, 1998). Finally, *rural depopulation* has adversely affected the resident populations of most rural LGAs in this report over preceding decades (Holmes, Charles-Edwards and Bell, 2005).

Regions with a high reliance on resource industry employment are particularly susceptible to industry-related population change, owing to the cyclical nature of these industries. The use of FIFO/DIDO workforces in the resource sector has also been a mitigating factor on resident population change. Evolving employment conditions, including longer 'block shift' patterns, contractor workforces, and subsidised travel and accommodation arrangements have facilitated choices for workers to reside in other areas (including coastal centres) rather than in the area of employment (Rolfe and O'Dea, 2007).

3.2. Resident population change in resource regions

On a regional scale, the resident populations of the Bowen Basin, Surat Basin and Gladstone region increased overall between 1991 and 2015, while the population of the Galilee Basin LGA of Barcaldine (R) declined (Table 3.1). The Surat Basin had the largest population growth (44,860 persons), followed by the Gladstone region (28,490 persons). The Bowen Basin's resident population grew by 7,000 persons, while the Galilee Basin fell by 475 persons.

Table 3.1 Estimated resident population, resource region LGAs

Region / LGA	1991	1996	2001	2006	2011	2012r	2013r	2014r	2015p
	— persons —								
Banana (S)	16,385	15,145	15,535	15,025	14,810	14,970	15,180	15,230	15,210
Central Highlands (R)	25,160	25,790	24,580	27,265	29,540	30,515	31,255	31,585	31,455
Isaac (R)	22,400	20,395	18,170	20,370	23,190	23,755	24,250	24,445	24,265
Whitsunday (R) (Bowen only)	13,490	13,030	12,170	12,675	13,240	13,600	13,735	13,620	13,510
BOWEN BASIN	77,440	74,360	70,455	75,335	80,780	82,840	84,415	84,880	84,440
Maranoa (R)	13,320	12,420	12,370	12,610	13,435	13,560	13,785	13,855	13,860
Toowoomba (R)	122,775	128,120	134,955	145,990	155,475	157,750	160,135	161,900	163,230
Western Downs (R)	29,945	28,670	28,715	29,120	32,365	32,930	33,400	33,640	33,800
SURAT BASIN	166,035	169,210	176,040	187,725	201,275	204,245	207,320	209,400	210,895
GLADSTONE REGION (Gladstone (R))	38,975	43,755	45,480	52,050	59,460	61,465	63,880	66,070	67,465
GALILEE BASIN (Barcaldine (R))	3,815	3,660	3,485	3,340	3,290	3,310	3,360	3,360	3,340

r = revised p = preliminary

(R) – Regional Council (S) – Shire

Preliminary estimates will be finalised following the release of 2016 Census data; see Technical notes for details.

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

As time series data in Table 3.1 show, resident population change in resource regions from 1991 to 2015 has not always taken the form of growth, nor has it been uniformly distributed across all LGAs in those regions. For example, all resource LGAs in the Bowen, Surat and Galilee Basins, with the exception of the two larger LGAs of Toowoomba (R) and Gladstone (R), experienced small to moderate population losses between 1991 and 2001.

A number of factors contributed to these losses, including the long-established population drift from rural areas that had its origins in structural changes in the agricultural and pastoral industries (Holmes et al., 2005). This trend was further exacerbated by extended periods of drought that gripped much of Queensland between 1991 and 1996 (GSO, 1998), and persisted across the Bowen and Surat Basins until 2006 (DAF, 2016). Outward population flows in the Bowen Basin were also influenced by a downturn in coal mining production and subsequent industry restructuring (Rolfe and O'Dea, 2007).

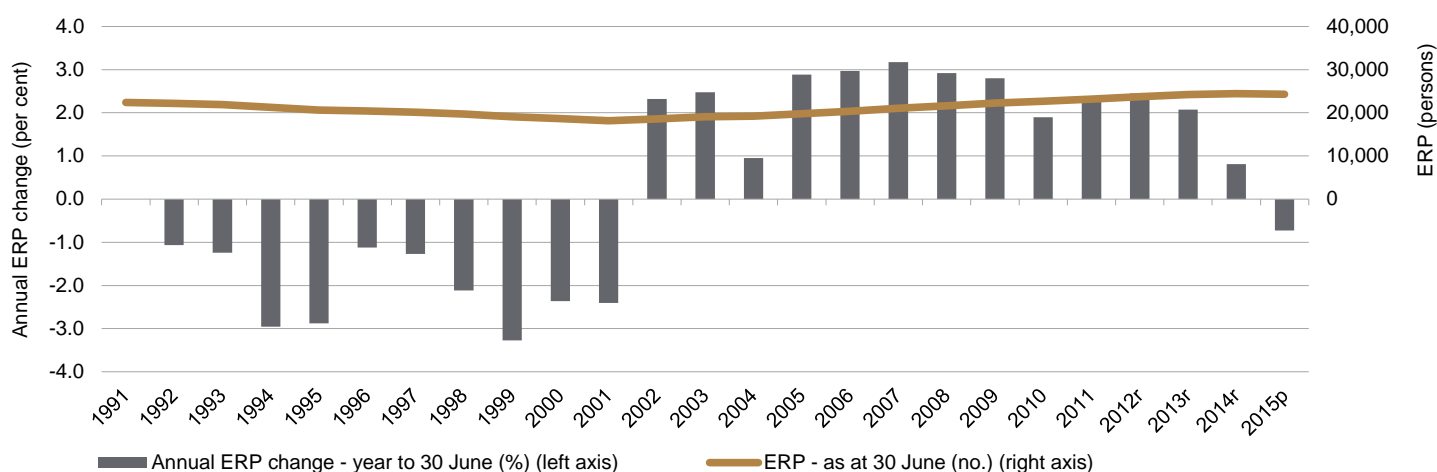
On the back of this downward trend, the resident populations of all resource LGAs except Banana (R) and Barcaldine (R) increased overall from 2001 to 2015. A resurgence of coal mining employment in the Bowen Basin, and the introduction of the CSG/LNG industry in the Surat Basin and Gladstone (R) strongly influenced this growth (ABS, 2013).

3.2.1. Bowen Basin LGAs

The four LGAs of the Bowen Basin show different patterns of population change which, in part, reflect the varying influence of resource industries on local employment. The LGAs of Isaac (R) and Central Highlands (R) experienced strong overall population growth from 2001 to 2015 and had notable increases in mining employment from 2001 to 2011 (Appendix D). On the other hand, Banana (S) and Whitsunday (R) (Bowen only) did not experience similar population gains, despite some gains in mining employment. The latter LGAs did, however, have large employment losses in agriculture, forestry and fishing between 2001 and 2011.

Isaac (R) had a preliminary ERP of 24,265 persons in 2015, some 1,865 persons more than in 1991 (Table 3.1, Figure 3.1). Despite this overall gain, Isaac (R) experienced a prolonged population downturn during the 1990s, with a loss of 4,230 persons between 1991 and 2001 (between 1.1% and 3.3% per year). With an economy that is strongly aligned with coal mining, outward migration from Isaac (R) during that period was influenced by a cyclical downturn in mining activity. These losses were reversed during the mining boom that followed, with the area's resident population regaining around 5,020 persons between 2001 and 2011. Since 2013, population growth in Isaac (R) has slowed, with a small decline indicated in the preliminary ERP for 2015 (–180 persons or –0.7% from 2014).

Figure 3.1 Change in estimated resident population, Isaac (R)



r = revised p = preliminary

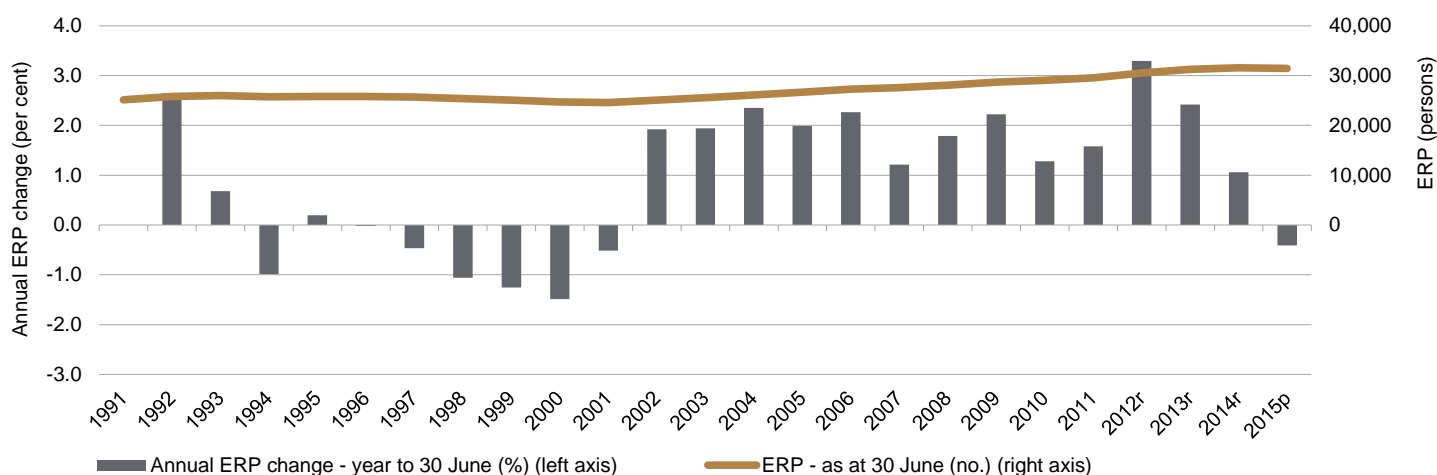
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

Central Highlands (R) has a diverse economy that includes agriculture, coal mining, services and tourism. With the largest resident population of all LGAs in the Bowen Basin (31,455 persons in 2015), the area recorded the highest overall population growth (6,295 persons) since 1991 (Table 3.1, Figure 3.2). The ERP of Central Highlands (R) fell slightly between 1991 and 2001 (–580 persons), due in part to jobs lost in the agricultural sector through drought as well

as a downturn in the mining industry. The area's resident population increased from 2001 onward, influenced by expansion of coal mining employment (Appendix D) and the evolving role of Emerald as a regional service centre. While this growth continued up to 2014, preliminary ERP estimates show a small decline in 2014–15 (–130 persons, –0.4%).

Figure 3.2 Change in estimated resident population, Central Highlands (R)



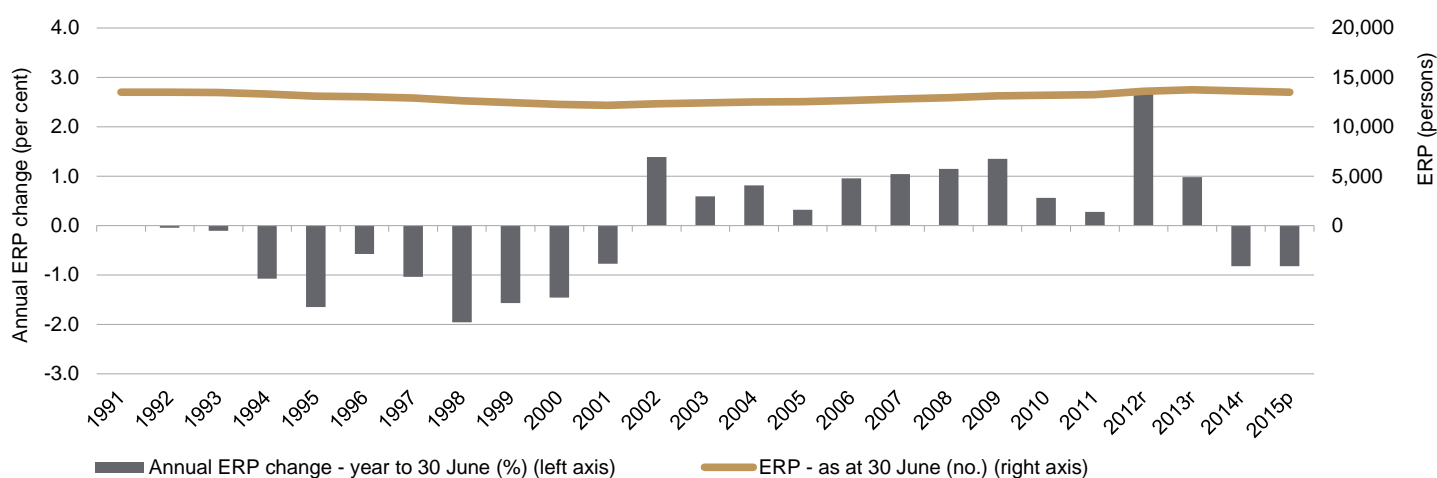
r = revised p = preliminary

(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

Whitsunday (R) (Bowen only) had a preliminary ERP of 13,510 persons in 2015, only 20 persons more than in 1991 (Table 3.1, Figure 3.3). The area recorded annual population losses of up to 2.0% between 1991 and 2001, which were influenced largely by outward migration following closure of railway workshops in Bowen in 1993 and the Merinda meatworks in 1997. Further job losses occurred in the agriculture, forestry and fishing industry between 2001 and 2011, although mining industry employment increased during the same period (Appendix D). While the resident population of Whitsunday (R) (Bowen only) increased by 1,340 persons from 2001 to 2015, this growth barely offset population losses that occurred during the previous decade.

