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**Population Growth:
Implications for Australia and
Sydney**

by

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**Population Growth:
Implications for Australia and Sydney**

EXECUTIVE SUMMARY

In 2001 the world population was 6.1 billion. It is projected to grow by 50 percent, to 9.3 billion people, by 2050. There are two main factors which influence the size of the world's population: fertility, which is the rate at which the population reproduces, and mortality – the rate at which people die. At December 2001, the estimated Australian resident population was 19.6 million.

Immigration is an important determinant of the size of the Australian population. Australia's permanent immigration program has two components: Skilled and Family Stream migrants (together referred to as the Migration Program); and the Humanitarian program, for refugees and others with humanitarian needs. The Humanitarian Program has been allocated 12,000 new places for the 2002-03 financial year. The current 2002-03 Migration Program is the largest in over a decade, with a planned intake in the range of 100,000 to 110,000 places.

The Australian Bureau of Statistics has projected the nation's population to 2101. Of the three scenarios, the mid-case scenario indicates: a population of 25.3 million in 2051, which peaks at 25.5 million in 2063 and then gradually declines. An almost constant population size is achieved from the middle of the projection period, with close to zero growth rates and only slight declines in population after 2063.

The linkages between population growth and its affect on the environment are keenly debated in the literature. A cross section of reports exploring this relationship is discussed. The most recent report is Future Dilemmas from the CSIRO. It found four kinds of impacts of population growth on the Australian environment. These were: primary – (or first order), these are directly linked to: individuals who require food; households that require houses, cars, televisions and refrigerators; and communities that require schools, hospitals and public transport; secondary – (or second order), these are linked to affluence, lifestyle and scale; tertiary – (or third order) these occur when the domestic requirements for imported goods and services have to be covered by revenue from the goods and services from the nation's export industries. The rising levels of imports linked to consumption growth on a per capita household basis have to be paid for by exporting commodities such as coal and wheat, and importing international tourists; and quaternary – (or fourth order) these occur when the lagged effects of previous population growth and economic development have contributed to issues such as international debt and weakness of currencies.

Sydney is now classed as a 'global city', and attracting people from around Australia and from overseas. Population predictions for Sydney forecast it to grow from a population of currently 3.5 million to six million by 2050 . Measures to attract migrants away from Sydney are discussed.

1.0 INTRODUCTION

In 2001 the world population was 6.1 billion. It is projected to grow by 50 percent, to 9.3 billion people, by 2050. The 48 least developed countries in the world will almost triple in size, from 658 million to 1.8 billion. World population is growing by 1.3 percent, or 77 million people per year. Six countries account for half of this growth: India; China; Pakistan; Nigeria; Bangladesh and Indonesia. Although the world population is still increasing, the actual rate of growth has slowed and the trend is towards smaller families.¹

There are two main factors which influence the size of the world's population: fertility, which is the rate at which the population reproduces, and mortality – the rate at which people die.² The world's population was once characterised by high fertility and high mortality. However, more recently better health and access to contraceptives has contributed to a demographic transition from high fertility and mortality to low fertility and mortality. Fertility is at or below replacement levels in 61 countries. People are living longer and healthier lives from infancy to old age thanks to access to basic sanitation, clean drinking water and modern health care. Globally, the number of older persons (60 years or over) will nearly triple, increasing from 606 million in 2001 to nearly 2 billion by 2050.³

At December 2001, the estimated Australian resident population was 19.6 million, an increase of 242,900 people (or 1.3 per cent) since December 2000. Australia's population has increased steadily at an average annual rate of 1.3% during the 1996-2001 period, compared with 1.2% during the 1991-1996 period. Natural increase - the excess of births over deaths - contributed more to population growth than overseas migration during the 1990s. This is likely to change over the next few decades with deaths likely to exceed births by around the mid to late 2030s.⁴

This paper looks at the population prospects for Australia and the implications of this for Sydney. It focuses on the issue of population and the environment, whilst recognising the presence of economic and social issues as well.

1.1 Immigration

Immigration is an important determinant of the size of the Australian population, and is referred to throughout population projections in the rest of this paper. It is thus useful to outline the size and extent of the current immigration program.

¹ United Nations Population Fund, *Population Issues Briefing Kit*, 2001, at 11.

² Australian Academy of Science, "How many Australians can our environment support?" *Nova, Science in the News*, 1997. See <http://www.science.org.au>.

³ United Nations Population Fund, *Population Issues Briefing Kit*, 2001, at 12.

⁴ See the Department of Immigration, Multicultural and Indigenous Affairs website at: http://www.minister.immi.gov.au/population/fs_15_pp.htm

Australia's permanent immigration program has two components: Skilled and Family Stream migrants (together referred to as the Migration Program); and Humanitarian, for refugees and others with humanitarian needs. The skill stream is specifically designed to target migrants who have skills or outstanding abilities that will contribute to the Australian economy. Family stream migrants are selected on the basis of their family relationships with their sponsor or nominator in Australia. The Humanitarian Program gives priority to people in greatest need of resettlement, with 12,000 new places for the 2002-03 financial year.⁵

The current 2002-03 Migration Program is the largest in over a decade, with a planned intake in the range of 100,000 to 110,000 places. The 2001-02 program was expected to have an outcome of 93,000 new immigrants. The Minister, whilst announcing the 2002-03 program, stated that the range of 100,000 to 110,000 would be maintained over the next four years, barring any exceptional circumstances. The bulk of the increase is to be in the Skill Stream, with 60,700 places, compared to the projected record of 53,500 places for 2001-02. The Skill Stream at the mid-point of the Migration Program planning range (105,000 places) will be 58 per cent of the total program, an increase from 29 per cent of the Program in 1995-96.⁶

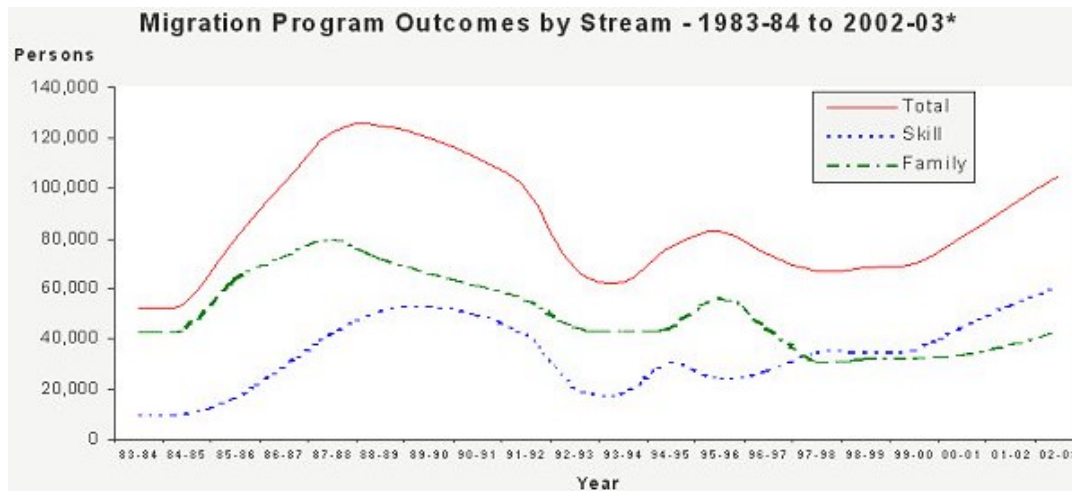
Figure One shows the total, skilled and family migrant intake since the early 1980s. It shows that immigration over this period reached a peak of approximately 125,000 in the late 1980s, dipping to a low in the early 1990s at around 65,000. What is clear is the historical dominance of the family intake over the skilled intake, until the Commonwealth Government reversed this policy stance in 1997/98 and increased the skilled intake as a proportion of the total migrant intake.

⁵ See the Department of Immigration, Multicultural and Indigenous Affairs web site: <http://www.minister.immi.gov.au/migration/index.htm>

⁶ The Hon Philip Ruddock MP, Minister for Immigration and Multicultural and Indigenous Affairs, Media Release, *Minister Announces 2002-03 Migration (Non-humanitarian) Program*. 7 May 2002. See:

http://www.minister.immi.gov.au/media_releases/media02/r02030.htm.

Figure One: Migration Program Outcomes by Stream 1983/84 to 2002/03.⁷



In addition to the permanent entry Migration Program as outlined above, people can enter the country on a temporary basis, either as visitors, students or for a range of specialised purposes under the temporary residence program. The increasing numbers of temporary visitors is having an influence on the demographics of Australia. Immigration Minister Philip Ruddock noted the increase in temporary visitors for 2000 – 01: offshore student visas reached over 86,000, compared to 55,000 in 1994-95; working holiday maker visas reached over 76,000 compared to around 35,000 in 1994-95; long-stay business-sponsored temporary entry visa reached 37,000, a 19 percent increase over the previous year – the major occupations were computing professionals, managers, nurses and accountants; in 2000-01 about ten percent of skilled temporary entrants changed to permanent residence visas under the migration program.⁸

The Australian Bureau of Statistics noted that net overseas migration can have a large impact on population over time, though its impact varies across the country. For instance, currently New South Wales receives the highest amount of net overseas migration of all the States and Territories. For instance, in the three years 1996/97 to 1998/99, New South Wales received 43 percent of Australia's net overseas migration, followed by: Victoria (23 percent); Queensland (16 percent); Western Australia (14 percent); South Australia (4 percent); Northern Territory (0.6 percent); ACT (0.3 percent); and Tasmania (0.1 percent). McDonald and Kippen state that in 1999 and 2000, for the first time, net long-term visitor migration exceeded net permanent migration, by nine percent in 1999 and 21 percent in 2000. Their modelling suggests that at 2000, the estimated long-term visitor populations constituted 1.5 percent of the Australian population, or one in every 67 persons. In Sydney and Melbourne, this percentage would be higher, approximately 1 in every 40 people. The

⁷ Hon Philip Ruddock, Minister for Immigration and Multicultural and Indigenous Affairs, Media Release, *Minister Announces 2002-03 Migration (Non-humanitarian) Program, Attachment 1: Migration Program 1983/84 to 2002/03*. 7 May 2002.

