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Queensland Treasury and Trade

Bowen and Galilee Basins Population Report, 2011

Full-time equivalent population estimates and projections of the non-resident workforces of local government areas, statistical local areas, and selected urban centres and localities; supply and uptake of worker accommodation; and characteristics of resource industry workforces

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Contents

Executive summary

The *Bowen and Galilee Basins Population Report, 2011* (the report) contains a range of population and accommodation data for the Bowen and Galilee Basin regions (refer Figure 1, page 4), based on surveys of accommodation providers and the resource industry conducted by the Office of Economic and Statistical Research (OESR) in 2011. In keeping with previous editions of the *Bowen Basin Population Report* published annually by the Queensland Government since 2006, the report's focus is on quantifying the number of fly-in/fly-out and drive-in/drive-out (FIFO/DIDO) workers living in the region. While these non-resident workers are not included in official resident population estimates published by the Australian Bureau of Statistics (ABS), they represent a sizeable proportion of all people living there and expressing demand for infrastructure and services.

The report provides estimates of the number of non-resident workers present in all local government areas (LGAs), statistical local areas (SLAs) and selected localities in the Bowen and Galilee Basins as at July 2011. These non-resident populations are then added to ABS resident population estimates to give a full-time equivalent (FTE) population. The report also estimates the bed capacity of all commercial accommodation (worker accommodation villages (WAVs), hotels, motels and caravan parks) at the time of survey, and the take up of that accommodation by non-resident workers.

The 2011 report differs from previous editions in that it also provides projections of the FTE population for all LGAs in the Bowen and Galilee Basins to 2018. These forward estimates have been modelled from current and future workforce data provided to OESR by industry sources, including information about the relative proportions of resident and non-resident workers for the construction and operations phases of each operation or project. The report contains other new information, including:

- FTE population and age–sex projections to 2018 for the town of Moranbah
- characteristics of mining workforces in the Bowen Basin region, including employment status and place of usual residence
- a typology of WAVs according to size, purpose and location
- a framework for understanding population impacts of future project workforces in the Galilee Basin
- baseline population and accommodation data for the Galilee Basin.

While no new coal mines were commissioned in the Bowen Basin in 2010-11, the level of employment in resource operations and related construction increased significantly over preceding years. This activity resulted in unprecedented growth of around 7,220 people in the region's FTE population. Most of this growth – around 5,910 people – consisted of non-resident workers, bringing the total FIFO/DIDO population of the region to 20,520 as at July 2011.

Like much of Queensland, all LGAs in the Bowen Basin experienced heavy rain and flood events, peaking in December 2010 – January 2011. Most open-cut mines experienced in-pit flooding, rail infrastructure was damaged, and coal production was curtailed to the extent that many operations were obliged to declare force majeure. To make up lost production, and to take advantage of rising coal prices, additional workers were engaged to assist with dewatering operations, mine reconstruction and the development of new pits. Most of these were non-resident contractors. The region's non-resident population was further boosted by temporary workers engaged in flood reconstruction and mining-related infrastructure projects, such as the Northern Missing Link rail project.

While much attention is focused on changes to the non-resident population, it should not be overlooked that all LGAs in the Bowen Basin also recorded resident population growth during 2010-11. In particular, Central

Highlands Regional Council grew by 760 residents or 2.5 per cent, making it the sixth fastest growing LGA in Queensland. This growth is particularly notable, in view of the constraints imposed by flooding during the year. Looking forward to 2018, it is expected that the Bowen Basin will continue to grow strongly, and much of that growth will be in the form of non-resident workforces engaged in resource industry and infrastructure development. New mines such as Daunia, Caval Ridge and Grosvenor have been approved and will be built, while others are undergoing advanced planning and approval processes. Construction of new rail and port facilities, water storage and distribution networks, and development associated with the coal seam gas industry will also contribute to ongoing regional employment.

This period is also likely to see the emergence of mining in the Galilee Basin, most notably in the LGA of Barcaldine. While the scale of mines planned for the region is significant, and would generate large workforces in construction and operations, it is likely that much of the associated population impacts would take the form of non-resident workers. Some elements of these projects, including rail and port construction, would occur in the Bowen Basin and add to growth in that region.

Summary findings of this report are:

One in five people living in the Bowen Basin in July 2011 was a FIFO/DIDO worker
The Bowen Basin had an estimated FTE population of 105,370 people in July 2011. Some 84,850 of these were local residents, while 20,520 were non-resident workers living there while on-shift.

The Bowen Basin's FTE population grew by around 7,220 in the year to July 2011
The FTE population of the Bowen Basin increased by 7,220 people or 7 per cent between 2010 and 2011. Most of this growth (5,910 people) occurred in the non-resident population, representing a 40 per cent increase over the preceding year. The resident population also increased by 1,310 people.

Isaac (R) contained around two-thirds of the Bowen Basin's non-resident population in July 2011
Some 13,590 of the Bowen Basin's 20,520 non-resident workers on-shift in July 2011 were counted in the LGA of Isaac, representing 66 per cent of the total. Central Highlands LGA accounted for around one-quarter of the regional total (4,830 people, 24 per cent), with smaller numbers in Banana (1,380 people, 7 per cent) and Whitsunday (Bowen) (720 people, 3 per cent).

The FTE population of Isaac (R) is now approaching that for Central Highlands (R)
Isaac's FTE population increased by 4,060 people between 2010 and 2011, reaching 36,540 in July 2011. This was only slightly below that for Central Highlands (36,620 people). While the FTE population of Isaac is expected to outgrow Central Highlands in 2012, due largely to strong growth in its non-resident population, Central Highlands will continue to have the largest resident population.

Over 29,310 workers were engaged in mining operations across the Bowen Basin in July 2011
According to company estimates, a total of 29,310 workers were engaged in mining production, in-house maintenance and ad hoc construction in 39 existing operations across the region. More than half of these (54 per cent) were contractors, while the remaining 46 per cent were company employees.

Fewer than half of all mining operations workers in the Bowen Basin are likely to reside locally
An estimated 47 per cent of operations employees and contractors for mines in the Bowen Basin were residents of the same LGA where they worked in July 2011. The remaining 53 per cent were non-resident workers, who lived elsewhere.

Most non-resident mining operations workers in the Bowen Basin are DIDO rather than FIFO

Some 41 per cent of the region's mining operations workers in July 2011 were non-resident workers who were likely to travel between place of home and place of work by road, compared with only 12 per cent who were likely to travel by air. An estimated one-quarter (25 per cent) of operations workers lived in the Mackay area, while 9 per cent lived in the Rockhampton/Gladstone area.

Capacity of worker accommodation villages in the Bowen Basin expanded rapidly in 2010-11

The total capacity of all WAVs across the Bowen Basin expanded by 4,940 beds or 28 per cent during the year to July 2011, reaching 22,730 beds. Those in the LGA of Isaac made up most of this expansion (3,280 beds). WAVs housed 86 per cent of all non-resident workers in the Bowen Basin in 2011.

Availability of hotel/motel accommodation was limited across the Bowen Basin in 2011

The estimated capacity of hotels and motels in the Bowen Basin in July 2011 was 2,390 rooms, of which 1,970 were occupied by non-resident workers on-shift. Many operators reported limited capacity to provide accommodation for tourists or other visitors, with just 3 per cent of hotel/motel rooms in the region considered to be vacant and available.

The FTE population of the Bowen Basin is projected to reach 128,550 by 2018

According to OESR's medium series projections, the FTE population of the Bowen Basin may reach 128,550 by 2018, comprising 101,790 residents (79 per cent) and 26,760 non-resident workers on-shift (21 per cent). This represents an increase of 23,180 people from July 2011.

Moranbah's FTE population is projected to increase significantly by 2018

In 2011, Moranbah had an estimated FTE population of 12,530 people, comprising 8,980 residents and 3,550 non-resident workers on-shift. According to OESR's medium series projection, Moranbah will reach around 19,910 people by 2018, due largely to growth in its non-resident population.

Population growth from mining has yet to occur in the Galilee Basin

The impact of resource industry workforces in the Galilee Basin has been limited to date, with most activity confined to exploration and proving of resources. Around 110 non-resident workers on-shift were counted in Barcaldine LGA in July 2011. The majority were in Jericho SLA (80 people), with around two-thirds (67 per cent) of these counted in WAVs.

1 Introduction

1.1 About this report

The *Bowen and Galilee Basins Population Report, 2011* (the report) contains a range of population and accommodation data for the Bowen and Galilee Basins, based on surveys conducted by the Office of Economic and Statistical Research (OESR) in 2011. The purpose of the report is to provide reliable population estimates and projections to inform policy and planning processes.

This edition of the report marks the sixth year since annual monitoring of the Bowen Basin's non-resident worker population was initiated by the Queensland Government. In addition to presenting similar full-time equivalent (FTE) population estimates and accommodation data to previous years, the 2011 report contains considerable additional material, including FTE population projections for the Bowen Basin and Moranbah, previously unpublished results from the Resource Operations Employment Survey, and population data and background information for the Galilee Basin.

The Bowen Basin segment of the report comprises:

- population data, including estimates of non-resident workers on-shift, FTE population estimates, FTE population projections, and a case study with FTE population projections for Moranbah
- an examination of the characteristics of mining workforces in the region
- a study of non-resident workers' use of commercial accommodation, with an emphasis on worker accommodation villages (WAVs).[1]

The 2011 edition also incorporates the inaugural Galilee Basin population and accommodation report. OESR conducted annual surveys of commercial accommodation providers and resource companies in the Galilee Basin for the first time in 2010, and will continue to monitor the region in future years. Due to the relatively limited influence of mining in the Galilee Basin to date, it does not yet warrant a separate report, but is included as a standalone chapter. This section of the report provides non-resident worker and accommodation data for the Galilee Basin for 2010 and 2011 and future estimates of non-resident workers on-shift, along with a framework for understanding the population impacts of future project workforces.

1.2 Background

Since the introduction of fly-in/fly-out and drive-in/drive-out (FIFO/DIDO) work practices, it has become increasingly common for mining areas to have a high incidence of non-resident workers who commute long distances to work and live in the area temporarily while rostered on, but who return to their place of usual residence when rostered off. While in the area, non-resident workers occupy commercial accommodation (hotels, motels or caravan parks) or worker accommodation in localities adjacent to the mines. WAVs are a commonly used accommodation solution, and may be located in town centres or on a mining lease.

Non-resident workers do not meet the Australian Bureau of Statistics' (ABS) criteria for a 'usual resident' of the area where they work, and so are not included in the area's estimated resident population (ERP). Nevertheless, the non-resident worker population creates additional demand for goods, services and

[1] A particular type of non-private accommodation, usually provided to house unaccompanied non-resident workers and typically consisting of demountable dwellings arranged in a camp. WAVs were previously known as single person quarters (SPQs). See Chapter 4 or the Glossary of terms and abbreviations for further details.

infrastructure while living in the area, which must be planned for and provided by both government and the private sector.[2]

The FTE population measure includes the usual resident population (people who live in the area permanently) and non-resident workers (those who regularly stay in the area for extended periods when working, but who are not counted as usual residents). The concept was developed to provide a more complete picture of the service population of an area and provides a better measure of total demand for goods, services and infrastructure in regions where there is a high incidence of FIFO/DIDO workers. See Appendix A for further details.

1.3 Methodology and data sources

The non-resident worker data presented in this report are sourced from three surveys conducted by OESR in 2011:

- The *Survey of Accommodation Providers* counted the number of non-resident workers staying in commercial accommodation in the Bowen and Galilee Basins during the week of Monday 25 to Friday 29 July 2011. The survey covered non-resident workers living in worker accommodation villages (WAVs), hotels, motels, caravan parks and other accommodation on a medium to long-term basis, based on accommodation providers' best knowledge of their tenants.
- The *Resource Operations Employment Survey* collected data from resource companies on their current workforces, including employees and contractors, construction, production and maintenance workers, employed in existing operations as at June 2011.
- The *Resource Projects Employment Survey* gathered data on expected construction and operation workforce numbers and anticipated scheduling of resource projects directly from proponents, providing an estimate of workforce numbers for future projects to 2018.

See Appendix B for further details on survey scope, methodology and related concepts. Lists of existing operations and future projects surveyed are included in Appendix C and Appendix D respectively.

The methodology adopted for this study follows that used previously for estimating the FTE population of the Bowen Basin[3] and similar studies for the Surat Basin.[4] More information on the FTE population methodology is available in Appendix A.

1.4 Geographical coverage

In technical terms, the 'Bowen Basin' and 'Galilee Basin' refer to the geological formations or coal basins that give these regions their names. For the purposes of reporting population statistics, OESR has defined these regions in demographic rather than geological terms, to include relevant populations and align with the statistical geography used by the ABS.

The geographical area covered by this report includes nine statistical local areas (SLAs) and key urban centres and localities (UC/Ls) within the four local government areas (LGAs) that make up the Bowen Basin – Banana Shire, Central Highlands Regional Council, Isaac Regional Council and Whitsunday Regional Council (Table 1, Figure 1). For Whitsunday, note that this report only includes the SLA of Bowen and excludes other parts of the LGA.

[2] See Cook, T. *When ERPs aren't enough – a discussion of issues associated with service industry population estimation*.
[3] See OESR, *Bowen Basin Population Report, 2010*, and previous studies.
[4] OESR, *Surat Basin Population Report, 2010.*

Table 1: Bowen Basin and Galilee Basin LGAs and SLAs and naming conventions

Region	LGA	Full SLA name[(a)]	Abridged SLA name[(b)]
Bowen Basin	Banana (S)	Banana (S)	Banana
	Central Highlands (R)	Central Highlands (R) – Bauhinia	Bauhinia
		Central Highlands (R) – Duaringa	Duaringa
		Central Highlands (R) – Emerald	Emerald
		Central Highlands (R) – Peak Downs	Peak Downs
	Isaac (R)	Isaac (R) – Belyando	Belyando
		Isaac (R) – Broadsound	Broadsound
		Isaac (R) – Nebo	Nebo
	Whitsunday (R)	Whitsunday (R) – Bowen	Bowen
Galilee Basin	Barcaldine (R)	Barcaldine (R) – Aramac	Aramac
		Barcaldine (R) – Barcaldine	Barcaldine
		Barcaldine (R) – Jericho	Jericho

(R) – Regional Council (S) – Shire
(a) ABS ASGC 2011 SLA name.
(b) Abridged SLA name used throughout this report.

Source: ABS 1216.0, *Australian Standard Geographical Classification (ASGC), July 2011*

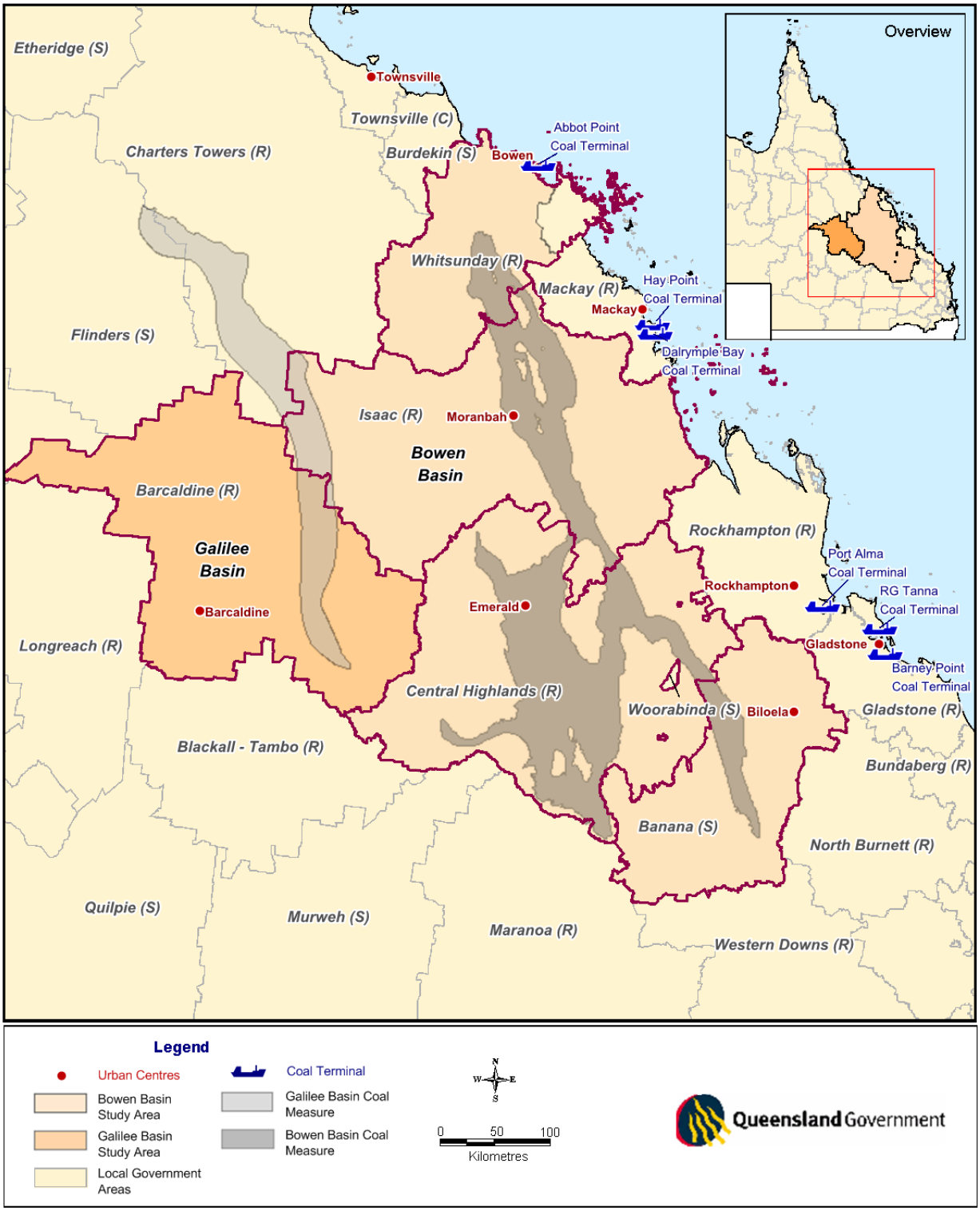
The area covered by the Galilee Basin in this report comprises the three SLAs within the Barcaldine Regional Council area (Table 1, Figure 1). While the Galilee Basin extends north into Isaac, Charters Towers and Flinders LGAs, early resource development activities have been concentrated in the southern end of the basin and Barcaldine LGA is the area most impacted to date.[5] See Chapter 5 for further details.

Appendices E–G contain maps of operational coal mines and future mining projects in the Bowen and Galilee Basins.

For brevity and ease of reference, Australian Standard Geographical Classification (ASGC) 2011 SLA names have been shortened in tables and throughout the text. For example, the report refers to 'the SLA of Bauhinia' or 'Bauhinia SLA', rather than the full ASGC name of 'Central Highlands (R) – Bauhinia' (Table 1). The LGA of Whitsunday is referred to as 'Whitsunday (R) (Bowen only)' or 'Whitsunday (Bowen)', to indicate the part of the LGA covered in this report. Refer to the technical notes for a more detailed explanation of the statistical geography used in this report and changes to statistical geography effective from July 2012.

