Australian Government | Infrastructure Australia

Population Estimates and Projections

Australian Infrastructure Audit Background Paper
April 2015

Infrastructure Australia is an independent statutory body that is the key source of research and advice for governments, industry and the community on nationally significant infrastructure needs.

It leads reform on key issues including means of financing, delivering and operating infrastructure and how to better plan and utilise infrastructure networks.

Infrastructure Australia has responsibility to strategically audit Australia's nationally significant infrastructure, and develop 15 year rolling infrastructure plans that specify national and state level priorities.

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Acknowledgments

Northern Territory Planning Commission – high resolution image for Figure 23
Victorian Department of Transport, Planning and Local Infrastructure - high resolution image for Figure 18
Western Australian Department of Planning – high resolution image for Figure 21

Contents

Appendices

Tables

Figures

Executive Summary

Introduction

This paper provides an overview of various population projections for Australia, the eight states and territories, their capital cities, and some regional areas over the next 15 to 40+ years. The paper has been prepared to inform the Australian Infrastructure Audit and subsequent development of the Australian Infrastructure Plan.

The purpose of the paper is to consolidate authoritative data on population issues in order to minimise the potential for misunderstanding of the demographic drivers of future demand for infrastructure.

Developing a solid understanding of population projections is important for a range of reasons. Firstly, population growth is a key driver of economic growth. The so-called 'three Ps' model of economic growth - population, productivity, and participation - applied by the Australian Treasury and others has population at its core.

Secondly, projections of the demand for infrastructure services, and in turn the business cases for new capital and maintenance proposals, turn heavily on population projections. Misunderstanding population projections can lead to poor infrastructure-related decisions.

Finally, population not only adds to demand for infrastructure; it can also provide funding for infrastructure. A larger population, gainfully employed, can afford more.

Australia's Present Population

Australia's population at the end of September 2014 was estimated to be 23.58 million persons. The four most populous states were: New South Wales (7.54 million and 32.0% of the national total); Victoria (5.87 million; 24.9%), Queensland (4.74 million; 20.1%) and Western Australia (2.59 million; 11.0%).

Two-thirds of Australians live in the capital cities. Western Australia, South Australia and Victoria have the highest concentrations of population in their capital city (all 75% or more), while Tasmania and Queensland have the least (both under 50%).

Natural increase in the population has ranged between 114,000 and 162,200 persons per annum over the last 20-25 years. Recently, net overseas migration (NOM) has played a more significant role in national population growth, with net figures between 200,000 and 300,000 persons per annum since the mid-2000s.

Projected Population Growth

Over recent years, Australia has had one of the fastest population growth rates in the developed world (it grew by 1.49% per annum over the 15 years to June 2014). Long-term population projections released by the Australian Bureau of Statistics (ABS) in November 2013 suggest that, on 'medium' assumptions, Australia's population will grow from 22.7 million persons in June 2012 to:

- 30.5 million in 2031 (an increase of 7.8 million persons or 1.56% per annum);
- 41.5 million in 2061 (an increase of 18.8 million persons or 1.24% per annum); and

- 53.6 million persons in 2101 (an increase of 30.9 million or 0.97% per annum).

The latest projections are somewhat higher than the equivalent figures released in 2008. The previous projected populations for 2031 and 2061 were 28.8 million and 36.7 million persons respectively. The new medium level projection for 2031 (30.5 million persons) is not that different to the previous high level projection (30.9 million).

This increase in the projected population reflects both recent natural growth in population as well as higher levels of net overseas migration. The new medium level projections assume net overseas migration of 240,000 persons per annum, 60,000 persons more than the 2008 projections. The assumption on net overseas migration is the largest and most uncertain, both in terms of the aggregate number and the distribution of future migrants between the states and territories.

Projections of Australia's population used in the 2015 version of the *Intergenerational Report* are very close to those issued by the ABS in November 2013. The *2015 Intergenerational Report* provides a projection for 2034-35 (32.0 million persons), i.e. the closest year to 2031 (the year of interest in the Audit). The medium level ABS population projection for June 2035 is also 32.0 million.

The proportion of Australians living in capital cities is expected to grow. The medium projections suggest that Australia's capital cities will increase their share of national population from 66.0 per cent in 2011 to 69.3 per cent in 2031 and 73.4 per cent in 2061.

This view is consistent with those of several state governments (e.g. New South Wales, Victoria and South Australia) that are planning for their capital cities to take on a greater share of the state's population.

The medium level projections suggest that 78.4 per cent of Australia's population growth over the period to 2031 could occur in the cities. The equivalent percentage for the period to 2061 is 82.1 per cent. On these medium projections, the population of Australia's capital cities would grow by:

- 6.4 million persons between 2011 and 2031; and
- 15.7 million persons between 2011 and 2061.

The projected growth in the population of the capital cities between 2011 and 2031 is equivalent to a new Melbourne and Brisbane. The projected growth to 2061 is more than the total current population of the capital cities.

The population of a number of major cities outside the capitals, e.g. Geelong, Bendigo, Ballarat, Newcastle (or more precisely the Lower Hunter), the Sunshine Coast and Gold Coast in Queensland (and possibly Rockingham and Mandurah in Western Australia), is also expected to grow appreciably. Several of these cities are in 'peri-urban locations' that are relatively close to the capitals and share many economic and social linkages.

Over time, as these peri-urban cities grow, it is conceivable there will be greater interaction between the capital and the city in question. In the absence of employment growth in these locations, 'journey to work' trips to and from the capital city may increase appreciably.

Performance of Previous Population Projections

Projecting population growth over the long term can be challenging. Examining the performance of past projections provides an insight into how future projections may perform.

Population projections for Sydney based on the 1981 Census suggested a 2011 population which was only 3.2 per cent (142,000 persons) lower than the observed estimated resident population (ERP) in 2011. Similarly, the 1981 population projections for Adelaide in 2011 were 4.8 per cent lower (58,000 persons) than the observed ERP in 2011. A previous projection of Queensland's population in 2011 was only 4.0 per cent (174,000 persons) lower than the observed ERP in 2011. Given the length of time over which these projections were made, the margins of error provide some encouragement for future projections.

Projections for Western Australia show a different result. The projection for 2011 was 14.4 per cent (230,000 persons) lower than the observed ERP. However, the 2001 projection was off by less than 1 per

cent. The difference in the following ten years is almost certainly due to the impact of growth in the mineral and energy sectors in the period after 2001.

More recent population projections for Melbourne also appear not to have fully anticipated a period of very strong economic growth. The *Victoria in Future* projections, based on the 2001 Census, anticipated a 2011 population for Melbourne of 3.87 million persons. In contrast, the observed population was 4.17 million by 2011, a difference of 294,000 persons (7.6 per cent) in less than a decade.

Examining the performance of these past long-term projections has shown that they can prove to be reasonably accurate, but are susceptible to inaccuracy should periods of strong economic growth develop in the future.

Implications for Our Infrastructure Networks

Projections are simply that; projections of future population given certain assumptions. Change the assumptions, and a different set of projections arise. They are used to inform forecasts and plans.

Arguably, greater weight should be placed on the forecasts and plans themselves. This is because they are expressions of intent and/or design, reflecting decisions and commitments by various parties. Government plans are usually (but not always) based on population projections that, at a state/territory level, accord fairly well with the medium growth ABS projections.

Governments and others may advocate other plans and strategies that, if implemented, would lead to materially different population figures from those suggested by current projections. This is particularly the case at a sub-national level. For example, the Australian Government has committed to developing and implementing a strategy to grow economic activity in northern Australia. Also, state government projections for New South Wales and Victoria suggest greater population growth in regional areas than anticipated by the ABS.

Demand for infrastructure does not necessarily rise or fall in proportion with changes in population. Nevertheless, in the absence of changes in the per capita consumption of infrastructure services and/or an ability to manage demand for those services within existing assets, the recent and prospective growth in Australia's population suggests a rising demand for new infrastructure.

The projected growth in population will have significant implications for our infrastructure networks. Given the 'fiscal gaps' projected in various versions of the *Intergenerational Report* (and equivalent reports prepared by some states), funding (or otherwise meeting) the projected requirements for infrastructure will almost certainly require significant policy change.

Within the cities, the location of new development and population growth will be critical. While the cost of providing new infrastructure in 'greenfield areas' is substantial, the cost of retrofitting or augmenting some infrastructure (for example transport links in tunnels) in established areas can also be high.

With a few exceptions, the 'population case' for expanding infrastructure networks in regional areas is likely to be less obvious. Arguments for investment in infrastructure in those areas will be driven more by social considerations (service equality) and economic development prospects, e.g. proposals for development in northern Australia.

Approach Pursued in the Audit

The ABS estimates and projections are a starting point for analysis during the Audit, particularly at a national and state/territory level. The ABS projections are also used as a starting point by state and territory governments, as well as other bodies such as the Australian Treasury.

In developing sub-state/territory projections, a balance has been struck between, on the one hand, having a set of projections that is sufficiently disaggregated to inform meaningful discussions about an area's infrastructure needs and, on the other, having a level of disaggregation that is manageable to deliver. The Audit uses sub-state/territory projections at the ABS-defined Statistical Area (SA) 4 Level. This is the first level of disaggregation below the state/territory level. There are 88 SA4 areas across Australia. In some cases, e.g. when analysing urban transport, a finer grain of analysis (SA3 or SA2) has been applied.

The projections used in the Audit are consistent with those used in the recent *Northern Australia Infrastructure Audit* prepared by Infrastructure Australia. Given the nature of that work, in some cases estimates and projections were prepared at the ABS SA2 level.

1 Introduction

The Australian Government has asked Infrastructure Australia to prepare an Australian Infrastructure Audit (the Audit), and subsequently to assist the Government in preparing an Australian Infrastructure Plan (the Plan) for the development of Australia's infrastructure.

This paper provides an overview of the range of population projections for Australia, the eight states/territories, and their capital cities and some regional areas over the next 15-40+ years. The paper has been prepared to inform the Audit and, in turn, development of the Plan.

The purpose of the paper is to consolidate authoritative data on population issues, in order to minimise the potential for misunderstanding of the demographic drivers of future demand for infrastructure.

A large number of population estimates and projections is in existence, including those prepared by the Australian Bureau of Statistics (ABS), Commonwealth Treasury, and state/territory governments. This paper consolidates the latest estimates and projections in one location, to form a resource to be used during the audit and to highlight any differences between the various projections.

Developing a solid understanding of population projections is important for several reasons.

Firstly, population is a key driver of economic growth. As shown in Figure 1, the so-called 'three Ps' model of economic growth - population, productivity, and participation - applied by the Australian Treasury and others has population at its core. In the *2015 Intergenerational Report* (IGR), population growth is assumed to drive almost half of the projected economic growth - measured in real Gross Domestic Product (GDP) - over the next 40 years.[1]

If productivity does not grow at 1.5 per cent per annum (as assumed in the IGR), the significance of population growth as a driver of economic growth will be larger than projected.

Secondly, projections of the demand for infrastructure services, particularly the business cases for new capital and maintenance proposals, turn heavily on population projections. Poor population projections can lead to poor infrastructure-related decisions.

Population projections can vary somewhat, both between and indeed within jurisdictions. To the extent that the projections are used in the development of infrastructure business cases, differences between projections and associated plans can confound rigorous, transparent decision-making.

Thirdly, and related to the second reason, population growth often leads to community expectations that infrastructure will be upgraded to address expected 'pressure points'. The responses to such expectations

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[1] Australian Treasurer (2015), p.27. The IGR projects that population will grow at an average 1.3 % per annum, while real GDP per person will grow at 1.5% per annum, producing a projected growth in real GDP of 2.8% per annum over the period to 2055. The average 1.5% per annum rise in real GDP per person is assumed to be the product of several factors, notably a 1.5% per annum increase in productivity; a 0.1% per annum decrease in participation rates, and a 0.1% per annum increase in the proportion of the population aged over 15.

can gain a 'head of steam' and be pursued without rigorous examination of the arguments and options to address those pressure points.

Finally, population not only adds to demand for infrastructure; it also provides funding for infrastructure. A larger population, gainfully employed, can afford more.

Figure 1 - The 3Ps of growth in real GDP per person

Source: Australian Treasurer (2015), p. xi, using data from ABS catalogue no. 5206.0, catalogue no. 6202.0, and Treasury projections.

1.1 Scope of this Paper

As the Australian Government has requested the preparation the Audit of current infrastructure and the development of the Plan, this paper focuses on current population and projections over the next approximately 15 years.

Most projections, and the plans which they inform, are based on five yearly intervals that coincide with the five yearly interval of the Census. The last Census was held in August 2011.

This paper focuses on projections through to 2031 for two reasons:

- infrastructure is designed for a long life, and it is appropriate to take a longer view of the population projections. Indeed, the paper also makes some comment about projections over the longer term. This makes sense, as major infrastructure decisions often turn on business cases that take 30-year and even 40-year views of future demand; and
- some jurisdictions have plans that expressly adopt a 2031 time horizon.

This paper is intended as a first exploration of these matters. It does not set out to provide a detailed review of population issues. In particular, the paper does not address changes in ageing of the population and its implications for the development and management of our infrastructure in detail. The paper does provide a brief assessment of the performance of historical population projections for a sample of states and major cities.

The paper does not seek to deal with the record of Australian governments in projecting and planning for population growth. Evidence from the past suggests that projections can be proved wrong and plans can be undone by subsequent decisions and changes in wider society. Examples include: (i) the impact of post-World War II immigration on the efficacy of plans for some of our major cities, and (ii) changes in internal migration within Australia (which were partly in response to changing perceptions of economic opportunity and concerns about the cost of housing).

1.2 Comment on the Projections and Implications for the Audit

This paper draws on the latest estimates and projections of population in Australia. Estimates of current population and projections of future population by the ABS form the basis for most of the analysis, although other estimates and projections are also referenced. This is because the ABS estimates and projections:

- are nationally consistent;
- are available for the states/territories and their respective capital cities (unlike some other projections);
- can be aligned with other ABS data, e.g. economic data; and
- are recognised and used by other governments and industry.

The ABS estimates and projections have been used as a starting point for analysis during the Audit, particularly at a national and state/territory level. These set 'control totals' for analysis of the cities and regions within a state or territory.

In developing the sub-state and territory projections, a balance has been struck between, on the one hand, having a set of projections that is sufficiently disaggregated to inform meaningfully discussions about an area's infrastructure needs and, on the other, having a level of disaggregation that is manageable to deliver.

The Audit uses sub-state and territory projections at the ABS-defined Statistical Area (SA) 4 Level. This is the first level of disaggregation below the state and territory level. The Bureau also produces data for the Greater Capital City Statistical Areas (GCCSA), which are, in effect, aggregations of SA4 areas in the capital cities. There are 88 SA4 areas across Australia.[2] In some cases, e.g. when analysing urban transport patterns, a finer grain of analysis (SA3) has been used.

At a sub-state and territory level, ABS analysis has been supplemented with projections and planning forecasts developed by the state and territory governments.

Any consideration of population estimates and projections requires some understanding of the different bases on which the estimates and projections are prepared. Confusion can easily arise, especially since, at face value, the estimates or projections cover a similar period or geographic area. Differences between projections can arise for one or more reasons, including:

- the use of different assumptions about fertility, mortality and migration (including migration within Australia). Different parties can legitimately reach different views on these matters;
- the fact that the projections are prepared or reviewed at different points in time. In most cases, the latest projections by state and territory governments have been built upon data from the 2011 Census, while others were built upon on the previous (2008) long-term projections by the Australian Bureau of Statistics, while some still draw from the 2006 Census; and
- the use of different geographical boundaries. For example, governments may change the boundaries of local government areas. It is also particularly relevant in the discussions about the capital cities. From time to time, governments will alter their conception or definition of what a city may be. In

[2] Strictly, the first sub-state level of aggregation is between the respective capital city, i.e. the Greater Capital City Statistical Area (GCCSA) and the 'rest of state'. The GCCSA is a combination of SA4 areas in each city. In regional areas, SA4s tend to have a population between 100,000 and 300,000. In metropolitan areas, SA4s tend to have populations of 300,000 to 500,000. See Australian Bureau of Statistics (2011).

addition, the ABS change to a new geographic standard in July 2011 has some minor impact when comparing past and present projections of the population of Australia's capital cities. [3]

For all of that, until the November 2013 projections from the ABS, the differences have generally not been that marked (at least at higher levels of geographic aggregation).

To minimise the risk of confusion, this paper endeavours to be as specific as is possible about the source material that is being used, and to highlight any key points of difference with other projections or plans.

This paper also considers forecasts of population that underpin the plans of governments (e.g. a regional development strategy), the private sector (a project business case) and other stakeholders (e.g. policy advocacy). It is important to note that projections are not forecasts. Projections only show how the population would change if certain demographic assumptions were to eventuate over the projection period. Change the assumptions, and a different set of projections arise.

Projections are used to inform forecasts and plans; however greater weight should arguably be placed on the forecasts and plans themselves. This is because they are expressions of intent and/or design, reflecting decisions and commitments by various parties. For example, a government may plan for an area to have a population increase of 100,000 people, which in turn leads to land use zoning decisions, expectations of changes in the demand for infrastructure and, consequentially, commitments to spend funds on particular infrastructure projects.

1.3 Structure of the Paper

Section two provides current estimates of the population of the states and territories, the capital cities, and areas outside the capital cities.

Section three provides a brief assessment of the performance of historical population projections for a sample of states and major cities.

Section four analyses population projections for Australia. Projections at a sub-national level are also considered. The views of various interest groups are also highlighted.

The final section provides a range of concluding comments, and suggestions for further work.

A series of appendices sets out more detailed information about the projections and plans for each of the jurisdictions.

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[3] Since July 2011, the Australian Bureau of Statistics has improved the basis for the geographical structure of its data, the Australian Statistical Geography Standard (ASGS) - see Australian Bureau of Statistics (2011). The new standard establishes a hierarchy of 'statistical areas'.

2 Australia's Present Population

Australia's population at 30 September 2014 (the most recent estimate) was 23.58 million persons. The associated estimates of the population of the states and territories are shown in Table 1.

The latest estimates of the population of the capital cities and the balance of each state and territory (based on estimates of state and territory population in June 2013) are shown in Table 2. The figures for the capital cities exclude the population of nearby regions, although these regions are affected by and contribute to the life and economy of their capital city.[4]

As shown in Table 2, two-thirds of Australians live in the capital cities. Western Australia, South Australia and Victoria have the highest concentrations of population in their capital city. In each case, the capital city accounts for more than three-quarters of the state's total population. Tasmania is the most decentralised of the states. Details of the population of various regional areas are shown in the Appendices. The population of the capital cities grew by 1.9 per cent in the year to 30 June 2014, compared to 1.6 per cent for the nation as a whole.

Table 1 - Estimated resident population (ERP) of Australian states and territories at 30 September 2014

Jurisdiction	Estimated Resident Population at 30 September 2014	Percentage Share of National Population
New South Wales	7,544,485	32.0%
Victoria	5,866,292	24.9%
Queensland	4,740,927	20.1%
South Australia	1,688,667	7.2%
Western Australia	2,589,078	11.0%
Tasmania	514,978	2.2%
Northern Territory	246,322	1.0%
Australian Capital Territory	387,069	1.6%
Australia - Total	**23,581,029**	**100.0%**

Source: Australian Bureau of Statistics (2015)
Note: The total for Australia includes other Territories comprising Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

[4] The ABS produces population estimates at the state/territory level on a quarterly basis. Estimates of population below the state/territory level are prepared annually. As shown in Table 2, the total Australian population in June 2014 (23.49 million) was around 90,000 lower than in September 2014. The NSW Greater Capital City Statistical Area (GCCSA) excludes the Illawarra and Lower Hunter. The Queensland GCCSA excludes the Gold Coast and Sunshine Coast. The Victorian GCSSA excludes Geelong. The Western Australian GCCSA includes Fremantle and Mandurah in the south and Yanchep in the north.

Table 2 - Estimated resident population of capital cities and the balance of each state/territory at 30 June 2014

Region	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Greater Capital City	4,840,628	4,440,328	2,274,560	1,304,631	2,021,203	219,243	140,386	385,996	15,626,975
Balance State/Territory	2,677,844	1,401,339	2,447,887	381,083	552,186	295,519	104,693	-	7,860,551
State/Territory Total	7,518,472	5,841,667	4,722,447	1,685,714	2,573,389	514,762	245,079	385,996	23,490,736
Capital City as % of Total	**64.4%**	**76.0%**	**48.2%**	**77.4%**	**78.5%**	**42.6%**	**57.3%**	**100.0%**	**66.5%**

Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2015a) data

2.1 Historic and Recent Growth

Appendix 1 includes a graph showing annual population growth rates back to 1901-02. Average annual growth rates have been:

- since 1901 (i.e. from 30 June 1901 – 30 June 2014) - 1.63% per annum;
- the last 40 years (i.e. from 30 June 1974 – 30 June 2014) - 1.35% per annum;
- the last 15 years (i.e. from 30 June 1999 – 30 June 2014) - 1.49% per annum; and
- the last 5 years (i.e. from 30 June 2009 – 30 June 2014) - 1.61% per annum.

In recent years, Australia has had one of the highest population growth rates in the western world. Over the last decade, Australia's population growth rate was more than twice the average of Organisation for Economic Co-operation and Development (OECD) member countries. Between September 2009 and September 2014, Australia's population grew by 1.79 million persons or 8.23 per cent.

Table 3 shows a breakdown of population growth by jurisdiction over the five years to September 2014. Although the east coast states grew more in absolute terms, the growth of Western Australia's population stands out, particularly in percentage terms. Notwithstanding the recent slowdown in the mining and resources industries, Western Australia's population grew the fastest in percentage terms in the 12 months to September 2014 (2.12 per cent), followed by Victoria (1.77 per cent). New South Wales grew the fastest in absolute terms (106,365 persons).

The figures highlight the scale of population growth that is leading, in part, to calls for investment in infrastructure.