⁸ Hon Philip Ruddock MP, Minister for Immigration and Multicultural and Indigenous Affairs, Media Release, *Record Temporary Entrants Contribute to Economy*, 7 January 2002.

authors noted that at this level, the number of long-term visitors would impact on local housing markets, especially as long-term visitors tend to be locally concentrated.⁹

2.0 THE AUSTRALIAN BUREAU OF STATISTICS – POPULATION PROJECTIONS FOR AUSTRALIA 1999 – 2101.

In 1999 the Australian Bureau of Statistics (ABS) released population projections for Australia up to the year 2051 and 2101 for the State and Territories and their capital cities. Whilst a range of factors impact on population size and growth, including fertility, mortality and migration, fertility and overseas migration have the greatest impact. For instance, a change in the total fertility rate of just 0.1 births per woman higher or lower over the whole of the period results in the population being approximately 1.0 million larger or smaller in 2051, and in 2101 being approximately 2.3 million larger or smaller.

The ABS projections used two long-term fertility assumptions. The high assumption maintains a fertility level of 1.75 babies per woman, while the other assumes fertility declining to 1.6 babies per woman in the next ten years. The high assumption is based on the fact that the total fertility rate (TFR) has ranged between 1.9 and 1.7 babies since 1979, and assumes the fertility level will remain constant as at 1998 level of 1.76 babies per woman. The low assumption notes the reduction in fertility rate from 1.86 babies in 1993 to 1.76 babies in 1998, and continues this reduction to 1.6 babies per woman to 2008 and from there it remains constant to the end of the projection period. Natural replacement level is 2.1 babies per woman.

Before the end of the baby boom in the mid 1960s, Australia reached its highest total fertility level in 1961 at 3.5 babies per woman. It fell in the following years, and below replacement fertility level (2.1 babies) was reached in 1976. In the 1990s, fertility declined further, and in 1998 the total fertility rate was 1.76 babies per woman, the lowest ever recorded for Australia.¹⁰

Internationally, fertility rates vary widely. In the more developed countries total fertility rate is around 1.5, compared to 3.2 for less developed countries. Table 1 below shows the fertility rate of selected countries around the world.

⁹ McDonald P. and Kippen R. *The Impact of Long-Term Visitors on Projections of Australia's Population*. Prepared for the Department of Immigration and Multicultural and Indigenous Affairs, May 2002. Australian Centre for Population Research, Australian National University.

¹⁰ Australian Bureau of Statistics, *Population Projections Australia, 1999 to 2101*, August 2000, at 46.

Table 1: Fertility Rates of Selected Countries 1999.¹¹

Country	Total Fertility Rate
Hong Kong (SAR of China)	1.1
Italy	1.2
Germany	1.3
Greece	1.3
Japan	1.4
Netherlands	1.5
Canada	1.5
France	1.7
United Kingdom	1.7
China	1.8
New Zealand	1.9
United States of America	2.0
Indonesia	2.8
India	3.4
Papua New Guinea	4.8

The long term mortality assumption used in the ABS projections is that life expectancy at birth increases from the 1996-1998 levels of 75.9 years for males and 81.5 years for females, to 83.3 years for males and 86.6 years for females in 2051. The Bureau has assumed three future scenarios of net overseas migration, developed by analysing net overseas migration as a ten year moving average. The middle assumption (90,000) being the average, and the high (110,000) and low (70,000) assumptions encompass the bounds of the ten year moving average curve. The Bureau notes that fluctuations in net overseas migration are largely the result of changes in the Commonwealth Government's migrant visa quota, unrestricted movement between Australia and New Zealand under the Trans-Tasman Travel Agreement, and prevailing economic conditions in Australia and overseas.¹² Using the above assumptions, the Bureau selected three main population projection forecasts, referred to as Series I, II and III. The assumptions of these three series and the results of the population projections is summarised below.

- Series I: total fertility rate of 1.75 babies per woman over the projection period, high net overseas migration (110,000) per year and high levels of interstate migration;
- Series II: total fertility rate will decline to 1.60 and remain there from 2008/09, medium net overseas migration (90,000) and medium flows of interstate migration;
- Series III: total fertility rate will decline to 1.60 and remain there from 2008/09, net overseas migration of 70,000 per year and small flows of interstate migration.

¹¹ Australian Bureau of Statistics, *Population Projections Australia, 1999 to 2101*, August 2000, at 45.

¹² Australian Bureau of Statistics, *Population Projections Australia, 1999 to 2101*, August 2000, at 54.

The results of the population projections were as follows:

Characteristics of Series I

- Population 28.2 million in 2051 and 31.9 million in 2101;
- Population growth is positive through to 2101, sustained by a relatively high level of fertility and high net overseas migration;

Characteristics of Series II

- Population 25.3 million in 2051, peak at 25.5 million in 2063 and gradually decline;
- An almost constant population size is achieved from the middle of the projection period, with close to zero growth rates and only slight declines in population after 2063;

Characteristics of Series III

- Population would peak at 24.1 million in 2049, and then decline at a faster rate than in Series II, with 22.6 million in 2101;
- Population growth rate is negative in the latter half of the century, with a population decline of 0.2 percent per year between 2071 and 2091, reflecting the fact that the level of net overseas migration is not sufficient to counteract the effect of the declining number of births combined with an increasing number of deaths.¹³

3.0 THE IMPORTANCE OF DEMOGRAPHY

Professor Peter McDonald, Head of the Demography program at the Australian National University, and colleague Rebecca Kippen, have noted that whilst many populist statements are made about Australia's population by prominent people in the community, many of the comments are 'sheer demographic nonsense'.¹⁴

McDonald and Kippen argue that the dominant feature of Australia's long term population future is not immigration, but the balance between births and deaths and the consequent effects upon the age structure of the population. The importance of fertility and mortality is evidenced by the emergence of the ageing of the population as a central demographic issue. The authors note that during the last 20 years, while significant changes in fertility (ie, reducing) and mortality (we are living longer), have been altering our demographic future, policy attention has focused only upon immigration. The demographic researchers consider that whilst immigration can play an important role in shaping population futures, its impact must be considered in the context of trends in fertility and mortality.

¹³ Australian Bureau of Statistics, *Population Projections Australia, 1999 to 2101*, August 2000, at 20.

¹⁴ McDonald P. and Kippen R. *Population Futures for Australia: the Policy Alternatives*. Commonwealth Department of the Parliamentary Library, Research Paper No 5, 1999 – 2000.

McDonald and Kippen proposed the following demographic criteria to assess the feasibility of different future population scenarios for Australia:

We should aim to avoid excessive ageing of the population: substantial ageing of the population in the next 40 years is ‘absolutely inevitable’, and we should be considering policy approaches to deal with it. Concurrently, we should avoid future demographic pathways that exacerbate the extent of population ageing.

We should avoid creating a substantial momentum of population decline: Presently in Australia, our fertility rate is below the level of generational replacement. Despite this, there are many more births in Australia than deaths. This is because of the large numbers of people in the reproductive ages as a result of the post-war baby boom, and relatively small numbers at older ages. However, this momentum for population growth will disappear over the next 25 years and from that point, in the absence of migration, our population will begin to decline. Sustained low fertility and an ageing of the population will then create an age structure that has a momentum for population decline.

We should avoid excessively high or negative numbers of immigrants: population targets for the future cannot be such that we have to make people leave the country in order to achieve the target. Equally, there are upper limits to the number of immigrants that can be recruited and settled in any given period of time. McDonald notes the significant problems that arose in 1988-89 when net immigration rose to an average over 150,000 per year, and considers that sustained net immigration above 150,000 per year could be considered to be excessively high.

As far as possible, we should avoid wide fluctuations in our age structure: fluctuations in age structure can mean that demand for public services such as education and health services also fluctuate. As these services can involve substantial infrastructure and training costs, it is more efficient to avoid widely fluctuating age structures.

We should avoid a substantial fall in the number of people in the working ages: a substantial fall in the number of people at working ages, combined with an increase in the number at older ages, depending on improvements in productivity, could lead to a fall in economic output per capita.

It was concluded that Australia’s future population options are much more limited than many commentators have suggested. It was argued that there are good arguments for avoiding demographic pathways that would lead to a declining Australian population – resulting in a reduction in the size of the labour force and an increase in the numbers of older people. It was suggested that the ‘bottom line’ would be a population policy which aimed for zero population growth within 50 years, by which time the population would be around 24-25 million. To avoid long term population decline, annual net migration would need to be around 80 000 per year if fertility falls to a level of about 1.65 births per woman. McDonald and Kippen concluded that a smaller population is not a substitute for an ecologically sustainable future, and that false hopes that population decline is a realistic

option for Australia detract from the need for environmental reform.¹⁵

4.0 THE EFFECT OF POPULATION ON THE AUSTRALIAN ENVIRONMENT

The history behind the contemporary population / environment debate is illustrative of the changes in thinking of the ‘carrying capacity’ of the Australian continent. The historical debate has been summarised by a House of Representatives Standing Committee:

- Early 1900s: the population problem then was whether we would ever be able to people the vast areas of the continent which was capable of supporting a large population.
- The 1920s: After the First World War there was intensive debate over the optimal and maximum population size. Net migration to Australia between 1920 and 1929 was 349,000 people, and an ultimate population of 100 million was foreseen and widely wanted. However, Sydney University geographer Griffith Taylor argued that the nation’s soil and water resources could not support more than 65 million people, and that the population would be no more than 20 million by the year 2000.
- The 1930s: Visions of an eventual 100 million population collapsed with falling migration from Britain and declining fertility.
- The 1940s to 1960s: A massive immigration program commenced, drawing no longer just on Britain but on much of Europe, with the aim to build a population and economy capable of defending itself in future wars.
- The 1970s and 1980s: It was only after about 1968 that the whole basis of the post-War immigration program began to be questioned. Reasons for emerging concern included the prospects of US style congestion and recognition that the Australian environment was vulnerable.¹⁶

The rest of this section canvasses a cross section of some key reports since the 1990s that have looked at the influence of population on the Australian environment.

