

Surat Basin non-resident population projections, 2019 to 2025

Introduction

The resource sector in regional Queensland utilises fly-in/fly-out and drive-in/drive-out (FIFO/DIDO) workers as a source of labour supply. These non-resident workers live in the regions only while on-shift. The Australian Bureau of Statistics' (ABS) official population estimates and the Queensland Government's population projections for these areas only include residents.

To support planning for population change, the Queensland Government Statistician's Office (QGSO) publishes, for selected regions, annual estimates of the non-resident population and a set of population projections. This report provides a range of projections on non-resident workers on-shift for local government areas (LGAs) in the Surat Basin region (Figure 1), from 2019 to 2025.

Projections in this report are derived from surveys conducted by QGSO in 2018 and other sources. Three projection series are presented in this report representing various scenarios, based on the status of projects in the regulatory and financial approval process. Series A is based on existing operations, projects that are currently under construction and upcoming projects that have received all the regulatory approvals and have reached financial close. Series B and D projections are based on projects that are at earlier stages of the approvals process. Data tables to supplement the report are available on the QGSO website (www.qgso.qld.gov.au).

Figure 1 Surat Basin region



In this publication, the Surat Basin region is defined as the local government areas (LGAs) of Maranoa (R), Western Downs (R) and Toowoomba (R).

Key points

For the Surat Basin region:

- The non-resident population of the Surat Basin was 3,630 persons in June 2018. This largely comprised FIFO/DIDO workers involved in coal seam gas (CSG) production, maintenance and drilling activities, as well as those engaged in the construction of renewable energy projects and civil works.
- Under Series A, the region's non-resident population will increase to 3,720 persons by 2020, and then gradually decline to 3,340 persons by 2025.
- According to Series B, the region's non-resident population will increase to 4,330 persons in 2020, then decline to 3,770 persons by 2025.
- As there are no projects in Category C, there are no Series C projections in this edition.
- The Series D projection anticipates the region's non-resident population will grow to 4,350 persons by 2022.
- The LGA of Western Downs (R) will host much of the resource industry activity in the Surat Basin, and will continue to have the largest non-resident population in the region between 2019 and 2025.
- Under Series A, the non-resident population of Western Downs (R) is expected to increase from 2,250 persons in 2018 to 2,390 persons in 2020, before declining to 2,060 persons by 2025. Series B projects a higher non-resident population across the seven years, reaching a peak of 2,860 persons in 2020.



Surat Basin – future influences

The Surat Basin is Queensland's main source of CSG supply and a major energy province, with an emerging renewable energy industry to supplement its existing CSG operations, coal mines, and coal and gas fired power stations (Table 5, page 8). CSG-related activity continues to provide most of the region's resource-related employment, as the industry progressively develops gas resources to supply export and domestic markets (QGSO, 2018). With major CSG infrastructure now in operation, development activity in the Surat Basin is focused on drilling and exploration programs, as well as enhancement of existing gas infrastructure.

Queensland Curtis LNG (QCLNG) continues to progress drilling and completions activity at Project Ruby near Chinchilla, as well as commencing preparation works for Project Goog-a-binge, which will see the development of around 250 wells connected to existing gas facilities (QGC, 2018). **Australia Pacific LNG (APLNG)** plans to drill 250–300 wells in 2019–20, with a focus on optimisation and new development opportunities at existing gas fields to further increase production (Origin Energy, 2018). **Gladstone LNG (GLNG)** is increasing activity levels and expects to drill 350–400 wells per annum in 2019–20. During 2018, GLNG commenced work at its 480-well Roma East development, and announced a final investment decision (FID) on the 137-well Arcadia development in Central Highlands (R) (Figure 2) (Santos, 2018a; Santos, 2018b).

Following the recommissioning of the Kincora gas plant, Armour Energy commenced the **Kincora Project** drilling program in 2018, near Surat in Maranoa (R) (Armour Energy, 2018). The drilling program will continue into 2019, with longer-term plans including the re-working of existing production wells and ongoing exploration activities.

In October 2018, Senex Energy announced FID for **Project Atlas** in Western Downs (R) and for the Roma North program of its **Western Surat Gas Project** in Maranoa (R) (Senex Energy, 2018b). An integrated drilling and connection campaign is scheduled to start in the first half of 2019, commencing with an initial 15-well campaign at Project Atlas. Civil works have commenced at the Roma North development, with key activities to include construction and commissioning of the gas processing facility and associated infrastructure (Senex Energy, 2018a). Drilling for Roma North is expected to commence after the initial drilling program at Project Atlas.

