Australian Government | **Infrastructure Australia**

Planning Liveable Cities

A place-based approach to sequencing infrastructure and growth

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

Infrastructure Australia has a mandate to prioritise and progress nationally significant infrastructure investments. It leads reform on key issues including means of financing, delivering and operating infrastructure and how to better plan and utilise infrastructure networks.

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

Cover: Brisbane, Australia, 2017.

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Executive Summary

The timely and coordinated sequencing of infrastructure is critical to the success of our growing cities

Australia's largest cities are growing and changing at an unprecedented rate. To support this growth and prepare for the future, we need to deliver new housing and substantially upgrade the capacity of many of our infrastructure networks. However, to maintain the world-renowned liveability of Australian cities, we also need to make sure we appropriately sequence the delivery of housing and infrastructure to ensure people have access to necessary facilities and services, such as a good local park and playground, or reliable local bus.

Sequencing the delivery of infrastructure and housing is a complex task. 'Sequencing', for the purpose of this paper, refers to the planning for, and timely and coordinated delivery of, new or upgraded infrastructure alongside additional housing supply, or prioritising the delivery of housing development in areas with additional infrastructure capacity. It includes the full range of infrastructure required to make a place 'work', from essential utilities to transport, schools, hospitals, parks, cultural institutions, and other community facilities.

Done correctly, sequencing will ensure that new or upgraded infrastructure is delivered in time to service communities where additional housing is being delivered and demand for community infrastructure is increasing.

It is important to note that infrastructure sequencing is not about providing all future infrastructure needs upfront. This is not practical or affordable for governments and taxpayers, nor does it deliver the best outcomes for communities. Rather, best-practice sequencing is about proactively identifying and methodically planning for the trigger points that will necessitate new and upgraded infrastructure across our cities as they grow and ensuring infrastructure is operational at these trigger points. Good sequencing requires collaboration across levels of government and with industry, as well as a shared understanding of infrastructure needs through the lens of outcomes for a place and community, rather than outcomes for a sector.

This paper provides advice to governments, industry, and the community on how to enable best-practice sequencing. It calls for an overhaul of the way we deliver new housing and infrastructure in our largest cities, proposing changes to current planning systems, governance frameworks, and funding arrangements to better manage our rapid population growth.

Population growth can benefit our cities, but we need to ensure they remain liveable

Between 2017 and 2047, Australia's population is projected to increase by over 11 million people.[1] Around 80% of this growth will occur in our five largest cities – Sydney, Melbourne, Brisbane, Perth and Adelaide.[2] This growth will be accompanied by other major shifts that will have a significant impact on the structure and operation of our cities, such as the changing nature and location of work, the ageing of the population, rapid technological transformation, an increasing urban freight task, and climate change.

More than ever before, Australia's long-term prosperity is linked to the performance of our cities. Cities are increasingly the generators of the nation's wealth and where a growing number of people choose to live and businesses choose to locate. Between 2000–01 and 2015–16, even with the mining boom, 70% of Australia's economic growth occurred in our capital cities.[3] Trends indicate this contribution will continue to increase over coming decades.

While Australia's cities are the economic powerhouses of our nation, we need to remember that cities are also fundamentally about people. People are choosing to live in cities because of the access to jobs and amenity they provide. Liveability and sustainability are essential to attracting and retaining people and ensuring the efficient and productive operation of our cities. People want to live in places with easy access to parks, schools, community facilities, and reasonable travel times to work and services. Creating liveable places is not optional for governments; it is essential. Liveability is intrinsically linked to economic growth and will play a key role in maximising the opportunities of population growth in our cities in the future.

Communities suffer without timely infrastructure delivery

There are places in Australian cities where housing and infrastructure delivery have been well planned and coordinated – often where development is large scale and actively managed through specific governance structures, like a development corporation or master planning process. However, there are too many examples from the past decade of delivering new housing without adequate infrastructure and services to support it. This has occurred in both new greenfield developments (large-scale housing developments located on master planned land releases on city fringes) and infill developments (incremental densification of already developed areas, including development focused around transport nodes or regeneration of former industrial sites in established areas).