4.1 National Population Council – Population Issues and Australia’s Future, 1991.

In November 1990 Prime Minister Hawke directed the National Population Council to examine the major issues that could arise from an increase in Australia’s population. The Council reported in December 1991. The report looked at the impacts of population on economic progress, ecological integrity, social justice and international involvement.

The report noted that few submissions to the Inquiry provided any quantitative guidance on

¹⁵ McDonald P. and Kippen R. *Population Futures for Australia: the Policy Alternatives*. Commonwealth Department of the Parliamentary Library, Research Paper No 5, 1999 – 2000, at 30.

¹⁶ Adapted from: House of Representatives Standing Committee for Long Term Strategies, *Australia’s Population ‘Carrying Capacity’: One Nation – Two Ecologies*, December 1994, at 7.

the population – environment linkages. However, it was put to the Inquiry that a general indication of the relationship between population and the environment is given by the following equation: $I = PAT$, where I = environmental impact, P = population, A = per capita economic consumption (affluence) and T = technology. The Committee accepted that this methodology could be helpful to fix some basic ideas, but noted that the linkages are much more complex than the summary equation can encapsulate, and that many environmental impacts do not have or lend them to empirical analysis.¹⁷

The Committee recognised the following sorts of environmental impacts:

- Australian impacts that have little direct linkage to changes in the Australian domestic population;
- Global impacts that have some direct linkage to changes in the Australian domestic population;
- Australian impacts that are domestic population related, but where market based pricing of use provides some important conservation incentives; and
- Australian impacts that are domestic population related, and are outside the influence and calculus of market based decision making.¹⁸

The Committee noted that Australia has a small population in a large land, and is well endowed with natural resources. However, it also noted that there can be no complacency on this ground. For instance, it was recognised that: the arable share of the land is small; there is a serious mismatch between distributions of available water supply and the population; water supply is subject to high levels of seasonal and year to year variability; the land is severely degraded; the soils thin and vulnerable to depletion; and the number of threatened species high.

The Committee also noted that many of the environmental problems created since European settlement, such as land degradation, have been created with a small population. In addition, the environmental impact of any industry that exports a large proportion of its outputs, such as the mining and primary production industries, is weakly related to domestic population needs. The Committee concluded that when some people are concerned over population effects on Australia's uniquely fragile environment, the concern can be misplaced if it is focussed only on domestic population and ignores the world market context. However, it was also noted that growth in population may arguably affect the scale of resource based projects indirectly, in that increased imports may create pressure to relax environmental constraints in resource industries in order to generate more exports.

According to the Committee, a major concern associated with resource extraction and production and consumption, including that driven by population, is the generation of

¹⁷ National Population Council, Population Issues Committee, *Population Issues and Australia's Future, Environment, Economy and Society*, 1992 at 39.

¹⁸ National Population Council, Population Issues Committee, *Population Issues and Australia's Future, Environment, Economy and Society*, 1992 at 39.

pollutants and wastes. These generate pressure on natural capital as a 'sink'. The Committee used the example of species loss in Australia, and concluded that whilst many extinctions have occurred due to intensive phases of land clearance when the population was much lower than at present, any current day population growth will necessitate increased commitment to the protection of biodiversity – the faster the population growth, the higher the level of commitment required.¹⁹

The Committee also recognised that Australia is a highly urbanised country, and that it is in our cities that the direct stresses of population impact are most apparent. It is in urban areas that air, noise and water pollution, and problems of sewerage, industrial effluents and solid waste production are all heavily concentrated, sometimes overwhelming the natural systems ability to absorb the impacts without degradation.

It was also the Committee's view that the environmental effects of population are not reflected in free market prices, and that atmospheric, riverine and marine environments are being polluted because their use as a disposal ground is effectively free. However, the Committee acknowledged that to the extent that social market mechanisms or efficient regulatory arrangements can be developed whereby the full costs, including environmental, can be reflected, then this is the preferred way to proceed compared to measures to curb the population.²⁰

The Committee came to the following conclusions:

- The Government should note the wide-ranging and significant impacts of population on the economy, the environment, society and international issues;
- The Government should develop a population policy which seeks to influence and respond to population change so as to advance economic progress, ecological integrity, social justice and responsible international involvement.

Of particular relevance to Commonwealth – State relationships, the Committee recommended:

- There be established a Commonwealth – State Ministerial Council for Population and Urban Affairs;
- State finances in relation to population change be discussed by the Premiers' Conference after completion of Bureau of Immigration Research reports on population linkages to government revenue and expenditure.²¹

¹⁹ National Population Council, Population Issues Committee, *Population Issues and Australia's Future, Environment, Economy and Society*, 1992 at 48.

²⁰ National Population Council, Population Issues Committee, *Population Issues and Australia's Future, Environment, Economy and Society*, 1992 at 51.

²¹ National Population Council, Population Issues Committee, *Population Issues and Australia's Future, Environment, Economy and Society*, 1992 at 122.

However, the Committee's recommendation for the adoption of a population policy was rejected by the Commonwealth Government:

This mainly reflected the view that the objectives of a population policy could be largely achieved by building on co-ordination and research within Government. The Government's approach also recognised that a range of other important initiatives, aimed at greater national ecological integrity and equity had been adopted, including the National Strategy for Ecologically Sustainable Development and the National Greenhouse Response Strategy.²²

4.2 Ecologically Sustainable Development Working Groups – Intersectoral Issues Report, 1992

Ecological sustainable development (ESD) has been one of the fundamental platforms of natural resource management since the 1980s. In the early 1990s, Prime Minister Hawke convened working groups to define strategies to achieve ESD in different sectors of the economy. A Cross Sectoral Working Group was established and amongst other things considered the issue of population.

The report noted that at the global level, population growth remains one of the most critical challenges to ESD. It acknowledged that population is a fundamental aspect of ESD, and specific areas of concern to ESD where population issues are important include: the use of air, land and water; the use of non-renewable resources; the loss of ecosystem integrity and genetic diversity; and urban issues.²³

The Working Groups Chairs accepted that population size and composition have a direct effect on the impacts that Australians impose on air, land and water. The emission of greenhouse gases and other atmospheric pollutants were described as being directly related to the numbers of people. However, the relationship between an increasing population and land degradation, a major environmental issue for the country, was considered 'not so direct'. Similarly water usage, whilst clearly influenced by population size in terms of domestic and to an extent agricultural and industrial consumption, is also affected by the efficiency by which water is collected, distributed and consumed. The Report also noted that one of the major intersectoral concerns for ESD is urban growth and its associated environmental, social and cultural impacts. In this area, population growth is a crucial issue.

From the viewpoint of ESD, the report noted that critical determinants of optimum population size and composition will be economic, social and environmental consequences

²² Submission of the Department of Immigration and Ethnic Affairs, in House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994, at 13.

²³ Ecologically Sustainable Development Working Group Chairs, *Intersectoral Issues Report*, AGPS, Canberra, 1992, at 76.

of any population increase. The desirable outcome was described as achieving a sustainable rate of growth in the country's population, where sustainability is assessed in terms of net economic, social and environmental outcomes.²⁴ The Working Group relied heavily on the results of the National Population Issues Committee report, as discussed above.

4.3 Australia's Population 'Carrying Capacity' – One Nation Two Ecologies. House of Representatives Standing Committee on Long Term Strategies, 1994.

In 1994 the House of Representatives Standing Committee on Long Term Strategies published its report on the population 'carrying capacity' of Australia. The Terms of Reference required the Committee to inquire into the population that can be supported in Australia within and beyond the next 50 years (ie, 2045). The Chairman of the Committee, the Hon Barry Jones MP, noted that over 270 written submissions were made to the Committee, with over 90 percent of them advocating population stability or lower population growth. The Chairman noted that on both sides of the debate, extreme views were expressed, including the views that: the present population should be encouraged to dwindle to as low as seven million, one million, or until it equalled the approximate number of the indigenous population pre-1788; to the other extreme, a population of 80 or 100 million was cited as desirable.²⁵

The Committee attempted to clarify the term 'carrying capacity', and recognised the diverse ideas on the meaning of the term. However, it determined the term to mean 'that combination of population, location and demographic characteristics which best serve Australia's national interests, and which allow individuals in the society to live long, self-fulfilling lives'.

The Committee noted the short-comings of two divergent views, which were: that the nation does not have enough drinking water or food producing land to feed and water even the present population indefinitely; and the other view that we have the natural resources to allow indefinite sustenance of perhaps hundreds of millions of Australians.

Short-comings identified for these arguments were:

- Both perceptions ignore the possibility of setting up a prosperous and secure economy which is not natural resource based but trade based, which feeds its people by trading non-food exports for food imports;
- Historical experience, especially in Europe, demonstrates that national food production is very strongly determined by the prices which farmers receive for their produce – to the extent that the production of other goods and services are 'traded off' against extra food production, larger populations can almost certainly be fed;

²⁴ Ecologically Sustainable Development Working Group Chairs, *Intersectoral Issues Report*, AGPS, Canberra, 1992, at 78.

²⁵ House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994.

- It has been argued that Australia's waste assimilation capabilities are a more useful indicator of limits to the nation's population 'carrying capacity'. However, the extent to which population can increase without unacceptably polluting resources does not have a single answer – it depends on changes in consumption patterns and the extent of investment in reducing waste production per unit of consumption.