Jemena will build, own and operate the **Atlas Gas Pipeline Project**, comprising a gas processing facility at Senex Energy's Project Atlas in Western Downs (R) and a 60-kilometre pipeline connecting to Jemena's existing Darling Downs pipeline in Maranoa (R) (Senex Energy, 2018c). The project is anticipated to be commissioned by late 2019.

Arrow Energy announced in 2017 that it would commercialise most of its gas reserves in the Surat Basin through a joint venture with QCLNG (Arrow Energy, 2018a). Phased development activity for the **Surat Gas Project** will commence at Tipton near Arrow's existing infrastructure, and then progress north to the Daandine and Kogan fields. From 2021, development will expand into new gas fields near Dalby and Miles, with peak construction activity for new areas expected in 2022 and peak gas production around 2027 (Arrow Energy, 2018b).

Four renewable energy projects were under construction at the end of 2018 – the **Coopers Gap Wind Farm** (AGL, 2018) in Western Downs (R) and **Brigalow Solar Farm** (Impact Investment Group, 2018), **Oakey Solar Farm** (Foresight Group, 2019) and **Yarranlea Solar Farm** (Risen Energy, 2018) in Toowoomba (R). Other renewable energy projects in the development pipeline include the **Beelbee Solar Farm** (DoEE, 2018a), **Bulli Creek Solar Farm** (DoEE, 2017a), **Chinchilla Solar Farm** (DoEE, 2017b), **Delga Solar Farm** (WDRRC, 2017b), **Wandoan South Solar Project** (Vena Energy, 2017), **Western Downs Green Power Hub** (DoEE, 2018b) and **Western Downs Solar Farm** (WDRRC, 2017a).

Projection methodology

QGSO's non-resident population projection methodology comprises four different series, which represent a range of possible outcomes arising from the future development of resource projects and operations in the Surat Basin. Each series estimates the non-resident population that would be present in each LGA at 30 June of each year from 2019 to 2025, should the listed operations and projects proceed according to advised timeframes and workforce numbers.

The four projection series represent the estimated non-resident workforces of existing operations and future projects. Projects are categorised according to their standing in the approvals pipeline, including stages of the environmental impact statement (EIS) process¹, and progress towards achieving financial close.

- **Series A** projection is based on the number of non-resident workers on-shift who were engaged in existing resource operations at June 2018. The projection takes into account future changes to those operational workforces as advised by company sources, as well as the estimated construction and operational workforces of Category A projects (i.e. those that are approved and have reached financial close).
- **Series B** projection includes the Series A projection plus projected growth in the non-resident population arising from Category B projects (those that are approved but have yet to reach financial close).

¹ The projections also include some projects where an EIS is not or may not be mandatory. Such projects are still subject to other statutory approvals.

- **Series C** projection includes the Series A and B projections, plus projected growth in the non-resident population arising from Category C projects (those that have lodged an EIS, but have yet to proceed through to final approval).
- **Series D** projection includes the Series A, B and C projections, plus projected growth in the non-resident population from Category D projects (those that have yet to publish an EIS, including projects that have lodged an initial advice statement (IAS) as well as projects that have yet to begin the approvals process).