Figure 3.3 Change in estimated resident population, Whitsunday (R) (Bowen only)



r = revised p = preliminary

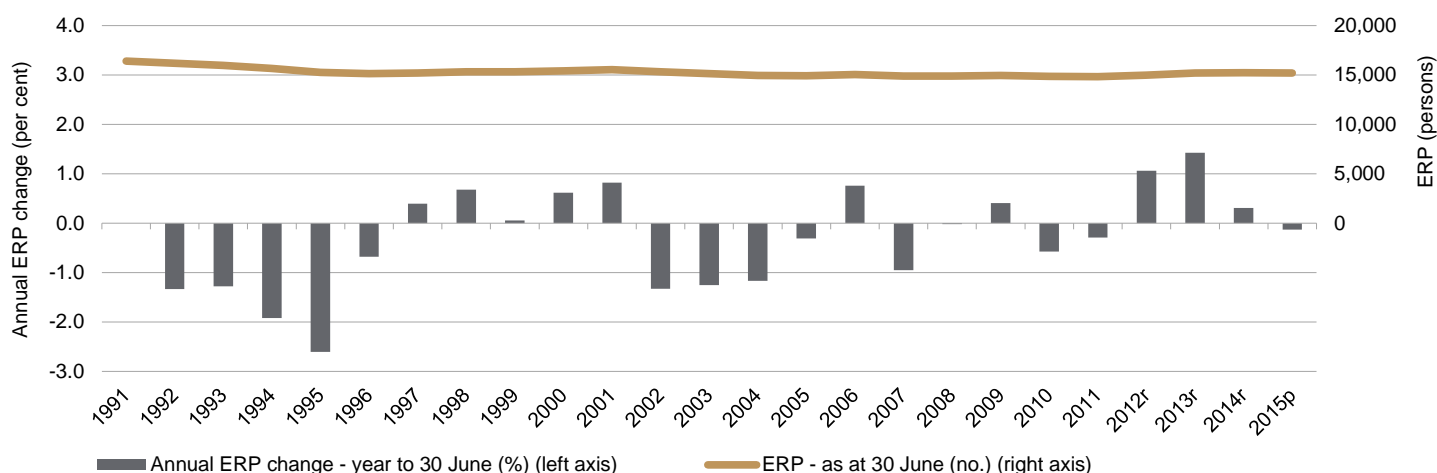
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

Banana (S) had a preliminary ERP of 15,210 persons in 2015, 1,175 persons fewer than in 1991 (Table 3.1,

Figure 3.4). The resident population fell by 1,240 persons between 1991 and 1996, and has yet to fully regain those losses despite intermittent periods of growth since then. Mining employment more than doubled in Banana (S) from 2001 to 2011 (Appendix D), with the opening of new mines and expansions of existing operations (Appendix B). Offsetting this growth, employment in the agriculture, forestry and fishing industries declined notably. Like many other LGAs in Queensland, the rural depopulation of Banana (S) was further exacerbated by prolonged periods of drought up to 2006. Severe flooding events in 2008 and 2011 also contributed to short-term population changes (Appendix B).

Figure 3.4 Change in estimated resident population, Banana (S)



r = revised p = preliminary

(S) – Shire

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

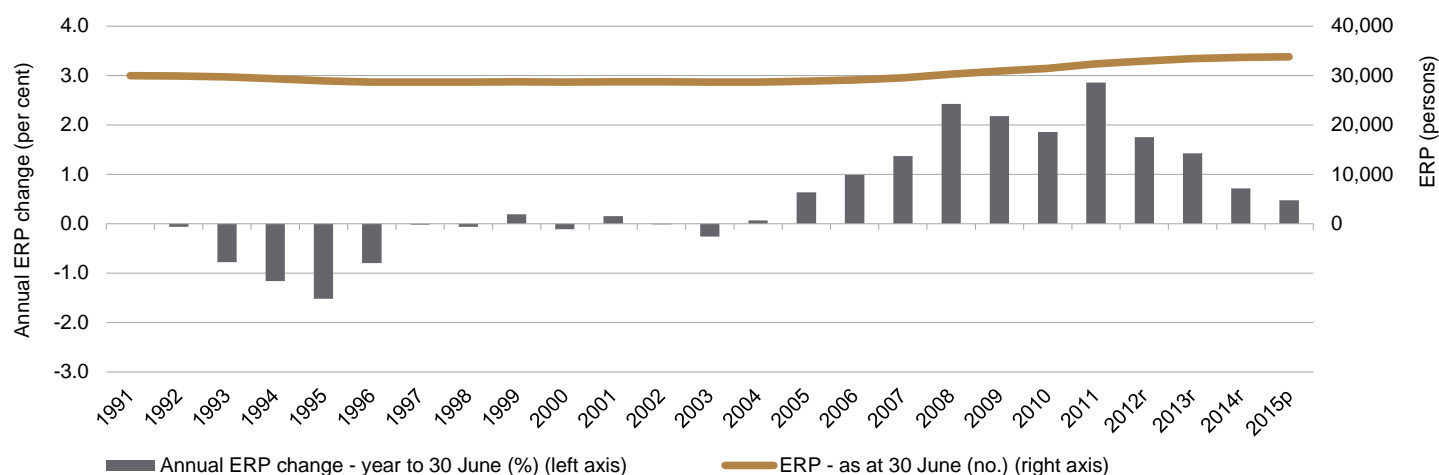
3.2.2. Surat Basin LGAs

The three LGAs of the Surat Basin differ markedly in the size of their resident populations, and in the extent to which those populations have changed over time. All LGAs experienced overall population increases from 1991 to 2015 (Table 3.1), but only Toowoomba (R) recorded growth for each year during that period. Maranoa (R) and Western Downs (R) sustained population losses during the early nineties, followed by a period of relatively low growth up until the start of the new millennium. Both LGAs subsequently recorded population gains, which recovered the losses of earlier years.

The dissimilar growth patterns of the Surat Basin LGAs are a reflection of their employment profiles, and of the role that each plays in the broader region. Toowoomba (R) contains the city of Toowoomba, which is a regional services hub for the Darling Downs. As a result, the population growth pattern of Toowoomba (R) is typical of regional centre growth, rather than being driven by industry-related changes. By contrast, agricultural industries generate a major proportion of employment in both Maranoa (R) and Western Downs (R), while mining makes up a small but growing component. While the resurgence of resident population growth in these LGAs since 2001 corresponds with the development of resource-related industries (Appendix B) and an increase in mining employment (Appendix D), other factors, such as recovery from drought conditions and natural increase, have also made a positive contribution to change.

Western Downs (R) had a preliminary ERP of 33,800 persons in 2015, some 3,855 persons more than in 1991 (Table 3.1, Figure 3.5). Like many other rural areas, Western Downs (R) experienced a loss of resident population from 1991 to 2001, with its ERP falling by 1,230 persons. These population losses coincided with a downturn in the area's agricultural industry, which was impaired by prolonged periods of drought until 2006 (DAF, 2016). From 1996 to 2004 the resident population of Western Downs (R) remained relatively unchanged, with only small annual fluctuations.

Between 2001 and 2011 the introduction of new resource industries, including gas extraction, coal mining and construction of power stations (Appendix B) created job growth in Western Downs (R), which in turn contributed to a reversal of the previous population decline. The area's ERP increased by 3,650 persons from 2001 to 2011, with annual growth rates being highest from 2008 to 2011 (between 1.9% and 2.9%). Construction of major CSG projects from 2011 onward generated further local employment in Western Downs (R), with the resident population increasing by a further 1,435 persons between 2011 and 2015.

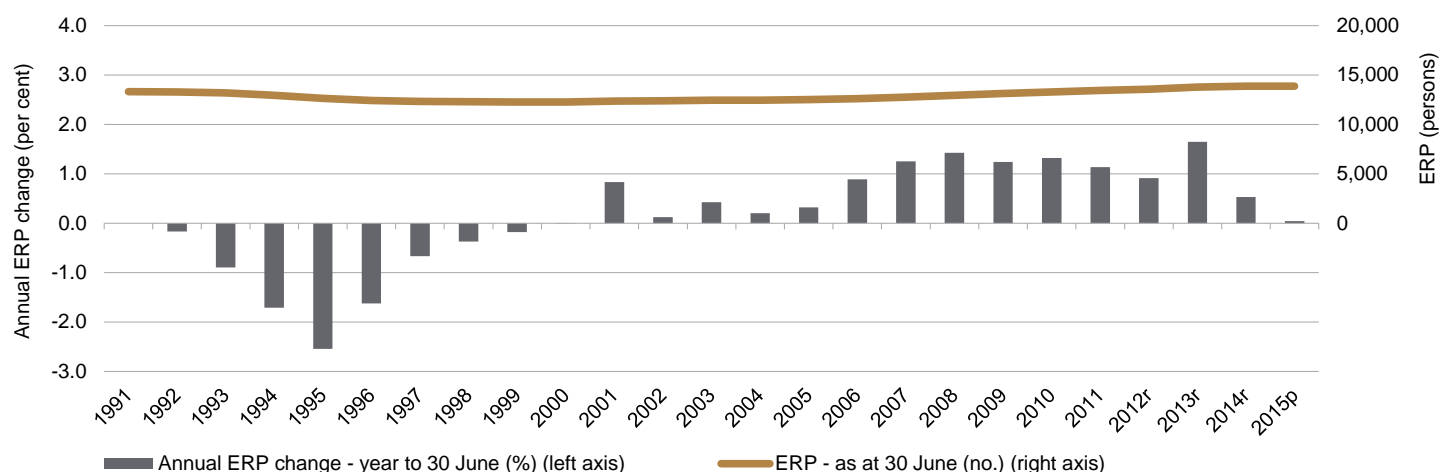
Figure 3.5 Change in estimated resident population, Western Downs (R)

r = revised p = preliminary

(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

Maranoa (R) had a preliminary ERP of 13,860 persons in 2015, an overall increase of 540 persons from 1991 (Table 3.1, Figure 3.6). The area's resident population fell by 950 persons between 1991 and 2001, influenced by the closure of the Roma meatworks in 1995, as well as the combined effects of drought and structural changes in the beef industry (Rolfe, 1999). Initial development of gas industry projects (Appendix B) and recovery from drought conditions saw Maranoa (R)'s population increase by 1,065 persons between 2001 and 2011, reversing the losses of the preceding decade. Construction of two large CSG projects between 2011 and 2015 influenced further growth of 425 persons.

Figure 3.6 Change in estimated resident population, Maranoa (R)

r = revised p = preliminary

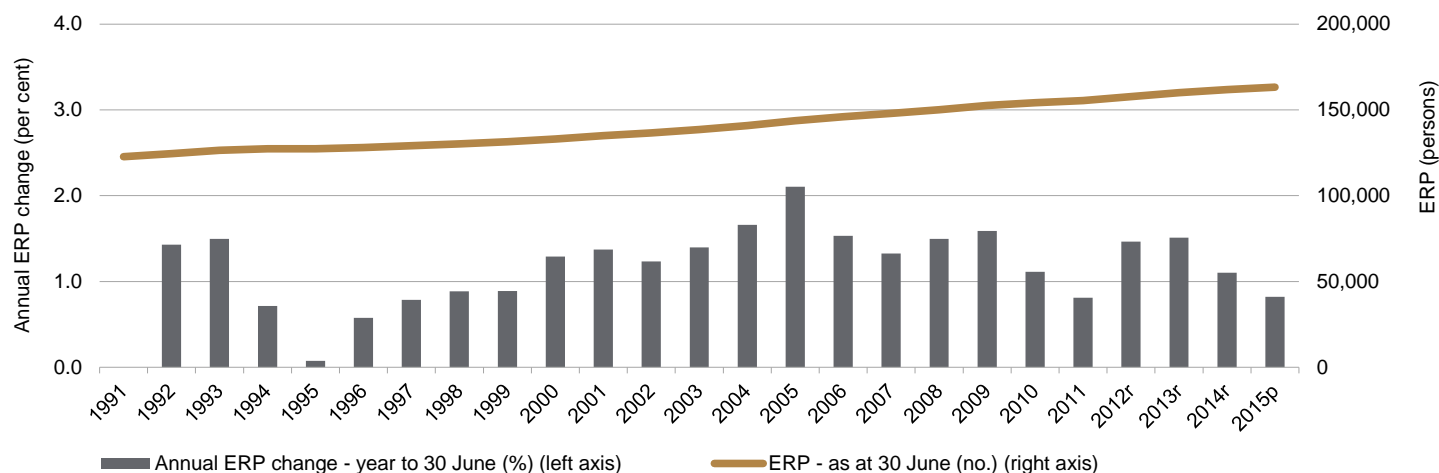
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

Toowoomba (R) is one of only two LGAs covered by this report to have experienced sustained growth in its resident population since 1991. With a preliminary ERP of 163,230 persons in 2015, Toowoomba (R) is the largest and fastest growing LGA in the Surat Basin, having increased by 40,455 persons since 1991 (Table 3.1, Figure 3.7). While local jobs created directly by local resource operations have increased since 2001, mining makes up a relatively low proportion of total employment in Toowoomba (R) (Appendix D). The area's population growth has, however, benefitted from indirect

employment created through its role as a regional services and transport hub for the Surat Basin, including being the place of residence for many resource industry workers who FIFO/DIDO to other LGAs in the region (OESR, 2012a).

