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## New South Wales state and regional population projections 2001-2051

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### Abstract

Population projections can be used for a wide range of purposes. They enable a greater understanding of the determinants of population change and are an essential input into future decision making.

The Department of Infrastructure, Planning & Natural Resources (DIPNR) is responsible for the production of official population projections on behalf of the NSW Government. The most recent set of State and Regional projections (2004 release) are for the period 2001 – 2051. This paper outlines the methodology used in the derivation of these projections along with a summary of the results.

The projections have been produced using POPSTAR (Population Projections for a State/Territory and its Regions), a multi-regional cohort component model developed by the University of Queensland. The model projects births, deaths, internal migration and overseas migration by single year of age, separately for males and females, for each region of the State. The model operates using a migration pool method whereby out-migration from each region is calculated using rates. This 'pool' of out-migrants is then re-allocated back to regions as in-migrants using proportions which the user sets and which can vary over time.

The projected population of NSW in 2051 may range between 8.4 million and 9.6 million, representing an increase of between 1.8 million and 3.0 million people over the next three decades. This population growth is not expected to be evenly distributed throughout NSW, with coastal regions expected to grow at a faster rate than the rest of NSW.

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## **Introduction<sup>1</sup>**

This paper sets out the methodology, assumptions and results of the latest set of population projections produced by the Department of Infrastructure, Planning and Natural Resources (DIPNR) on behalf of the NSW State Government.

Population projections are an essential input to the strategic planning undertaken across the public and private sectors. DIPNR and its predecessors have produced State and regional population projections on behalf of the NSW State Government for over 30 years. This latest set of projections was produced in consultation with the NSW Population Projections Group (PPG), consisting of members from a number of government organisations across the State.

The projections were produced using a multi-regional cohort component model. This model projects births, deaths, internal migration and overseas migration by single year of age, separately for males and females, for each region of the State. The population in a given year is the population in the previous year plus natural change (births minus deaths), net overseas migration (arrivals minus departures) and net internal migration (interstate and intrastate arrivals minus interstate and intrastate departures).

Projections were produced for NSW, and the regions of Sydney, the Greater Metropolitan Region (GMR), Hunter (excluding Newcastle), Illawarra (excluding Wollongong), Richmond-Tweed, Mid-North Coast, Northern, North Western, Central West, South Eastern, Murrumbidgee, Murray, and Far West. This paper further summarises the regional areas into Coastal NSW and Inland NSW. The populations of NSW, Sydney and the GMR are projected for a 50 year period from 2001 to 2051. The populations of the other regions are projected for 30 years from 2001 to 2031.

A number of other projections were produced by DIPNR. These are discussed briefly later in the paper. Different assumptions were made in order to show the effect on the results of a high, medium and low assumption for each component.

The population projections discussed here are not predictions, forecasts or targets. Populations are projected using a set of assumptions. These assumptions have been developed using demographic techniques to assess change in different components of the population. Past trends and current patterns are analysed, and some judgement is used as to likely future demographic events. Changes in social policy, behaviour, or economics can have a significant effect on the direction of population change in the future. Consequently, it is not certain that these assumptions will hold for the projections period. For this reason DIPNR intends to update these population projections regularly, taking into account the latest available data.

## ***Acknowledgement***

This project was completed by a team of staff at the Transport and Population Data Centre which included the authors, Stephanie Callaghan and Shane Nugent.

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<sup>1</sup> The views expressed in this paper are those of the authors and do not necessarily reflect those of the NSW Department of Infrastructure, Planning and Natural Resources or the NSW Government.

Our grateful thanks also go to Dr Tom Wilson at the Queensland Centre for Population Research, School of Geography, Planning and Architecture at the University of Queensland for his endless assistance in the implementation of the projection model used to derive these state and regional population projections.

## **Methodology**

### ***Population Projections Model***

The model used to derive these state and regional population projections is the POPSTAR model developed by the Queensland Centre of Population Research in collaboration with the Queensland Government Office of Economic and Statistical Research [OESR]<sup>2</sup>. It is a state of the art multiregional population projection model for states/territories and their regions. The model is a much extended and adapted version of the standard multiregional projection model. The model provides population projections for a state and an unlimited number of sub-state regions by sex and single years of age from 0 to 99 and 100+ over a projection horizon of up to 100 years<sup>3</sup>.

The projections are computed at two geographic levels:

- New South Wales and “rest of Australia” in a simple bi-regional framework
- Sub-state regions using a migration pool model for intra-state migration and a geographical distribution model for regional inter-state migration.

The projected populations and projected components of change (births, deaths and migration) for the sub-state regions are constrained so that there is agreement with the state-level projections.

The main difference between the POPSTAR model and other models used by DIPNR in the past is the adoption of a migration pool model, which uses directional (rather than net) migration flows. In this model the out-migration from all regions is gathered together and redistributed to the regions using in-migration proportions. The advantage of this approach is that it avoids the possibility of removing all (or more) of the population of some age groups.

### ***Geographic Coverage***

These population projections have been produced for NSW as a whole, Statistical Divisions (SD) in NSW (except the Hunter and Illawarra SDs), and the Greater Metropolitan Region (GMR). The Statistical Divisions are Richmond-Tweed, Mid-North Coast, Northern, North Western, Central West, South Eastern, Murrumbidgee, Murray, and Far West. The GMR comprises the Sydney SD, Newcastle SSD and Wollongong SSD.<sup>4</sup>

For the Hunter SD, projections have been produced for Newcastle Statistical Subdivision (SSD) and ‘Hunter Balance’ (that is the Hunter SD excluding Newcastle SSD). For the Illawarra SD, projections have been produced for Wollongong SSD and ‘Illawarra Balance’ (that is the Illawarra SD excluding Wollongong SSD).

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<sup>2</sup> Wilson (2003a); Wilson (2003b)

<sup>3</sup> Wilson (2003b)

<sup>4</sup> For further definitions of the geographic areas refer to Australian Bureau of Statistics (2003b).

## **Data Sources**

The data used as input to the POPSTAR model is outlined below. Additional historical information was also analysed to develop the component assumptions for the model. The historical data on births, deaths, migration and estimated resident populations on which these projections are based were obtained from the Australian Bureau of Statistics (unpublished data).

The births and deaths data are based on registrations provided by the Registrar of Births, Deaths and Marriages in each State and Territory. Regional births data are adjusted to add to the NSW totals. The model inputs were based on statistics for the June years 1999, 2000 and 2001.

Overseas migration data at national and State levels are derived from passenger cards completed on arrival to and departure from Australia for the three years ended 30 June 1999, 2000 and 2001. Passenger card information is collected by the Department of Immigration and Multicultural and Indigenous Affairs. Regional data on overseas arrivals is derived from the 2001 Census.

Interstate migration data for NSW as a whole are derived from changes of address reported to the Health Insurance Commission, using data for the three June years 1999, 2000 and 2001. Migration data for the NSW regions are derived from the 2001 Census questions on place of residence one year ago.

## **Inputs to Projection Model**

The multi-regional cohort component model operates using the basic demographic projections equation:

$$\begin{aligned} \text{Projected population} = & \text{Initial population} + \text{births} - \text{deaths} \\ & + \text{overseas immigration} - \text{overseas emigration} \\ & + \text{internal in-migration} - \text{internal out-migration} \end{aligned}$$

The methodology used to set the model inputs for each component is set out below.

### *Initial population*

The starting point for the projections series was the 2001 estimated resident population (ERP) by single year of age.

### *Fertility*

The model requires as input Total Fertility Rates (TFRs) and age-specific fertility rates (ASFRs) for NSW, Rest of Australia and each region within NSW from 2001-02 to 2010-11. TFRs and ASFRs were held constant from 2010-11 onwards.

TFRs for NSW, Rest of Australia and each region were calculated from actual births data. An average of the three most recent years of data was used (1998-99, 1999-2000 and 2000-01) in order to smooth out any short-term variations.