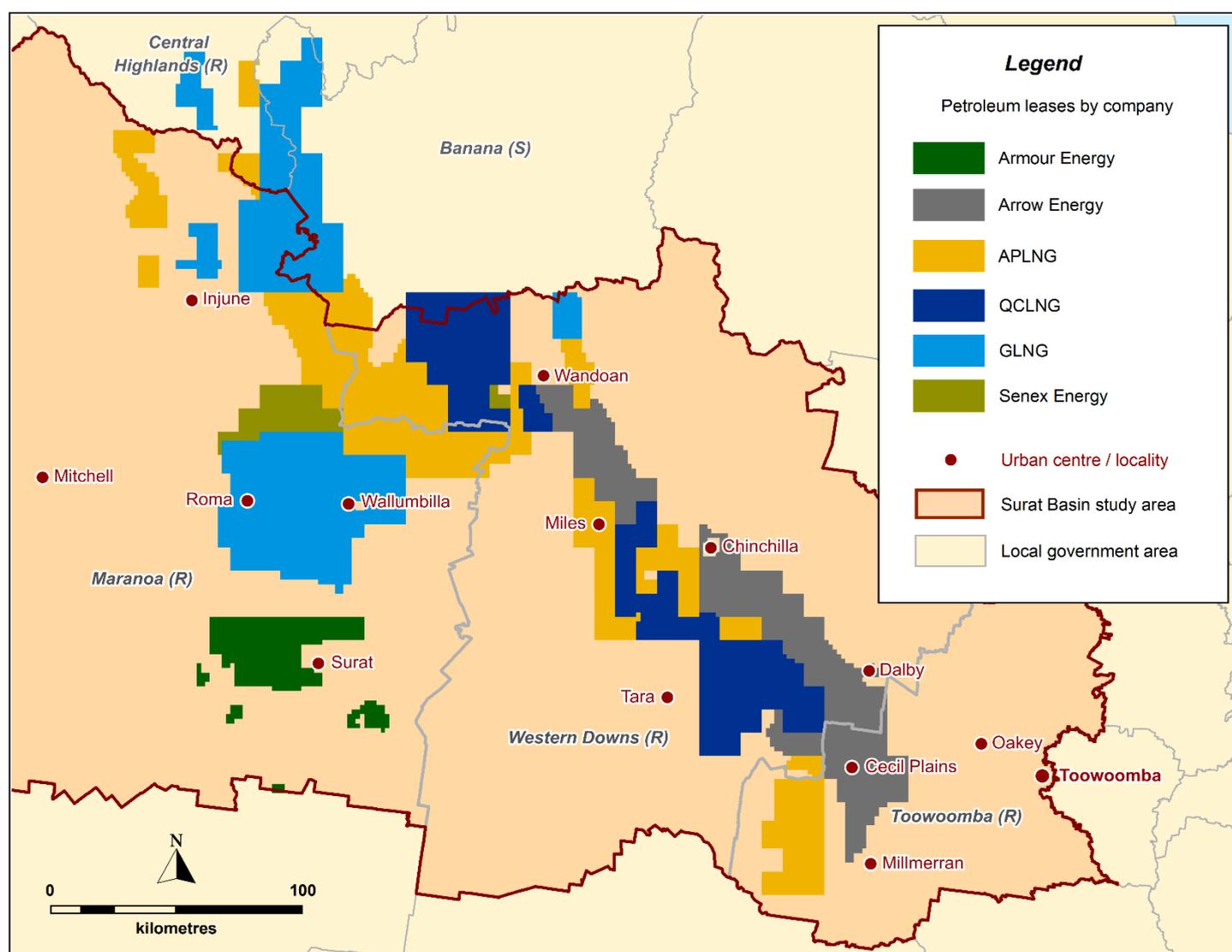
There are no Series C projections for the Surat Basin in this edition, as there are no projects in Category C.

Where financial close for an approved project has been delayed indefinitely, or where it is not possible to give consideration to indicative workforce data or sequencing, the project is designated as **Category E** and is not included in any of the four projection series. Other projects that are dependent on Category E projects in order to commence are also designated as Category E, and are excluded from consideration in the projections.

Users of these projections should note that there is a degree of uncertainty about the likelihood of these projects proceeding as assumed and, as such, the projections should be regarded as being indicative scenarios rather than probabilistic predictions. QGSO does not advocate any of the projection series as being the most likely or favoured outcome. See caveats on page 9 of this report for further details.

A full list of existing operations and projects included in each category is available in Table 5 (page 8). A map of petroleum leases by company in the Surat Basin is shown in Figure 2.

Figure 2 Petroleum leases by company^(a), Surat Basin



(a) Includes petroleum lease applications and petroleum leases granted. Does not include petroleum leases held by other companies.

Source: DNRME, 2018; QGSO, 2018

Projected non-resident population, Surat Basin

The non-resident population of the Surat Basin was 3,630 persons in June 2018, down from 3,810 persons in June 2017 (Figure 3). This population largely comprised FIFO/DIDO workers involved in CSG production, maintenance and drilling activities, as well as those engaged in the construction of renewable energy projects and civil works (QGSO, 2018).