Figure 3.7 Change in estimated resident population, Toowoomba (R)



r = revised p = preliminary

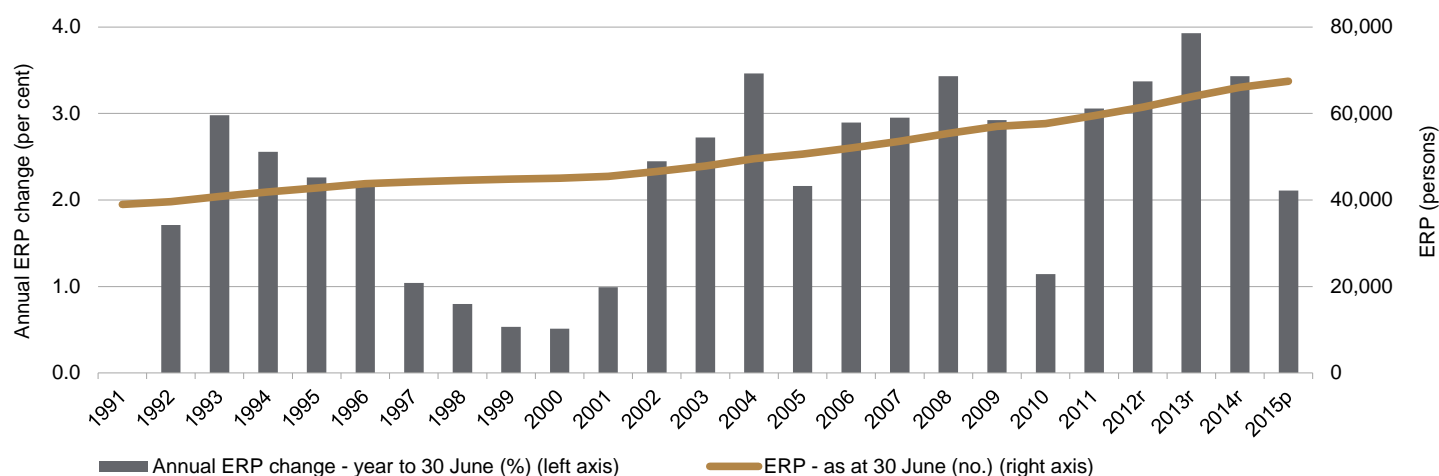
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

3.2.3. Gladstone (R)

Gladstone (R) had a preliminary ERP of 67,465 persons in 2015, around 28,490 persons more than in 1991 (Table 3.1, Figure 3.8). The LGA supports several large resource operations, including LNG processing and export, and acts as a port and regional services hub for coal mines in the southern end of the Bowen Basin. Gladstone (R) has consistently been among the fastest growing LGAs in Queensland, with annual growth rates exceeding 2.0% for 17 of the 24 years between 1991 and 2015. High population growth periods in Gladstone (R) since the early 2000s align closely with the temporary construction phase of new projects and major expansions to existing industries (Appendix B). The most recent wave of population growth, which commenced in 2011 and peaked in 2013, corresponded with the construction of three LNG processing plants, a new coal terminal, and port infrastructure expansions.

Figure 3.8 Change in estimated resident population, Gladstone (R)



r = revised p = preliminary

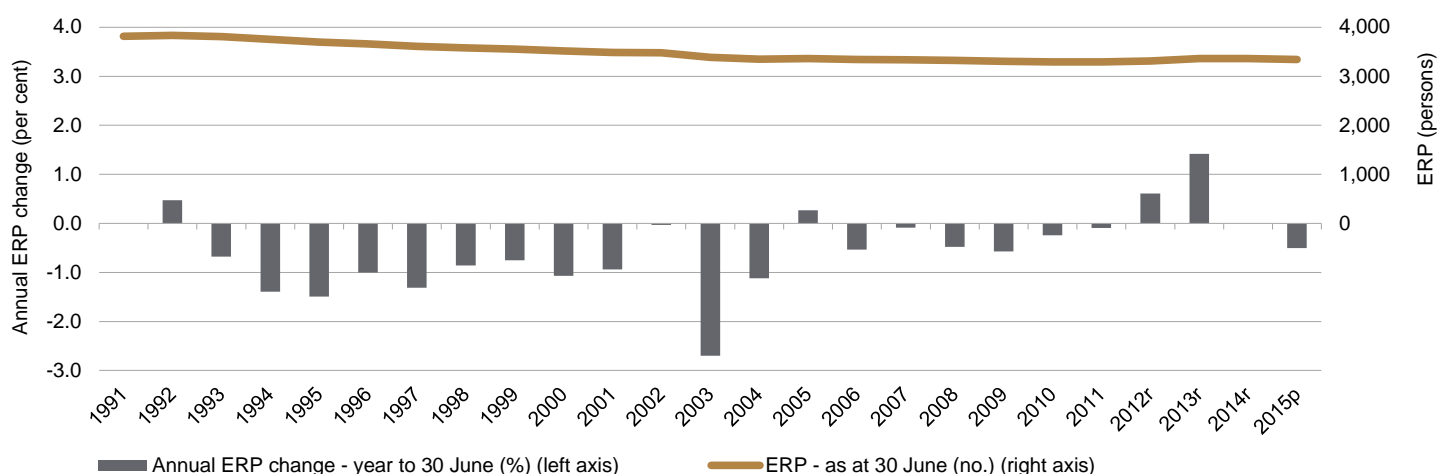
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

3.2.4. Barcaldine (R)

Barcaldine (R) had a preliminary ERP of 3,340 persons in 2015, around 475 persons fewer than in 1991 (Table 3.1, Figure 3.9). With mining industries yet to establish a presence in the area, Barcaldine's economy remains largely dependent on agriculture (Appendix D). The gradual decline in the area's resident population since 1991 has been influenced by climatic factors, including drought and flooding events.

Figure 3.9 Change in estimated resident population, Barcaldine (R)



r = revised p = preliminary

(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*

3.3. Key points

- Resident populations grow or decline according to a combination of natural increase and net migration. Net migration is influenced by a number of push/pull factors, which include local employment opportunities, the availability of services and amenities, and lifestyle choices of workers and their dependants. Climatic influences, such as drought, can also have an effect on outward migration from rural areas.
- On a regional scale, the resident populations of the Bowen Basin, Surat Basin and Gladstone region increased overall between 1991 and 2015, while the population of the Galilee Basin declined. Within these regions, population change has varied between LGAs and over time. Gladstone (R) and Toowoomba (R) were the only resource LGAs to have population gains for each year during this period.
- All LGAs in this report, other than Toowoomba (R) and Gladstone (R), experienced population decline between 1991 and 2001, largely through outward migration. Most LGAs in the Bowen Basin were affected by a cyclical downturn in coal mining during this period, as well as jobs lost through restructuring of other industries. Rural depopulation, which continued to affect LGAs with predominantly pastoral and agricultural economies, was further exacerbated by prolonged drought periods.
- All LGAs except Banana (S) and Barcaldine (R) subsequently recorded resident population growth between 2001 and 2015, reversing population losses that occurred during the nineties. Jobs created through resource industry development contributed strongly to this growth. The populations of Isaac (R) and Central Highlands (R) increased in line with expansion of coal mining in the Bowen Basin, while growth in Gladstone (R) and the Surat Basin LGAs of Western Downs (R) and Maranoa (R) coincided with the introduction of gas, coal and energy generation projects.
- Regions with a high reliance on resource industry employment are particularly susceptible to fluctuations in their resident populations through net migration, owing to the cyclical nature of these industries. The use of FIFO/DIDO workforces in the resource sector has also been a mitigating factor on resident population change in these areas.
- Preliminary ERPs indicate that population growth for LGAs in the Surat Basin and Gladstone region has slowed since 2013, while slight population losses were recorded for all LGAs in the Bowen Basin and in the Galilee Basin in 2014–15.

4.0 Relationship between resident and non-resident populations

4.1. Introduction

Although it was not the sole influence on change, the expansion of resource industries has contributed to growth in the populations of the Bowen Basin, Surat Basin and Gladstone region since 2001, particularly in LGAs with high levels of resource industry activity. While most of these LGAs recorded resident population growth during this period, the most conspicuous population impact has been in terms of temporary fluctuations in their non-resident populations. In most cases, FIFO/DIDO construction workforces engaged in expansions of existing operations and construction of new projects were the most common driver of non-resident population change.

Changes to an area's resident population do not always occur in line with changes in its non-resident population, as each is subject to different growth influences (Chapter 2 and Chapter 3). Resident population change tends to be more gradual and occurs over a longer term, whereas non-resident populations can grow or decline rapidly within a short period.

Construction workforces for resource projects tend to be predominantly non-resident rather than resident, and can make up a large proportion of the host area's non-resident population. By contrast, *production* workforces tend to contain more local residents than FIFO/DIDO workers. As a result of these differences, most resident population growth from a new project tends to occur when it reaches the production phase, and after the non-resident construction workforce declines.

Where the production workforces of resource operations in an area contain a mix of resident and FIFO/DIDO workers, changes to the size of those workforces may result in changes to either or both the resident and non-resident populations. Growth or decline in the area's *non-resident* population will be more immediately apparent, as it will be reflected in QGSO's annual non-resident population estimates. Changes to an area's *resident* workforce will only affect the ERP if it results in workers and dependants migrating to or from the area. In such instances there may be a lag between the time that the migration occurs, and where this change is detected by the ABS and factored into the ERP.

Planning for the provision of services and infrastructure in resource regions needs to take into account any additional demand that may arise from hosting large non-resident populations, as well as any changes to the size of their resident populations. The extent of that additional demand, and the scale of the response required to meet it, will vary according to the changing size of the resident and non-resident populations, and the timeframes over which any changes will occur.

The size of an area's non-resident population relative to its resident population is an important consideration. A large non-resident population will usually have a more pronounced impact where the host area has a relatively small resident population and a limited range of services. On the other hand, host areas with large resident populations are usually better serviced than smaller areas, and more capable of meeting increased demand from non-resident populations. For that reason, it is useful to consider the non-resident to resident population ratio as well as absolute numbers.

4.2. Non-resident to resident population ratios

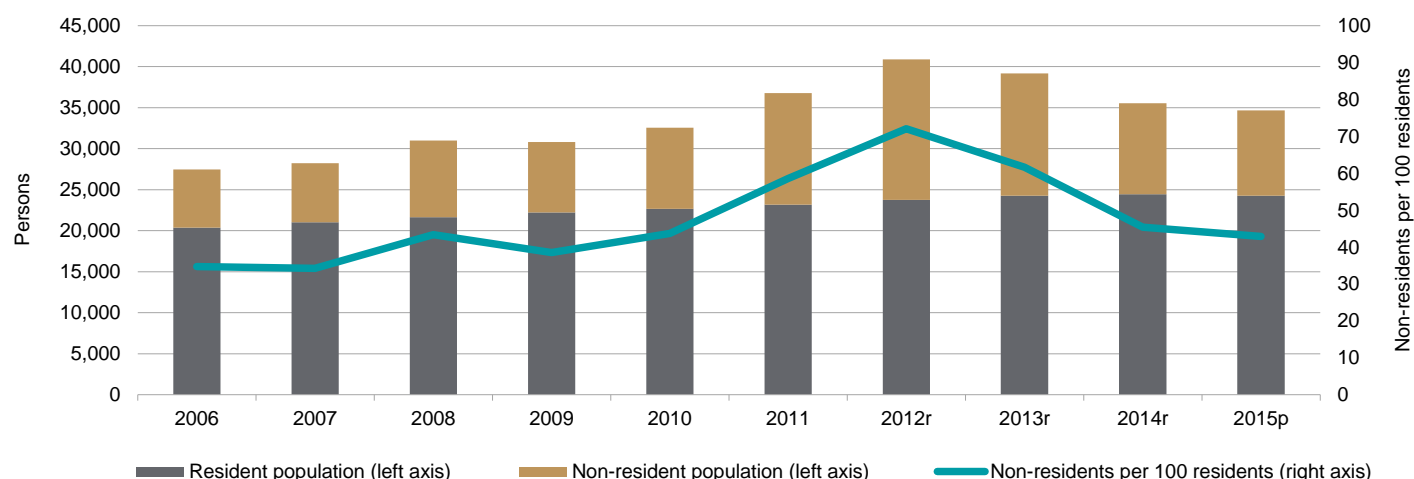
The ratio of the non-resident population to the resident population provides a means of assessing the relativity between both populations, taking into account any growth or decline in either over time. Ratios are expressed as the number of non-resident workers present in the area per 100 residents. Figures 4.1 to 4.5 provide representative examples of non-resident to resident ratios for five resource LGAs. These examples illustrate how non-resident to resident ratios differ between LGAs, and how they can vary over time. Appendix E contains ratios for all LGAs covered by this study.

The non-resident population of **Isaac (R)** is notably large in comparison with its resident population (Figure 4.1), and contains a sizeable FIFO/DIDO production workforce as well as a temporary contingent of non-resident construction workers. As a result, Isaac (R) has the highest non-resident to resident ratio of all resource LGAs covered by this report. At the peak of construction activity in 2012, there were 72 non-residents living in Isaac (R) for every 100 residents. A winding down of construction activity and production workforce reductions saw the ratio fall to 43 per 100 in 2015.

Although the resident population of Isaac (R) grew by 3,895 persons from 2006 to 2015, this growth was masked by the scale of changes to the area's non-resident population during that period. From 7,075 persons in 2006, Isaac's non-resident population grew to 17,125 persons in 2012, an increase of 10,055 persons. By 2015, it had fallen to 10,400 persons, only 3,325 persons more than in 2006. In terms of net change over time, resident population growth for Isaac (R) between 2006 and 2015 actually exceeded growth in the non-resident population by 570 persons.

The example of Isaac (R) demonstrates how the non-resident to resident population ratio can fluctuate widely in areas with relatively small resident populations and large non-resident populations. While changes to either population may alter the ratio at any point in time, it is important to differentiate between changes that are due to temporary, short-term influences (such as construction activity) and those of longer term consequence.