[5] Adani Mining's proposed Carmichael project, which is located in Isaac LGA, is treated as part of the Bowen Basin for demographic purposes. Many population impacts relating to the port and rail components of Galilee Basin projects will be felt in the Bowen Basin. This overlap is factored into the projections for the relevant areas.

Figure 1: Bowen and Galilee Basins, study areas and coal measures, 2011



(C) – City (R) – Regional Council (S) – Shire

Source: OESR, 2012

2 Bowen Basin population report

2.1 Introduction

The Bowen Basin is Queensland's most important source of export coal and contains the majority of operational coal mines in the State (Figure 2). As at June 2011 there were 39 mines operating in the Bowen Basin, with no new mines opened during the previous year (Appendix C).

Most mines in the Bowen Basin were affected by flooding between October 2010 and May 2011, curtailing production at surface mines and restricting access to underground operations. As a result, Queensland's saleable coal production was lower than the previous year, falling from 205.6 million tonnes (Mt) in 2009-10 to 179.8 Mt in 2010-11.[6] OESR's surveys, conducted in June and July 2011, captured a large number of non-resident workers in the area engaged in dewatering, reconstruction and other post-flood related work. This contributed to an increase in the number of non-resident workers counted between 2010 and 2011, despite the drop in production.

Growth in the count of non-resident workers can also be attributed to construction and production workforces associated with the expansion of mines that are already in operation. New resource industry projects, including those associated with the Galilee Basin, are expected to contribute significantly to population growth in Bowen Basin LGAs in coming years. See Appendix D for a list of future mines and related infrastructure projects as at June 2011.

This chapter deals largely with the non-resident worker population of the Bowen Basin, and its growth over recent years. It also provides FTE population estimates for all LGAs, SLAs and selected urban centres and localities in the Bowen Basin for July 2011, projections of the FTE populations of LGAs to 2018, and UC/L-level FTE population projections for Moranbah to 2018.

2.2 Count of non-resident workers on-shift

A prominent feature of the Bowen Basin's day to day population is the large number of non-resident workers, who live in the area temporarily while rostered on but have their place of usual residence elsewhere. Most of these workers are employees or contractors engaged in resource industry production, construction and maintenance, although the group also includes construction workers engaged in related infrastructure projects. Because of shift arrangements, not all members of the non-resident workforce are present in the local area at one time. For that reason, all non-resident population figures given in this section of the report refer to the *number of non-resident workers on-shift*, rather than total non-resident workforce numbers.

OESR's Survey of Accommodation Providers counted 20,520 non-resident workers on-shift and living in the Bowen Basin at the end of July 2011 (Table 2). Isaac LGA had the largest number of non-resident workers on-shift in the region, with 13,590 people representing around two-thirds of the Bowen Basin total (66 per cent). Central Highlands LGA accounted for around one-quarter of the regional total (4,830 people, 24 per cent), with smaller numbers in Banana (1,380 people, 7 per cent) and Whitsunday (Bowen) (720 people, 3 per cent).

At the SLA level, Nebo had the largest non-resident worker population, with 5,150 people making up 25 per cent of the Bowen Basin total. The other two SLAs in Isaac LGA, Broadsound (4,360 people, 21 per cent) and Belyando (4,080 people, 20 per cent), were the next largest Bowen Basin SLAs in terms of non-resident workers on-shift.

[6] Department of Natural Resources and Mines, 2012

Table 2: Non-resident workers on-shift, Bowen Basin LGAs and SLAs, 2006 to 2011

		Non-resident workers on-shift			Change	
		2006	2010	2011	2010-11	2006-11
LGA	SLA[(a)]	— number —			— number —	
Banana (S)	***Banana***	***1,150***	***1,010***	***1,380***	***380***	***230***
Central Highlands (R)	Bauhinia	150	270	270	0	120
	Duaringa	750	1,380	2,140	760	1,390
	Emerald	690	910	1,420	510	730
	Peak Downs	720	670	1,010	340	290
	LGA total	***2,310***	***3,230***	***4,830***	***1,610***	***2,520***
Isaac (R)	Belyando	2,120	3,280	4,080	800	1,960
	Broadsound	1,820	2,910	4,360	1,450	2,540
	Nebo	3,140	3,710	5,150	1,440	2,020
	LGA total	***7,080***	***9,900***	***13,590***	***3,690***	***6,510***
Whitsunday (R) (Bowen only)[(b)]	***Bowen***	***220***	***480***	***720***	***240***	***500***
BOWEN BASIN TOTAL		**10,760**	**14,610**	**20,520**	**5,910**	**9,760**

(R) – Regional Council (S) – Shire
(a) SLA names are abbreviated for ease of reference; see technical notes for details.
(b) Data for Whitsunday (R) (Bowen only) for 2011 include Merinda, which was not included in previous years' collections.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2006 to 2011

The estimated number of non-resident workers on-shift in the Bowen Basin grew from 14,610 in 2010 to 20,520 in 2011, an increase of 5,910 people or 40 per cent. This represents the largest single year increase recorded since annual data collections began in 2006, and takes the non-resident worker population of the Bowen Basin to over 20,000 for the first time. Factors contributing to this growth include the scale of recovery work associated with floods in late 2010 and early 2011, increased efforts to return to full production following flooding, and the construction and expansion of existing mines and related projects. The non-resident population was also boosted by workers involved in the construction of mining related infrastructure, such as the Northern Missing Link rail project, and independent contractors who service mining operations.

Most non-resident worker population growth in the Bowen Basin in 2010-11 occurred in the LGA of Isaac (R) (3,690 people or 62 per cent of growth), with substantial increases recorded in all three SLAs. Broadsound and Nebo each recorded particularly large increases of more than 1,400 non-resident workers on-shift (around a quarter of total growth), with smaller but still considerable growth of around 800 in Belyando. Central Highlands LGA recorded an additional 1,610 non-resident workers on-shift compared with 2010 (27 per cent of regional growth), with most of this growth occurring in Duaringa SLA (760 people).

Annual data should be interpreted with caution and considered within the longer term context, taking into account the particular dynamics of non-resident workforces in resource communities. Large variations can occur from year to year due to factors such as the movement of large construction workforces and short-term increases or decreases in production. Non-resident workforces are more affected by these fluctuations than resident workforces, effectively acting as a buffer for employment change in resource communities.

2.3 FTE population estimates

The FTE population measure is the sum of the estimated resident population and the number of non-resident workers on-shift for a given year (see Chapter 1 and Appendix A for further details). As at July 2011, the Bowen

Basin had an estimated FTE population of 105,370 people, comprising 84,850 residents and 20,520 non-resident workers on-shift (Table 3). Non-resident workers on-shift made up just under one-fifth (19 per cent) of the FTE population of the Bowen Basin in 2011, compared with 15 per cent in 2010.

The FTE population of the Bowen Basin increased by 7,220 people (or 7 per cent) between 2010 and 2011, with non-resident workers accounting for most of this growth (5,910 people). Isaac (R) experienced the most notable FTE population increase at the LGA level, growing by 4,060 people or 12 per cent. Non-resident workers on-shift contributed the majority of this growth (3,690 people). Isaac's FTE population (36,540 people) is now close to that of Central Highlands (36,620 people), but with a far greater proportion of non-resident workers on-shift (37 per cent, Central Highlands 13 per cent).

While small compared with non-resident worker population growth, all Bowen Basin LGAs also experienced resident population increases between 2010 and 2011. The resident population of Central Highlands grew by 2.5 per cent between 2010 and 2011, making it the sixth fastest growing LGA in Queensland.[7]

Table 3: FTE population estimates for Bowen Basin LGAs, 2010 to 2011

LGA	Year	Estimated resident population	Total non-resident workers	FTE population estimate	FTE population change
		— number —			%
Banana (S)	2010r	15,570	1,010	16,570	
	2011p	15,590	1,380	16,970	
	Change, 2010-11	*30*	*380*	*400*	*2*
Central Highlands (R)	2010r	31,020	3,230	34,250	
	2011p	31,780	4,830	36,620	
	Change, 2010-11	*760*	*1,610*	*2,370*	*7*
Isaac (R)	2010r	22,590	9,900	32,490	
	2011p	22,960	13,590	36,540	
	Change, 2010-11	*370*	*3,690*	*4,060*	*12*
Whitsunday (R) (Bowen only)[(a)]	2010r	14,360	480	14,840	
	2011p	14,520	720	15,230	
	Change, 2010-11	*150*	*240*	*390*	*3*
BOWEN BASIN TOTAL	**2010r**	**83,540**	**14,610**	**98,150**	
	2011p	**84,850**	**20,520**	**105,370**	
	Change, 2010-11	***1,310***	***5,910***	***7,220***	***7***

(R) – Regional Council (S) – Shire r = revised p = preliminary
(a) Non-resident worker data for Whitsunday (Bowen) for 2011 include Merinda, which was not included in previous years' collections.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: ABS 3218.0*, Regional Population Growth, Australia, 2010-11*; OESR, Survey of Accommodation Providers, 2010 and 2011

Table 4 contains a full summary of FTE population estimates for LGAs, SLAs and selected UC/Ls in the Bowen Basin as at July 2011. Nebo SLA in Isaac stands out as the SLA with the greatest concentration of non-resident workers on-shift, with non-resident workers (5,150 people, 63 per cent) outnumbering residents (3,010 people, 37 per cent). These figures reflect the scale and intensity of mining and construction activity in this area, the location of a number of large WAVs, and the small resident populations of local townships.

[7] ABS 3218.0*, Regional Population Growth, Australia, 2010-11*. See OESR, *Population Growth Highlights and Trends, 2012* (forthcoming) for further discussion of regional population change in Queensland.

Table 4: FTE population estimates for Bowen Basin LGAs, SLAs and selected UC/Ls, July 2011

LGA	SLA[a]	UC/L	Estimated resident population[b]	Total non-resident workers on-shift	FTE population estimate
			— number —		
Banana (S)	*Banana*	Biloela	5,830	250	6,070
		Moura	1,890	800	2,690
		SLA remainder	7,880	330	8,210
	Banana (S) total		***15,590***	***1,380***	***16,970***
Central Highlands (R)	*Bauhinia*	Springsure	930	50	980
		SLA remainder	1,490	220	1,710
		SLA total	*2,420*	*270*	*2,680*
	Duaringa	Blackwater	5,550	2,000	7,550
		Bluff	410	100	510
		SLA remainder	1,410	40	1,450
		SLA total	*7,370*	*2,140*	*9,510*
	Emerald	Emerald	13,830	850	14,690
		SLA remainder	4,580	570	5,140
		SLA total	*18,410*	*1,420*	*19,830*
	Peak Downs	Capella	930	270	1,210
		Tieri	1,680	740	2,420
		SLA remainder	970	0	970
		SLA total	*3,590*	*1,010*	*4,600*
	Central Highlands (R) total		***31,780***	***4,830***	***36,620***
Isaac (R)	*Belyando*	Clermont	2,000	510	2,510
		Moranbah	8,790	3,560	12,350
		SLA remainder	1,650	0	1,650
		SLA total	*12,440*	*4,080*	*16,510*
	Broadsound	Dysart	3,450	2,080	5,530
		Middlemount	2,220	2,280	4,500
		SLA remainder	1,840	0	1,840
		SLA total	*7,510*	*4,360*	*11,870*
	Nebo	Coppabella[c]	630	2,210	2,840
		Glenden	1,320	1,620	2,940
		Nebo	350	1,320	1,670
		SLA remainder	720	0	720
		SLA total	*3,010*	*5,150*	*8,160*
	Isaac (R) total		***22,960***	***13,590***	***36,540***
Whitsunday (R) (Bowen (S) only)	*Bowen*	Collinsville	2,060	590	2,650
		SLA remainder	12,460	130	12,580
	Whitsunday (R) (Bowen (S) only total		***14,520***	***720***	***15,230***
BOWEN BASIN TOTAL			**84,850**	**20,520**	**105,370**

(R) – Regional Council (S) – Shire
(a) SLA names are abbreviated for ease of reference; see technical notes for details.
(b) 2011 preliminary ERP.
(c) ERP for Coppabella is based on collection district (CD) 3052004, which includes population outside of Coppabella village.
Out-of-town WAVs have been allocated to the nearest locality. Smaller localities with only one accommodation provider are included in SLA remainder to maintain confidentiality.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: ABS 3218.0*, Regional Population Growth, Australia, 2010-11*; OESR, Survey of Accommodation Providers, 2011

Figure 2: LGAs, SLAs and selected UC/Ls in Bowen Basin study area, 2011

(C) – City (R) – Regional Council (S) – Shire
SLA names are abbreviated for ease of reference; see technical notes for details.

Source: OESR, 2012

2.4 Projected non-resident workers on-shift

OESR has prepared forward estimates of the number of non-resident workers on-shift in Bowen Basin LGAs from 2012 to 2018. These projections are based on estimates of the non-resident workforce on-shift established in 2011 through OESR's accommodation and resource operations surveys, along with information from project proponents about the composition of their future workforces and likely arrangements for their accommodation. Appendix D provides a list of future projects included in these projections, while Appendix H provides a more detailed account of the projection methodology.

The low, medium and high series projections of non-resident workers on-shift reflect differing assumptions about the likelihood of projects proceeding according to advised commencement dates, sequencing of project stages, the timing of workforce peaks, and changes to the size of the residual non-resident workforce. Changes to any of these factors can make a significant difference to the cumulative non-resident workforce at a given point in time, particularly during construction phases. Given the inherent uncertainty about exact timeframes for projects to proceed, these projections should be considered as being indicative rather than literal accounts of future growth.

When the non-resident worker projections are used for planning purposes, OESR strongly recommends that users apply the medium series as the preferred starting point, but to have regard to the high and low series as upper and lower boundaries respectively. Users are also advised to have regard to short-term influences such as adverse weather, industrial action, labour shortages and supply chain delays, which can all result in changes to project scheduling and to these projections.

The number of non-resident workers on-shift in the Bowen Basin is expected to peak in 2016, before declining slightly to 2018 (Table 5). A peak of 31,060 non-resident workers on-shift is projected under the medium series, representing an increase of 10,540 people between 2011 and 2016. Larger growth of 14,240 non-resident workers on-shift is expected according to the high series, with a considerably smaller increase of 4,030 people anticipated under the low series over this same period.

Table 5: Projected non-resident workers on-shift, low, medium and high series, Bowen Basin, 2011 to 2018

	Number of non-resident workers on-shift at 30 June[(a)]							
	2011	2012	2013	2014	2015	2016	2017	2018
Projection series	— number —							
Low series	20,520	21,480	23,700	24,440	24,100	24,550	23,480	23,220
Medium series	20,520	22,110	24,640	26,400	29,080	31,060	27,600	26,760
High series	20,520	22,480	25,910	27,760	31,170	34,760	32,600	31,510

(a) Represents an estimate of the cumulative non-resident worker population on-shift for the middle of the indicated year. Due to the volatile nature of non-resident workforces and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, 2012

Table 6 summarises the medium series projections for each of the four LGAs in the Bowen Basin. Low and high series non-resident worker population projections for these LGAs are also included in Appendix J. The LGA of Isaac is expected to receive the majority of non-resident growth anticipated under all three projection series, with 17,970 people in 2018 accounting for 67 per cent of the total non-resident worker population of the Bowen Basin expected according to the medium series.

Table 6: Projected non-resident workers on-shift, medium series, Bowen Basin LGAs, 2011 to 2018

	Number of non-resident workers on-shift at 30 June[(a)]							
	2011	2012	2013	2014	2015	2016	2017	2018
LGA	— number —							
Banana (S)	1,380	1,430	1,520	1,750	1,980	1,830	1,520	1,610
Central Highlands (R)	4,830	5,020	5,350	6,480	6,230	6,400	6,010	5,880
Isaac (R)	13,590	14,860	16,730	16,730	17,600	19,290	18,650	17,970
Whitsunday (R) (Bowen only)	720	790	1,040	1,440	3,270	3,540	1,420	1,300
BOWEN BASIN TOTAL	**20,520**	**22,110**	**24,640**	**26,400**	**29,080**	**31,060**	**27,600**	**26,760**

(R) – Regional Council (S) – Shire

(a) Represents an estimate of the cumulative non-resident worker population on-shift for the middle of the indicated year. Due to the volatile nature of non-resident workforces and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, 2012

2.5 FTE population projections, Bowen Basin

The FTE population measure comprises the sum of the estimated resident population and non-resident workers on-shift (see Chapter 1 and Appendix A). OESR's current series of resident population projections (2011 edition), added to the projected number of non-resident workers on-shift, provide the basis for projecting the FTE population. Each series represents slightly different assumptions about the drivers of growth, and the resulting population outcomes in the event of these occurring.[8]

While any combination of the three series of resident and non-resident projections may be used to estimate an FTE population, OESR recommends that the medium series of both sets should be used as a starting point, as per the example in Table 7. Any variations from that combination should be carefully considered. For example, where existing operations and future projects place an increasing emphasis upon FIFO/DIDO workers over locally resident workers, it may be appropriate to add the high series non-resident worker projection to the low series resident population projection to reach an FTE population mix. High, medium and low series projections are provided for the resident population and the non-resident workforce on-shift in Appendices I and J. Medium series FTE population projections for Bowen Basin LGAs are included in Appendix K.

Table 7: Projected FTE population by components, medium series, Bowen Basin, 2011 to 2018

	2011	2012	2013	2014	2015	2016	2017	2018
	— number —							
Estimated resident population[(a)]	84,850	87,750	91,220	93,590	95,930	97,830	99,790	101,790
Non-resident workers on-shift[(b)]	20,520	22,110	24,640	26,400	29,080	31,060	27,600	26,760
FTE population	**105,370**	**109,860**	**115,860**	**119,990**	**125,010**	**128,890**	**127,390**	**128,550**

(a) Medium series resident population projection.

(b) Medium series projection for non-resident workers on-shift. Represents an estimate of the cumulative non-resident worker population on-shift for the middle of the indicated year. Due to the volatile nature of non-resident workforces and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

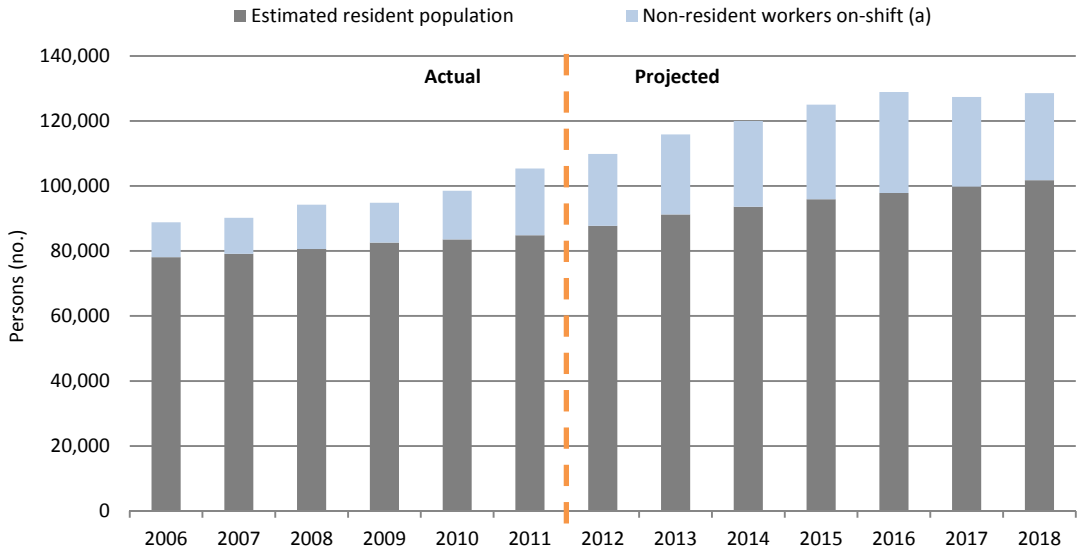
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

[8] OESR's current resident population projections (2011 edition) take into account assumptions about net migration resulting from resource industry development, based upon advice received from industry and other current sources at the time of preparation. The high, medium and low series resident population projections also reflect different assumptions about natural increase.