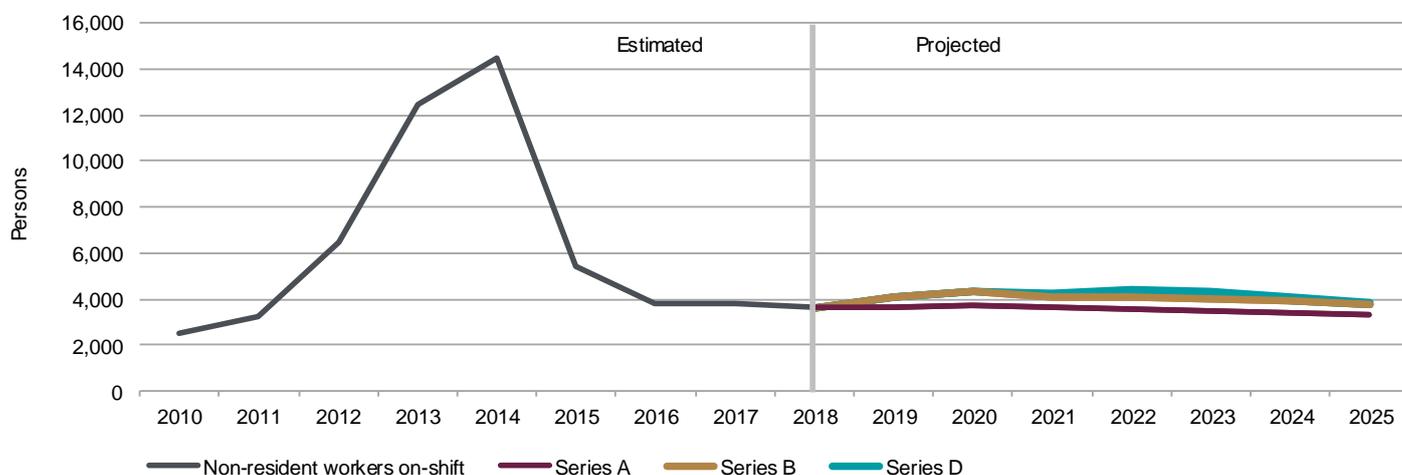
The majority of the Surat Basin's non-resident population will continue to be engaged in CSG-related activities, as the CSG industry progressively develops gas resources to supply export and domestic markets. With major CSG infrastructure now in operation, development activity will be focused on drilling and exploration programs and the enhancement of existing gas infrastructure in the region. It should be noted, though, that some gas gathering and drilling activity associated with Surat Basin CSG operations has not been captured in the Surat Basin projections as the activity is expected to occur in neighbouring Bowen Basin LGAs.

Three projection series are presented for the Surat Basin. Under the Series A projection, the region's non-resident population will increase to 3,720 persons in 2020, and then gradually decline to 3,340 persons by 2025 (Table 1). This series includes the non-resident production workforces for ongoing CSG, coal mining and power station operations, as well as workforces for renewable energy and other projects under construction in the region.

The Series B projection factors in the additional influence of projects that have been approved but have yet to reach financial close. Under this series, the Surat Basin's non-resident population would increase to 4,330 persons in 2020, then decline to 3,770 persons by 2025. The Series D projection takes into account all Series B projects, plus the influence of two projects in preliminary planning stages. This series would see the region's non-resident population reach 4,350 persons in 2022, before decreasing to 3,770 persons by 2025.

Should projects in Series B and D proceed as planned, the region's non-resident population is expected to exceed 2018 levels throughout the projections period. Despite the projected increase, the non-resident population will remain well below the 14,490 persons reached at the peak of CSG infrastructure construction in 2014.

Figure 3 Past and projected non-resident population, Surat Basin



Source: QGSO estimates, 2010 to 2018; QGSO projections, 2019 to 2025

Table 1 Projected non-resident population, Surat Basin

Projection series	Number of non-resident workers on-shift at 30 June							
	Estimated	Projected						
	2018	2019	2020	2021	2022	2023	2024	2025
Series A	3,630	3,630	3,720	3,640	3,580	3,450	3,430	3,340
Series B	3,630	4,070	4,330	4,120	4,120	4,020	3,910	3,770
Series D	3,630	4,070	4,330	4,190	4,350	4,240	3,980	3,770

Figures in all tables have been rounded to the nearest 10; see Notes at end of report for details.

Source: QGSO estimates, 2018; QGSO projections, 2019 to 2025

Maranoa (R)