Figure 4.1 Resident and non-resident populations, Isaac (R)



r = revised p = preliminary

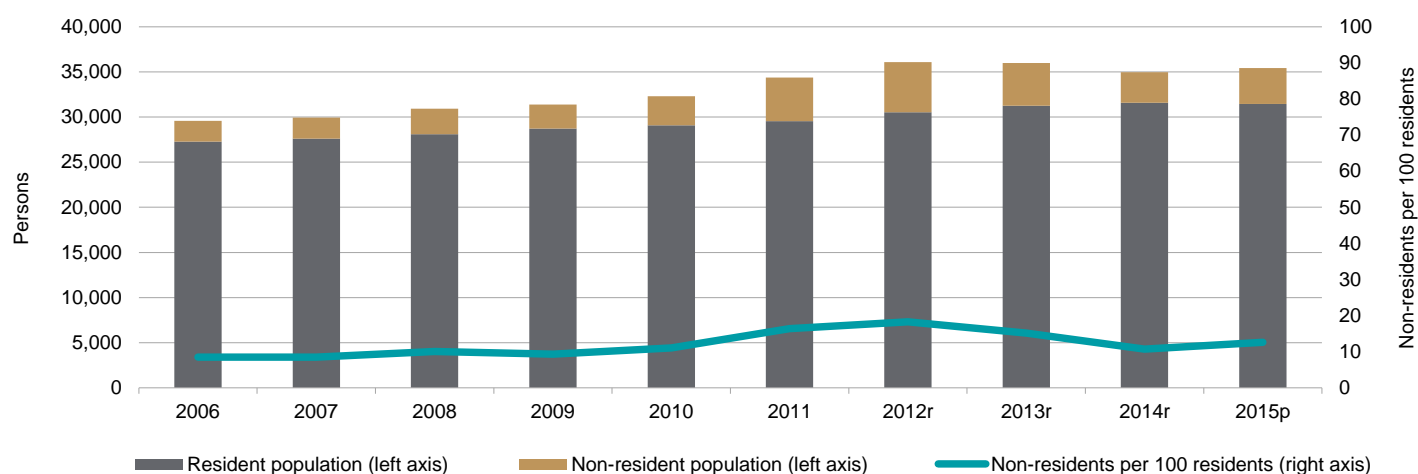
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*; Queensland Government Statistician's Office, Queensland Treasury, estimates

Central Highlands (R) also has an ongoing non-resident population which is primarily engaged in coal production, although construction workforces have temporarily boosted numbers since 2006 (Chapter 2). The resident population of Central Highlands (R) is substantially larger than its non-resident population (Figure 4.2), so the area's non-resident to resident ratio is lower than that for the neighbouring LGA of Isaac (R). At its peak in 2012, the non-resident to resident ratio of Central Highlands (R) reached 18 per 100, before declining to 13 per 100 in 2015.

The resident population of Central Highlands (R) grew by 4,190 persons between 2006 and 2015, outstripping growth in the non-resident population (1,640 persons). Central Highlands (R) has experienced low variability in its non-resident to resident ratio since 2006, due to the relatively large size of its resident population and strong resident population growth.

Figure 4.2 Resident and non-resident populations, Central Highlands (R)



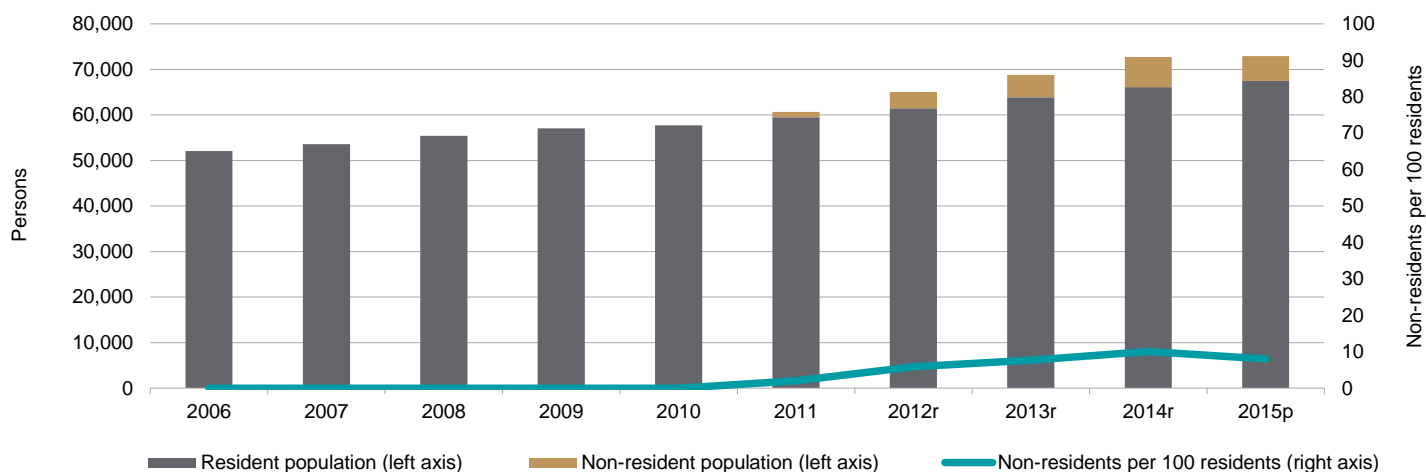
r = revised p = preliminary

(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*; Queensland Government Statistician's Office, Queensland Treasury, estimates

The non-resident population of **Gladstone (R)** consists largely of FIFO/DIDO construction workers, with only a small number of production workers in the region who are not locally resident. Despite reaching 6,655 persons in 2014, the non-resident population in Gladstone (R) was relatively small in comparison with the size of its resident population (Figure 4.3). As a result, the non-resident to resident population ratio of Gladstone (R) peaked at only 10 per 100 in 2014, before falling to 8 per 100 in 2015. Between 2011 and 2015, the area's resident population growth (8,005 persons) was almost double that of the non-resident population (4,225 persons).

Figure 4.3 Resident and non-resident populations, Gladstone (R)



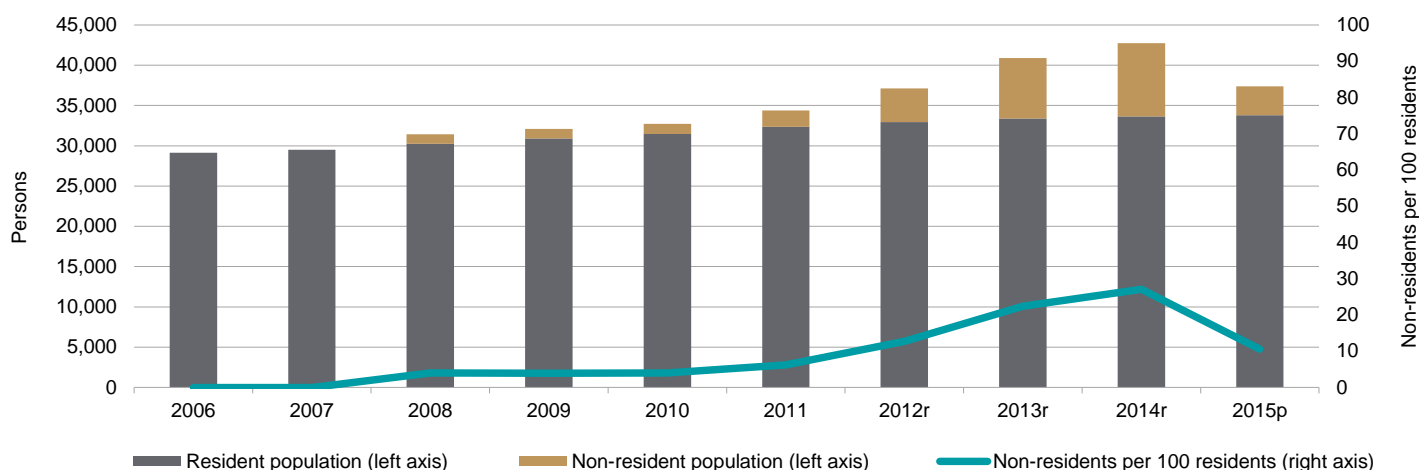
r = revised p = preliminary

(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*; Queensland Government Statistician's Office, Queensland Treasury, estimates

The resident population of **Western Downs (R)** is large compared with its non-resident population, which consists mainly of FIFO/DIDO workers involved in CSG and coal production. Large construction workforces for CSG projects increased the area's non-resident population between 2011 and 2014 (Figure 4.4), so that the non-resident to resident ratio peaked at 27 per 100 in 2014. As construction slowed in 2015, this ratio declined to 11 per 100. The resident population of Western Downs (R) grew by 3,565 persons between 2008 and 2015, which exceeded growth in the non-resident population over this period (2,355 persons).

Figure 4.4 Resident and non-resident populations, Western Downs (R)



r = revised p = preliminary

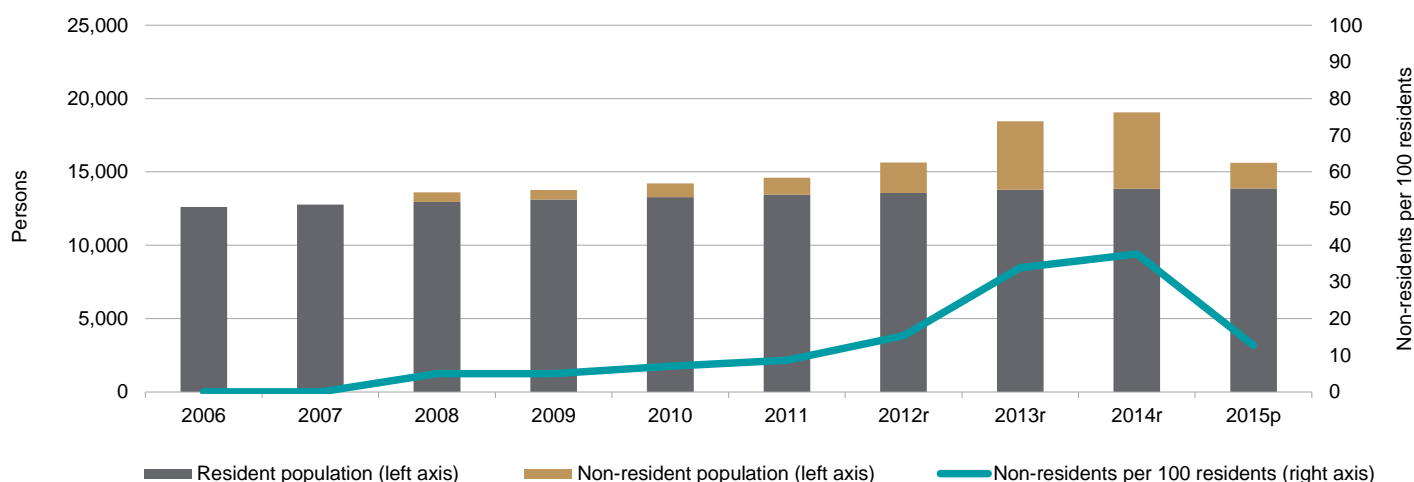
(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*; Queensland Government Statistician's Office, Queensland Treasury, estimates

Maranoa (R) has a small non-resident population involved in CSG production, which was temporarily boosted by large numbers of construction workers between 2011 and 2014 (Figure 4.5). At its peak in 2014, the non-resident to resident population ratio of Maranoa (R) was 38 per 100, which was second only to that for Isaac (R) for that year. As construction activity wound down in 2015, this ratio fell to a more modest 13 per 100.

The resident population of Maranoa (R) increased by only 910 persons between 2008 and 2015, which was less than growth in its non-resident population (1,110 persons) over the same period. Variability in the non-resident to resident population ratio of Maranoa (R) is a reflection of two influences – the small size of the area's resident population relative to its non-resident population, and low growth in the resident population.

Figure 4.5 Resident and non-resident populations, Maranoa (R)



r = revised p = preliminary

(R) – Regional Council

Source: ABS 3218.0, *Regional Population Growth, Australia, 2014–15*; Queensland Government Statistician's Office, Queensland Treasury, estimates

4.3. Key points

- The impact of non-resident populations on demand for services in an area varies according to the relative size of the non-resident and resident populations. The non-resident to resident population ratio provides a convenient means of comparing the impact of FIFO/DIDO populations across different local government areas and over time.
- Isaac (R) has consistently recorded the largest non-resident to resident population ratio of all resource LGAs in this study. This ratio reached a peak of 72 non-residents for every 100 residents in 2012, but has since fallen to 43 per 100 in 2015.
- Maranoa (R) had a non-resident to resident population ratio of 13 per 100 in 2015. This was well below its peak level of 38 per 100 in 2014, when the area's non-resident population was boosted by construction workforces.
- Central Highlands (R), Gladstone (R) and Western Downs (R) all have sizeable non-resident populations, but their impacts on service demand are lessened due to having relatively large resident populations. In 2015, the non-resident to resident population ratio for these LGAs was 13 per 100, 8 per 100 and 11 per 100 respectively.
- Changes to the resident populations of resource regions in this report have not always occurred in line with changes to their non-resident populations, as both are subject to different growth influences.
- Resident population change, which is driven by natural increase and net migration, has tended to occur more gradually and over a longer term, whereas non-resident populations have grown and declined rapidly within a relatively short period. As a result, much attention has been given to changes in the non-resident populations of resource regions over the short term, while longer term resident population movements tend to be overlooked.
- The resident populations of all resource LGAs (except Maranoa (R)) actually outgrew their non-resident populations in net terms between 2006 and 2015.

5.0 Workforce accommodation arrangements

5.1. Introduction

The adoption of FIFO/DIDO work arrangements in resource industries has gone hand in hand with the utilisation of commercial accommodation services to house non-resident workers. These arrangements include the use of hotel, motel and caravan park accommodation, as well as dedicated worker accommodation villages (WAVs). Where commercial accommodation is not available in sufficient quantities, companies may also utilise housing that is head-leased from the private rental market. In tandem, the use of non-resident workforces and commercial accommodation provides a means of meeting temporary local demand for labour without commensurate development of permanent infrastructure, particularly housing, that could become redundant after the project is completed.

The location and size of WAV accommodation can vary according to distance between the place of work and established population centres, the nature of the activity, and the duration of the activity. In general, WAVs used for construction activity are more likely to be located in close proximity to the project in order to minimise travelling time. This has been particularly the case for gas field exploration, construction and development, which is more decentralised in nature than coal mining. WAVs used to house production workforces for coal mines are more likely to be located in or close to population centres, than on the mining lease.