Historical fertility data were investigated to establish trends in fertility over time. An exponential trend line was drawn through the TFR data for NSW between 1989-99 and 2002-03 and projected forward to 2010-11. This resulted in a target TFR for 2010-11 of

1.66 for NSW. TFRs were then projected forward from the base data to the target 1.66 level in 2010-11 to provide NSW TFRs for all years between 2001-02 and 2010-11. TFRs for each region were set by taking regional differentials in TFRs from the base data and applying those differentials to each region in each projected year. Age-specific fertility rates were calculated for each region from an average of three years births data (1998-99, 1999-2000 and 2000-01). An age profile was also produced for the year 2010-11 to reflect the propensity of women to give birth at older ages. The model took a linear trend between the two sets of age profiles in order to calculate age-specific fertility rates for each intervening year.

### *Mortality*

The model requires an overall level of mortality for each region which is determined by life expectancy at birth. It also requires age-specific mortality rates by gender for each year of the projections period for each region. The life expectancy at birth values used in these projections were set between the high and medium mortality scenarios published in 2003 by the Australian Bureau of Statistics (ABS). The high ABS assumption adopts a linear increase in life expectancy which follows a historical trend. The ABS medium assumption was more conservative and assumed that the increase in life expectancy would level off in the future.

Life expectancy at birth figures were calculated for the State and each region from actual deaths data using an average of three years data (1998-99, 1999-2000 and 2000-01). The differentials between these figures and the ABS calculated life expectancy figures for Australia were maintained throughout the projections period.

Age-specific mortality rates were obtained by smoothing deaths data from the years 1998-99, 1999-2000 and 2000-01 in order to smooth out any short-term variations. Smoothed data for NSW and Sydney were used to construct age profiles for these areas. Age-specific deaths data for regions outside Sydney were less robust so the deaths age profile for NSW was used for these regions and scaled up or down to match actual deaths in those areas.

The age-specific death rate profiles were gradually altered over the whole projections period to match trends in differential improvements by age.

### *Overseas migration*

The number of arrivals and departures is required for each region and each year of the projections period, as well as an age profile for both. Long-term and permanent arrivals and departures for NSW were obtained from the Department of Immigration and Multicultural and Indigenous Affairs' (DIMIA) passenger card information provided by the Australian Bureau of Statistics (ABS).

Historical data were analysed to inform future levels of immigration and emigration. High (125,000), medium (100,000) and low (70,000) assumed annual levels of net migration to Australia were set based on these trends. These levels were the same as the ABS assumptions used in the calculation of the 2002-base population projections for Australia<sup>5</sup>. Total overseas migration (in and out) is set at a fixed level over the projection period within the model.

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<sup>5</sup> Australian Bureau of Statistics (2003a)

Each region's share of overseas arrivals was derived from the 1996 and 2001 Census data on people who were resident overseas one year before the census. The average of the years 1995-96 and 2000-01 is assumed to remain constant throughout the projections. Each region is assumed to have the same share of total NSW departures as it has of arrivals. The age and sex profile of overseas arrivals was derived from the average for the three years 1998-99, 1999-2000 and 2000-01, and was held constant throughout the projections period.

The initial age and sex distribution of overseas departures for NSW regions is assumed to be the same as for overseas arrivals. Out-migration rates were derived from the average for the same three years of passenger card statistics as for overseas arrivals. These rates were applied to the projected population with the total overseas out-migration adjusted to add to a total that remains constant over the projections period. Thus the age and sex distribution of out-migration varies over time, while the total level is fixed.

### *Internal migration*

There are two components of internal migration: people moving from and to each region interstate, and people moving from and to each region within NSW.

At the State level the model works in a bi-regional way calculating figures for NSW and Rest of Australia. Sub-state the model is multi-regional with all regions linked together through a migration pool. For interstate migration at State level, an average of the most recently available three years of Australian Bureau of Statistics (ABS) internal migration data sourced from the Health Insurance Commission (HIC) are used in the model. At the regional level 2001 Census one-year migration data were scaled up to the State-adjusted HIC figures.

Out-migrants from each area by age and sex are calculated using out-migration rates applied to the starting population. The resulting aggregate 'pool' of migrants is then apportioned back to each region as in-migrants. The use of the migration pool model means that as the population of a region increases, so does the number of people moving out of the region. A region with a decreasing population will have a decreasing number of people moving out. It was also assumed that the relative attraction of a region to in-movers would change as its population changed. Therefore, after the initial years internal migration is an output of the model rather than a set input.

Internal net migration is set for the initial years of the projection where data are available (2001-02 and 2002-03). Net migration trends over the 35 years from 1966 to 2001 were analysed to set future levels.

### ***Adjustment to the projections***

In the first runs of the POPSTAR model for the 2004 Release projections, it was found that the projected number of 0 year olds in the regions (other than Sydney) was smaller than expected. When viewing the population pyramids, there was a step change up from the number of 0 year olds projected from the model, and the number of 0 year olds and other young cohorts from the 2001 ERP data.

Our suspicion (and that of other demographers e.g. Peter McDonald and those in State Govt. in Victoria) is that the 2001 ERPs slightly overestimated the population in the younger age groups in the Balance of State. Our initial estimation of the number of births from the model was lower than the ERPs at young ages and therefore gave an impression that there had been a fall in the number of 0 year olds.

DIPNR's projections aim to project the official ERP figures into the future and therefore the decision was taken to adjust births outside Sydney upwards to be more in line with existing ERP data. Although we think our initial projected number of 0 year olds is actually more accurate than the ERPs at those youngest ages, we model the transition between births and 0 year olds using fertility and mortality rates which are probably fairly accurate and also with migration data. Migration data at those early ages has been estimated as data are not easily available since the normal Census question "where were you a year ago" in this case does not apply. Therefore it is difficult to prove conclusively that our figures are correct.

An adjustment was made to eradicate the underestimate found in the initial run of the regional projections. Out-migration of the 'birth to 0' cohort from Sydney was multiplied by a factor in order that the difference between the birth and age 0 cohort for other regions of NSW was the same as for historic data (ERPs). This adjustment increased the flow of infants from Sydney then served to increase the numbers of this age group going to all other regions within the State.

## **Component Assumptions for Medium Scenario Projections**

A number of assumptions have been made about the future direction of change in the main components of the model: fertility, mortality, internal migration and overseas migration. These assumptions are outlined below.

### ***Mortality***

Life expectancy at birth in 2001 is based on a projection of actual deaths from the base data (an average of 1998-99, 1999-2000, 2000-01). Life expectancy is assumed to increase half way between a linear increase in life expectancy and the Australian Bureau of Statistics' (ABS) medium assumption where life expectancy increases are expected to tail off. This assumption has been made after referring to literature from both Australian and overseas demographers. Work completed by Australian demographers<sup>6</sup> has shown that ABS has historically underestimated life expectancy at birth. There is also a body of international literature stating that:

- Life expectancy has increased linearly over long periods of time since the mid-1840s and is expected to continue doing so for some considerable time.
- Most national governments have underestimated improvements in life expectancy and have therefore underestimated the size of their older populations.

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<sup>6</sup> Booth and Tickle (2003); Dr Tom Wilson, Queensland Centre for Population Research, personal communication.

- National projections should be undertaken in the international context of these improvements in mortality and not just based on national trends.

NSW life expectancy at birth for 2001-02 was 82.7 years for females and 77.3 years for males. By 2050-51 it is projected to be 88.0 years for males and 91.3 years for females (see Table 2).

### **Fertility**

The NSW Total Fertility Rate (TFR) is assumed to decrease from 1.79 in 2001-02 to 1.66 in 2010-11, and then remain constant (see Table 1). Regional differentials in TFRs in the base data (an average of the financial years 1998-99, 1999-2000, 2000-01) are assumed to be maintained throughout the projections period. The ages at which women are giving birth are assumed to increase slightly over time until 2010-11 and then remain constant.