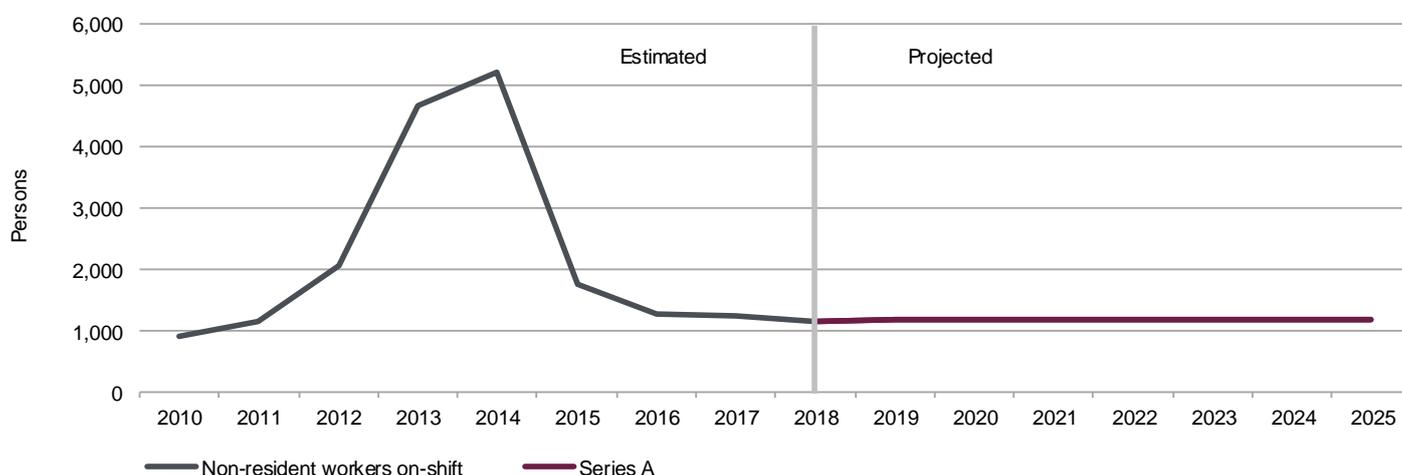
The non-resident population of Maranoa (R) is primarily associated with the CSG industry (Table 5, page 8). Current and future CSG developments in Maranoa (R) are located a considerable distance from large population centres, and will continue to utilise non-resident workforces for project construction and ongoing operations.

The non-resident population of Maranoa (R) declined to 1,170 persons in June 2018, a decrease of 90 persons from the preceding year (Figure 4). This can be partly attributed to a shift in the location of some gas gathering and drilling activity, which moved into neighbouring Bowen Basin LGAs (QGSO, 2018).

Just one projection series is presented for Maranoa (R). Series A anticipates minimal change in the size of Maranoa (R)'s non-resident population between 2018 (1,170 persons) and 2025 (1,190 persons). This series includes consideration of the ongoing gas gathering, drilling and operation workforces of the APLNG and GLNG projects, as well as Armour Energy's Kincora Project and Senex Energy's Western Surat Gas Project.

The projection series for Maranoa (R) does not include consideration of the Atlas Gas Pipeline Project, which is classified as Category E (Table 5, page 8).

Figure 4 Past and projected non-resident population, Maranoa (R)



Source: QGSO estimates, 2010 to 2018; QGSO projections, 2019 to 2025

Table 2 Projected non-resident population, Maranoa (R)

Projection series	Number of non-resident workers on-shift at 30 June							
	Estimated			Projected				
	2018	2019	2020	2021	2022	2023	2024	2025
Series A	1,170	1,200	1,200	1,190	1,190	1,190	1,190	1,190

Source: QGSO estimates, 2018; QGSO projections, 2019 to 2025

Western Downs (R)

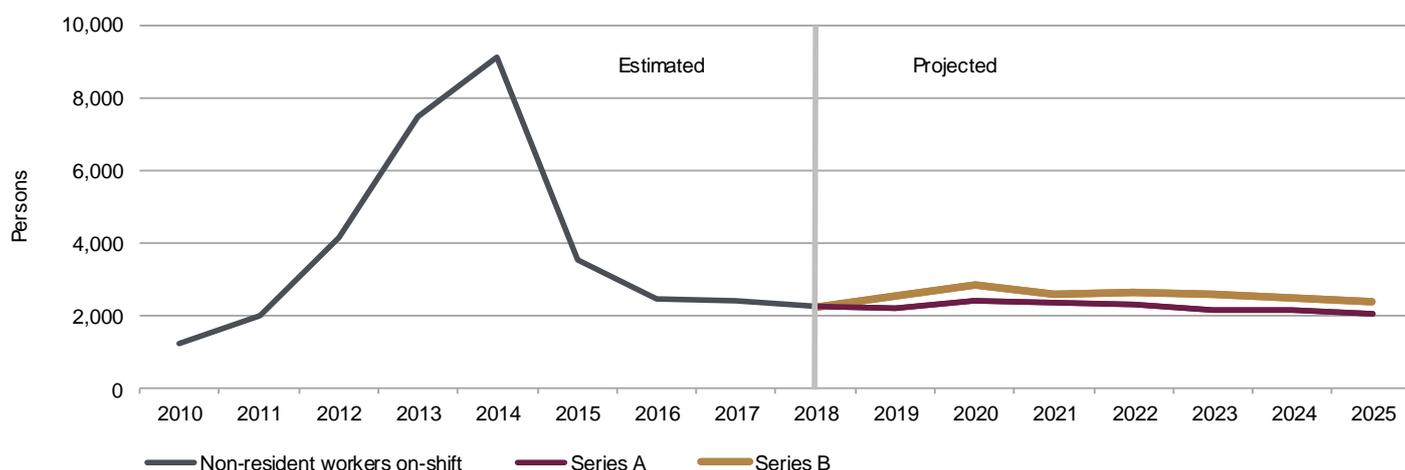
Western Downs (R) has the largest non-resident population of the Surat Basin LGAs and is host to a range of resource industry activity including coal mines, CSG projects and operations, coal and gas fired power stations, and renewable energy generation projects (Table 5, page 8). In June 2018, Western Downs (R) had a non-resident population of 2,250 persons, a decrease of 150 persons from the preceding year (Figure 5).