These lags in infrastructure provision affect everyday life, reducing the liveability of these communities. In inner areas, this can often translate into over-enrolment in schools, increased congestion on roads, overcrowding on trains and buses, and competition for space at parks. In greenfield areas, this can mean public transport networks or local community services are not delivered until well after new residents move in and patterns of behaviour, such as car use, have become well entrenched. In turn, community trust in governments to deliver the services they need, and act in their best interest, can diminish significantly.

Communities have also witnessed the delivery of poor-quality housing development that is not sympathetic to the local character of their neighbourhoods. When density is not well integrated into the local area and not accompanied by the amenity and services expected in large cities, communities are understandably apprehensive about further growth and change.

While these concerns should not be dismissed out of hand as 'nimbyism', the solution is not to limit growth or the provision of infrastructure in our cities. It is possible to grow our cities and retain their liveability and unique character. To achieve this, we need to modernise the way we plan and sequence housing and infrastructure in our cities.

Current planning and sequencing practices need to adapt to support growth

The combination of the scale and pace of population growth set to occur in our cities poses material challenges for governments, industry, and the community. Supporting the additional housing that will be needed in both greenfield and established areas will place pressure on existing planning, funding, and governance practices. Our cities will need to become more agile and innovative in accommodating growth and delivering services.

Australian cities need to transform from 'suburban' cities into 'urban' cities. While detached housing and lower-density living will still play a role in our cities into the future, the changing nature of our cities – including their new economic geography, physical geographic constraints, cost of development, and increasing trends towards more urban living – means there will need to be a greater focus on delivering infill development.

Delivering infrastructure for infill development presents governments with new challenges that our planning, funding, and governance arrangements were not designed to address. For example, 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 dual challenges of rapid population growth and the increasing urban infill task place us at a crucial moment in the development of our cities. Governments need to act now to preserve and enhance their world-renowned livability. To do this, our urban planning, funding, governance, and delivery practices need to evolve and adapt.

Infrastructure Australia reviewed infrastructure sequencing practices in our five largest cities

Infrastructure Australia conducted a 'process and practice' review of how Australia's largest cities sequence housing-related infrastructure and housing development in Sydney, Melbourne, Brisbane, Perth and Adelaide, at both state and local government levels.

The first component of the research was a review of the legislative and planning processes in place for each city, at both state and local government levels. This included planning systems, overarching governance frameworks, and funding arrangements for delivering new housing and infrastructure.

The second component was interviews with representatives of local government, state government, and industry (both the property and infrastructure sectors) in each city. This qualitative research was conducted to gain insight into the way planning processes are translated into practice. The interviews focused on each participant's views on the differences between the realities 'on the ground' of delivering supporting infrastructure to developments in cities, and the formal processes and practices.

Participants also identified challenges and successes of sequencing practices, and circumstances in which sequencing practices align poorly with intended outcomes.

Australia's major cities face six common challenges when sequencing infrastructure and housing

Infrastructure Australia has used the outcomes of the 'process and practice' review to identify six common challenges facing Australia's largest cities as they grow. Each of the five cities is unique, having different geographies, planning systems, infrastructure networks, and rates of growth. However, our research found that common challenges exist across these five cities. These are:

- **Finding 1: 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. In fast-growing cities, housing development tends to lead infrastructure delivery, making it difficult for governments to plan strategically for the long term and meet the needs of growing communities.

- **Finding 2: Australia's three-tiered governance structure can make it challenging to consistently deliver liveable places.** Different levels of government have different responsibilities and priorities for delivering and maintaining infrastructure in our cities, which can lead to fragmented decision-making and investment.

- **Finding 3: Sector-led infrastructure planning can lead to uncoordinated outcomes for communities.** Governments are structured to deliver sectoral outcomes, such as transport, education, and health services, rather than 'place' outcomes. Sector-based governance structures, particularly at the state level, can lead to siloed planning and infrastructure decision-making, inconsistent outcomes, and unintended consequences for places and communities.

- **Finding 4: Communities are increasingly disappointed by their experience of growth.**
Communities are understandably resistant to growth when they witness development that is poorly designed and not accompanied by commensurate increases in infrastructure. Community trust in governments to deliver infrastructure and services in growing cities is diminishing, as outcomes for a place are often not well defined and communities can feel left out of conversations about the future of their area.