**Table 1: Fertility Assumptions for Medium Scenario, NSW and its Regions, 2001-02, 2006-07 and 2010-11 Onwards**

Region	2001-02	2006-07	2010-11 onwards
	TFR (Children per woman)		
Sydney (SD)	1.72	1.65	1.59
Newcastle (SSD)	1.82	1.74	1.69
Hunter Balance	2.06	1.97	1.91
Wollongong (SSD)	1.84	1.76	1.70
Illawarra Balance	2.09	2.00	1.94
Richmond-Tweed (SD)	1.99	1.91	1.85
Mid-North Coast (SD)	2.07	1.99	1.92
Northern (SD)	2.04	1.96	1.89
North Western (SD)	2.26	2.17	2.10
Central West (SD)	2.05	1.97	1.91
South Eastern (SD)	1.97	1.89	1.83
Murrumbidgee (SD)	2.12	2.03	1.97
Murray (SD)	1.92	1.84	1.78
Far West (SD)	1.92	1.84	1.78
New South Wales	1.79	1.72	1.66

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

### **Overseas migration**

In the first years of the projection (2001-02 and 2002-03) overseas migration levels for NSW match figures published by the Australian Bureau of Statistics<sup>7</sup>. Flows are smoothed into the long-term trend from the 2002-03 level.

A long-term assumption of 100,000 net overseas migration per year into Australia is set as the medium assumption from 2005-06 onwards (see Table 3). This is at the high end of the long term range since 1945. This is justified given the current high levels of

<sup>7</sup> Australian Bureau of Statistics (2004)

migration and current immigration policy. In NSW the annual net gains from overseas migration decline from 44,400 in 2001-02 to 42,000 in 2005-06, then remain constant.

**Table 2: Mortality Assumptions for Medium Scenario, NSW and its Regions, 2001-02 to 2046-47**

Region	Sex	2001-02	2006-07	2011-12	2016-17	2021-22	2026-27	2031-32	2036-37	2041-42	2046-47
<b>Life expectancy at birth (Years)</b>											
Sydney (SD)	Males	77.9	79.3	80.7	81.9	83.0	84.0	85.0	85.9	86.9	87.8
New South Wales	Males	77.3	78.8	80.1	81.3	82.4	83.4	84.4	85.3	86.3	87.2
Sydney (SD)	Females	83.0	84.3	85.4	86.3	87.2	88.0	88.8	89.5	90.3	91.0
New South Wales	Females	82.7	84.0	85.1	86.0	86.9	87.7	88.5	89.2	90.0	90.7

Region	Life Expectancy at Birth – Males						Life Expectancy at Birth – Females					
	2001-02	2006-07	2011-12	2016-17	2021-22	2026-27	2001-02	2006-07	2011-12	2016-17	2021-22	2026-27
<b>Years</b>												
Newcastle (SSD)	76.7	78.2	79.5	80.7	81.8	82.8	82.5	83.7	84.8	85.7	86.6	87.4
HunterBalance	77.0	78.5	79.8	81.0	82.1	83.1	83.0	84.2	85.3	86.3	87.2	88.0
Wollongong (SSD)	77.5	79.0	80.3	81.6	82.7	83.7	82.8	84.0	85.1	86.1	87.0	87.8
Illawarra Balance	77.5	79.0	80.3	81.6	82.7	83.6	83.5	84.7	85.8	86.8	87.7	88.5
Richmond-Tweed (SD)	77.6	79.0	80.4	81.6	82.7	83.7	83.4	84.6	85.7	86.7	87.6	88.4
Mid-North Coast (SD)	76.7	78.2	79.5	80.7	81.8	82.8	82.9	84.1	85.2	86.2	87.0	87.8
Northern (SD)	75.5	77.0	78.3	79.5	80.6	81.5	82.4	83.6	84.7	85.7	86.5	87.3
North Western (SD)	74.9	76.3	77.6	78.8	79.9	80.8	80.2	81.4	82.4	83.4	84.2	85.0
Central West (SD)	75.7	77.1	78.4	79.6	80.7	81.6	82.0	83.2	84.3	85.3	86.1	86.9
South Eastern (SD)	77.2	78.6	80.0	81.2	82.3	83.3	82.2	83.4	84.5	85.5	86.3	87.1
Murrumbidgee (SD)	76.2	77.6	79.0	80.2	81.2	82.2	81.8	83.1	84.1	85.1	86.0	86.8
Murray (SD)	77.1	78.5	79.9	81.1	82.2	83.2	82.6	83.8	84.9	85.9	86.8	87.6
Far West (SD)	74.1	75.5	76.8	77.9	79.0	79.9	80.5	81.7	82.8	83.7	84.5	85.3

Hunter Balance = Hunter SD excl Newcastle SSD  
 Illawarra Balance = Illawarra SD excl Wollongong SSD

Each region's share of overseas arrivals is derived from 1996 and 2001 Census data on people who were resident overseas one year before the census. The average of the years 1995-96 and 2000-01 is assumed to remain constant throughout the projections. Each region is assumed to have the same share of total NSW departures overseas as it has of arrivals.

**Table 3: Net Overseas Migration Assumptions for Medium Scenario, NSW and its Regions, 2001-02 and 2005-06 Onwards**

Region	2001-02	2005-06
	Number	
Sydney (SD)	38,800	36,700
Newcastle (SSD)	1,200	1,150
Hunter Balance	150	150
Wollongong (SSD)	1,150	1,100
Illawarra Balance	300	300
Richmond-Tweed (SD)	600	550
Mid-North Coast (SD)	400	400
Northern (SD)	350	350
North Western (SD)	150	150
Central West (SD)	300	300
South Eastern (SD)	400	350
Murrumbidgee (SD)	350	350
Murray (SD)	200	150
Far West (SD)	0*	0*
New South Wales	44,400	42,000

\* Rounded to zero.

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

Note: Due to rounding the sum of the regions may not add to the net flows shown for NSW.

### ***Internal migration***

There are two sets of internal migration flows:

- Interstate migration flows for NSW as a whole and each region
- Intrastate migration flows within NSW for each region.

For NSW the interstate net loss from internal migration is projected to be -16,000 in 2006-07, increasing to a loss of -17,750 in 2046-47 (see Table 4). Estimates of net internal migration in the early years of the projections are based on an analysis of net migration flows since the mid-1960s using Census data and the ERP residual method. The average net interstate migration loss for NSW for the twenty years 1981 to 2001 was -16,000.

Net internal migration for each region within NSW is split between interstate and intrastate migration flows in proportion to the relative shares of these flows in 2000-01 (based on census data). Each region's share of in-migration is assumed to change linearly over time from 2005-06, to reach a long-term share. Regions with an increasing share of the NSW population are assumed to also attract an increasing share of in-migrants.

**Table 4: Internal Migration Assumptions for Medium Scenario, NSW and its Regions, 2001-02 to 2046-47**

Region	2001-02	2006-07	2011-12	2016-17	2021-22	2026-27	2031-32	2036-37	2041-42	2046-47
	<b>Annual Net Internal Migration (Number)</b>									
Sydney (SD)	-30,000	-20,250	-22,300	-24,450	-26,550	-28,400	-29,800	-30,800	-31,600	-32,400
Newcastle (SSD)	1,400	1,000	1,050	1,200	1,400	1,600	1,800			
Hunter Balance	600	300	400	550	600	700	700			
Wollongong (SSD)	-450	0	-50	-50	0	100	150			
Illawarra Balance	1,850	1,600	1,600	1,700	1,800	1,900	2,000			
Richmond-Tweed (SD)	1,350	1,700	1,750	1,900	2,050	2,200	2,300			
Mid-North Coast (SD)	3,000	2,450	2,650	3,000	3,300	3,500	3,700			
Northern (SD)	-1,300	-1,100	-850	-600	-450	-350	-300			
North Western (SD)	-1,000	-700	-450	-250	-150	-100	-50			
Central West (SD)	-300	-600	-300	-50	100	250	300			
South Eastern (SD)	1,650	1,200	1,500	1,800	2,000	2,150	2,250			
Murrumbidgee (SD)	-850	-900	-750	-600	-450	-400	-350			
Murray (SD)	-50	-300	-100	100	250	350	350			
Far West (SD)	-300	-400	-250	-150	-100	-100	-100			
New South Wales	-24,450	-16,000	-16,050	-16,050	-16,250	-16,600	-17,000	-17,350	-17,550	-17,750

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

Note: NSW regions outside Sydney are not projected beyond 2030-31

Due to rounding the sum of the regions may not add to the net flows shown for NSW.