Two projection series are presented for Western Downs (R). The Series A projection reflects the ongoing production workforces of resource operations and projects currently active in the area, as well as the construction and production workforces for the Coopers Gap Wind Farm project and Senex Energy's Project Atlas. Following a slight decline in 2019, the Series A non-resident population of Western Downs (R) is projected to increase to 2,390 persons in 2020, before declining to 2,060 persons by 2025 (Table 3).

The Series B projection includes the anticipated non-resident population impacts of Arrow Energy's Surat Gas Project, as well as the construction of six solar farms. Under this scenario the number of non-resident workers on-shift in Western Downs (R) would increase to 2,860 persons in 2020, before declining to 2,380 persons by 2025.

Neither of the projection series for Western Downs (R) include consideration of the Atlas Gas Pipeline Project, Surat Basin Rail or proposed coal mining projects, which are classified as Category E (Table 5, page 8).

Figure 5 Past and projected non-resident population, Western Downs (R)



Source: QGSO estimates, 2010 to 2018; QGSO projections, 2019 to 2025

Table 3 Projected non-resident population, Western Downs (R)

Projection series	Number of non-resident workers on-shift at 30 June							
	Estimated		Projected					
	2018	2019	2020	2021	2022	2023	2024	2025
Series A	2,250	2,240	2,390	2,360	2,290	2,170	2,150	2,060
Series B	2,250	2,550	2,860	2,610	2,670	2,600	2,510	2,380

Source: QGSO estimates, 2018; QGSO projections, 2019 to 2025

Toowoomba (R)

The LGA of Toowoomba (R) has a relatively small non-resident population compared with the other Surat Basin LGAs. This is in part due to the proximity to the large population centre of Toowoomba, which enables a sizeable proportion of project and operational workforces to reside within the local area. The non-resident population of Toowoomba (R) in June 2018 was 200 persons, with non-resident workers on-shift engaged in work for civil projects, including road and rail projects, and a range of support services for the CSG and mining industries.

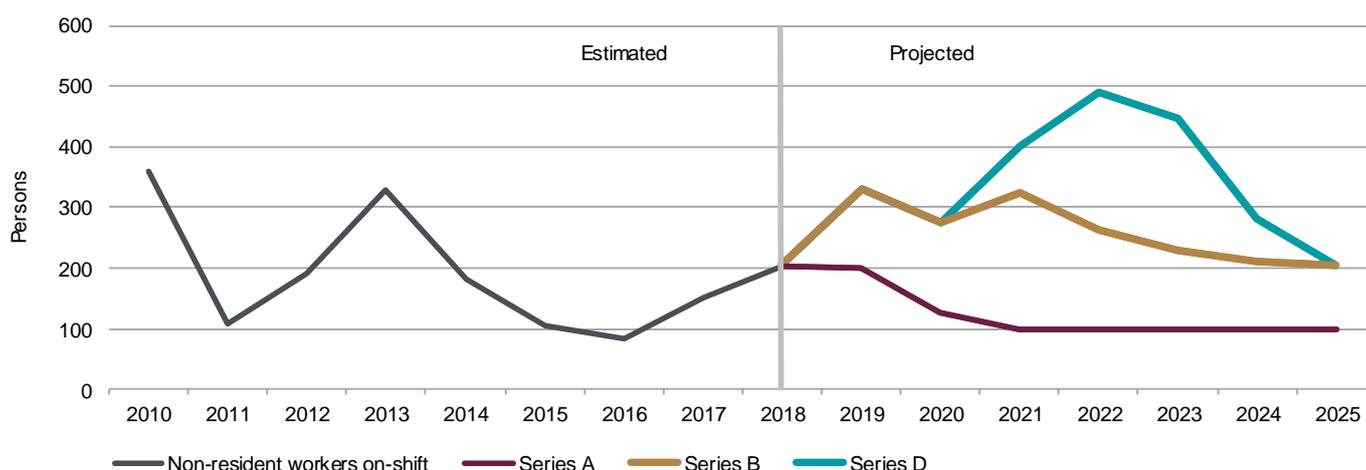
Three projection series are presented for Toowoomba (R) (Table 4). According to Series A, the non-resident population of Toowoomba (R) is projected to remain stable at 200 persons in 2019, then fall to 100 persons by 2021 and remain at that level until 2025. This population includes non-resident workers associated with existing resource operations, as well as construction workforces for renewable energy projects.