Table 3 - Change in estimated resident population – end September 2009 – end September 2014

Region	2009 (no.)	2014 (no.)	Change 2009 - 2014 (no.)	Change 2009 - 2014 (%)
New South Wales	7,079,175	7,544,485	465,310	6.6%
Victoria	5,398,874	5,866,292	467,418	8.7%
Queensland	4,350,135	4,740,927	390,792	9.0%
South Australia	1,614,593	1,688,667	74,074	4.6%
Western Australia	2,253,355	2,589,078	335,723	14.9%
Tasmania	505,468	514,978	9,510	1.9%
Northern Territory	227,255	246,322	19,067	8.4%
ACT	356,310	387,069	30,759	8.6%
Other Territories	2,923	3,211	288	9.9%
Australia - Total	**21,788,088**	**23,581,029**	**1,792,941**	**8.2%**

Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2015) data

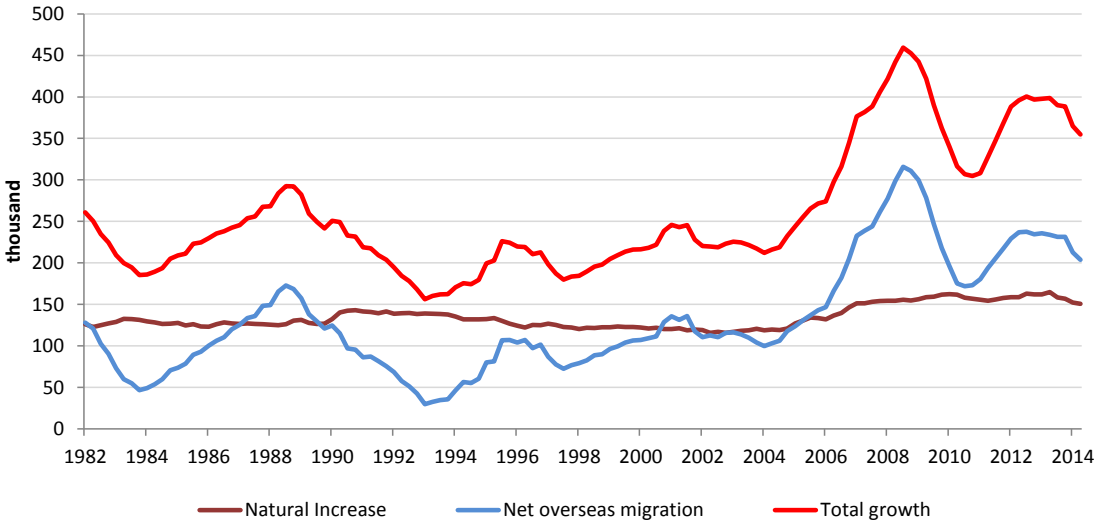
2.2 Drivers of Past Population Growth

As shown in Figure 2, natural increase in the population has ranged between 114,000 and 162,200 persons per annum over the last 30 years. Recently, net overseas migration has played a more significant role in national population growth, with net figures between 200,000 and 300,000 persons per annum since the mid-2000s. Net overseas migration since 2005 has averaged around 220,000 persons per annum.

Residents also shift from one jurisdiction to another for a variety of reasons. Many move in search of improved economic prospects, cheaper housing (this was reportedly a significant issue in the movement of people out of New South Wales in the early 2000s), and retirement/lifestyle preferences.

Figure 3 shows that while gross inter-state migration flows can be significant, the net figures (at least on an annual basis) are relatively modest. In all jurisdictions, net flows in and out were less than 12,000 persons in 2013 (and in most cases well below that figure).

Figure 2 - Components of annual population growth, Australia



Source: Australian Bureau of Statistics (2015)

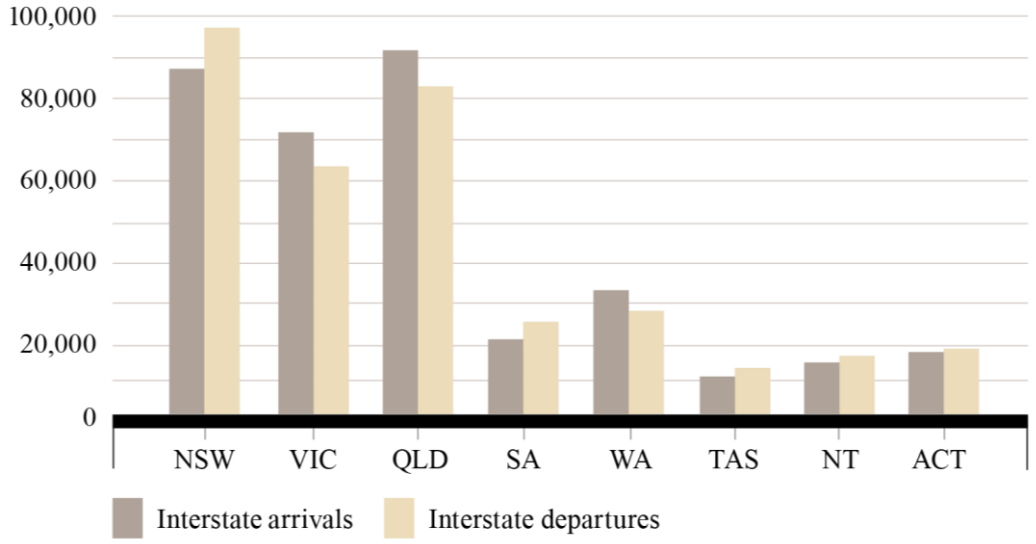
Note 1: Annual components calculated at the end of each quarter
Note 2: Estimates prior to 30 September 2011 are final. Estimates for 30 September to 31 December 2012 are revised. Estimates thereafter are preliminary.
Note 3: NOM estimates have been calculated using a range of methods over the period.

Appendix 1 provides more detail of inter-state migration flows for the period 2004 to 2013. The largest net flows were:

- out migration - migration out of New South Wales to other states and territories averaged almost 19,200 persons per year over the last decade, although the rate has halved since the early 2000s; and
- in migration – migration into Queensland averaged almost 16,700 persons per year over the last decade, although the rate has recently dropped to around a quarter of what it was in the early 2000s.

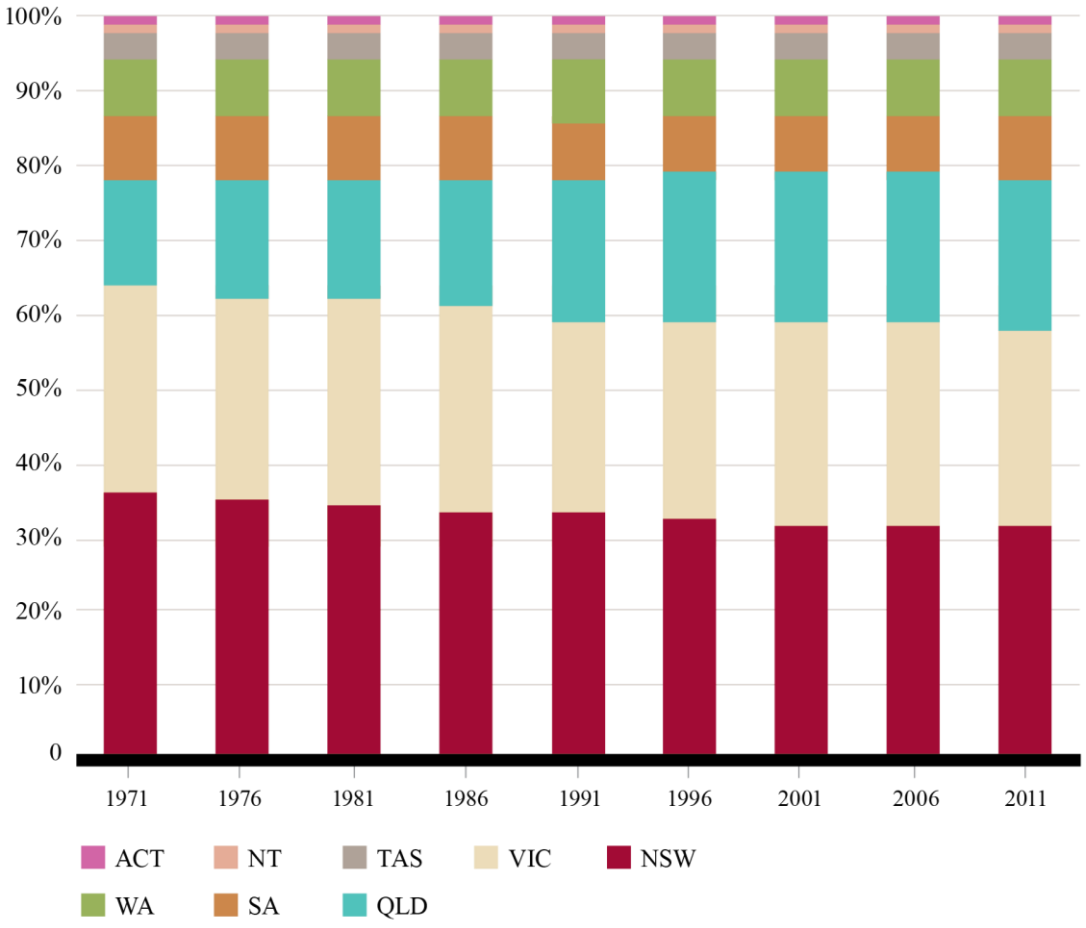
Figure 4 bears out this pattern of inter-state migration. Over the last 40 years, the proportion of the Australian population living in Queensland (especially) and Western Australia has increased, while other jurisdictions have remained stable or declined slightly. The share of the national population in the smaller jurisdictions has remained largely unchanged.

Figure 3 - Inter-state migration flows – 2013



Source: Australian Bureau of Statistics (2013a), p.13

Figure 4 - State and territory share of Australian population - 1971-2011



Source: Infrastructure Australia Analysis of Australian Bureau of Statistics (2014) data

Appendix 1 provides further detail, particularly in relation to the capital cities and balance of the states and territories.

It shows that over the 40 years from 1971 to 2011, the proportion of people living in the capital cities remained relatively stable (increasing slightly from 65.48% to 65.97%). These figures mask a fall from 1971 to 1996 and a slightly larger increase over the 15 years from 1996 to 2011 (from 64.67% to 65.97%). In short, more Australians have been choosing to settle in the larger cities, particularly in recent years.

Regional Queensland also stands out, increasing its share of the national population from 6.84 per cent in 1971 to 10.43 per cent in 2011.

3 Performance of Previous Population Projections

Projecting population growth over a long period of time can be challenging. Examining the performance of past projections can provide an insight into how future projection may perform. Past population projections have been drawn from a variety of sources. These include:

- New South Wales Department of Planning (Base Year 1981);
- ABS South Australian population projections (Base Year 1981);
- ABS Queensland population projections (Base Year 1981);
- Western Australian Ministry of Planning (Base Year 1991); and
- Victorian Department of Planning (Base Year 2001).

A comparison of population projections for Sydney made in the early 1980s (based off the 1981 Census) with the observed estimated resident population (ERP) in the relevant year is presented in Table 4. The projection for 1986 was 49,000 persons (1.4%) lower than the ERP. The difference narrowed to 28,000 persons (0.7%) in 1996. This gap may have been due to the fact the projections were made in the midst of the recession of the early 1980s. The assumptions made at the time were influenced by weak economic conditions. The economic recovery was more robust than anticipated and population growth was stronger than projected.

Over the medium term (fifteen years) the economic cycle and projected growth rate appears to have converged. Between 1996 and 2006, Sydney experienced another economic cycle (and the Sydney Olympics) which saw the projections being 62,000 persons (1.5%) below the observed ERP in 2001. Concerns about housing affordability (leading to migration out of Sydney) probably contributed to the gap between the two closing significantly (and reversing) by 2006.

The 2011 population projection made in 1981 was 3.2 per cent (142,000 persons) lower than the observed ERP in 2011.

Table 4 - Historical Sydney population projections

Sydney	1986	1991	1996	2001	2006	2011
Population projections made in 1981	3,423,000	3,637,000	3,853,000	4,066,000	4,272,000	4,467,000
Observed ERP	3,472,000	3,673,000	3,881,000	4,128,000	4,256,161	4,608,949
Difference between projection and ERP	-49,000	-36,000	-28,000	-62,000	15,839	-141,949

Similarly, as shown in Table 5, projections of Adelaide's population prepared by the ABS in 1981 proved to be reasonably accurate. The ABS projection of Adelaide's population in 2011 was 4.8 per cent (58,000 persons) lower than the observed ERP in that year. When the period between 1981 and 2011 is analysed further, ERP growth between 2006 and 2011 was much higher than the 1981 population projections had anticipated. However, this followed a twenty year period in which the population projections were higher than the ERP.

Table 5 - Historical Adelaide population projections

Adelaide	1986	1991	1996	2001	2006	2011
Population projections made in 1981	1,011,465	1,062,577	1,107,162	1,144,108	1,175,785	1,206,275
Observed ERP	1,003,548	1,056,561	1,078,437	1,107,986	1,189,243	1,264,091
Difference between projection and ERP	7,917	6,016	28,725	36,122	-13,458	-57,816

ABS population projections for Queensland prepared in 1981 (Table 6) show a similar pattern. The projections were closely aligned with the observed ERP until the mining and resources boom stimulated the Queensland economy during the 2000s. Interstate migration due to housing affordability concerns (in Sydney particularly) may also have been a factor. The 2011 projection for Queensland was four per cent (174,000 persons) lower than the observed ERP in 2011.

Table 6 - Historical Queensland population projections

Queensland	1986	1991	1996	2001	2006	2011
Population projections made in 1981	2,650,400	2,976,000	3,308,000	3,640,700	3,970,300	4,302,900
Observed ERP	2,624,595	2,960,951	3,338,690	3,628,946	4,111,018	4,476,778
Difference between projection and ERP	25,805	15,049	-30,690	11,754	-140,718	-173,878

The impact of the mining boom can also been seen in the population of Perth (Table 7). Projections made in 1991 by the then WA Ministry of Planning suggested Perth would have a population of 1.38 million persons in 2001. The projection was off by less than 1 per cent (9,500 persons). However, the projection for 2011 was 14.4 per cent (230,000 persons) lower than the observed ERP. The difference in the following ten years can be attributed to the rate of growth in the mineral and energy sector, which hadn't been anticipated in 1991.

On the other hand, there are also examples where plans have fairly accurately projected future growth. Zaw (2013) reports on the 1963 *Perth Metropolitan Regional Scheme*, which forecast that the city's population would be 1.4 million persons in 2000. Perth's estimated resident population in June 2000 was 1.43 million persons - see Australian Bureau of Statistics (2013a).

Table 7 - Historical Perth population projections

Perth	1996	2001	2006	2011
Population projections made in 1991	1,208,145	1,383,460	1,491,262	1,603,446
Observed ERP	1,295,092	1,393,002	1,576,912	1,833,567
Difference between projection and ERP	-86,947	-9,542	-85,650	-230,121

More recent population projections for Melbourne also appear not to have anticipated a period of strong economic growth. The *Victoria in Future* projections (based off the 2001 Census) anticipated a 2011 population for Melbourne of 3.87 million. The observed population in 2011 was 4.17 million persons, representing a difference of 294,000 persons (7.6%) in less than a decade.

Examining the performance of these projections indicates that long-term projections can prove reasonably accurate. However, they are susceptible to error during periods of strong economic growth in the future.

4 Projections of Australia's Population

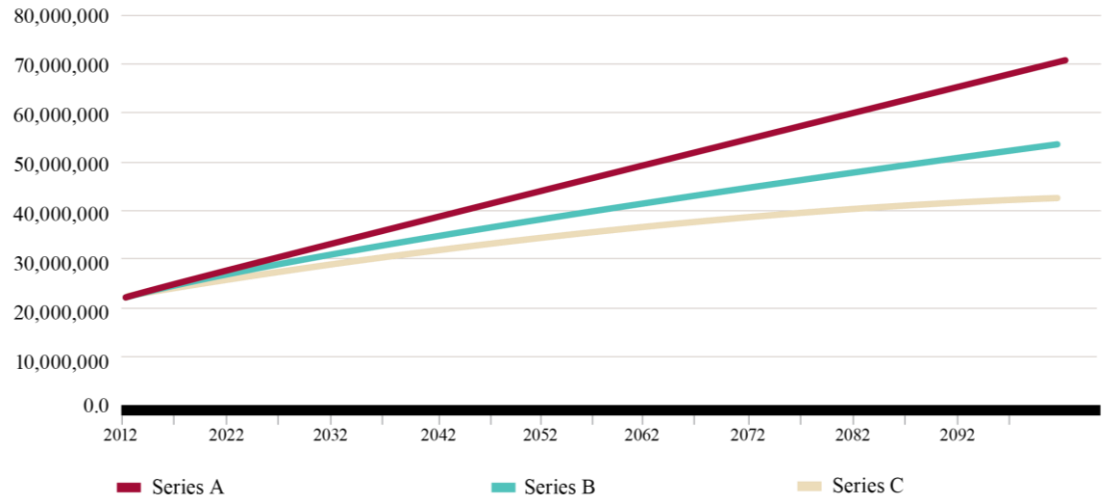
Figure 5 provides three projections of Australia's population to 2101. On a medium level projection (Series B), Australia's population will grow by around 7.8 million persons (or 34.3%) from 22.72 million persons at June 2012 to 30.50 million persons at June 2031.

The national population will grow by around 18.8 million persons (or 82.7%) to approximately 41.5 million by 2061. The low and high projections of Australia's population in 2061 are 36.8 and 48.3 million respectively.

The projections also suggest that the nation's population will grow to between 42.4 and 70.1 million persons by 2101, with a medium level projection of 53.6 million persons.

Further detail, particularly on the underlying fertility, mortality, and net migration assumptions, can be found in Appendix 1.

Figure 5 - Projected population of Australia to 2101



Source: Australian Bureau of Statistics (2013b)

These projections are somewhat higher than those released in 2008. For example, the 2008 projection of Australia's population in 2031 was 28.8 million persons. The equivalent medium level projection for 2031 released in November 2013 (30.5 million) is 1.7 million persons or almost 6 per cent higher than the projections released five years earlier.

The latest projections assume higher rates of net overseas migration than those used in the equivalent projections prepared in 2008. Appendix 1 provides further details on the difference between the 2008 and 2013 projections.

Appendix 1 also provides a comparison with projections used by Treasury in preparing the *2015 Intergenerational Report*. The Treasury's projections of Australia's population in 2031 are very close to the medium level ABS projection.

4.1 Which Areas are Projected to Grow Fastest?

Understanding which areas of Australia are projected to experience significant population growth provides insights for where infrastructure demand might grow. Significant absolute increases in population are likely to lead to significant increases in demand, especially on 'trunk' networks and at key nodes. Whether substantial percentage increases in population present an infrastructure issue is likely to depend in part on the extent to which existing networks have spare capacity.

4.1.1 States and Territories

As shown in Table 8, the projected population growth to 2031 in Western Australia (1.6 million persons and 69%) and Queensland (almost 2 million persons and 44%) stand out. Absolute population growth in NSW and Victoria (1.9 million and 2.0 million persons respectively) is also projected to be significant over this period.

The four largest states are each projected to grow by more than 4 million persons over the period to 2061. The population of the Australian Capital Territory is projected to more than double over the next 50 years. Tasmania's population growth is projected to be relatively small, slightly over 1,000 people per annum over the next 50 years.

Table 8 - Medium level projected growth of the states and territories - 2011-2061

State/ Territory	2011 (no.)	2011 (% of Aust.)	2031 (no.)	2031 (% of Aust.)	Change 2011-2031 (no.)	Change 2011-2031 (%)	2061 (no.)	2061 (% of Aust.)	Change 2011-2061 (no.)	Change 2011-2061 (%)
Queensland	4,476,778	20.0	6,445,733	21.1	1,968,955	44.0	9,259,341	22.3	4,782,563	106.8
NSW	7,218,529	32.3	9,128,665	29.9	1,910,136	26.5	11,475,527	27.6	4,256,998	59.0
ACT	367,985	1.6	520,412	1.7	152,427	41.4	740,903	1.8	372,918	101.3
Victoria	5,537,817	24.8	7,584,869	24.9	2,047,052	37.0	10,305,516	24.8	4,767,699	86.1
Tasmania	511,483	2.3	559,706	1.8	48,223	9.4	565,710	1.4	54,227	10.6
South Australia	1,639,614	7.3	1,971,779	6.5	332,165	20.3	2,308,149	5.6	668,535	40.8
Northern Territory	231,292	1.0	316,655	1.0	85,363	36.9	453,024	1.1	221,732	95.9
Western Australia	2,353,409	10.5	3,970,021	13.0	1,616,612	68.7	6,402,253	15.4	4,048,844	172.0
Australia - Total	**22,340,024**	**100.0**	**30,501,192**	**100.0**	**8,161,168**	**36.5**	**41,513,375**	**100.0**	**19,173,351**	**85.8**

Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2013b) – Series B and Australian Bureau of Statistics (2013d) data

Compared with the previous (2008) projections prepared by the ABS and previous projections developed by the respective states and territories, the current projections differ in most cases. In several cases, the differences are fairly minor. In some cases, e.g. South Australia and Western Australia the differences are more significant. The differences are primarily due to:

(1) the fact that the projections are prepared or reviewed at different points in time. Most recent projections by state and territory governments are derived from the 2011 Census, while others are derived from the previous (2008) long-term projections by the ABS, and some still draw on data from the 2006 Census; and

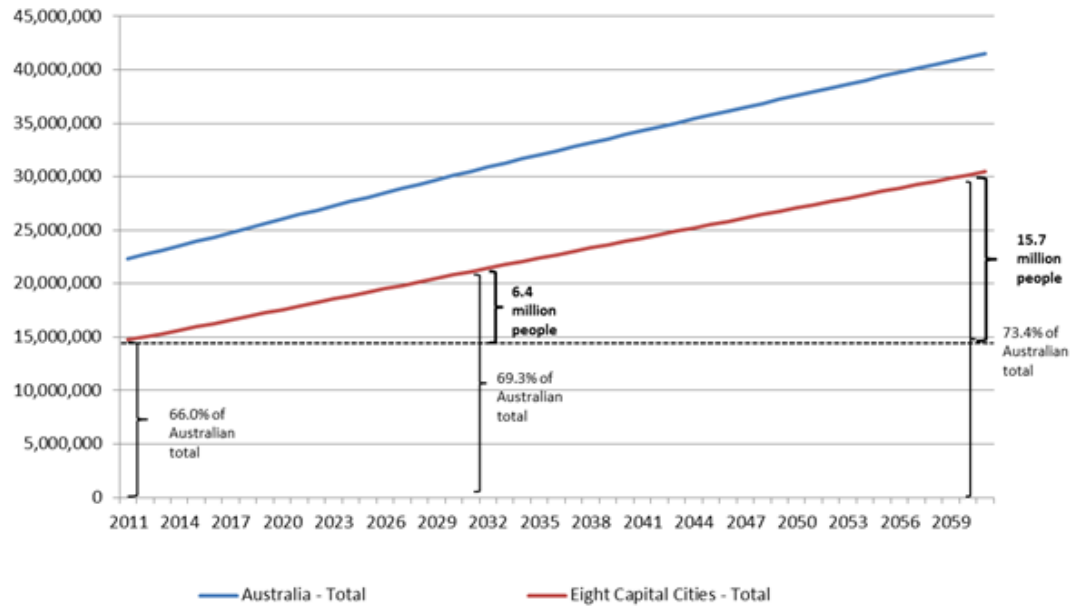
(2) different demographic assumptions, e.g. fertility, mortality and net migration.