## Assumptions for Alternative Projection Scenarios

A total of 19 projection scenarios were produced, with the focus on three of these scenarios - equivalent to the normally published high, medium and low series. Each scenario was set by altering the assumptions of one component. This was undertaken in order to ascertain the effect of changing just one element of the model. The medium or preferred scenario was the medium overseas migration variant. The assumptions for the scenarios, other than the medium scenario which has just been described in some detail, are set out in the following table (see Table 5).

It is impossible to isolate the effect of a change in one component completely in this projections model. For example, when fertility is increased, this increases the population of NSW, and as interstate out-migration is set by out-migration *rates* rather than predetermined *levels*, this also increases the level of interstate out-migration. These alternative scenarios examine the results of altering one component acknowledging the cascade effect this has on other components.

The following sections summarise the results of a selection of these scenarios. In particular, those scenarios where one of the components has been increased or decreased from the levels assumed in the medium scenario. Two alternative scenarios may be considered to be the Department's "high" and "low" population projections. However these differ to the high and low projection series often produced elsewhere in that only one demographic component is altered, rather than all three. The high and low series presented in this paper are the scenarios of high overseas migration and low overseas migration. These were chosen as overseas migration has the most dramatic impact on population growth in the state, and Sydney in particular. Overseas migration has much less direct impact on regional populations outside Sydney, although it does have a cascading effect in internal migration. When overseas migration levels to Sydney have been high, internal migration flows from Sydney to other parts of Australia have been similarly elevated. Overseas migration fluctuates considerably over time as a result of such factors as policy decisions and economic conditions.

**Table 5: Assumptions for Alternative Projection Scenarios**

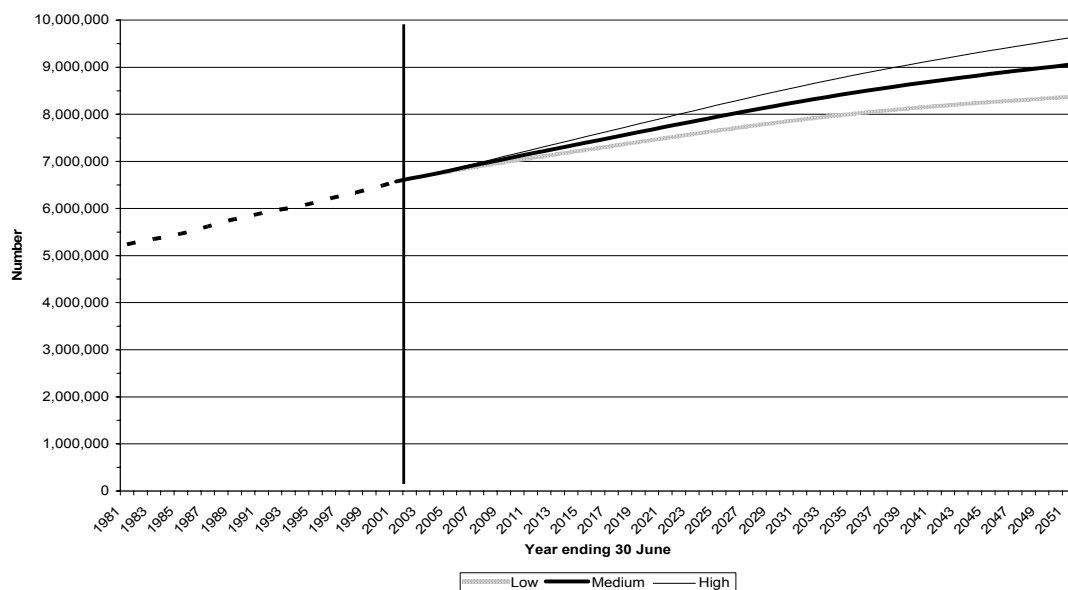
Scenario	Component assumption	Rationale
High overseas migration (High Series)	net overseas migration from 2005-06 of 125,000	A continuation of the net migration of 2000-01 and 2001-02.
Very high overseas migration	Net overseas migration from 2005-06 of 150,000	This shows the impact of a long term continuation of the highest level of net overseas migration recorded in Australia.
Low overseas migration (Low Series)	Net overseas migration from 2005-06 of 70,000	Low end of long term average migration levels since 1945. Such levels could return in the medium term due to a combination of worsening economic conditions, environmental concerns, and global competition for long term temporary migrants.
High interstate migration	A net loss of -10,000 from NSW in 2005-06	As interstate migration is a net loss for NSW, the 'high' scenario is based on a lower net loss than the medium scenario (i.e. nearer to zero), resulting in a higher population.
Low interstate migration	A net loss of -22,000 from NSW in 2005-06	As interstate migration is a net loss for NSW, the 'low' scenario is based on a higher net loss than the medium scenario, therefore resulting in a lower population.
High intrastate mobility	Intrastate mobility was increased by 25%	This was achieved by multiplying the intrastate GMRs by 1.25.
Low intrastate mobility	Intrastate mobility was decreased by 25%	This was achieved by multiplying the intrastate GMRs by 0.75.
Zero all migration	Migration for all flows and all years is set as zero	
Zero internal migration	Interstate and intrastate migration for all years is set as zero	
Zero interstate migration	Interstate migration for all years is set as zero	
Zero intrastate migration	Intrastate migration for all years set as zero	
Zero overseas migration	Based on net overseas migration for all years of zero	
Constant fertility	TFRs from the base period held constant	
High fertility	TFR of 1.84 for NSW from 2010-2011	Based upon an extrapolation of current trends, but calculated using recent cohort fertility patterns rather than period fertility.
Low fertility	TFR of 1.43 for NSW from 2010-2011	Follows the ABS low fertility assumption that current fertility levels will continue to decline.
Constant life expectancy	Life expectancy at birth figures from the base period held constant	
High life expectancy	Gains in life expectancy held constant at 0.3 years for males and 0.25 years for females	This follows the high mortality scenario used by the ABS for 2002-2101 population projections.
Low life expectancy	Gains in life expectancy decrease from 0.3 years for males and 0.25 years for females initially, to 0.08 years for males and 0.05 years for females in 2050-51	This follows the medium mortality scenario used by the ABS for 2002-2101 population projections.

## Summary of Results

### *Population of NSW Projected to Keep Growing*

The population of New South Wales (NSW) is projected to grow from 6.57 million in 2001 to 9.05 million in 2051 (under the medium series), an increase of 2.5 million or 37.7 per cent over 50 years (see Figure 1). The population growth of NSW is projected to slow, compared with growth in the previous 20 years. Between 1981 and 2001, NSW grew by some 1.34 million people. By 2021, the population is expected to grow by 1.16 million people to 7.73 million. Based on the low and high series assumptions, NSW could grow between 1.8 million and 3.0 million over the 50 years to 2051.