The Committee concluded that ultimately, Australia's 'carrying capacity' is a function of choices, and not environmental constraints.²⁶

In its report the Committee reviewed the environmental arguments about population size. Issues as diverse as urban consolidation, rural water quality, land degradation and city congestion were discussed. Yet the Committee concluded that whilst there was subjective evidence of city people having a declining quality of life parallel with population growth, there has been almost no formal modelling of links between population levels and environmental quality.²⁷

The Committee proposed six population scenarios for the year 2045. It's conclusions on each are as follows:

1. The high population option (50 – 100+ million): "...it is the Committee's opinion it would now be politically and socially impossible to propose the high population option, especially as it would inevitably involve such major changes in lifestyle and resource use."
2. The high population / low resource use option (30 – 50 million): "...It would be essentially a European (eg Netherlands) model – higher density cities, less car dependence, more care about waste disposal. It would involve a degree of self discipline and quality of life would depend less on consumption and high resource use."
3. The modest increase / modest restraint option (23 – 30 million): "This view has some support in the submissions, but is clearly a minority view. However, it is worth noting that historically immigration was often unpopular."
4. The stable population option (17 – 23 million): "This has strong community support. Its opponents argue that with growing longevity it may be necessary to increase the population of labour force age, but there is no longer consensus on this."
5. The reduced population option (5 – 17 million): "This is proposed by many submissions but it is based on a fallacy – that if Australia's population increased from 7 million in 1947 to (say) 14 million in 1976 then it would be possible to turn back the clock and halve the population in an equivalent period. But time (and society) does not run backwards."

²⁶ House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994, at 42.

²⁷ House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994, at 99.

6. Return to 1788 'carrying capacity' (1 – 9 million): "This extreme position is argued in several submissions: its central theme is that this would best safeguard Australia's unique flora and fauna."²⁸

The Committee rejected outright options 1 and 6, and noted that realistic options for community debate can be limited to the other four. The Committee noted:

All human behaviour is open to change. Operating methods can be improved: the Committee rejects the sense of fatalism in most submissions – that we have no choices, that we cannot manage better, and that immigration is the only factor that can change the impact of population on environment.²⁹

However, the Committee did not propose a specific target or optimum figure of its own. Rather, it suggested a process of open debate, and emphasised that the best outcome will depend on how we organise economic, social and cultural arrangements.

In terms of institutional issues, the Committee recommended the formation of a Cabinet Committee on Population, to be chaired by the Prime Minister, and:

The Australian Government should adopt a population policy which explicitly sets out options for long term population change, in preference to the existing situation where a de facto population policy emerges as a consequence of year by year decisions on immigration intake taken in an ad hoc fashion, such decisions being largely determined by the state of the economy in the particular year and with little consideration of the long term effects. Population policy is central to establishing national goals and must involve the Prime Minister directly.

A Commonwealth-State Ministerial Council for Population and Urban Affairs should be established and population placed on the agenda of the Premiers' Conferences.³⁰

4.4 Population Futures. The Australian Academy of Technological Sciences and Engineering, 2000.

The Academy was commissioned by the Business Council of Australia to study the potential environmental impacts of population growth. The technological, behavioural, pricing and settlement planning measures that could be used to manage the identified environmental impacts were also discussed. Three scenarios were considered up to the year 2050: population growing as at present, leading to 24.8 million people in 2050; 1 percent

²⁸ House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994, at 144.

²⁹ House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994, at 144.

³⁰ House of Representatives Standing Committee for Long Term Strategies, *Australia's Population 'Carrying Capacity': One Nation – Two Ecologies*, December 1994. Recommendations 2 and 5 respectively.

additional growth so that population growth reached 31.5 million; and an accelerated growth option so that population reached 37.9 million by 2050.

The Academy (through the use of consultants) approached the task by identifying the major environmental issues facing Australia, and assessed these on the basis of whether their status would change with an enlarged population. On this basis, environmental issues were classified under three headings:

- Strong connection to population growth, (defined as that there is likely to be a clear and significant worsening in an environmental issue);
- Tenuous connection to population growth, (defined as not likely to be a clear and significant worsening in an environmental issue with an enlarged population, but a degree of worsening could be expected); and
- No direct connection to population growth, (defined as no reasonable possibility that an enlarged population can directly cause a significant worsening in an environmental issue).

The report found: four environmental issues that had a strong connection to population growth; nine issues with a tenuous connection; and seven with no direction connection, as shown in the table below.

Environmental Issue	Connection to population growth	
Pollution of land (and groundwater basins).	Strong	More people equals more waste generation, solid waste disposal and landfill leakage into groundwater.
Pollution of coastal waters, rivers and lakes near urban areas.	Strong	More people equals more urban development, construction of hard surfaces and associated increase in stormwater run-off, with litter and liquid pollutants, and sewage discharge into waterways.
Depletion of freshwater stocks near major urban areas.	Strong	More people equals more water use for domestic activities such as drinking, washing and gardening.
Pollution of urban airsheds.	Strong	More people equals more fossil fuel emissions primarily from car use and to a lesser extent energy generation.
Depletion of arable land stocks.	Tenuous	More people might equal suburbanisation into arable land stocks. Most depletion relates to land clearing and poor land management.
Depletion / fragmentation of natural habitats/ecosystems.	Tenuous	More people might equal suburbanisation into natural environments and fragmentation of natural environments by transport networks. Most depletion relates to land clearing and primary production.
Depletion of animal / insect species / biodiversity.	Tenuous	As above.

Pollution of fresh water stocks near major urban areas.	Tenuous	More people might equal suburbanisation into, and contamination of, urban water catchments.
Alteration of river and lake systems near major urban areas.	Tenuous	More people might equal suburbanisation into water systems and consequent alteration and damming of water systems.
Greenhouse effect	Tenuous	More people might equal a net increase in global greenhouse emissions from energy, transport and industry.
Depletion of the ozone layer in the upper atmosphere.	Tenuous	More people might equal a net increase in global ozone emissions from energy, transport and industry.
Loss of amenity	Tenuous	More people might equal more noise (primarily related to transport) and congestion at natural and cultural attractions.
Depletion of mineral, energy and timber resources.	Tenuous	More people might equal more demand for natural resources. Resource exploitation relates to primary industry practices and international demand.
Depletion of fresh water stocks in rural and remote areas.	No direct	More people does not equal non-urban water use which primarily relates to irrigation.
Pollution of coastal waters, rivers and lakes in rural and remote areas.	No direct	More people does not equal pollution discharge into rural and remote waterways which primarily relates to primary industry practice.
Degradation of soils (eg, salinity, acidification, erosion).	No direct	More people does not equal soil damage which primarily relates to primary industry practices.
Depletion of marine habitats.	No direct	More people does not equal marine habitats which primarily relates to primary industry and shipping practices.
Depletion of fish / marine stocks and species / biodiversity.	No direct	More people does not equal marine species which primarily relates to primary industry and shipping practices.
Depletion / degradation of heritage and cultural sites.	No direct	More people does not equal damage to heritage and cultural sites which primarily relate to resource management practices.
Harm to human and environmental health from manufactured by-products.	No direct	More people does not equal generation and mismanagement of potentially harmful by-products from energy sector and industry (eg, pesticides, chemicals, wastes).

Based on the above analysis, the authors concluded that adverse population related environmental issues in Australia relate to:

- The structure and functioning of our cities (eg urban sprawl and dominance of car transport);
- Australia being a high resource using and waste generating society; and
- Australia's dry climate resulting in low stocks of fresh water near the major population centres.³¹

The paper then identifies various technological, behavioural, pricing, and settlement planning strategies that can be applied to manage the environmental pressures directly associated with population growth. Technological advances were described as innovations that can contain or potentially reverse environmental impacts through improved efficiency, containment or 'ways of doing things'. For example, improvements in the technology for re-using 'grey water' can substantially reduce demand for new water harvesting and treatment. Behavioural shifts caused by education programs and regulatory measures can be applied to minimise environmental impact, as can pricing policies. Urban planning and settlement pattern policies can also contribute to superior environmental outcomes.³²

The report concluded that:

- the application of these strategies could deliver superior environmental outcomes even in the context of a higher population scenario for 2050;
- modelling work is required to determine the extent to which strategies can off-set, or even reverse, stresses placed on the four environmental issues based on a range of population scenarios to 2050; and
- it is not appropriate to say that the only policy option for government in addressing environmental concerns is to cap or lower population whilst not addressing environmentally damaging technological, lifestyle and economic arrangements into the future.³³

However, the approach and conclusions of this report have attracted some strong criticisms. For example, Alan Jones, Research Scientist at the Australian Museum, identified three shortcomings:

- The degree of subjectivity concerning the adjectives 'strong' and 'tenuous' means that judgements made by others could be very different;
- Even if one agrees that the effects of population growth in each case described as 'tenuous' are not significant in isolation, the cumulative effect on all nine tenuous issues is likely to be substantial – yet this probability is ignored;
- Where it is claimed that there is no direct connection between an issue and

³¹ Australian Academy of Technological Sciences and Engineering, *Population Futures*, October 2000, at 8.

³² Australian Academy of Technological Sciences and Engineering, *Population Futures*, October 2000, at 16.

³³ Australian Academy of Technological Sciences and Engineering, *Population Futures*, October 2000, at 22.

population, the direct cause (for example, irrigation in the case of fresh water depletion), is itself driven by population and / or consumption growth that increases the demand for commodities. The links to population growth may be indirect but should be acknowledged.³⁴

Jones concludes that the report understates the ecological effects of population growth and uncritically accepts various management strategies as a panacea to heal all environmental ills.

