

DISCUSSION PAPER

Population growth and infrastructure in Australia: the catch-up illusion

NOVEMBER 2019

www.population.org.au



Sustainable Population Australia

Sustainable Population Australia (SPA) is an independent not-for-profit organisation seeking to protect the environment and our quality of life by ending population growth in Australia and globally, while rejecting racism and coercive population control. SPA works on many fronts to encourage informed public debate about how Australia and the world can achieve an ecologically sustainable population.

SPA Patrons



Dr Katharine Betts



Prof. Tim Flannery



The Hon. Bob Carr



Emeritus Prof. Ian Lowe



Dr Paul Collins

CONTACT SPA



www.population.org.au



www.facebook.com/population.org



Twitter: @SustPopAus



info@population.org.au



Sustainable Population Australia Inc.

DISCUSSION PAPER

Population growth and infrastructure in Australia: the catch-up illusion



Published by Sustainable Population Australia
ISBN-13: 978-0-6487082-0-9 (print) ISBN-13: 978-0-6487082-1-6 (digital)
© Sustainable Population Australia 2019

This work is copyright Sustainable Population Australia. All material contained in this work is copyright Sustainable Population Australia except where a third party source is indicated. Sustainable Population Australia copyright material is licensed under the Creative Commons Attribution 3.0 Australia Licence. To view a copy of this licence visit <http://creativecommons.org.au>. You are free to copy, communicate and adapt the Sustainable Population Australia copyright material so long as you attribute Sustainable Population Australia and the authors.

This report may be cited as: van Onselen, L., O'Sullivan J., and Cook, P.G. (2019). Population growth and infrastructure in Australia: the catch-up illusion. Discussion Paper. Sustainable Population Australia.

Cover images: © AdobeStock and iStock
Graphic design and layout: Ingrid van Grysen

This report is printed on recycled paper.

CONTACT SPA



www.population.org.au



www.facebook.com/population.org



Twitter: @SustPopAus



info@population.org

Foreword

Hon. Sandra Kanck
President, Sustainable Population Australia



Since the beginning of this century Australia has experienced unprecedented population growth. Its impacts upon congestion, housing affordability, environmental degradation and loss of amenity are obvious and the subject of ongoing media commentary. The major political parties, however, have shown a peculiar but perhaps predictable reluctance to identify population growth as a major cause of these predicaments. Their unwillingness to consider a reduction in population growth, specifically by means of a significant decrease in net overseas migration, puts Australia's political and policy elites out of step with public opinion.

Polls are repeatedly showing Australians are increasingly averse to this continuing growth; a 2018 ANU opinion survey found 69.6 per cent of Australians felt Australia did not need more people, a substantial increase from a similar survey in 2010. Despite Australians' concerns about our bulging-at-the-seams capital cities, our political leaders refuse to talk about the numbers, instead making vague claims about the benefits of a Big Australia.

“We must be able to talk about both the impacts of rapid population growth *and* whether a major reduction in the rate of that growth is not only desirable, but well overdue.”

The growth lobby – vested interests including property developers and now, regrettably, the university sector which has become dependent on revenue from overseas students – is determined to steer all conversations about population into how growth can be ‘managed’, rather than questioning whether the growth is either necessary or desirable in the first place.

Commentators criticise an inadequate level of infrastructure investment, while governments advocate yet again their so-called solution of ‘moving people to the regions’. But, whatever solution is proposed, it must not include talk about reducing population growth!

“Despite Australians’ concerns about our bulging-at-the-seams capital cities, our political leaders refuse to talk about the numbers...”

Australia must have a more informed, honest and comprehensive conversation about population, free from the limits imposed by the narrow conventional focus of mainstream political parties and by much of the mainstream media. We must be able to talk about both the impacts of rapid population growth *and* whether a major reduction in the rate of that growth is not only desirable, but well overdue.

Such a discussion ought not be about ‘blaming immigrants’, or be motivated by racism or xenophobia. Rather, the Australian community needs to have a discussion about what is an ecologically sustainable level of population for this continent.

No less a mainstream institution than the Productivity Commission, in its landmark *Migrant intake into Australia* report (2016), made a clear call for informed community engagement in the development of a population policy for Australia. The Commission accepted that population policy must include consideration of what is the appropriate level of immigration and population growth – according to community values and other relevant evidence.

Sustainable Population Australia is therefore delighted to launch the first of a series of discussion papers which address major issues relating to population, society, economy and the environment in Australia. We want these papers to stimulate informed community engagement and encourage real political leadership which is responsive to the concerns of the Australian community on these matters.

Contents

| | |
|---|----|
| Foreword | ii |
| Key Points | iv |
| Executive Summary | v |
| 1 Introduction: Australia's population growth is unprecedented | 1 |
| 2 Is decentralisation the answer? | 4 |
| 3 Mass immigration post-war versus now: the 'just build more' myth | 6 |
| 4 Australia's infrastructure backlog is massive and growing | 8 |
| 5 Dis-economies of scale: why infrastructure investment cannot catch up | 10 |
| 6 The death of the Aussie backyard | 13 |
| 7 With rising infrastructure costs comes higher cost of living | 16 |
| 8 Conclusion: is this the future we want to bestow upon our children? | 20 |
| Endnotes | 21 |

Key Points

1

Australia's population is growing by a number approaching, and sometimes exceeding, 400,000 people annually, the equivalent of adding a Canberra-size population each year. Net overseas migration (NOM) contributes more than 60 per cent of Australia's yearly population growth.

2

At these rates the ABS projects that by 2066, Sydney's (9.7 million) and Melbourne's (10.2 million) populations will each be comparable with the size of Australia's entire population in the 1950s.

3

This rapid population growth rate of about 1.6 per cent per annum results in Australia's infrastructure supply not keeping up with demand, despite our best efforts. Consequently, individual living standards are being eroded through rising congestion, declining housing affordability, growing infrastructure costs (e.g. toll roads and water), environmental degradation, and overall reduced amenity.

4

As the numbers of people arriving in our major cities increase to unprecedented levels, so does the cost and complexity of providing more infrastructure. Each additional person (whether by immigration or birth) requires well over \$100,000 of public infrastructure, to enjoy the same standard of living provided to existing residents. If that investment is not made (and it often isn't), then the pressures and demands upon existing infrastructure builds up, causing congestion.

5

With continuing rapid population growth, Australia's infrastructure catch-up will remain illusory. The backlog can only increase, further adding to congestion and loss of amenity.

6

Increasing infrastructure costs have created increasing costs for residents, such as tolls and user-pays charges and other costs which may be hidden. Household water bills are projected to more than quadruple in real terms in the next 50 years because of population growth and climate change.

7

In future, only the wealthiest residents in our major cities will be able to afford a detached house with a backyard, while the majority will have to live in cramped higher-density accommodation of questionable build quality and with little or no access to green space.

8

The rapidly reducing home ownership rate will ultimately leave many future pensioners starved of funds and reliant on the Federal Government for housing assistance.

9

Rapid population growth is actually a *cause* of bad planning outcomes. The sheer pace of change due to this rapid growth, and the strong pressures from big developer interests, create incentives for sub-optimal planning. This means inferior results in land-use zoning, aesthetics, environmental protection, quality of building design and construction, and social inclusivity.

10

A major reduction in the rate of population growth is necessary to relieve these compounding problems. That means a significant reduction in immigration, at least back to the long-term 20th century average NOM of 50-70,000 per year.

Executive Summary

Sydney and Melbourne now have worse traffic congestion than New York and Toronto. This congestion is just one symptom of an infrastructure shortfall caused by rapid population growth, fuelled by very high levels of immigration.

Living standards are being eroded, not just by congestion, but also through declining housing affordability, increasing costs for road and water use, environmental degradation, and overall reduced amenity.

Adding to the problem, new migrants have overwhelmingly chosen to reside in Sydney and Melbourne. If current policy settings continue, in less than 50 years, these two cities will have doubled their combined population size from 10 to 20 million.

With rapid population growth, Australia's infrastructure backlog can only increase. There *can never be* enough decentralisation, planning or investment to enable infrastructure to keep pace with increasing demands.

Instead of addressing population growth as a cause of the infrastructure shortfall and general loss of amenity, our political leaders offer two overarching myths:

Myth 1: We can just encourage more decentralisation

The current federal policy of sending migrants to the regions is doomed to fail, since there is nothing to actually keep migrants there. Most of them will head to the major cities once their mandatory time period is up.

There is also the problem of scarce water supply in Australia's regions. Towns like Tamworth and Dubbo cannot accommodate tens of thousands more people when they are already short of water. In addition, much of regional Australia is located far away from the ocean, meaning that desalination of seawater is not an option, and large-scale desalination of groundwater for inland towns is unlikely to be feasible or ecologically sustainable.

Myth 2: We just need to invest more in infrastructure and plan better

There have *already* been massive increases in infrastructure spending by all levels of government. It has added very significantly to state government debt. Despite spending more than ever before, Australia has failed to build enough economic and social

infrastructure to cater for rapid population growth caused largely by 15 years of hyper-immigration. As the numbers of people arriving in our major cities increase to unprecedented levels, so does the cost and complexity of providing more infrastructure.

Why infrastructure investment can never catch up

Each additional person added to the population requires well over \$100,000 of public infrastructure, to achieve the same standard of living that existing residents enjoy. Adding nearly a Canberra-worth of population to Australia each year requires several tens of billions of dollars of investment.

In already sprawling cities, the cost of retrofitting new infrastructure is very expensive because of the need for land buy-backs and tunnelling. For example, Melbourne's West Gate Tunnel is expected to cost 42 times more per lane-kilometre than NSW's Woolgoolga to Ballina highway upgrade.

Infrastructure backlogs will continue to grow under a Big Australia policy and, in turn, erode living standards.

Death of the Aussie backyard

Australia's large-scale immigration policy is transforming the structure of Australia's cities from lower-density detached housing toward high density. If present trends continue, detached housing, as a share of Sydney's dwelling stock, will decline from 55 per cent to 25 per cent in the 40 years from 2016.

In future, in Sydney and Melbourne only the wealthiest residents will be able to afford a detached house with a backyard, while the majority of residents will be forced to live in cramped accommodation, an increasing share of whom will also be renting and with little or no access to green space.

The design and build quality of some of the mushrooming high-rise in our cities is now under serious question. Residents of high-rise face the risk and anxiety of shoddy construction that is often hard, if not impossible, to rectify.

Increasing transport and water costs for consumers

To meet growing infrastructure costs, states have 'managed' them by shifting significant infrastructure

spending off balance sheets, for example, by privatising assets via Public Private Partnerships (PPPs). This has created increasing costs for residents, such as tolls and user-pays charges and other costs which may be hidden. Prime examples are the WestConnex toll road in Sydney and the West Gate Tunnel in Melbourne.

Sydney's toll road network is now the most expensive and extensive in the world, while Melbourne's West Gate Tunnel Project will permit tolls to rise by 4.25 per cent a year – well above inflation and wage growth. Private companies like Transurban enjoy massive revenue and profit growth.

The escalating cost of water is adding to the cost of living. Australia's major cities already have had to resort to recycling and desalination, raising average household water bills. Already facing lower rainfall and increased evaporation as a consequence of climate change, water supplies will need to be augmented still further if Australia's population continues to increase.

Household water bills are projected to more than quadruple in real terms in the next 50 years because of population growth and climate change, and are likely to cause significant hardship.

Conclusion: the need to reduce population growth

High immigration and a Big Australia are often sold by politicians, policy makers and vested interests as key ingredients to boosting Australian living standards.

The reality, however, could not be more different. After more than 15 years of extreme population growth, economic and social infrastructure across Australia's cities has become increasingly crush-loaded, leading to rising congestion and higher costs of living.

With Australia's population projected to hit around 43 million people in 50 years, these infrastructure bottlenecks will only worsen.

The fundamental driver of growth in Australia's population is the level of immigration. This is something that is within the direct control of Australian governments, not a fact of nature.

To end population growth and help solve the infrastructure problem, Australians must demand of their elected representatives a major reduction in immigration, at least back to the long-term 20th century average net overseas migration of 50-70,000 per year.