There have been instances where high occupancy of commercial accommodation by non-resident resource workers has placed limits on its availability for other visitors, including tourists (QGSO, 2014b). Similarly, widespread and prolonged use of rental housing to accommodate non-resident workers may inflate local rents and further limit housing availability in areas where housing supply is already limited (McKenzie et al, 2009). These situations commonly occur during the start-up phase of a project, where pioneering construction workforces occupy existing commercial accommodation or head-leased housing while new WAVs are being built for the main body of workers. It may also occur during the construction phase of a project if the supply of WAV beds lags behind demand due to delays in WAV construction or occupancy.

5.2. Worker accommodation villages

Worker accommodation villages (WAVs) are the most commonly utilised commercial accommodation in Queensland's resource regions, housing 95.3% of all non-resident workers in 2015 (QGSO 2015a; QGSO 2015b; QGSO 2015c). WAVs have several advantages over other types of accommodation for this purpose, including the capacity to expand or contract rapidly in line with changing workforce demand, economies of scale for large workforces, and the ability to house workers on or near work sites in remote areas. WAVs vary in size, amenity and location, ranging from small, mobile drilling camps to well-established villages of up to several thousand beds with a high standard of services and facilities.

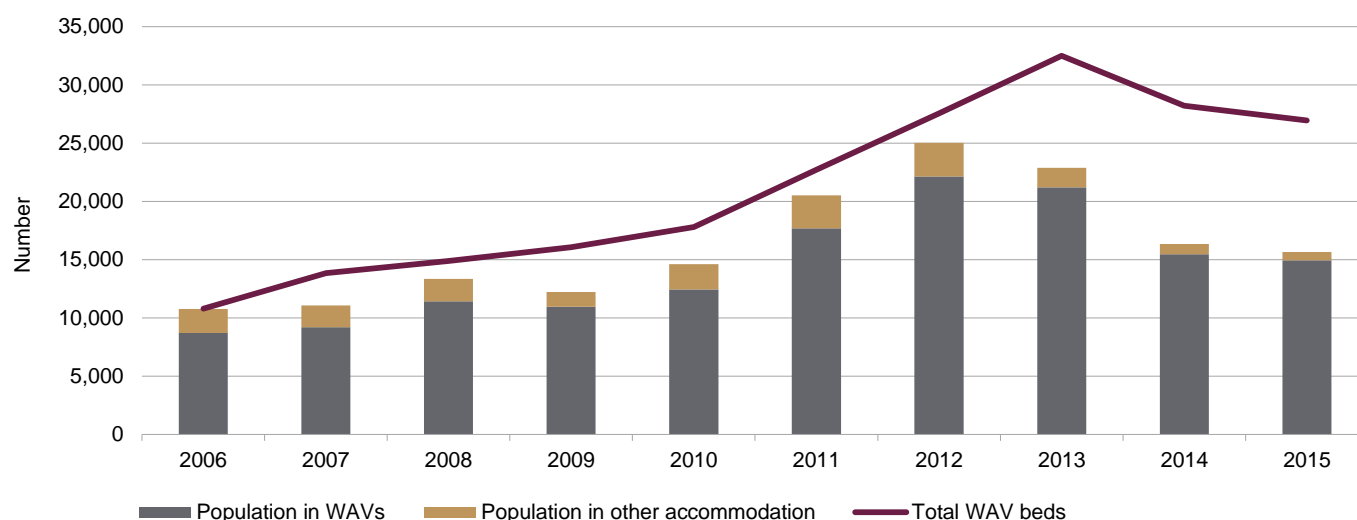
The following graphs illustrate how the supply of WAV accommodation in Queensland's major resource regions has changed in line with demand for worker accommodation, and how the increased provision of WAV beds has reduced reliance on other forms of commercial accommodation (Appendix F).

The non-resident population of the **Bowen Basin**, which stood at 10,760 persons in 2006, grew to a peak of 25,035 persons in 2012 (Figure 5.1, Appendix C). Slowing construction activity, combined with production workforce cutbacks, saw this population fall to 15,665 persons in 2015. Capacity of WAV accommodation across the region increased from 10,790 beds in 2006 to a maximum of 32,495 beds in 2013, in keeping with this growth in demand. Although subsequent closures and downsizing of some establishments have seen bed numbers decline since 2013, WAV capacity in the Bowen Basin currently exceeds the size of the region's non-resident population by a considerable margin.

In practice, the number of WAV beds is usually higher than the number of non-resident workers, as many establishments reserve rooms for workers who are rostered off. This convention varies according to company policies and employment agreements, and is more commonly found in WAVs catering for production workers than those housing construction workers.

In keeping with the growing supply of WAV accommodation, the uptake of other forms of commercial accommodation by non-resident workers has decreased markedly in the Bowen Basin in recent years. With the number of WAV beds barely exceeding the non-resident population in 2006, around 18.9% of non-resident workers were accommodated in hotels, motels, caravan parks and rental accommodation. Although WAV capacity was substantially increased in following years to keep up with demand, the uptake of other commercial accommodation by non-resident workers was still relatively high in 2012 (11.5%). By 2015, this proportion had declined to just 4.6% of non-resident workers.

Figure 5.1 Non-resident population by accommodation type and WAV bed capacity, Bowen Basin



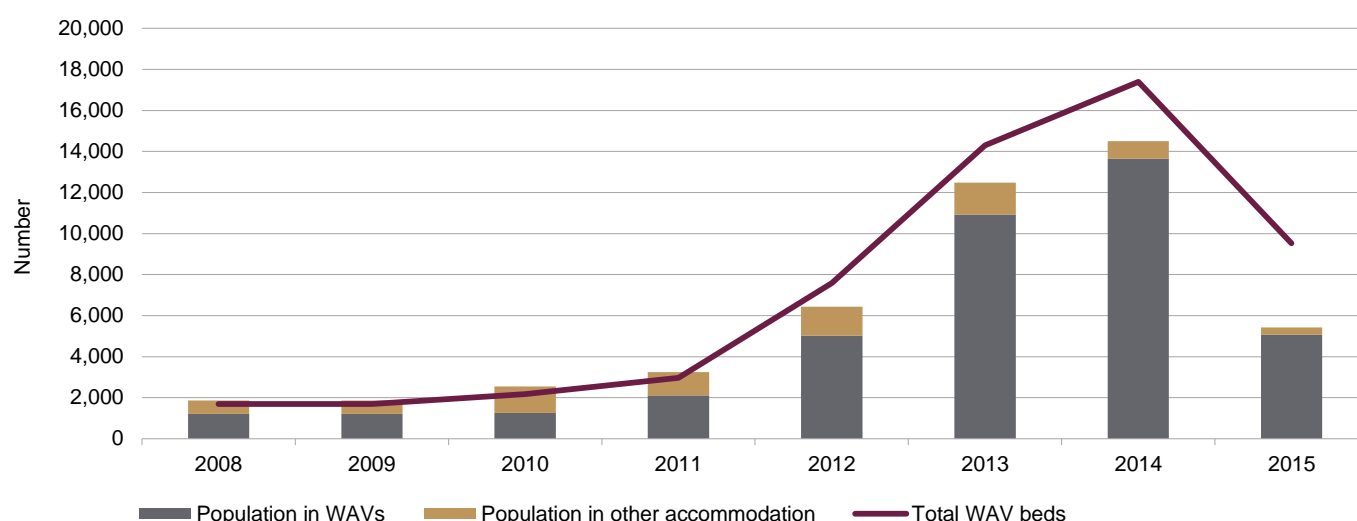
Other accommodation includes hotels/motels, caravan parks, and other rental accommodation occupied by non-resident workers.

Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

Between 2008 and 2010 the non-resident population of the **Surat Basin** increased from 1,855 persons to 2,540 persons (Figure 5.2). Although some of these workers were employed in existing gas operations and housed in WAVs located in rural areas, a substantial proportion were engaged in construction of coal mines, power station projects and other related infrastructure. Due to the proximity of these projects to existing centres, and the relatively low supply of available WAV accommodation, 34.4% of these non-resident workers were housed in other forms of accommodation in 2008, rising to 50.6% in 2010.

CSG industry workforces grew rapidly from 2010 onward, and the supply of WAV accommodation in the Surat Basin increased to 17,390 beds by 2014. As construction moved further from population centres, the number of non-resident workers housed in other commercial accommodation fell from 1,550 persons in 2013 (12.4% of the total) to 360 persons in 2015 (6.6%). With construction of the CSG projects largely completed by 2015, many of the temporary worker villages built to accommodate non-resident construction workers were decommissioned and WAV bed capacity fell to 9,530 beds.

Figure 5.2 Non-resident population by accommodation type and WAV bed capacity, Surat Basin



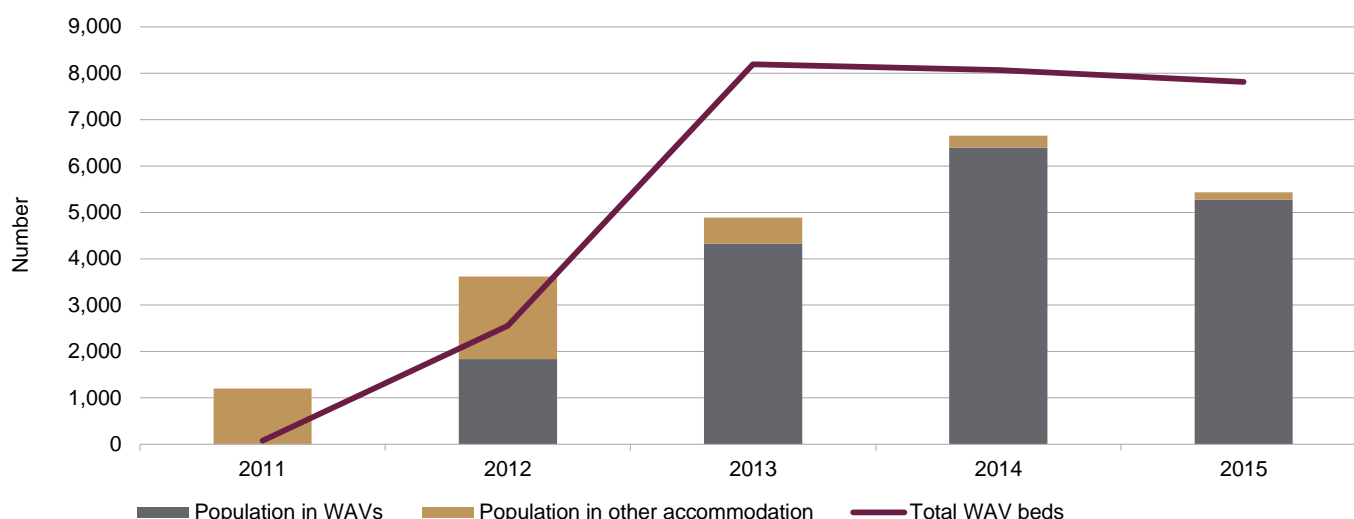
Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

The **Gladstone region** provides an example of how a lag in the supply of WAV beds for non-resident workers during the early stages of a project can temporarily add to demand for other forms of accommodation (Figure 5.3).

In mid-2011 the non-resident population of the Gladstone region was 1,205 persons, who were largely housed in accommodation other than WAVs. At that point, the supply of WAV accommodation in the region was constrained, with new villages completed but yet to open or still under construction. While these establishments began to come on line in the following year, rapid growth in construction of new projects meant that the region's non-resident population still exceeded the availability of WAV beds. As a result, around 49.2% of the 3,615 non-resident workers on-shift still occupied other forms of accommodation in 2012.

By 2013, the supply of WAV accommodation in the Gladstone region was 8,190 beds, and only 560 non-resident workers (or 11.5% of the total) were housed in other accommodation. The region's non-resident population peaked at 6,655 persons in 2014, with only 255 of these (3.8%) not accommodated in WAVs. As construction of new projects reached or neared completion in 2015, the size of the region's non-resident population fell to 5,430 persons, and some WAV establishments began to decommission rooms in response to diminished demand. It is anticipated that all WAVs built for LNG plant construction workers will be closed by the end of 2016, and removed from site.

Figure 5.3 Non-resident population by accommodation type and WAV bed capacity, Gladstone region



Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

5.3. Vacant and available hotel/motel rooms

Hotels/motels provide accommodation for a range of clients, including tourists and short-term business visitors, as well as non-resident resource industry workers. Along with caravan parks, hotels/motels often pick up much of the overflow in accommodation demand wherever WAV capacity is constrained. Many hotels/motels in resource regions have reported limited capacity to provide accommodation for other visitors during these periods⁶.

As Table 5.1 demonstrates, the number of vacant and available hotel/motel rooms in resource regions has steadily increased in recent years, largely reflecting a lessening in demand for other accommodation from non-resident workers. By June 2015, between half and two-thirds of all hotel/motel rooms in the Bowen Basin, Surat Basin and Gladstone region were vacant and available. This diminished demand for other accommodation can be linked directly to increased availability of WAV beds, as outlined in Section 5.2.

Of the regions covered by this report, the Bowen Basin has seen the largest turnaround in the proportion of vacant and available hotel/motel rooms, increasing from just 3% in 2011 to 63% in 2015. The Gladstone region also had a low proportion of vacant and available hotel/motel rooms in 2011 (4%), which increased to 57% in 2015. Demand for

⁶ See *Tourist accommodation in resource regions, 2013* (QGSO 2014) for more detailed analysis of conflicting demand for accommodation in resource regions.

hotel/motel accommodation peaked in 2012 in the Surat Basin, where only 11% of rooms were vacant and available. This demand has since diminished, with 54% of rooms available in 2015.

Table 5.1 Vacant and available^(a) hotel/motel rooms, resource regions

Region	2011	2012	2013	2014	2015
	— % vacant and available —				
Bowen Basin	3	8	42	65	63
Surat Basin	18	11	15	34	54
Gladstone region	4	12	28	39	57

(a) 'Vacant and available' refers to hotel/motel rooms that were not occupied by non-resident workers on-shift or other guests, and were vacant and available on the night of the survey.