Similarly, Clive Hamilton of the Australia Institute, using greenhouse gas emissions as an example, notes that changing technologies and increasing energy efficiency can reduce emissions in the face of population growth. However, he argues that every step in this direction has proven very difficult politically, and has met fierce resistance from the fossil fuel lobby. Hamilton also notes that coastal ecosystems are under major environmental stress for which population growth is directly responsible. As the population drifts out of Sydney mainly to the north coast, new arrivals want land to build on, roads to travel on, new water supplies and sewerage systems. He argues that population growth is directly related to these pressures – and that as population increases, we can expect to see a proliferation of medium and high density residential and commercial developments in coastal towns as space runs out. Hamilton argues that people move to the coast to find more ‘space’, and that it seems counter productive to jeopardise the very features of Australia that define us so uniquely.³⁵

Hamilton asks what it would take to protect the environment from the effects of faster population growth, and offers the following as an initial list:

- The Government would need to agree immediately to ratify the Kyoto Protocol and go well beyond the limits embodied in it;
- There would need to be an enforceable Federal-State plan to restrict the settlements that jeopardise coastal ecosystems, covering land from coast to the Great Divide. This would need to cover urban and rural developments, roads, water diversions, sewerage systems and waste disposal;
- Serious measures would need to be taken to solve the problems of urban transport.³⁶

4.5 Future Dilemmas, 2002.

The Department of Immigration and Multicultural and Indigenous Affairs commissioned

³⁴ Jones, A. “The Business Council of Australia’s Case for Population Growth: An Ecological Critique.” In *People and Place*, Vol 9, No 2, 2001, at 50.

³⁵ Hamilton C., “Population growth and environmental quality: are they compatible?” in *People and Place*, Vol 10, No 2, 2002.

³⁶ Hamilton C., “Population growth and environmental quality: are they compatible?” in *People and Place*, Vol 10, No 2, 2002, at 5.

the CSIRO Sustainable Ecosystems working group to produce a report on options to 2050 for Australia's population, technology, resources and environment. The result is the publication *Future Dilemmas*.³⁷

Future Dilemmas modelled three population scenarios and their effect on resources and the environment. It was noted that Australia's future population will depend on the degree to which immigration is used to offset declining birth rates. Three scenarios of net immigration used were: zero; 70,000 per year; and 0.67 % per annum of total population. These scenarios were meant to reflect approximately the policy position of: some environment organisations (zero immigration); the most likely outcome of current immigration program settings – the base case (70,000 per year); and the population growth rate preferred by Australian business interests (0.67 % pa). These scenarios were combined with the declining fertility rate (from 1.78 to 1.65 children per woman), and increasing longevity (1 years life extension for each decade of the simulation out to 2050) to project Australia's population in the year 2050 and 2100.³⁸ The results are shown in Table 3 below.

Table 3: Scenarios for Australian population size (millions)

Year	Zero net immigration per year	70,000 Net immigration per year	0.67% pa net immigration per year
2050	20.6	25.1	32.5
2100	16.7	25.5	50.6

The results show that in the longer term, a zero net immigration policy will lead to population decline, and substantial falls in the size of the labour force. The base case scenario projects a population of 25.1 million in 2050, and only a small increase of 0.4 million from 2050 to 2100. Under the 0.67%pa scenario population increases to 32.5 million in 2050, and 50.6 million in 2100, and will continue to grow.

Future Dilemmas also looked at the size of Australia's capital cities under the different population scenarios. By 2050, under the base case scenario, Sydney, Melbourne, Brisbane and Perth may increase by about one million people each. The zero scenario constrained most capitals to their current size, while the growth scenario saw both Sydney and Melbourne growing by nearly three million people. By 2100, the zero scenario saw Sydney reducing by about 0.8 million people, the base case results are about the same as the 2050 scenario because the populations have stabilised, while the growth scenario sees Sydney (and Melbourne) grow to about 10 million, termed a megacity. Table 4 below summarises the projections for Sydney.

³⁷ CSIRO, *Future Dilemmas. Options to 2050 for Australia's population, technology, resources and environment*. Report to the Department of Immigration and Multicultural and Indigenous Affairs. October 2002.

³⁸ CSIRO, *Future Dilemmas. Options to 2050 for Australia's population, technology, resources and environment*. Report to the Department of Immigration and Multicultural and Indigenous Affairs. October 2002, at 31.

Table 4: Simulated population size (millions) for Sydney for the three population scenarios³⁹.

Sydney	Zero scenario	Base case scenario	0.67%pa scenario
2050	4.280	5.254	6.878
2100	3.448	5.303	10.717

However, what is also important is not the population per se, but the number of households. Much of the demand for houses, motor cars, furnishings and electrical goods is driven by the number of households rather than the number of people. Currently the number of households is growing at a faster rate than the population itself. The number of people per household is currently around 2.6 (down from 3.75 in 1947), while it is projected that by the year 2050 it will be around 2.3 to 2.4. Hence the number of households increases from about seven million currently to 8.2 million for the zero scenario, 10.6 million for the base case and 13.6 million for the 0.67%pa scenario by 2050.⁴⁰

The population projections used by *Future Dilemmas* laid the boundaries for the rest of the study in relation to the use of resources and environmental quality. The authors defined four levels of influence which population growth has:

- Primary – (or first order), these are directly linked to: individuals who require food; households that require houses, cars, televisions and refrigerators; and communities that require schools, hospitals and public transport.
- Secondary – (or second order), these are linked to affluence, lifestyle and scale. Affluence and lifestyle issues describe the expansion of a direct requirement or need into a higher level of consumption or quality that could require more energy and materials to deliver that service. Scale issues relate to threshold effects such as the presence of international airports, convention centres and five star hotels which expand opportunities for industries such as tourism.
- Tertiary – (or third order) these occur when the domestic requirements for imported goods and services have to be covered by revenue from the goods and services from the nation's export industries. The rising levels of imports linked to consumption growth on a per capita household basis have to be paid for by exporting commodities such as coal and wheat, and importing international tourists.
- Quaternary – (or fourth order) these occur when the lagged effects of previous

³⁹ CSIRO, *Future Dilemmas. Options to 2050 for Australia's population, technology, resources and environment*. Report to the Department of Immigration and Multicultural and Indigenous Affairs. October 2002, at 46.

⁴⁰ CSIRO, *Future Dilemmas. Options to 2050 for Australia's population, technology, resources and environment*. Report to the Department of Immigration and Multicultural and Indigenous Affairs. October 2002, at 49.

population growth and economic development have contributed to issues such as international debt and weakness of currencies.⁴¹

The authors made detailed assessments of the future of: the urban environment; natural resources and environment; energy use; and water use. Ten overall conclusions for the three population scenarios and their effects on Australia's physical economy were then made. These were:

1. Direct effects on population growth

Many issues in Australia's physical economy are directly linked to population growth. For instance, more people means economic growth and development stimulated by the requirements for more infrastructure, more industrial output, more services, more food, more tourism, more energy and water use and more waste and emissions. Given these realities, the high, medium and low population scenarios tested are physically feasible out to 2050 and beyond.

The authors concluded that ceasing population growth will not cause the physical economy to stall, nor will it immediately make key issues of resource use and environmental quality disappear. This is because a number of drivers of the physical economy, such as lifestyle and affluence, international trade and inbound tourism affect key resource and environmental issues, and are only indirectly linked to population size and growth.

Any significant progress towards sustainability in Australia's physical economy will require that population futures are managed in unison with the futures of infrastructure, lifestyle and personal consumption, energy, international trade, inbound tourism and technological innovation.

2. The good news on population growth

Under all population scenarios, growth in a range of key sectors of the physical economy continues, at least until 2020. Even under the low population scenario, declining household size, internal migration patterns and requirements for tourism accommodation stimulate activity for the building industry - although less than for the higher population scenarios. This growth occurs in many other sectors, with notable exceptions. In terms of the physical economy, growth brings three immediate causes for optimism, although later conclusions suggest caution about the prospect of growth (as we currently know it) in the long run. The three areas of optimism were:

- 20 years of assured activity gives time to implement substantial institutional innovation;
- This lead time allows advanced stocks of cars, buildings and passenger transport and freight systems to penetrate the national system – to begin to stabilize the flows

⁴¹ CSIRO, *Future Dilemmas. Options to 2050 for Australia's population, technology, resources and environment*. Report to the Department of Immigration and Multicultural and Indigenous Affairs. October 2002, at 68.

- of energy and waste;
- Provided the above two points eventuate, growth could underpin new export industries that are rich in services and information, to substantially replace the current materially and energy export mix.

3. Three population scenarios: the detailed demographic outcomes

The changing demographic structures and the assumptions tied to them highlight three potential issues. Firstly, regional Australia is likely to age more than the cities, due to assumptions about internal migration. Secondly, regional ageing is compounded by increasing aged medical problems compared to the younger cities. Thirdly, the extent of demands for services such as education will fluctuate, driven by slow moving changes in demographic structures. It is feasible to prepare the workforce, and its infrastructure, well ahead of time to better accommodate these issues.

4. Technological innovation offers promise *but...*

Aggressive implementation of technical solutions to key resource use and environmental quality problems show much promise. For example, cutting edge designs that already exist for houses and motor vehicles can reduce energy use and greenhouse gas emissions. The transition to a 'factor-four' economy where process intensity for basic materials is reduced in unison with rapid implementation of new consumer technologies, also provides the potential for large reductions in energy use and subsequent greenhouse gas emissions.

However five important caveats were identified which limit the potential for feasible technological solutions. These were:

- Consumer sentiment, in general, stimulates the requirement for larger buildings, more quality and luxury, more powerful motor vehicles and more frequent air travel;
- An efficient consumer-led economy generally embraces growing volumes of cheaper goods and services, which, in turn, have increasing energy and material content in their total life cycle;
- While pricing policies can moderate the use of resources such as energy and water, they are seldom applied to stabilise resource use in a physical sense, although there are exceptions. Furthermore the direct and indirect requirements for energy, water and land are directly related to per capita expenditure;
- As per capita expenditure grows, so too does the resource quotient required for the sum total of goods and services included in measures of total personal consumption;
- The 'rebound effect', where efficiencies gained in one sector give savings (in resources or money) that inevitably migrate to stimulate resource use in another sector.

Therefore, while technology can be a powerful ally, it will struggle to reach its full potential under the current structure and function of Australia's economic and social system. As the population and the economy grow, so too will the physical transactions required to underpin economic success.

5. Direct and indirect effects of population influence

To effectively manage the effect of population growth on resource and environmental outcomes, the population issue in Australia was identified as having four levels or tiers of influence.