4.1.2 Cities and Regions

Population growth is expected to occur primarily in and around Australia's capital cities. Aggregated data for the capital cities is shown in Figure 6 and Table 9 below.

The projections suggest that Australia's capital cities will see their share of the national population increase from 66.0 per cent in 2011 to 69.3 per cent in 2031 and 73.4 per cent in 2061. This view is consistent with those of several state governments (particularly NSW and Victoria) which are also projecting and planning for their capital cities to take on a greater share of the state's population.

Figure 6 - Comparison of projected growth of national and capital city population – 2011-2061



Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2013b) – Series B and Australian Bureau of Statistics (2013d) data

The projections suggest that 78.4 per cent of Australia's population growth over the period to 2031 could occur in the cities. The equivalent percentage for the period to 2061 is 82.1 per cent.

Figure 7 illustrates the expected growth in the population of the eight capital cities between 2011 and 2061.

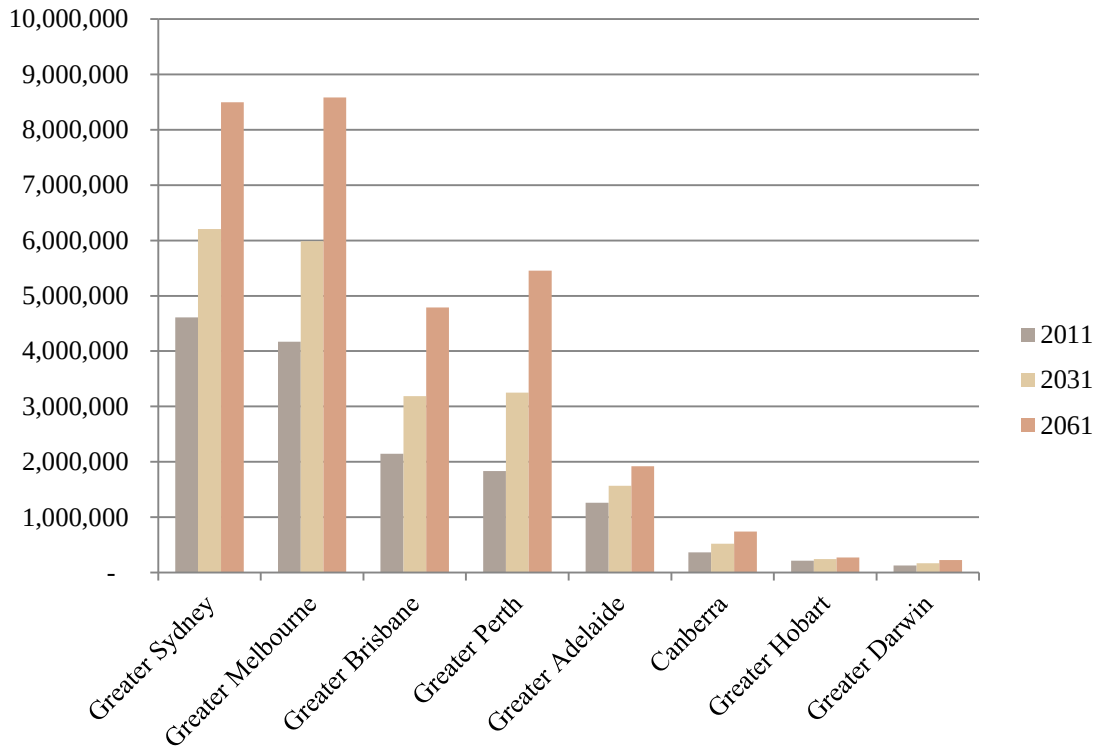
On these 'medium' projections, the population of Australia's capital cities is projected to grow by approximately 6.4 million persons between 2011 and 2031, and by 15.7 million persons between 2011 and 2061. The projected growth to 2061 is more than the total current population of the capital cities. The projected growth between 2011 and 2031 is equivalent to a new Melbourne and Brisbane.

The percentages and figures above do not include growth in and around the capital cities in peri-urban locations such as the lower Hunter, Geelong, the Gold Coast and the Sunshine Coast.

These areas already interact significantly with their nearby capital cities. Indeed, some of these areas and their capital might already be viewed as one conurbation.

Projections below the state and territory level are not published by the ABS, other than figures for the relevant Greater Capital City Statistical Areas (GCCSA). The states and territories, though, have released projections and/or plans for these cities.

Figure 7 - Medium projected population growth in Australian capital cities



Source: Infrastructure Australia analysis of Australia Bureau of Statistics (2013b) – Series B data.

As shown in the Appendices, the population in areas around some of the regional cities (especially in Queensland) is projected to grow appreciably. In Queensland, the following statistical areas are all projected to grow substantially over the period 2011 – 2031:

- Gold Coast (increase of 308,000 persons by 2031);
- Sunshine Coast (increase of 167,000 persons by 2031);
- Fitzroy (increase of 113,000 persons by 2031);
- Townsville (increase of 107,000 persons by 2031);
- Cairns (increase of 90,000 persons by 2031);
- Mackay (increase of 89,000 persons by 2031); and
- Wide Bay (increase of 85,000 persons by 2031).

In NSW, the population of Outer Metropolitan Sydney, comprising Lower Hunter, Central Coast, and Illawarra is projected to grow by over 250,000 persons (representing 20 per cent growth) by 2031.

Similarly, the regional cities that encircle Greater Melbourne, namely Geelong, Ballarat and Bendigo are also projected to exhibit strong population growth to 2031, increasing their respective populations by upwards of 35 per cent.

Over time, as these peri-urban cities grow, it is conceivable there will be greater interaction between the capital and the city in question. In the absence of employment growth in these locations, 'journey to work' trips to and from the capital city may increase appreciably.

The Australian Government has announced its intention to work with the Queensland, Northern Territory and Western Australian Governments to foster economic growth in northern Australia. It expects to release a White Paper on northern Australia in 2015.

Table 9 - Medium level projected growth of Australian capital cities: 2011-2061

Region	2011	2016	2021	2026	2031	Increase 2011-2031 (no.)	Increase 2011-2031 (%)	2036	2041	2046	2051	2056	2061	Increase 2011-2061 (no.)	Increase 2011-2061 (%)
Australian Total	22,340,024	24,359,761	26,452,147	28,505,871	30,501,192	8,161,168	36.5	32,426,009	34,294,733	36,135,078	37,955,917	39,749,997	41,513,375	19,173,351	85.8
Capital City Total	14,736,773	16,280,775	17,907,418	19,529,322	21,134,555	6,397,782	43.4	22,713,509	24,273,650	25,832,718	27,393,179	28,941,753	30,471,856	15,735,083	106.8
Greater Brisbane	2,147,436	2,397,068	2,659,768	2,924,905	3,190,129	1,042,693	48.6	3,453,502	3,716,603	39,82,333	4,250,746	4,519,579	4,787,996	2,640,560	123.0
Greater Sydney	4,608,949	4,986,714	5,398,481	5,805,642	6,206,843	1,597,894	34.7	6,599,601	6,984,977	7,367,572	7,748,168	8,123,645	8,493,740	3,884,791	84.3
Greater Canberra	367,985	405,827	444,710	482,997	520,412	152,427	41.4	557,000	593,236	629,779	666,788	703,928	740,903	372,918	101.3
Greater Melbourne	4,169,366	4,605,993	5,070,416	5,530,901	5,984,219	1,814,853	43.5	6,428,575	6,866,025	7,301,442	7,735,073	8,162,290	8,580,556	4,411,190	105.8
Greater Hobart	216,273	222,533	231,771	240,146	247,320	31,047	14.4	253,141	257,746	261,564	264,909	267,910	270,655	54,382	25.1
Greater Adelaide	1,264,091	1,340,503	1,419,500	1,495,341	1,566,929	302,838	24.0	1,633,305	1,695,106	1,754,136	1,811,407	1,866,809	1,920,727	656,636	51.9
Greater Darwin	129,106	140,943	151,045	160,753	170,153	41,047	31.8	179,356	188,505	197,739	207,075	216,472	225,873	96,767	75.0
Greater Perth	1,833,567	2,181,194	2,531,727	2,888,637	3,248,550	1,414,983	77.2	3,609,029	3,971,452	4,338,153	4,709,013	5,081,120	5,451,406	3,617,839	197.3

Source: For 2016 to 2061, Infrastructure Australia analysis of Australian Bureau of Statistics (2013b) – Series B data. For 2011, the source is Australian Bureau of Statistics (2014).

Implementation of a strategy to grow the economy of northern Australia is likely to lead to greater population growth across the regions that make up northern Australia than in current projections. Economic growth in northern Australia could affect both internal migration patterns, as well as fostering some level of net overseas migration to these regions.

The quantum of planned or forecast economic activity (and therefore potential population growth) is expected to emerge during development of the White Paper.

4.2 Other Views

Various organisations representing business, environment and other interests have set out their views about Australia's future population. In general, business groups have argued for a larger population, whilst environmental groups have argued for limited (or no) population growth.

What lies at the core of the views of most parties and observers is the need for population growth to be sustainable. How the term 'sustainable' is defined or perceived, and what level of immigration (and on what conditions) is considered sustainable, is more contested.

The Business Council of Australia has recommended that a new national population strategy should be prepared that:

- sets out a long-term strategic path for population growth that will give us the best opportunity to meet national goals for sustainable growth;
- designs population policies to achieve the strategic population growth path (and meet the immediate and future needs of the economy) through natural increase and migration; and
- sets out a comprehensive policy to plan and invest for future population growth and to support growth in living standards.[5]

It also argued that:

- the permanent migration program should remain at least at current levels of 190,000 per annum with two-thirds of the program filled by skilled migrants; and
- these levels may need to be increased following the findings of the next Intergenerational Report and the new National Population Strategy.

The Australian Conservation Foundation argues that:

> *"... the government [should] set a population policy that will:*
>
> - *Stabilise Australia's population and resource use to ecologically sustainable levels;*
> - *Drive adequate infrastructure for the environmental consequences of demographic changes in Australian population settlement and distribution;*
> - *Develop and fund strategies that minimise the environmental impact of population growth and maximise biodiversity outcomes;*
> - *Maintain healthy regional and remote communities that include aboriginal communities and actively working on reducing Indigenous demographic disadvantage;*
> - *Assist other nations to achieve population stabilisation and ecologically sustainable lifestyles through non-coercive, holistic development programs; and*
> - *Encourage migration policy that fulfils environmental, social and ethical obligations, rather than perceived economic needs."* [6]

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5 Business Council of Australia (2013), p.61

6 Australian Conservation Foundation (2013)

5 Conclusions

Demand for infrastructure does not necessarily rise or fall in proportion with changes in population. Nevertheless, in the absence of changes in the per capita consumption of infrastructure services and/or an ability to manage demand for those services within existing assets, the recent and prospective growth in Australia's population suggests a rising demand for new infrastructure.

Australia's population has been growing rapidly over the last five to ten years. Recent growth has been amongst the fastest since the post-World War II period, and in line with previous medium to high growth projections. If these population growth rates continue, Australia's population will increase by more than a third (or around 8 million persons) by 2031.

5.1 Significant Growth in Store

It is unclear whether government policy and/or external factors will see a return to slower rates of population growth in the future. Experience following the Second World War is relevant. Although growth rates over 2 per cent per annum lasted for 25 years after the war,[7] growth rates dropped to around 1.5 per cent during the 1980s and then to 1.1 per cent during the 1990s.

There is an arguable case that, over the next 15 years, population growth rates will remain relatively high compared to the last 40 years. This is due to:

- the consequences of recent growth, e.g. natural increase as some recent migrants have children; and
- various groups appear to be calling for a continuation of strong population growth, although other groups argue for limited or no population growth.

Even on a low growth projection, Australia's population increases by 6.9 million persons between 2011 and 2031.

Population growth is likely to have its greatest impact in Australia's cities. Around the globe, cities are increasing their share of national population. Australia is already one of the most urbanised countries in the world. It would be unusual – if not remarkable – if Australia were to chart a materially different path from its past (or where the world is heading), at least over the next 15 years or so.

On medium projections, by 2031 Australia's capital cities will be home to 6.4 million extra people (around 43.4% more than 2011). On the medium level projections, the growth to 2061 (15.7 million persons) is around 1 million persons more than the current combined population of all of Australia's capital cities.

5.2 Implications for Infrastructure

Growth of this order will have significant implications for our infrastructure networks. Given the budget deficits or 'fiscal gaps' projected in various iterations of the *Intergenerational Report* (and equivalent

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[7] National population grew at 2.7% per annum between 1946 and 1960 and 2.1% between 1961 and 1970 – See Australian Bureau of Statistics (1996).

reports prepared by some states), funding or otherwise meeting the projected infrastructure requirements will almost certainly require significant policy change in order to provide for positive economic, environmental and social outcomes of an increasing population.

Within the cities, the location of new development and population growth will be critical.

Most states and territories are planning for at least 50 per cent of new dwellings to be accommodated in established areas. Some states are planning for 60-70 per cent of new dwellings to be accommodated in established areas.

Opportunities for infill development continue to be resisted by local residents. At least in part, resident objections to new development reflect concerns about the adequacy of existing infrastructure to support growth and, probably more relevantly, doubts about the capacity of governments and developers to deliver on commitments to upgrade infrastructure. Another element of objections to infill development is the perceived loss of 'liveability', quality of life, and environmental and other amenity.

While the cost of providing new infrastructure in greenfield areas is substantial, the cost of retrofitting some infrastructure (notably transport links in tunnels) in established areas can also be high. Increasingly, management of demand on urban infrastructure networks is likely to be required.

With a few exceptions, the 'population case' for expanding infrastructure networks in regional areas is likely to be less obvious. Arguments for investment in infrastructure in those areas will be driven more by social considerations (e.g. greater equality in the level of service) and economic development prospects, e.g. proposals for development in northern Australia.

Yet, the history of regional policy in Australia is not particularly encouraging. Regional development and decentralisation policies often have a short life span. It is unclear whether governments and the Australian community would support material on-going interventions over the long term to encourage decentralised growth. As elsewhere, proposals for investment in regional areas need to be supported by rigorous and transparent analysis.

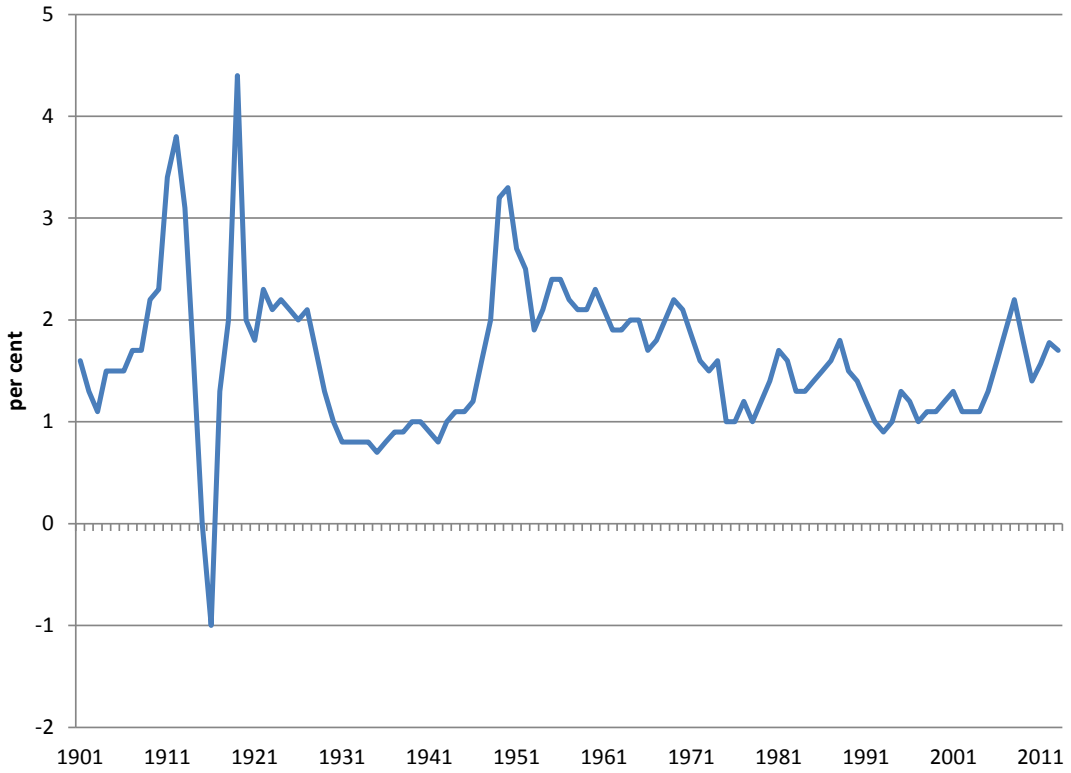
Appendix 1 Details of Australian National Level Estimates and Projections

Historical Growth Rates

Figure 8 places recent population growth in a century-long historical context. Compared to the early twentieth century and post-war period, percentage growth rates over the last 30 years (even over the last five years) are relatively modest.

On the other hand, the absolute size of the recent population increase is greater than in the past; the recent increase in percentage growth is off a much higher base figure (20.18 million persons in June 2005 compared to 7.43 million persons in December 1945).

Figure 8 - Annual percentage growth in the Australian population – 1901-02 to 2013-14



Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2014a) – for the period 1901-02 to 2010-11 - and Australian Bureau of Statistics (2014) – for the period 2011-12 to 2013-14 - data.

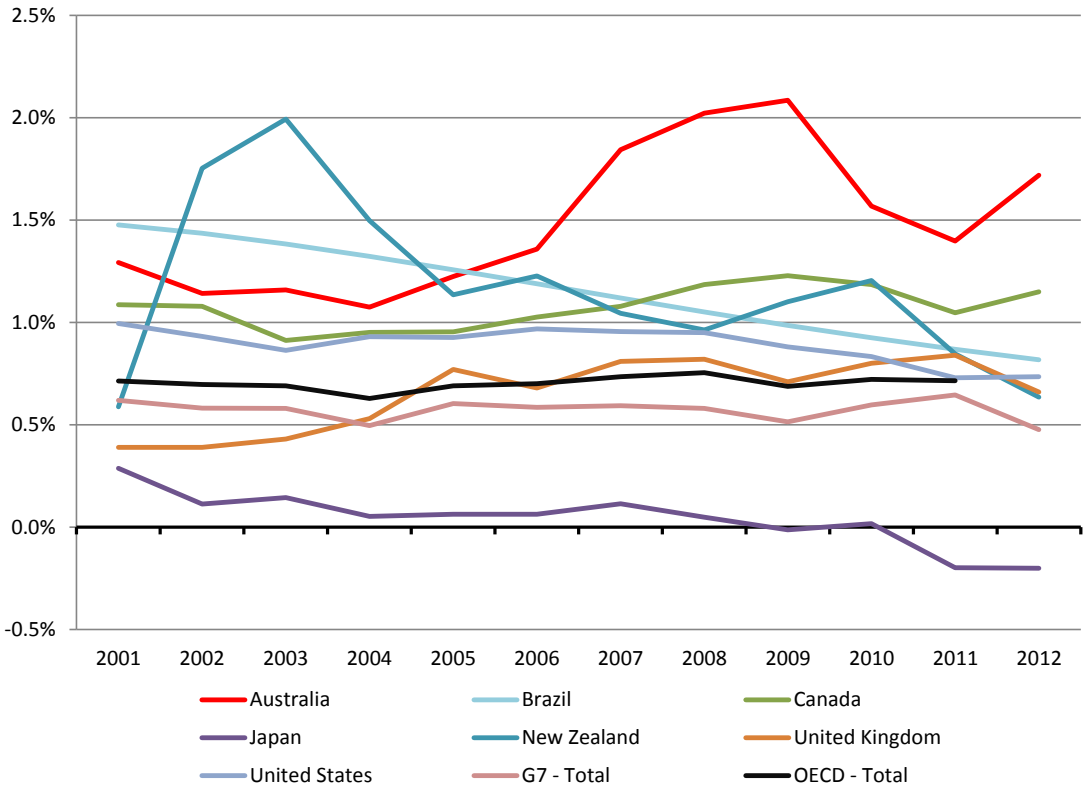
Note 1: Percentages are for calendar years.

Note 2: In 1971, the Australian Bureau of Statistics changed the population concept from actual location to usual residence. Accordingly, population growth cannot be calculated for 1971.

Note 3: Where there is a series break (such as in 1961 and 1971), growth rates are interpolated between the preceding and following years.

The Organisation for Economic Co-operation and Development (OECD) collates data on population growth across its member countries and for certain other nations. Figure 9 shows that Australia's population growth rate over the past decade has typically been more than twice the average for the OECD and G7 countries. Out of 40 countries in the OECD dataset, Australia experienced the fourth fastest rate of population growth over the decade to 2012, and saw the fastest growth of any country with over ten million people.

Figure 9 - Comparison of annual population percentage growth rates for selected countries, G7 and OECD average



Source: Infrastructure Australia analysis of Organisation for Economic Co-operation and Development (2013), Office for National Statistics (2014) and The World Bank (2015) data.

As shown in Table 10, net interstate migration, particularly out of NSW and into Queensland, has slowed down considerably over the last decade. The reversal in inter-state migration flows from/to Victoria over the course of the decade also stands out. Although flows in an individual year can be modest, longer term trends can, over time, lead to material changes in a jurisdiction's population.

Table 10 - Net interstate migration – 2004 to 2013

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT
2004	-27,928	-2,583	32,352	-3,519	2,312	1,011	-482	-1,131
2005	-26,484	-3,571	29,141	-3,366	2,818	306	726	470
2006	-25,545	-613	24,153	-2,593	4,613	-485	-331	751
2007	-22,914	-2,558	21,953	-3,664	4,855	212	1077	892
2008	-21,527	-225	17,516	-4,920	6,453	1,126	881	548
2009	-12,691	2,592	9,991	-3,051	2,445	312	367	-101
2010	-10,849	3,131	5,384	-3,038	4,457	714	-1,599	1,740
2011	-15,961	3,372	9,042	-2,401	9,047	-1,404	-2,173	483
2012	-16,798	2,335	10,224	-3,038	10,803	-2,437	-1,139	50
2013	-11,219	7,528	6,897	-3,944	4,800	-1,460	-2,224	-378
Annual average 2004-2013	**-19,192**	**941**	**16,665**	**-3,353**	**5,260**	**-211**	**-490**	**332**

Source: Australian Bureau of Statistics (2013a), p.11

Table 11 provides a breakdown of the share of the Australian population found in each capital city and the balance of the relevant state and territory over the forty years from 1971 to 2011. The growth of Queensland and Western Australia stands out.