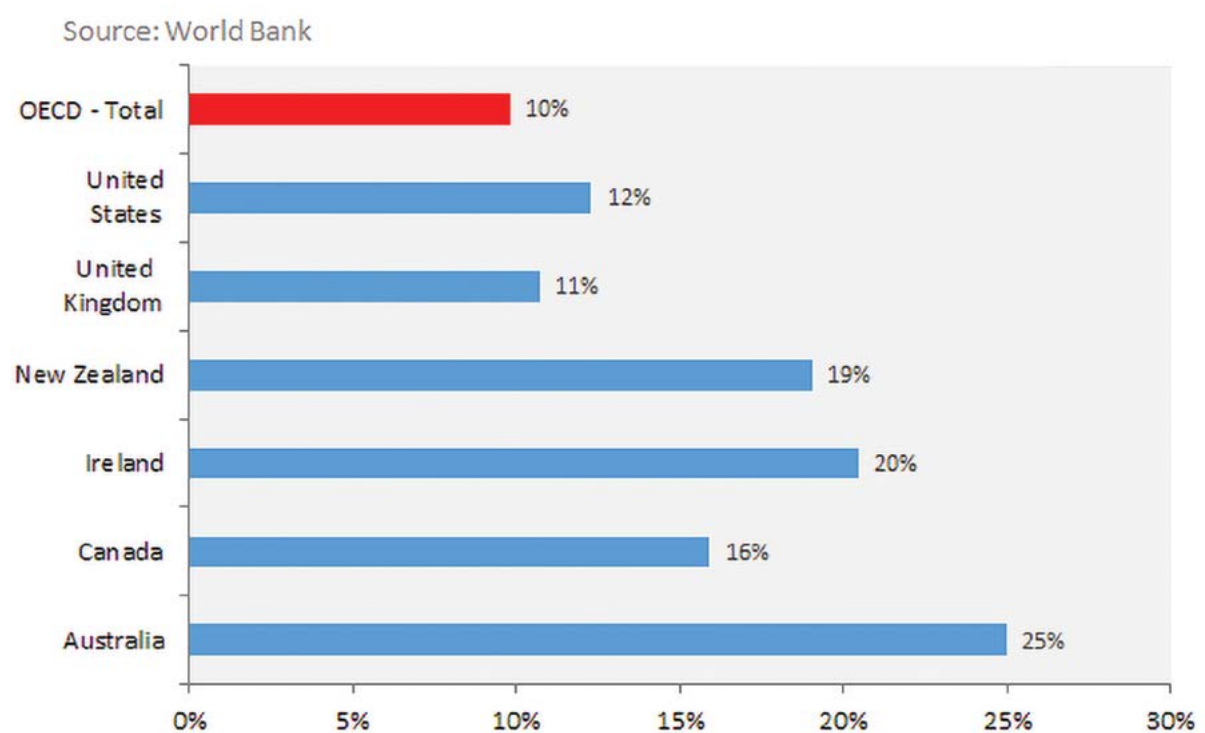
Introduction: Australia's population growth is unprecedented

One of the most profound changes affecting the Australian economy and society this century has been the massive lift in Australia's net overseas migration (NOM) and population growth under the multi-partisan Big Australia policy.

Net overseas migration surged from the early-2000s and is currently running at around triple the historical average in number terms. Australia's population is growing by a number approaching, and sometimes exceeding, 400,000 people annually, the equivalent of adding a Canberra-size population each year. NOM contributes more than 60 per cent of Australia's yearly population growth.¹

Australia's population has expanded at a rate that is 2.5 times the Organisation for Economic Cooperation and Development (OECD) average since 2003, easily the fastest of advanced English-speaking nations (see Chart 1).

CHART 1: Population change (2003 to 2017)



Australia's population at the time of writing in 2019 was 25.4 million people.² To give an indication of just how large Australia's population shift has been, in the year 2000 the Australian Bureau of Statistics (ABS) projected that Australia would not reach 25.4 million people until 2051!³ The main reason that reality deviated so far from this projection is that the Federal Government chose to accelerate growth through promotion of childbearing and vastly higher immigration quotas.

This rapid population growth is projected to continue for decades to come, if current policy settings favouring high immigration continue.

The ABS medium (Panel B) population projections,⁴ released in 2018, have NOM continuing at current strong levels (225,000 people a year) for the next half century, in turn driving all of Australia's projected 17.5 million population increase to 42.6 million people by 2066 (see Chart 2).

It should be noted that ABS provide three standard projection scenarios, including a lower scenario of 37.4 million and a higher scenario of 49.2 million. However, all scenarios assume a significant growth in population due to relatively high levels of immigration. In the absence of such high levels, Australia's population would gradually plateau.

Contrary to misconceptions in the media and elsewhere, a much lower immigration rate would not cause a calamitous (or indeed any) decline in Australia's population in the medium term. Australia's fertility rate of 1.74 babies per mother may be a little below the long-term replacement level, but because of our young age structure, births would still exceed deaths for several decades even in a scenario of zero NOM. If Australia were to have zero NOM from now until 2066, our population by then is projected to be 25.1 million, about the same size as it is now (see Chart 3).

It is clear, therefore, that major growth in Australia's future population size is dependent on the settings of the immigration policy lever. This is something that is eminently within the control of Australian governments – the level of immigration is a product of their policies, not a fact of nature.

Despite this, there remains a bi-partisan view (or multi-partisan if the Greens are included) that continuing high population growth is what Australians must endure, if not accept. The prospect that, based on this trajectory, Australia's population could reach as high as 60 million by the end of this century, does not appear to faze our political leaders.⁵ This is despite the evidence that this rapid growth is already worsening urban congestion, placing stress on services, reducing growth in incomes, and adding to environmental damage.

These population growth pressures have generated rising public concern about the ability of Australia's 'infrastructure' to keep up. It is not only roads and hospitals that need to keep pace with population growth, but all forms of public infrastructure, including schools, water, electricity and sewage supply, policing, law and justice, parks and open space, public transport, and much more.

CHART 2: Australian population change*

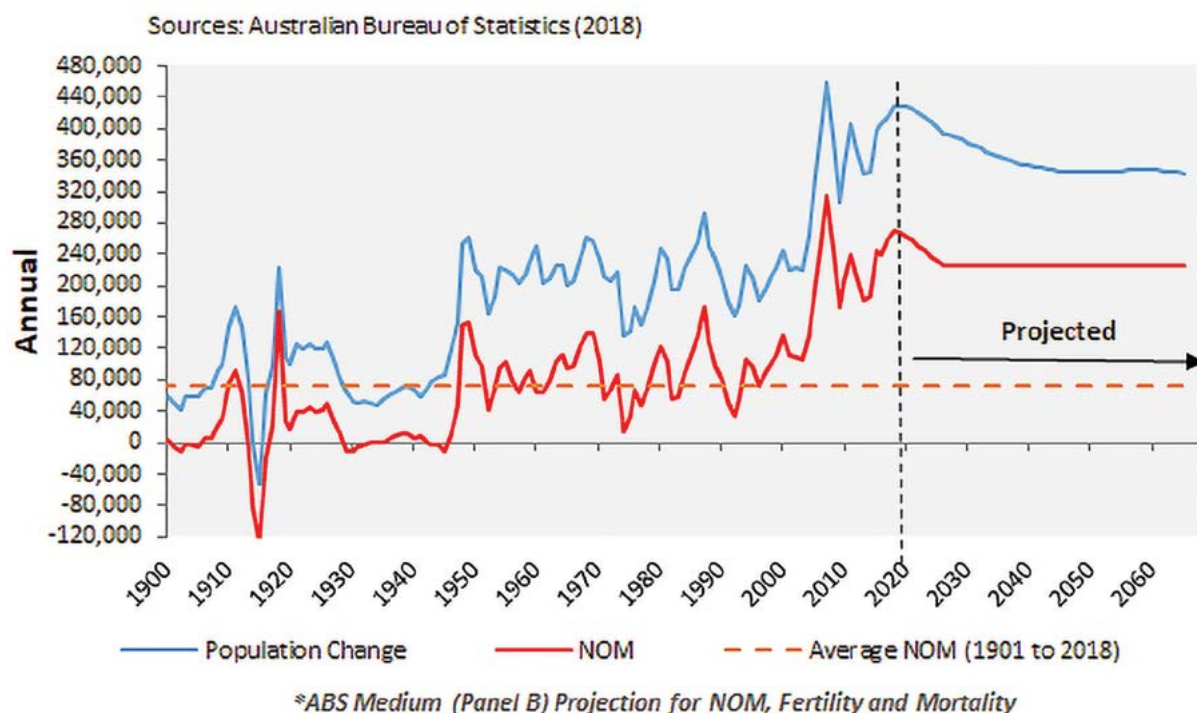
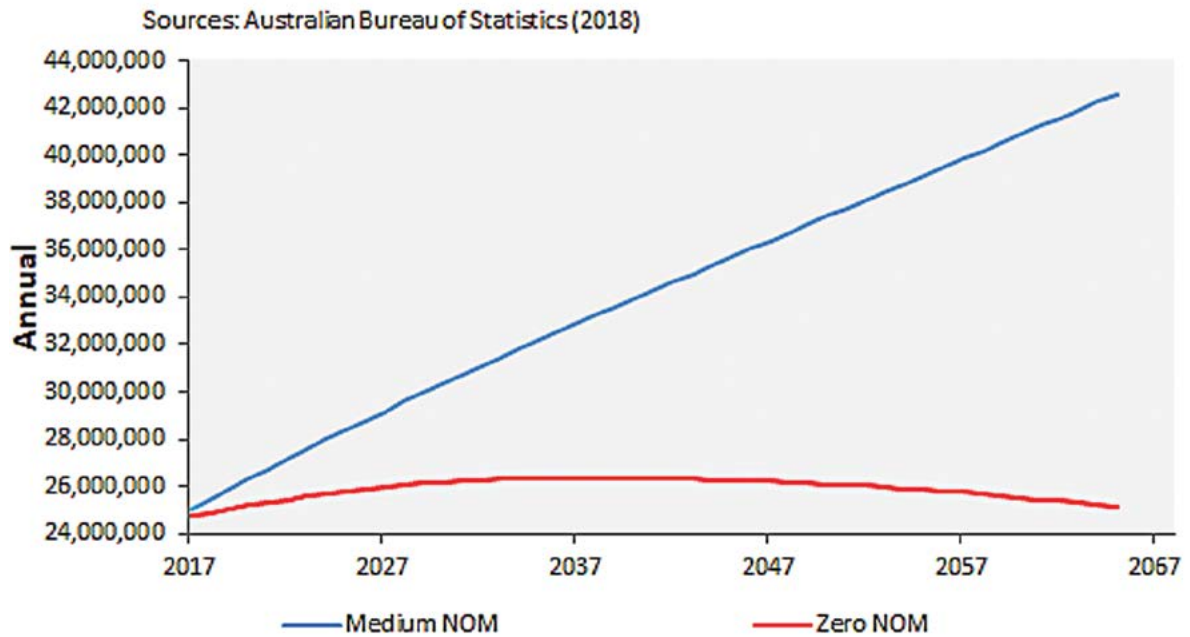


CHART 3: Australian population projections*

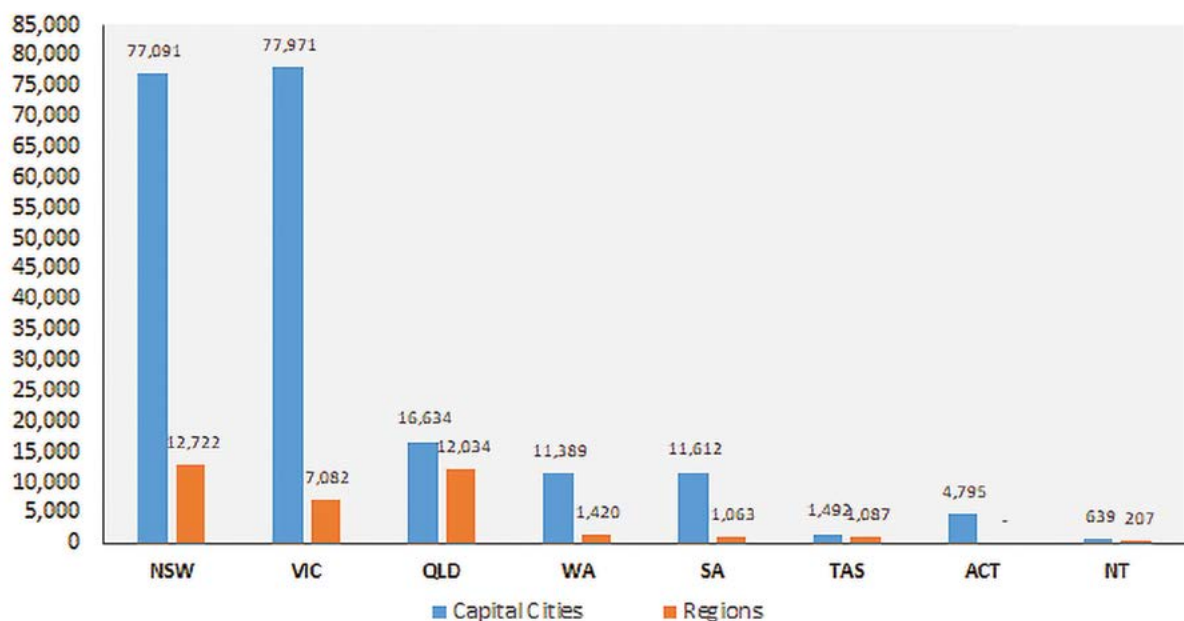
*ABS Medium (Panel B) Projection for Fertility and Mortality

Adding to the problem of rapid population growth, most new migrants have overwhelmingly chosen to reside in Australia's two biggest cities – Sydney and Melbourne.