The first level is the direct influence. More people consume more energy and materials and thereby produce more waste and emissions. The primary influence has been reasonably well documented over the last 30 years. Under all population scenarios, the study concluded that, barring unforeseen catastrophes, Australia has enough land, water, and energy to provide food and a moderate lifestyle for all its citizens out until 2100. However there will be significant pressures on marine fisheries and domestic stocks of oil and gas.

The second level of population influence is driven by discretionary, rather than obligatory, lifestyle factors. Rising affluence and its effect on consumption patterns is a strong driver of modern economies, some of which are exiting the industrial economy and entering the service or new economy. However, affluence is underpinned by energy and material transactions which increase as discretionary spending rises. Rising affluence is one contributor to rising resource use, even in the low scenario where population is declining. Technical innovation must continue to outrun lifestyle requirements, if material and energy use are to stabilise.

International trade in goods and services drives the third level of population influence. Most nations have export industries to pay for imports. In a modern consumption driven economy, import volume is related to population size, its growth rate and its per capita affluence. Many of Australia's commodity and manufacturing industries are export focused with only part of their production being consumed domestically. The outcomes of total production, be they profits, jobs or regional development, still flow back to the domestic population, at least in a theoretical sense.

The fourth level of population influence is driven by international debt levels. Long-term investment funds flow in to assist project development and the expansion of industry and infrastructure. Whether this happens in anticipation of, or in response to, population growth, was considered a moot point and the real answer is probably both. Failure to balance the costs of imports and exports, the third population influence, is another contributor to international debt as the nation borrows to fund its current account deficit.

The authors concluded that much media and policy analysis tends to ignore the second, third and fourth levels of the population debate.

6. Resource and environmental issues of concern

Direct population effects (the more people the bigger the issue) are important in three resource and environmental quality areas. These were:

- Australia runs a sizeable deficit in the volumetric account of its fish trade while some of its marine fish stocks are considered over utilised. As population grows, per capita consumption is also expected to grow, bringing more tensions

between volumetric supply and demand. Although managerial and technological responses are well underway, the response times are usually long and Australian waters are relatively unproductive by world standards. Pressure on fish stocks globally and in international waters near Australia, will increase with the steady expansion of consumer demand in developing countries, where disposable income and population are growing strongly. Part of this pressure will occur in Australian waters.

- Modelling of domestic oil stocks shows some parallel with the fisheries situation. The study highlighted a growing gap between domestic oil production and domestic requirements past 2010. The higher the rate of population growth, then the bigger the gap will grow. Imports will fill the gap in the medium term, vast new petroleum provinces could be discovered and a new generation of fuel miserly vehicles could penetrate and dominate the vehicle stock. Other fuel sources such as natural gas, oil shale and biomass could be developed. In the 50-year timeframe, alternatives to cheap oil pose large, though not unsurmountable challenges of transition. The higher the population, the larger the challenge.
- Air quality in the airsheds of capital cities could decline substantially if population and car use grow strongly, especially given that circulation patterns to disperse air pollutants are relatively ineffective in city airsheds. Better car engines, cleaner fuel, car free days and more public transport will all help. However, world-wide trends suggest that delivery vehicles and articulated trucks, central to the 'just-in-time' service economy, will counteract emissions saved by the better cars.

The study did not link the problems of agricultural lands, biodiversity depletion and the water quality of inland rivers directly to the primary population effect. Rather, these were due to the third level of population influence, our export industries. Most countries export goods and services to pay for imports. In a consumer driven economy, imports are strongly linked to population issues, but moderated by a range of volatile shorter-term issues such as currency exchange rates.

The authors were surprised that the study found that water availability is not likely to be a constraining factor under any of the population scenarios, provided that big changes occur over the next 50 years. Although it was noted that water is almost as important as energy as a precursor to social advancement and economic growth, the volume of water is sufficient and a wide range of opportunities exist for innovation, both institutional and technological. To make physical space for the repair of southern water systems, scenarios that expand irrigated agriculture in northern Australia were developed. It was noted that this carries the same risks as the southern experience over the last century unless new technological and institutional innovations are implemented.

7. Management of slow moving variables (stocks versus flows)

Greenhouse gas issues and immigration issues have much in common. Most attention currently focuses on the flows (immigrants and greenhouse gas emissions) rather than the stocks (domestic population size and age, total complement of machines that use energy) that control those flows. This reality leads to an important theoretical point that has emerged throughout the study. Most systems in the world, be they natural or human made,

usually seek to maintain a measure of robustness or resilience. For example, forests store their nutrients in biomass, workers invest in superannuation and nations have constitutions. Resilience allows those systems to both innovate and take new directions, as well as being able to resist shocks.

The size or structure of the slow moving variables (the stocks) in relation to the demands of the faster moving variables (the flows) determines the degree of resilience. In population terms, the slow moving variable is the population size (changes only slowly) and the faster moving variables are the births, deaths, emigrants and immigrants (variations year to year) that determine the rate at which the stock will change. The slow moving variables govern all the important issues linked to population outcomes in this study. It was concluded that Australia is poorly placed to understand such issues in aggregate, with some notable exceptions.

In examining technical innovation through the stock of houses and cars, the analytical outcome suggests that better cars and better houses will have little moderating effect on total energy use and subsequent greenhouse emissions. If vehicle and housing policies are to affect future energy use, then each year's complement of new houses and new cars must meet the highest, rather than the average, technical standards. Only then will the technical characteristics of the stocks (and thence the flows driven by the stock characteristics) be improved over timescales of 20 to 40 years.

Without a focus on the slow moving variables, it was considered that policy design for the physical economy is running blind. As an example of a slow moving variable, the demographic focus on population ageing with 50 year timeframes is appropriate. The same focus and timescale should be applied to most sectors of the physical economy. Policy design for guiding the slow moving variables is probably best left to government, while the discipline of the market is probably better at managing the fast moving flows.

8. Challenges for the low population scenario

A number of environmental and political advocates who see that population stability, or even population shrinkage, might lessen pressures on resource use and environmental quality advocate the low population scenario (20 million people by 2050 driven by an assumption of zero net immigration).

Within the assumptions and methodology used in this study, a lower population size and the beginning of population decline allowed a range of environmental quality issues (emissions in the airsheds of capital cities) and resource use issues (household water use) to stabilise. Total greenhouse gas emissions were lower and physical trade balance was higher. The per capita material flow account was also higher (because of the dominating influence of international trade and fewer people).

The key challenges in this scenario relate to rapidly declining population after the year 2100, a larger proportion of aged citizens and the possibility that health care and pensions systems will not be able to cope. Under the scenario assumptions, the population declines in many rural areas and key sectors of the economy such as building and motor vehicles

stabilise. Other analyses suggest that the size of the labour force may not be sufficient to ensure both the maintenance and expansion of key sectors of the economy. It is suggested that without substantial structural change, maintaining economic growth in a declining population could be difficult.

Countries already further advanced in the transition to an ageing population than Australia may already have solutions to the problems presented by this scenario. Many of the problems may even disappear as the nation adapts to issues, long before they become critical. The low scenario could also stimulate home-grown innovations that could be turned to the nation's economic, social and environmental advantage, since the rest of the developed world will eventually be travelling along similar transition pathways.

9. Challenges for the medium population scenario

The medium population scenario (25 million people by 2050, driven by an assumption of 70,000 net immigration per year) represents the status quo and the average policy position of the past decade. Apart from its federal policy origins, a range of analysts and social commentators support this scenario, as rational in a demographic sense, practical in maintaining a balance between the economic and social aims of an immigration policy, and helping to maintain the contribution of population growth to economic growth.

The key element of this scenario is a stabilisation of population size that occurs after 2050. Even with stabilisation though, resource use and environmental quality issues keep growing due to scenario assumptions of non-revolutionary technological progress and growth in personal affluence, export trade and inbound tourism.

The medium scenario projects the past 50 years onto the next 50 years. Thus it is sufficiently comfortable to avoid major decisions that might be forced by population decline in the low scenario, or rapid population growth in the high scenario. Its key challenge is to move from relative inactivity, into aggressive and positive action on several major fronts. For example, the authors ask - how does the nation enable major investment to proceed in parallel on marine fisheries, biodiversity, land degradation and inland river quality? How do capital cities restrict edge growth while re-inventing urban transport and energy systems to provide low carbon transport and energy services with reasonable equity? How could the nation's endowments of domestic oil and gas stocks be diverted past short-term personal consumption into innovative capital stocks that produce low carbon electricity and transport fuels for subsequent human generations?

There is a very real possibility that a moderate sized and stable population, reasonably endowed with natural resources, could manage a physically intensive economy with steady adaptation, to the national and international advantage of its citizens well into the future. This may be unlikely, however, given the current success of information rich economies versus commodity based economies.

10. Challenges for the high population scenario

A range of business leaders, past and present politicians, economic analysts and technological optimists who promote the advantages of growth and size support the high population scenario (32 million people by 2050, driven by an assumption of net

immigration per year of two thirds of 1 %)

Continuing growth is the key element of this scenario with an eventual population of 50 million by 2100. While the resource use and environmental quality issues are more challenging than in the other scenarios, some ageing issues are moderated in a proportional sense. Possible constraints to the size of the labour force are avoided and with them, various dependency ratios that relate numbers of nonworkers to workers. Melbourne and Sydney become megacities of 10 million people by 2100, with possible constraints to their resource requirements and efficient functioning.