Most of the increase in Queensland's share of the national population has been outside of Brisbane, although, strictly, much of the growth outside of Brisbane has nevertheless occurred in south-east Queensland.[8] Much of the growth in the Queensland regional share of population occurred between 1971 and 1996.

Interestingly, notwithstanding the expansion of minerals and energy projects in Western Australia over the last decade or more, the share of the Australian population living in regional Western Australia has not changed over the last 40 years. Western Australia's increasing share of the national population has been driven by growth in Perth.

Growth in the Northern Territory's share of the national population was fastest in the period to 1996. Since that time, the Territory's share of the national population has continued to grow, albeit at a slower rate. The development of Darwin has driven much of this growth.

Victoria's share of the national population has more or less stabilised in the last 15 years, driven largely by growth in Melbourne.

[8] For example, the Gold Coast-Tweed Heads area grew from approximately 74,200 persons in 1971 to 581,000 in 2011. The Sunshine Coast grew from 74,000 persons in 1981 to 281,000 persons in 2011. Toowoomba grew from just under 59,500 persons in 1971 to 109,200 in 2011. Amongst the Queensland coastal cities, Cairns (from 32,700 persons in 1971 to 139,200 persons in 2011), Mackay (19,100 persons in 1971 to 79,7 00 in 2011), Townsville (68,600 persons in 1971 to 167,600 in 2011) and Bundaberg (27,300 persons in 1971 to 69,100 in 2011) have grown the fastest. See Australian Bureau of Statistics (2014b) for further detail.

Table 11 - Share of Australian estimated resident population by state and territory – June 1971 – June 2011

State/Area	1971 (no.)	1971 (% of total)	1976 (no.)	1981 (no.)	1986 (no.)	1991 (no.)	1996 (no.)	1996 (% of total)	2001 (no.)	2006 (no.)	2011 (no.)	2011 (% of total)	Change in % Share of Australian Total (1971-2011)	Change in % Share of Australian Total (1996-2011)
Greater Sydney	3,015,900	**23.08**	3,143,800	3,279,539	3,471,489	3,672,914	3,856,646	**21.16**	4,102,580	4,256,161	4,608,949	**20.63**	-2.45	-0.53
Rest of NSW	1,709,603	**13.08**	1,815,788	1,955,350	2,060,037	2,225,817	2,319,815	**12.73**	2,427,769	2,486,529	2,609,580	**11.68**	-1.40	-1.05
NSW - Total	4,725,503	**36.16**	4,959,588	5,234,889	5,531,526	5,898,731	6,176,461	**33.89**	6,530,349	6,742,690	7,218,529	**32.31**	-3.85	-1.58
Greater Melbourne	2,606,900	**19.95**	2,764,100	2,857,907	2,996,733	3,194,707	3,304,912	**18.13**	3,500,249	3,760,760	4,169,366	**18.66**	-1.29	0.53
Rest of Vic.	994,452	**7.61**	1,046,326	1,089,010	1,164,123	1,225,666	1,230,072	**6.75**	1,263,366	1,300,506	1,368,451	**6.13**	-1.48	-0.62
Victoria - Total	3,601,352	**27.56**	3,810,426	3,946,917	4,160,856	4,420,373	4,534,984	**24.88**	4,763,615	5,061,266	5,537,817	**24.79**	-2.77	-0.09
Greater Brisbane	957,900	**7.33**	1,058,100	1,154,705	1,265,114	1,411,773	1,560,296	**8.56**	1,693,556	1,908,265	2,147,436	**9.61**	2.28	1.05
Rest of Qld	893,585	**6.84**	1,034,275	1,190,503	1,359,481	1,549,178	1,742,896	**9.56**	1,877,913	2,099,727	2,329,342	**10.43**	3.59	0.86
Queensland - Total	1,851,485	**14.17**	2,092,375	2,345,208	2,624,595	2,960,951	3,303,192	**18.12**	3,571,469	4,007,992	4,476,778	**20.04**	5.87	1.91
Greater Adelaide	883,900	**6.76**	940,100	979,895	1,034,960	1,093,525	1,116,237	**6.12**	1,148,006	1,189,243	1,264,091	**5.66**	-1.10	-0.47
Rest of SA	316,214	**2.42**	333,970	338,874	347,590	352,774	352,842	**1.94**	355,455	363,286	375,523	**1.68**	-0.74	-0.26
South Australia - Total	1,200,114	**9.18**	1,274,070	1,318,769	1,382,550	1,446,299	1,469,079	**8.06**	1,503,461	1,552,529	1,639,614	**7.34**	-1.84	-0.72
Greater Perth	744,600	**5.70**	845,700	941,479	1,075,959	1,226,115	1,343,355	**7.37**	1,455,361	1,576,912	1,833,567	**8.21**	2.51	0.84
Rest of WA	309,234	**2.37**	332,642	358,577	383,060	409,952	424,851	**2.33**	450,913	473,669	519,842	**2.33**	-0.04	0.00
WA - Total	1,053,834	**8.06**	1,178,342	1,300,056	1,459,019	1,636,067	1,768,206	**9.70**	1,906,274	2,050,581	2,353,409	**10.53**	2.47	0.83
Greater Hobart	157,100	**1.20**	166,900	174,120	182,846	191,648	197,124	**1.08**	197,403	204,753	216,273	**0.97**	-0.23	-0.11
Rest of Tas.	240,973	**1.84**	245,414	253,104	263,627	275,154	278,481	**1.53**	276,265	284,549	295,210	**1.32**	-0.52	-0.21
Tasmania - Total	398,073	**3.05**	412,314	427,224	446,473	466,802	475,605	**2.61**	473,668	489,302	511,483	**2.29**	-0.76	-0.32
Greater Darwin	39,000	**0.30**	47,300	62,078	82,814	86,414	97,247	**0.53**	108,280	113,461	129,106	**0.58**	0.28	0.04
Rest of NT	46,735	**0.36**	50,928	60,538	71,607	79,079	87,269	**0.48**	93,463	95,596	102,186	**0.46**	0.10	-0.02
NT - Total	85,735	**0.66**	98,228	122,616	154,421	165,493	184,516	**1.01**	201,743	209,057	231,292	**1.04**	0.38	0.02
ACT	151,169	**1.16**	207,740	226,821	258,246	288,586	309,629	**1.70**	321,538	335,170	367,985	**1.65**	0.49	-0.05
Other Territories	N.A.	**N.A.**	N.A.	760	664	734	3,095	**0.02**	2,584	2,379	3,117	**0.01**	N.A.	-0.00
Capital Cities	8,556,469	**65.48**	9,173,740	9,676,544	10,368,161	11,165,682	11,785,446	**64.67**	12,526,973	13,344,725	14,736,773	**65.97**	0.49	1.30
Australia – Total	**13,067,265**	**100.00**	**14,033,083**	**14,923,260**	**16,018,350**	**17,284,036**	**18,224,767**	**100.00**	**19,274,701**	**20,450,966**	**22,340,024**	**100.00**	**N.A.**	**N.A.**

Source: Infrastructure Australia analysis in Australian Bureau of Statistics (2014b) and Australian Bureau of Statistics (2013c) data

Note: The capital city areas are based on the Greater Capital City Statistical Area boundary.

Projections by the Australian Bureau of Statistics

In November 2013, the ABS released updated projections for Australia's population to 2101.[9] The projections drew upon the results from the 2011 Census, and replaced equivalent projections released in 2008.[10]

The projections include a breakdown between the states and territories and, within the jurisdictions, a further breakdown between projections for capital cities and the rest of the state or territory. These sub-national projections extend to 2061.

The projections turn on different assumptions about fertility, mortality and net overseas migration behind the three scenarios. The assumptions used in the Bureau's projections are shown in Table 12. Notably, net overseas migration is assumed to be 60,000 persons per annum higher in the 2013 projections (Series B) when compared to those made in 2008. Life expectancy at birth is marginally greater in the 2013 projections (Series B and C).

Table 12 - Comparison of assumptions behind ABS 2008 and 2013 long-term projections

Year	Series	Fertility, babies per woman (b)	Life expectancy at birth (a) - Males	Life expectancy at birth (a) - Females	Net overseas migration (c)
2008	Series A	2.0	93.9	96.1	220.000
2008	Series B	1.8	85.0	88.0	180,000
2008	Series C	1.6	85.0	88.0	140,000
2013	Series A	2.0	92.1	93.6	280,000
2013	Series B	1.8	85.2	88.3	240,000
2013	Series C	1.6	85.2	88.3	200,000

Source: Australian Bureau of Statistics (2013b), p.3

(a) From 2056 in the case of the 2008 projections and 2061 in the case of the 2013 projections.
(b) From 2021 in the case of the 2008 projections and 2026 in the case of the 2013 projections.
(c) From 2010-11 in the case of the 2008 Series A and C projections, and from 2007-08 in the case of the 2008 Series B projections. From 2021 in the case of the 2013 projections.

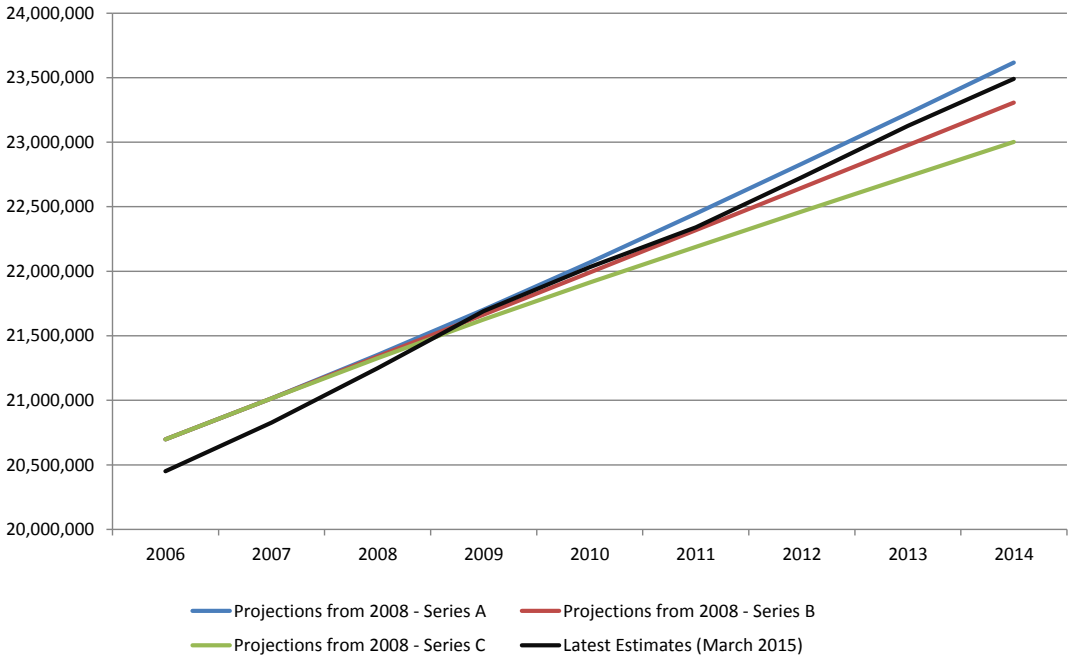
In the last five years, Australia's population grew broadly in line with the ABS 2008 Series A (high growth) projections. This conclusion is based on the following observations:

- yearly population growth rates in the last five years have been amongst the highest of the last 25 years; and
- the estimates of Australia's population released in August 2013 (ABS Catalogue no. 3218.0) revised downwards the estimate of Australia's population at June 2006 from 20.698 million (the figure used in the 2008 projections) to 20.451 million.

This reflects the rate of population growth over the last few years. As shown in Figure 10, a comparison of the 2008 projections with the recent ABS estimates of Australia's population (i.e. those released in March 2015 which are based on the 2011 Census and associated revisions of the estimated resident population) shows that, in recent years, Australia's population has been growing slightly faster than even the earlier Series A (high growth) projection (albeit starting from a lower 2006 base).

9 Australian Bureau of Statistics (2013b)
10 Australian Bureau of Statistics (2008b)

Figure 10 - Comparison of Australia's projected (2008) & latest estimated resident population



Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2008b) and Australian Bureau of Statistics (2015) data

Note 1: Data for June of each year.
Note 2: The Bureau's estimates released in March 2013 extend to September 2015.

A longer term view supports this observation. Table 13 compares the growth rates over the last 15 and 40 years with ABS projected growth rates over the next 15 and 40 years. [11] The ABS projections suggest that it is anticipating faster growth over the next 15 years than the last 15 years. On the medium projections, growth over the longer term is projected to occur at close to the same rate as the last 40 years.

Table 13 - Comparison of projected and past annual population growth rates

Series	15 Years	40 years
Past	1.49	1.35
Projected - Low	1.42	1.08
Projected - Medium	1.62	1.32
Projected - High	1.84	1.62

Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2013b) and Australian Bureau of Statistics (2013d) data
Note: Past growth rates are for June 1999 and June 1974 respectively to June 2014.

Table 14 compares the 2008 and 2013 ABS projections. The overall increase in the projected population in the 2013 series is clear. Closer review shows that the ABS projections have increased more in the Series B (Medium) and Series C (Low) projections than in the Series A (High) projections. The broad conclusion seems to be that the relative 'spread' of the projections has shifted upwards.

[11] Strictly, the projected rates are for the periods June 2012 to June 2027 and June 2012 to June 2061.

Table 14 - Comparison of Australian Bureau of Statistics 2008 and 2013 projection series

Series/ Year	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2056	Change 2011-2056 (no.)	Change 2011-2056 (%)	2061	Change 2011-2061 (no.)	Change 2011-2061 (%)	2101	Change 2011-2101 (no.)	Change 2011-2101 (%)
Series A (2013)	22,340,024	31,873,432	9,533,408	42.7	45,349,198	23,009,174	103	48,264,035	25,924,011	116	70,056,682	47,716,658	213.6
Series A (2008)	22,447,371	30,944,742	8,497,371	37.9	42,510,352	20,062,981	89.4	44,877,103	22,429,732	99.9	62,161,792	39,714,421	176.9
Series A (Difference)	-107,347	928,690	1,036,037	4.8	2,838,846	2,946,193	13.6	3,386,932	3,494,279	16.1	7,894,890	8,002,237	36.7
Series B (2013)	22,340,024	30,501,192	8,161,168	36.5	39,749,997	17,409,973	77.9	41,513,375	19,173,351	85.8	53,564,333	31,224,309	139.8
Series B (2008)	22,319,066	28,786,486	6,467,420	29	35,469,971	13,150,905	58.9	36,677,497	14,358,431	64.3	44,744,809	22,425,743	100.5
Series B (Difference)	20,958	1,714,706	1,693,748	7.5	4,280,026	4,259,068	19	4,835,878	4,814,920	21.5	8,819,524	8,798,566	39.3
Series C (2013)	22,340,024	29,279,478	6,939,454	31.1	35,719,479	13,379,455	59.9	36,775,636	14,435,612	64.6	42,385,964	20,045,940	89.7
Series C (2008)	22,189,586	27,059,894	4,870,308	21.9	30,906,094	8,716,508	39.3	31,433,621	9,244,035	41.7	33,700,336	11,510,750	51.9
Series C (Difference)	150,438	2,219,584	2,069,146	9.2	4,813,385	4,662,947	20.6	5,342,015	5,191,577	22.9	8,685,628	8,535,190	37.8

Projections by the Treasury

As demographic projections bear significantly on the cost of various social outlays and policies, the Treasury prepares its own projections of Australia's population. In addition to providing an input to policy and budget advice, the projections form an important input to the periodic versions of the *Intergenerational Report*. The report sets out long-term (40 year) projections of Australian Government finances.

Unlike the projections of the ABS, details behind the national level projections (including those at a sub-national level) are not publicly available. The national level projections used in the *Intergenerational Report* are shown in Table 15.

Table 15 - Projections of Australia's population used in the 2015 Intergenerational Report

Year	1974-75	2014-15	2024-25	2034-35	2044-45	2054-55
Number of persons (million)	13.9	23.9	28.0	32.0	35.8	39.7

Source: Australian Treasurer (2015), p.12

Treasury projects that population growth will slow to an average annual rate of 1.3 per cent over the next 40 years. This is slightly lower than the average annual rate of growth of 1.4 per cent in the previous 40 years. Treasury also observed:

> *This report assumes that the total fertility rate remains at 1.9 over the next 40 years, which is consistent with the observed trend in fertility over the past 35 years.*[12]

The *2015 Intergenerational Report* projects that net overseas migration will fall from 1.0 per cent of the population per year in 2014-15 to 0.7 per cent in 2034-35 and 0.5 per cent in 2054-55. This rate is equal to 215,000 per annum from 2018-19, a slightly lower figure than the rate of net overseas migration assumed by the ABS. This rate of growth compares to an average of 0.5 per cent per annum between 1973 and 2006, and 1.1 percent per annum between 2007 and 2018.[13]

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12 Australian Treasurer (2015), p.4. The Bureau's Series B projection assumes the fertility rate to be 1.8 after 2026.

13 Australian Treasurer (2015), pp.10-12 and p.99

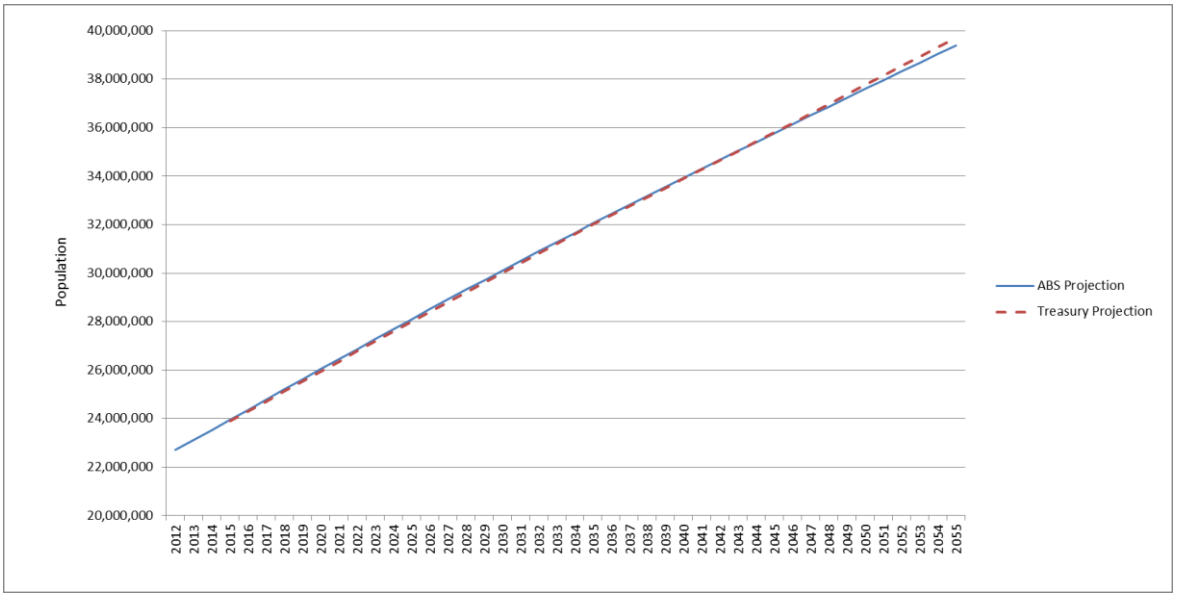
Treasury also expects age-specific mortality rates to decline. It projects that:

- men born in 2054-55 will live an average of 3.6 years longer than those born in 2014-15, and women an average of 3.0 years longer; and
- men aged 60 in 2014-15 are expected to live to 86.4 years (on average), while those aged 60 in 2054-55 are expected to live to 91.5 years. Women aged 60 in 2014-15 are expected to live to 89.1 years (on average), while those aged 60 years in 2054-55 are expected to live to 93.3 years.[14]

Comparison of ABS and Treasury Projections

As shown in Figure 11, at a national level, the projections of Australia's population used in the *2015 Intergenerational Report* are very close to those issued by the Australian Bureau of Statistics in November 2013. The *Intergenerational Report* does not provide population projections below the national level.

Figure 11 - Comparison of Treasury and ABS medium level population projections – 2015-2055



Source: Infrastructure Australia analysis of data from Australian Treasurer (2015) and Australian Bureau of Statistics (2013b) Series B projections.

[14] Australian Treasurer (2015), p.5.

Appendix 2 Details of Queensland Projections and Plans

The Queensland Government's assessments of the future Queensland and Queensland regional population can be found in both:

- population projections prepared by Queensland Government agencies; and
- planning documents.

Given the different times and assumptions on which they are based, the projections in these documents may differ.

Projections

As shown in Table 16, the Queensland Government has three projections of the state's population to 2061. The medium projection has the state adding slightly more than 2 million persons by 2031, with the low projection adding 1.6 million and the high 2.5 million.

These projections are based on data from the 2011 Census.

Table 16 - Queensland Government projections of state population to 2061 (Persons)

Series	2011	2016	2021	2026	2031	Growth 2011-2031 (no.)	Growth 2011-2031 (%)
Low	4,476,778	4,889,453	5,300,740	5,701,568	6,100,538	1,623,760	36.3
Medium	4,476,778	4,946,319	5,477,082	6,007,578	6,548,220	2,071,442	46.3
High	4,476,778	4,995,388	5,647,020	6,316,877	7,010,674	2,533,896	56.6

Series	2036	2041	2046	2051	2056	2061	Growth 2011-2061 (no.)	Growth 2011-2061 (%)
Low	6,493,413	6,879,011	7,256,118	7,662,869	7,978,841	8,325,532	3,848,754	86.0
Medium	7,095,177	7,650,333	8,217,035	8,796,256	9,386,231	9,986,381	5,509,653	123.1
High	7,724,268	8,463,435	9,238,408	10,055,996	10,914,580	11,809,027	7,332,249	163.8

Source: Infrastructure Australia analysis of Queensland Government Treasury and Trade (2014) data

Projections by the Queensland Government are also available at a sub-state level to 2036. Projections for the period to 2031 are shown in Table 17. Based on medium projections, substantial growth is anticipated to 2031 in:

- Greater Brisbane (1.03 million additional persons);
- other parts of South East Queensland (the population of the Gold Coast is projected to increase by 308,000 persons by 2031, and that of the Sunshine Coast is projected to increase by 167,000 persons by 2031); and
- in several other regions, including:
  - Fitzroy (increase of 113,000 persons by 2031);
  - Townsville (increase of 107,000 persons by 2031);
  - Cairns (increase of 90,000 persons by 2031);
  - Mackay (increase of 89,000 persons by 2031); and
  - Wide Bay (increase of 85,000 persons by 2031).