The latest immigration settlement data⁶ from the ABS illustrates this situation clearly. In the 2017-18 financial year, 155,000 net overseas migrants settled in Sydney and Melbourne alone, representing 65 per cent of Australia's total NOM intake (see Chart 4).

CHART 4: Net overseas migration by jurisdiction (2017-2018)

Source: Australian Bureau of Statistics



Is decentralisation the answer?

Decentralisation to regional cities is regularly proposed as a solution to the population growth in our capital cities. For example, one recent report proposes a scenario in which up to 7 million potential future residents are ‘diverted’ to regional cities and towns by 2051. However, this thought-experiment conveniently excludes consideration of the costs of the infrastructure that would be required for such a massive change in settlement patterns, and the major disruption such a change would cause to communities as well as to ecological habitat and precious agricultural land.⁷ As recently noted by two urban policy specialists:

Any redistribution that is large enough to mitigate metropolitan congestion and growth issues will create similar infrastructure demands and population pressures in regional cities. If growth slowed in Melbourne or Sydney by 200,000 people over 20 years it would not markedly change those cities, but such numbers moving to Geelong or Wollongong would create huge disruption.⁸

Nevertheless, the current Federal Government has formulated a decentralisation policy aimed at diverting migrants away from the major capitals to Australia’s regions. This policy, however, is doomed to fail, since there is nothing to actually keep them there and most migrants will head into the major cities once their mandatory time period is up.

Indeed, recent Australian National University research on settlement patterns⁹ found that 60 per cent of migrants who moved to Australia’s regions subsequently moved to capital cities – primarily Sydney and Melbourne – within five years. The study concluded:

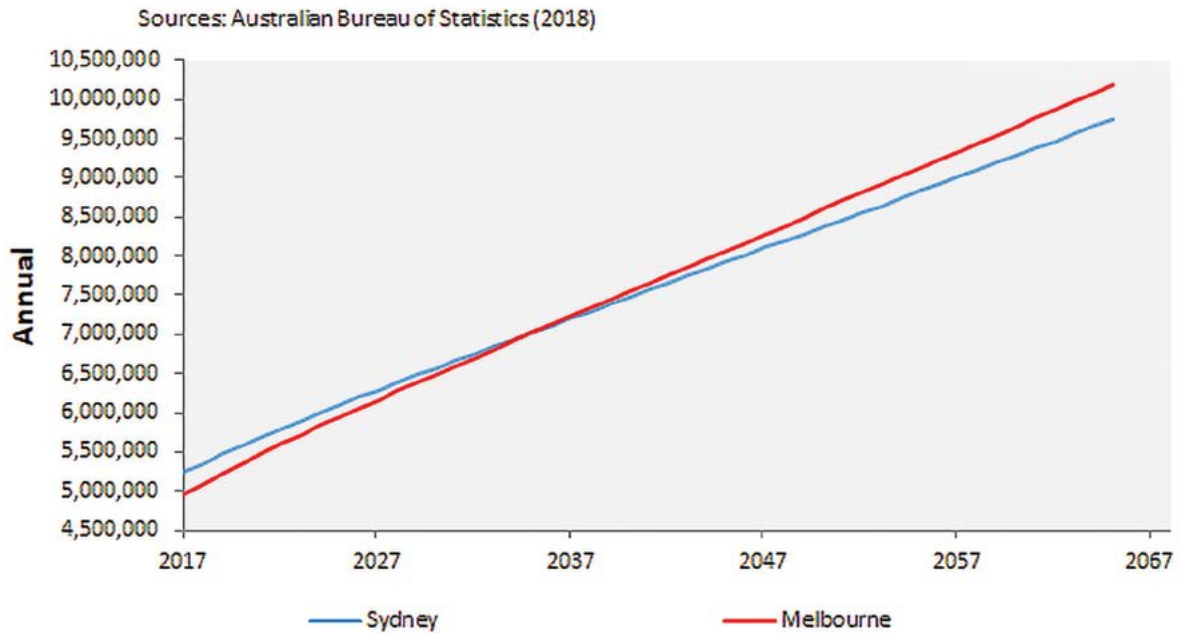
Our research demonstrated strong persistence over time in the high levels of out-migration from regional and remote areas. State capital city areas, especially Sydney and Melbourne, on the other hand, have not only attracted both immigrants and internal migrants, but they have increasingly retained them over time. The patterns for newer immigrant groups are exhibiting even more concentrated migration patterns towards capital city areas. Indeed, we found the proportions of out-migration from regional areas to be increasing over time for the Chinese-born and Indian-born populations.¹⁰

State-based migration programs have been systematically gamed¹¹, with migrants temporarily settling in places like the Australian Capital Territory and Tasmania purely to get the required number of points for permanent residency before moving to Sydney and Melbourne.

Even if a meaningful proportion of new migration could be diverted away from major cities, it is difficult to see how this would ease the burden of generating sufficient new infrastructure. In its 2019 Infrastructure Audit, Infrastructure Australia noted:

Infrastructure is more expensive to provide per unit of consumption in low population density areas, but communities and businesses in these areas are also more reliant on available infrastructure for their productivity and wellbeing.¹²

There is also the problem of scarce water supply in Australia’s regions, with large swathes of New South Wales¹³ and Queensland¹⁴ in drought at the time of writing, and severe water restrictions and other emergency measures in place.¹⁵

CHART 5: ABS population projections*

*ABS Medium (Panel B) Projection for Fertility, Mortality, and Interstate Migration

With this situation officially described as ‘critical’,¹⁶ how are towns like Tamworth and Dubbo realistically supposed to accommodate tens-of-thousands more people when they are already running dangerously short of water?¹⁷

Much of regional Australia is located far away from the ocean, meaning that desalination of seawater is not an option, and large-scale desalination of groundwater for inland towns is unlikely to be feasible or ecologically sustainable. This makes decentralisation an impossible pipe dream.

Reflecting the above realities, the settlement pattern of migrants into the major cities is projected by the ABS to continue indefinitely, as illustrated by Sydney’s and Melbourne’s populations projected (see Chart 5) to grow to around 10 million people each by 2066.

No matter how it is viewed, the population growth in Australia’s major cities is unprecedented. Australia’s immigration levels are well beyond what our cities can absorb and Australia’s infrastructure supply is not keeping up with demand, despite our best efforts.

The result is that individual living standards are being eroded through rising congestion costs, declining housing affordability, paying more for infrastructure (e.g. toll roads and water), environmental degradation, and overall reduced amenity.

The remainder of this report examines these issues.

Mass immigration post-war versus now: the ‘just build more’ myth

The proponents of Australia’s high mass immigration policy frequently argue that the solution to complaints about congestion is to simply ‘build more’ infrastructure as we did previously in the 20th century post-war period of high rates of immigration. This view is misguided for several reasons.

First of all we need to understand that Australia’s current situation is very different to the post-war period when we experienced similar or higher immigration rates. A quick examination of the data does indeed show that immigration rates were higher in the 1950s and similar in the 1960s (see Chart 6).

It is not only the immigration *rate*, however, that matters for infrastructure, traffic congestion, housing or the environment, but the *sheer numbers* of new residents, and how those numbers cumulatively create much larger cities and their associated footprints.

It was far easier to expand Sydney and Melbourne when their populations were 1.7 million and 1.3 million respectively in 1950, than it is at their current size of around 5 million. A constant immigration *rate* also infers an exponential increase in the *number* of migrants over time.

CHART 6: Immigration as a per cent of population

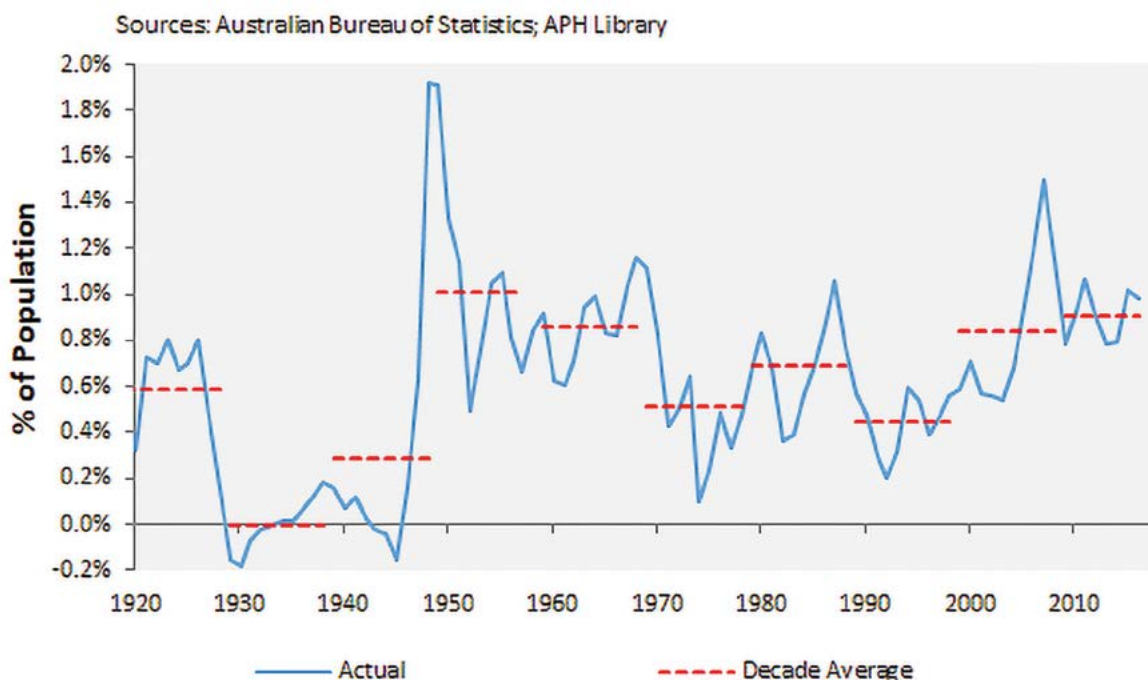


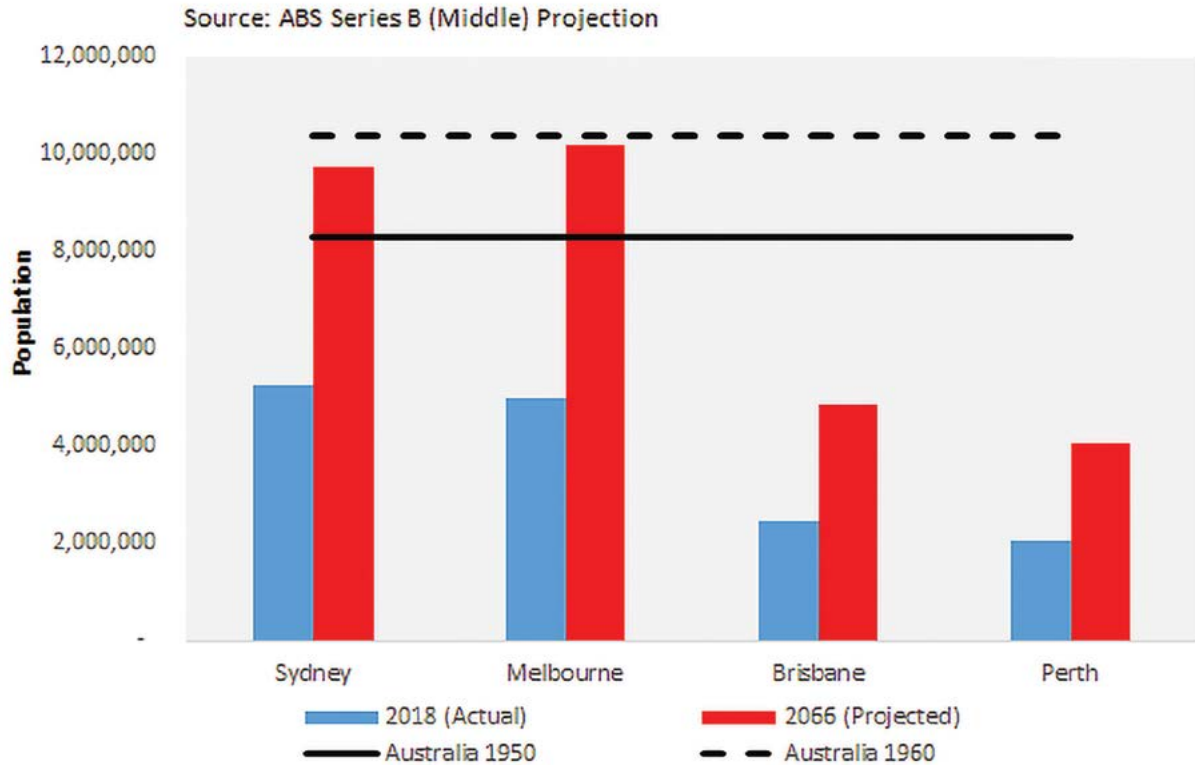
CHART 7: Capital city population projections

Chart 7 illustrates the fallacy of looking only at the immigration rate, while ignoring the numbers.