The key challenge for the high population growth scenario is coping with accelerating growth without a detailed national 'flight plan'. This 'flight plan' should ensure that material and energy issues do not interact to stimulate a hyper-materiality. The co-evolution of material production and skills to ensure that key physical elements actually appear on time and to specification is critical, given difficulties seen in major projects currently, and the experience of re-building East Germany. Along with the challenge of just making it happen, the dilemmas of resource use and environmental quality, already a challenge for low and medium scenarios, must be solved with faster moving trajectories. The balance of trade deficit for oil (by 2020) and natural gas (by 2040) becomes more critical and keeps growing to 2100 and beyond, in the absence of fuel transitions that are not as yet contemplated in policy and industrial circles.⁴²

5.0 THE POPULATION GROWTH OF SYDNEY

5.1 The ABS Population Projections for New South Wales and Sydney

As noted on page four in this paper, the Australian Bureau of Statistics developed population projections from 1999 up to 2051. The population growth rate for New South Wales for the five years preceding 1999 varied between 0.9 and 1.3 percent annually. Over the life of the projections it is expected that the rate of population growth in the State will decline steadily. However, changes in level of net overseas migration has the biggest effect on the population of New South Wales in all of the different projections of the Bureau. For instance, if fertility and interstate migration levels are held constant, the use of the high instead of the low net overseas migration assumption could change the size of the population in 2051 by between 1.1 and 1.2 million.⁴³

The Bureau projected the following for New South Wales and Sydney:

⁴² CSIRO, *Future Dilemmas. Options to 2050 for Australia's population, technology, resources and environment*. Report to the Department of Immigration and Multicultural and Indigenous Affairs. October 2002.

⁴³ Australian Bureau of Statistics, *Population Projections Australia, 1999 to 2101*, August 2000, at 20.

Table 5: Population Size (millions) for Sydney and New South Wales.⁴⁴

	30 June 1999	As at 30 June 2021			As at 30 June 2051		
	Actual	Series I	Series II	Series III	Series I	Series II	Series III
Sydney	4 041.4	5 143.2	5 039.7	4 986.9	6 215.8	5 857.8	5 704.7
Balance of NSW	2 370.3	2 696.0	2 560.7	2 493.7	2 785.8	2 390.0	2 206.0
Total	6 411.7	7 839.2	7 600.4	7 480.6	9 001.6	8 247.8	7 910.7

The projections show that using the ‘mid case scenario’, Sydney is projected to have a population of just under six million people by 2051.

5.2 Sydney and the Results of the 2001 Census

The 2001 Census recorded 3,455,110 people living in Sydney, excluding overseas visitors. This was 54.7 percent of the population of New South Wales. The population of Sydney, including overseas visitors, grew by 6.5 percent between the 1996 and 2001 Censuses – representing an annual average increase of more than 213,000 people. Most of the areas of population increase were in the outer regions of Sydney where new housing was developed. These included suburbs in the local government areas of Penrith, Blacktown, Liverpool, Campbelltown and Camden in the outer west and south-west, and Baulkham Hills in the north-west. Suburbs within the Sydney, South Sydney, Botany Bay and Hunters Hill local government areas also experienced substantial population increases, affected in part by increases in medium or high density housing. Population decreases occurred in older, established suburbs which were experiencing an ageing population.⁴⁵

At the 2001 Census the average household size in Sydney was 2.7 people, compared to 2.8 people in the 1996 census. Sydney recorded the largest average household size of all Australian capital cities in 2001. At the 2001 Census there were 921,352 employed people in Sydney who travelled to work by car. This was 64.5 percent of employed people, compared with 65.1 percent in 1991. Using a car to travel to work was most prevalent in the outer western and south-western suburbs of Sydney, as well as high levels found in suburbs along the northern beaches. Conversely, the Census recorded that 326,732 employed people in Sydney travelled to work on public transport – almost one quarter of all employed people (22.9 percent). This was the same proportion as in 1991. The use of public transport to travel to work was strongly influenced by the proximity of railways. Inner city suburbs such as in the inner west, lower north shore and eastern suburbs, with ready access to various forms of public transport, also recorded more than 42 percent of employed people using public transport to travel to work.⁴⁶

⁴⁴ Australian Bureau of Statistics, *Population Projections Australia, 1999 to 2101*, August 2000, at 17.

⁴⁵ Australian Bureau of Statistics, *Sydney, A Social Atlas. 2001 Census of Population and Housing*, 2002, at 6.

⁴⁶ Australian Bureau of Statistics, *Sydney, A Social Atlas. 2001 Census of Population and*

5.3 The Demography of Sydney

It has been argued that as Sydney takes on more of the characteristics of a global city, the consequence is population growth. Most of the ‘new economy’ jobs – such as financial services, information technology, and global trading tend to be concentrated in the big cities. As these jobs expand in number, it is therefore to be expected that the populations of Sydney (and Melbourne) will also continue to grow. Another feature of these ‘new economy’ jobs is that they are dominated by younger people. The big cities are now drawing young people in their twenties from all around Australia – and in fact Sydney and Melbourne are attracting people from Canberra, Tasmania, Brisbane and New Zealand. High in-migration of young people means that these cities become younger than other places in Australia, creating a momentum for future population growth.⁴⁷

However, McDonald and Kippen acknowledge that the main source of future population growth will be in the older ages – as the baby boom generation already living in Sydney grow older. Given the inevitable future population growth of the group 50 years and older, if Sydney’s total population were to remain constant, as advocated by many people, this would imply a sharp fall in the numbers aged under 50. This would eventuate only if Sydney were no longer a global city attracting young people – and indeed it would imply that Sydney’s young people would be leaving to go elsewhere, and McDonald and Kippen suggest that this ‘elsewhere’ would not be somewhere else in NSW. Loss of Sydney’s status as a global city would be disastrous for its economy, and therefore it can be expected that governments will be attempting to maintain and enhance its reputation. The consequence of this is population growth.⁴⁸

McDonald and Kippen then describe some future demographic trends for Sydney, and use these to forecast the Sydney population in the years 2009, 2039 and 2049. The demographic trends are as follows:

Future Levels of Fertility: Sydney in 2000 had a total fertility rate of 1.73 births per woman, which was, after Darwin, the highest fertility rate of any capital city. This high fertility rate is due to the high fertility of recent first generation immigrants from the Middle East and Pacific countries. However, the range of options for future fertility in Sydney is probably around 1.5 to 1.7 births per woman. Higher fertility is considered unlikely in a large ‘new economy’ city because of the wages that will be available for women. Lower levels are likely to be averted in the longer term due to the introduction of family / work support policies, which have shown to stabilise fertility around 1.7 births per woman in countries such as France, The Netherlands and Nordic countries. The authors stress that it is important to realise that the moderate range of future fertility rates (1.5 to 1.7) constrains

Housing, 2002, at 62.

⁴⁷ McDonald P and Kippen R, ‘Scenarios for the Future Population of Sydney’, *Australian Geographer*, Vol 33, No 3.

⁴⁸ McDonald P and Kippen R, ‘Scenarios for the Future Population of Sydney’, *Australian Geographer*, Vol 33, No 3, at 264.

the range of future population options for Sydney.

International Migration: Sydney constitutes about one-fifth of Australia's population but recently has received around two-fifths of Australia's net overseas permanent and long-term migration. Hence, any change in the number of overseas migrants coming to Australia has a much greater impact on Sydney than on Australia as a whole. When net migration for Australia is 90,000 (about the level of recent years), net overseas migration to Sydney is 34,000. If net overseas migration rises to 110,000 per year, the Sydney component would be about 42,000 per annum. McDonald and Kippen write:

While the NSW Premier calls for the diversion of international migrants away from Sydney, past schemes to attract international migrants to other places have been less than successful. Furthermore, there has been a shift in the migration stream to long-term temporary migrants and away from permanent migrants. The long-term temporary stream is highly likely to go to Sydney because of its status as an international financial and educational centre. Thus, there seems little likelihood that the attraction of Sydney for international migrants is about to abate.⁴⁹

Internal Migration: The level of net internal migration for Sydney is much less predictable than fertility and international migration. One school of thought is that as more people come from overseas to live in Sydney, more Sydney residents leave for other places in the State or Australia, due to the increase in housing costs. Another theory is that movements in and out of Sydney are a function of the business cycle, as the peak movement out of Sydney in the last 30 years has been during times of recession. McDonald and Kippen used two scenarios for their population projections: a gain of 22,000 people per annum, consisting of a net international migration gain of 34,000 and a net internal loss of 12,000 (ie, a continuation of the present situation); and the second assumption, a gain of 34,000 per annum, based on net overseas immigration to Australia rising to 110,000 and the internal migration out of Sydney reduced from 12,000 to 8,000.

Mortality

The projections used were the same as that by the Australian Bureau of Statistics, where it is assumed that by 2049 males have a life expectancy of 83 years and 86 years for females.

With these demographic trends in place, the authors used four different scenarios to forecast Sydney's population up to the year 2049. It was found that:

- under all scenarios the population becomes markedly older, with the proportion of population aged 65 and over increasing from 12 percent in 1999 to 23-25 percent in 2049;
- under all scenarios, the population grows substantially from four million in 1999 to at least 5.7 million in 2049. At the end of the projection period, Sydney's population is still growing from 14,000 to 40,000 per year;
- the total populations in 2049 range from 5.7 million to 6.8 million, according to the

⁴⁹ McDonald P and Kippen R, 'Scenarios for the Future Population of Sydney', *Australian Geographer*, Vol 33, No 3, at 267.

assumptions used. The lowest projection results in an increase in Sydney's population of 1.7 million over the 50 year period.

However, a projected increase in the population of Sydney is only part of the picture. It is also important to project the number of households rather than the number of people per se. According to Australian Bureau of Statistics projections, between 1996 and 2021 Sydney gains 980,000 people but 560,000 households – the rate of household growth is faster than the rate of population growth.

McDonald and Kippen then ask where these half a million plus new households are going to be located. They note that young one and two person households have already expressed a strong preference for inner-city, medium density and high density housing – driven partly by the continual deferral of childbearing. They suggest that these young one and two person households will gradually spread out from the inner areas to the next circle as prices rise in the inner city – fuelled by the growing numbers of temporary international migrants. The continued redevelopment of old industrial sites within ten kilometres of the city, such as has happened along the Parramatta River, is likely to provide much of the housing which is needed.