The FTE population of the Bowen Basin is projected to reach 128,550 by 2018, according to the medium series, comprising 101,790 residents (79 per cent) and 26,760 non-resident workers on-shift (21 per cent) (Table 7, Figure 3). Non-resident workers on-shift as a proportion of the total FTE population are expected to peak in 2016 at 24 per cent.

Figure 3: Estimated and projected FTE population by components, medium series, Bowen Basin, 2006 to 2018



(a) Represents an estimate of the cumulative non-resident worker population on-shift projected for the middle of the indicated year. Due to the volatile nature of non-resident workforces and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

Source: ABS 3218.0, *Regional Population Growth, Australia, 2010-11*; OESR, Survey of Accommodation Providers, 2006–2011; OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

2.6 FTE population projections, Bowen Basin LGAs

FTE population projections for LGAs in the Bowen Basin demonstrate notable differences in the influence that mining workforces will have on population growth in these areas out to 2018. These differences are most apparent in Isaac (R) and Central Highlands (R), which contain most of the Bowen Basin's current and future mining activity. Elsewhere, the influence of mining on population growth is likely to be less acute in the LGAs of Banana and Whitsunday (Bowen).

As noted in Section 2.3, Central Highlands (R) and Isaac (R) had comparable FTE populations in 2011 (36,620 and 36,540 people respectively), but with a much larger proportion of non-resident workers on-shift in Isaac (37 per cent) than in Central Highlands (13 per cent) (Figure 4, Table 8). Isaac's recent FTE population increases were driven largely by non-resident worker growth, compared with notable resident population growth in Central Highlands. It is likely that this trend will continue, with non-resident workers on-shift projected to account for 41 per cent of Isaac's FTE population in 2016. By contrast, the FTE population of Central Highlands is also projected to increase between 2011 and 2018, although non-resident workers are likely to constitute only 13 to 16 per cent of the total.

Figure 4: Projected FTE population by components, medium series, Central Highlands (R) and Isaac (R), 2011 to 2018

(R) – Regional Council
(a) Represents an estimate of the cumulative non-resident worker population on-shift projected for the middle of the indicated year. Due to the volatile nature of non-resident workforces and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

Source: OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

Table 8: Projected FTE population by components, medium series, Central Highlands (R) and Isaac (R), 2011 to 2018

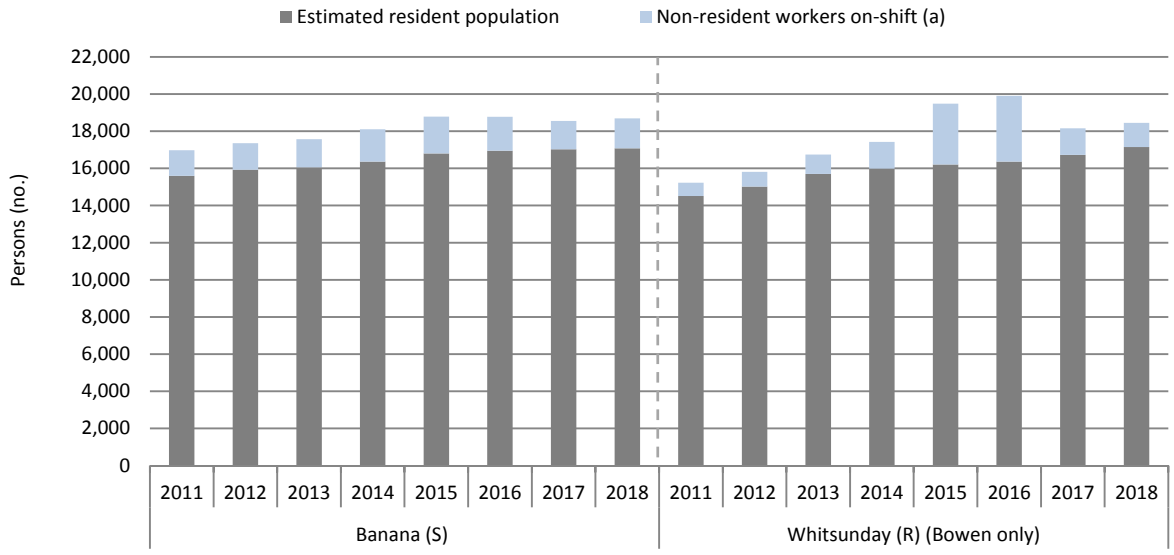
	2011	2012	2013	2014	2015	2016	2017	2018
	— number —							
	Central Highlands (R)							
Estimated resident population[(a)]	31,780	32,550	33,640	34,560	35,420	36,260	37,140	38,050
Non-resident workers on-shift[(b)]	4,830	5,020	5,350	6,480	6,230	6,400	6,010	5,880
FTE population	**36,620**	**37,570**	**38,990**	**41,050**	**41,650**	**42,650**	**43,150**	**43,920**
	Isaac (R)							
Estimated resident population[(a)]	22,960	24,260	25,830	26,680	27,490	28,270	28,890	29,520
Non-resident workers on-shift[(b)]	13,590	14,860	16,730	16,730	17,600	19,290	18,650	17,970
FTE population	**36,540**	**39,120**	**42,560**	**43,410**	**45,090**	**47,560**	**47,540**	**47,490**

(R) – Regional Council
(a) Medium series resident population projection.
(b) Medium series projection for non-resident workers on-shift. Represents an estimate of the cumulative non-resident worker population on-shift for the middle of the indicated year. Due to the volatile nature of non-resident workforce numbers and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

The other Bowen Basin LGAs, Banana (S) and Whitsunday (Bowen), are projected to experience smaller FTE population growth than Central Highlands and Isaac. According to the medium series projections, non-resident workers on-shift will account for 8 to 11 per cent of the FTE population of Banana (S) between 2011 and 2018 (Figure 5). Temporary construction workforces for port and rail projects in Whitsunday (Bowen) are likely to see steep increases in the non-resident components of that LGA's FTE population. The number of non-resident workers on-shift is projected to increase steeply in 2015 and peak at 3,540 people (18 per cent of the FTE population) in 2016, but will remain relatively stable at between 5 and 8 per cent of the FTE population for the remainder of this period.

Figure 5: Projected FTE population by components, medium series, Banana (S) and Whitsunday (R) (Bowen only), 2011 to 2018



(R) – Regional Council (S) – Shire

(a) Represents an estimate of the cumulative non-resident worker population on-shift projected for the middle of the indicated year. Due to the volatile nature of non-resident workforce numbers and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

Source: OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

2.7 Moranbah case study

In 2011, OESR undertook a study of housing and population in Moranbah to inform the development of a Moranbah Housing Study for BHP Billiton Mitsubishi Alliance's (BMA) Bowen Basin Coal Growth Project, as conditioned by the Queensland Government's Coordinator-General. As part of this study, OESR prepared FTE population projections for Moranbah to 2018, based on data supplied by BMA and OESR's own survey data.

OESR produced three resident and non-resident worker population projection series for Moranbah, utilising differing assumptions for the low, medium and high series scenarios. The projections took into consideration:

- reported changes to the resident and non-resident workforces of expanding resource industry operations and future projects, including associated infrastructure projects
- natural increase occurring in the resident population (births minus deaths)
- likely increases in the number of dependants, based on analysis of likely turnover in company workforces arising from retirements during the projection period.

OESR also produced three series of age–sex projections for Moranbah based on low, medium and high growth scenarios. Age projections are available for the projected resident population only. According to the medium series age projections, the total resident population of Moranbah will grow by 3,330 people, from 8,980 in 2011 to 12,310 in 2018 (Table 9). All age groups are projected to experience population increases over this period, with the most notable growth expected for working age adults.

Adults of young working age (25–44 years) are projected to experience the largest growth (1,710 people) and account for an increasing proportion of the total resident population (from 39 per cent in 2011 to 43 per cent in 2018). Mature working age adults (45–64 years) are expected to record the second largest increase (760 people) and slightly increase their share of the total population (from 20 per cent to 21 per cent).

Despite the increase in young working age adults and absolute growth in the number of 0–14 year olds, the proportion of children under 15 years is projected to decline, from 23 per cent of the total resident population in 2011 to 20 per cent in 2018. The share of young people (15–24 years) and older adults (65+ years) is expected to remain relatively stable, at 13 per cent and 4 per cent respectively.

Table 9: Projected resident population by age group, medium series, Moranbah, 2011 to 2018

	0–14 years	15–24 years	25–44 years	45–64 years	65+ years	Total
Year	— number —					
2011[(a)]	2,070	1,210	3,540	1,820	340	**8,980**
2012	2,160	1,290	3,900	1,990	360	**9,690**
2013	2,200	1,320	4,080	2,060	380	**10,030**
2014	2,300	1,420	4,480	2,250	400	**10,850**
2015	2,310	1,430	4,560	2,260	410	**10,970**
2016	2,360	1,490	4,810	2,380	430	**11,450**
2017	2,390	1,520	4,980	2,450	440	**11,790**
2018	2,430	1,590	5,250	2,580	460	**12,310**

(a) 2011 figures are projected estimates as preliminary ERPs and non-resident worker data were not available at the time of preparation. They do not align with FTE population figures for Moranbah presented in Table 4.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, 2011

In 2011, Moranbah had an estimated FTE population of 12,530 people, comprising 8,980 residents (72 per cent) and 3,550 non-resident workers on-shift (28 per cent) (Table 10, Figure 6). According to the medium series, the FTE population of Moranbah is projected to increase by 7,380 people, to 19,910 in 2018. The high series anticipates an increase of 7,780 people, taking the FTE population to 20,310 by 2018, with smaller growth of 4,660 people expected under the low series. See Appendix L for the full low, medium and high projection series.

Table 10: Projected FTE population by components, low, medium and high series, Moranbah, 2011 to 2018

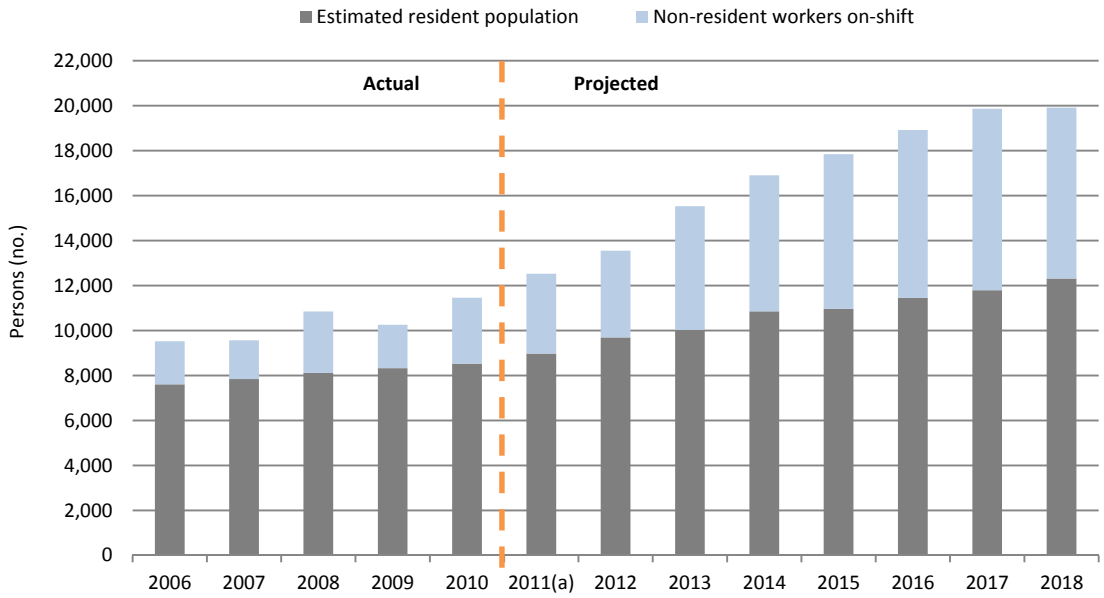
Projection series	Year	Estimated resident population	Non-resident workers on-shift	FTE population
		— number —		
Low	2011[(a)]	8,980	3,550	12,530
	2018	12,020	5,170	17,180
	Change, 2011-18	*3,040*	*1,620*	*4,660*
Medium	2011[(a)]	8,980	3,550	12,530
	2018	12,310	7,600	19,910
	Change, 2011-18	*3,330*	*4,050*	*7,380*
High	2011[(a)]	8,980	3,550	12,530
	2018	12,920	7,390	20,310
	Change, 2011-18	*3,940*	*3,840*	*7,780*

(a) 2011 figures are projected estimates as preliminary ERPs and non-resident worker data were not available at the time of preparation. They do not align with FTE population figures for Moranbah presented in Table 4.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, 2011

Figure 6: Estimated and projected FTE population by components, medium series, Moranbah, 2006 to 2018



(a) 2011 figures are projected estimates as preliminary ERPs and non-resident worker data were not available at the time of preparation. They do not align with FTE population figures for Moranbah presented in Table 4.

Source: ABS 3218.0, *Regional Population Growth, Australia, 2009-10*; OESR, Survey of Accommodation Providers, 2006–2010; OESR, 2011

According to the medium series, Moranbah's FTE population is projected to comprise 12,310 residents (62 per cent) and 7,600 non-resident workers on-shift (38 per cent) in 2018. The medium series projections assume that the operational workforces of the Caval Ridge and Daunia projects will be 100 per cent non-resident. Other projects in Moranbah, including those which have not yet secured approval, are also assumed to proceed as per similar workforce and accommodation arrangements.

The high series projections reflect the difference that a larger resident component for new mines could have on both the resident and non-resident worker populations. OESR factored in the effect of a phased introduction of resident operations workers based on the likely occupancy of new worker housing being constructed by BMA and other project proponents. This results in a larger residential component (12,920 people) but a smaller number and proportion of non-resident workers on-shift (7,390 people, 36 per cent) than the medium series scenario.

A smaller FTE population with a lower share of non-resident workers on-shift (5,170 people, 30 per cent) is estimated under OESR's low series projections. This series assumes that the construction workforces of nearby rail corridors, gas field and pipelines, factored into the medium and high series, will have minimal direct impact on the town of Moranbah itself (that is, that any camps for these projects will be located outside of the immediate vicinity of Moranbah and will not directly contribute to growth in the town's non-resident workforce).

3 Characteristics of resource operations workforces

3.1 Introduction

Data in this chapter were compiled from the Resource Operations Employment Survey, conducted by OESR in 2011. Mining and gas companies provided information on the size and characteristics of their operations workforces, including proportions of employees and contractors and data on place of usual residence, as at June 2011. These data represent all workers (including company employees and contractors) who were directly engaged in operations on a regular basis, including those involved in production, in-house maintenance and ad hoc construction. They do not include employees and contractors engaged in the development and construction of new projects, outsourced maintenance, flood reconstruction, or independent sub-contractors who service the mining industry.

All of the 39 operations surveyed by OESR in 2011 (Appendix C) provided estimates of their operations workforces by employees and contractors, a response rate of 100 per cent. Almost all were able to provide place of residence information for employees, but not all respondents could identify where their contractor workforces usually live when not at work. As a result, the place of residence data presented in this chapter represents only around 61 per cent of total operations workers. While this provides a sufficiently robust sample for estimating percentage splits of where workers live, users of this data should carefully observe its limitations.

Estimates of non-resident operations workforces presented in this chapter represent the total reported workforce and do not align with the non-resident worker on-shift measure derived from OESR's Survey of Accommodation Providers (reported in Chapter 2 of this report). There are several points of distinction:

- Non-resident workforces of existing mines are only a subset of the total non-resident population of the Bowen Basin, as detailed above.
- Place of residence data provided for operations contractors were incomplete.
- Data from the Survey of Accommodation Providers reflect the number of non-resident workers on-shift and living in the region at the time of survey. The data presented in this chapter represent the number of non-resident workers and contractors who are in the operations workforce, not just those who are on-shift at a given point in time.

Refer to Appendix B for further details of OESR's survey methodology.

3.2 Resource operations workforce by employment status

The total operations workforce reported for mines and gas fields in the Bowen Basin at June 2011 was 29,310 people (Table 11). More than half of these (15,960 people) worked in the LGA of Isaac, while operations in Central Highlands employed just under one-third (9,090 people). Operations in the LGAs of Banana (S) and Whitsunday (Bowen only) accounted for relatively small workforces (2,060 and 2,200 respectively).

As Table 11 shows, around 13,390 of the total 29,310 operations workers in the Bowen Basin (or 46 per cent) were company employees (workers directly employed by a resource company). The remaining 15,920 people (or 54 per cent) were contractors. The proportion of employees and contractors engaged in operations varies according to the LGA and SLA of where the operation is located. Of all four LGAs in the Bowen Basin, operations in Banana (S) had the lowest proportion of employees (40 per cent), while Whitsunday (Bowen) had the highest proportion of employees (53 per cent).

Table 11: Resource operations workforce by employment status, Bowen Basin LGAs and SLAs, June 2011

LGA of operation	SLA[a]	Resource operations employees[b]	Resource operations contractors[c]	Total resource operations workforce
		— % —		— number —
Banana (S)	*Banana*	***40***	***60***	***2,060***
Central Highlands (R)	Bauhinia	56	44	800
	Duaringa	45	55	4,640
	Emerald	27	73	530
	Peak Downs	45	55	3,120
	LGA total	***45***	***55***	***9,090***
Isaac (R)	Belyando	50	50	7,340
	Broadsound	41	59	4,330
	Nebo	44	56	4,300
	LGA total	***46***	***54***	***15,960***
Whitsunday (R) (Bowen only)	***Bowen***	***53***	***47***	***2,200***
BOWEN BASIN TOTAL (%)		**46**	**54**	**100**
BOWEN BASIN TOTAL (number)		**13,390**	**15,920**	**29,310**

(R) – Regional Council (S) – Shire
(a) SLA names are abbreviated for ease of reference; see technical notes for details.
(b) Employees are workers directly employed by a resource company in an existing operation.
(c) Contractors employed in an existing operation for production, in-house maintenance and ad hoc construction. Does do not include contractors engaged in the development and construction of new projects, outsourced maintenance, flood reconstruction, or independent sub-contractors who service the mining industry.
Numbers in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Resource Operations Employment Survey, 2011

At the SLA level, Belyando in Isaac LGA had the largest resource operations workforce (7,340 people), about half of whom were employees (3,650 people). The largest proportions of employees as a share of total resource operations workforce were found in the SLAs of Bauhinia (56 per cent), Bowen (53 per cent) and Belyando (50 per cent). Conversely, Emerald SLA had the smallest share of employees (27 per cent) and the largest share of contractors (73 per cent) engaged in operations.