By 2066, Sydney's (9.7 million) and Melbourne's (10.2 million) populations are projected by the ABS to each be significantly larger than Australia's entire population in 1950 (8.3 million) and only slightly below Australia's population in 1960 (10.4 million).

The volume of population growth into Sydney and Melbourne needs to be put into perspective:

- It took Sydney roughly 210 years to reach a population of 3.9 million in 2001. Yet the official medium projection by the ABS has Sydney reaching roughly 2.5 times that number of people in only 65 years.
- It took Melbourne nearly 170 years to reach a population of 3.3 million in 2001. The official medium ABS projection, however, has Melbourne's population tripling that number in only 65 years.

In the face of these unprecedented numbers, the key difference between then and now needs to be underlined: unlike the post-war period, it is no longer easy to further expand the capacities of our largest cities. What was an abundant supply of cheap frontier land in the 1950s and 1960s is now well and truly built-out. Both cities are now sprawling metropolises with greenfield land in short supply. Ever-longer commutes erode productivity, and ever-greater distances between rich and poor neighbourhoods entrench disadvantage. New infrastructure investment necessarily requires costly solutions like land acquisitions and tunnelling. It is no longer easy or cheap to just build more.

Australia's infrastructure backlog is massive and growing

Fifteen years of rapid population growth has driven a massive infrastructure deficit across Australia's cities although estimates of this backlog vary significantly.¹⁸

For example, the 2013 *National Infrastructure Plan*¹⁹ produced by the Federal Government's advisory body, Infrastructure Australia, concluded that

we still face a significant infrastructure deficit, estimated at around A\$300 billion.

Infrastructure Australia's 2018 report, entitled *Planning Liveable Cities*,²⁰ found that Australia's infrastructure provision is failing badly to keep pace with rapid population growth:

Infrastructure delivery is struggling to keep pace with rapid population growth and change. Our largest cities are 'playing catch up' in delivering infrastructure to support population growth... Our infrastructure funding mechanisms have not kept pace with growth... Communities are increasingly disappointed by their experience of growth...

In its 2019 Infrastructure Audit report, Infrastructure Australia reiterated the failure to keep pace, noting:

By 2034, Australia's population is projected to grow by 23.7 per cent to reach 31.4 million, adding to infrastructure demand, while existing infrastructure struggles under maintenance backlogs and the condition of many assets is unknown.²¹

In 2010, Engineers Australia estimated Australia's infrastructure deficit to be \$700 billion. A follow-up report in 2018²² by Engineers Australia examined 10-year construction trends and concluded that infrastructure is

not keeping up with population and economic growth ... [following] almost a decade of underinvestment.

The International Monetary Fund's (IMF) latest *Article IV report on Australia*²³ similarly noted that Australia

has a notable infrastructure gap compared to other advanced economies

and that

there is an average forecasted annual infrastructure gap of roughly 0.35 percent of GDP through 2040 for basic infrastructure (roads, rail, water, ports), and an additional gap in social infrastructure (schools, hospitals, prisons), likely of a lesser magnitude.

The IMF also warned that:

gaps may also be opening faster than expected, given the greater-than-expected rapid population growth in Sydney and Melbourne.

The most publicly recognisable symptom of Australia's infrastructure shortfall is traffic congestion, which has progressively worsened across Australia's major cities.

The Bureau of Infrastructure, Transport and Regional Economics estimated²⁴ that congestion cost the Australian economy \$16.5 billion in 2015. Moreover, without major policy changes, congestion costs are projected to reach between \$27.7 billion and \$37.3 billion by 2030.

Infrastructure Australia, in its 2019 Infrastructure Audit, estimated that the annualised cost of traffic congestion and public transport crowding in Australia would rise from \$19 billion in 2016 to \$39.6 billion in 2031.²⁵ These congestion pressures will be particularly acute in Sydney and Melbourne. Infrastructure Australia further noted that:

This growth in congestion is in spite of significant investments in new transport infrastructure across our largest cities, particularly Sydney and Melbourne. ... Despite their scale, recent investments in transport infrastructure in our fast-growing cities is largely playing 'catch-up' rather [than] providing additional capacity that will support substantial future growth.²⁶

The *TomTom Traffic Index*²⁷, which benchmarked congestion levels in urban areas between 2008 and 2016, showed that travel times have steadily increased across Australia's largest cities, with Sydney and Melbourne experiencing the greatest deteriorations (see Chart 8).

According to TomTom, extra travel times when compared to free-flowing traffic rose in Sydney from 28 per cent in 2008 to 39 per cent in 2016, whereas in Melbourne excess travel times increased from 25 per cent to 33 per cent over the same period.

In a similar vein, the Australian Automobile Association's (AAA) latest *Road Congestion in Australia*²⁸ report stated that traffic congestion is growing worse year after year, and that

average driving speeds have declined markedly in Australia's capital cities.

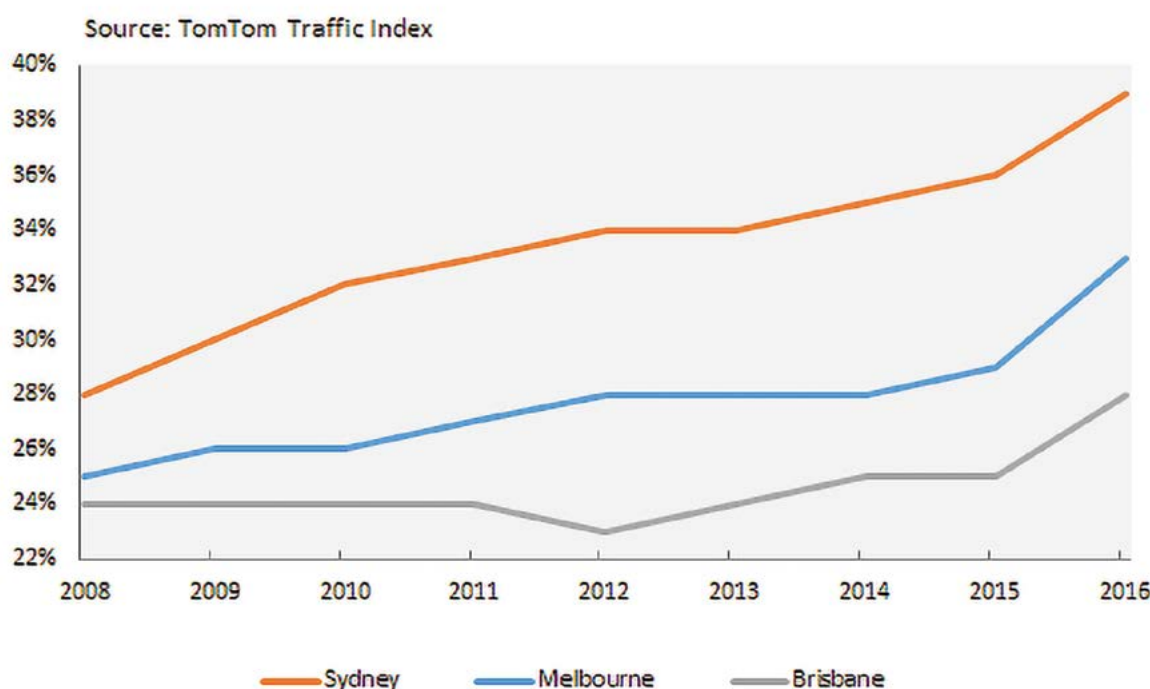
Predictably, AAA ranked Sydney and Melbourne worst overall across the various measures, including average speed across capital city arterial road networks; average speeds as a percentage of the speed limit; average speeds as a percentage of free flow speeds; and predictability of journey time.

Consistent with the above findings, the 2019 Household, Income and Labour Dynamics in Australia survey found that average daily commuting times (city and rural) have increased by 23 per cent, from about 49 minutes in 2002 to almost one hour in 2017. The share of workers with lengthy commutes has increased from approximately 12 per cent in 2002 to 18 per cent in 2017. In parallel, the share of workers with short commutes has declined, from above 62 per cent to below 53 per cent.²⁹

Finally, the 2019 *Global Urban Mobility Index*³⁰, which assesses the mobility of 38 leading cities, showed that Sydney and Melbourne have significantly worse traffic congestion than New York and Toronto.

Specifically, for every 100 kilometres travelled, Sydney-siders spent, on average, an extra 40 minutes of driving time during peak periods than at non-peak times (29th out of 38 cities where 1st ranking is the city with least delay), whereas Melbournians spent an extra 35 minutes (25th out of 38 cities). By comparison, for New Yorkers it was an extra 29 minutes (19th out of 38 cities), while for Torontonians it was 18 minutes (5th out of 38 cities).

CHART 8: Average delay in peak hours versus non-peak journeys



Dis-economies of scale: why infrastructure investment cannot catch up

Claims that Australia just needs to ‘plan better,’³¹ invest more and build more, ignore the increasingly costly and constrained options for further infrastructure build in the face of such unprecedented numbers of people pouring into our major cities. This section will further explain the difficulties involved.

First of all, such claims ignore the fact that there have *already* been massive increases in infrastructure spending by all levels of government. The Grattan Institute in 2014 showed that, since the escalation of population growth from 2004,

unprecedented infrastructure spending by states and territories is largely responsible for a \$106 billion decline in their finances since 2006.

They further note that:

After a threefold increase in capital spending over the last 10 years, states are paying 3 per cent more of their revenues in interest and depreciation.³²

Continuing growth in infrastructure spending is adding very significantly to state government debt, with the combined government sector net debt across the eight states and territories projected to more than double from \$81 billion in the 2019 financial year to more than \$184 billion by the 2023 financial year.³³

For its part, the 2019 Federal Budget boasted \$100 billion of planned infrastructure investment over 10 years. While this figure sounds huge, it won’t be nearly enough to keep pace with the 3.5 to 4.0 million population growth expected to be added over this 10-year period, nor will it backfill the infrastructure deficit that has accumulated over the past 15 years as Australia’s population has soared.

Despite increasing infrastructure investment, we are running faster to stand still, in fact we are moving backwards into more congestion and reduced quality of life. This is a direct outcome of continuing high population growth – the magnitude and speed of the investment and planning required to catch up to a rapidly moving target becomes increasingly difficult, if not impossible, to achieve. The near-impossibility of the task, despite major efforts to date, is wrongly perceived as being caused by a neglect of infrastructure planning and investment.

Furthermore, the sheer pace of change due to this rapid growth, and the strong pressures from big developer interests, create incentives for sub-optimal planning outcomes. This produces inferior results in land-use zoning, aesthetics, environmental protection, quality of building design and construction, and social inclusivity. Rapid population growth is actually a *cause* of bad planning outcomes.

The more we grow, the more costly, disruptive, logistically difficult and sub-optimal each additional increase in capacity becomes. In already built-out cities like Sydney and Melbourne, the cost of retrofitting new infrastructure to accommodate greater population size and densities becomes prohibitively expensive as we buy back, bridge over or tunnel under existing assets, and as each new project disrupts more heavily-trafficked services causing greater productivity losses. These are what economists call ‘dis-economies of scale’.

The Productivity Commission has been at the forefront highlighting the huge infrastructure costs associated with population growth.

In its 2016 *Migrant Intake into Australia*³⁴ report, the Commission noted:

Physical constraints in major cities make the costs of expanding infrastructure more expensive, so even if a user-pays model is adopted, a higher population is very likely to impose a higher cost of living for people already residing in these major cities...

Funding will inevitably be borne by the Australian community either through user-pays fees or general taxation...