- **Finding 5: Our infrastructure funding mechanisms have not kept pace with growth.**
There are limitations with the current funding mechanisms for timely delivery of local and state infrastructure. Funding mechanisms lack consistency and transparency, and vary in their effectiveness as a means of raising revenue. This creates uncertainty for governments and industry.

- **Finding 6: Governments and industry lack a shared understanding of the capacity of different infrastructure networks.**
Governments and industry differ in their understanding of the current quality or performance, and projected growth and capacity across infrastructure networks in our cities. While the different levels and arms of Australia's governments increasingly use common population assumptions, information about the available and potential capacity of infrastructure networks is often fragmented, resulting in uncoordinated decision-making and planning.

Governments and industry must work in partnership to address these challenges

As Australia's population grows, it is crucial that we improve the way we plan for housing and infrastructure in our cities. Ensuring we have the right planning, funding, and governance models in place will help to improve outcomes for the community and re-establish trust between communities and governments.

Drawing on the findings of our 'process and practice' review, this paper provides nine recommendations for action at different levels of government and for industry. While these recommendations are relevant to all five cities, and other parts of Australia experiencing growth and change, governments in each city should seek to implement solutions that respond to their city's respective characteristics and contexts.

This paper builds on Infrastructure Australia's previous research on cities and population growth

The *Australian Infrastructure Plan* and the recent Reform Series paper *Future Cities: Planning for our growing population* made recommendations to all levels of government on managing population growth for the benefit of all Australians. *Future Cities* presented growth scenarios for Melbourne and Sydney to 2046 and found that a business-as-usual approach to land use and infrastructure planning in our largest cities is not sustainable. It recommended that governments improve planning and delivery processes to accommodate growth, particularly through integration and coordination in delivering strategic metropolitan plans.

This paper builds on this work by providing more detailed advice to governments, industry, and the community on how we can improve the way we plan for and deliver housing and infrastructure as our cities grow.

A guide to reading this paper

This paper is split into three chapters:

1. **The state of planning in Australia's largest cities:** Identifies the changes already occurring in our five largest cities and provides an overview of the current processes and practices in place to deliver housing and infrastructure.

2. **Challenges with the current approach:** Evaluates the challenges being faced across the cities in aligning the delivery of housing with appropriate infrastructure, including planning, funding, and governance challenges. The chapter outlines our six key findings across the five cities studied.

3. **Recommendations for more integrated planning and delivery:** Details nine recommendations for action within governments and industry to improve processes and practices in sequencing infrastructure and housing development to retain liveability and productivity in our cities as they grow.

Each chapter begins with an 'At a glance' box. These provide the reader with a snapshot of the content and structure of the chapter.

Findings & Recommendations

This paper identifies six common challenges facing Australia's largest cities as they grow. Infrastructure Australia has used these findings to inform the development of nine recommendations to governments and industry on how to deliver best-practice sequencing. Together, the findings and recommendations are a call to action for all levels of government to ensure the right planning, governance, funding, and delivery frameworks are in place to make our cities liveable into the future.

Finding 1

Infrastructure delivery is struggling to keep pace with rapid population growth in our major cities.

Recommendation 1

The Australian Government should establish a process to better strategically plan for Australia's future population. It should partner with state, territory, and local governments to develop:

- A whole-of-government vision for the future liveability of the nation. This should underpin policy and investment decisions at all levels of government, and spatial planning by state, territory, and local governments.

- An evidence base to better understand the demographic drivers of change in our population and their spatial impact.

- Forecasts for population growth at a national level, which are translated to account for spatial impacts at the local level. These should include inputs from core policy areas including births, deaths, immigration and other demographic factors (such as ageing), skills and jobs, and infrastructure provision, and should be tested against a number of different scenarios.

Recommendation 2

Planning systems should focus the weight of decision-making on strategic level planning. State and local governments should work in partnership to:

- Develop local strategic plans that translate metropolitan strategies into tangible outcomes at the 'place' level.

- Ensure local strategic plans consider local infrastructure planning and sequencing requirements.

- Amend local planning controls and development assessment processes to reflect strategic plans.

Finding 2

Australia's three-tiered governance structure can make it challenging to consistently deliver liveable places.