Percentages of vacant and available rooms are rounded to the nearest whole number.

Source: Queensland Government Statistician's Office, Queensland Treasury, estimates

5.4. Key points

- Non-resident workforce arrangements for resource industry construction and production rely on the use of commercial accommodation, including WAVs, hotel/motel and caravan park accommodation. Where commercial accommodation is not available, rental housing may also be used.
- Data for all three resource regions show that there have been occasions where high occupancy of non-WAV accommodation by non-resident workers has limited availability for other users, including tourists. These situations have usually occurred during the early stages of construction for new projects, or where operational expansions resulted in temporary growth in non-resident worker numbers. In all instances, the supply of WAV accommodation eventually caught up with growing demand, reducing reliance on other forms of accommodation.
- WAV capacity in the Bowen Basin increased from 10,790 beds in 2006 to a peak of 32,495 beds in 2013, before falling to 26,945 beds by 2015. Supply of WAV beds in the region has increased in response to growing demand, and currently exceeds the number of non-resident workers on-shift by a considerable margin. The proportion of non-resident workers staying in other accommodation fell from 18.9% in 2006 to 4.6% in 2015.
- The supply of WAV accommodation in the Surat Basin increased to a peak of 17,390 beds by 2014, in response to growing demand from CSG construction workforces. With construction largely completed by 2015, many of these temporary worker villages were decommissioned and WAV bed capacity fell to 9,530 beds. The number of non-resident workers housed in other forms of accommodation fell from 1,550 persons in 2013 (12.4% of total workers) to 360 persons in 2015 (6.6% of total).
- WAV capacity in the Gladstone region lagged behind the size of the region's non-resident workforce in 2011 and 2012. As a result, around 49.2% of the 3,615 non-resident workers on-shift in the region still occupied other forms of accommodation in 2012. Supply of WAV beds caught up with demand from 2013 onward.
- The number of hotel/motel rooms that are vacant and available has increased substantially across all three regions since 2011. By June 2015, between half and two-thirds of all hotel/motel rooms in the Bowen Basin, Surat Basin and Gladstone region were vacant and available.



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Technical notes

Geographies

The Bowen, Surat and Galilee Basins refer to the geological formations or coal basins that give these regions their names. For the purposes of reporting population statistics, QGSO has defined these regions in demographic rather than geological terms, to include relevant populations and align with the statistical geography used by the ABS. Local government area boundaries are based on the 2011 edition of the Australian Statistical Geography Standard (ASGS). Whitsunday (R) (Bowen only) comprises the statistical areas level 2 (SA2s) of Bowen and Collinsville, equivalent to the area of the former Bowen Shire prior to amalgamation in 2008.

The Gladstone region and Galilee Basin each comprise a single LGA (Gladstone (R) and Barcaldine (R) respectively). The Gladstone region and Galilee Basin are used in sections of the report discussing regions. Gladstone (R) and Barcaldine (R) are used in sections discussing LGAs.

Non-resident population and accommodation data

Non-resident population and accommodation data are derived from surveys conducted by QGSO and other sources. Non-resident workers include FIFO/DIDO mining and gas industry employees and contractors, construction workers and associated subcontractors. Data are a point in time estimate as at the survey date in June/July.

Data for the Bowen Basin have been collected and published from 2006 onward, the Surat Basin from 2008 and Gladstone region from 2011. Data for the Galilee Basin have been collected since 2010 but are not included in annual population reports published by QGSO.

Data for the Surat Basin were not collected in 2009. Estimates for 2009 are extrapolated from 2008 data. Data for non-resident workers in Toowoomba (R) were not collected in 2008. The total non-resident population of the Surat Basin therefore does not include any non-resident workers that may have been in Toowoomba (R) during the survey period.

Estimated resident population

The ERP, as derived by the ABS, is the official population measure used in Australia. The ERP is based on adjusted counts of persons by usual residence taken from the five-yearly Census of Population and Housing (ABS, 2016) conducted by the ABS. *Usual residence* is that place where each person has lived or intends to live for six months or more from the reference date for data collection (ABS, 2016c).

Preliminary estimates as at 30 June are normally available by April of the following year, revised estimates twelve months later and rebased and final estimates after the following census. The ERPs shown in this report are final for 1991 to 2011, revised for 2012 to 2014, and preliminary for 2015. These estimates will be finalised following the release of 2016 Census data.

The ABS updates national and state level ERPs quarterly between censuses, and annually at sub-state level. After each census, estimates for the preceding intercensal period are finalised (rebased) by incorporating an additional adjustment (intercensal difference) to ensure that the difference between the ERPs at the two respective census dates agrees with the total intercensal change.

In the intercensal period, national ERP updates are calculated using registered births and deaths data, as well as data on net overseas migration, while estimates of interstate migration are also factored in to ERP changes for states and territories. At a sub-state level, the movement of residents into and away from the local area (intrastate migration) also needs to be taken into consideration.

The most reliable data source for net migration at small area level is the ABS Census of Population and Housing. In between census collections, the unavailability of migration data at small area levels (including LGAs) means that the ABS currently calculates post-censal changes to ERPs using a mathematical model, rather than by using actual data on natural increase and net migration. Input data vary according to state or territory, but include dwelling approvals, Medicare enrolments, and counts of people on the Australian electoral roll (ABS, 2016a).

Rounding

Figures in tables have been rounded to the nearest five. As a result of rounding, discrepancies may occur between sums of the component items and totals. Percentages and other calculations are made prior to rounding of figures and discrepancies might therefore exist between these calculations and those that could be derived from the rounded figure.



Abbreviations

(R)	Regional Council
(S)	Shire
ABS	Australian Bureau of Statistics
CSG	coal seam gas
EIS	environmental impact statement
ERP	estimated resident population
FID	final investment decision
FIFO/DIDO	fly-in/fly-out and drive-in/drive-out
IAS	initial advice statement
LGA	local government area
LNG	liquefied natural gas
QGSO	Queensland Government Statistician's Office
WAV	worker accommodation village

Glossary

Australian Bureau of Statistics (ABS)

The ABS is Australia's national statistical agency, which publishes official statistics on a wide range of economic, social, population and environmental matters of importance to Australia. See also *Australian Statistical Geography Standard* and *Estimated resident population*.

Australian Statistical Geography Standard (ASGS)

The ASGS is a geographical framework covering all spatial areas of Australia and its external territories. The ASGS is used by the ABS to disseminate a broad range of social, demographic and economic statistics. See also *Statistical area level 2*.

Commercial accommodation

Commercial accommodation includes non-private dwellings such as hotels, motels and caravan parks, as well as WAVs. Commercial accommodation is widely used in resource regions to house non-resident workers while they are rostered on for work. See also *Worker accommodation village*.

Construction

A wide range of activities are regarded as 'resource industry construction', including those that are directly related to development of a new mining or gas project, or expansions to an existing operation. The definition also includes activities that are indirectly associated with the resource industry, such as construction of processing facilities and supporting infrastructure. Typical mine construction and expansion activities include site preparation, establishment of pits or underground drives, assembly of machinery, and building mine infrastructure such as haul roads, wash plants, conveyor systems and train load-out facilities. The construction phase of gas projects includes well drilling and completions, installing gas and water gathering networks, field compression stations, central processing plants, and trunk pipelines. See also *Construction workforce*.

Construction workforce

Construction workers are engaged in the planning, construction and commissioning of a new resource project, or in the expansion or decommissioning of an existing operation. Construction workforces as defined in this publication may also include workers who are not directly employed in the resource industry, but who are engaged in construction of resource-related infrastructure such as ports, rail networks, roads, and power and water utilities. Construction workforces are usually larger than production workforces, and predominantly non-resident. See also *Construction*.

Estimated resident population (ERP)

The ERP is the official ABS measure of the Australian population, based on the concept of usual residence. A person is regarded as a resident of an area if they identify that they have lived or intend to live there for six months or more in a reference year. FIFO/DIDO workers and other visitors who stay in an area temporarily but have their place of usual residence elsewhere are not included in the ERP for that area.

See Technical Notes for further information on ERP. See also *Non-resident population*, *Resident population* and *Usual residence*.

Fly-in/fly-out or drive-in/drive-out (FIFO/DIDO)

An employment arrangement whereby workers live away from home, in the same area as their place of work, for the duration of their roster. Workers commute by air or road between their place of usual residence and place of work at the start and end of their roster, which consists of alternating periods of shift-work and rest in the work location. Following the completion of their roster, workers return to their place of usual residence for a period of time that varies according to the type of roster used, e.g. one week at work and one week off. See also *Non-resident population* and *Usual residence*.



Local government area (LGA)

The spatial unit that represents the legally designated area for which an incorporated local government council has responsibility. An LGA may be an Aboriginal or Island Council, City (C), Regional Council (R), Shire (S) or Town (T).

Non-resident population

The non-resident population is the number of non-resident workers on-shift in an area at a given point in time. Due to shift arrangements, not all non-resident workers are present in the local area at one time. In resource regions, this group includes FIFO/DIDO construction and production workers employed in resource industries, but excludes short-term visitors, tourists, itinerants and seasonal agricultural workers. Non-resident workers do not meet the ABS criteria for a usual resident of the area where they work, so are not included in the area's official resident population estimate. See also *Fly-in/fly-out or drive-in/drive-out*, *Non-resident worker* and *Resident population*.

Non-resident worker

A FIFO/DIDO worker who lives in the local area at their place of work while rostered on, but returns to their place of usual residence elsewhere when rostered off. See also *Fly-in/fly-out or drive-in/drive-out* and *Non-resident population*.

Production

Day to day activities for implementing a resource operation, including management, administration, technical services, routine maintenance and producing output. The production phase of a resource operation commences once construction is complete and the project is commissioned, and continues until the operation is decommissioned. See also *Production workforce* and *Resource operation*.

Production workforce

The production workforce of a resource operation comprises all workers engaged in the day to day activities of an established resource operation. The production workforce does not include workers engaged in the development and construction of new projects or non-routine maintenance. Production workforces, particularly in the Bowen Basin, can comprise both resident and non-resident workers. See also *Production* and *Resource operation*.

Queensland Government Statistician's Office (QGSO)

QGSO, formerly known as the Office of Economic and Statistical Research (OESR), is part of Queensland Treasury. QGSO provides a range of statistical and demographic services for the Queensland Government, business and the community. These include projections of the state's resident population, which are prepared twice every five years, as well as annual estimates and projections of the non-resident populations of resource regions and LGAs. See also *Non-resident population*.

Resident population

A population estimate based on the place where people usually live. This concept is used by the ABS in its ERP and for the Queensland Government's resident population projections. See also *Estimated resident population*, *Non-resident population* and *Usual residence*.

Resource industry

The business of extracting mineral, petroleum or gas resources from the ground. The broader definition as used in this publication also extends to operations that transport, process and export such resources. See also *Resource operation*, *Resource project* and *Resource region*.

Resource operation

An organised activity relating to the production phase of a new mine, gas project or processing plant. The production phase also includes decommissioning activities following the end of the operation's economic life. A resource project is considered to be an operation once it is completed and commissioned. See also *Resource project* and *Resource industry*.

Resource project

An organised activity relating to the planning, construction or commissioning of a new mine, gas project or processing plant. Once commissioned, a resource project is regarded as an operation. See also *Resource operation* and *Resource industry*.

Resource region

A geographical area that is different from other places due to the nature of its mineral or gas reserves, and that hosts resource industry activities, including mining, gas and associated infrastructure developments. Queensland resource regions that are covered by QGSO's monitoring program are based on the predominant geological formations (i.e. the Bowen Basin, the Surat Basin, and the Galilee Basin coal measures), and are defined by the boundaries of LGAs that the formations contain. Although Gladstone region contains no significant coal or gas reserves, it does contain a number of resource-related industries, including processing and port facilities that link it to other resource regions. See also *Resource industry*.

Statistical area level 2 (SA2)

SA2 is a spatial unit used by the ABS to collect and disseminate statistics. SA2 boundaries used in this report are based on the 2011 edition of the ASGS. See also *Australian Statistical Geography Standard*.

Usual residence

The location within Australia at which a person has lived, or intends to live, for six months or more in a given year. See also *Estimated resident population* and *Resident population*.

Worker accommodation village (WAV)

A term used to describe a particular type of commercial accommodation, usually provided to accommodate unaccompanied non-resident workers of mining companies and associated contractors. WAV accommodation is typically a form of hostel that usually consists of demountable dwellings arranged in a large camp, although some establishments also contain permanent and semi-permanent dwellings. WAV accommodation is arranged with common dining, laundry and entertainment facilities and rooms that are cleaned and serviced by the operator. Occupants of WAVs are usually provided with all meals.

WAVs range from small, mobile drilling and exploration camps and temporary construction camps to large, well-established villages of up to several thousand beds with a high standard of services and facilities. WAVs provide a cost-effective solution to housing non-resident workforces, particularly in instances where the non-resident population grows beyond the capacity of other forms of accommodation in an area. In addition to achieving savings through economies of scale, WAVs provide a means of meeting temporary local demand for accommodation without development of permanent infrastructure, particularly housing, that could become redundant after the project is completed. See also *Commercial accommodation*.