However, McDonald and Kippen note that a vital cog in the housing matrix of Sydney is the decisions of the baby-boom, empty nest couples. If they leave Sydney altogether, or relocate into new inner city medium density developments, this would free up suburban houses for families with children, reducing the need for new greenfield developments. However, to-date there is little evidence of major relocation among empty nest couples, and the authors suggest that most of them will stay in their present houses in the suburbs that they are 'attached to'. This means that as the younger generations form relationships and have children, they will be looking for houses in the suburbs close to where they grew up – and satisfying this demand will be a problem.

McDonald and Kippen conclude that planners have little choice but to plan Sydney for a future with six million people in 50 years time – and that a master plan for infrastructure for this development would be useful to assess where problems are likely to arise.⁵⁰

5.4 Sydney Housing Supply

The Metropolitan Development Program of Planning NSW co-ordinates the planning, funding, servicing and development of all major new residential projects in the Sydney – Central Coast – Illawarra regions. This includes urban renewal and greenfield release areas. The main functions of the program are to:

- Manage land supply to meet new housing needs from urban renewal and greenfield sites in Sydney;
- Coordinate the planning and funding of physical and human services to new housing areas.

⁵⁰ McDonald P and Kippen R, 'Scenarios for the Future Population of Sydney', *Australian Geographer*, Vol 33, No 3, at 279.

Planning NSW notes that the past five years have seen the strongest period of sustained population growth in Sydney since the 1960s. Between 1996 and 2001 the population of Sydney grew by over 273 000 people, or 54 700 people per year. In 1999, the forecast population was for 4.5 million people by 2013. This population is now expected to be reached around 2010. The demand for additional housing also comes from growth in the number of households, as the average number of people per household falls. The average size of households in the Sydney region fell from 2.9 persons per household in 1981 to 2.7 in 1996. This fall has created demand for an extra 100,000 dwellings in this period. Assuming net annual migration of 100 000 people annually, Planning NSW predicts that Sydney will require an additional 27,000 dwellings a year in the period 2001 – 2016.⁵¹

In terms of housing supply, the forecast dwelling completions for the Sydney region indicates that in the next five years, 139,395 dwelling will be completed (an average of 27,800 per year). Of these, 85 percent of dwellings completed are forecast to be multi-unit dwellings. Planning NSW has divided the Sydney region into four descriptive areas: an inner ring (established area); a middle ring (established area); an outer ring (established area); and an outer ring ('greenfield' release areas). Table 6 below shows the characteristics of the projected housing supply in each of these areas.

Table 6: Forecast Net Dwelling Increase – Dwelling Type for the next five years

Sub region	New housing supply in 5 years	Detached Houses (%)	Multi-unit (%)	Others (%)
Inner ring	32, 460	1 %	98 %	1%
Middle ring	39, 425	8 %	8 %	2 %
Outer ring (established)	32, 930	23 %	71 %	6 %
Outer ring (Greenfield release areas)	34, 580	94 %	5 %	1 %
Sydney region total	139, 395	32 %	66 %	2 %

Of the net dwelling increase in the Sydney region in the next five years: 23 percent of dwellings are forecast to come from the inner ring (compared to 24 percent last five years); 28 percent in the middle ring (22 percent last five years); 24 percent in the established outer ring (26 percent last five years); and 25 percent in the outer ring 'greenfield' release areas (28 percent last five years). Over 50 percent of the total forecast housing supply is expected to come from ten local government areas, out of 44 in the Sydney region. The top ten local government areas are shown below.

⁵¹ Planning NSW, *Managing Sydney's Urban Growth. Residential forecasts – summary report*. 2002 Metropolitan Development Program 2002.

Table 7: Top ten housing producers

Council	Sub-region	Housing supply in next 5 years
South Sydney	Inner Ring	11, 140
Blacktown	Outer Ring	9, 680
Baulkham Hills	Outer Ring	8, 990
Sydney City	Inner Ring	7, 470
Camden	Outer Ring	6, 390
Wyong	Outer Ring	6, 230
Parramatta	Middle Ring	5, 770
Penrith	Outer Ring	5, 570
Canada Bay	Middle Ring	4, 695
Rockdale	Middle Ring	4, 350

In the outer ring ‘greenfield’ release areas, over the next five years about 33,145 lots are likely to be produced, with an average annual production of 6,629. The average for the last 21 years has been 7,400 lots. In the Sydney region, the total land potential of release areas currently identified as Metropolitan Development Program greenfields is estimated as 147, 294 lots. Of these, 81,620 lots are identified in the Program, whilst 65,674 lots are in potential release areas. Of the 147,294 lots identified, 27,040 are considered available for subdivision (ie, they are serviced and zoned appropriately), while 38,874 lots have short term potential and are expected to become available for subdivision in the next five years. The remaining 81,380 lots are in the long term category – where progress with servicing, zoning and staging is anticipated to take place beyond the next five years.⁵²

6.0 GOVERNMENT RESPONSES TO INCREASED IMMIGRATION AND SYDNEY POPULATION GROWTH

With Sydney already facing problems of urban development, New South Wales Premier Bob Carr has been critical of the Commonwealth Government increasing the migrant intake to 110,000 per year. He said this decision will translate into more pressure on growth in the Sydney basin. The Premier was reported as saying: “Experience has shown that people once in Australia gravitate to its biggest, economically most dynamic and culturally most diverse city, and that’s Sydney... We don’t want to end up with the densities of Brooklyn and we don’t want the sprawl of Los Angeles. I like our lifestyle. I like Sydney with lower densities. So do 90 percent of the population in the Sydney basin... I think we were better off with the intake as existed before May; that is, with a national intake of 93,000 a year. I would like to see a national intake of about 80,000.”⁵³

⁵² Planning NSW, *Managing Sydney’s Urban Growth. Residential forecasts – summary report*. 2002 Metropolitan Development Program 2002.

⁵³ “Carr’s crush cure: cut immigration by a third.” in *The Sydney Morning Herald*, 26

In contrast, NSW Opposition Leader John Brogden MP stated that immigration at current levels was appropriate and said: “[Premier] Carr takes a head in the sand approach by simply saying that Sydney is full and not addressing the fundamental infrastructure planning and environmental issues that need to be addressed by the State Government...They have failed miserably in the area of infrastructure to deal with the problems we have now and they are doing no more planning to cope with two million more people.”⁵⁴

6.1 Encouraging new migrants to other capital cities and regions

Following a meeting between Minister Ruddock and Premier Carr over the impact of new migrants settling in Sydney, the two governments have formed a working party to develop mechanisms to encourage new immigrants to settle in other capital cities and regional Australia.

Directing migration into specific areas has more recently been done by way of State-specific Migration Mechanisms (SsMM). These Mechanisms are intended to permit State Governments to use aspects of the Commonwealth migration program to support their individual development strategies, including:

- Addressing skills shortages;
- Encouraging a more balanced dispersal of the skilled migrant intake; and
- Attracting overseas business people.⁵⁵

The main State-specific Migration Mechanisms are:

- Regional Sponsored Migration Scheme (RSMS): this has operated since 1995, and allows employers in regional Australia to nominate overseas workers for migration when the employer has been unable to recruit suitable skilled personnel through the local labour market;
- State/Territory Nominated Independent: since November 1997 State and Territory Governments have been able to sponsor ‘skilled independent’ category migrants who are willing to settle in specified areas where their skills are in demand;
- Skilled – Designated Sponsored: initiated in 1996 and revised in July 1999, Australian citizens and permanent residents in specified areas of Australia are able to sponsor skilled relatives for migration;
- Regional Established Business in Australia: a visa category established in July

November 2002.

⁵⁴ “Carr’s head in sand over city’s inevitable expansion: Brogden.” In *The Sydney Morning Herald*, 6 July 2002.

⁵⁵ Parliament of the Commonwealth of Australia, Joint Standing Committee on Migration, *New faces, new places. Review of State Specific Migration Mechanisms*, September 2001.

1997, allowing people to apply for permanent residence if, while on a long-stay temporary business visa, they have established successful business ventures in specified areas of Australia.

The Joint Standing Committee on Migration, in reviewing the above programs in 2001, generally supported their operation, whilst noting the relatively few migrants involved. For instance, the Regional Sponsored Migration Scheme was the most utilised of all the mechanisms, yet over four years from 1997/98 to 2000/01, it involved only 197 visa grants for New South Wales. Nationally, a total of 3,846 visas were granted under all the above mechanisms, which was 4.8 percent of the total number of migrants arriving outside of the humanitarian migration arrangements. However, the Committee noted that what might be a small intake nationally could have a significant effect on a small community.⁵⁶

Minister Ruddock has recently announced changes to encourage business migrants into regional areas. State and Territory Governments will be able to sponsor a four year provisional visa to business migrants, who will then be eligible to apply for permanent residence after they have successfully operated a business for at least two years, and have again obtained State or Territory sponsorship. The new arrangements take effect from 1 March 2003.⁵⁷ It is thought that the combination of the two hurdles will encourage migrants to remain in the State which initially sponsored them. The main objective behind the changes was to see a better dispersal of the business migrant intake to those States and regional areas that most wanted an increase. States will be able to have a greater influence over where business migrants settle, for instance making it easier for a migrant to get a visa if they establish their business in a regional area.⁵⁸

7.0 CONCLUSIONS

Population projections indicate that Australia is likely to have a population of around 25 million people by 2050, up from the present day figure of approximately 19 million. The population of Sydney will continue to grow, from 3.5 million currently to six million by 2050.

It is evident that the debate about the linkages between population and the environment has yet to be resolved. However, the challenges facing Sydney, as it will be almost doubling in population size within fifty years, are immense. It is clear that a 'whole of government' long term perspective is required to plan for a sustainable Sydney.

⁵⁶ Parliament of the Commonwealth of Australia, Joint Standing Committee on Migration, *New faces, new places. Review of State Specific Migration Mechanisms*, September 2001, at 24.

⁵⁷ Hon Philip Ruddock, Minister for Immigration and Multicultural and Indigenous Affairs, Media Release, *Regional Boost for Business Migration*, 26 February 2003.

⁵⁸ "Want a visa? Then stay away from Sydney." in *The Sydney Morning Herald*, 12 November 2002.