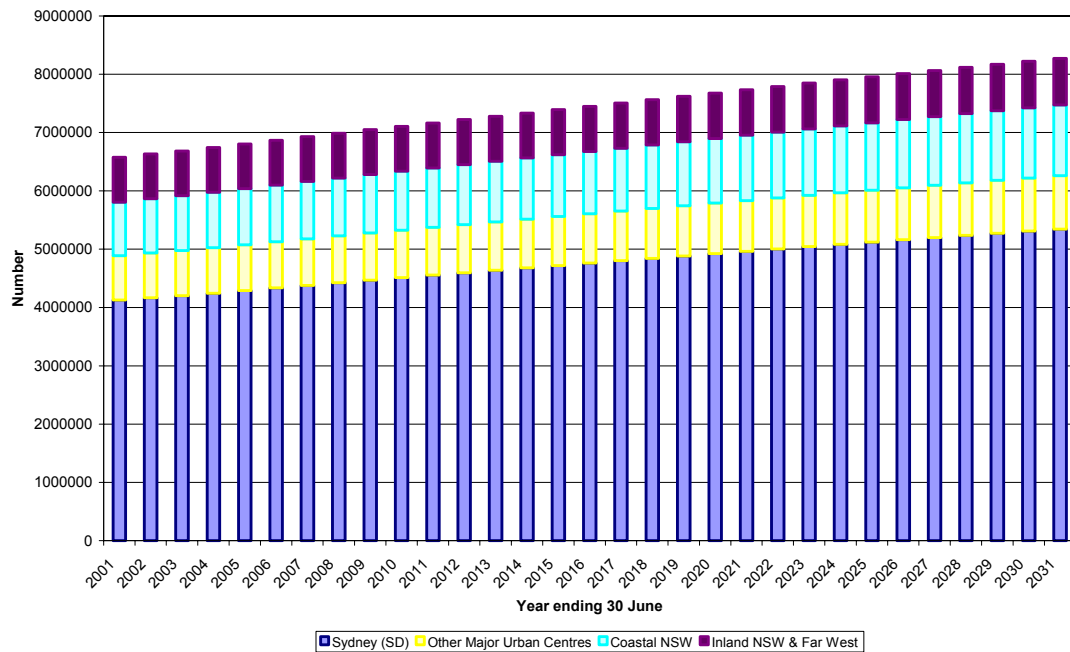
**Figure 1: Actual and Projected Population, NSW, 1981-2051**



### *Regional Projected Populations*

The regions of NSW can be classified into five distinct super-regions in terms of population size and demographic attributes:

- Sydney, as the State's capital city, is markedly different in its characteristics compared with Regional NSW. It will continue to dominate in its share of the NSW population. In 2001 Sydney's population of 4.1 million comprised 62.8 per cent of the NSW population. By 2031 the population is projected to grow to 5.3 million, or 64.6 per cent of the NSW population.
- Newcastle and Wollongong, the Other Major Urban Centres, have similar demographic attributes, but are different to Sydney. By 2031 Newcastle will have a projected population of 585,900 and Wollongong's population will number 328,400. While they will continue to grow, their combined share of population will decline slightly from 11.6 per cent in 2001 to 11.1 per cent in 2031.

**Figure 2: Projected Population, NSW and Super-Regions, 2001–2031**

- Coastal NSW is projected to change the most of any of the super-regions over the 30 years 2001-2031. It will have the greatest increase in population, increasing from 916,800 or 13.9 per cent of the NSW population in 2001 to 1.22 million or 14.7 per cent in 2031. Within Coastal NSW Mid-North Coast will have the largest population increase, followed by Richmond-Tweed and South Eastern regions.

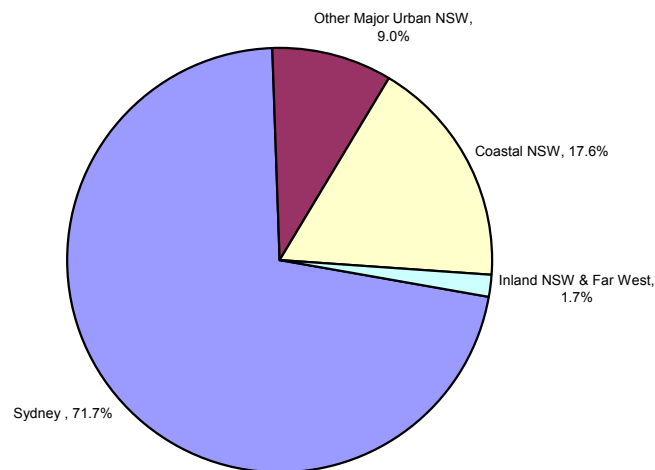
- The population is projected to increase in Inland NSW from 743,600 in 2001 to 779,600 in 2031. Some areas of Inland NSW are expected to decline over the first 10 years. This results in the Inland NSW share of the NSW population decreasing from 11.3 per cent in 2001 to 9.4 per cent in 2031.

- Far West, with the smallest population of any region in NSW, is the only region expected to continue to lose population. Its population may drop from 24,400 in 2001 to 17,600 in 2031.

### **Regional Variations in Projected Growth**

While most of NSW is growing, average annual growth is expected to slow. In the 20 year period 1981-2001 the average annual growth rate for NSW was 1.1 per cent. In the 20 years to 2021 the average annual growth rate for NSW is expected to be 0.8 per cent.

The rate at which each region's population grows is not consistent and is projected to diminish over time. This is due to the magnitude of change in fertility, mortality and migration and the size of the population. The larger a population, the greater the increments needed to sustain this growth.

**Figure 3: Share of Population Growth, NSW, 2001 - 2031**

The regions within Coastal NSW are projected to have the greatest growth between 2001 and 2031. Illawarra Balance is projected to have the greatest growth of any region in NSW over the projections period (45 per cent). Over the next 20 years, the average annual rate of growth of Coastal NSW is expected to be 1.0 per cent. This rate has slowed markedly compared with an average rate of growth of 2.2 per cent for the region over the 1981-2001 period.

While not the fastest growing region in NSW, by virtue of its size, Sydney will comprise the major share of growth in NSW by 2031, accounting for over 70 per cent of all growth. Sydney's population is expected to increase by 29.5 per cent over the next 30 years. In the 20 year period 1981-2001 the average annual growth rate for Sydney was 1.2 per cent. The average annual rate of growth for Sydney is expected to slow over the next 20 years, to 0.9 per cent.

The populations of the Other Major Urban Centres of Wollongong and Newcastle are projected to grow by 21.8 per cent and 18.9 per cent respectively between 2001 and 2031. In terms of average annual growth, Wollongong and Newcastle had grown at an average of 0.8 per cent per year between 1981 and 2001. In the 20 years, 2001 to 2021, average annual growth is expected to slow to 0.7 per cent.

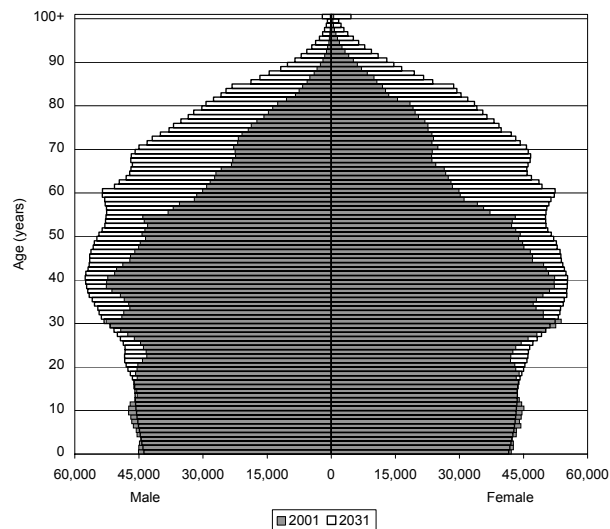
Inland NSW will grow between 2001 and 2031 but at lesser rate than Coastal NSW, Sydney and Other Major Urban Centres. Regions such as Northern and North Western are expected to experience population decline in the first ten years of the projections period, but then grow in the remainder of the period. Murray (8.5 per cent) is projected to have the largest growth within Inland NSW, while Northern is expected to grow the least (0.05 per cent) over the 30 year period. The average annual rate of growth of Inland NSW between 1981 and 2001 was 0.3 per cent. The projected annual average growth rate for Inland NSW between 2001 and 2021 is 0.13 per cent.

Far West is the only region in NSW to experience negative growth between 2001 and 2031. Far West's population will decline by 27.7 per cent in this period. This projected decline is a continuation of a 40 year downward trend. Since 1961, Far West region has been losing people to other parts of Australia.