Recommendation 3

Governance arrangements with appropriate funding, resourcing, and accountability arrangements are essential to ensuring that strategic metropolitan plans are translated into tangible local outcomes. State and local governments should work in partnership to:

- Clearly define roles and responsibilities to strengthen accountability for delivering the local strategic plans.

- Ensure local governments are adequately resourced and empowered to plan and deliver local strategic plans.

Recommendation 4

Enhancing existing incentive mechanisms that promote improved governance and better collaboration between all levels of government will help to achieve liveable outcomes in our largest cities. The Australian Government should work with state and local governments to:

- Establish a consistent hierarchy of incentive funding to drive nationally significant benefits for our largest cities, at the project, place, and reform levels.

- Continue to prioritise long-term metropolitan governance reform through City Deals to ensure progress on inter-governmental collaboration is institutionalised and ongoing.

- Prioritise governance reforms such as reforms to funding arrangements between levels of government, new or dedicated governance structures, and reforms to planning legislation.

Finding 3

Sector-led infrastructure planning can lead to uncoordinated outcomes for communities.

Recommendation 5

In areas of high growth, governments should identify and assess the full range of economic and social infrastructure required at a 'place' level. State governments should work with local governments and industry to:

- Establish adequately resourced governance arrangements that bring together a range of stakeholders who have an interest in the successful development of the place. For example, state agencies, local governments, land owners and developers, and business and community representatives.

- Align the objectives of stakeholders with state and local infrastructure strategies and commit agency budgets to ensure delivery and implementation.

- Improve coordination across sectors, through adopting approaches, such as the development of strategic 'place-based' business cases, to ensure that infrastructure is delivered to meet the demands of growth.

- Continue to evaluate individual projects as final business cases.

Finding 4

Communities are increasingly disappointed by their experience of growth.

Recommendation 6

Improving the quality, demonstrated outcomes, and longevity of community engagement is critical to the successful growth of our largest cities. All governments should work in partnership with industry to:

- Focus the weight of community engagement at the strategic level to enable the community to contribute to 'telling the story' of an area, beyond individual projects.

- Ensure a range of perspectives that reflect community demographics are considered.

- Use collaborative engagement models to co-create strategic goals.

- Design engagement processes that allow frank, honest, and forthright community conversation on expectations and trade-offs, with a commitment to tangible actions, transparent reporting, and accountability.

Image credit: METRONET WA

Finding 5

Our infrastructure funding mechanisms have not kept pace with growth.

Recommendation 7

Governments should undertake an independent review of local and state infrastructure funding mechanisms and policies. State governments should work with local governments and industry to:

- Assess the effectiveness of the full range of mechanisms available, including local government rates and taxes, developer contributions and user charges, to address long-term structural funding shortfalls for asset delivery and maintenance.

- Ensure policies facilitate the timely delivery of infrastructure, increase transparency, and provide governments, industry, and the community with as much certainty as possible of the cost of infrastructure and how it is paid for.

- Consider alternative and innovative funding mechanisms, such as a broad-based land tax and targeted levies, to promote equitable and efficient outcomes.

Recommendation 8

Making better use of existing infrastructure assets and networks will deliver improved outcomes for both communities and governments. Planners and asset owners should:

- Embed better-use principles in infrastructure decision-making, including consideration of non-capital options, such as optimisation, policy and regulatory reform, and governance reform, when developing solutions to upgrade infrastructure capacity.

- Prioritise the planning, funding, and delivery of maintenance to address backlogs.

- Use technological enhancements (such as smart motorways) and policy interventions (such as variable pricing) to improve user experience and reduce costs.

- Promote shared-use arrangements, such as opening up spaces like school playgrounds out of hours to increase community access to green space.

Finding 6

Governments and industry lack a shared understanding of the capacity of different infrastructure networks.

Recommendation 9

Our largest cities require a more coordinated, transparent and standardised understanding of current and future infrastructure capacity to help governments optimise infrastructure use and make better investment decisions. All levels of government should work with industry to further develop evidence bases that:

- Use new and existing data sources to provide more integrated and timely information on asset and network quality, capacity, and use.

- Inform cross-sectoral government planning and decision-making.