Table 17 - Queensland Government projections of regional population (no. of persons) to 2031

		2011 (no.)	2016 (no.)	2021 (no.)	2026 (no.)	2031 (no.)	Increase 2011-2031 (no.)	Increase 2011-2031 (%)
Low series	Greater Brisbane GCCSA	2,147,436	2,362,649	2,571,423	2,772,382	2,969,951	822,515	38.30%
	Cairns	232,781	250,304	268,621	286,338	303,748	70,967	30.50%
	Darling Downs - Maranoa	125,260	129,366	132,864	136,214	139,531	14,271	11.40%
	Fitzroy	217,123	241,877	264,398	286,098	308,013	90,890	41.90%
	Gold Coast	528,766	585,009	647,995	709,234	771,749	242,983	46.00%
	Mackay	171,564	189,166	205,727	221,916	238,624	67,060	39.10%
	Queensland - Outback	86,631	89,287	90,400	91,310	92,050	5,419	6.30%
	Sunshine Coast	318,279	348,776	383,010	416,881	451,332	133,053	41.80%
	Toowoomba	144,258	151,799	159,820	170,426	180,963	36,705	25.40%
	Townsville	224,678	244,698	264,583	284,776	305,204	80,526	35.80%
	Wide Bay	280,002	296,524	311,900	325,992	339,372	59,370	21.20%
	Queensland	4,476,778	4,889,453	5,300,740	5,701,568	6,100,538	1,623,760	36.30%
Medium series	Greater Brisbane GCCSA	2,147,436	2,386,420	2,650,449	2,911,854	3,176,055	1,028,619	47.90%
	Cairns	232,781	252,672	276,091	299,340	322,797	90,016	38.70%
	Darling Downs - Maranoa	125,260	130,761	136,682	142,618	148,714	23,454	18.70%
	Fitzroy	217,123	245,310	273,590	301,468	330,037	112,914	52.00%
	Gold Coast	528,766	593,209	673,496	753,583	836,738	307,972	58.20%
	Mackay	171,564	192,529	214,754	236,920	260,074	88,510	51.60%
	Queensland - Outback	86,631	89,932	92,549	95,046	97,506	10,875	12.60%
	Sunshine Coast	318,279	353,060	396,490	440,346	485,626	167,347	52.60%
	Toowoomba	144,258	153,549	165,140	179,594	194,306	50,048	34.70%
	Townsville	224,678	248,608	275,455	303,200	331,803	107,125	47.70%
	Wide Bay	280,002	300,269	322,387	343,609	364,565	84,563	30.20%
	Queensland	4,476,778	4,946,319	5,477,082	6,007,578	6,548,220	2,071,442	46.30%
High series	Greater Brisbane GCCSA	2,147,436	2,404,960	2,723,200	3,048,248	3,383,129	1,235,693	57.50%
	Cairns	232,781	254,837	283,671	313,140	343,420	110,639	47.50%
	Darling Downs - Maranoa	125,260	132,362	141,270	150,529	160,194	34,934	27.90%
	Fitzroy	217,123	248,142	281,919	315,988	351,275	134,152	61.80%
	Gold Coast	528,766	599,321	695,597	794,407	898,274	369,508	69.90%
	Mackay	171,564	196,000	224,510	253,583	284,212	112,648	65.70%
	Queensland - Outback	86,631	90,394	94,508	98,707	103,018	16,387	18.90%
	Sunshine Coast	318,279	356,897	409,667	464,237	521,197	202,918	63.80%
	Toowoomba	144,258	155,061	170,251	188,806	207,989	63,731	44.20%
	Townsville	224,678	252,951	287,942	324,837	363,382	138,704	61.70%
	Wide Bay	280,002	304,463	334,486	364,395	394,584	114,582	40.90%
	Queensland	4,476,778	4,995,388	5,647,020	6,316,877	7,010,674	2,533,896	56.60%

Source: SGS Economics and Planning analysis of Queensland Government Treasury and Trade (2014) data

Note: Boundaries are based on the 2011 edition of the Australian Statistical Geography Standard (ASGS).

Differences between Queensland Government and ABS projections

Table 18 compares the population projections released by the Queensland Government and the ABS.

Table 18 - Comparison of Queensland Government and ABS population projections- 2011 to 2061 (persons)

Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2061	Change 2011-2061 (no.)	Change 2011-2061(%)
Queensland Government -Low	4,476,778	6,100,538	1,623,760	36.3	8,325,532	3,848,754	86.0
Queensland Government –Medium	4,476,778	6,548,220	2,071,442	46.3	9,986,381	5,509,653	123.1
Queensland Government -High	4,476,778	7,010,674	2,533,896	56.6	11,809,027	7,332,249	163.8
ABS (Series C) - Low	4,476,778	6,075,220	1,598,442	35.7	7,904,284	3,427,506	76.6
ABS (Series B) – Med.	4,476,778	6,445,733	1,968,955	44.0	9,259,341	4,782,563	106.8
ABS (Series A) - High	4,476,778	6,850,500	2,373,722	53.0	11,083,277	6,606,499	147.6

Source: Infrastructure Australia analysis of Queensland Government Trade and Treasury (2014) and Australian Bureau of Statistics (2013b) data

Comparing ABS Series B and Queensland Government medium projections for 2031 reveals a small difference for the whole of Queensland. The Queensland Government projects around 102,000 more people (1.6 per cent) than the ABS in 2031. The higher projection at 2031 is largely due to an assumption of higher long-term inward interstate migration, higher fertility rates, and a slightly more optimistic view on life expectancy compared to the assumptions made by the ABS.

The difference becomes more pronounced in the projections to 2061. The Queensland Government medium projection for the state (9,986,381 persons) in 2061 is approximately 727,000 persons, or 7.9 per cent, above the ABS projection (9,259,341 persons).

There is almost no difference (approximately 14,100 persons or 0.4 per cent) between the ABS and Queensland Government 2031 projections for the Greater Brisbane GCCSA. The Queensland Government's higher population projection for the state therefore projects a slightly higher population outside of Greater Brisbane GCCSA than the ABS. Again, this is driven by the differences in assumptions that underpinned the difference in overall state population projections.

Plans

The previous Queensland Government released the *Queensland Plan*, which set out a 30 year vision for the state.[15] The *Queensland Plan* outlined a range of initiatives to grow the economy, investment in infrastructure and provide services for a growing population.

Doubling the population outside South East Queensland was the key population-related target in the *Queensland Plan*.[16] Over the next thirty years, this would require regional Queensland to grow from 1.5 million to 3.1 million persons, an average annual growth rate of 2.3 per cent. Under these projections, South East Queensland would grow from 3.1 million in 2014 to 4.9 million persons by 2044, an average annual growth rate of 1.5 per cent.

Historically, regions outside of South East Queensland have grown on average at 1.7 per cent and South East Queensland on average at 2.0 per cent annually.

Plans have been, or are being prepared for the regions shown in Figure 12. The projections for each of these regions, as well as the base population used for planning purposes, are shown in Table 19. While forecast population growth in the coastal regions is sizeable, forecast growth in the inland regions is quite modest.

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15 Queensland Government (2014)

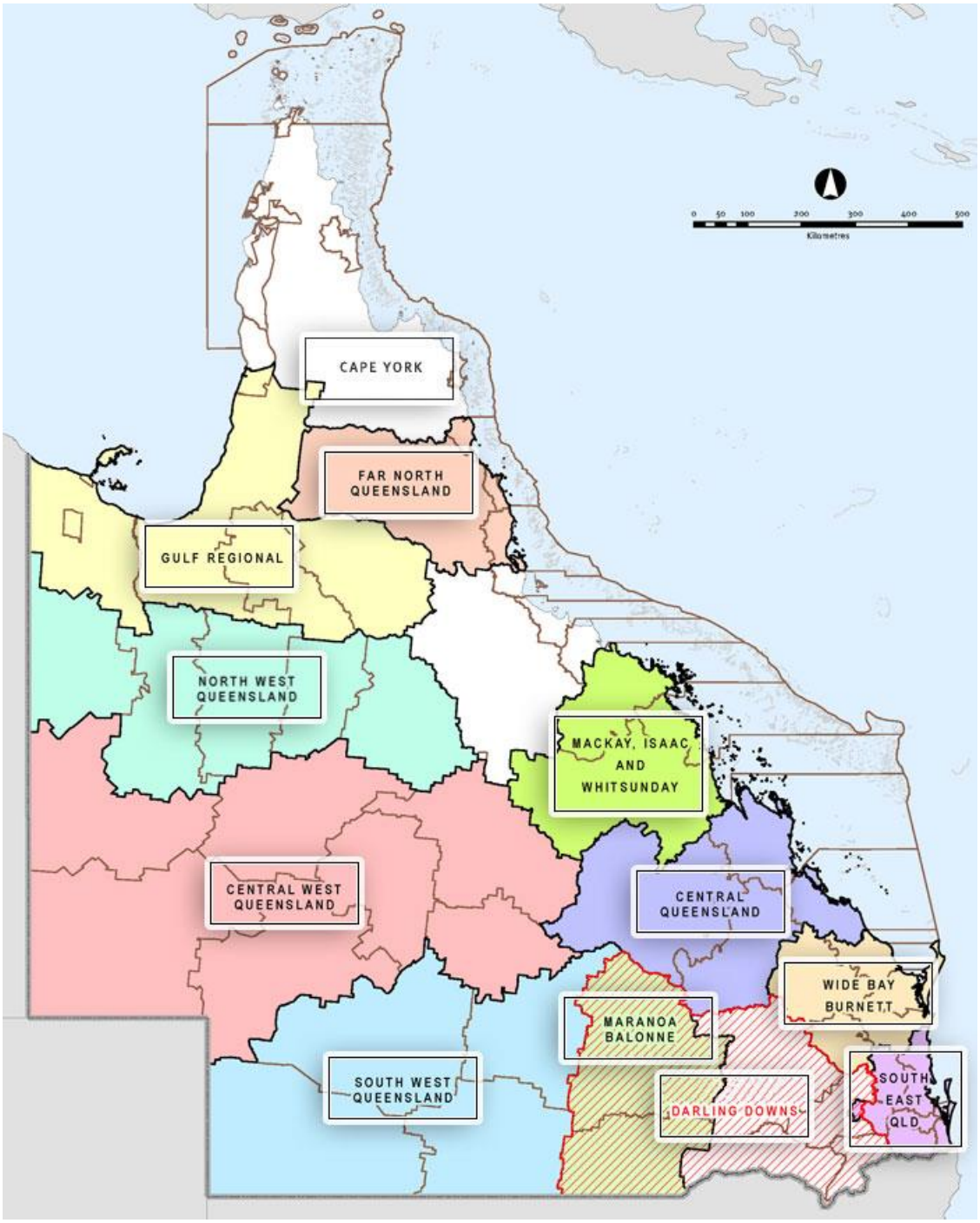
16 Queensland Government (2014), p.4

Table 19 - Population estimates and projections used in Queensland regional plans

Regional Plan	Year of Publication	Base Population and Year	Forecast Population and Year
Cape York (draft)	2013	Not stated.	20,660 (2031)
Central Queensland	2013	223,000 (June 2012)	345,000 (2031)
Darling Downs	2013	255,000 (June 2012)	Not stated.
Central West	2009	12,500 (2006)	13,700 (2031)
Far North Queensland	2009	220,700 (2006)	311,400 (2011)
Gulf Region	2000	7,000 (1996)	Not stated.
Mackay, Isaac and Whitsunday	2012	180,000 (poss. June 2011)	280,000 (2031)
Maranoa-Balonne	2009	18,000 (2007)	19,800 (2031)
North West	2010	28,700 (June 2008)	32,500 (2031)
South West	2009	8,200 (June 2007)	8,200 (2031)
Wide Bay-Burnett	2011	293,500 (2010)	425,200 (2031)

Source: Plans available at Queensland Department of State Development, Infrastructure and Planning (2013)

Figure 12 - Regions covered by Queensland Government regional plans



Source: Queensland Department of State Development, Infrastructure and Planning (2013)

Appendix 3 Details of New South Wales Projections and Plans

The NSW Government's assessments of the future NSW population can be found in both:

- population projections prepared by NSW Government agencies; and
- planning documents.

Given the different times when the projections have been prepared, and the assumptions on which they are based, the projections in these documents may differ slightly.

Projections

In early 2014, the NSW Department of Planning and Environment released a set of state-wide (to 2041) and local government area population projections (to 2031).[17] These projections update preliminary figures released in 2013, and are based on data from the 2011 Census. A single projection series is available, i.e. low and high projections have not been published. The recent estimates provide for a slightly higher population than previous estimates, with a greater proportion of the population attracted to Sydney.

Under the latest projections, NSW is anticipated to grow by 27.8 per cent over the period to 2031, from 7.22 million persons in 2011 to 9.23 million persons in 2031. Table 20 shows the government's projections through to 2031.[18]

Table 20 - NSW Government population projections – Sydney and regional, 2011-2031

Region	2011	2016	2021	2026	2031	Growth 2011-2031 (no.)	Growth 2011-2031 (%)
Sydney	4,286,200	4,657,650	5,064,200	5,467,200	5,861,750	1,575,500	36.8
Other Metropolitan	1,249,950	1,314,500	1,379,350	1,442,250	1,500,850	250,900	20.1
Regional NSW	1,682,400	1,736,750	1,786,850	1,830,550	1,865,800	183,400	10.9
NSW TOTAL	7,218,550	7,708,850	8,230,400	8,739,950	9,228,350	2,009,800	27.8

Source: Infrastructure Australia analysis of New South Wales Department of Planning and Environment (2014) data.

'Other metropolitan' is defined to include the following Local Government Areas: Central Coast (Gosford and Wyong); lower Hunter (Cessnock, Lake Macquarie, Maitland, Newcastle and Port Stephens) and Illawarra (Kiama, Shellharbour and Wollongong).

The projections suggest that a larger proportion of the state's population is expected to be living in the Sydney region by 2031 than at present (63.5 per cent compared to 59.4 per cent in 2011). Interestingly, the share of the 'other metropolitan' areas around Sydney is projected to fall slightly from 17.3 per cent in 2011 to 16.3 per cent in 2031. Overall, the dominance of the so-called 'Greater Metropolitan Area' (an area comprising the Sydney, Lower Hunter, Central Coast and Illawarra regions) is expected to increase. Almost 80 per cent of the state's population is projected to live within the conurbation by 2031.

In August 2012, the NSW Bureau of Transport Statistics released a more detailed set of projections for the Greater Metropolitan Area.[19] The projections are based on the 2010 Statistical Local Area projections prepared by the then NSW Department of Planning. The earlier projections extended to 2036, rather than the current projections which are now limited to 2031.

The population of local government areas outside the Sydney and 'other metropolitan' areas is projected to increase only slightly or decline over the period to 2031. Of these areas, Tweed Shire (on the fringe of the Gold Coast) is projected to experience the greatest population growth (adding 21,000 by 2031), followed by Queanbeyan Council (on the fringe of Canberra) which is expected to add 18,500 people by 2031.[20] In terms of growth as a percentage of current population, Queanbeyan (46.3 per cent growth to

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17 NSW Department of Planning and Environment (2014)

18 At a state level, the projections extend to 2036 (9,700,650 persons) and 2041 (10,162,700 persons).

19 NSW Bureau of Transport Statistics (2012)

20 NSW Department of Planning and Environment (2014)

2031), Yass Valley (40.2 per cent) and Palerang Shire - east of Canberra - (38.3 per cent) are anticipated to grow fastest.

Differences between NSW Government and ABS projections

Table 21 compares the NSW Government's and the ABS projections. At a state level, there is relatively little difference between the NSW Government and ABS projections to 2031; the state government's projection is above the medium ABS projection but less than the high ABS projection. The NSW Government's projection of the state's population in 2031 is approximately 100,000 persons (1.1 per cent) higher than the Bureau's projection. The difference between the two projections grows to 2.0 per cent by 2041.

Table 21 - Comparison of New South Wales Government and ABS population projections – 2011to 2041

Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2041	Change 2011-2041 (no.)	Change 2011-2041(%)
NSW Government	7,218,550	9,228,350	2,009,800	27.8	10,162,700	2,944,150	40.8
ABS (Series A)	7,218,529	9,276,690	2,058,161	28.5	10,358,068	3,139,539	43.5
ABS (Series B)	7,218,529	9,128,665	1,910,136	26.5	9,965,948	2,747,419	38.1
ABS (Series C)	7,218,529	9,021,044	1,802,515	25.0	9,723,703	2,505,174	34.7

Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2013b) and NSW Department of Planning and Environment (2014) data

The NSW Government projections are slightly higher than those issued by the ABS, due primarily to a higher assumed fertility rate. The ABS assumes the total fertility rate in NSW will decline from 1.93 births per woman in 2013 to 1.79 births per woman by 2026, and thereafter remain constant. The NSW Government projections assume a fertility rate of around 1.95 births per women between 2011 and 2031.

Differences in the projections also develop due to long-term assumptions about the level of Net Overseas Migration (NOM) to NSW. After 2016/17, the ABS assumes NOM of 66,200 people for NSW – this is slightly higher than the long-term assumption used in the NSW Government projections (65,400 persons per year). The difference is attributed to the ABS setting an Australian NOM first and then distributing it to all of the states and territories, while the New South Wales Government assumption is based on NSW data.

The NSW Government's assumption on net inter-state migration (-20,000 persons per year) is slightly higher than the ABS assumption (-17,000 persons per year after 2015).

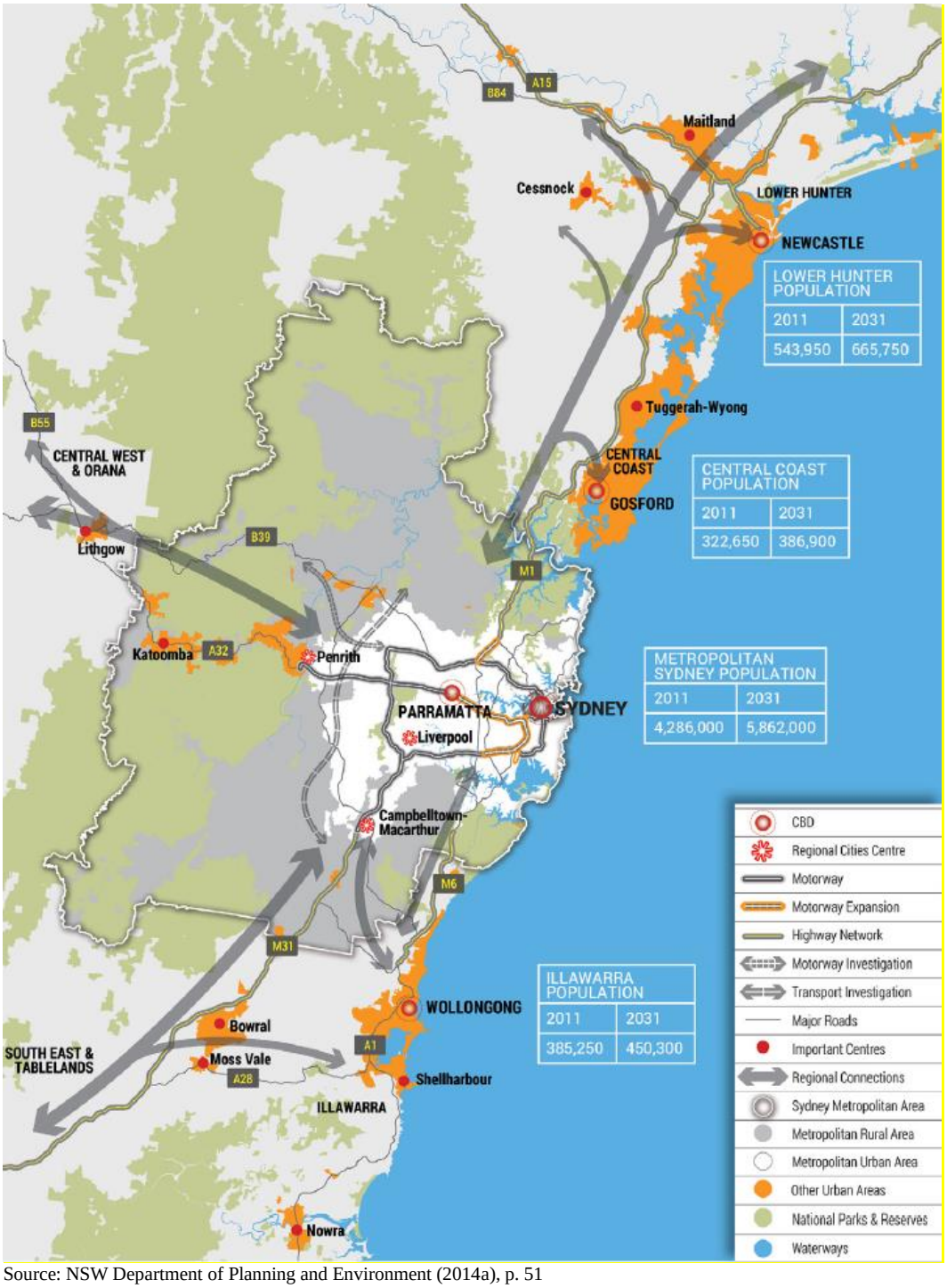
The ABS medium level projection of the Greater Capital City Statistical Area (GCCSA) population in 2031 (6.207 million persons) accords closely with the NSW Government's projection of the total population for the Sydney region and the two other local government areas – Gosford and Wyong – that fall within the ABS definition of the GCCSA (6.249 million persons). The difference is 0.67 per cent. Put another way, under the ABS projections, the 'delay' in the GCCSA population reaching the NSW projection is approximately six months.