3.3 Resource operations workforce by place of usual residence

Place of usual residence data collected in the Resource Operations Employment Survey provide an indication of where workers engaged in the Bowen Basin's resource operations live when off-shift. Table 12 provides a summary of operations workforce numbers according to place of work (by LGA) and place of usual residence by regional groupings, as of June 2011. It also provides nominal groupings of workers who were usual residents (that is, live and work in the same LGA), those likely to drive between place of work and place of residence (DIDO), and those likely to make the journey by air (FIFO). These data represent the total operations workforce, consisting of employees and contractors. Users should note that the table also acknowledges 11,460 workers, mainly contractors, for whom place of usual residence could not be established.

Table 12: Resource operations workforce by place of usual residence, Bowen Basin LGAs, June 2011

Residency status[a]	Place of usual residence	Place of work					
		Banana (S)	Central Highlands (R)	Isaac (R)	Whitsunday (R) (Bowen)	BOWEN BASIN TOTAL	
		— number —				— number —	— % —
Resident	In same LGA	630	3,670	3,390	680	**8,370**	**47**
	Total residents of same LGA	*630*	*3,670*	*3,390*	*680*	***8,370***	***47***
DIDO	Mackay [b]	0	380	3,520	480	**4,390**	**25**
DIDO	Rockhampton/Gladstone[c]	140	1,050	370	40	**1,600**	**9**
DIDO	Elsewhere in Bowen Basin[d]	20	100	310	380	**800**	**4**
DIDO	Wide Bay-Burnett[e]	80	170	120	30	**400**	**2**
DIDO	Elsewhere in Queensland	0	60	110	30	**200**	**1**
	Total likely DIDO	*250*	*1,760*	*4,430*	*960*	***7,390***	***41***
FIFO	South East Queensland[f]	60	360	740	140	**1,290**	**7**
FIFO	Townsville/Cairns[g]	0	130	190	230	**550**	**3**
FIFO	Interstate or overseas	10	40	160	40	**260**	**1**
	Total likely FIFO	*70*	*530*	*1,090*	*410*	***2,100***	***12***
TOTAL	**Place of residence known[h]**	**950**	**5,960**	**8,900**	**2,050**	**17,850**	**100**
	Place of residence unknown[i]	*1,110*	*3,130*	*7,060*	*160*	***11,460***	-
TOTAL RESOURCE OPERATIONS WORKFORCE[j]		**2,060**	**9,090**	**15,960**	**2,200**	**29,310**	**-**

(R) – Regional Council (S) – Shire

(a) Residency status is based on region of usual residence relative to place of work. FIFO/DIDO groupings represent the most likely means of travelling between home and work according to distance and known transport services, rather than individual arrangements. FIFO – Fly-in/fly-out; DIDO – Drive-in/drive-out.

(b) Resident of region including Mackay, Sarina, Whitsunday Coast.

(c) Resident of region including Rockhampton, Yeppoon, Gladstone, Calliope.

(d) Resident of other LGA within Bowen Basin.

(e) Resident of region including Bundaberg, Hervey Bay, Maryborough.

(f) Resident of region including Brisbane, Sunshine Coast, Gold Coast.

(g) Resident of region including Townsville, Cairns, Innisfail, Ingham, Home Hill.

(h) Resource operations employees and contractors where place of residence was identified in survey.

(i) Resource operations employees and contractors where place of residence was not identified in survey.

(j) Total reported workforce of all resource operations in Bowen Basin as at June 2011. Includes company employees and contractors who were directly engaged in resource operations on a regular basis, including those involved in production, in-house maintenance and ad hoc construction. This group does not include contractors engaged in the development of new projects, outsourced maintenance, sub-contractors or casual workers.

Numbers in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Resource Operations Employment Survey, 2011

As Table 12 shows, slightly less than half (47 per cent, or 8,370 people) of the 17,850 resource operations workers identified in the Bowen Basin were residents of the same LGA where they worked. More than half (53 per cent or 9,490 people) resided elsewhere, comprising 7,390 likely DIDO workers (41 per cent) and 2,100 likely FIFO workers (12 per cent). The LGA of Central Highlands had the largest population of resident workers (3,670 people), only slightly ahead of Isaac (3,390 people).

Non-resident workers who are likely to DIDO between home and work significantly outnumbered those likely to FIFO in all LGAs. The popularity of the Mackay region as a place of residence is evident by the number of workers who live there and work in the LGAs of Isaac and Whitsunday (R) – Bowen (3,520 and 480 respectively). In all, around 25 per cent of all Bowen Basin resource operations workers live in Mackay. Similarly, the Rockhampton/Gladstone region is home to around 1,600 non-resident workers, representing 9 per cent of the Bowen Basin total. The majority of these (1,050 people) worked in Central Highlands LGA.

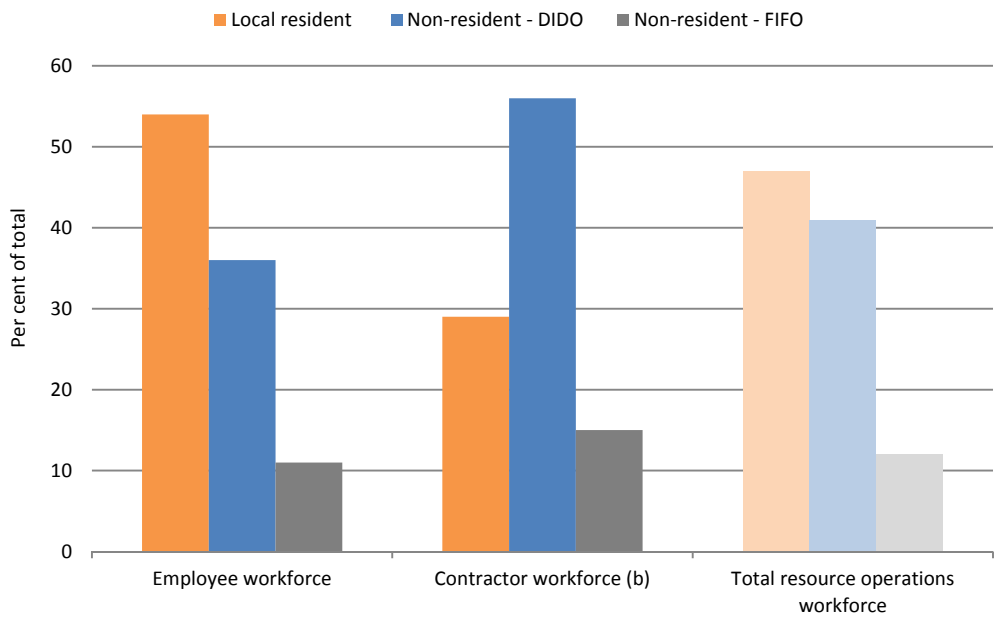
FIFO workers represent only one in eight resource industry workers in the Bowen Basin (12 per cent). Most of these live in South East Queensland (1,290 workers, or 7 per cent) and work in the LGAs of Isaac or Central Highlands. While workers living in the Townsville/Cairns region have been nominally identified as being likely to FIFO rather than DIDO, anecdotal evidence suggests that an unidentified number of these may actually drive from home in Townsville to work in Isaac and Whitsunday (Bowen).

3.4 Resource operations employees and contractors by residency status

Information summarised in Table 12 represents the place of usual residence for the total resource operations workforce, derived by combining data received for employees and contractors. As survey respondents provided incomplete residence information for contractors, this total distribution largely reflects the influence of employee data rather than contractors. When available data are analysed separately according to employees and contractors, a different picture of residency becomes evident.

As Figure 7 shows, the employee workforce had an appreciably higher proportion of resident workers (54 per cent) than the contractor workforce (29 per cent). By contrast, the contractor workforce had a higher share of non-resident workers, with DIDO representing 56 per cent compared to just 36 per cent for employees. Contractors were more likely to FIFO than employees (15 per cent and 11 per cent respectively).

Figure 7: Resource operations employees and contractors by residency status[(a)], Bowen Basin, June 2011



(a) These data describe persons who are employees or contractors of existing resource operations, and who are engaged in production, in-house maintenance and ad hoc construction. They do not include project workforces, incidental contractors or persons not directly engaged in mining operations. Residency status is based on region of usual residence relative to place of work. FIFO/DIDO groupings represent the most likely means of travelling between home and work according to distance and known transport services, rather than individual arrangements.

(b) Place of residence data for contractors are based on an incomplete sample received from survey. Responses where place of residence was not provided are not included in total shown above.

Source: OESR, Resource Operations Employment Survey, 2011

4 Bowen Basin accommodation report

4.1 Non-resident workers on-shift by accommodation type

Worker accommodation villages (WAVs) were the predominant accommodation type in all LGAs and across the Bowen Basin, housing 17,690 non-resident workers on-shift or 86 per cent of the total in 2011 (Table 13). Hotels/motels (1,970 people, 10 per cent) and caravan parks and other accommodation (850 people, 4 per cent) accounted for the remainder.

Table 13: Non-resident workers on-shift by accommodation type, Bowen Basin LGAs and SLAs, July 2011

LGA	SLA[a]	WAVs	Hotels/ motels	Caravan parks/ other[b]	Total
		— number —			
Banana (S)	***Banana***	***960***	***290***	***130***	***1,380***
Central Highlands (R)	Bauhinia	200	40	30	270
	Duaringa	1,850	260	20	2,140
	Emerald	720	560	140	1,420
	Peak Downs	870	140	10	1,010
	LGA total	***3,640***	***1,000***	***190***	***4,830***
Isaac (R)	Belyando	3,380	310	390	4,080
	Broadsound	4,200	160	0	4,360
	Nebo	4,960	120	70	5,150
	LGA total	***12,540***	***590***	***460***	***13,590***
Whitsunday (R) (Bowen only)	***Bowen***	***550***	***90***	***80***	***720***
BOWEN BASIN TOTAL		**17,690**	**1,970**	**850**	**20,520**

(R) – Regional Council (S) – Shire
(a) SLA names are abbreviated for ease of reference; see technical notes for details.
(b) Other includes private dwellings head-leased by companies and farm-stay accommodation if occupied by non-resident workers other than seasonal agricultural workers.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2011

At the sub-regional level, there was some variation in the types of accommodation used to house non-resident workers. WAVs accounted for the bulk of non-resident workers on-shift in Isaac LGA (12,540 people, 92 per cent). Central Highlands had a notable share in hotels/motels (1,000 people, 21 per cent), reflecting the range of accommodation options available in the urban centre of Emerald and the LGA's more diverse economy. Banana (290 people, 21 per cent) recorded a similar proportion but a smaller number of non-resident workers on-shift counted in hotels/motels compared with Central Highlands.

The current strong demand for accommodation in the Bowen Basin is likely to continue into 2012. A number of establishments across all three categories report that they are expanding and/or upgrading facilities to cater for increased demand from the resource industry and related workers.

4.2 Worker accommodation village typology

The term 'worker accommodation village' (WAV) is a catch-all phrase used to describe a variety of non-private accommodation arrangements provided for non-resident workforces of resource industry and construction projects.[9] WAVs encompass a wide range of accommodation styles and differ according to size, location, duration and amenity. Table 14 shows the distribution of WAV types across the Bowen Basin. A full typology of typical WAV arrangements can be found in Appendix M.

Table 14: Typology of typical WAV arrangements, Bowen Basin LGAs, July 2011

	Banana (S)	Central Highlands (R)	Isaac (R)	Whitsunday (R) (Bowen only)	BOWEN BASIN TOTAL
WAV type			— number —		
Major village	1	6	12	0	19
Minor village	2	8	9	3	22
Mine/ gas field village	2	2	5	0	9
Major construction village	0	0	2	1	3
Minor construction village	2	0	3	0	5
Mobile construction camp	0	0	0	0	0
Drilling/exploration camp	0	0	0	1	1
Total WAVs	**7**	**16**	**31**	**5**	**59**

Source: OESR, 2011

At the most basic level, a WAV may consist of a collection of transportable dwellings and associated communal amenities, usually located some distance from a serviced population centre (often on a mining or gas lease). Such temporary worker camps are frequently used for drilling and exploration teams, as well as construction crews for pipeline and rail projects. This type of WAV facility is relocated as the project proceeds, requiring it to be self-sufficient in terms of essential services such as power, water supply, and sanitation.

The most commonly found WAV accommodation takes the form of a hostel, consisting of demountable dwellings set in a village arrangement, with a hub that provides communal messing, laundry and wet canteen amenities. Newer WAVs provide furnished one bedroom cabins with television and bar fridge, internet connection and ensuite bathroom. Meals are usually included in the tariff, while rooms are cleaned and serviced by the operator. Most larger WAVs have a small shop on-site for basic essentials, and may provide gymnasium, pool and entertainment amenities.

WAVs that are established to service the construction of a mine or gas project are often located close to the work site, in order to minimise travel times. Where WAV accommodation is subsequently required for the project's operational workforce, a separate facility is usually established some distance away from the site to minimise exposure to noise, dust and light pollution.

The amenity of a WAV is usually linked to the duration of its existence, and to the price that the user is prepared to pay for its services. Thus accommodation provided for the short-term needs of a construction project usually provides a lesser degree of amenity than that provided for operations over the course of a project's life. The latter style of WAV is more likely to provide a better build quality, incidental services and features such as landscaping, to the extent that it may approximate the standard associated with a permanent facility.

[9] In previous editions of the Bowen Basin report, WAVs were referred to as single person quarters (SPQs). Other terms for WAVs include temporary workers' accommodation, worker camps and dongas.

4.3 WAV bed capacity and occupancy

According to the 2011 Survey of Accommodation Providers, there was a total capacity of 22,730 beds in WAVs across the Bowen Basin (Table 15). At the time of the survey in July 2011, there were 17,690 non-resident workers on-shift counted in WAVs. The largest numbers of WAV beds were located in the three Isaac SLAs, reflecting the presence of a number of large facilities in this area.

Table 15: WAV bed capacity and non-resident workers on-shift counted in WAVs, Bowen Basin LGAs and SLAs, July 2011

		Total capacity (beds)	Non-resident workers on-shift counted in WAVs
LGA	**SLA[(a)]**	— number —	
Banana (S)	***Banana***	***1,160***	***960***
Central Highlands (R)	Bauhinia	520	200
	Duaringa	2,480	1,850
	Emerald	1,160	720
	Peak Downs	920	870
	LGA total	***5,070***	***3,640***
Isaac (R)	Belyando	4,590	3,380
	Broadsound	4,640	4,200
	Nebo	6,350	4,960
	LGA total	***15,590***	***12,540***
Whitsunday (R) (Bowen only)	***Bowen***	***910***	***550***
BOWEN BASIN TOTAL		**22,730**	**17,690**

(R) – Regional Council (S) – Shire
(a) SLA names are abbreviated for ease of reference; see technical notes for details.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2011

It should be noted that not all unoccupied rooms may actually be free for use by other guests, depending on company policy or tenancy agreements. Some WAV operators hold rooms vacant for designated workers when off-shift, while other rooms are shared between shifts or reallocated to other occupants (often referred to as 'motelling').

The total capacity of WAVs in the Bowen Basin grew from 17,800 in 2010 to 22,730 in 2011, an increase of 4,940 beds or 28 per cent (Table 16). These figures confirm the expansion plans reported by a number of WAV operators in 2010. Anecdotal evidence suggests a further increase in capacity can be expected in 2012. The number of WAVs has more than doubled since 2006, demonstrating the scale of growth across the Bowen Basin in recent years.

Isaac LGA accounted for the bulk of growth in the region, with an additional 3,280 WAV beds between 2010 and 2011. A number of large accommodation centres across all three Isaac SLAs contributed strongly to this increase. Central Highlands LGA also recorded a notable increase of 1,080 beds, reflecting expanded capacity in and around Blackwater in particular.

Table 16: Non-resident workers on-shift counted in WAVs and WAV bed capacity, Bowen Basin LGAs, 2006 to 2011

	Total bed capacity for year			Change in bed capacity	
	2006	2010	2011	2010-11	2006-11
LGA	— number —			— number —	
Banana (S)	1,120	1,090	1,160	70	40
Central Highlands (R)	2,330	3,990	5,070	1,080	2,740
Isaac (R)	7,260	12,300	15,590	3,280	8,330
Whitsunday (R) (Bowen only)[(a)]	80	410	910	500	830
BOWEN BASIN TOTAL	**10,790**	**17,800**	**22,730**	**4,940**	**11,940**

(R) – Regional Council (S) – Shire
(a) Data for Whitsunday (R) (Bowen only) for 2011 include Merinda, which was not included in previous years' collections.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2006 to 2011

4.4 Vacant and available hotel/motel rooms

Hotels/motels tend to cater for a different segment of the resource industry accommodation market than WAVs, attracting contractors and associated workers (such as technicians and consultants) rather than miners. Hotels/motels also frequently pick up the overflow from WAVs in areas where accommodation is particularly tight. A common shift pattern is for workers to stay for a week and fly/drive home for the weekend, with many hotel/motel operators reporting no vacancies from Monday to Thursday nights. Many companies maintain permanent weekly bookings, meaning that rooms are unavailable to other occupants whether or not they are actually being utilised by non-resident workers on any given night.

Due to strong demand from resource industry workers, many hotels/motels in the Bowen Basin have limited capacity to provide accommodation for tourists or other visitors. At the time of the Survey of Accommodation Providers in July 2011, just 3 per cent of hotel/motel rooms in the region were vacant and available to prospective occupants (Table 17). Note that this figure represents a typical weeknight, when establishments are likely to be at their busiest.