- Improve infrastructure optimisation, the transparency of infrastructure funding mechanisms, and reduce the cost of delivering and maintaining infrastructure.

The state of planning in Australia's largest cities

At a glance

- **Australian cities are set to grow and change significantly over coming decades.** To support this growth we need to deliver new housing and substantially upgrade the capacity of our infrastructure networks.

- **We will need to focus more on delivering infill development.** Our cities will need high-quality, higher-density development that is well sequenced with infrastructure to accommodate growth and maintain liveability.

- **Greenfield and infill development have different infrastructure and planning needs.** Greenfield sites generally have limited levels of existing infrastructure, whereas infill developments have varying levels of infrastructure capacity, which may need to be upgraded to support additional people.

- **Our current urban governance, planning, and delivery mechanisms are complex and reflect historical practices.** Governments will need to become more agile and innovative in accommodating growth and delivering services.

## Australian cities are growing and changing

Over the period from 2017 to 2047, Australia's population is projected to increase by over 11 million people. Around 80% of this growth will occur in our five largest cities – Sydney, Melbourne, Brisbane, Perth, and Adelaide.[4]

Figure 1 shows historical and projected population growth across these cities, and demonstrates the step change expected in the rate of growth over the next 30 years. While actual growth rates in Brisbane and Perth have slowed over recent years, due in large part to a reduction in mining activity, economic growth is expected to remain strong in these cities as their economies transition towards other sectors.

It is important to note that long-term population projections are inherently difficult to determine. Australia reached a population of 25 million in August 2018 – much earlier than projected less than 20 years ago – due to changes in migration and demographic factors such as people living longer. While future population projections will be based on assumptions and trends that may change over time, it is clear that Australia's largest cities are likely to grow substantially over the next 50 years.

Figure 1: Historical and projected populations in Australia's five largest cities, 1901 to 2066
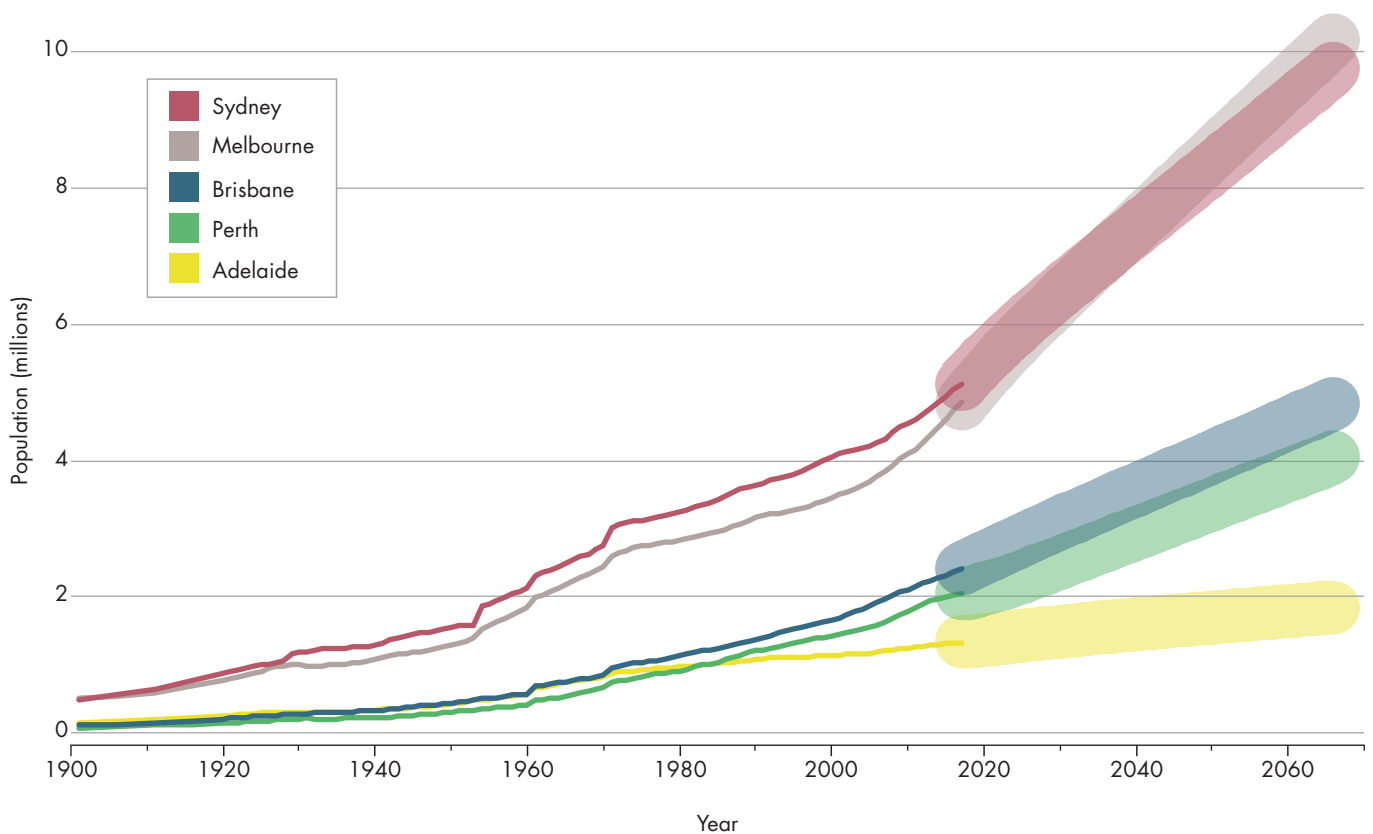
Note: Figures include Census counts (updated for non-Census years) for years 1901 to 1970, and estimated resident population for 1971 onwards. Capital city boundaries are based on Greater Capital City Statistical Areas (GCCSAs) for 1971 onwards. GCCSAs are geographic regions created by the ABS, which represent the socio-economic extent of each capital city. Population figures for 1901 to 1970 are based on earlier boundary definitions and may be inconsistent with GCCSAs.