Series B projects the non-resident population of Toowoomba (R) will peak at 330 persons in 2019, before eventually falling to 200 persons by 2025. This series factors in the workforces associated with Arrow Energy's Surat Gas Project, the New Acland Coal Mine Stage 3 Project, and construction of the Bulli Creek Solar Farm.

The Series D projection, which includes two large rail projects in the early stages of planning, sees the non-resident population growing to 490 persons in 2022, then falling back to 200 persons by 2025.

Due to the relatively small number of non-resident workers on-shift in Toowoomba (R), seasonal power station maintenance workers, road crews and other civil construction workers may also have a notable temporary influence on the size of the non-resident population. These workforces have not been included in any of the projection series.

Figure 6 Past and projected non-resident population, Toowoomba (R)



Source: QGSO estimates, 2010 to 2018; QGSO projections, 2019 to 2025

Table 4 Projected non-resident population, Toowoomba (R)

Projection series	Number of non-resident workers on-shift at 30 June							
	Estimated	Projected						
	2018	2019	2020	2021	2022	2023	2024	2025
Series A	200	200	130	100	100	100	100	100
Series B	200	330	280	320	260	230	210	200
Series D	200	330	280	400	490	450	280	200

Source: QGSO estimates, 2018; QGSO projections, 2019 to 2025



Queensland Government Statistician's Office

Table 5 Resource operations and projects, Surat Basin

Category ^(a)	Project / operation name	Company name	LGA
A	APLNG Drilling and Completions	APLNG ^(b)	Maranoa (R), Western Downs (R)
A	APLNG Surat Operations and Gas Gathering	APLNG	Maranoa (R), Western Downs (R)
A	Arrow Energy Surat Operations	Arrow Energy	Western Downs (R)
A	Braemar Power Station	Alinta Energy	Western Downs (R)
A	Braemar 2 Power Station	Arrow Energy	Western Downs (R)
A	Brigalow Solar Farm	Impact Investment Group	Toowoomba (R)
A	Cameby Downs Mine	Yancoal Australia	Western Downs (R)
A	Commodore Mine	Millmerran Power Partners	Toowoomba (R)
A	Condamine Power Station	QGC	Western Downs (R)
A	Coopers Gap Wind Farm	AGL	Western Downs (R)
A	Daandine Power Station	Arrow Energy	Western Downs (R)
A	Darling Downs Power Station	Origin Energy	Western Downs (R)
A	GLNG Drilling and Completions	GLNG ^(c)	Maranoa (R), Western Downs (R)
A	GLNG Surat Operations and Gas Gathering	GLNG	Maranoa (R), Western Downs (R)
A	Kincora Project	Armour Energy	Maranoa (R)
A	Kogan Creek Mine	CS Energy	Western Downs (R)
A	Kogan Creek Power Station	CS Energy	Western Downs (R)
A	Millmerran Power Station	InterGen	Toowoomba (R)
A	New Acland Mine	New Hope Group	Toowoomba (R)
A	Oakey Power Station	ERM Power	Toowoomba (R)
A	Oakey Solar Farm	Canadian Solar	Toowoomba (R)
A	Project Atlas	Senex Energy	Western Downs (R)
A	QCLNG Drilling and Completions	QCLNG ^(d)	Western Downs (R)
A	QCLNG Surat Operations and Gas Gathering	QCLNG	Western Downs (R)
A	Roma Power Station	Origin Energy	Maranoa (R)
A	Western Surat Gas Project	Senex Energy	Maranoa (R)
A	Yarranlea Solar Farm	Risen Energy	Toowoomba (R)
B	Beelbee Solar Farm	APA	Western Downs (R)
B	Bulli Creek Solar Farm	First Solar	Toowoomba (R)
B	Chinchilla Solar Farm	First Solar	Western Downs (R)
B	Delga Solar Farm	Shell Australia	Western Downs (R)
B	New Acland Coal Mine Stage 3 Project	New Hope Group	Toowoomba (R)
B	Surat Gas Project	Arrow Energy	Toowoomba (R), Western Downs (R)
B	Wandoan South Solar Project	Vena Energy	Western Downs (R)
B	Western Downs Green Power Hub	Neoen Australia	Western Downs (R)
B	Western Downs Solar Farm	Tilt Renewables	Western Downs (R)
D	Inland Rail – Border to Gowrie	Australian Rail Track Corporation	Toowoomba (R)
D	Inland Rail – Gowrie to Helidon	Australian Rail Track Corporation	Toowoomba (R)
E	Atlas Gas Pipeline Project	Jemena	Maranoa (R), Western Downs (R)
E	Elimatta Coal	New Hope Group	Western Downs (R)
E	Surat Basin Rail	Surat Basin Rail	Western Downs (R)
E	The Range Coal	Stanmore Coal	Western Downs (R)
E	Wandoan Coal	Glencore Coal	Western Downs (R)