Table 17: Vacant and available hotel/motel rooms, Bowen Basin LGAs, July 2011

	Occupied by non-resident workers	Balance[(a)]	Total rooms	Per cent vacant and available rooms[(b)]
LGA	— number of rooms —			%
Banana (S)	290	100	390	4
Central Highlands (R)	1,000	220	1,220	3
Isaac (R)	590	80	670	3
Whitsunday (R) (Bowen only)	90	20	100	6
BOWEN BASIN TOTAL	**1,970**	**410**	**2,390**	**3**

(R) – Regional Council (S) – Shire
(a) Balance includes vacant and available rooms as well as rooms occupied by short-term visitors.
(b) Refers to 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.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2011

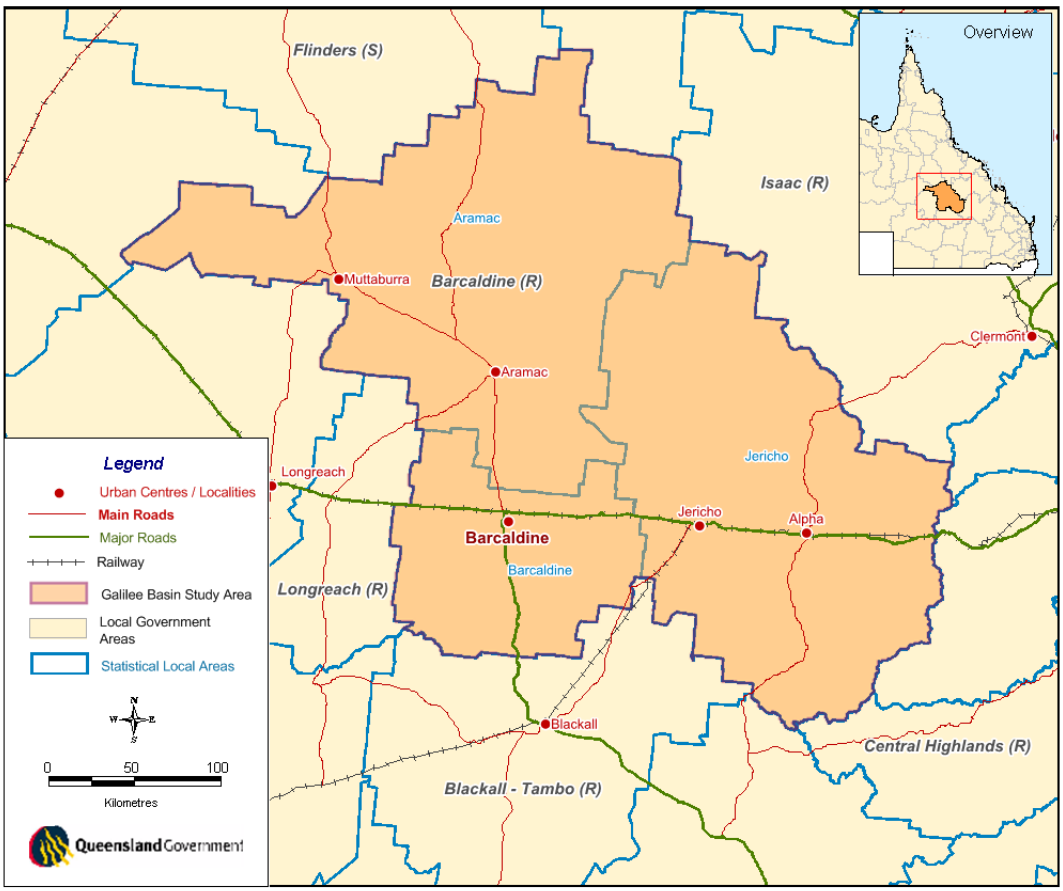
5 Galilee Basin population and accommodation report

5.1 Introduction

This section of the report examines the workforce composition of forthcoming mining projects in the Galilee Basin and provides a framework for understanding the potential impacts that they may have on the area's resident and non-resident populations. It draws upon data gathered from OESR's surveys of commercial accommodation providers and resource companies conducted in 2010 and 2011. Data were collected on the size of the current non-resident workforce and the supply of commercial accommodation in the LGA of Barcaldine. This baseline data is then combined with workforce estimates provided by prospective project proponents to produce projections of the FTE population of Barcaldine (R).

While the Galilee Basin coal deposit extends north into the LGAs of Isaac, Charters Towers and Flinders, most of the resource development activities announced to date are located in the southern end of the basin. Accordingly, the Galilee Basin area covered by this report comprises the three SLAs within the Barcaldine Regional Council area (Figure 8). It should be noted that Adani's proposed Carmichael project, which would mine coal from the Galilee Basin coal deposit, is located in the LGA of Isaac (Appendix G), so its population impacts are included in projections for the Bowen Basin rather than the Galilee Basin. Similarly, most of the rail and port construction and operations activities for the Galilee Basin projects will take place in the Bowen Basin LGAs of Isaac and Whitsunday (Bowen), rather than in Barcaldine (R).

Figure 8: LGAs, SLAs and selected UC/Ls in Galilee Basin study area, 2011



(R) – Regional Council (S) – Shire. SLA names are abbreviated for ease of reference; see technical notes for details.

Source: OESR, 2012

5.2 Proposed coal mines and infrastructure projects

The Galilee Basin is an emerging coal province in central western Queensland that has significant high volatility, low sulphur thermal coal resources. To date, the remote location of the area relative to existing rail and port infrastructure has precluded large scale mining; however, increased world demand for low cost and reliable thermal coal and firm contract prices since 2008 have renewed interest in coal exploration. There are five major thermal coal projects and two associated infrastructure projects proposed for the Galilee Basin. These projects are currently undergoing environmental impact statement (EIS) assessment under the *State Development and Public Works Organisation Act 2007* (SDPWOA).[10]

The **Alpha Coal project (Hancock Coal Pty Ltd, Hancock Alpha West Pty Ltd and Hancock Coal Infrastructure Pty Ltd (joint proponents))** is located 38 km north-west of Alpha. The Alpha Coal project proposes a 30 million tonnes per annum (Mtpa) open-cut coal mine, with the potential for the future development of significant underground reserves. The mine would be supported by new rail and port infrastructure, including a 495 km railway and facilities at the Port of Abbot Point. Consultation on the supplementary EIS was completed in late 2011, with the Coordinator-General's report expected in the second quarter of 2012.

The **Kevin's Corner project (Hancock Galilee Pty Ltd)** is located 56 km north of Alpha adjacent to the Alpha Coal project. The Kevin's Corner project comprises a combined open-cut and underground coal mine with an ultimate capacity of 30 Mtpa. The project proposes to use Alpha Coal's rail and port infrastructure, which is being designed to cater for the combined output of both Hancock projects. The Kevin's Corner EIS and submissions are currently being assessed by the Office of the Coordinator-General.

The **Galilee Coal (Northern Export Facility) project (Waratah Coal Pty Ltd)** is located 35 km north-west of Alpha. Also known as **China First**, the project involves open-cut and underground coal mines with a capacity of 40 Mtpa and potential for expansion. The project also incorporates a 468 km railway line and port facilities at Abbot Point. The proponent is preparing a supplementary EIS following public consultation on the EIS in 2011.

The associated **Galilee Power Station project (Waratah Coal Pty Ltd)**, a 900 megawatt coal fired power station 30 km north-west of Alpha, has been declared a significant project in its own right. The release of draft terms of reference for comment has been delayed at the proponent's request.

The **South Galilee Coal Mine project** proposes a 15–20 Mtpa open-cut and underground thermal coal mine located immediately south-west of Alpha. The project is a joint venture between **AMCI (Alpha) Pty Ltd (AMCI) and Alpha Coal Pty Ltd (Bandanna Energy)**. The project also includes a rail line to connect with another proponent's rail infrastructure to export product coal via Abbot Point. The preparation of the EIS is currently under way.

QR Limited recently announced their intention to develop the **Central Queensland Integrated Rail project**. New rail links are proposed to connect the south and central Galilee Basin to the existing rail network north of Moranbah, providing access to the Port of Abbot Point near Bowen, or the Ports of Hay Point or Dalrymple Bay near Mackay. Draft terms of reference are being prepared for the project.

The **Carmichael Coal Mine and Rail project (Adani Mining Pty Ltd)** is located 160 km north-west of Clermont within the Isaac Regional Council area.[11] The proposed open-cut and underground coal mine will produce up to 60 Mtpa. At the time of writing, Adani's proposal includes a new rail link to Moranbah to connect the mine to the existing rail system and thereafter to access port facilities in Bowen Abbot Point or in Mackay LGA.

[10] Project information has been provided by the Office of the Coordinator-General and is current as at February 2012.
[11] The Carmichael project is treated as part of the Bowen Basin for demographic purposes. See Chapter 1 for geographical definitions.

The Adani Group recently purchased a 99-year lease over the existing Abbot Point X50 coal terminal from the Queensland Government and may use rail infrastructure proposed by other proponents to export via Abbot Point, subject to a further assessment process. Terms of reference for the project were released in May 2011 and preparation of the EIS is currently under way.

5.3 Implications for population change

The projects proposed for the Galilee Basin are large, both in terms of expected coal production capacity and the workforces required to operate and construct the mines and associated infrastructure. Mining companies' workforce policies and accommodation strategies – where and how proponents decide to source and house their workers – will heavily influence the nature and extent of population impacts in the region, given the small size of the local population. Project proponents will need to consider various strategies for sourcing appropriately skilled labour, either by attracting workers to live locally or flying them in from elsewhere. The possible use of overseas workers utilising temporary Enterprise Migration Agreements (EMAs) introduces a further element of complexity to the assessment of future population impacts.

The population impacts of proposed projects in the Galilee Basin will differ depending on the composition of project workforces. Workforces can be classified into three categories – existing residents, new settlers, and non-resident workers – based on their residential status. A fourth category, overseas workers, may be resident or non-resident depending on their place of usual residence while in Australia.

- **Existing residents** are workers drawn from the pool of people already living in the local area. As this group is already counted in the area's resident population, their inclusion in the project workforce will have no net population impact. In the case of the Galilee Basin this group will be small, given the small size of the local population and limited pool of available labour. Should existing residents of rural areas or other centres relocate within the region, the resulting impact would be one of population redistribution rather than growth.

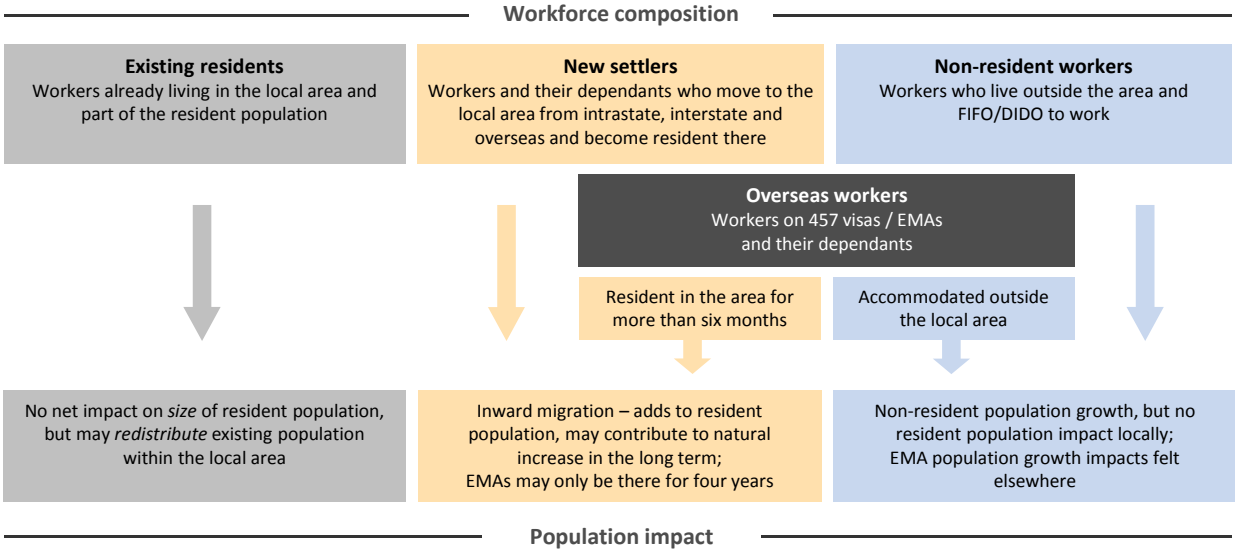
- **New settlers** refer to those workers and their dependants who migrate to the local area from elsewhere in Queensland, the remainder of Australia or overseas and become resident there, resulting in *resident* population growth. An influx of younger families to the local area could also contribute to further population growth through natural increase, although such growth would need to be substantial (to counteract the long-term population decline brought about by ageing) before resulting in any significant changes to the age structure.

- **Non-resident workers** live outside the area and FIFO/DIDO to work. Non-resident workers do not contribute to local resident population growth, although their presence in the area requires that essential services and infrastructure still need to be provided for them. All Galilee Basin project proponents currently undergoing the EIS process have indicated their intention to utilise predominantly FIFO workforces.

- **Overseas workers** on temporary work visas (including Temporary Business (Subclass 457) visas or EMAs) constitute a fourth workforce component to consider in assessing local population impacts. The impact that this group could have on local population growth is contingent upon where workers (and their dependants) are housed for the duration of their visa.

Figure 9 illustrates how the different components of a project's workforce may contribute to different population impacts for the area where the project occurs.

Figure 9: Framework for assessing future population impacts of mining workforces, Galilee Basin



Source: OESR, 2011

Overseas workers and Enterprise Migration Agreements

While temporary overseas workers currently make up a relatively small component of resource industry workforces in Queensland, numbers are likely to increase in view of recent policy responses to skilled labour shortages. The Australian Government's EMA scheme, announced in May 2011, is a new temporary migration initiative designed to meet the skills needs of resource projects that cannot be filled from the Australian labour market. Eligible projects must have capital expenditure of more than two billion dollars and a peak workforce of more than 1,500 workers. Project proponents are also required to provide evidence as to why Australian workers are not available to fill these vacancies.

The EMA scheme utilises the existing 457 visa category, which enables employers to sponsor skilled overseas workers on a temporary basis. Visa holders can work in Australia for up to four years and may bring eligible dependants, who are able to work and study while living in Australia.

All projects currently proposed for the Galilee Basin meet the eligibility criteria for EMAs. While no proponent has officially indicated a specific intention to employ EMA workers in the Galilee Basin to date, the possibility exists that future skilled labour shortages could influence changes to the workforce strategies of some projects. Should that occur, the impacts of imported workforces on the local population will vary according to:

- whether EMA workers are accompanied by dependants
- whether EMA workers and their dependants are accommodated in the local area or elsewhere in Queensland or Australia
- the duration of stay for EMA workers and dependants (that is, whether it exceeds six months)
- whether the size of the EMA component of the project workforce changes over the life of the project.

The duration of an EMA visa is between one day and four years. Workers and dependants employed under the scheme and housed locally for six months or longer should be counted in the resident population of the area. EMA workers who reside outside the local area and FIFO/DIDO to work would be included in the resident population of the place where they reside, and would form part of the non-resident workforce of the area where they work. Regardless of where they are housed in Australia, workers sourced from overseas will generate a population impact.

5.4 Baseline count of non-resident workers on-shift

To date, non-resident mining workforces in the Galilee Basin have been limited to crews involved in exploration and testing, but are likely to increase rapidly as mining construction and operations commence. At the time of the Survey of Accommodation Providers in July 2011, there were 110 non-resident workers on-shift counted in Barcaldine LGA (Table 18).[12] The majority (76 per cent) were counted in Jericho SLA, reflecting the concentration of proposed mines in this area. Non-resident workers in other parts of the LGA were largely engaged in small scale drilling and exploration activities. The number of non-resident workers on-shift in Jericho SLA increased by around 20 people between 2010 and 2011, offsetting loses in the other SLAs but resulting in minimal change for the LGA overall.

Table 18: Non-resident workers on-shift, Barcaldine (R) SLAs, 2010 to 2011

	Non-resident workers on-shift		Change
	2010	2011	2010-11
Area	— number —		
Aramac SLA[(a)]	10	10	0
Barcaldine SLA[(a)]	40	20	-20
Jericho SLA[(a)]	60	80	20
Barcaldine (R) total	**110**	**110**	**0**

(R) – Regional Council
(a) SLA names are abbreviated for ease of reference; see technical notes for details.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2010 to 2011

5.5 Non-resident workers on-shift by accommodation type

Jericho is the only SLA in Barcaldine LGA to presently host WAVs of a significant size. The number of non-resident workers on-shift counted in WAVs in Jericho almost doubled, from 30 people (or 50 per cent of the SLA total) in 2010 to around 60 people (67 per cent) in 2011 (Table 19). This growth can be largely attributed to activity at the Alpha bulk sample pit at the time of the survey in July 2011.

Table 19: Non-resident workers on-shift by accommodation type, Barcaldine (R) and Jericho SLA, 2010 to 2011

	2010				2011			
	WAVs	Hotels/ motels	Caravan parks/ other[(a)]	Total	WAVs	Hotels/ motels	Caravan parks/ other[(a)]	Total
Area	— number —				— number —			
Jericho SLA[(b)]	30	20	10	60	60	30	0	90
Barcaldine (R)	30	70	10	110	60	50	0	110

(R) – Regional Council
(a) Other includes private dwellings head-leased by companies and managed by real estate agencies and some farm-stay accommodation if occupied by non-resident workers other than seasonal agricultural workers.
(b) SLA names are abbreviated for ease of reference; see technical notes for details.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2010 to 2011

[12] Non-resident workers associated with the Carmichael Coal project are included in Isaac LGA in the Bowen Basin.

5.6 Bed capacity by accommodation type

OESR conducted an initial Survey of Accommodation Providers in mid-2010, which was repeated in mid-2011. These surveys established the bed capacity of commercial establishments catering for non-resident workers in the Barcaldine (R) area, as well as the capacity of temporary WAV facilities.

In July 2011, the reported bed capacity of all establishments catering for non-resident workers in Barcaldine LGA was 570 beds, consisting of 100 beds in WAV facilities and the balance in commercial accommodation (hotels, motels and caravan parks) (Table 20). The reported capacity of commercial accommodation increased from 370 beds in 2010 to 470 beds in 2011. These increases were due in part to new facilities and expansions of existing accommodation, but also reflect the inclusion of establishments in the 2011 survey that did not previously cater for non-resident workers.[13]

Table 20: Bed capacity by type of accommodation, Barcaldine (R) and Jericho SLA, 2010 to 2011

	2010				2011			
	WAVs	Hotels/ motels	Caravan parks/ other[(a)]	Total	WAVs	Hotels/ motels	Caravan parks/ other[(a)]	Total
Area	— number of beds —				— number of beds —			
Jericho SLA[(b)]	100	60	20	180	100	80	30	210
Barcaldine (R)	100	320	50	470	100	390	80	570

(R) – Regional Council
(a) Other includes private dwellings head-leased by companies and farm-stay accommodation if occupied by non-resident workers other than seasonal agricultural workers.
(b) SLA names are abbreviated for ease of reference; see technical notes for details.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, Survey of Accommodation Providers, 2010 to 2011

WAV capacity can vary considerably depending on the addition or removal of facilities. As Table 20 shows, the total bed capacity of WAVs in Jericho SLA remained constant between 2010 and 2011, despite the closure of one establishment. These existing establishments were created as temporary structures on private land adjacent to the mining leases, and served to accommodate small exploration and test pit crews. The facilities will be replaced by more substantial WAV accommodation when project construction commences.

To date, all WAVs in the region have been located on mining leases some distance from town. While small at present, the number of workers and WAVs on-site can be expected to increase as mining activity accelerates, in addition to or instead of utilising commercial accommodation in town. It is also possible in future that WAVs could be situated in or adjacent to nearby townships.

5.7 FTE population estimates

The full-time equivalent population of Barcaldine LGA was around 3,530 in mid-2011, comprising the estimated resident population of 3,420 people and 110 non-resident workers on-shift (Table 21). Non-resident workers on-shift accounted for 3 per cent of the total FTE population of Barcaldine (R). The impact of non-resident workers was greatest in Jericho SLA, where they made up 8 per cent of the FTE population.

[13] Accommodation providers who indicate that they do not accommodate non-resident workers are excluded from the survey.

Table 21: FTE population estimates for Barcaldine (R) SLAs, July 2011

Area	Estimated resident population[(a)]	Non-resident workers on-shift	FTE population estimate
	— number —		
Aramac SLA[(b)]	780	10	790
Barcaldine SLA[(b)]	1,640	20	1,660
Jericho SLA[(b)]	1,000	80	1,080
Barcaldine (R) total	**3,420**	**110**	**3,530**

(R) – Regional Council
(a) 2011 preliminary ERP.
(b) SLA names are abbreviated for ease of reference; see technical notes for details.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: ABS 3218.0*, Regional Population Growth, Australia, 2010-11*; OESR, Survey of Accommodation Providers, 2011

5.8 FTE population projections

OESR has collated information provided by project proponents in the Resource Projects Employment Survey and other sources to estimate the future construction and operations workforces required for Galilee Basin projects. In turn, these workforce numbers have been translated into resident and non-resident population components according to best advice from proponents about the composition of their workforces and the most likely arrangements for their accommodation. These estimated resident and non-resident population outcomes are then combined to provide forward estimates of the FTE population for the LGA of Barcaldine.