## Differing Changes in Age Structures

The population of NSW is projected to age in the 50 year projections period commencing 2001. By 2051, the median age will have increased to 45.5 years. By 2017, the number of people aged 65 years or more will outnumber those aged less than 15 years. By 2051, the population aged 65 years and over will have almost trebled to 2.36 million to comprise over one-quarter of the NSW population

**Figure 4: Age and Sex Distribution, NSW, 2001 and 2031**

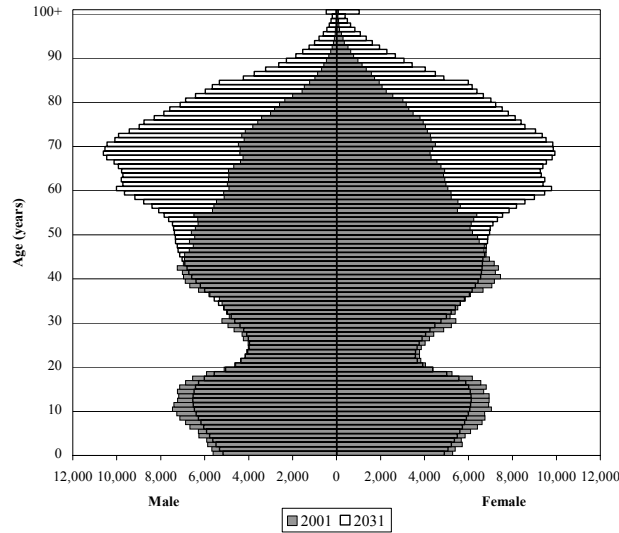


The number of people in the working age groups (15 to 64 years) will increase over the next 50 years, although making up a smaller proportion of the total population (59 per cent in 2051 compared with 67 per cent in 2001).

The age distributions are markedly different for each of the five regions, reflecting the differences in fertility, mortality and migration. All regions, except Sydney, are projected to have a median age of 40 years and over in 2031, compared with only three regions in 2001. Differences aside, the proportion of the population aged less than 15 years is expected to be less in all regions by 2031, while the proportion aged 65 years or more is expected to increase in all regions.

While Coastal NSW is projected to have the highest overall population growth rates, much of the growth will be due to in-migration in the older age groups. The population aged 65 years or more is projected to more than double between 2001 and 2031 (see Figure 5).

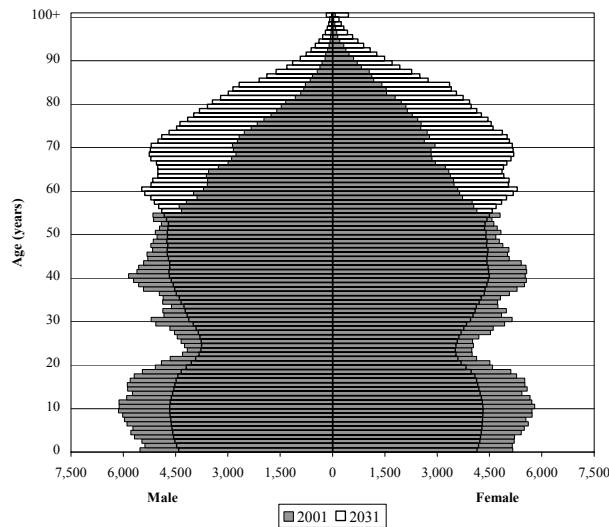
**Figure 5: Age and Sex Distribution, Coastal NSW, 2001 and 2031**



The Mid-North Coast is expected to have the highest proportion of the population aged 65 years or more in 2031 (35 per cent). The other regions in Coastal NSW also have high proportions aged 65 years or above in 2031, all above 30 per cent of their respective populations as a whole. While the population in the older age groups is projected to increase in Coastal NSW, the loss of young adults to other parts of Australia is projected to continue.

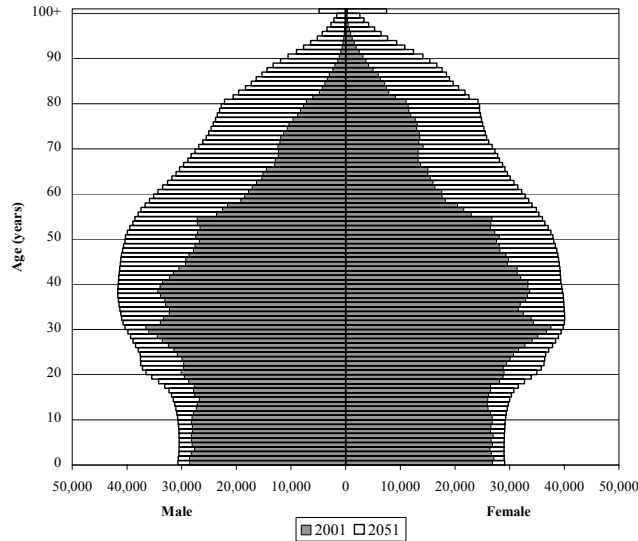
Inland NSW is expected to have the largest proportion of the population aged less than 15 years. While the population in this age group will have declined compared with 2001, they will comprise 17 per cent of the population of Inland NSW in 2031.

**Figure 6: Age and Sex Distribution, Inland NSW, 2001 and 2031**



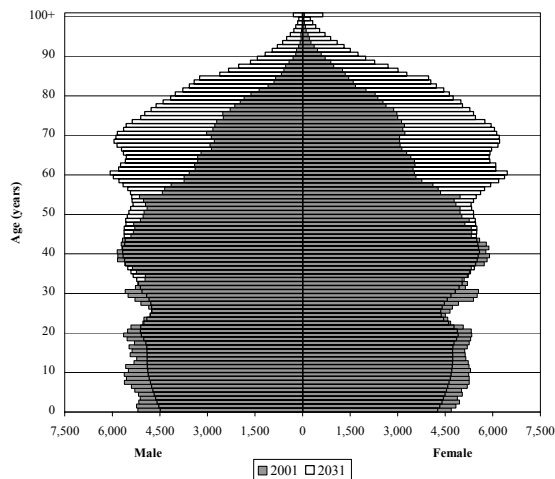
Sydney is projected to have the youngest age structure by 2031. While the population aged less than 15 years in Sydney is expected to decline at a lesser rate than elsewhere in NSW, it will also have the lowest proportion aged 65 years and over. Unlike other regions, Sydney is projected to increase its population in all age groups.

**Figure 7: Age and Sex Distribution, Sydney, 2001 and 2031**



The age structure of the population of the Other Major Urban Centres of Wollongong and Newcastle is a little different. The Newcastle population tends to have an older age structure than the Wollongong population, and is projected to age at a faster rate than Wollongong (median age in 2031 of 47.2 years). Wollongong will continue to have a younger age structure compared with other regions in NSW, having the third lowest median age (44.1 years) in 2031.

**Figure 8: Age and Sex Distribution, Other Major Urban Centres of NSW, 2001 and 2031**



## ***Regional Variations in Components of Change***

Growth in each region is dependent on the magnitude of each of the components of population change, births, deaths and migration. There are distinct differences in the way these components combine to influence population growth in each of the regions.

Sydney is one of five NSW regions that are projected to have more births than deaths over the 30 year period. It is anticipated that Sydney will grow by 869,000 due to natural increase over the 30 years to 2031. Sydney is also the predominant recipient of overseas migrants in NSW. However, this is somewhat balanced by the fact that more people tend to leave Sydney for other NSW regions and interstate, than move into Sydney from elsewhere in Australia.

The components of growth for Wollongong and Newcastle are quite different. Wollongong is projected to have more births than deaths over the period, while Newcastle is projected to have more deaths than births from 2027-28. It is expected that both regions will attract a similar number of overseas migrants each year (about 1,100 from 2005-06). The internal migration profiles of each region are different. Newcastle is expected to gain anywhere between 600 and 1,700 migrants per year over the projections period. In contrast, Wollongong is expected to have no growth attributed to internal migration.