In regard to the distribution of population throughout the state, the NSW Government makes no assumptions about how state level population is distributed. Instead, the NSW Government runs simultaneous cohort models for each region and LGA, with the outputs of this modelling informing distribution. Using this model, Sydney is growing faster due to a younger population spurring natural increase and attracting a higher proportion of NOM. However, the main difference between NSW Government and ABS projections for 'Sydney' and 'NSW Balance' occur due to the application of different boundaries for Sydney. The NSW Government aligning its geography in the Metropolitan Planning Strategy with the 41 LGAs that make up Metropolitan Sydney, while ABS defines Greater Sydney using new ASGS geographies and include Gosford and Wyong. This results in the ABS (Series B) projection for Greater Sydney being approximately 350,000 people higher than the projection made by the NSW Government. Conversely the NSW Government projects NSW Balance to be approximately 450,000 persons higher than the ABS (Series B).

Plans

The NSW Government's *Plan for Growing Sydney*, published in December 2014, sets out the government's strategy for the development of Sydney to 2031.[21] Figure 13, drawn from the government's plan, provides an indication of the broad scale of growth across the Sydney/Hunter/Illawarra conurbation. The projected population growth in the Sydney region between 2011 and 2031 (1.58 million) is estimated to require 664,000 new dwellings.[22]

Figure 13 - Projected Population Growth in Sydney/Lower Hunter/Illawarra Conurbation



Source: NSW Department of Planning and Environment (2014a), p. 51

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21 NSW Department of Planning and Environment (2014a)

22 NSW Department of Planning and Environment (2014a), p.63

The plan provides high level information about the expected breakdown of dwellings and population growth within the Sydney region. The *Plan for Growing Sydney* emphasises the importance of future sub-regional planning processes to determine where and how the expected demand for 664,000 dwellings will be met.

A precursor to the plan, the draft *Metropolitan Strategy for Sydney* released by the NSW Government in March 2013, provided some additional guidance (although the views expressed then cannot be taken as a statement of current policy). The draft strategy was predicated on a view that the Sydney region population (i.e. excluding the Lower Hunter and the Illawarra areas) will increase from 4.3 million to 5.6 million persons by 2031.[23]

The draft strategy indicated that to accommodate this population growth, a minimum of 545,000 new dwellings would be required in the Sydney region between 2011 and 2031. Slightly over half the new dwellings and approximately 63 per cent of the anticipated population growth was proposed to be located in the west and south-west sub-regions.

Although the draft strategy provided an indication of housing targets for six sub-regions within Sydney (see Table 22 and Figure 14 below), it was unclear what proportion of new dwellings was planned to be accommodated in greenfield areas versus infill development. The draft strategy included a suggestion that around 60 per cent of new dwellings would be built in established areas.[24]

Table 22 - Planned population increases in Sydney sub-regions – 2011-2031

Sub-region	Population Increase Under Draft Strategy	2031 Minimum Housing Targets
Central	242,000	138,000
North	81,000	37,000
West	89,000	39,000
South	76,000	42,000
South West	469,000	141,000
West Central & North West	355,000	148,000
Total	1,312,000	545,000

Source: NSW Government (2013), p. 30 and pp.81-99

NSW Government plans for the Central Coast (i.e. the Gosford and Wyong local government areas) envisage population growth of 100,000 persons (from 304,700 in 2006) and around 56,000 dwellings over the period 2006 to 2031. Applying the projection period used for the current draft Metropolitan Strategy, suggests an additional 80,000 persons over the period 2011-2031.[25]

NSW Government plans for the Lower Hunter (i.e. the Lake Macquarie, Newcastle, Maitland, Cessnock and Port Stephens local government areas) envisage population growth of 160,000 persons (from 515,000 persons in 2006) and around 115,000 dwellings over the period 2006 to 2031.[26] Applying the projection period used for the current draft Metropolitan Strategy, suggests an additional 128,000 people over the period 2011-2031.

Plans for the Illawarra region (in effect the Wollongong, Shellharbour and Kiama local government areas) envisage population growth of 47,600 persons and around 38,000 dwellings over the period 2006 to 2031. Applying the projection period used for the current draft Metropolitan Strategy, suggests an additional 38,000 persons over the period 2011-2031. The Strategy suggests that 50 per cent of new dwellings will

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23 NSW Government (2013), p.6

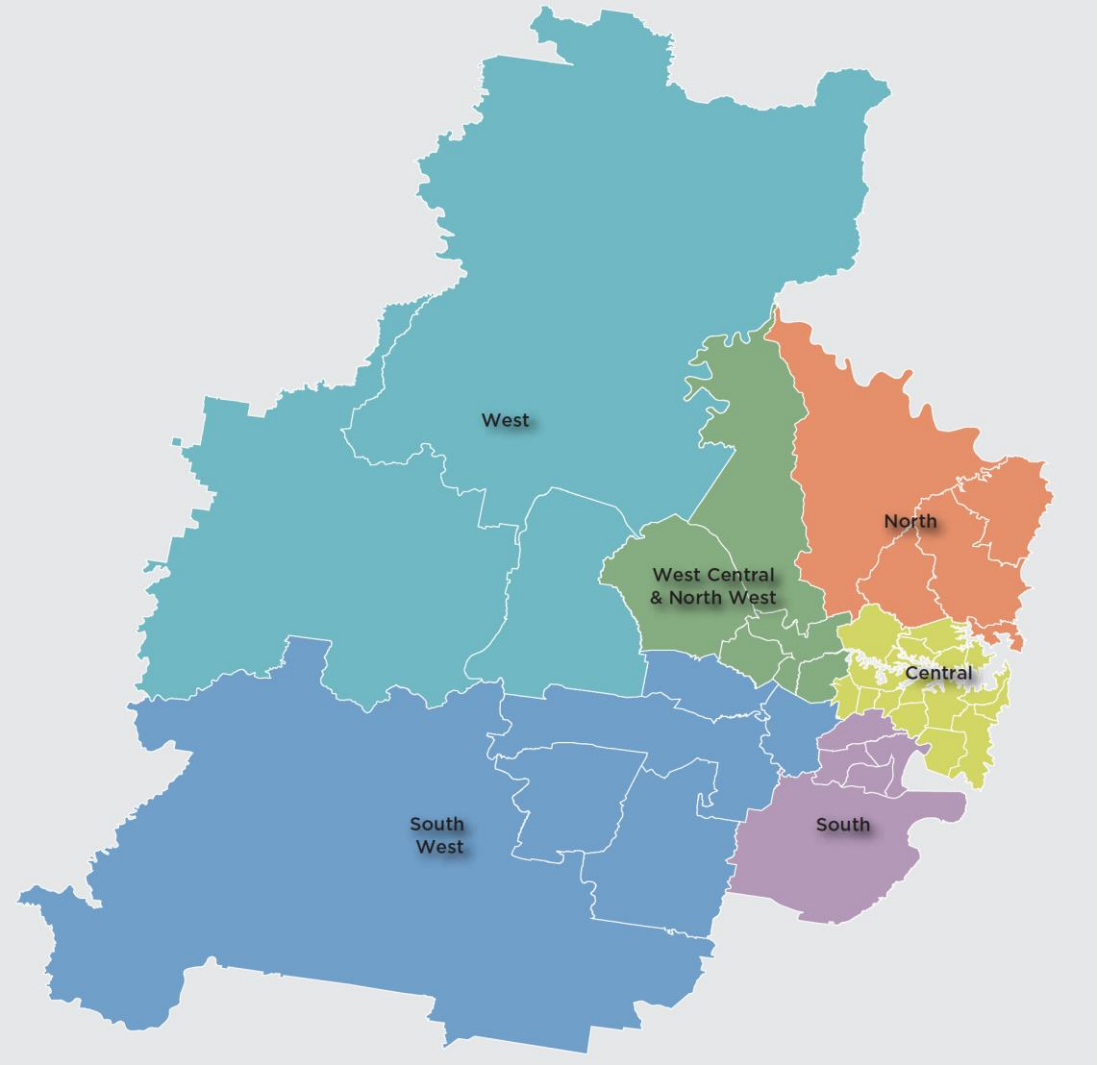
24 See comment at p.12 that "…undeveloped land yet to reach its full potential ... could provide the capacity for over 200,000 additional dwellings – more than one-third of the 545,000 additional dwellings needed over the period 2011 to 2031".

25 NSW Department of Planning (2008), p.7

26 NSW Department of Planning (2006), p.4

be built as detached houses (principally in the West Dapto land release), and 50 per cent as medium to high density dwellings.[27]

Figure 14 - NSW Government's planning sub-regions for Sydney



Source: NSW Government (2013), p.81

[27] NSW Department of Planning (2007), p.9

Appendix 4 Details of Australian Capital Territory Projections and Plans

The Australian Capital Territory (ACT) Government's assessments of the Territory's future population can be found in both:

- population projections prepared by the ACT Government's agencies; and
- planning documents.

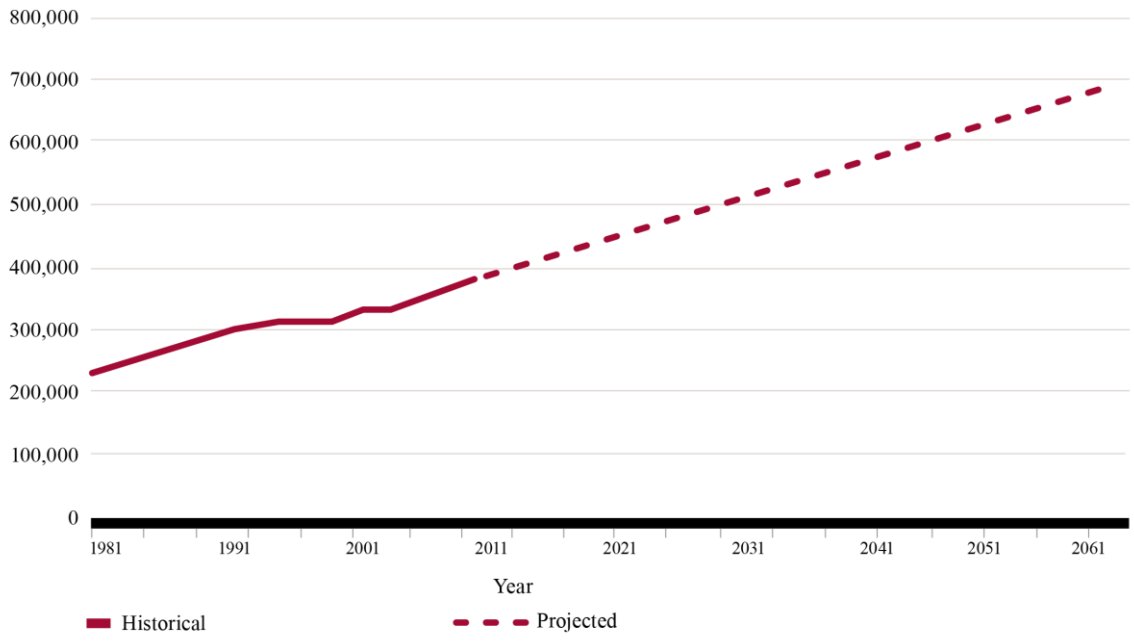
Given the different times when the projections have been prepared, and the assumptions on which they are based, the projections in these documents may differ slightly.

Projections

The ACT Government's latest population projections were released in January 2014. The projections incorporate results from the 2011 Census.

A single projection series is available, i.e. low and high projections have not been published. Figure 15 and Table 23 present the past and projected population. The 2014 projections indicate higher levels of growth than anticipated in projections prepared in 2011. This is due to higher assumptions concerning net overseas migration and slightly higher fertility. The population of the ACT is projected to increase by approximately 130,000 persons (or 36 per cent) between 2011 and 2031.

Figure 15 - ACT Government estimates of Territory population - past and projected



Source: ACT Government (2014)

Table 23 - ACT Government estimates of past and projected population

Year	2011	2016	2021	2026	2031		Change 2011-2031 (no.)	Change 2011-2031 (%)
No. of Persons	363,764	399,899	430,439	462,762	493,452		129,688	35.7

Year	2036	2041	2046	2051	2056	2061	Change 2011-2061 (no.)	Change 2011-2061 (%)
No. of Persons	523,353	553,465	584,259	615,301	646,016	675,549	311,785	85.7

Source: Infrastructure Australia analysis of ACT Government (2014) data

In arriving at these projections, the key demographic assumptions by the ACT Government were:

- Fertility (Total Fertility Rate) – 1.736;
- Life Expectancy at Birth – Assumes life expectancy at birth will reach 88.0 years for males and 92.2 years for females over the projection period (linear improvement in life expectancy);
- Net Overseas Migration – Uses Department of Immigration and Citizenship forecasts for 2013-2017 (inclusive). For the remainder of the projection period, NOM of 250,000 persons for Australia has been assumed with 1.12 per cent moving to the ACT (equal to the average of the last six years), a total of 2,800 persons per annum from 2017; and
- Net Interstate Migration – Assumes slowing interstate movement as a result of efficiencies and natural attrition in the Australian Public Service, a total of 200 persons per annum from 2019 (approximately the average of the last five years).

The ACT projections do not take into account population growth outside the ACT, such as in the adjacent town of Queanbeyan. In 2011, Queanbeyan's estimated resident population was approximately 40,000 persons.

Differences between ACT Government and ABS projections

Table 24 compares the ACT Government's and the ABS projections. The ABS medium projection for 2031 is approximately 27,000 persons (or 5.5 per cent) above the Territory's projections. The medium ABS 2061 projection is approximately 65,400 persons (or 9.7 per cent) above the Territory's projection.

Table 24 - Comparison of ACT Government and ABS population projections – 2011to 2061 (persons)

Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2061	Change 2011-2061 (no.)	Change 2011-2061(%)
ACT Government	363,764	493,452	129,688	35.7	675,549	311,785	85.7
ABS (Series A)	367,985	560,590	192,605	52.3	904,115	536,130	145.7
ABS (Series B)	367,985	520,412	152,427	41.4	740,903	372,918	101.3
ABS (Series C)	367,985	482,937	114,952	31.2	612,352	244,367	66.4

Source: Infrastructure Australia analysis of Australian Bureau of Statistics (2013b) and ACT Government (2014) data

These differences largely turn on different assumptions regarding migration. The ABS has assumed net inward migration of approximately 1,000 persons per year, while the ACT Government assumes approximately 200 persons per year. A difference in the assumed rate of Net Overseas Migration to the Territory is also a factor, with the ACT Government projecting around 1,000 fewer overseas arrivals per year than the ABS.

Plans

In June 2012, the ACT Government released its *ACT Planning Strategy*. The Strategy aims to lead sustainable development of the ACT over the next 20 years, and provide guidance for the Territory's development to 2060.

The Strategy posits an ACT population of 457,300 persons by 2031, a figure which is roughly 35,000 persons fewer than the most recent Territory projections. (The Strategy was published prior to the 2011 Census results being released, and prior to release of the long-term ABS population projections). The Strategy argues that a further 150,000 persons are expected to live in the broader ACT 'region' by 2030.

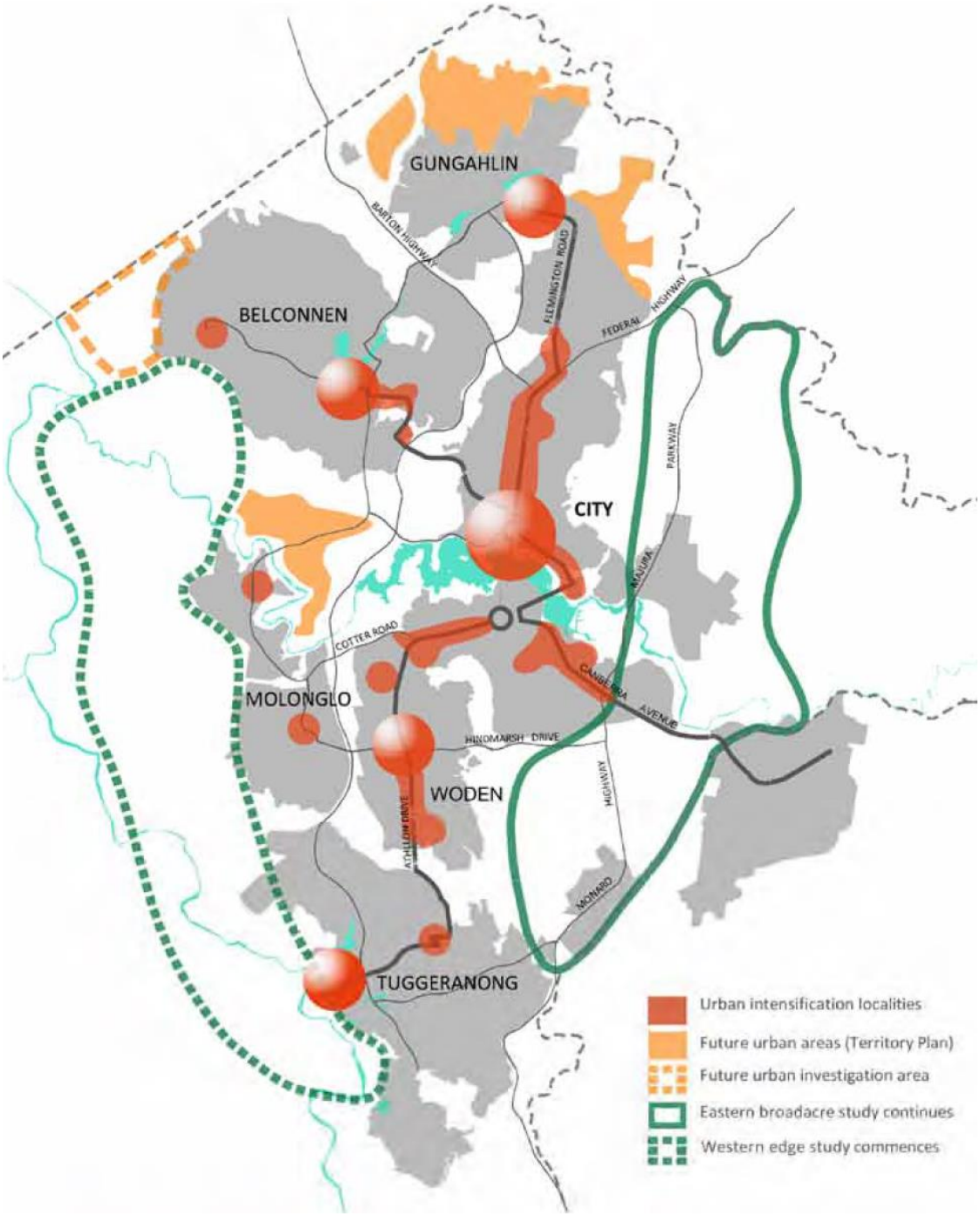
The Strategy also provides an indication of possible high and low growth projections for the ACT.[28] Under a low growth projection, the ACT population would increase to around 410,000 persons by 2031 (compared to a medium projection of 457,300 persons) and around 440,000 persons by 2056 (compared to a medium projection of 547,600. Under a high growth projection, the ACT population increases to around 490,000 persons by 2031 and 640,000 persons by 2056.

[28] ACT Government (2012), p.20

The Strategy sets an indicator that "the proportion of new housing delivered through urban intensification is 50 per cent or more."[29] Figure 16 shows that the Strategy envisages intensification in and around City (Civic), Belconnen, Gungahlin, Woden and Tuggeranong, and some of the corridors (notably Northbourne Avenue) leading into the city.

In 2014, the ACT Government released *The City Plan* to guide development in the Canberra city centre. The Plan aims to encourage ten per cent of the Territory's expected population growth over the next 15-20 years (around 8,000 persons) into the city centre.[30]

Figure 16 - Proposed urban growth and intensification areas in Canberra



Source: ACT Government (2012), p.40

[29] ACT Government (2012), p.5

[30] ACT Government (2014a), p.34

Appendix 5 Details of Victorian Projections and Plans

The Victorian Government's assessments of the future Victorian population can be found in both:

- population projections prepared by Victorian Government agencies; and
- planning documents.

Given the different times and assumptions on which they are based, the projections in these documents may differ.

Projections

The Victorian Department of Transport, Planning and Local Infrastructure released *Victoria in Future 2014*, which provides population projections for Victoria, Melbourne and local government areas in the state[31]. Projections are based on the 30 June 2013 ERP and the 2011 Census. A single projection series is available, i.e. low and high projections have not been published. For Victoria as a whole, and major regions within the state, the projections cover the period from 2011 to 2051. For local government areas, the projections extend to 2031.

Under these projections, Melbourne's dominance is clear. It represented 75.3 per cent of the state population in 2011, a share that is projected to increase to 77.4 per cent in 2031 and 78.2 per cent by 2051. The cities of Geelong, Ballarat, Bendigo and Latrobe-Gippsland are also expected to exhibit comparatively strong population growth to 2031.The share of the state population in the north west and south west is projected to fall. Table 26 presents the projected population growth in the various Victorian regions.

Table 25 – Victorian Government projections of state population to 2051

Series	2011	2016	2021	2026	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)
No. of Persons	5,537,817	6,058,677	6,607,853	7,159,898	7,699,067	2,161,250	39.0

Series	2036	2041	2046	2051	Change 2011-2051 (no.)	Change 2011-2051 (%)
No. of Persons	8,238,619	8,796,031	9,384,091	10,010,993	4,473,176	80.8

Source: Infrastructure Australia analysis of Victorian Department of Transport, Planning and Local Infrastructure (2014a) data

Table 26 - Victorian Government regional population projections – 2011-2031

Region	2011	% of State Total	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	% of State Total
Greater Melbourne GCCSA	4,169,366	75.3	5,956,886	1,787,520	42.9	77.4
Geelong SA4	256,580	4.6	351,672	95,092	37.1	4.6
Ballarat SA4	148,656	2.7	205,380	56,724	38.2	2.7
Bendigo SA4	142,693	2.6	193,930	51,237	35.9	2.5
Hume SA4	161,335	2.9	197,567	36,232	22.5	2.6
Latrobe-Gippsland SA4	259,952	4.7	342,246	82,294	31.7	4.4
North West SA4	149,634	2.7	165,983	16,349	10.9	2.2
Shepparton SA4	127,002	2.3	150,858	23,856	18.8	2.0
Warrnambool/South West SA4	122,599	2.2	134,546	11,947	9.7	1.7

Source: Infrastructure Australia analysis of Victorian Department of Transport, Planning and Local Infrastructure (2014) data

[31] Victorian Department of Transport, Planning and Local Infrastructure (2014a)

Differences between Victorian Government and ABS projections

Table 27 compares the Victorian Government's projections with those by the ABS.