OESR advises potential users that these FTE population estimates should be considered as indicative only and used with caution, as they are subject to the following limitations:

- The quality of data that they are based upon varies widely, and numbers are likely to change as projects proceed through the EIS process.
- The feasibility of each project and its timetable for implementation are subject to significant constraints, including but not limited to financial viability, exposure to risk, rail and port capacity, water supply, economic viability and financial risk.[14]
- The extent and duration of cumulative population impacts arising from several large projects are heavily influenced by project scheduling, as well as the size of individual project workforces. This effect is particularly relevant to the timing of the overlaps between non-resident construction workforces and operational workforces.
- Assumptions about the split between resident and non-resident populations, as discussed in Section 5.3. The estimated resident component of each project workforce has been considered in OESR's current resident population projections.[15]

Table 22 provides projections of the FTE population for the LGA of Barcaldine from 2012 to 2018. Data for the non-resident worker on-shift elements of the FTE population are split according to construction and operational workforces, which relate only to the mine component of these projects. Data for rail and port construction and operation are excluded, as these are short-term and will be accommodated predominantly

[14] Most Galilee Basin projects will depend on water supply from the proposed Moranbah to Alpha pipeline, intended to connect with the Connors River Dam pipeline at Moranbah. The Connors River Dam and Pipelines project was approved by the Coordinator-General in January 2012, and is expected to be operational by March 2015. The Moranbah to Alpha pipeline is a separate project, subject to a separate approvals process. (Department of Employment, Economic Development and Innovation, *Connors River Dam and Pipelines project: Coordinator-General's report on the environmental impact statement*, January 2012.)
[15] OESR's resident population projections published in 2011 took into account the potential growth in net migration arising from Galilee Basin projects, as per best information available at the time of preparation.

outside of Barcaldine (R). Indirect growth arising from the advent of mining activity, including that from support and service industries, is not included in these estimates.

Table 22: Projected FTE population by components, Barcaldine (R), 2012 to 2018

	2012	2013	2014	2015	2016	2017	2018
	— number —						
Estimated resident population[(a)]	3,450	3,650	3,710	3,740	3,770	3,810	3,850
Non-resident construction workers on-shift[(b)]	0	1,110	4,130	3,630	1,340	1,110	670
Non-resident operations workers on-shift[(b)]	0	0	30	490	2,150	3,200	3,440
Projected FTE population	**3,450**	**4,760**	**7,870**	**7,860**	**7,260**	**8,120**	**7,960**

(a) Resident projections utilised in these FTE estimates are based on the medium series projections produced by OESR in 2011, which contain assumptions about resident growth arising from increased net migration related to mining development, based upon data that were known at the time of preparation. Users of these FTE estimates are also directed to the high series resident projections, which could be substituted for the medium series in the event of a more locally-focused workforce strategy being adopted by proponents. In either case, it should be borne in mind that impacts on the resident population of Barcaldine (R) are more likely to arise from the operational workforces of these projects, rather than from workforces during the construction phase.

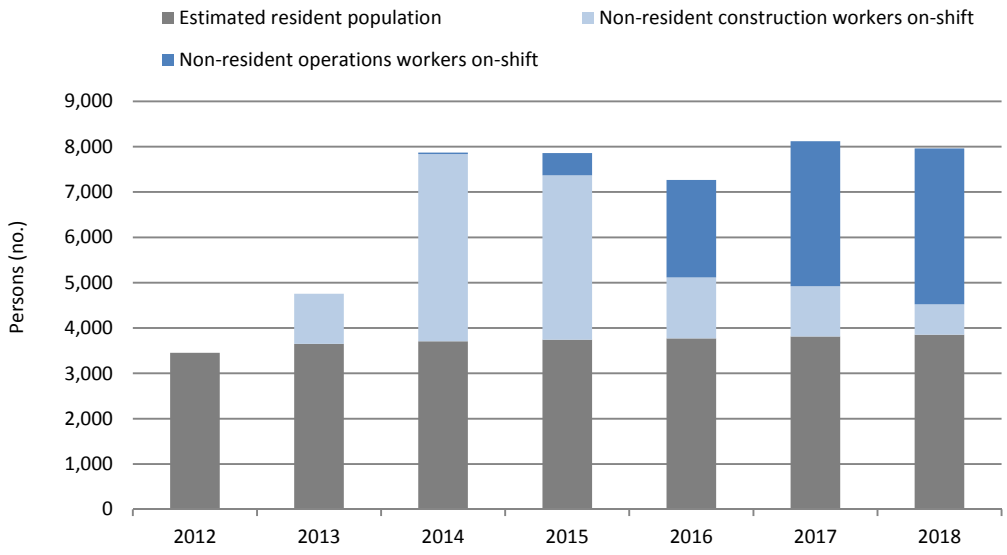
(b) Non-resident workers on-shift describes the number of non-resident workers likely to be present in the area at a given point in time, not the total size of the non-resident workforce advised by project proponents in their EIS. The on-shift measure takes account of likely shift and roster patterns for the construction and operational workforces, which differ according to the workforce and accommodation strategies of each proponent.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012.

While the number of non-resident workers on-shift in the LGA of Barcaldine was diminutive in 2011 compared with the Bowen Basin, Barcaldine's very small population base means that non-resident workers are likely to account for a relatively large share of the future FTE population as projects proceed. In particular, the non-resident construction workforces of Galilee Basin projects are expected to increase steeply from 2013 and peak in 2014 (Figure 10). A sharp drop in construction workforces between 2015 and 2016 is projected to coincide with an increase in the operations workforce as production ramps up, maintaining the total FTE population at above 7,000 people.

Figure 10: Projected FTE population by components, Barcaldine (R), 2012 to 2018



Source: OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

6 Technical notes

This report has been prepared by the Office of Economic and Statistical Research (OESR), Queensland Treasury and Trade. The primary data sources for this report are three surveys – the Survey of Accommodation Providers, Resource Operations Employment Survey, and Resource Projects Employment Survey – conducted by OESR in 2011 to obtain information about current and future non-resident worker populations in the Bowen and Galilee Basins. The Survey of Accommodation Providers enumerated non-resident workers staying in commercial accommodation, while the Resource Operations Employment Survey and Resource Projects Employment Survey collected data from resource companies on their current and future workforces. Appendix B contains further detail on survey scope, methodology and related concepts.

Full-time equivalent (FTE) population estimates in this report were calculated by adding the estimated non-resident worker population on-shift to the estimated resident population (ERP). ERP figures in this report are Australian Bureau of Statistics (ABS) preliminary ERPs for June 2011 and revised ERPs for 2010, released in March 2012. See Appendix A for details of FTE population methodology.

The FTE population data in this report supersede those given in former editions. While the non-resident worker components of previously published FTE populations remain unchanged, the resident population components are updated annually to account for revised ERP data released by the ABS since initial publication.

Figures in tables throughout this report have been rounded to the nearest 10. 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 figures.

In technical terms, the ‘Bowen Basin’ and ‘Galilee Basin’ refer to the geological formations or coal basins that give these regions their names. For the purposes of reporting population statistics, OESR has defined these regions in demographic rather than geological terms, to include relevant populations and align with the statistical geography used by the ABS.

In this report, all FTE estimates and accommodation statistics for local government areas (LGAs) and statistical local areas (SLAs) are reported on the most recent Australian Standard Geographical Classification 2011 (ASGC 2011) boundaries, including those for years preceding major local government reforms in March 2008. This allows for direct comparison of results for all years covered by the report (2006 to 2011).

For brevity, a geographical descriptor is used throughout the report to identify SLAs rather than the full naming convention adopted by the ASGC 2011. For example, the report refers to the SLA of ‘Bauhinia’, rather than to the full and strictly correct SLA name of ‘Central Highlands (R) – Bauhinia’.

The current ASGC 2011 is the final edition of the Australian Standard Geographical Classification. It has been replaced by the new Australian Statistical Geography Standard (ASGS). The ASGS was released concurrently with the ASGC in July 2011 to ensure a smooth transition to the new statistical geography. Both are current until July 2012, when the ASGS will replace the ASGC. Future OESR publications will be released on the new ASGS boundaries. For further information regarding the ASGC and the ASGS, please refer to the ABS geography web portal at <www.abs.gov.au/geography>.

7 Glossary of terms and abbreviations

ABS
The Australian Bureau of Statistics.

Accommodation centre
Refer to worker accommodation village (WAV).

Australian Standard Geographical Classification (ASGC)
The Australian Standard Geographical Classification (ASGC) is a convention developed by the ABS for the collection and dissemination of geographic statistics on a national basis. It is a hierarchically structured classification of defined spatial units that satisfy different statistical purposes. See also *local government area*, and *statistical local area*.

Australian Statistical Geography Standard (ASGS)
The Australian Statistical Geography Standard (ASGS) is the new statistical geography released by the ABS in July 2011. It will replace the ASGC from July 2012. Future OESR publications will be released on the new ASGS boundaries. See also *Australian Standard Geographical Classification*.

Construction workers
Construction workers are company employees or contractors who are engaged in the planning, construction and commissioning of a new resource project, or in the expansion or decommissioning of one.

Enterprise Migration Agreements (EMAs)
A temporary migration initiative designed to meet the skills needs of resource projects that cannot be filled from the Australian labour market. Eligible projects must have capital expenditure of more than two billion dollars and a peak workforce of more than 1,500 workers.

Estimated resident population (ERP)
The number of people estimated to be usually resident in an area (see *usual residence*). During population census years, estimates of the resident population are based on census counts by place of usual residence, to which are added the estimated net undercount and the number of Australian residents estimated to have been temporarily overseas at the time of the Census. Overseas visitors in Australia are excluded from this calculation. These census year estimates become the base on which estimates of natural increase and migration are added (or subtracted) over the following years.

People are deemed usual residents of the address at which they have lived (or intend to live) for six months or more during the census year.

Fly-in/fly-out or drive-in/drive-out (FIFO/DIDO)
An arrangement whereby workers live for an extended period in an area removed from their usual place of residence while on-shift and commute by air or road between home and place of work. Flexible work schedules and accommodation arrangements in the mining industry have made FIFO/DIDO more feasible, to the point where it has now supplanted provision of local housing as a condition of employment for many operations. See *non-resident workers*.

Full-time equivalent (FTE) population
A measure derived by OESR that approximates the total population living in an area at a given point in time. The FTE is based on two components – the number of non-resident workers on-shift, and the resident

population component estimated to be present in the area. See also *estimated resident population* and *non-resident workers*.

Head-lease
A form of rental tenancy arrangement whereby a company obtains the lease for one or more rental properties, which are then used to provide employee accommodation. Occupants of head-leased housing may enter into sub-tenancy arrangements directly with the employer; otherwise, tenancy agreements are managed by a third party such as a real estate agent. Head-leasing arrangements differ from private rental arrangements, whereby the occupant enters into a direct agreement with the dwelling owner or agent.

Local government area (LGA)
According to the Australian Standard Geographical Classification (ASGC), the local government area (LGA) is a spatial unit that represents the geographical area under the responsibility of an incorporated local government council, or an Aboriginal or Island Council. An LGA may be a City (C), Regional Council (R), Shire (S) or Town (T).

In the statistical geography current at the time of the Census in August 2006 (Australian Standard Geographical Classification, 2006), LGAs were equal to or larger than statistical local areas (SLAs) and collection districts (CDs). In March 2008, LGA boundaries were changed as the result of administrative reforms in Queensland and the reformed LGA boundaries were included in the 2008 standard geographic classification (ASGC 2008).

Non-resident workers
Employees of mining companies, contractors and construction workers who live in an area for extended periods when working but have a permanent place of residence in another area. This group includes workers engaged in FIFO/DIDO arrangements and who live locally in non-private dwellings such as WAVs, hotels, motels and caravan parks while on-shift. Although many non-resident workers may actually spend a total of more than six months of the year in their area of work, they are generally not regarded as being residents by the ABS and are omitted from estimates of the resident population. See *FIFO/DIDO*, and *ERP*.

Office of Economic and Statistical Research (OESR)
The Office of Economic and Statistical Research (OESR), a portfolio office of Queensland Treasury and Trade, is the principal economic, demographic and social research agency for the Queensland Government.

Operations workforce
The operations workforce comprises all workers (including company employees and contractors) who are directly engaged in operations on a regular basis, including those involved in production, in-house maintenance and ad hoc construction. It does not include employees and contractors engaged in the development and construction of new projects, outsourced maintenance, flood reconstruction, or independent sub-contractors who service the mining industry.

Population projection
An estimate of the future resident population of a given area. The Queensland Government produces updated population projections for all LGAs within Queensland on a regular basis.

Production workers
Production workers are permanent company employees or contract staff who provide management, administration, technical services, routine maintenance and production activities associated with the resource operation. Part-time contractors, visitors and short-term workers employed for less than one week during the specified month are not included.

Statistical local area (SLA)
The statistical local area (SLA) is a defined area under the ASGC. In Queensland, many SLAs share the same boundaries as LGAs. SLAs cover, in aggregate, the whole of Australia without gaps or overlaps. See also *Australian Standard Geographical Classification*, and *local government area*.

Urban Centre / Locality (UC/L)
Term used by the Australian Standard Geographical Classification to define a population cluster greater than 200 people. In broad terms, an urban centre is a population cluster of 1,000 or more people while a locality is a population cluster of between 200 and 999 people.

Usual residence
For the purposes of the Census and this report, usual residence refers to the location where the person lives for the majority of the time, and is the definition used to estimate the usual resident (UR) population derived from the Census of Population and Housing. The Census establishes usual residence according to the place where the person has lived or intends to live for six months or more in the census year.

For most people, the family home is the place where they live for the majority of the time, and that dwelling may be considered to be their place of usual residence. An exception occurs in the case of mining and construction workers who live for extended periods in non-private accommodation near the work site but fly or drive to their family home when off-roster. It is likely that many of these workers would consider the family home to be their usual place of residence, despite spending more than half of the given year at the location of their workplace.

Worker accommodation village (WAV)
A term used to describe a particular type of non-private 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 messing, laundry and entertainment facilities and rooms that are cleaned and serviced by the operator. Occupants of WAVs are usually provided with all meals.

Formerly described as single person quarters (SPQs), OESR has adopted this term to avoid confusion about the marital status of non-resident workers who occupy WAVs.

8 References

Australian Bureau of Statistics (2011), *Australian Standard Geographical Classification (ASGC), July 2011*, cat. no. 1216.0. Australian Bureau of Statistics, Canberra.

Australian Bureau of Statistics (2012), *Regional Population Growth, Australia, 2010-11*, cat. no. 3218.0. Australian Bureau of Statistics, Canberra.

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OESR (2011), *Bowen Basin Population Report, 2010*. Office of Economic and Statistical Research, Brisbane.

OESR (2011), *Queensland Government population projections to 2031: local government areas, 2011 edition*. Office of Economic and Statistical Research, Brisbane.

OESR (2011), *Surat Basin Population Report, 2010*. Office of Economic and Statistical Research, Brisbane.

9 Appendices

Appendix A

FTE population methodology

The full-time equivalent (FTE) population of an area is calculated by adding the count of non-resident workers on-shift to the estimated resident population (ERP). The non-resident worker population is derived from the Survey of Accommodation Providers and Resource Operations Employment Survey, both conducted annually by OESR. The FTE population concept was developed by the Queensland Government in 2006[16] to provide a more complete picture of the service population of an area, as estimated resident population numbers published by the ABS exclude non-resident workers. In resource areas, non-resident workers can add significantly to the demand for goods, services and infrastructure.

A more detailed discussion paper covering service population methodologies may be downloaded from http://www.oesr.qld.gov.au/products/presentations-papers/towards-est-service-pop/index.php.

Preliminary ERP figures as at 30 June are published annually by the ABS in March of the following year, along with revised estimates for previous years. See ABS, *Regional Population Growth, Australia, 2010-11*, cat. no. 3218.0 for further details. ERP figures in this report are ABS preliminary ERPs for 2011 and revised ERPs for 2010, released in March 2012.

While the non-resident worker components of previously published FTE populations remain unchanged, the resident population components are updated annually to account for revised ERP data released by the ABS since initial publication. For this reason, the ERP component of the FTE population is subject to revision, and FTE population data in this report supersede those given in earlier editions.

[16] The initial *Bowen Basin Population Report, 2006* published by the Department of Local Government and Planning contained FTE population estimates, which have since been updated annually in subsequent Bowen Basin reports.

Appendix B

Survey concepts and scope

Three data collections – the *Survey of Accommodation Providers*, *Resource Operations Employment Survey*, and *Resource Projects Employment Survey* – were conducted by OESR in 2011 to obtain information about current and future non-resident workers in the Bowen and Galilee Basins.

Each collection was a census of the relevant companies or establishments. The collection methodology used was similar for each survey and involved:

- an initial phone call to determine the most appropriate contact person, mail and email address for each establishment
- a self-completion questionnaire and cover letter mailed out with an electronic option provided by email
- telephone follow up of non-respondents.

Details of the concepts, scope and methodology used in each collection are provided below and additional definitions are provided in the Glossary of terms and abbreviations.

Survey of Accommodation Providers

The 2011 Survey of Accommodation Providers collected information about the non-resident worker population of the Bowen and Galilee Basins. All operators of WAVs, hotels, motels and caravan parks in these regions were asked to report the number of non-resident workers staying at their establishment on Wednesday 27 July, or another more representative day that week. The 'typical day' concept was used to avoid undercounting due to shift changes or maintenance periods. Commercial accommodation providers not catering for these workers were not included in the collection.

Non-resident workers were defined as:

- staying for the working week or longer
- including mining employees, contractors, construction crews and other workers who FIFO/DIDO to the region
- including live-in staff of WAVs
- excluding overnight and short-term guests
- excluding seasonal agricultural workers and itinerants
- excluding permanent residents of the LGA.

A total of 152 establishments were surveyed in the Bowen Basin, with 151 responses received – a response rate of 99 per cent. Close to half (48 per cent) the respondents were hotels/motels, followed by WAVs (38 per cent) and caravan parks (13 per cent). All 23 establishments surveyed in the Galilee Basin responded. The majority were hotels/motels (70 per cent) and the remainder WAVs and caravan parks (30 per cent).

Resource Operations Employment Survey

OESR's 2011 Resource Operations Employment Survey gathered information from all resource companies with existing operations in the Bowen Basin. See Appendix C for the list of existing operations surveyed.

Companies were asked to report the size of their production and construction workforce in June 2011 according to the residential status of workers (resident or non-resident), the region where non-resident workers lived, and the accommodation provided for workers by the company. Respondents were asked to provide the number of company employees and contractors for the month of June 2011 excluding visitors or short-term contractors employed for a total of one week or less.

Resource Projects Employment Survey

OESR's 2011 Resource Projects Employment Survey gathered information from all resource companies intending to develop projects in the Bowen and Galilee Basins as at June 2011. A list of future projects included in the data collection is contained in Appendix D.