Appendices

Appendix A: Resource operations and future projects by region, 2016

Category ^(a)	Project / operation name	Company name	LGA
BOWEN and GALILEE BASINS			
<i>Existing operations</i>			
A	Abbot Point Coal Terminal (T1)	Abbot Point Bulk Coal	Whitsunday (R) (Bowen only)
A	Baralaba ^(g)	Cockatoo Coal	Banana (S)
A	Blackwater	BMA	Central Highlands (R)
A	Broadmeadow	BMA	Isaac (R)
A	Burton	Peabody Energy	Isaac (R)
A	Callide	Anglo American	Banana (S)
A	Capcoal Surface Operations	Anglo American	Isaac (R)
A	Carborough Downs	Vale Australia	Isaac (R)
A	Caval Ridge	BMA	Isaac (R)
A	Clermont	GS Coal	Isaac (R)
A	Collinsville	Glencore Coal	Whitsunday (R) (Bowen only)
A	Cook	Caledon Resources	Central Highlands (R)
A	Coppabella	Peabody Energy	Isaac (R)
A	Cows Coal	Sonoma Mine Management Pty Ltd	Whitsunday (R) (Bowen only)
A	Cracow gold mine	Evolution Mining	Banana (S)
A	Crinum ^(h)	BMA	Central Highlands (R)
A	Curragh	Wesfarmers Resources	Central Highlands (R)
A	Daunia	BMA	Isaac (R)
A	Dawson	Anglo American	Banana (S)
A	Drake Coal	Sonoma Mine Management Pty Ltd	Whitsunday (R) (Bowen only)
A	Ensham	Ensham Resources	Central Highlands (R)
A	Foxleigh	Anglo American	Isaac (R)
A	Goonyella Riverside	BMA	Isaac (R)
A	Grasstree	Anglo American	Isaac (R)
A	Hail Creek	Rio Tinto Coal	Isaac (R)
A	Isaac Plains ⁽ⁱ⁾	Stanmore Coal	Isaac (R)
A	Jellinbah	Jellinbah Group	Central Highlands (R)
A	Kestrel	Rio Tinto Coal	Central Highlands (R)
A	Lake Vermont	Jellinbah Group	Isaac (R)
A	Middlemount	Middlemount Coal	Isaac (R)
A	Millennium	Peabody Energy	Isaac (R)
A	Minerva	Sojitz Corporation	Central Highlands (R)
A	Moorvale	Peabody Energy	Isaac (R)
A	Moranbah Ammonium Nitrate Plant	Incitec Pivot	Isaac (R)
A	Moranbah Gas Project	Arrow Energy	Isaac (R)
A	Moranbah North	Anglo American	Isaac (R)
A	Mt Carlton gold mine	Evolution Mining	Whitsunday (R) (Bowen only)
A	Nebo Rail Maintenance Facility	Pacific National	Isaac (R)
A	Newlands Eastern Creek	Glencore Coal	Isaac (R)
A	Newlands Northern Underground	Glencore Coal	Isaac (R)
A	North Goonyella	Peabody Energy	Isaac (R)
A	Oaky Creek	Glencore Coal	Central Highlands (R)
A	Peak Downs	BMA	Isaac (R)
A	Poitrel	BMC	Isaac (R)
A	Rolleston	Glencore Coal	Central Highlands (R)

Category ^(a)	Project / operation name	Company name	LGA
A	Saraji	BMA	Isaac (R)
A	Sonoma	Sonoma Mine Management Pty Ltd	Whitsunday (R) (Bowen only)
A	South Walker Creek	BMC	Isaac (R)
A	Yarrabee	Yancoal Australia	Central Highlands (R)
Future projects			
A	Byerwen Coal	Byerwen Coal	Isaac (R)
A	Eagle Downs	Eagle Downs Coal Management	Isaac (R)
A	Grosvenor	Anglo American	Isaac (R)
B	Abbot Point Coal Terminal Expansion (T0)	Adani	Whitsunday (R) (Bowen only)
B	Abbot Point Coal Terminal Expansion (T3)	GVK Hancock Coal	Whitsunday (R) (Bowen only)
B	Alpha Coal Project – mine	GVK Hancock Coal	Barcaldine (R)
B	Alpha Coal Project – rail	GVK Hancock Coal	Barcaldine (R), Isaac (R), Whitsunday (R) (Bowen only)
B	Bluff Coal	Wealth Mining	Central Highlands (R)
B	Carmichael Coal	Adani	Isaac (R)
B	China First Project – mine	Waratah Coal	Barcaldine (R)
B	China First Project – rail	Waratah Coal	Barcaldine (R), Isaac (R), Whitsunday (R) (Bowen only)
B	Codrilla	Peabody Energy	Isaac (R)
B	Ellensfield	Vale Australia	Isaac (R)
B	Galilee Basin Transmission Project	Powerlink	Barcaldine (R), Isaac (R), Central Highlands (R)
B	Kevin's Corner	Hancock Galilee	Barcaldine (R)
B	Meteor Downs South	U&D Mining	Central Highlands (R)
B	Minyango	Blackwater Coal	Central Highlands (R)
B	Moranbah South	Anglo American	Isaac (R)
B	North Galilee Basin Rail	Adani	Isaac (R), Whitsunday (R) (Bowen only)
B	Red Hill Mining Lease Project	BMA	Isaac (R)
B	Santos GLNG Gas Field Development	Santos GLNG ⁽ⁱ⁾	Central Highlands (R), Maranoa (R), Western Downs (R)
B	South Galilee Coal	AMCI	Barcaldine (R)
B	Springsure Creek	Springsure Creek Coal	Central Highlands (R)
B	Taraborah	Shenhua International Group	Central Highlands (R)
B	Washpool Coal	Aquila Resources	Central Highlands (R)
C	Boundary Hill South	Anglo American	Banana (S)
C	China Stone	MacMines Austasia	Isaac (R)
C	Nathan Dam and Pipeline	SunWater	Banana (S)
C	New Lenton	New Hope Group	Isaac (R)
C	Rolleston Coal Expansion	Glencore Coal	Central Highlands (R)
C	Teresa Coal	United Mining Group	Central Highlands (R)
D	Athena	Yancoal Australia	Central Highlands (R)
D	Broughton	U&D Mining	Isaac (R)
D	Hail Creek Transition Project	Rio Tinto Coal	Isaac (R)
D	Hillalong Coal Project	Shandong Energy	Isaac (R)
D	Mackenzie	Moreton Resources	Central Highlands (R)
E	Arrow Bowen Pipeline	Arrow Energy	Isaac (R), Gladstone (R)
E	Arrow Surat Pipeline	Arrow Energy	Banana (S), Western Downs (R), Gladstone (R)
E	Bowen Gas Project	Arrow Energy	Isaac (R)
E	Surat Basin Rail	Surat Basin Rail	Banana (S), Western Downs (R)

Category ^(a)	Project / operation name	Company name	LGA
SURAT BASIN			
<i>Existing operations</i>			
A	Arrow Energy Surat operations	Arrow Energy	Western Downs (R), Toowoomba (R)
A	Cameby Downs mine	Yancoal Australia	Western Downs (R)
A	Commodore mine	Millmerran Power Partners	Toowoomba (R)
A	Kogan Creek mine	CS Energy	Western Downs (R)
A	New Acland mine	New Hope Group	Toowoomba (R)
A	Origin Energy Surat operations	Origin Energy	Maranoa (R), Western Downs (R)
A	QGC Surat operations	QGC (BG Group)	Western Downs (R)
A	Santos Surat operations	Santos Ltd	Maranoa (R), Western Downs (R)
A	Kogan Creek Power Station	CS Energy	Western Downs (R)
<i>Future projects</i>			
A	APLNG gas fields expansion	APLNG ^(l)	Maranoa (R), Western Downs (R)
A	GLNG gas fields expansion	Santos GLNG ^(j)	Maranoa (R)
A	Wallumbilla Gas Treatment Facility	Santos GLNG ^(j)	Maranoa (R)
A	Kogan Creek Solar Boost	CS Energy	Western Downs (R)
A	QCLNG gas fields expansion	QGC (BG Group) ^(k)	Western Downs (R)
B	Braemar 3 Power Station	ERM Power	Western Downs (R)
B	Santos GLNG Gas Field Development	Santos GLNG ^(j)	Maranoa (R), Western Downs (R), Central Highlands (R)
B	New Acland Coal Mine Stage 3 Project	New Hope Group	Toowoomba (R)
E	Arrow Surat Pipeline	Arrow Energy	Western Downs (R), Banana (S), Gladstone (R)
E	Elimatta Coal	New Hope Group	Western Downs (R)
E	Ironbark Project	Origin Energy	Western Downs (R)
E	Surat Basin Rail	Surat Basin Rail	Western Downs (R), Banana (S)
E	Surat Gas Project	Arrow Energy	Western Downs (R), Toowoomba (R)
E	The Range Coal	Stanmore Coal	Western Downs (R)
E	Toowoomba Second Range Crossing	Nexus Infrastructure	Toowoomba (R)
E	Wandoan Coal	Wandoan Joint Venture	Western Downs (R)
GLADSTONE REGION			
<i>Existing operations</i>			
A	Boyne Smelter	Pacific Aluminium	Gladstone (R)
A	Gladstone Cement Plant	Cement Australia	Gladstone (R)
A	Gladstone Power Station	NRG Gladstone	Gladstone (R)
A	Gladstone rail operations	Aurizon	Gladstone (R)
A	Orica Yarwun	Orica	Gladstone (R)
A	Port of Gladstone ^(m)	Gladstone Ports Corporation	Gladstone (R)
A	Queensland Alumina Refinery	Queensland Alumina	Gladstone (R)
A	QCLNG LNG Plant	QGC (BG Group) ^(k)	Gladstone (R)
A	Wiggins Island Coal Export Terminal (WICET)	WICET Pty Ltd	Gladstone (R)
A	Yarwun Alumina Refinery	Rio Tinto Aluminium	Gladstone (R)
<i>Future projects</i>			
A	APLNG LNG Plant	ConocoPhillips ^(l)	Gladstone (R)
A	GLNG LNG Plant	Santos GLNG ^(j)	Gladstone (R)
B	Gladstone–Fitzroy Water Pipeline	Gladstone Area Water Board	Gladstone (R), Rockhampton (R)
B	Gladstone Nickel Project	Gladstone Pacific Nickel	Gladstone (R)



Queensland Government Statistician's Office

Category ^(a)	Project / operation name	Company name	LGA
B	Wiggins Island Coal Export Terminal (WICET) Expansion – WEXP1 and WEXP2	WICET Pty Ltd	Gladstone (R)
C	East End No. 5 Mine Project	Cement Australia	Gladstone (R)
C	Euroa Steel Plant Project	Euroa Steel Plant Project Pty Ltd	Gladstone (R)
E	Arrow Bowen Pipeline	Arrow Energy	Gladstone (R), Rockhampton (R), Isaac (R)
E	Arrow Surat Pipeline	Arrow Energy	Gladstone (R), Banana (S), Western Downs (R)
E	Moura Link – Aldoga Rail Project	Aurizon	Gladstone (R)

(R) – Regional Council (S) – Shire

- (a) The five categories shown include existing resource operations and future projects, grouped according to their status in the EIS (environmental impact statement) process as at March 2016.
- (b) Category A represents existing resource operations and associated infrastructure activities in the area. Projects that had reached FID as at March 2016 are also included in Category A.
- (c) Category B projects are those that have an EIS approved but have yet to reach FID.
- (d) Category C projects are those that have lodged an EIS, but have yet to proceed through to final approval.
- (e) Category D projects are those that have yet to publish an EIS. This category includes projects that have lodged an initial advice statement (IAS) as well as projects that have yet to begin the approvals process.
- (f) Where FID for an approved project has been delayed indefinitely, or in circumstances where it is not possible to give consideration to indicative workforce data or sequencing, the project is designated as Category E. Other projects that are dependent on Category E projects in order to commence are also designated as Category E.
- (g) Cockatoo Coal entered voluntary administration in November 2015 and Baralaba mine was placed into care and maintenance in February 2016.
- (h) Crinum mine ceased commercial production on 9 November 2015, and was placed into care and maintenance.
- (i) Isaac Plains coal mine was sold to Stanmore Coal in July 2015 and is expected to restart production in 2016.
- (j) Santos Gladstone LNG (GLNG) is a joint venture between Santos, PETRONAS, Total and KOGAS.
- (k) BG Group's Australian business QGC Pty Limited is the operator and majority owner of the Queensland Curtis LNG (QCLNG) project.
- (l) Australia Pacific LNG (APLNG) is a joint venture between Origin Energy, ConocoPhillips and Sinopec.
- (m) Includes the RG Tanna and Barney Point Coal Terminals.