Table 27 - Comparison of Victorian Government and ABS medium population projections – 2011-2051 (Persons)

Region/ Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2051	Change 2011-2051 (no.)	Change 2011-2051 (%)
Victoria - Victorian Government	5,537,817	7,699,067	2,161,250	39.0	10,010,993	4,473,176	80.8
Victoria - ABS	5,537,817	7,584,869	2,047,052	37.0	9,436,233	3,898,416	70.4
Melbourne - Victorian Government	4,169,366	5,956,886	1,787,520	42.9	7,825,995	3,656,629	87.7
Melbourne - ABS	4,169,366	5,984,219	1,814,853	43.5	7,735,073	3,565,707	85.5

Source: Infrastructure Australia analysis of Victorian Department of Transport, Planning and Local Infrastructure (2014a) and Australian Bureau of Statistics (2013c) data

To 2031, the Victorian Government and ABS projections do not differ greatly. The Victorian Government projections for the state are slightly higher than the Bureau's, due to a more 'optimistic' view regarding Victoria's future birth rate (based on state government analysis of more recent single year fertility).

However, by 2051, the Victorian Government and ABS population projections differ somewhat: the Victorian Government projection of the state population is approximately 575,000 persons (6.1 per cent) higher than the ABS. This difference arises due to assumptions made regarding Net Overseas Migration in the long term. After 2030, the ABS assumes a constant migration number (approximately 240,000), while the Victorian Government (in consultation with academics and Victorian Treasury) assume that migration will continue at a constant ratio to population, therefore as the population of Australia grows, the total annual number of migrants to the country will grow (but remain at the same ratio to population).

Regarding growth of Melbourne and the balance of Victoria, the Victorian Government assumes a constant ratio of migration out of Melbourne, so that as Melbourne grows the outward migration total to the rest of Victoria also grows. On the other hand, the ABS assumes a constant migration number from/to Melbourne and the rest of the Australia/Victoria Balance. This results in the Victorian Government 2051 projection for 'Victoria Balance' to be almost half a million persons higher than the ABS (Series B) projections.

Plans

In May 2014, the then Victorian Government released *Plan Melbourne*, a strategy for the city's development to 2050. The strategy is predicated on Melbourne's population growing from around 4.3 million persons in 2013 to:

- between 5.85 million and 6.15 million persons in 2031 (as shown in Figure 17); and
- around 7.7 million persons in 2051.[32]

The strategy does not expressly include Geelong, where population is projected to grow by approximately 95,000 persons by 2031. However, the strategy acknowledges the importance of economic and infrastructure linkages between Geelong and Melbourne.

The strategy suggests that accommodating the 3.4 million additional persons by 2051 will require approximately 1,570,000 million dwellings. Approximately 960,000 of these dwellings, around 61 per cent of the total, are planned to be built in established areas. Of the 960,000 new dwellings in established

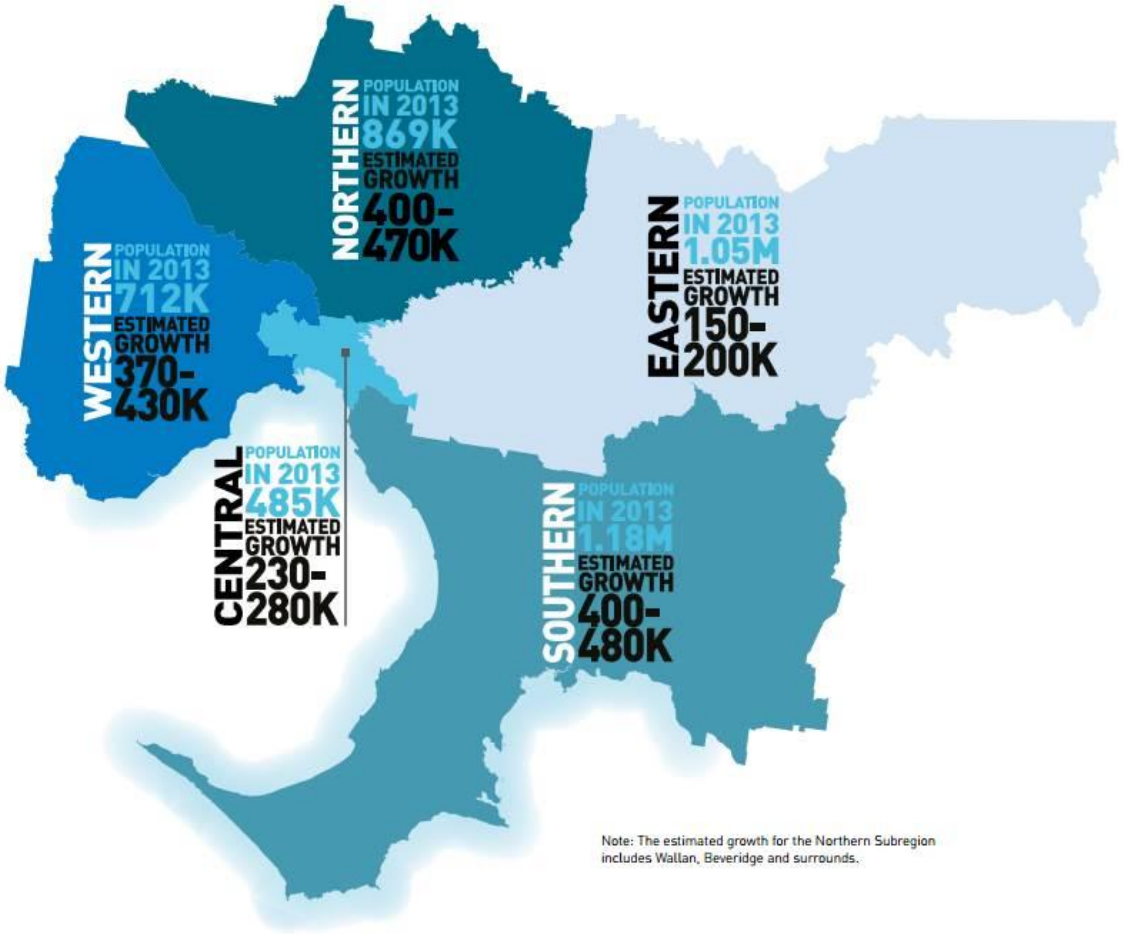
[32] Victorian Government (2014), p. 29 and p.61

areas, 310,000 dwellings are proposed to be accommodated in the central city and its immediate surrounds.[33]

The Victorian Government announced in late March 2015 that it is reviewing *Plan Melbourne*. Community consultation will be completed later in 2015, and a final plan will be incorporated in an overall planning scheme by the first quarter of 2016.[34]

The Victorian Government supported councils and regional groups to prepare plans for eight regions around Victoria. The regions are shown in Figure 18. The population forecasts underpinning the plans are shown in Table 28.

Figure 17 - Current population and estimated growth to 2031 in Melbourne's sub-regions



Source: Victorian Government (2014), p.29

[33] Victorian Government (2014) p.62

[34] Wynne, The Hon. R. (2015)

Table 28 - Planned population for Victorian non-metropolitan regions

Regional Growth Plan	Date of Publication	Base Population and Year	Forecast Population and Year
Central Highlands	May 2014	169,300 (2011)	223,500 (2031) and 247,500 (2041)
G21 Region	April 2013	294,300 (2011)	505,300 (2031-2041)
Gippsland	May 2014	269,800 (2011)	345,900 (2031) and 386,000 (2041)
Great South Coast	May 2014	101,600 (2011)	124,800 (2031) and 142,000 (2041)
Hume	May 2014	276,800 (2011)	333,800 (2031) and 354,000 (2041)
Loddon Mallee North	May 2014	134,300 (2011)	152,100 (2031) and 160,000 (2041)
Loddon Mallee South	May 2014	188,000 (2011)	242,200 (2031) and 266,900 (2041)
Wimmera Southern Mallee (draft)	May 2014	50,700 (2011)	51,300 (2031)

Source: Victorian Department of Transport, Planning and Local Infrastructure (various)

Figure 18 - Victorian planning regions

Source: Victorian Department of Transport, Planning and Local Infrastructure (2013), p.3.

Appendix 6 Details of Tasmanian Projections and Plans

The Tasmanian Government's assessments of the future Tasmanian population can be found in both:

- population projections prepared by Tasmanian Government agencies; and
- planning documents.

Given the different times and assumptions on which they are based, the projections in these documents may differ.

Projections

In December 2014, the Tasmanian Department of Treasury and Finance released updated population projections for Tasmania covering a period of 50 years (from 2012 to 2062). Projections are also provided at a Local Government Area level to 2037. The projections take account of the 2011 Census results and the ABS estimate of Tasmania's resident population at 30 June 2014 (514,684 persons).[35]

The new projections indicate that, on medium demographic assumptions, Tasmania's population will grow by around 55,200 to around 566,300 persons by 2031 and 589,000 persons by 2061.

As shown in Table 29, two things are notable about the Tasmanian Government's projections:

- under the medium projection series, the state's population essentially stabilises after 2031; and
- under the low projection series, the state's population starts to decline from the late 2020s.

Table 29 - Tasmanian Government population estimates and projections – 2011-2061

Series	2011	2016	2021	2026	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)
Low	511,195	517,786	522,175	524,627	524,223	13,028	2.6
Medium	511,195	525,501	540,732	554,612	566,348	55,153	10.8
High	511,195	533,156	559,877	586,510	612,126	100,931	19.7

Series	2036	2041	2046	2051	2056	2061	Change 2011-2061 (no.)	Change 2011-2061(%)
Low	520,345	513,037	502,716	490,183	476,384	462,167	-49,028	-9.6
Medium	575,421	581,878	586,030	588,177	588,987	588,998	77,803	15.2
High	636,629	660,672	684,882	709,666	735,374	762,323	251,128	49.1

Source: Infrastructure Australia analysis of Tasmanian Department of Treasury and Finance (2014) data

The Tasmanian Government projections indicate that, on medium level long-term projections, greater Hobart[36] will marginally increase its share of the total Tasmanian population, rising from 213,116 persons (or 41.6 per cent of the state population) in 2011 to 248,193 persons (or 43.8 per cent of the state total) in 2031.

On the same Tasmanian Government medium level projections, the combined population of the Launceston and West Tamar Local Government Areas (the area which includes the bulk of the Launceston city area) is expected to grow from 90,013 in 2012 to 97,419 in 2031.

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35 Tasmanian Department of Treasury and Finance (2014)

36 'Greater Hobart' is defined for the purposes of this report to include the Local Government Areas of Hobart, Glenorchy, Brighton, Clarence, Sorell and Kingborough. This is slightly larger than the Australian Bureau of Statistics' definition of the Hobart Greater Capital City Statistical Area, which excludes the southern part of Kingborough.

Differences between Tasmania Government and ABS projections

Table 30 compares the ABS Series B projection with the range of projections made by the Tasmanian Government. The Tasmanian Government's medium projection for 2031 is 6,642 persons or 1.2 per cent higher than the ABS medium projection. The equivalent difference for 2061 is 23,288 or 4.1 per cent.

Table 30 - Comparison of Tasmanian Government and ABS population estimates and projections 2011-2061

Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2061	Change 2011-2061 (no.)	Change 2011-2061(%)
ABS	511,483	559,706	48,511	9.5%	565,710	54,227	10.7%
Tasmanian Government (Low)	511,195	524,223	13,028	2.6%	462,167	-49,028	-9.6%
Tasmanian Government (Medium)	511,195	566,348	55,153	10.8%	588,998	77,803	15.2%
Tasmanian Government (High)	511,195	612,126	100,931	19.7%	762,323	251,128	49.1%

Source: Infrastructure Australia analysis of data in Australian Bureau of Statistics (2013b) and Tasmanian Department of Treasury and Finance (2014)

For the most part, the projections are very similar. The major variation is due to different assumptions around overseas and interstate migration, with interstate migration in Tasmania particularly variable from year to year. With regard to this variation in year-to-year interstate migration, the ABS and Tasmanian Government have adopted different timeframes in their assessment.

Plans

The Tasmanian Government has committed to increase Tasmania's population to 650,000 by 2050.[37] This is significantly above the ABS projection of the Tasmanian population in 2061 (565,710 persons) shown in Table 30. To achieve its population target, the Tasmanian Government has commenced development of a whole of government Population Strategy, as well as a Business and Skilled Migration Strategy. It is anticipated that the Population Strategy will be drafted by mid-2015.

Southern Tasmanian councils have produced a *Southern Tasmania Regional Land Use Strategy*, an amended version of which was approved by the then Tasmanian Minister for Planning in November 2013. The Strategy states that the population of the southern Tasmanian region, which extends beyond the greater Hobart area, would grow from 246,200 in 2008 to 327,000 in 2035. Approximately 86 per cent of the southern Tasmanian population lives in greater Hobart. Meeting this population growth is expected to require 26,500 additional dwellings in the greater Hobart area by 2035.[38]

The Strategy further states:

> *"... this Strategy proceeds on the basis of a 50/50 ratio of greenfield to infill scenario, with a minimum net residential density of 15 dwellings per hectare. Residential growth will be primarily managed through an Urban Growth Boundary that will set the physical extent for a 20 year supply of residential land for the metropolitan area."*[39]

Figure 19 shows areas where the councils are proposing to increase densities. However, the Tasmanian Government's population projections indicate that most of the projected growth in greater Hobart's population is expected to occur in the outer local government areas around Hobart, notably Kingborough, Clarence and Brighton.[40]

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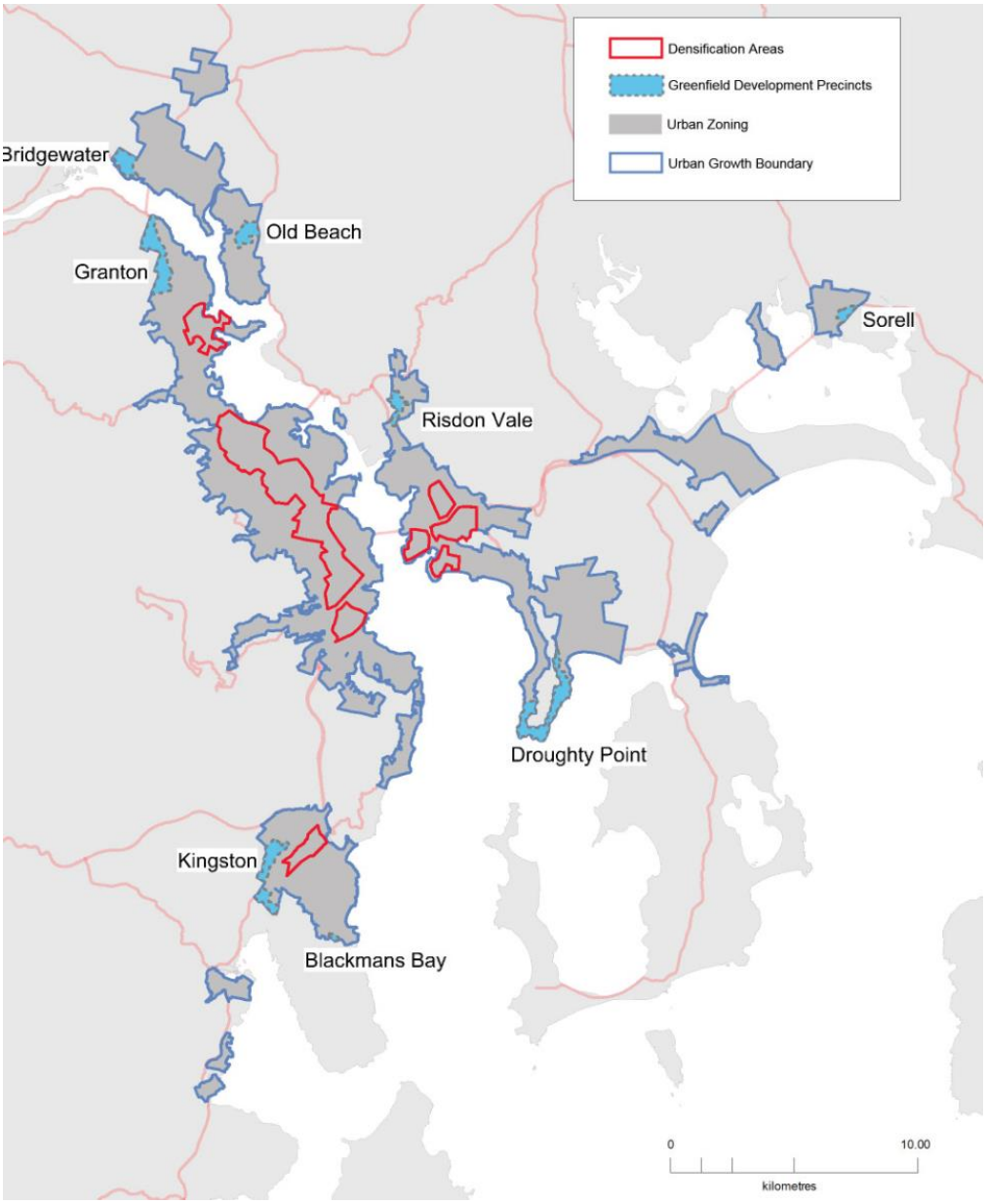
37 Hodgman (2014)

38 Southern Tasmanian Councils Authority (2013), pp.10-11

39 Southern Tasmanian Councils Authority (2013), p.91. Until recently, the greenfield/infill split has been 85/15.

40 Tasmanian Department of Treasury and Finance (2014), p.8

Figure 19 - Areas for residential development in greater Hobart 2010-2035



Source: Southern Tasmanian Councils Authority (2013), p.100

Appendix 7 Details of South Australian Projections and Plans

The South Australian (SA) Government's assessments of the future South Australian population can be found in both:

- population projections prepared by SA Government agencies; and
- planning documents.

Given the different times and assumptions on which they are based, the projections in these documents may differ.

Projections

In December 2010, the SA Government released projections for the South Australian population (and Statistical Divisions within the state) to 2036, based on the 2006 Census.[41] It also released small area projections to 2026. The state level projections to 2031 are shown in Table 31. Under the medium projection, the state population grows to 2,088,450 persons in 2036.

A covering note to the projections states that:

> *"the projections in this workbook have been developed in the context of the release of The 30-Year Plan for Greater Adelaide in February 2010. The spatial priorities for future population distribution outlined in the 30-Year Plan have guided the spatial distribution between statistical divisions for these projections."*[42]

Table 31 - South Australian Government population projections for South Australia - 2006-2036

Projection Series	2011	2016	2051	2026	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)
Low	1,664,059	1,744,098	1,794,984	1,830,457	1,857,604	193,545	11.6
Medium	1,667,644	1,771,644	1,860,935	1,942,161	2,018,079	350,435	21.0
High	1,669,374	1,789,354	1,911,356	2,035,537	2,158,192	488,818	29.3

Source: Infrastructure Australia analysis of Government of South Australia (2010a) data

As yet, projections based on the 2011 Census have not been released. These projections are presently being developed.

Differences between SA Government and ABS projections

Table 32 compares the population projections released by the SA Government and the ABS. As noted above, the South Australian population projections are being revised by the SA Government. When released the updated projections are expected to be built upon data from the 2011 Census data. Revisions are expected to be available in 2015.

The SA Government's medium projection for the state population in 2031 is approximately 46,000 (or 2.3 per cent) above the projection prepared by the ABS.

A higher growth population projection was deliberately chosen by the SA Government as the basis for the population and dwelling growth targets in the government's *30-Year Plan for Greater Adelaide*. This projection (between the state's medium and high level projections) was chosen on the basis that it was preferable to plan for the future release of land to cater for a possible high outcome than to underestimate future demand because of projections that are too conservative. The official projection series released in late 2010 was slightly more conservative than the 30-Year Plan scenario, but was influenced by the record net overseas arrival flows into South Australia in 2007, 2008 and 2009. These flows have since decreased and revised projections are more likely to align with the current ABS Series B projections.

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41 The medium level projection for South Australia in 2036 was 2,088,450 persons. The low and high projections were 1,876,948 and 2,278,224 persons respectively.

42 Government of South Australia (2010a), p1

Table 32 - Comparison of South Australian Government and ABS population projections – 2011 to 2036

Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2036	Change 2011-2036 (no.)	Change 2011-2036(%)
South Government (Low)	1,664,059	1,857,604	193,545	11.6	1,876,948	212,889	12.8
South Australian Government (Medium)	1,667,644	2,018,079	350,435	21.0	2,088,450	420,806	25.2
South Australian Government (High)	1,669,374	2,158,192	488,818	29.3	2,278,224	608,850	36.5
ABS (Series C) - Low	1,639,614	1,923,886	284,272	17.3	1,970,681	331,067	20.2
ABS (Series B) – Med.	1,639,614	1,971,779	332,165	20.3	2,038,755	399,141	24.3
ABS (Series A) - High	1,639,614	2,029,887	390,273	23.8	2,128,285	488,671	29.8

Source: Infrastructure Australia analysis of Government of South Australia (2010a) and Australian Bureau of Statistics (2013b) data

Plans

In October 2013, the SA Government released a draft *Integrated Transport and Land Use Plan* for the state. The draft plan observes that 82 per cent of South Australians live in the Greater Adelaide area[43]; and draws a range of links with the SA Government's *30-Year Plan for Greater Adelaide.*

The *30 Year Plan* was based on the population of Greater Adelaide growing by 560,000 persons over the period to 2040, and an associated need to provide for 258,000 new dwellings.[44] Through implementation of the 30 Year Plan, the SA Government aims to achieve a 70/30 split of infill housing versus greenfield growth (increasing from 50/50 at the time the 30-Year Plan was released).

Major areas of new housing are proposed for:

- Playford on Adelaide's northern fringe (an additional 100,000 people);
- the Central Business District (an additional 60,000 residents);
- redevelopment around the Noarlunga Regional Centre and Noarlunga railway station in Adelaide's south (an additional 10,000 people); and
- the Bowden redevelopment area immediately north-west of the CBD (an additional 3,500 residents).[45]

The draft *Integrated Transport and Land Use Plan* envisages only modest growth in regional South Australia, as shown in the following extracts:

> *"… covering more than half of South Australia's land area, the far north region is sparsely populated with long distances between settlements. The region's population is anticipated to grow from its current base of 29,170 people to around 37,100 people by 2036 (one per cent per annum).*
>
> *…The population of the Eyre and Western Region is projected to increase from around 57,700 in 2011 to 61,600 by 2036 (0.3 per cent per annum).*
>
> *…Population growth in the Yorke and Mid north Region is forecast to increase from 74,400 people in 2011 to around 80,900 people by 2036 (0.3 per cent per annum). However, the region will continue to experience substantial increases in population at particular times of the year as a result of tourism and seasonal employment opportunities.*
>
> *…The population of Kangaroo Island was just over 4,520 in 2011 and is expected to grow relatively quickly compared to other regions in the state to 5,930 people in 2036 (1.1 per cent per annum).*

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43 Government of South Australia (2013)

44 Government of South Australia (2010b), p.71

45 Government of South Australia (2013), p.123, p.36, p.123, and p.43

…With a population currently approaching 68,900 people, the Murray and Mallee region is expected to grow at a rate of 0.4 per cent per annum to around 75,230 people by 2036.