Companies were asked to report employment details for future projects, including new projects and expansion of existing projects. Respondents were asked to provide the anticipated size, timing and location of each project's construction and production workforces.

Note that this collection reports on planned projects, which are subject to substantial change. All data reported from this collection should therefore be considered as indicative only of project development timeframes, future workforce sizes and their expected resident/non-resident composition.

Appendix C

Existing operations, Bowen Basin, as at June 2011

Name	Resource owner or manager	LGA	Nearest town(s)
Baralaba	Cockatoo Coal Ltd	Banana	Baralaba
Blackwater	BMA (BHP Billiton Mitsubishi Alliance)	Central Highlands	Blackwater
Blair Athol	Rio Tinto Coal Australia Pty Ltd	Isaac	Clermont
Broadlea	Vale Australia Pty Ltd	Isaac	Moranbah
Broadmeadow	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
Burton	Peabody Energy Australia Coal Pty Ltd	Isaac	Moranbah, Glenden, Coppabella
Callide	Anglo American Metallurgical Coal Pty Ltd	Banana	Biloela
Capcoal (German Creek) and Foxleigh	Anglo American Metallurgical Coal Pty Ltd	Isaac	Middlemount
Carborough Downs	Vale Australia Pty Ltd	Isaac	Moranbah, Coppabella
Clermont	Rio Tinto Coal Australia Pty Ltd	Isaac	Clermont
Collinsville	Xstrata Coal Queensland Pty Ltd	Whitsunday	Collinsville
Cook	Caledon Coal Pty Ltd	Central Highlands	Blackwater
Coppabella	Macarthur Coal (C&M Management) Pty Ltd	Isaac	Coppabella
Curragh	Wesfarmers Resources Ltd	Central Highlands	Blackwater
Dawson	Anglo American Metallurgical Coal Pty Ltd	Banana	Moura
Eaglefield / North Goonyella	Peabody Energy Australia Coal Pty Ltd	Isaac	Moranbah
Ensham	Ensham Resources Pty Ltd	Central Highlands	Emerald
Goonyella Riverside	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
Gregory Crinum	BMA (BHP Billiton Mitsubishi Alliance)	Central Highlands	Emerald
Hail Creek	Rio Tinto Coal Australia Pty Ltd	Isaac	Glenden, Nebo
Isaac Plains	Vale Australia Pty Ltd, IP Coal Pty Ltd	Isaac	Moranbah
Jellinbah East	Jellinbah Group Pty Ltd	Central Highlands	Blackwater
Kestrel	Rio Tinto Coal Australia Pty Ltd	Central Highlands	Emerald, Tieri
Lake Vermont	Jellinbah Group Pty Ltd	Isaac	Dysart
Middlemount	Middlemount Coal Pty Ltd	Isaac	Middlemount
Millennium	Peabody Energy Australia Coal Pty Ltd	Isaac	Moranbah, Coppabella
Minerva	Sojitz Coal Resources Pty Ltd	Central Highlands	Emerald
Moorvale	Macarthur Coal (C&M Management) Pty Ltd	Isaac	Coppabella
Moranbah North	Anglo American Metallurgical Coal Pty Ltd	Isaac	Moranbah
Newlands	Xstrata Coal Queensland Pty Ltd	Whitsunday	Glenden
Norwich Park[(a)]	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Dysart
Oaky Creek	Xstrata Coal Queensland Pty Ltd	Central Highlands	Tieri
Peak Downs	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
Poitrel	BHP Billiton Mitsui Coal Pty Ltd	Isaac	Moranbah
Rolleston	Xstrata Coal Queensland Pty Ltd	Central Highlands	Rolleston
Saraji	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Dysart
Sonoma	QCoal Pty Ltd/Sonoma Mine Management Pty Ltd	Whitsunday	Collinsville
South Walker Creek	BHP Billiton Mitsui Coal Pty Ltd	Isaac	Coppabella
Yarrabee	Yancoal Australia Ltd	Central Highlands	Blackwater, Bluff

(a) No longer operational as at May 2012

Source: OESR, Resource Operations Employment Survey, 2011

Appendix D

Future projects, Bowen and Galilee Basins, identified as at June 2011

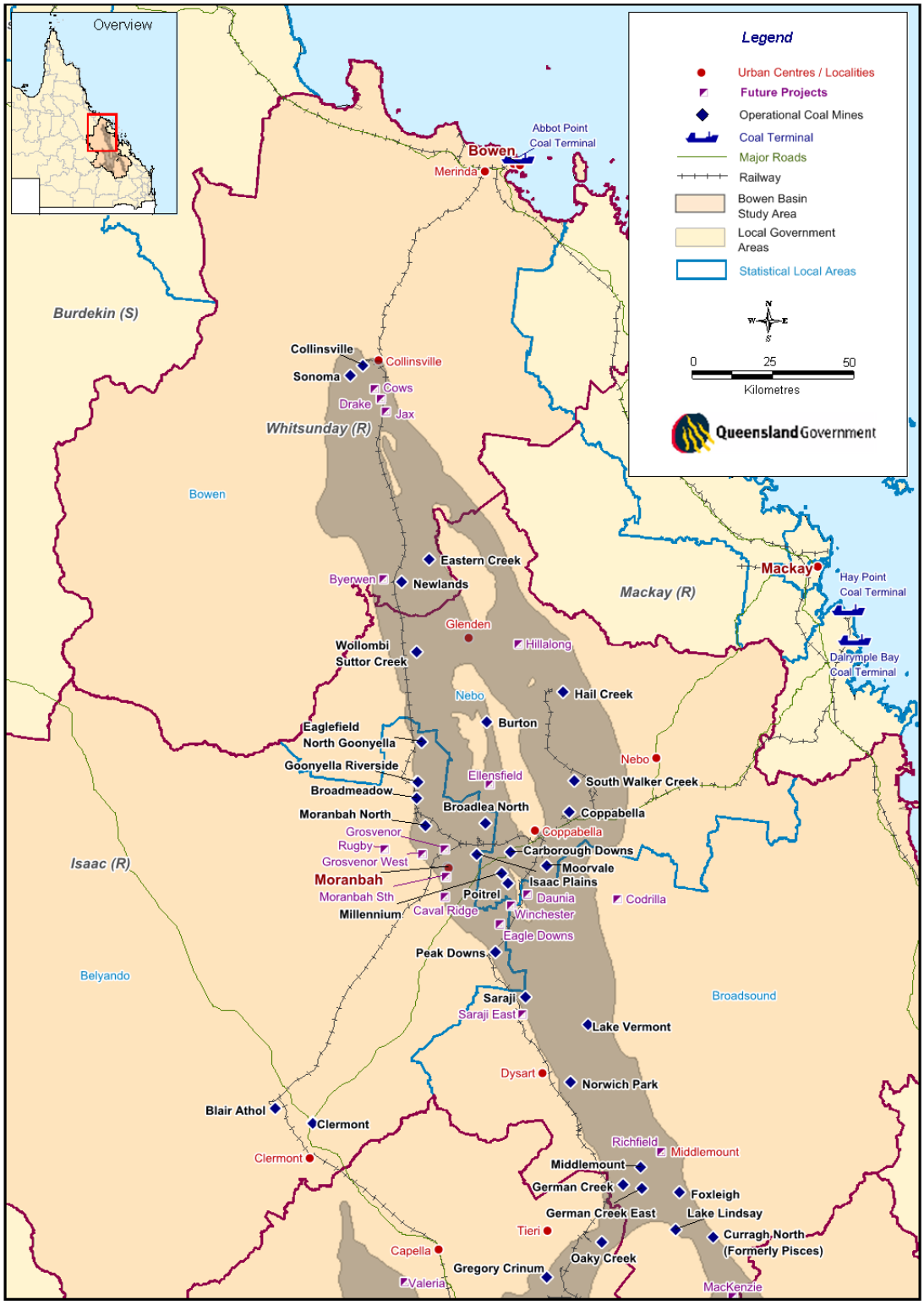
Name	Resource owner or manager	LGA	Nearest town(s)
Abbot Point Expansion	BMA (BHP Billiton Mitsubishi Alliance)	Whitsunday	Bowen
Alpha Coal Mine	Hancock Coal Pty Ltd	Barcaldine	Alpha
Alpha Coal Port	Hancock Coal Pty Ltd	Whitsunday	Bowen
Alpha Coal Railway	Hancock Coal Pty Ltd	Barcaldine, Whitsunday	Alpha, Bowen
Arrow Energy Bowen Basin Gas Project	Arrow Energy Pty Ltd	Isaac	Moranbah
Arrow Energy Bowen Pipeline	Arrow Energy Pty Ltd	Isaac, Gladstone	Moranbah, Gladstone
Belvedere	Belvedere Coal Management Pty Ltd	Banana	Moura
Byerwen Coal Project	QCoal Pty Ltd	Isaac	Glenden
Carmichael Mine Project	Adani Mining Pty Ltd	Isaac	Clermont
Carmichael Rail Project	Adani Mining Pty Ltd	Isaac	Clermont and Moranbah
Caval Ridge	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
Caval Ridge Expansion	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
China First Coal Project (mine)	Waratah Coal Pty Ltd	Barcaldine	Alpha
China First Coal Project (port)	Waratah Coal Pty Ltd	Whitsunday	Bowen
China First Coal Project (railway)	Waratah Coal Pty Ltd	Whitsunday	Collinsville, Bowen
Codrilla Mine	Macarthur Coal	Isaac	Nebo
Connors River Dam	Sunwater Limited	Isaac	Nebo
Connors River Dam to Moranbah Pipeline	Sunwater Limited	Isaac	Moranbah, Nebo
Cows Coal Project	QCoal Pty Ltd	Whitsunday	Collinsville
Daunia	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
Degulla	Vale Australia Pty Ltd	Isaac	
Dingo West Coal Project	Dingo West Coal Pty Ltd (Bandanna Energy Ltd)	Central Highlands	Dingo
Drake Coal Project	QCoal Pty Ltd	Whitsunday	Collinsville
Dyno Nobel Moranbah Explosives Plant	Incitec Pivot Pty Ltd	Isaac	Moranbah
Eagle Downs Project	Eagle Downs Coal Management Pty Ltd	Isaac	Moranbah
Eaglefield Expansion Project	Peabody Energy Australia Coal Pty Ltd	Isaac	Moranbah
Ellensfield Coal Project	Vale Australia Pty Ltd	Isaac	Moranbah
Ensham Underground Project	Ensham Joint Venture	Central Highlands	Emerald
Goonyella Riverside Expansion (Red Hill)	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Moranbah
Goonyella to Abbot Point Rail Project	BMA (BHP Billiton Mitsubishi Alliance)	Isaac, Whitsunday	Moranbah, Bowen
Grosvenor Mine	Anglo American Metallurgical Coal Pty Ltd	Isaac	Moranbah
Grosvenor West	Carabella Resources Ltd	Isaac	Moranbah
Hay Point Expansion Stage 3 Project	BMA (BHP Billiton Mitsubishi Alliance)	Mackay	Mackay
Hillalong	Rocklands Richfield Ltd	Isaac	Glenden
Jax Coal Project	QCoal Pty Ltd	Whitsunday	Collinsville
Kevin's Corner	Hancock Galilee Pty Ltd - GVK	Barcaldine	Alpha
Lake Vermont Mine Expansion Project	Bowen Basin Coal Pty Ltd	Isaac	Dysart
Mackenzie Project	Stanmore Coal Ltd	Central Highlands	Comet

Millennium Expansion Project	Peabody Energy Australia Coal Pty Ltd	Isaac	Moranbah
Minyango	Blackwater Coal Pty Ltd	Central Highlands	Blackwater
Monto Coal Project	Monto Coal Joint Venture	North Burnett	Mulgildie
Moranbah South Mine	Anglo American Metallurgical Coal Pty Ltd	Isaac	Moranbah
Moranbah to Alpha Pipeline Project	Sunwater Limited	Isaac	Moranbah, Clermont, Alpha
Richfield	Rocklands Richfield Ltd	Isaac	Middlemount
Rocklands	Rocklands Richfield Ltd	Central Highlands	Blackwater
Rolleston Mine Expansion	Rolleston Coal Joint Venture (Xstrata Coal, Sumisho Coal Australia and ICRA Rolleston)	Central Highlands	Rolleston
Rugby Coal Project	Diamond Creek Coal Pty Ltd	Isaac	Moranbah
Saraji East (Expansion)	BMA (BHP Billiton Mitsubishi Alliance)	Isaac	Dysart
South Galilee Coal Project	AMCI (Alpha) Pty Ltd and Alpha Coal Pty Ltd (Bandanna Energy)	Barcaldine	Alpha
Springsure Creek Coal Mine	Springsure Creek Coal Pty Ltd (Bandanna Energy Limited)	Central Highlands	Springsure, Emerald
Teresa Coal Project	Linc Energy Ltd	Central Highlands	Emerald
Valeria	Rio Tinto Coal Australia Pty Ltd	Central Highlands	Capella
Washpool Hard Coking Coal Project	Aquila Resources Ltd	Central Highlands	Blackwater
Winchester South	Rio Tinto Coal Australia Pty Ltd	Isaac	Moranbah
Yamala Project	New Hope Corporation Limited	Central Highlands	Emerald

Source: OESR, Resource Projects Employment Survey, 2011

Appendix E

Existing operations and future projects, northern Bowen Basin, as at June 2011

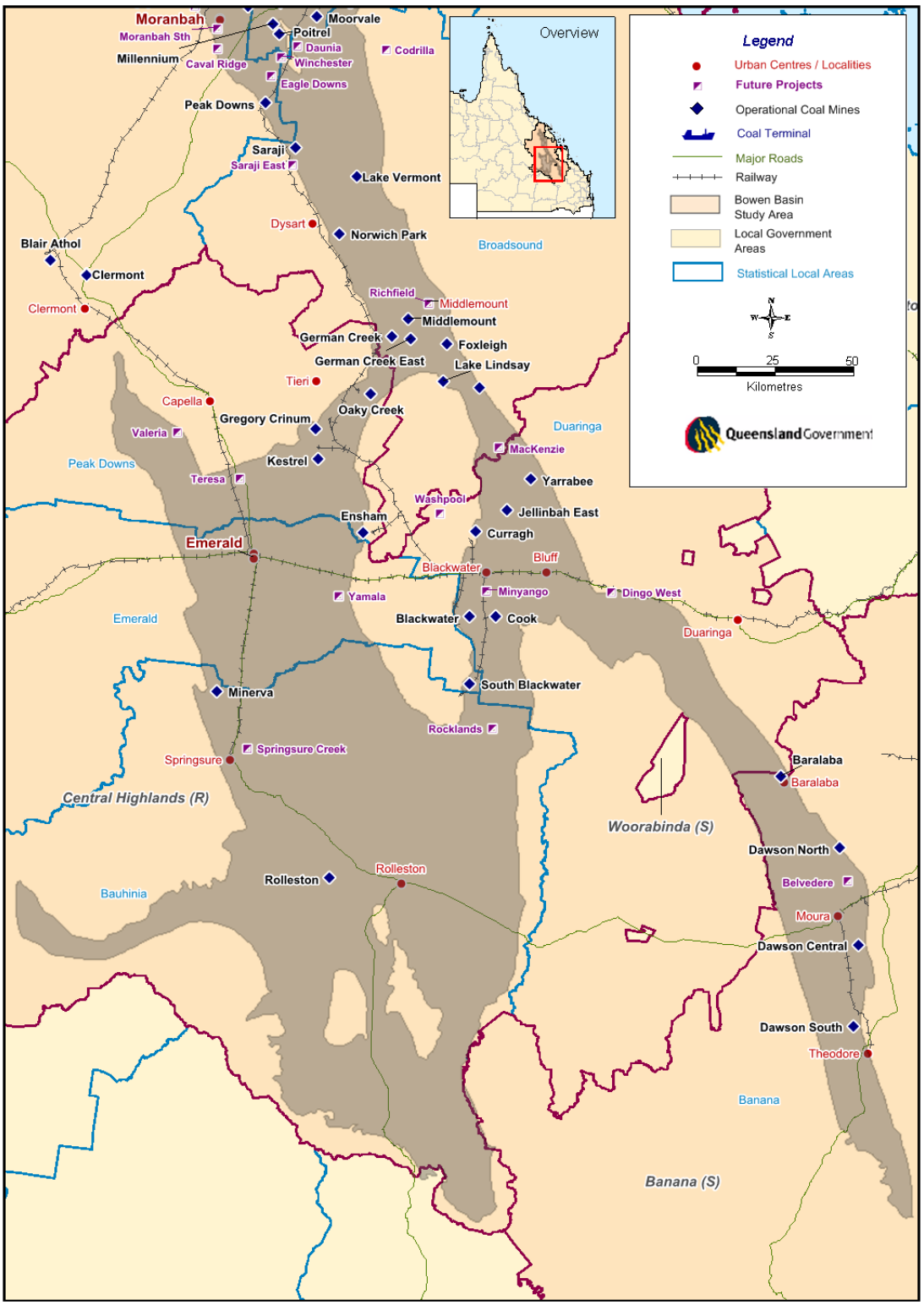


(R) – Regional Council (S) – Shire
Points shown for operational mines and future projects represent the centroid of the mining lease. The actual location of current and future mines may differ from those shown on the map.
The Carmichael project, included in projections for the Bowen Basin, is beyond the boundaries of this map (see Appendix G).