The Commission's 2018 *Shifting the Dial: 5 year productivity review*³⁵ similarly noted that infrastructure costs will balloon due to Australian cities' rapidly growing populations:

Growing populations will place pressure on already strained transport systems... Yet available choices for new investments are constrained by the increasingly limited availability of unutilised land. Costs of new transport structures have risen accordingly, with new developments (for example WestConnex) requiring land reclamation, costly compensation arrangements, or otherwise more expensive alternatives (such as tunnels).

Infrastructure Australia has also regularly warned on the rising cost of infrastructure provision caused by rapid population growth. For example, its 2018 *Planning Liveable Cities*³⁶ report noted:

... construction of new infrastructure is often more expensive, due to the need to tunnel under existing structures or purchase land at higher costs. The small scale, incremental nature of growth in established areas can also lead to an over-reliance on existing infrastructure, which can result in congestion and overcrowding.

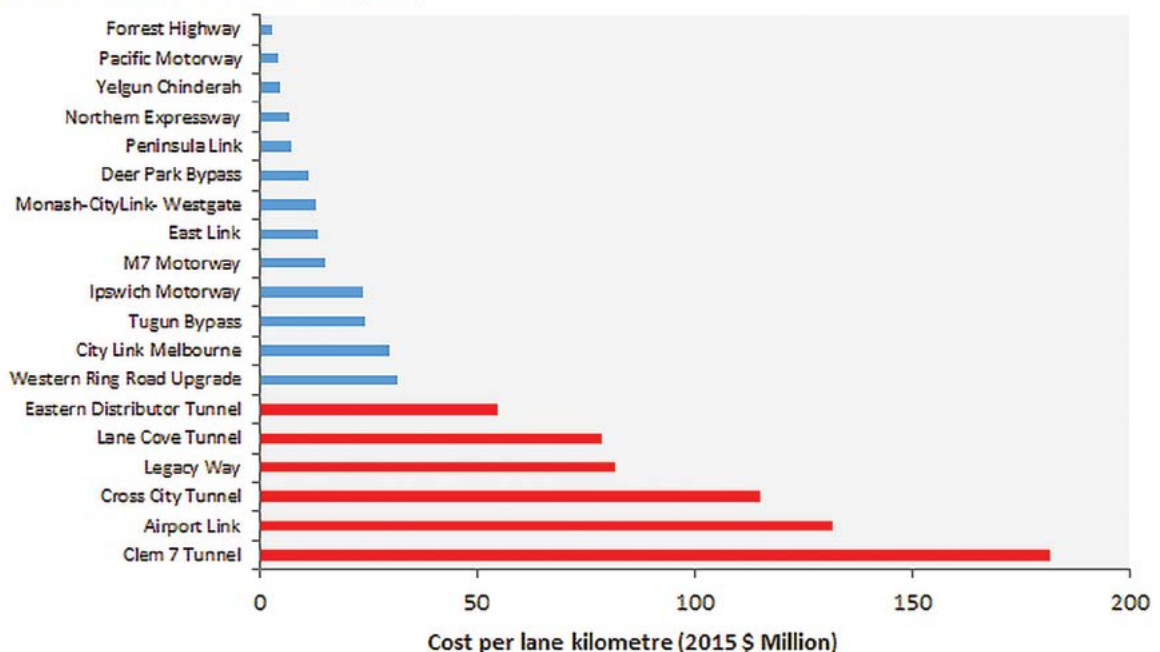
The huge cost of expanding the road network illustrates these dis-economies of scale. Chart 9 shows that road construction through undeveloped greenfield land is many times cheaper than tunnelling under existing brownfield land.³⁷

More recent examples are equally stark. The WestConnex project in Sydney will reportedly cost \$17 billion for 33 kilometres (\$515 million per kilometre) while Melbourne's West Gate Tunnel is expected to cost \$6.7 billion for five kilometres of highway (\$1.34 billion per kilometre). In contrast, the 155-kilometre Woolgoolga to Ballina highway upgrade³⁸ costs \$4.9 billion, or just \$32 million per kilometre (approximately 16 times less than WestConnex, and 42 times less than the West Gate Tunnel, on a 'per kilometre' basis). And yet, with all of this current and proposed investment, of increasing orders of magnitude, congestion is still expected to increase.

The cold hard truth is that the quantity of infrastructure investment required for a Big Australia is mind-boggling and impossible to meet. The infrastructure catch-up is illusory – proponents of a Big Australia keep expecting it to happen or promising it, but there is no evidence of it to be found.

CHART 9: The high cost of infill road expansion

Source: Elaurant, S., & Louise, J. (2015)



As a further indication of the magnitudes involved, The Productivity Commission’s 2013 final report on *An ageing Australia: Preparing for the future*³⁹ projected that Australia’s population would swell to 38 million people by 2060 and estimated that total private and public investment requirements over the 50-year period would be around *five times* the cumulative investment made over the last half century.

In a submission to the Commission’s *Inquiry into Infrastructure provision and funding in Australia*, Dr Jane O’Sullivan (2014) estimated that:

each additional person requires well over \$100,000 of public infrastructure, to enjoy the same standard of living provided to existing residents.⁴⁰

Dr O’Sullivan identified three key ways in which the cost of added people is not linearly proportional to the number of people added but escalates with both growth rate and population density:

- population growth drives up the inflation of land values;
- population growth has overrun Australia’s natural endowment in areas such as water provision, meaning governments have been forced to turn to expensive technological solutions like desalination; and
- increasing density in our cities caused by population growth requires retrofitting already built-up areas with higher-capacity infrastructure (e.g. tunnels).⁴¹

Reflecting the above, modelling conducted by Infrastructure Australia in 2018 projected that traffic congestion and access to jobs, schools, hospitals and green space will all worsen in Sydney and Melbourne as their populations balloon to a projected 7.4 million and 7.3 million people respectively by 2046, irrespective of whether these cities build up or out (see Table 1).⁴²

A recent example is Parramatta’s new Arthur Phillip High School, a high-rise campus costing \$225 million for 2000 students. At \$112,500 per student place, it is six to ten times the cost of traditional low-rise schools, while denying students the physical outlets and contact with nature formerly available on school campuses.⁴³

The empirical evidence clearly shows that Australia has failed dismally to build enough economic and social infrastructure to cater for the past 15 years of hyper-immigration. This is despite spending more than ever before on infrastructure – not only more as a proportion of GDP, but more per person added to our population. Therefore, expecting infrastructure to magically catch-up as Australia adds a projected 17.5 million people over the next half century is pure fantasy.

Not even Infrastructure Australia believes this is possible. Regardless of whether the projected population growth would be accommodated by increasing density or low-density sprawl, their modelling found that congestion, car commute times, and access to hospitals, schools and green space are all expected to worsen in Sydney and Melbourne (see Table 1).

TABLE 1: Liveability outcomes under alternative strategies for accommodating growth

| Key Liveability Statistics | Reference Case (2016) | | Expanded Low Density (2046) | | Expanded Medium Density (2046) | | Expanded High Density (2046) | |
|---|-----------------------|-----------|-----------------------------|-----------|--------------------------------|-----------|------------------------------|-----------|
| | Sydney | Melbourne | Sydney | Melbourne | Sydney | Melbourne | Sydney | Melbourne |
| Transport Performance | | | | | | | | |
| Road Congestion (Traffic volume exceeds capacity) | 15% | 5% | 28% | 7% | 28% | 6% | 30% | 9% |
| Public Transport Mode Share | 26% | 14% | 32% | 21% | 35% | 21% | 35% | 22% |
| Access to Jobs in 30 Minutes | | | | | | | | |
| Car | 13% | 22% | 9% | 18% | 9% | 18% | 9% | 17% |
| Public Transport | 2% | 2% | 2% | 3% | 2% | 3% | 2% | 4% |
| Access to Jobs in 60 Minutes | | | | | | | | |
| Car | 43% | 64% | 35% | 53% | 36% | 54% | 36% | 53% |
| Public Transport | 13% | 24% | 18% | 25% | 22% | 26% | 23% | 29% |
| Access to Hospitals | | | | | | | | |
| Percentage of Population with Access | 80% | 87% | 71% | 78% | 74% | 80% | 76% | 82% |
| Access to Schools | | | | | | | | |
| Percentage of Population with Access | 97% | 95% | 92% | 86% | 94% | 87% | 95% | 90% |
| Access to Green Space | | | | | | | | |
| Percentage of Population with Access | 62% | 38% | 54% | 31% | 56% | 32% | 58% | 33% |

Source: <https://infrastructureaustralia.gov.au/policy-publications/publications/future-cities.aspx>
Tables 14 and 29

The death of the Aussie backyard

In addition to driving up congestion and eroding amenity, Australia's mass immigration policy is transforming the structure of Australia's cities from lower density detached housing toward high density.

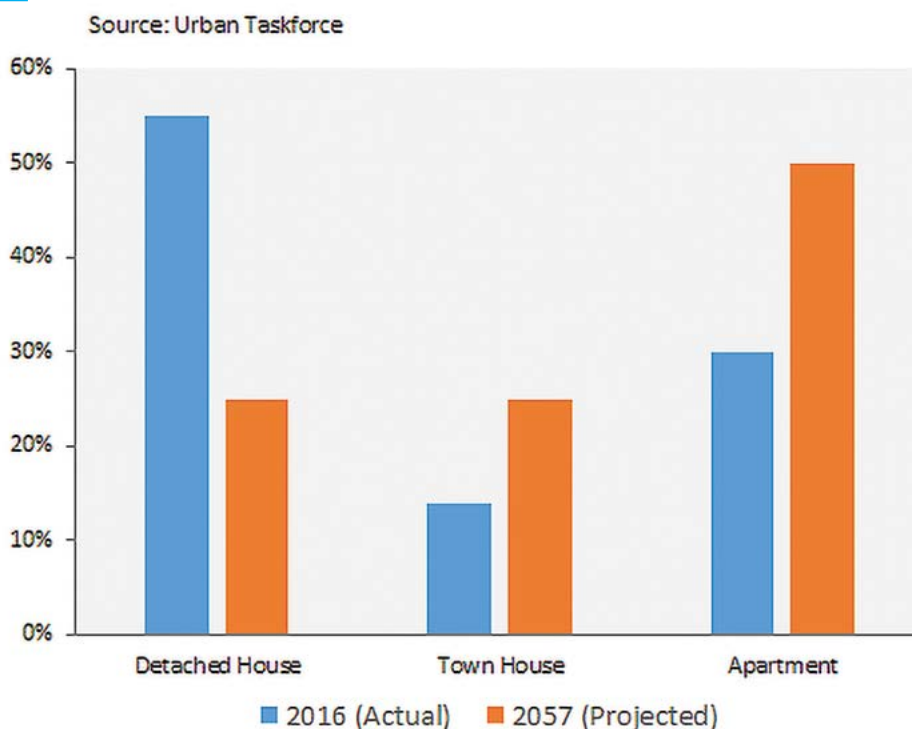
This change is most pervasive in Sydney and Melbourne where both immigration and population growth have been, and are projected to remain, the strongest.

In the eight years to December 2018, there were 115,000 detached houses approved for construction in Sydney, versus 232,000 units and apartments. Over the same period in Melbourne, there were 189,000 houses approved for construction versus 214,000 units and apartments.⁴⁴

With geographical and/or planning constraints limiting both cities' ability to expand outwards, densification will intensify as a consequence of population ballooning.

Projections from Urban Taskforce, a body representing large developers in Australia, illustrate the transformation taking place (see Chart 10). These projections show that, assuming Sydney reaches 10 million people shortly

CHART 10: Sydney dwelling composition 2016 and 2057



after mid-century, the share of Sydney’s dwelling stock comprised of detached housing will more than halve from 55 per cent in 2016 to 25 per cent in 2057. By contrast, apartments will increase their share of Sydney’s dwelling stock from 30 per cent to 50 per cent over the same period, whereas townhouses will increase their share from 14 per cent to 25 per cent.⁴⁵

The rapid population growth and densification of Australia’s two major cities has also helped drive the cost of housing to extreme levels.

In the 14 years to 2018, Sydney and Melbourne added 1,050,000 and 1,300,000 people respectively, of which 470,000 and 590,000 people were added in the five years to 2018 alone (see Chart 11).

Reflecting this strong population growth, especially over the most recent five years, both Sydney’s and Melbourne’s dwelling price-to-income ratio surged to an extreme 9.1 and 7.5 respectively as at the end of 2017 – well beyond Australia’s other capital cities where population growth was lower (see Chart 12).

As a consequence, home ownership rates in both Sydney and Melbourne have collapsed among under-40 Australians (see Chart 13).⁴⁶

If, as per ABS standard projections, Sydney’s and Melbourne’s populations each balloon to around 10 million people over the next half century, driven by ongoing mass immigration, then the chronic housing affordability problems in both cities will continue.