…The limestone coast region serves as South Australia's gateway to Victoria and features important tourist and freight transport links. With a population of around 64,370 in 2011 and expected growth to around 72,240 people by 2036 (0.5 per cent per annum), initiatives to improve the safety and performance of the road network will be an important stimulus for ongoing economic development of the region.[46]

[46] Government of South Australia (2013), pp.128-144.

Appendix 8 Details of Western Australian Projections and Plans

The Western Australian (WA) Government's assessments of the future Western Australian population can be found in both:

- population projections prepared by WA Government agencies; and
- planning documents.

Given the different times and assumptions on which they are based, the projections in these documents may differ.

Projections

The latest population projections from the WA Government were released in February 2012. The five projection series are built upon on a 2006 base year and extend to 2026. [47]

Table 33 – Western Australian Government population projections for Western Australia 2006 – 2026

Series	2006	2011	2016	2021	2026	Change 2011-2026 (no.)	Change 2011-2026 (%)
Series A	2,064,300	2,329,000	2,543,200	2,734,700	2,931,400	602,400	25.9
Series B	2,065,000	2,350,600	2,584,400	2,793,000	3,006,800	656,200	27.9
Series C	2,065,400	2,365,300	2,612,300	2,834,000	3,060,500	695,200	29.4
Series D	2,065,700	2,380,300	2,642,400	2,874,400	3,116,100	735,800	30.9
Series E	2,066,300	2,402,500	2,685,500	2,938,100	3,201,000	798,500	33.2

Source: Western Australian Planning Commission WA (2012)

Table 34 shows the WA Government's projected population for various regions across Western Australia. Again, these projections are based on 2006 Census data. Metropolitan Perth is anticipated to grow by one-third, or half a million people, from 2011 to 2026. Peel (67.6 per cent growth to 2026) and South-West Western Australia (38.6 per cent growth to 2026) are anticipated to grow at the fastest rate.

Table 34 - Western Australian Government medium level regional population projections – 2006-2026

Region	2006	2011	2016	2021	2026	Change 2011-2026 (no.)	Change 2011-2026 (%)
Metro. Perth	1,522,500	1,752,500	1,939,500	2,105,700	2,276,900	524,400	29.9
Peel	77,000	99,300	121,800	144,300	166,400	67,100	67.6
South-West	143,000	165,900	187,400	208,500	230,000	64,100	38.6
Mid-West	51,900	57,000	61,400	65,400	69,900	12,900	22.6
Great Southern	55,900	60,500	64,200	67,400	70,500	10,000	16.5
Wheatbelt	72,300	75,800	78,600	81,100	84,000	8,200	10.8
Kimberley	33,000	35,800	37,900	39,300	40,600	4,800	13.4
Pilbara	44,400	49,800	51,600	51,900	52,600	2,800	5.6
Goldfields-Esperance	55,800	59,600	61,500	62,000	62,300	2,700	4.5
Gascoyne	9,600	9,800	9,500	9,000	8,500	-1,300	-13.3

Source: Planning WA (2012)

Note: The total of the regional projections differs slightly from the state total in Table 33.

[47] Western Australian Planning Commission (2012). The base year population estimates vary across the five series.

Difference between WA Government and ABS projections

Table 35 compares the medium level projections by the WA Government with the Series B (medium) projection from the ABS. As illustrated, there are differences in the future population of Western Australia as projected by the state government and the ABS, particularly out to 2026. The causes of these differences are discussed in the next section.

Table 35 - Comparison of Western Australian Government and ABS medium population projections – 2006-2026

Series	2006	2011	Change 2006-2011 (no.)	Change 2006-2011 (%)	2016	2021	2026	Change 2011-2026 (no.)	Change 2011-2026 (%)
WA Government Medium Series	2,065,400	2,365,300	299,900	14.5	2,612,300	2,834,000	3,060,500	695,200	29.4
ABS (2013) Series B	2,050,581	2,353,409	302,828	14.8	2,755,875	3,157,700	3,563,623	1,210,214	51.4

Source: SGS Economics and Planning analysis of Western Australian Planning Commission (2012a) and Australian Bureau of Statistics (2013c) data

Source: Current WA Government projections are well below the ABS projections, due to the fact that they are based on 2006 Census data as well as differences of opinion between the ABS and the WA Government regarding Western Australia's share of future Net Overseas Migration (NOM).

Source: Western Australian projections are currently being revised to align with 2011 Census. It was suggested that the revisions would estimate growth in the Western Australian population to well above the current projections, but not as high as the current ABS (Series B) projections. Revised projections are more likely to align with the Productivity Commission report "An Ageing Australia", in which Perth is projected to have a population of 3.67 million by 2059-60 (against the current ABS B projection whereby Greater Perth reaches this population by approximately 2036).

While there are obvious base year differences between the WA Government and ABS projections, the major reason behind the large variation arises due to a difference of opinion over the NOM share attributed to Western Australia over the long-term. The ABS attributes 20 per cent of Australia's NOM to Western Australia over the long-run, while the WA Government does not believe this share of NOM is likely to be sustained. The WA Government notes that this share of NOM was recorded at the height of the resources boom, and that assuming it will sustain into the future is unrealistic. It predicts Western Australia's share of NOM to be approximately 10-13 per cent in the long-run.

Figure 20 shows that, over the last 50 years, Western Australia's population growth rate has been consistently above the growth rate for Australia as a whole.

Plans

In August 2010, the Western Australian Government released *Directions 2031 and Beyond: Metropolitan Planning Beyond the Horizon*, its metropolitan planning strategy for Perth and the nearby Peel region.

Directions 2031 is predicated on projections that Perth's population will grow from 1.65 million persons at the time of the strategy release to 2.88 million persons in 2031. Drawing on the 2008 ABS projections, the strategy stated:

> *The connected city medium-growth scenario suggests that the population of Perth will reach 3.5 million around 2050 and this is currently considered the most likely medium to long-term outcome.*[48]

As shown in the following quotes, the strategy proposes to increase residential densities through greater use of infill development, and by increasing densities in new greenfield development:

> *Directions 2031 seeks a 50 per cent improvement on current infill residential development trends of 30 and 35 per cent; and, has set a target of 47 per cent or 154,000 of the required 328,000 dwellings as infill development.*
>
> *Directions 2031 seeks a 50 per cent increase in the current average residential density 10 dwellings per gross urban zoned hectare; and, has set a target of 15 dwellings per gross urban zoned hectare of land in new development areas.* [49]

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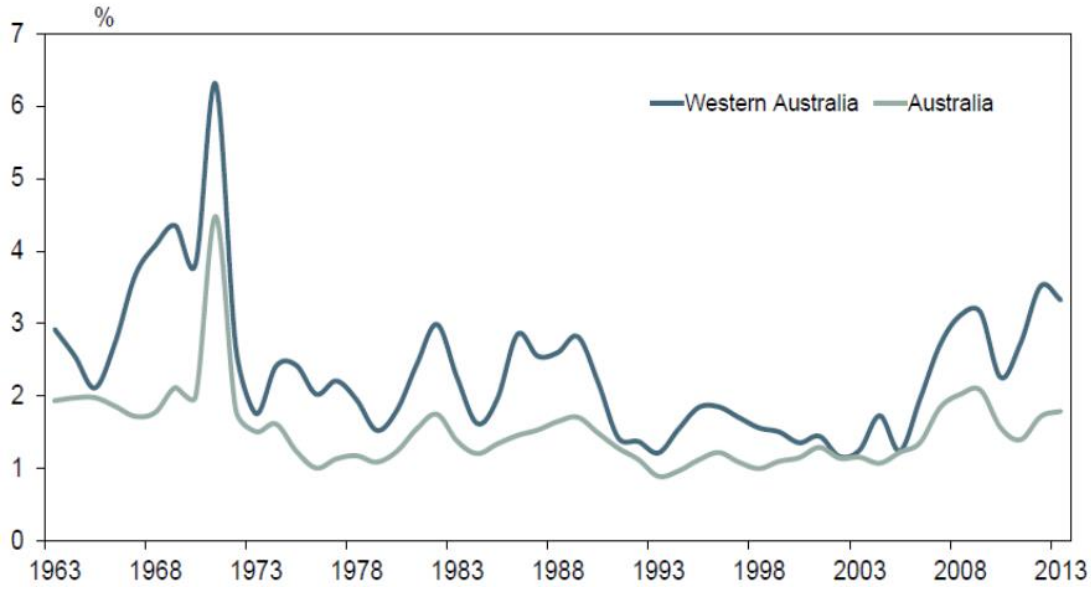
[48] Western Australian Planning Commission (2010), p.9

Figure 20 - Comparison of population growth rates for Australia and Western Australia: 1963 - 2013



Source: Western Australian Department of Training and Workforce Development (2014), drawing on analysis of data from Australian Bureau of Statistics' Catalogue No. 3105.0 (for the years 1963-1980 and Catalogue No.3101.0 (for the years 1980 -2013)

In its 2013 report card on the implementation of *Directions 2031*, the Government produced revised housing targets for each local government area in Perth and the surrounding region to 2031. A total of 220,960 new dwellings will be required to 2031, with 124,880 in the 'central region' (broadly within 15-20 km of the CBD), and a further 96,080 dwellings in 'outer regions'. [50]

In addition, targets are included for the number of additional dwellings that would be required post 2031 to accommodate a population of 3.5 million. A further 45,630 dwellings are proposed for the central region and an additional 354,100 are proposed for the outer region to support this population threshold. The report card does not specify when this population is expected to be reached.

The WA Government is pursuing the development of various regional areas across the state, notably in the Pilbara. The *Pilbara Planning and Infrastructure Framework* released in January 2012 suggests the WA Government is working on the basis that the region's resident population will increase from 41,000 persons in 2006 to around 140,000 persons in 2035. [51]

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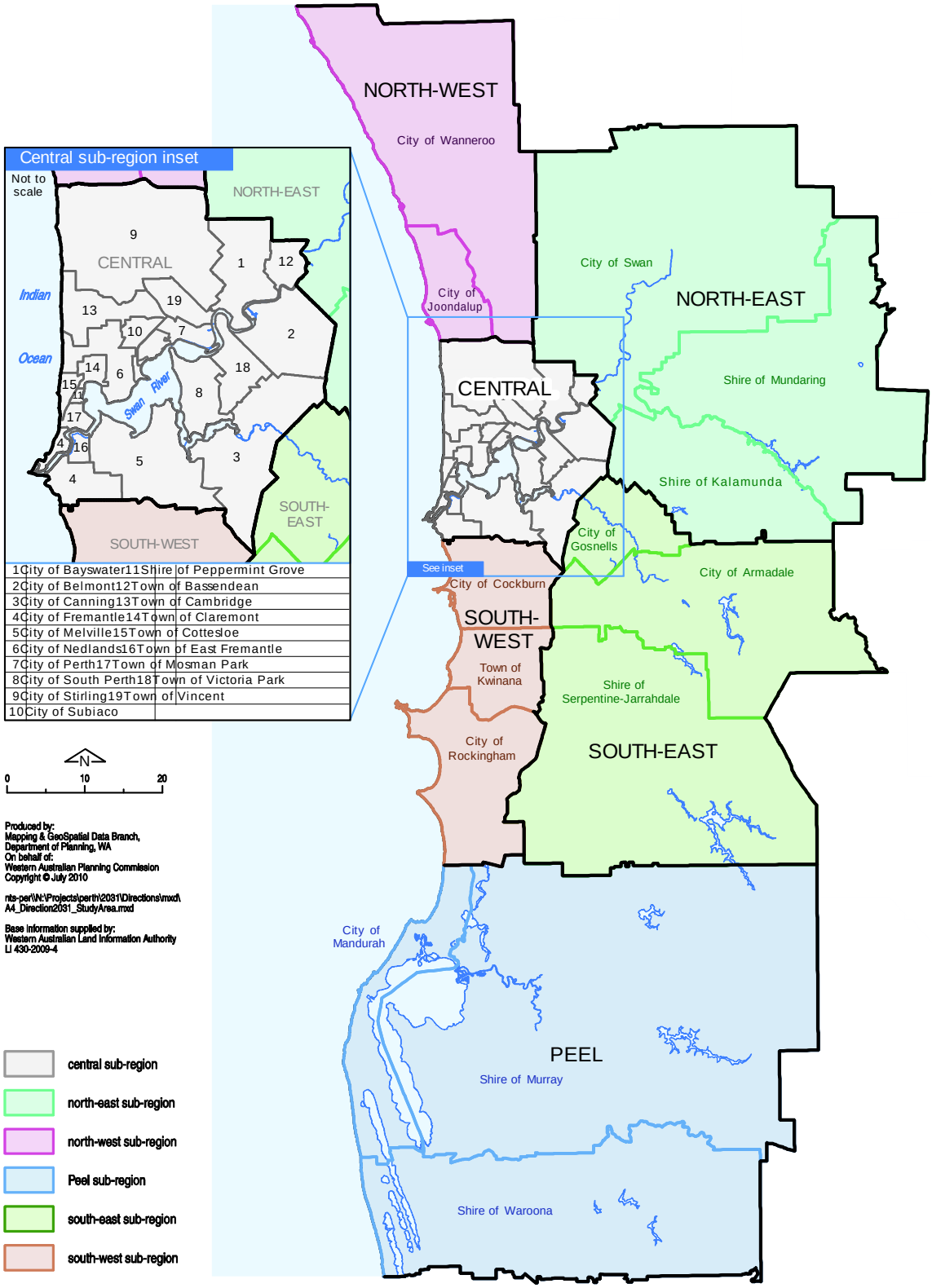
[49] Western Australian Planning Commission (2010), p.4

[50] Western Australian Planning Commission (2013), pp.20-21. The 'central region' local government areas with the largest new dwelling targets to be achieved by 2031 are: Stirling (35,350 dwellings); Canning (11,440); Victoria Park (11,320) and Melville (10,830). The 'outer' local government areas with the largest new dwelling targets to be achieved by 2031 are predominantly north of the Perth CBD: Wanneroo (16,360); Swan (15,050) and Joondalup (12,110). Armadale in the east (8,800 dwellings) is the next highest.

[51] Western Australian Planning Commission (2012b), p.8

Figure 21 - Western Australian Government planning regions in and around Perth



Source: Western Australian Planning Commission (2010)

Appendix 9 Details of Northern Territory Projections and Plans

The Northern Territory Government's assessment of the future Northern Territory population can be found in both:

- population projections prepared by Northern Territory Government agencies; and
- planning documents.

Given the different times and assumptions on which they are based, the projections in these documents may differ.

Projections

In May 2014, the Northern Territory Government released projections of the Territory population based on the ABS final estimated resident population (ERP) derived from the 2011 Census. Population projections for the whole Territory are provided to 2041 (Table 36). A single projection series is available, i.e. low and high projections have not been published. The Northern Territory is anticipated to grow by approximately 88,000 persons (38 per cent) between 2011 and 2031.

Table 36 - Northern Territory Government population projections to 2011-2041

	2011	2016	2021	2026	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)
Persons	231,292	253,330	275,128	297,369	319,533	88,241	38.2

	2036	2041				Change 2011-2041 (no.)	Change 2011-2041 (%)
Persons	341,655	364,207				132,915	57.5

Source: Infrastructure Australia analysis of Northern Territory Department of Treasury and Finance (2014) data

Sub-Territory projections to 2026 were also released for Greater Darwin and the balance of the Northern Territory. Darwin is projected to increase its share of the Territory population from 55.8 per cent in 2011 to 57.9 per cent in 2026.

Table 37 - Northern Territory Government population projections for Darwin and rest of NT to 2011-2041

	2011	2016	2021	2026	Change 2011-2026	
Greater Darwin	129,117	143,547	157,708	172,271	43,154	33.4%
NT Balance	102,175	109,783	117,420	125,098	22,923	22.4%

Source: SGS Economics and Planning analysis of Northern Territory Department of Treasury and Finance (2014) data

Changes in the Northern Territory population are materially affected by changes in interstate migration. Each year around seven percent of the territory population moves inter-state, and this figure is offset (more or less) by migration in from other states. Overall, the flows of people have more often been out of the Territory than into the Territory. Net inwards migration usually occurs for short periods only, in response to major projects and other activities that drive up the demand for labour, especially in the construction sector.[52]

Difference between NT Government and ABS projections

Figure 22 compares the population projections of the Northern Territory Government and the ABS. There is little difference between the Northern Territory Government and ABS projections; the ABS projected population in 2031 is approximately 0.9 percent lower than the Northern Territory Government's projection, and 1.2 per cent lower in 2041. This difference is largely attributable to different assumptions or methods employed in the distribution of population growth in Darwin and Balance of Northern

[52] Northern Territory Department of Treasury and Finance (2014), p.8

Territory. The ABS (Series B) projects greater growth in Balance of Northern Territory, while the Northern Territory Government sees greater growth in Darwin.

Figure 22 - Comparison of Northern Territory Government and ABS population projections – 2011 to 2041

Series	2011	2031	Change 2011-2031 (no.)	Change 2011-2031 (%)	2041	Change 2011-2041 (no.)	Change 2011-2041(%)
NT Government	231,292	319,553	88,241	38.2	364,207	132,915	57.5
ABS (Series B)	231,292	316,655	85,363	36.9	359,705	128,413	55.5

Source: Infrastructure Australia analysis of Northern Territory Department of Treasury and Finance (2014) and Australian Bureau of Statistics (2013b) data

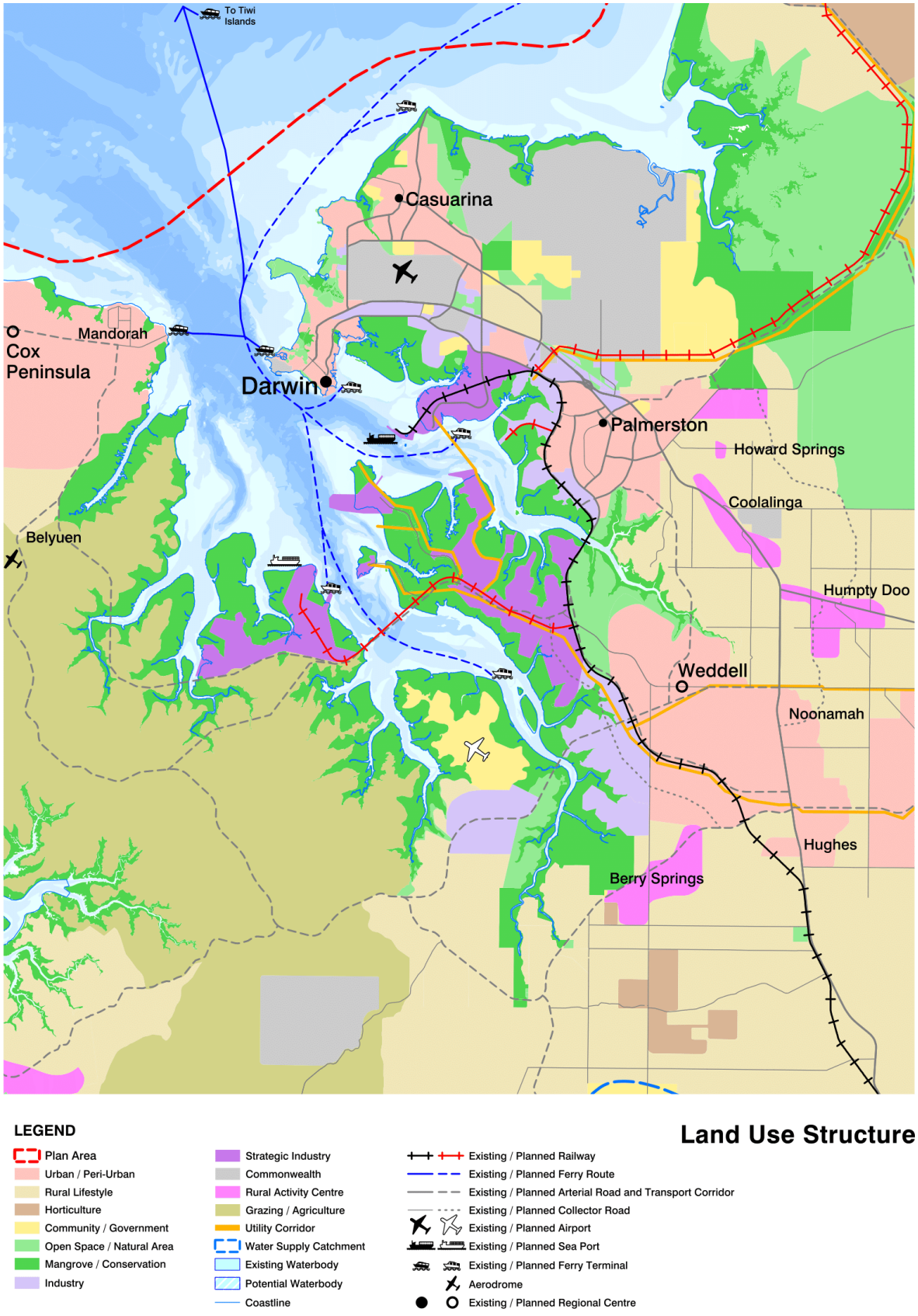
Plans

The Northern Territory Planning Commission was established in January 2013 and has been tasked, amongst other things, with the development of a Greater Darwin Regional Land Use Plan. The Commission has stated that "as part of this work, the Planning Commission is reviewing the work in the *Greater Darwin Plan 2012* and *Planning for Greater Darwin – A Dynamic Harbour City*."

A *Draft Darwin Regional Land Use Plan 2014* was released for public comment in November 2014. The draft plan states that recent analysis has identified a need for sufficient land to accommodate an additional 'short term' population 150,000 people, and an additional 250,000 people over the next 40-50 years. The proposed land use structure for Darwin (see Figure 23) is aimed at accommodating a regional population in excess of 500,000 people.[53]

[53] Northern Territory Planning Commission (2014), p. 12

Figure 23 - Draft Darwin Regional Land Use Plan – proposed land use structure



Source: Northern Territory Planning Commission (2014), p. 13

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Infrastructure Australia
GPO Box 5417
Sydney NSW 2001
Australia
T +61 2 8114 1900
F +61 2 8114 1932
E mail@infrastructureaustralia.gov.au
W infrastructureaustralia.gov.au