(a) The four categories include existing operations and projects, grouped according to their status in the EIS process as at December 2018. Operations that are in care and maintenance mode, including Wilkie Creek coal mine in Western Downs (R), are not included in this list or the projections. See methodology (page 2) and caveats (page 9) for further details. There are no Category C projects in the Surat Basin.

(b) Australia Pacific LNG (APLNG) is a joint venture between Origin Energy, ConocoPhillips and Sinopec.

(c) Santos Gladstone LNG (GLNG) is a joint venture between Santos, PETRONAS, Total and KOGAS.

(d) Queensland Curtis LNG (QCLNG) is a joint venture between QGC, CNOOC and Tokyo Gas.

Source: QGSO, 2018



Caveats

QGSO's non-resident population projections provide an estimate of the number of non-resident workers on-shift by LGA. They are based on the on-shift non-resident worker population estimates established in previous years and consider future workforce growth arising from resource industry and infrastructure projects planned for the region, as reported directly by resource companies.

Projections are based on the best available data and advice at the time of preparation. Non-resident populations are projected for the period to 2025 only, as it is considered that the reliability of information regarding future projects diminishes considerably beyond that point. Projected numbers of non-resident workers on-shift presented in this report represent an estimate for 30 June of the indicated year. Temporary peaks and falls in project workforces may occur in between these mid-year estimates for successive years.

The four projection series represent a range of possible outcomes based on the status of projects in the EIS process at the time of production in December 2018 (see the projection methodology, page 2, for further details). These outcomes are subject to change over time as projects proceed through the approvals process. Projections reflect the cumulative impacts of multiple projects at a given point in time, and changes to any individual project will affect the projected cumulative outcome.

Category E comprises projects that have completed the approvals process but where financial close has been delayed indefinitely; projects where it is not possible to give consideration to indicative workforce data or sequencing; and other projects that are dependent on the commencement of projects in this category. These projects could not be allocated to a projection series at the time of preparation. Changes in the status of these projects could substantially alter any or all of the possible outcomes represented by the four projection series.

The projections reflect certain assumptions about the likelihood of projects advancing according to advised commencement dates, sequencing of project stages and timing of workforce peaks. 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. Short-term influences such as extreme weather events, industrial action, and supply chain delays can all result in changes to project scheduling and to these projections.

QGSO does not advocate any one series as being the most likely or favoured outcome and users should consider the assumptions affecting each potential scenario. Given the volatile nature of the resource sector and the inherent uncertainty about the likelihood of projects proceeding as indicated, these projections should be considered as being indicative of the range of potential outcomes rather than literal accounts of future growth.

Notes

(R) – Regional Council

Non-resident workers are people who fly-in/fly-out or drive-in/drive-out (FIFO/DIDO) to work and live in the area temporarily while rostered on, and who have their usual place of residence elsewhere. Non-resident workers include FIFO/DIDO mining and gas industry employees and contractors, construction workers and associated sub-contractors. Figures in this report refer to the number of non-resident workers on-shift, or present in the area at a given point in time, and should not be confused with total non-resident workforce numbers.

Data in this report are derived from surveys conducted by QGSO in 2018 and other sources. The Survey of Accommodation Providers counted the number of non-resident workers on-shift during the last week of June 2018. See the *Surat Basin population report, 2018* <http://www.qgso.qld.gov.au/products/publications/surat-basin-pop-report/index.php> for further details. The Resource Operations Employment Survey and the Resource Projects Employment Survey gathered workforce information from companies with existing operations or future projects in the Surat Basin at June 2018. A full list of existing operations and projects is available in Table 5 of this report.

The total number of non-resident workers on-shift for the Surat Basin represents the aggregate non-resident populations of all LGAs in the region. This total may include a small number of non-resident workers in each LGA who live elsewhere within the Surat Basin.

Figures in tables 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.

Data tables to supplement this report are available online at <http://www.qgso.qld.gov.au/products/tables/index.php>.



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