In turn, both Sydney and Melbourne are facing a future where only the wealthiest residents will be able to afford a detached house with a backyard, while the majority of residents will be forced to live in cramped accommodation, an increasing share of whom will also be renting and with little or no access to green space.

This has direct implications for the economy. Australia’s retirement system is based around retirees owning their homes. The rapidly decreasing home ownership rate will ultimately leave many future pensioners starved of funds and reliant on the Federal Government for housing assistance.⁴⁷

It is now coming to light that the design and build quality of at least some of the mushrooming high-rise in our cities is under serious question.^{48 49} Not only are more people being shoe-horned into high-rise, but they face the risk and anxiety of shoddy construction that is very hard, if not impossible, to rectify. The willingness of state and local governments to relinquish decision-making to private companies via the use of ‘light touch’ regulatory and planning regimes is increasingly being questioned.⁵⁰ The often expressed hope that ‘better planning’ will be sufficient to overcome any challenges caused by population growth, fails to grasp that this growth is premised upon a compliant and malleable planning apparatus which enables developers to achieve maximum throughput, at lowest cost and for maximum reward. To do the planning ‘better’ would by definition be costlier and more time-consuming – and thus could not support the current high rates of population increase.

CHART 11: Australian population change: capital cities

Source: Australian Bureau of Statistics

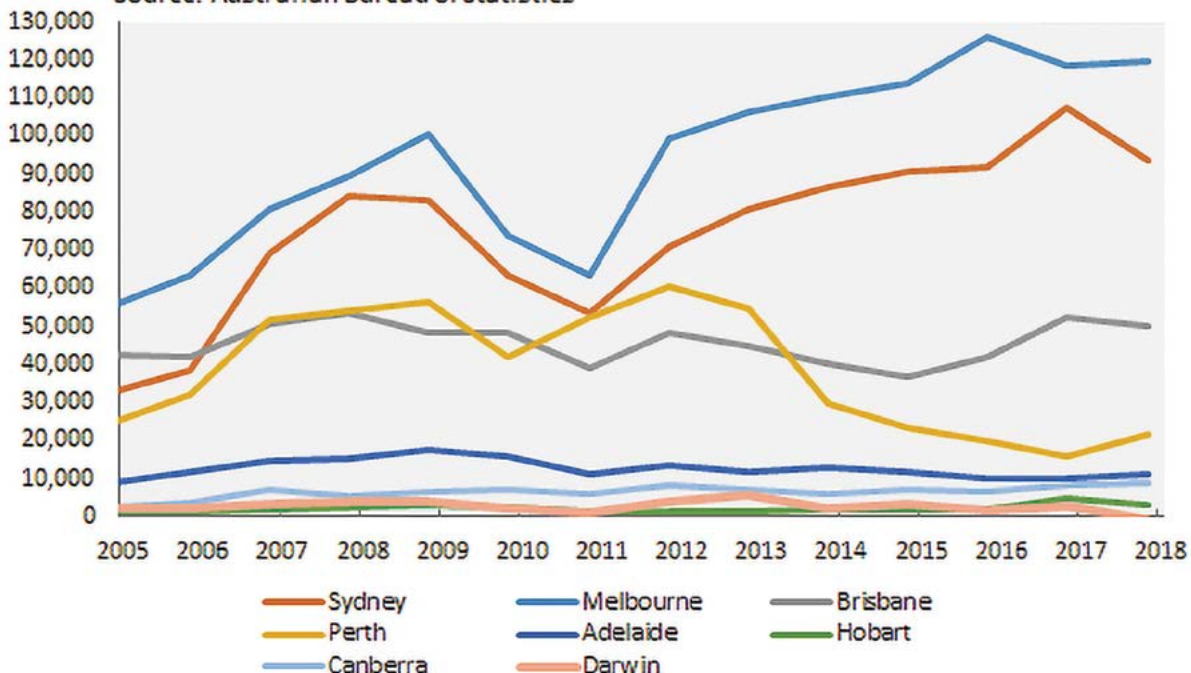
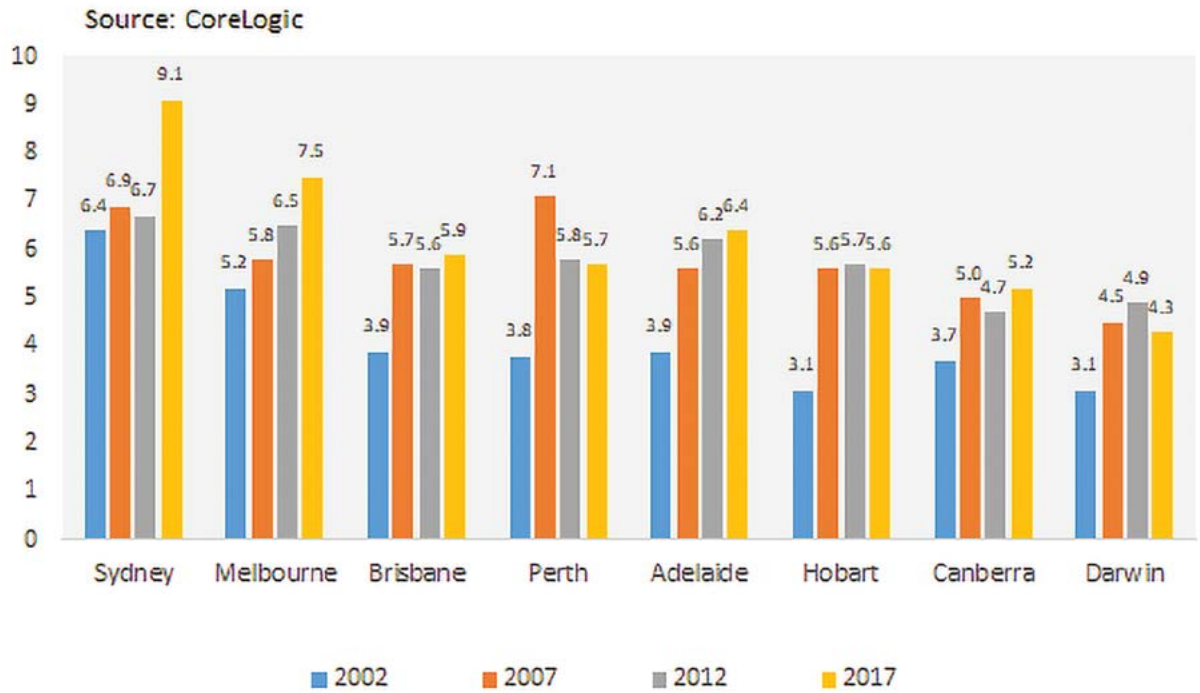
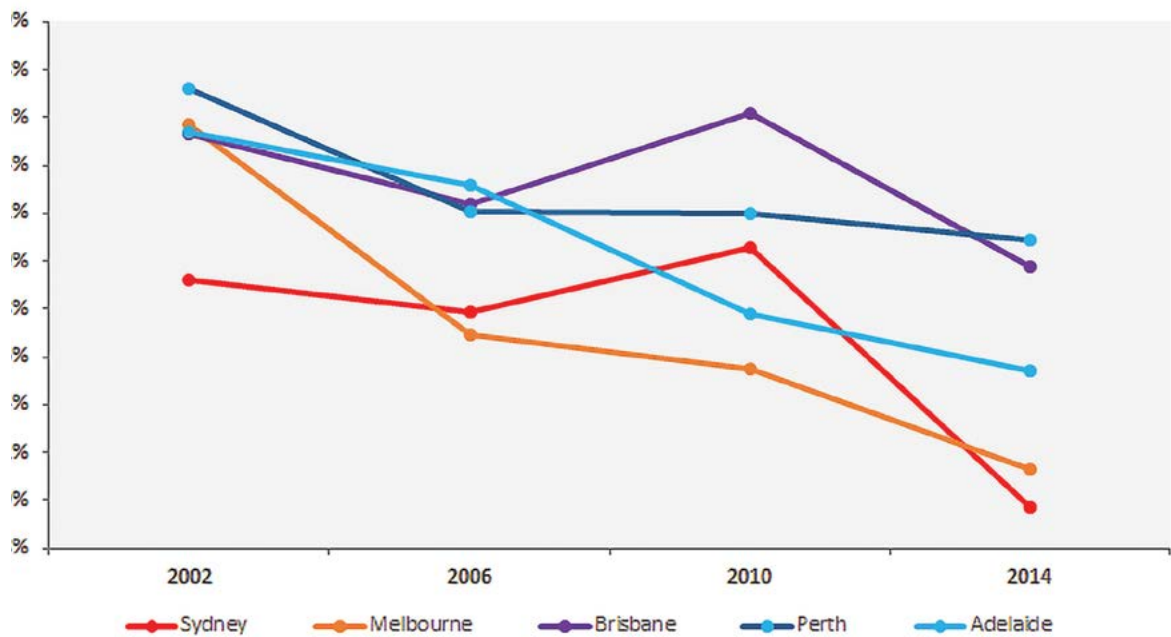


CHART 12: Dwelling price-to-income ratio**CHART 13: Home ownership of persons aged 18 to 39**

Source: HILDA 2017



With rising infrastructure costs comes higher cost of living

In 2018, then Treasurer Scott Morrison made headlines when he claimed former Prime Minister Tony Abbott's proposal to cut Australia's permanent migrant intake by 80,000 to 110,000 would cost the Federal Budget

\$4 billion to \$5 billion over the next four years, arguing

the economy (would not be) growing at the same level and people who come as skilled migrants pay taxes, make a net contribution to the economy.⁵¹

National governments collect more than 80 per cent of Australia's tax revenue⁵² and therefore collect the lion's share of the financial benefits that come with immigration, such as increased personal and company taxes. While this may assist the federal budget coffers, the indirect costs of this population growth are able to be ignored given they are transferred to state and local governments and households.

As Grattan Institute executive director, John Daley, has noted,

state governments were struggling to deal with rapid population growth in their major cities and the quality of life of residents – represented by the rapid growth in house prices in recent decades – was suffering.⁵³

A holistic analysis of financial impacts of rapid, immigration-fuelled population growth needs to take into consideration the significant negative impacts on:

- **state and local government budgets**, which carry the cost of infrastructure and services to support population growth, such as roads, utilities, public transport, schools and hospitals (see the preceding sections)
- **balance of trade**, as our fixed revenue from exports of mineral and agricultural products face escalating imports of construction materials and consumer goods
- **business productivity**, facing the drag of congestion
- **Gross National Income**, diminished by an increasing outflow of interest payments on both government and household mortgage debts
- **wages share of GDP**, which has been falling as competition for jobs has intensified because of higher immigration
- **households**, who have to pay more as new, expensive infrastructure projects are built in response to population growth (e.g. desalination plants, toll road tunnels, etc.), and as states sell off public assets to private monopolies to raise funds for new infrastructure.

To date, the states have ‘managed’ these costs by shoving massive infrastructure spending off balance sheet, including through privatising assets via accounting tricks like Public Private Partnerships (PPPs). This has created increasing costs for residents, such as tolls and user-pays charges and other costs which may be hidden.

Prime examples of these ‘private taxes’ are the WestConnex toll road in Sydney and the West Gate Tunnel in Melbourne.

WestConnex is a \$17 billion, 33 kilometre motorway under construction that is more expensive per kilometre than the UK’s Channel Tunnel.

WestConnex has seen existing free public roads, which had already been paid for by the taxpayer, such as the state-owned M4, being tolled to help fund the project. Tolls are scheduled to rise by 4 per cent a year until 2038 – far above inflation and wages – and then at the rate of inflation for another 20 years. Moreover, the M5 toll to Sydney’s south-west was due to be abolished, but has now been extended to 2060.

In its desperate attempt to keep pace with its ballooning population, Sydney’s toll road network is now the *most expensive and extensive in the world*, with 15 toll points currently and at least 20 expected by 2023.⁵⁴

In a similar vein, the Victorian Government’s controversial \$6.7 billion deal with Transurban to build the West Gate Tunnel Project will see Transurban contribute only \$4.4 billion towards the cost in exchange for extending tolls on CityLink for an additional 10 years at a projected cost to motorists of \$15 billion. Tolls are permitted to rise by a whopping 4.25 per cent a year – well above inflation and wage growth – with the current CityLink toll trip cap to increase from just over \$9 currently to more than \$20 by 2045.