In all regions of Coastal NSW the number of deaths will eventually exceed the number of births, a consequence of an increase in the size of the population in the older age groups. This phenomenon is expected to occur mid-way through the projections period in this region.

Migration from other parts of Australia contributes more to population growth in the regions of Coastal NSW than overseas migration. Net internal migration is projected to increase for all regions within Coastal NSW over the 2001-2031 period. While all regions in Coastal NSW gain people from other parts of Australia, the gain is mostly in the older age groups. The current loss of young adults from Coastal NSW to other regions is expected to continue.

In Inland NSW the impact of natural change is not as significant in the projections period as in Coastal NSW. In all regions of Inland NSW the number of births is expected to decline, while the number of deaths is projected to increase between 2001 and 2031. Deaths will exceed births in Central West (by 2027) and Murray (by 2024).

Inland NSW is expected to attract only small numbers of overseas migrants each year. All regions of Inland NSW are expected to lose people to other parts of Australia, but the loss is expected to reduce over the projections period. For Central West and Murray, it is projected that there will be a net gain from internal migration after 2015.

Far West is the first region in NSW projected to have an excess of deaths over births, occurring from 2005. It is not expected that Far West will attract many overseas migrants over the projections period (fewer than 20 people per annum). Far West will also continue to lose people to other parts of Australia, although this loss will diminish over the 30 year projections period.

## **Alternative Projection Scenarios**

Different assumptions about future demographic trends will result in diverse projected populations. Nineteen scenarios were developed to project populations for NSW and its regions, each varying one component. The two main alternative projection series, known as “high” and “low” correspond to the scenarios that assumed either high or low levels of overseas migration (see Table 5).

Depending on future overseas migration levels, the population of NSW may range between 7.88 million and 8.59 million in 2031. Under these same migration scenarios Sydney’s population may vary anywhere between 5.04 million and 5.59 million by 2031 (see Appendix Table A5). These indicative future populations for Sydney are a greater proportional variation from the more likely projected population than seen for other regions of NSW. This reflects the greater impact of overseas migration flows on Sydney’s population than elsewhere in NSW.

The projected populations of other regions are more likely to be affected by changes in internal migration flows or fertility. While changes in life expectancy will affect projected populations, the effect is far less significant than that of the other two components. The regions whose 2031 projected population is affected most by changes in intrastate migration levels (that is, changes in migration levels within NSW) are the coastal regions of the Illawarra Balance, Richmond-Tweed and Mid-North Coast. These are areas that currently have significant migration flows with other parts of the State. Changes to interstate migration flows would most affect the projected populations of the Far West and Murray regions. An increase in interstate migration would also affect the South Eastern region, which has significant population movements linked with the ACT.

The projected populations of other NSW regions appear to be most affected by changes in regional fertility levels. This includes the inland Murrumbidgee, Central West, North West, Northern and Hunter Balance regions and the other metropolitan regions of Wollongong and Newcastle. The future populations of these latter three regions may also be significantly altered by changes to overseas migration levels.

## **Concluding Comments**

This is the first time that the POPSTAR model has been used to derive population projections for New South Wales and its regions. NSW is the second state in Australia to use POPSTAR, with this version having enhancements on the model originally developed for deriving population projections for Queensland. This model is state of the art and is far more sophisticated than models previously used by the New South Wales Government. The major difference between POPSTAR and previous models is the adoption of a migration pool model in which the flows, and more importantly their age composition, are variable rather than fixed. While the workings of the POPSTAR model are complicated and take some considerable time to initially understand, the process of running the model is relatively straightforward. The relative ease of use of this model has led the Department to make a commitment to update projections more frequently than has been the case in the past. Having completed projections for the regions of NSW,

DIPNR is now in the process of producing SLA level projections that will be based on these broad level figures.

A number of issues have come to light in the process of producing these population projections. Most significantly, the detailed inputs required by the POPSTAR model have highlighted inadequacies in Australian demographic data at the regional scale, particularly in the area of migration (both internal and overseas). Considerable conjecture has been made, for example, in the volume and age profile of regional internal and overseas arrivals and departures. The most difficult demographic component to model was the regional age profiles of overseas departures. This paucity of information begs further research to profile the stream of people who leave Australia on a long-term or permanent basis. Of particular interest would be the impact on regional populations. This would compliment work recently undertaken on Australia's diaspora<sup>8</sup>.

The use of the POPSTAR model also highlighted how the choice of a particular projection model may affect the nature of the derived projections. Not only do the input data and assumptions affect the resulting projections but so does the workings of the model itself. Recent advances in probabilistic projection methodologies and increased computing power offer another method of projecting populations. Regardless of the type of model used, projecting the population of NSW requires in-depth consideration of future population dynamics. The complex interrelationships between fertility, mortality and migration are not understood and are beyond the scope of current projection models. Population projections will almost always never be correct. The challenge is to see how close to the mark we can get.

The population of NSW is set to continue to increase over the next three decades, with Sydney's population maintaining dominance. The increased population and changing regional distributions pose a challenge to planners and policy makers. The greater test is to provide for the expected changes in the age composition of the population, particularly in regional areas of NSW. For example, the dramatic projected change in the age composition of the population in Coastal NSW suggests a major shortfall of people of working age to support the dramatic projected increase in the number of older persons. However policy changes and unforeseen social or economic conditions may affect population dynamics to an extent that such a situation may not eventuate.

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<sup>8</sup> Hugo et al (2003)

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## Appendix A: Summary of Results

**Table A1: Medium series: Actual and Projected Populations for NSW, Sydney and the Greater Metropolitan Region, as at 30 June, 2001-2051**

Region	2001	2006	2011	2016	2021	2026	2031	2036	2041	2046	2051
	<b>Number</b>										
Sydney (SD)	4,128,300	4,335,300	4,554,200	4,762,200	4,965,400	5,161,500	5,345,300	5,513,200	5,665,100	5,804,100	5,933,400
Greater Metropolitan Region	4,890,400	5,128,100	5,374,300	5,607,300	5,834,700	6,054,300	6,259,600	6,445,600	6,611,800	6,762,000	6,900,800
New South Wales	6,575,200	6,868,900	7,164,700	7,450,400	7,734,900	8,012,600	8,271,900	8,503,900	8,706,900	8,887,500	9,053,200

**Low series: Actual and Projected Populations for NSW, Sydney and the Greater Metropolitan Region, as at 30 June, 2001-2051**

Region	2001	2006	2011	2016	2021	2026	2031	2036	2041	2046	2051
	<b>Number</b>										
Sydney (SD)	4,128,300	4,310,500	4,473,700	4,625,700	4,773,200	4,914,600	5,044,800	5,160,100	5,260,000	5,347,600	5,426,400
Greater Metropolitan Region	4,890,400	5,101,700	5,288,200	5,460,300	5,626,700	5,785,700	5,931,100	6,057,900	6,165,300	6,257,100	6,337,900
New South Wales	6,575,200	6,840,100	7,068,500	7,283,300	7,494,800	7,698,600	7,883,900	8,041,500	8,169,800	8,275,300	8,366,100

**High series: Actual and Projected Populations for NSW, Sydney and the Greater Metropolitan Region, as at 30 June, 2001-2051**

Region	2001	2006	2011	2016	2021	2026	2031	2036	2041	2046	2051
	<b>Number</b>										
Sydney (SD)	4,128,300	4,353,000	4,618,300	4,873,000	5,122,600	5,364,400	5,592,900	5,804,700	5,999,900	6,181,800	6,353,500
Greater Metropolitan Region	4,890,400	5,146,900	5,442,900	5,726,500	6,004,900	6,275,000	6,530,100	6,765,500	6,980,800	7,179,800	7,367,000
New South Wales	6,575,200	6,889,400	7,241,100	7,585,800	7,931,200	8,270,400	8,591,400	8,885,200	9,150,500	9,393,700	9,622,200