Source: Queensland Government Statistician's Office, Queensland Treasury, 2016

Appendix B: Operations and projects timeline, resource regions by LGA, year to June

Operation / project	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BOWEN BASIN																
Banana (S)																
APLNG pipeline																
Baralaba mine																
Callide mine																
Callide Power Station																
Cracow gold mine																
Dawson mine																
GLNG pipeline																
QCLNG pipeline																
Central Highlands (R)																
Blackwater mine																
Cook mine																
Crinum mine																
Curragh mine																
Ensham mine																
Foxleigh mine																
GLNG pipeline																
Gregory mine																
Jellinbah mine																
Kestrel mine																
Minerva mine																
Oaky Creek mine																
Rolleston mine																
Yarrabee mine																
<div> <div></div> Construction phase <div></div> Expansion phase <div></div> Production / operations phase <div></div> Affected by flooding <div></div> Closed, on hold or care and maintenance </div>																

Operation / project	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Isaac (R)																
Blair Athol mine																
Broadlea mine																
Broadmeadow mine																
Burton mine																
Byerwen mine (project)																
Capcoal (German Creek mine)																
Capcoal (Grasstree mine)																
Capcoal (Lake Lindsay mine)																
Carborough Downs mine																
Caval Ridge mine																
Clermont mine																
Coppabella mine																
Daunia mine																
Eagle Downs mine (project)																
Eaglefield mine																
Goonyella–Abbot Point Rail project																
Goonyella Riverside mine																
Grosvenor mine																
Hail Creek mine																
Isaac Plains mine																
Lake Vermont mine																
Middlemount mine																
Millennium mine																
Moorvale mine																
Moranbah Ammonium Nitrate Plant																
Moranbah Gas project																
Moranbah North mine																

Construction phase

Expansion phase

Production / operations phase

Affected by flooding

Closed, on hold or care and maintenance

Operation / project	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Isaac (R) cont.																
Nebo Rail maintenance facility																
Newlands OC mine																
Newlands UG mine																
North Goonyella mine																
Norwich Park mine																
Peak Downs mine																
Poitrel mine																
Saraji mine																
South Walker Creek mine																
Whitsunday (R) (Bowen only)																
Abbot Point Coal Terminal (T1)																
Collinsville mine																
Cows mine																
Drake mine																
Jax mine																
Mount Carlton gold mine																
Sonoma mine																
Goonyella–Abbot Point Rail project																
SURAT BASIN																
Maranoa (R)																
APLNG Gas Fields Expansion																
GLNG Gas Fields Expansion																
GLNG pipeline																
Origin Energy Surat operations																
Santos Surat operations																
<div> <div></div> Construction phase <div></div> Expansion phase <div></div> Production / operations phase <div></div> Affected by flooding <div></div> Closed, on hold or care and maintenance </div>																

Queensland Government Statistician's Office

Operation / project	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Toowoomba (R)																
Arrow Energy Surat operations																
Commodore mine																
New Acland mine																
Western Downs (R)																
APLNG Gas Fields Expansion																
APLNG Gas pipeline																
Arrow Energy Surat operations																
Braemar 1 Power Station																
Braemar 2 Power Station																
Cameby Downs mine																
Condamine Power Station																
Daandine Power Station																
Darling Downs Power Station																
Kogan Creek mine																
Kogan Creek Power Station																
Kogan Creek Solar Boost																
Origin Energy Surat operations																
QCLNG Gas Fields Expansion																
QCLNG pipeline																
QGC Surat operations																
Santos Surat operations																
Wilkie Creek mine																

Construction phase

Expansion phase

Production / operations phase

Affected by flooding

Closed, on hold or care and maintenance

Queensland Government Statistician's Office

Operation / project	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GLADSTONE REGION																
APLNG Gas pipeline																
APLNG LNG project																
Boyne Smelter																
Fishermans Landing Port Expansion																
GLNG LNG Plant																
GLNG pipeline																
QCLNG pipeline																
QCLNG project																
Western Basin Dredging project																
WICET Rail project																
WICET Stage 1																
Yarwun Alumina Refinery																
<div> <div></div> Construction phase <div></div> Expansion phase <div></div> Production / operations phase <div></div> Affected by flooding <div></div> Closed, on hold or care and maintenance </div>																

(R) – Regional Council (S) – Shire

Time periods shown are for financial years. Operation and project phase timeframes are indicative only and could extend beyond the period shown.

Source: Queensland Government Statistician's Office, Queensland Treasury 2016 (unpublished), compiled from government and industry sources.

Appendix C: Non-resident population, resource regions by LGA

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Region / LGA	— persons —									
Banana (S)	1,155	1,280	1,090	725	1,005	1,380	1,590	2,750	1,425	880
Central Highlands (R)	2,315	2,350	2,840	2,680	3,225	4,835	5,585	4,740	3,380	3,955
Isaac (R)	7,075	7,195	9,380	8,570	9,905	13,590	17,125	14,950	11,085	10,400
Whitsunday (R) (Bowen only)	220	250	345	250	480	715	735	460	465	430
BOWEN BASIN	10,765	11,075	13,655	12,230	14,615	20,520	25,035	22,900	16,355	15,665
Maranoa (R)	—	—	650	650	930	1,155	2,075	4,665	5,210	1,760
Toowoomba (R)	—	—	—	—	360	105	190	330	180	105
Western Downs (R)	—	—	1,205	1,205	1,250	2,005	4,175	7,485	9,100	3,560
SURAT BASIN^(a)	—	—	1,855	1,855	2,540	3,265	6,445	12,480	14,490	5,425
GLADSTONE REGION (Gladstone (R))	—	—	—	—	—	1,205	3,615	4,890	6,655	5,430
GALILEE BASIN (Barcaldine (R))	—	—	—	—	110	115	110	130	55	30
TOTAL ALL REGIONS	10,765	11,075	15,510	14,080	17,260	25,100	35,200	40,400	37,555	26,550

(R) – Regional Council (S) – Shire

(a) Surat Basin estimates for 2008 do not include Toowoomba (R). Surat Basin estimates for 2009 are extrapolated from 2008 data. See Technical notes for details.

Source: Queensland Government Statistician's Office, Queensland Treasury estimates

Appendix D: Selected industries of employment by LGA, 2001, 2006 and 2011

	2001	2006	2011	Change, 2001–2011	2001	2006	2011	Change, 2001–2011
LGA	— persons employed ^(a) —				— % of total —			
Agriculture, forestry and fishing								
Banana (S)	1,805	1,520	1,315	–490	24.2	18.4	16.1	–8.1
Central Highlands (R)	2,330	1,720	1,695	–635	17.8	10.7	9.4	–8.4
Isaac (R)	1,280	1,070	1,035	–245	13.3	8.7	5.8	–7.4
Whitsunday (R) (Bowen only)	1,610	1,320	1,005	–605	29.1	22.1	15.6	–13.5
Maranoa (R)	1,625	1,490	1,235	–390	26.2	22.1	17.0	–9.2
Toowoomba (R)	5,130	4,580	4,230	–900	8.9	7.2	6.2	–2.6
Western Downs (R)	3,660	3,095	2,680	–980	29.8	23.3	17.1	–12.7
Gladstone (R)	785	570	430	–350	3.9	2.4	1.5	–2.4
Barcaldine (R)	615	520	505	–110	36.0	32.0	28.8	–7.2
Queensland	76,530	63,225	56,705	–19,830	4.9	3.4	2.8	–2.1
Mining^(b)								
Banana (S)	680	1,330	1,520	845	9.1	16.0	18.6	9.5
Central Highlands (R)	2,355	3,565	5,030	2,675	18.0	22.2	27.8	9.8
Isaac (R)	3,300	4,975	7,480	4,180	34.3	40.3	42.3	8.0
Whitsunday (R) (Bowen only)	265	385	625	355	4.8	6.4	9.7	4.9
Maranoa (R)	145	275	525	380	2.3	4.1	7.3	4.9
Toowoomba (R)	155	415	1,065	910	0.3	0.6	1.6	1.3
Western Downs (R)	100	235	1,105	1,010	0.8	1.8	7.1	6.3
Gladstone (R)	205	360	915	710	1.0	1.5	3.2	2.1
Barcaldine (R)	5	15	50	45	0.2	0.8	2.8	2.6
Queensland	19,285	30,840	52,955	33,670	1.2	1.7	2.6	1.4
Total industry of employment^(c)								
Banana (S)	7,470	8,280	8,170	700	100.0	100.0	100.0	—
Central Highlands (R)	13,085	16,020	18,090	5,005	100.0	100.0	100.0	—
Isaac (R)	9,635	12,340	17,685	8,050	100.0	100.0	100.0	—
Whitsunday (R) (Bowen only)	5,535	5,990	6,435	900	100.0	100.0	100.0	—
Maranoa (R)	6,195	6,745	7,255	1,055	100.0	100.0	100.0	—
Toowoomba (R)	57,790	63,940	67,680	9,890	100.0	100.0	100.0	—
Western Downs (R)	12,285	13,295	15,675	3,395	100.0	100.0	100.0	—
Gladstone (R)	19,955	24,040	28,990	9,035	100.0	100.0	100.0	—
Barcaldine (R)	1,705	1,625	1,745	40	100.0	100.0	100.0	—
Queensland	1,568,865	1,840,885	2,052,230	483,370	100.0	100.0	100.0	—

(R) – Regional Council (S) – Shire

(a) Count of persons aged 15 years and over, based on place of enumeration.

(b) Includes coal mining; oil and gas extraction; metal ore mining; non-metallic mineral mining and quarrying; and exploration and other mining support services.

(c) Includes Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas, water and waste services; Construction; Wholesale trade; Retail trade; Accommodation and food services; Transport, postal and warehousing; Information media and telecommunications; Financial and insurance services; Rental, hiring and real estate services; Professional, scientific and technical services; Administrative and support services; Public administration and safety; Education and training; Health care and social assistance; Arts and recreation services; Other services; and Inadequately described/Not stated.

Source: ABS, 2011 Census Community Profiles, Time Series Profile

Queensland Government Statistician's Office

Appendix E: Non-resident population ratio, resource regions by LGA

		2006	2007	2008	2009	2010	2011	2012r	2013r	2014r	2015p
Region / LGA	Population	— persons —									
Banana (S)	Resident population	15,025	14,885	14,880	14,940	14,855	14,810	14,970	15,180	15,230	15,210
	Non-resident population	1,155	1,280	1,090	725	1,005	1,380	1,590	2,750	1,425	880
	<i>Non-residents per 100 residents</i>	8	9	7	5	7	9	11	18	9	6
Central Highlands (R)	Resident population	27,265	27,595	28,090	28,715	29,080	29,540	30,515	31,255	31,585	31,455
	Non-resident population	2,315	2,350	2,840	2,680	3,225	4,835	5,585	4,740	3,380	3,955
	<i>Non-residents per 100 residents</i>	8	9	10	9	11	16	18	15	11	13
Isaac (R)	Resident population	20,370	21,020	21,630	22,235	22,660	23,190	23,755	24,250	24,445	24,265
	Non-resident population	7,075	7,195	9,380	8,570	9,905	13,590	17,125	14,950	11,085	10,400
	<i>Non-residents per 100 residents</i>	35	34	43	39	44	59	72	62	45	43
Whitsunday (R) (Bowen only)	Resident population	12,675	12,805	12,955	13,130	13,200	13,240	13,600	13,735	13,620	13,510
	Non-resident population	220	250	345	250	480	715	735	460	465	430
	<i>Non-residents per 100 residents</i>	2	2	3	2	4	5	5	3	3	3
BOWEN BASIN	Resident population	75,335	76,305	77,555	79,020	79,795	80,780	82,840	84,415	84,880	84,440
	Non-resident population	10,765	11,075	13,655	12,230	14,615	20,520	25,035	22,900	16,355	15,665
	<i>Non-residents per 100 residents</i>	14	15	18	15	18	25	30	27	19	19
Maranoa (R)	Resident population	12,610	12,770	12,950	13,115	13,285	13,435	13,560	13,785	13,855	13,860
	Non-resident population	—	—	650	650	930	1,155	2,075	4,665	5,210	1,760
	<i>Non-residents per 100 residents</i>	—	—	5	5	7	9	15	34	38	13
Toowoomba (R)	Resident population	145,990	147,925	150,140	152,525	154,220	155,475	157,750	160,135	161,900	163,230
	Non-resident population	—	—	—	—	360	105	190	330	180	105
	<i>Non-residents per 100 residents</i>	—	—	—	—	0	0	0	0	0	0
Western Downs (R)	Resident population	29,120	29,520	30,235	30,895	31,465	32,365	32,930	33,400	33,640	33,800
	Non-resident population	—	—	1,205	1,205	1,250	2,005	4,175	7,485	9,100	3,560
	<i>Non-residents per 100 residents</i>	—	—	4	4	4	6	13	22	27	11
SURAT BASIN	Resident population	187,725	190,215	193,325	196,530	198,975	201,275	204,245	207,320	209,400	210,895
	Non-resident population	—	—	1,855	1,855	2,540	3,265	6,445	12,480	14,490	5,425
	<i>Non-residents per 100 residents</i>	—	—	1	1	1	2	3	6	7	3



Queensland Government Statistician's Office

		2006	2007	2008	2009	2010	2011	2012r	2013r	2014r	2015p
Region / LGA	Population	— persons —									
GLADSTONE REGION (Gladstone (R))	Resident population	52,050	53,585	55,425	57,045	57,695	59,460	61,465	63,880	66,070	67,465
	Non-resident population	—	—	—	—	—	1,205	3,615	4,890	6,655	5,430
	<i>Non-residents per 100 residents</i>	—	—	—	—	—	2	6	8	10	8
GALILEE BASIN (Barcaldine (R))	Resident population	3,340	3,340	3,320	3,305	3,295	3,290	3,310	3,360	3,360	3,340
	Non-resident population	—	—	—	—	110	115	110	130	55	30
	<i>Non-residents per 100 residents</i>	—	—	—	—	3	3	3	4	2	1

r = revised p = preliminary

(R) – Regional Council (S) – Shire

Source: ABS 3218.0, *Regional Population Growth, Australia*, 2014–15; Queensland Government Statistician's Office, Queensland Treasury estimates

Appendix F: Non-resident population by accommodation type and WAV bed capacity, resource regions

Region	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	— number —									
Bowen Basin										
Population in WAVs	8,725	9,210	11,435	10,960	12,440	17,690	22,155	21,205	15,465	14,940
Population in other accommodation	2,035	1,865	1,910	1,265	2,170	2,830	2,885	1,690	895	725
Total WAV beds	10,790	13,845	14,895	16,085	17,795	22,730	27,565	32,495	28,210	26,945
Surat Basin										
Population in WAVs	—	—	1,215	1,215	1,260	2,110	5,025	10,930	13,645	5,065
Population in other accommodation	—	—	640	640	1,290	1,140	1,415	1,550	850	360
Total WAV beds	—	—	1,685	1,685	2,175	2,965	7,585	14,305	17,390	9,530
Gladstone region										
Population in WAVs	—	—	—	—	—	5	1,835	4,330	6,400	5,275
Population in other accommodation	—	—	—	—	—	1,200	1,780	560	255	155
Total WAV beds	—	—	—	—	—	80	2,555	8,190	8,065	7,815

Other accommodation includes hotels/motels, caravan parks, and other rental accommodation occupied by non-resident workers.

Source: Queensland Government Statistician's Office, Queensland Treasury estimates