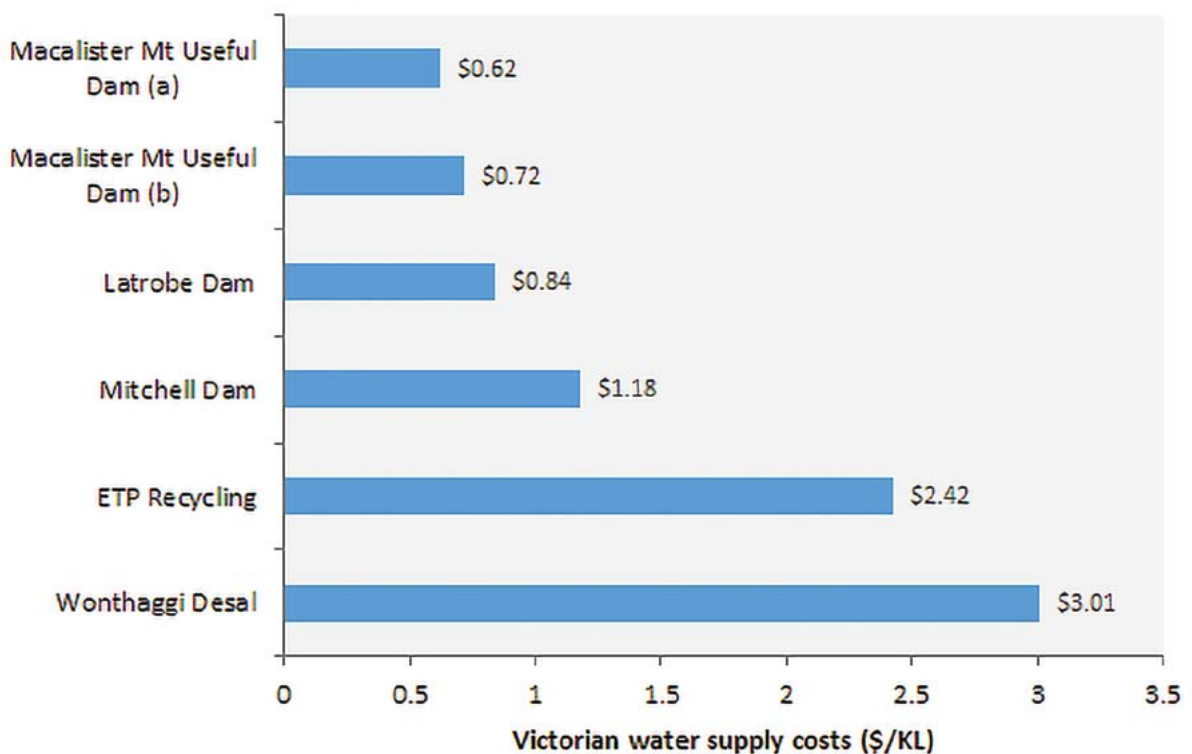
In short, with Australia’s two biggest states desperately trying to build infrastructure to keep pace with rapid population growth, private companies have been delivered massive revenue and profit growth, paid for by what are effectively privately-levied taxes imposed on ordinary residents without consultation or representation.

The rising cost of living caused by population growth is also reflected in the escalating cost of water. Because Australia has already overrun its natural endowment, Australia’s major cities have been required to resort to costly technological solutions like desalination, which have raised average household water bills.

Already facing lower rainfall and increased evaporation as a consequence of climate change, water supplies will need to be augmented still further if Australia’s population continues to increase.

CHART 14: The high cost of new water supplies

Source: Alan Moran (2008)



Modelling by Infrastructure Australia in 2017 projected that household water bills would more than quadruple in real terms because of population growth and climate change, rising from \$1,226 per year in 2017 to \$6,000 in 2067. The report also warned that

the impact of these changes on household affordability could be substantial... and could cause significant hardship.⁵⁵

Chart 14 clearly illustrates these dis-economies of scale in water supply.⁵⁶ The cost of Victoria's Wonthaggi Desalination plant is almost four times the cost of traditional dam water, whereas recycling is around three times more expensive. As Melbourne's population balloons, additional unconventional water sources will be required, in turn raising average water bills.

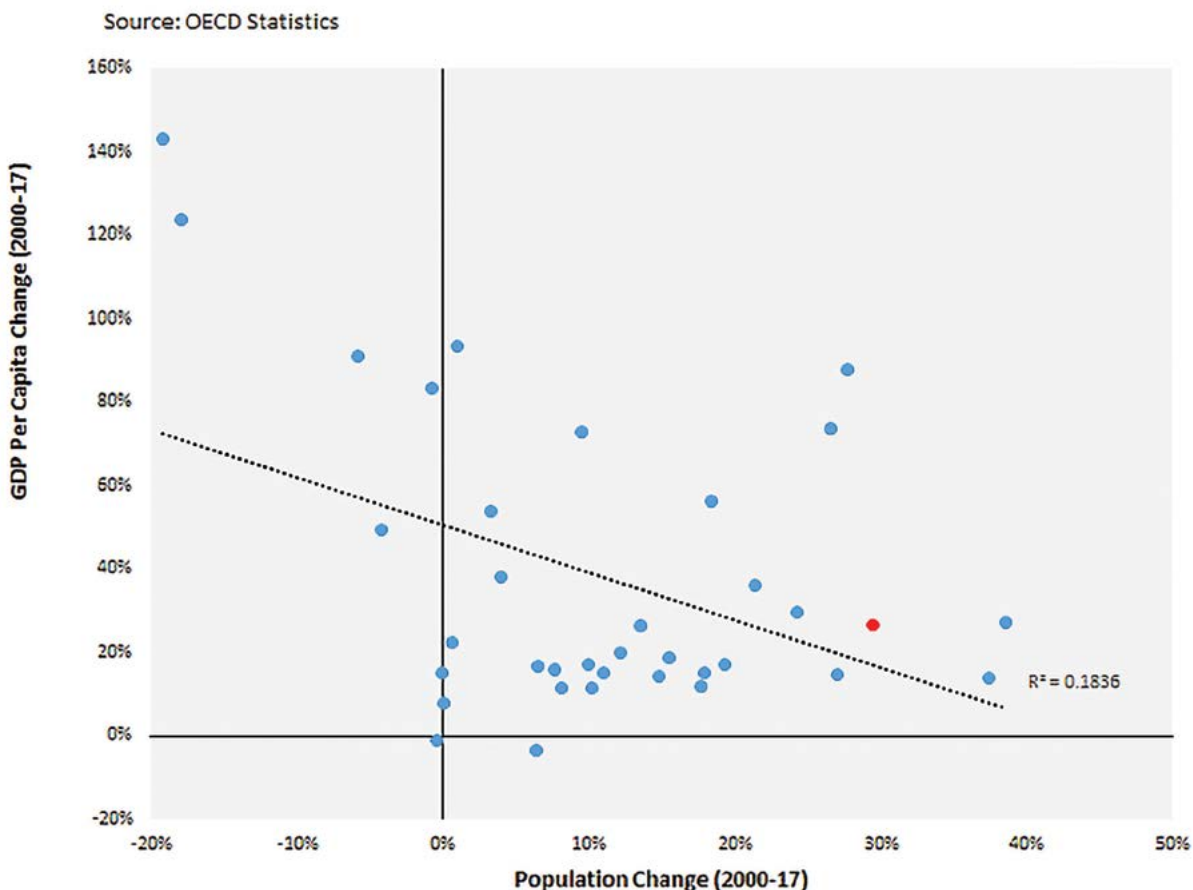
In summary, growing infrastructure costs have created substantial hidden costs for residents – effectively 'private taxes' – via tolls, access charges for power and water supplies, and other user-pays charges. These increasing costs, combined with other imposts such as congestion, loss of amenity and more constrained housing options, mean that most residents will likely face continuing decline in standard of living and quality of life, if immigration-fuelled population growth continues at its present rate.

Governments, political parties and those with a vested interest in high population growth repeatedly claim that high immigration is good for economic growth and hence for the betterment of Australians. Apart from its neglect of our 'per capita recessions,' such claims ignore the staggering infrastructure costs that are occasioned by this growth. There is great irony in the fact that these *costs* are counted as *additions* to economic growth (additions to GDP), yet are unlikely to translate into benefits of improved per capita income or well-being for the existing population. Rather, they get passed down the line to residents in the form of extra charges and the lived experience of congestion and reduced amenity.

Nor are claims linking population growth and GDP growth upheld in the comparative data across the OECD. As Chart 15 shows, countries with the highest population growth tend to have lower growth in GDP per capita.

The Productivity Commission has reported several times on the costs and benefits of immigration and has found little if any net benefit for the existing population. It has also added an important caveat, namely that it has not

CHART 15: Growth in GDP per capita vs population change, OECD nations, 2000 to 2017



taken the infrastructure or environmental costs into its analyses because of the complexity of doing so. For example, with respect to environmental costs, urban sprawl requires more land, more roads and more utility services, all of which can destroy natural habitat and agricultural land. Densifying within existing urban footprints has impacts upon existing communities, heritage, green space and open space, air quality, noise levels and the urban heat island effect. These caveats and unmeasured costs have been ignored by pro-growth political parties and others with a vested interest in growth.

Aside from the actual dollar amounts and the unmeasured environmental costs, the provision of additional infrastructure raises the interesting issue of timing: when should this new infrastructure be built? When a 2018 ABC Q&A program posed this question, panelists and many members of the audience expressed strong support for providing the infrastructure before the population arrives.⁵⁷ If that is to be done then it is clear that the present population bears the cost in advance, with the new arrivals gaining the benefit without having to outlay any costs. If it is not done then the present population bears the cost of impoverished services and amenities until contributions from the additional people materialise.

This is further illustration of the Productivity Commission's finding that the small economic benefit from immigration-fuelled population growth flows principally to big employers, developers and construction firms, while most of the incumbent population is worse off.

Conclusion: is this the future we want to bestow upon our children?

A strong immigration program and a Big Australia are often sold by politicians, policy makers and vested interests as a key ingredient to boosting Australian living standards.

The reality on the ground, however, could not be starker. After more than 15 years of extreme population growth, economic and social infrastructure across Australia's cities has become increasingly crush-loaded, leading to rising congestion and higher cost of living.

With Australia's population now projected to hit around 43 million people within 50 years, and Sydney and Melbourne to both roughly double in size, these infrastructure bottlenecks will only worsen.

The cost of providing new infrastructure across Australia's already built-out cities is prohibitive, due to dis-economies of scale and the constantly moving target of a rapidly growing population. Australia also has a critical shortage of water, which means that expensive technological solutions like water desalination and recycling will be required to cater for the larger population, thereby raising average water bills.

The recurrent calls by many of our elected representatives for 'more decentralisation', 'better planning' and 'more investment' in infrastructure are revealed to be futile and deceptive gestures which can never solve these problems. Under the real-world conditions of high population growth in Australia, there *can never be* enough decentralisation, planning or investment to enable infrastructure to keep pace with the projected increasing demands.

Our political leaders and parties need to be held to account for why they consistently dodge the question of the real costs of population growth and instead offer illusory solutions.

A major reduction in the rate of population growth is necessary to relieve these compounding problems. The fundamental driver of this growth is via the immigration policy lever. This is something that is within the direct control of the Australian government, not a fact of nature.

For all of the above reasons, it is time for Australians to demand of their elected representatives that a major reduction in Australia's immigration intake is essential, back to the long-term 20th century average NOM of 50,000 to 70,000 per year – as was, in fact, assumed by the ABS in earlier projections.

A Big Australia will be a bloated Australia, suffering increasingly uncomfortable pressure. Living standards for existing residents will decline as they are shoe-horned into smaller, more expensive and lower quality housing, endure worsening traffic congestion, pay more to access basic infrastructure and services, and have less access to public services and open space.

Is this the future we want to bestow upon our children?