**Table A2: Actual and Projected Populations, Regional NSW, Sydney, GMR and NSW, as at 30 June, 2001-2031**

Region	2001	2006	2011	2016	2021	2026	2031
	<b>Number</b>						
Newcastle (SSD)	492,500	511,900	528,400	543,400	558,300	572,800	585,900
Hunter Balance	96,400	100,400	103,400	106,600	110,000	113,300	116,400
Wollongong (SSD)	269,600	280,800	291,800	301,600	311,000	320,000	328,400
Illawarra Balance	130,400	141,600	151,600	161,100	170,700	180,300	189,600
Richmond-Tweed (SD)	216,300	228,900	241,300	253,300	265,500	277,700	289,300
Mid-North Coast (SD)	280,600	296,300	309,700	323,200	337,100	350,900	363,800
Northern (SD)	180,400	179,300	178,700	178,700	179,400	180,100	180,500
North Western (SD)	119,600	118,900	119,000	119,700	120,900	122,200	123,100
Central West (SD)	177,700	179,700	180,800	182,700	185,200	187,900	190,100
South Eastern (SD)	193,100	204,300	214,000	224,100	234,900	245,700	256,000
Murrumbidgee (SD)	152,500	153,900	155,100	156,600	158,700	160,800	162,700
Murray (SD)	113,400	114,800	115,600	117,000	118,900	121,100	123,100
Far West (SD)	24,400	22,700	21,100	19,900	19,100	18,400	17,600
Sydney (SD)	4,128,300	4,335,300	4,554,200	4,762,200	4,965,400	5,161,500	5,345,300
Greater Metropolitan Region	4,890,400	5,128,100	5,374,300	5,607,300	5,834,700	6,054,300	6,259,600
New South Wales	6,575,200	6,868,900	7,164,700	7,450,400	7,734,900	8,012,600	8,271,900

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

Figures may not add due to rounding

**Table A3: Average Annual Increase over Five Year Periods, Regional NSW, Sydney, GMR and NSW, 2001-2031**

Region	2001-06	2006-11	2011-16	2016-21	2021-26	2026-31
	<b>Number</b>					
Newcastle (SSD)	3,900	3,300	3,000	3,000	2,900	2,600
Hunter Balance	800	600	600	700	700	600
Wollongong (SSD)	2,200	2,200	2,000	1,900	1,800	1,700
Illawarra Balance	2,200	2,000	1,900	1,900	1,900	1,900
Richmond-Tweed (SD)	2,500	2,500	2,400	2,400	2,400	2,300
Mid-North Coast (SD)	3,100	2,700	2,700	2,800	2,800	2,600
Northern (SD)	-200	-100	0	100	200	100
North Western (SD)	-100	0	100	200	200	200
Central West (SD)	400	200	400	500	500	500
South Eastern (SD)	2,200	1,900	2,000	2,100	2,200	2,100
Murrumbidgee (SD)	300	200	300	400	400	400
Murray (SD)	300	200	300	400	400	400
Far West (SD)	-300	-300	-200	-200	-100	-100
Sydney (SD)	41,400	43,800	41,600	40,600	39,200	36,800
Greater Metropolitan Region	47,500	49,200	46,600	45,500	43,900	41,100
New South Wales	58,700	59,200	57,100	56,900	55,500	51,900

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

Figures may not add due to rounding

**Table A4: Average Annual Growth Rates, Regional NSW, Sydney, GMR and NSW, 2001-2031**

Region	2001-06	2006-11	2011-16	2016-21	2021-26	2026-31
	<b>Per cent</b>					
Newcastle (SSD)	0.78	0.63	0.56	0.54	0.51	0.45
Hunter Balance	0.81	0.60	0.61	0.62	0.60	0.55
Wollongong (SSD)	0.82	0.77	0.67	0.62	0.57	0.52
Illawarra Balance	1.67	1.36	1.23	1.16	1.10	1.01
Richmond-Tweed (SD)	1.14	1.06	0.97	0.94	0.90	0.82
Mid-North Coast (SD)	1.10	0.89	0.85	0.84	0.81	0.72
Northern (SD)	-0.13	-0.06	0.00	0.07	0.08	0.04
North Western (SD)	-0.12	0.02	0.12	0.19	0.20	0.16
Central West (SD)	0.23	0.13	0.21	0.27	0.28	0.24
South Eastern (SD)	1.13	0.93	0.93	0.94	0.91	0.83
Murrumbidgee (SD)	0.19	0.15	0.20	0.26	0.27	0.23
Murray (SD)	0.25	0.14	0.23	0.33	0.36	0.33
Far West (SD)	-1.44	-1.48	-1.10	-0.87	-0.77	-0.79
Sydney (SD)	0.98	0.99	0.90	0.84	0.78	0.70
Greater Metropolitan Region	0.95	0.94	0.85	0.80	0.74	0.67
New South Wales	0.88	0.85	0.79	0.75	0.71	0.64

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

Figures may not add due to rounding

**Table A5: Selected Alternative Scenarios: Actual and Projected Populations, Regional NSW, Sydney, GMR and NSW, 2001-2031**

Region	Low overseas migration	High overseas migration	Low fertility	High fertility	Low life expectancy	High life expectancy	Low interstate migration	High interstate migration	Low intrastate mobility	High intrastate mobility
	<b>Number</b>									
Newcastle (SSD)	569,300	599,500	565,500	602,400	579,800	591,700	574,900	595,700	571,900	599,100
Hunter Balance	112,900	119,300	112,700	119,500	115,200	117,600	114,000	118,600	113,400	119,200
Wollongong (SSD)	317,000	337,800	316,500	338,100	325,400	331,400	322,800	333,400	324,800	332,100
Illawarra Balance	183,700	194,500	183,200	194,900	187,500	191,700	185,500	193,400	176,700	200,900
Richmond-Tweed (SD)	280,200	296,700	279,600	297,100	286,400	292,100	280,200	297,700	277,500	300,100
Mid-North Coast (SD)	353,400	372,200	352,100	373,200	359,600	367,800	355,300	371,400	341,700	383,500
Northern (SD)	175,100	185,000	174,300	185,500	178,700	182,300	176,000	184,600	179,200	182,000
North Western (SD)	119,600	126,000	118,900	126,600	121,800	124,400	120,400	125,500	123,100	123,600
Central West (SD)	184,600	194,700	183,900	195,100	188,100	192,100	186,200	193,700	187,900	192,500
South Eastern (SD)	248,400	262,300	248,000	262,500	253,300	258,700	248,600	262,900	250,600	261,100
Murrumbidgee (SD)	157,800	166,800	156,900	167,400	161,100	164,300	158,400	166,700	161,000	164,400
Murray (SD)	119,600	125,900	119,100	126,200	121,800	124,300	118,600	127,300	122,400	123,800
Far West (SD)	17,200	18,000	17,100	18,100	17,400	17,900	17,100	18,200	17,500	17,800
Sydney (SD)	5,044,800	5,592,900	5,152,700	5,501,600	5,308,300	5,381,000	5,257,400	5,424,100	5,424,100	5,271,900
Greater Metropolitan Region	5,931,100	6,530,100	6,034,700	6,442,200	6,213,500	6,304,100	6,155,100	6,353,200	6,320,700	6,203,100
New South Wales	7,883,900	8,591,400	7,980,400	8,508,200	8,204,400	8,337,300	8,115,500	8,413,300	8,271,900	8,271,900

Hunter Balance = Hunter SD excl Newcastle SSD

Illawarra Balance = Illawarra SD excl Wollongong SSD

Figures may not add due to rounding

Other Major Urban Centres = Newcastle and Wollongong SSDs

Coastal NSW = Hunter Balance, Illawarra Balance, Richmond-Tweed SD, Mid-North Coast SD and South Eastern SD

Inland NSW = Northern SD, North Western SD, Central West SD, Murrumbidgee SD and Murray SD

### Appendix B: Populations of NSW Regions 2031 and Population Change 2001-2031