Source: OESR, 2012

Appendix F

Existing operations and future projects, southern Bowen Basin, as at June 2011

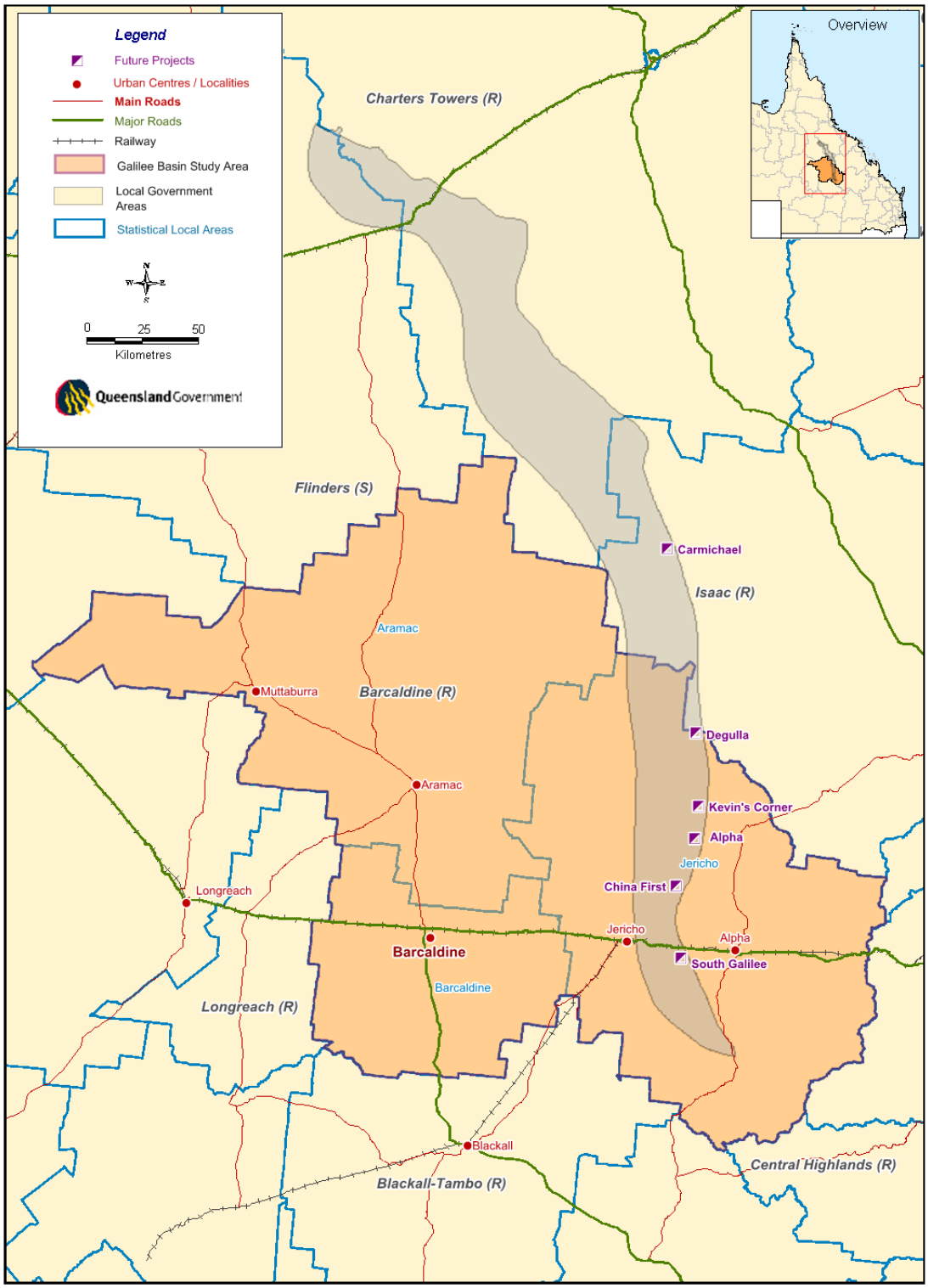


(R) – Regional Council (S) – Shire
Points shown for operational mines and future projects represent the centroid of the mining lease. The actual location of current and future mines may differ from those shown on the map.

Source: OESR, 2012

Appendix G

Existing operations and future projects, Galilee Basin, as at June 2011



(R) – Regional Council (S) – Shire
Points shown for operational mines and future projects represent the centroid of the mining lease. The actual location of current and future mines may differ from those shown on the map.
Population impacts of the Carmichael project, and rail and port components of other Galilee Basin projects, are included in projections for the Bowen Basin.

Source: OESR, 2012

Appendix H

Non-resident worker projections methodology

OESR's projections of the non-resident worker population of the Bowen and Galilee Basins provide an estimate of the cumulative number of construction and operations workers who would be present in the area at a given point in time, extending to 2018. They are based on the non-resident worker population estimates established by OESR in previous years, and take into account future workforce growth arising from resource industry and infrastructure projects planned for the region.

OESR's projections of the non-resident population denote only the number of FIFO/DIDO workers who would be present in the area when rostered on, and do not include those non-resident workers who would be off-shift and therefore absent from the region at the same point in time. These non-resident worker on-shift projections should not be confused with forward estimates of job numbers and workforces created by resource projects, which represent the number of additional jobs that they may generate, rather than their impact on regional population growth, both resident and non-resident.

The methodology to develop the non-resident worker population projections can be summarised thus:

- Baseline estimates of the current non-resident workforce are derived from the Survey of Accommodation Providers and the Resource Operations Employment Survey.
    - The Survey of Accommodation Providers counts all non-resident workers on-shift living in commercial accommodation (WAVs, hotels, motels and caravan parks), and includes both construction and operations workers of all projects, including non-resource industry projects.
    - The Resource Operations Employment Survey collects workforce numbers of current mining and gas operations, split according to resident and non-resident workers. This survey provides an estimate of the non-resident workforce directly attributable to resource industry operations.
    - Because they cover the same period of collection, the overlap between the two surveys is deemed to be the number of non-resident workers who are not directly employed by mining operations and who are present in the area at the time of survey. These largely consist of contractors and independent operators involved in construction, maintenance and associated services who are not locally resident in the area.
- Future growth in non-resident workforces is estimated from the Resource Projects Employment Survey results. This annual survey gathers workforce information directly from proponents of future projects, extending to a seven year time horizon. Data gathered include estimates of workforces for construction and operational phases of each project, the likely makeup of workforces (resident and non-resident) and estimated timeframes for the development sequence. Some of these data are supplemented or updated from other sources, including Environmental Impact Statements (EIS), Social Impact Management Plans (SIMP) and company sources.
- Resident and non-resident workforce splits for future projects are differentiated according to advice from project proponents, as well as industry and regionally specific propensities. The number of non-resident workers on-shift is estimated according to shift roster patterns advised by proponents or commonly used within the industry/area. Projected non-resident worker population totals for LGAs are established by accumulating quarter/year totals for the components of all projects that will be accommodated in that area.
- Further adjustments are made to non-resident worker estimates to account for the workforces of construction projects under way in 2011, and which have been completed since the time of survey or are expected to be completed between 2012 and 2018.

- The output of the model reflects the population and workforce impacts based on the best available data at the time of preparation (April 2012).

These projections should be interpreted carefully in view of the following caveats:

- The projections are based on the assumption that projects will proceed within the timeframes reported by the proponent, and that the workforce numbers given are representative of the actual numbers. In that sense, the projections are likely to be somewhat optimistic, and should be considered as having a high level of uncertainty.
- The timing of individual projects is a major influence on cumulative workforce totals. Changes to the indicative timeframes for larger projects are likely to result in changes to the peak levels of projected workforce numbers as well as the duration of these peaks.
- The information on which these projections are based is the best available to OESR at the time of collection. While efforts have been made by OESR to ensure the most reliable and up to date source material is considered, the volatile nature of the resource sector means that no guarantee can be given that any of these projects will proceed in the timeframe or manner reported by the proponent.
- Non-resident worker numbers are projected for the period 2012–2018 only, as it is considered that the reliability of information regarding future projects diminishes considerably beyond that point.
- OESR's population projections take into consideration the cumulative workforce impacts of expanding or declining operations, workforces of new projects, and changes to the residual non-resident workforce. The latter is a hidden component of the flow-on or indirect employment generated by the resource industry in that area, but it does not represent the fullest extent of the area's indirect workforce arising from flow-on employment.[17] In the absence of detailed information regarding supply chains for goods and services required by mining projects in their construction and operations phases, it is not currently possible to accurately determine the likely extent and location of cumulative flow-on employment.

[17] The data from the Survey of Accommodation Providers, which are used as the basis for projections, contain a number of non-resident workers who are not directly employed by resource operations in the area. This residual non-resident population represents an element of the indirect workforce which is carried forward into future growth estimates. If any of these workers are known to be associated with a particular activity (for example, construction of major infrastructure) that has a finite timespan, their number is reduced from forward estimates accordingly.

Appendix I

Projected resident population, low, medium and high series, Bowen Basin LGAs, 2011 to 2018

	2011[(a)]	2012	2013	2014	2015	2016	2017	2018
	— number —							
Banana (S)								
Low series	15,590	15,830	15,920	16,130	16,350	16,430	16,470	16,490
Medium series	15,590	15,920	16,050	16,360	16,810	16,950	17,030	17,080
High series	15,590	16,080	16,270	16,680	17,280	17,510	17,700	17,850
Central Highlands (R)								
Low series	31,780	32,300	33,250	34,030	34,740	35,400	36,080	36,770
Medium series	31,780	32,550	33,640	34,560	35,420	36,260	37,140	38,050
High series	31,780	32,870	34,110	35,180	36,200	37,210	38,280	39,390
Isaac (R)								
Low series	22,960	23,980	25,200	25,860	26,470	27,050	27,520	27,980
Medium series	22,960	24,260	25,830	26,680	27,490	28,270	28,890	29,520
High series	22,960	24,620	26,490	27,520	28,510	29,460	30,380	31,310
Whitsunday (R) (Bowen only)								
Low series	14,520	14,890	15,420	15,630	15,790	15,900	16,170	16,470
Medium series	14,520	15,020	15,700	15,990	16,210	16,360	16,730	17,150
High series	14,520	15,190	16,010	16,360	16,630	16,820	17,270	17,790
BOWEN BASIN TOTAL								
Low series	84,850	87,000	89,790	91,650	93,350	94,780	96,230	97,700
Medium series	84,850	87,750	91,220	93,590	95,930	97,830	99,790	101,790
High series	84,850	88,760	92,870	95,740	98,620	101,000	103,620	106,330

(R) – Regional Council (S) – Shire
(a) 2011 preliminary ERP.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: ABS 3218.0*, Regional Population Growth, Australia, 2010-11*; OESR, *Queensland Government population projections*, 2011 edition (medium series)

The 2011 population projections for LGAs in Queensland provide a range of population estimates to 2031, reflecting current expert knowledge. While the medium series projections are considered to be the most likely population outcomes, unforeseen circumstances may result in other population futures. The low and high series projections represent the likely lower and upper limits to population growth outcomes throughout the projection years.

LGA projections take into account long-term trends in the primary components of population change (natural increase and migration) and many secondary factors, including the effects of major residential developments and major employment generating projects, such as mining and gas projects. The influences of short-term activities or unusual events (such as natural disasters or short-term changes in economic conditions) are not modelled. Population projections are estimates of future population levels if assumptions concerning demographic trends were to prevail. Population projections are not forecasts or predictions, as social and economic factors underlying the components of population change may vary over time.

Appendix J

Projected non-resident workers on-shift[(a)], low, medium and high series, Bowen Basin LGAs, 2011 to 2018

	2011	2012	2013	2014	2015	2016	2017	2018
	— number —							
Banana (S)								
Low series	1,380	1,320	1,340	1,450	1,550	1,700	1,370	1,460
Medium series	1,380	1,430	1,520	1,750	1,980	1,830	1,520	1,610
High series	1,380	1,640	1,970	2,110	2,240	2,040	1,720	1,750
Central Highlands (R)								
Low series	4,830	4,810	4,840	5,570	5,320	5,380	5,000	4,870
Medium series	4,830	5,020	5,350	6,480	6,230	6,400	6,010	5,880
High series	4,830	5,160	5,920	6,870	6,970	7,950	7,590	7,420
Isaac (R)								
Low series	13,590	14,620	16,560	16,520	16,260	16,490	16,150	15,920
Medium series	13,590	14,860	16,730	16,730	17,600	19,290	18,650	17,970
High series	13,590	14,860	16,850	17,210	18,240	21,020	21,490	20,570
Whitsunday (R) (Bowen only)								
Low series	720	730	960	900	970	970	970	980
Medium series	720	790	1,040	1,440	3,270	3,540	1,420	1,300
High series	720	820	1,170	1,580	3,720	3,750	1,800	1,780
BOWEN BASIN TOTAL								
Low series	20,520	21,480	23,700	24,440	24,100	24,550	23,480	23,220
Medium series	20,520	22,110	24,640	26,400	29,080	31,060	27,600	26,760
High series	20,520	22,480	25,910	27,760	31,170	34,760	32,600	31,510

(R) – Regional Council (S) – Shire

(a) Represents an estimate of the cumulative non-resident worker population on-shift for the middle of the indicated year. Due to the volatile nature of non-resident workforces and the cumulative influences of several projects proceeding at the same time, temporary peaks and falls in project workforces may occur in between estimates for successive years.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, 2012

The low, medium and high series projections of non-resident workers on-shift reflect differing assumptions about the likelihood of projects proceeding according to advised commencement dates, sequencing of project stages, the timing of workforce peaks, and changes to the size of the residual non-resident workforce. Changes to any of these factors can make a significant difference to the cumulative non-resident workforce at a given point in time, particularly during construction phases. Given the inherent uncertainty about exact timeframes for projects to proceed, these projections should be considered as being indicative rather than literal accounts of future growth.

When the data are used for planning purposes, OESR strongly recommends that users apply the medium series projections as the most likely growth sequence, but to have regard to the high and low series as upper and lower boundaries respectively. Users are also advised to have regard to short-term influences such as adverse weather, industrial action, labour shortages and supply chain delays, which can all result in changes to project scheduling and to these projections.

Appendix K

Projected FTE population by components, medium series, Bowen Basin LGAs, 2011 to 2018

	2011[(a)]	2012	2013	2014	2015	2016	2017	2018
	— number —							
	Banana (S)							
Estimated resident population	15,590	15,920	16,050	16,360	16,810	16,950	17,030	17,080
Non-resident workers on-shift	1,380	1,430	1,520	1,750	1,980	1,830	1,520	1,610
FTE population	*16,970*	*17,360*	*17,570*	*18,110*	*18,790*	*18,780*	*18,550*	*18,690*
	Central Highlands (R)							
Estimated resident population	31,780	32,550	33,640	34,560	35,420	36,260	37,140	38,050
Non-resident workers on-shift	4,830	5,020	5,350	6,480	6,230	6,400	6,010	5,880
FTE population	*36,620*	*37,570*	*38,990*	*41,050*	*41,650*	*42,650*	*43,150*	*43,920*
	Isaac (R)							
Estimated resident population	22,960	24,260	25,830	26,680	27,490	28,270	28,890	29,520
Non-resident workers on-shift	13,590	14,860	16,730	16,730	17,600	19,290	18,650	17,970
FTE population	*36,540*	*39,120*	*42,560*	*43,410*	*45,090*	*47,560*	*47,540*	*47,490*
	Whitsunday (R) (Bowen only)							
Estimated resident population	14,520	15,020	15,700	15,990	16,210	16,360	16,730	17,150
Non-resident workers on-shift	720	790	1,040	1,440	3,270	3,540	1,420	1,300
FTE population	*15,230*	*15,810*	*16,740*	*17,430*	*19,480*	*19,900*	*18,150*	*18,450*
	BOWEN BASIN TOTAL							
Estimated resident population	84,850	87,750	91,220	93,590	95,930	97,830	99,790	101,790
Non-resident workers on-shift	20,520	22,110	24,640	26,400	29,080	31,060	27,600	26,760
FTE population	*105,370*	*109,860*	*115,860*	*119,990*	*125,010*	*128,890*	*127,390*	*128,550*

(R) – Regional Council (S) – Shire
(a) 2011 preliminary ERP.
Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: ABS 3218.0, *Regional Population Growth, Australia, 2010-11*; OESR, *Queensland Government population projections*, 2011 edition (medium series); OESR, 2012

The FTE population measure comprises the sum of the estimated resident population and non-resident workers on-shift (see Chapter 1 and Appendix A). OESR's current series of resident population projections (2011 edition), added to the projected number of non-resident workers on-shift, provide the basis for estimating the FTE population of the Bowen Basin to 2018.

While any combination of the three series of resident and non-resident projections may be used to estimate an FTE population, OESR recommends that the medium series of both sets should be used as a starting point. Any variations from that combination should be carefully considered. For example, where existing operations and future projects place an increasing emphasis upon FIFO/DIDO workers over locally resident workers, it may be appropriate to add the high series non-resident worker projection to the low series resident population projection to reach an FTE population mix.

Appendix L

Projected FTE population by components, low, medium and high series, Moranbah, 2011 to 2018

	Estimated resident population	Non-resident workers on-shift	FTE population
	— number —		
Year	**Low series**		
2011[(a)]	8,980	3,550	12,530
2012	9,640	3,510	13,150
2013	10,010	4,330	14,340
2014	10,790	4,860	15,650
2015	10,850	5,190	16,050
2016	11,320	5,710	17,030
2017	11,550	6,280	17,830
2018	12,020	5,170	17,180
Change, 2011-18	*3,040*	*1,620*	*4,660*
	Medium series		
2011[(a)]	8,980	3,550	12,530
2012	9,690	3,860	13,550
2013	10,030	5,500	15,530
2014	10,850	6,050	16,910
2015	10,970	6,870	17,840
2016	11,450	7,460	18,920
2017	11,790	8,070	19,870
2018	12,310	7,600	19,910
Change, 2011-18	*3,330*	*4,050*	*7,380*
	High series		
2011[(a)]	8,980	3,550	12,530
2012	9,690	3,860	13,550
2013	10,040	5,490	15,540
2014	10,990	6,000	16,990
2015	11,270	6,750	18,020
2016	11,790	7,330	19,120
2017	12,330	7,860	20,180
2018	12,920	7,390	20,310
Change, 2011-18	*3,940*	*3,840*	*7,780*

(a) 2011 figures are projected estimates as preliminary ERPs and non-resident worker data were not available at the time of preparation.

Figures in this table have been rounded to the nearest 10; any internal discrepancies are due to rounding.

Source: OESR, 2011

Appendix M

Typology of typical WAV arrangements

Category	Description	Typical size (beds)	Life span[(a)]	Usual location	Group usually catered for	Amenity[(b)]	Characteristics
1	Major village	Up to several thousand	Long-term	In urban centre, or on private land near operation	Production and maintenance workforces for resource operations	High	Usually owned and operated by a specialist provider. Usually have long-term take or pay service arrangements with client companies, but also provide casual accommodation to other companies or individuals if available. Usually service more than one client.
2	Minor village	Up to several hundred	Long-term	In urban centre, or on private land near to operation. May also be attached to a caravan park.	Production and maintenance workforces for resource operations	Moderate – High	Usually owned and operated by an independent entity, but could also be owned by a resource company and managed by a third party on their behalf. May service more than one client, but usually provide accommodation for only one resource operation.
3	Mine/ gas field village	Up to several hundred	Long-term (life of the operation)	On mine/gas field lease or adjacent land	Production and maintenance workforces for resource operations	Moderate – High	Usually owned by resource company and used to accommodate company employees and contractors. May also be used to house construction workers (e.g. during expansions). WAVs in remote areas may have their own dedicated airstrip for FIFO and medical facilities.
4	Major construction village	Several hundred to several thousand	Medium – short-term	In urban centre, or on private land near to project	Construction workforces – major projects	Moderate	May be owned and operated by an independent entity, or owned by a construction company and managed by a third party on their behalf. May have a life beyond the construction phase of the initial project, depending on continuity of work in the area.
5	Minor construction village	Up to several hundred	Short-term	On mining or gas lease	Construction workforces – mine and gas projects	Low – Moderate	Usually owned and operated by independent entity. Usually provide accommodation close to mine/gas field during construction, but removed from there once production commences. May be used as a pioneer village for a larger WAV during initial stages of a large project.
6	Mobile construction camp	Up to several hundred	Short-term	On private land near project	Pipeline and rail construction workers	Low	Temporary construction camps that occur along the route of a project. May be relocated to different localities along the route as the project proceeds.
7	Drilling/ exploration camp	Rarely more than 25	Very short-term	On mining or gas lease	Drillers and exploration workers	Low	Mobile camps that cater for drillers and exploration crews – often are in the form of caravans/trailers. Rarely in one location for more than a short period.

(a) Refers to the life span of the WAV in its current location. Although there are no hard and fast guidelines, a *short-term* facility may stay in place for a period of up to six months before being removed or relocated, while a *medium-term* facility may have a life span of up to three years. WAVs with a life span of more than three years may be considered as *long-term* facilities.

(b) Amenity takes into account the quality of the accommodation in terms of construction standard, landscaping, and standard of the facilities and services provided.

Source: OESR, 2011

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