Endnotes

- 1 ABS (2019). 3101.0 - Australian Demographic Statistics, Mar 2019. Released 19/09/2019.
- 2 Ibid.
- 3 ABS (2000). 3222.0 - Population Projections, Australia, 1999 to 2101. Released 17/08/2000.
- 4 ABS (2018). 3222.0 - Population Projections, Australia, 2017 (base) – 2066. November 2018.
- 5 The 60 million figure is based on ABS demographic projections to 2101, released in 2011, which projected a population of 59m by 2101 under 'high' (280,000) annual NOM. However, this is projected at a fixed annual number of NOM, rather than adding a fixed percentage of immigrants to the incumbent population. Since the latter could occur if Big Australia advocates prevail in seeking an ongoing high population growth rate, then 60 million by 2100 could be considered conservative.
- 6 ABS (2019). 3218.0 - Regional Population Growth, Australia. March 2019.
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3218.0Main%20Features%2012017-18?opendocument&tabname=Summary&prodno=3218.0&issue=2017-18&num=&view=>
- 7 Archer J, Houghton K. and Vonthethoff B (2019). *Regional Population Growth – Are We Ready? The economics of alternative Australian settlement patterns*, Regional Australia Institute: Canberra. See p. 11: "The scenario analysis does not take into consideration how such redistributions might be facilitated, or costs and benefits of the alternatives in terms of infrastructure."
- 8 Denham, T and Dodson, J (2019). Can high speed rail really solve our population problem? *The Guardian*, 21 August. <https://www.theguardian.com/commentisfree/2019/aug/21/can-high-speed-rail-really-solve-our-population-problem>
- 9 Kallios, N (2019). New migrants 'fleeing' regional Australia for city life. SBS. 16 May 2019.
<https://www.sbs.com.au/news/new-migrants-fleeing-regional-australia-for-city-life>
- 10 Raymer, J and Baffour, B (2018). Subsequent migration of immigrants within Australia, 1981–2016. *Population research and policy review*, 37(6), pp.1053-1077, p. 1074.
- 11 van Onselen, L (2018). Australia's interstate skilled migration rort. *MacroBusiness.com.au*. 4 July 2018.
<https://www.macrobusiness.com.au/2018/07/australias-interstate-skilled-migration-rort/>
- 12 Infrastructure Australia (2019). *An assessment of Australia's future infrastructure needs. The Australian infrastructure audit 2019*, p. 190. <https://www.infrastructureaustralia.gov.au/publications/australian-infrastructure-audit-2019>
- 13 Davies, A (2019). NSW towns including Dubbo and Tamworth face water emergency within months. *The Guardian*. 24 May 2019.
<https://www.theguardian.com/australia-news/2019/may/24/nsw-towns-including-dubbo-and-tamworth-face-water-emergency-within-months>
- 14 Cripps, S (2019). Drought still biting in Queensland's central and southern regions. *Queensland Country Life*. 1 May 2019.
<https://www.queenslandcountrylife.com.au/story/6099281/two-thirds-of-queensland-still-in-drought/>
- 15 Bearup, G (2019). Towns on brink of dry disaster. *The Australian*. 29-30 June; Bearup, G (2019). High and dry. *Weekend Australian Magazine*. 29-30 June, pp. 10-14.
- 16 Karp, P (2019). 'Critical': parts of regional NSW set to run out of water by November. *The Guardian*. 15 September. <https://www.theguardian.com/australia-news/2019/sep/15/parts-of-regional-nsw-set-to-run-out-of-water-by-november>
- 17 Davies, A; Smee, B and Allam, L (2019). 'I don't know how we come back from this': Australia's big dry sucks life from once-proud towns. *The Guardian*. 13 September.
<https://www.theguardian.com/environment/2019/sep/14/i-dont-know-how-we-come-back-from-this-australias-big-dry-sucks-life-from-once-proud-towns#comment-133116435>
- 18 Terrill, M and Coates, B (2016). Budget explainer: does Australia really have an infrastructure deficit?
<https://theconversation.com/budget-explainer-does-australia-really-have-an-infrastructure-deficit-57549>
- 19 Infrastructure Australia (2013). *National Infrastructure Plan*. June 2013.
<https://www.infrastructureaustralia.gov.au/publications/national-infrastructure-plan-june-2013-report-coag-and-assessments>
- 20 Infrastructure Australia (2018). *Planning Liveable Cities: A place-based approach to sequencing infrastructure and growth*. <https://www.infrastructureaustralia.gov.au/publications/planning-liveable-cities-place-based-approach-sequencing-infrastructure-and-growth>
- 21 Infrastructure Australia (2019). *An assessment of Australia's future infrastructure needs. The Australian infrastructure audit 2019*, p. 7.
- 22 Engineers Australia (2018). Engineering Construction on Infrastructure: 10 Years of Trends.
<https://www.engineersaustralia.org.au/sites/default/files/resources/Public%20Affairs/2018/Engineering%20Construction%20on%20Infrastructure%20-%2010%20years%20of%20trends.pdf>
- 23 IMF (2019). *2018 Article IV Consultation – Press Release; Staff Report; And Statement by the Executive Director for Australia*.
<https://www.imf.org/~media/Files/Publications/CR/2019/1/AUSEA2019008.ashx>
- 24 Bureau of Infrastructure, Transport and Regional Economics (2015). *Traffic and congestion cost trends for Australian capital cities*. https://www.bitre.gov.au/publications/2015/is_074.aspx
- 25 Infrastructure Australia (2019). *An assessment of Australia's future infrastructure needs. The Australian infrastructure audit 2019*, p. 272.
- 26 Ibid, p. 265.
- 27 TomTom Traffic Index. https://www.tomtom.com/en_gb/traffic-index/
- 28 Australian Automobile Association (2018). *Road Congestion in Australia*.
<https://www.aaa.asn.au/wp-content/uploads/2018/10/AAA-Congestion-Report-2018-FINAL.pdf>

- 29 Wilkins, R, Laß, I, Butterworth, P and Vera-Toscano, E (2019). *The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 17*. Melbourne Institute: Applied Economic & Social Research, University of Melbourne, pp. 80, 82.
- 30 Urban Mobility Index. <https://urbanmobilityindex.here.com/> . Accessed 22 July 2019.
- 31 Farrelly, E (2019). There's a con in congestion: it's not caused by what you think it is. *Sydney Morning Herald*, 17 August. <https://www.smh.com.au/national/there-s-a-con-in-congestion-it-s-not-caused-by-what-you-think-it-is-20190815-p52hjp.html>
- 32 Daley, J and McGannon, C (2014). *Budget pressures on Australian governments*, 2014 edition. Grattan Institute. <https://grattan.edu.au/report/budget-pressures-on-australian-governments-2014/>
- 33 Roddan, M (2019). States climb \$180bn debt mountain. *The Australian*. 19 June 2019, p.1.
- 34 Productivity Commission (2016). *Migrant intake into Australia*. <https://www.pc.gov.au/inquiries/completed/migrant-intake/report/migrant-intake-report.pdf>
- 35 Productivity Commission (2017). *Shifting the Dial: 5 year productivity review*. <https://www.pc.gov.au/inquiries/completed/productivity-review/report>
- 36 Infrastructure Australia (2018). *Planning Liveable Cities: A place-based approach to sequencing infrastructure and growth*. <https://www.infrastructureaustralia.gov.au/publications/planning-liveable-cities-place-based-approach-sequencing-infrastructure-and-growth>
- 37 Data from Elaurant, S, & Louise, J (2015). Politics, finance and transport-megaprojects in Australia. Proceedings of the Royal Society of Queensland.
- 38 NSW Government (2018). Pacific Highway Upgrade. Woolgoolga to Ballina. <https://www.pacifichighway.nsw.gov.au/project-sections/coffs-harbour-to-ballina/woolgoolga-to-ballina>
- 39 Productivity Commission (2013). *An Ageing Australia: Preparing for the Future*. Table 4.4. <https://www.pc.gov.au/research/completed/ageing-australia/ageing-australia.pdf>
- 40 O'Sullivan, J (2014). Submission to the Productivity Commission Inquiry into infrastructure provision and funding in Australia. https://www.pc.gov.au/_data/assets/pdf_file/0004/135517/subdr156-infrastructure.pdf; see also: O'Sullivan, J N (2012). The burden of durable asset acquisition in growing populations. *Economic Affairs*, 32(1), pp. 31-37.
- 41 O'Sullivan, J (2014). Submission to the Productivity Commission, *op. cit.*
- 42 Infrastructure Australia (2018). *Future Cities: Planning for our growing population*. Tables 14 & 29. <https://www.infrastructureaustralia.gov.au/policy-publications/publications/future-cities.aspx>
- 43 Baker, J (2019). Classrooms with a view: Inside Sydney's new \$225 million high school. *Sydney Morning Herald*. 24 July. <https://www.smh.com.au/education/classrooms-with-a-view-inside-sydney-s-new-225-million-high-school-20190723-p529zy.html>
- 44 ABS 8731.0 - Building Approvals, Australia. <https://www.abs.gov.au/ausstats/abs@.nsf/mf/8731.0>
- 45 Wade, M (2017). High-density living: the rise of Sydney's 'vertical families'. *Sydney Morning Herald*. 10 December 2017. <https://www.smh.com.au/business/companies/highdensity-living-the-rise-of-sydneys-vertical-families-20171210-h023f1.html>;
Urban Taskforce Australia and McCrindle (2017). Sydney lifestyle study: redefining Sydney's urban lifestyles. December. https://mccrindle.com.au/wp-content/uploads/2018/03/UrbanTaskforce_McCrindle_SydneyLifestyleStudy_Dec2017.pdf
- 46 Melbourne Institute: Applied Economic & Social Research (2017). *The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 15*. https://melbourneinstitute.unimelb.edu.au/_data/assets/pdf_file/0010/2437426/HILDA-SR-med-res.pdf
- 47 See Ong, R and Wood, G (2019). More people are retiring with high mortgage debts. The implications are huge. *The Conversation*. 12 June. <https://theconversation.com/more-people-are-retiring-with-high-mortgage-debts-the-implications-are-huge-115134>
- 48 Snow, D, M Gorrey and L Chung (2019). 'No effective oversight': why the Opal and Mascot Towers cases may be the tip of a very large iceberg. *Sydney Morning Herald*, 22 July. <https://www.smh.com.au/national/nsw/no-effective-oversight-why-the-opal-and-mascot-towers-cases-may-be-the-tip-of-a-very-large-iceberg-20190621-p52017.html>;
Holman, J (2019). Apartment owners worried they are living in structurally unsound buildings. *ABC News* 7.30. 25 June. <https://www.abc.net.au/news/2019-06-25/apartment-owners-worried-they-are-living-in-structurally-unsound/11246116>
- 49 Gorrey, M and Saulwick, J (2019). Australia's building crisis fix will cost \$6.2 billion: report. *Sydney Morning Herald*, 19 August. <https://www.smh.com.au/national/nsw/australia-s-building-crisis-fix-will-cost-6-2-billion-report-20190730-p52c9x.html>
- 50 Fellner, C and Gladstone, N (2019). Building certifiers leave a trail of chaos. *Sydney Morning Herald*. 3 August. <https://www.smh.com.au/national/nsw/building-certifiers-leave-a-trail-of-chaos-20190802-p52ddn.html>
- 51 Farr, M (2018). Scott Morrison slaps down immigration reduction calls. *News.com.au*. 21 February 2018.
- 52 Department of Prime Minister & Cabinet (2015). *Reform of the Federation. Discussion Paper*. <https://apo.org.au/sites/default/files/resource-files/2015/06/apo-nid55457-1192861.pdf>
- 53 Daley, J (2018). Housing report says migration may need to be cut to preserve quality of life. *The Guardian*. 4 March 2018. <https://www.theguardian.com/australia-news/2018/mar/04/housing-report-says-migration-may-need-to-be-cut-to-preserve-quality-of-life>
- 54 Hoh, A (2019). Sydney's growing toll road network world's most extensive and expensive, experts say. *ABC News*. 26 February 2019. <https://www.abc.net.au/news/2019-02-26/sydney-has-most-toll-roads-in-the-world/10845944>
- 55 Infrastructure Australia (2017). *Reforming Urban Water: A national pathway for change*. https://www.infrastructureaustralia.gov.au/policy-publications/publications/files/Reforming_Urban_Water_Web_version.pdf
- 56 Moran, A. (2008). *Water supply options for Melbourne*. Occasional Paper. Institute of Public Affairs. August. https://ipa.org.au/wp-content/uploads/archive/1222147673_document_moran_watersupply-melbourne.pdf
- 57 ABC (2018). Q&A, A Big Australia. Date of broadcast: 12 May 2018. <https://www.abc.net.au/qanda/a-big-australia/10649436>



Population growth and infrastructure in Australia: the catch-up illusion

Sydney and Melbourne now have worse traffic congestion than New York and Toronto. This congestion is but one symptom of an infrastructure shortfall caused by Australia's rapid population growth, fuelled by very high levels of immigration since the beginning of this century.

If these trends continue towards a 'Big Australia', living standards for existing residents will continue to decline as people are forced into smaller, more expensive and lower-quality housing, endure worsening traffic congestion, pay more to access basic infrastructure and services, and have less access to public services and green space.

Our political leaders are claiming that these problems can be managed by de-centralisation, better planning and more investment. This paper disagrees with those propositions.

We find that these proposed solutions will not work under conditions of high population growth. Instead, the increasing cost and complexity of adding new infrastructure in our already sprawling cities can only guarantee declining living standards.