Source: Australian Bureau of Statistics (2014, 2018).[5]

More people means we will need to deliver more housing, jobs, infrastructure, and amenities to support them. However, growth also provides Australia with an opportunity to improve our prosperity. Population growth can be a source of economic dynamism, which could strengthen our labour force and the domestic market for businesses, and enhance the diversity of our communities and places. Meanwhile, Australia is undergoing a number of economic, demographic, environmental, and technological shifts that are changing the way we live. We need to evolve the policy and regulatory frameworks of our largest cities to meet this changing future.

Our regions and smaller cities will also play an important role in supporting population growth. This will be explored further in future Infrastructure Australia research, but is not the focus of this paper.

Australian cities have not always accommodated growth well. Over the past decade, countless neighbourhoods have been redeveloped and densified without the necessary supporting infrastructure being delivered. This has led to poor outcomes for both existing and new communities. Community apprehension towards further growth is understandable when their experience of past growth has largely amounted to reduced amenity, poor-quality design, and congestion and crowding. In order to keep our cities attractive to people and businesses, we need to focus on improving their liveability (see **Box 1**), affordability, accessibility, and productivity. Achieving this while also growing the population of our cities will require a step change in the structure and governance of our cities, and better collaboration across government, industry, and the community.

Box 1: Defining liveability

Australian cities need to remain 'liveable' as they grow and change. A liveable community is one in which it is easy and comfortable to carry out day-to-day life, for a range of different people. It should be 'safe, attractive, socially cohesive and inclusive, and environmentally sustainable; with affordable and diverse housing linked by convenient public transport, walking and cycling infrastructure to employment, education, public open space, local shops, health and community services, and leisure and cultural opportunities'.[6]

Our cities will need more high-quality, higher-density development supported by adequate infrastructure

Cities do not change overnight. In fact, buildings and infrastructure generally last from 40 to 100 years. The decisions we make about our cities today, such as where development should go or which investments should be prioritised, will have implications for decades to come. This is evident when looking at Australian cities today.

The structure of many of our public transport networks, particularly trains and trams, are a legacy of the early 19th Century. The structure of our suburbs is a legacy of the 20th Century, when the car came to dominate travel, transforming Australia's cities into some of the largest (in terms of area) and lowest density in the world. For example, Melbourne is almost six times larger in area than London, with half its population. Brisbane covers an area 20 times the size of New York City (five boroughs), with a quarter of its population.[7]

Today we need to transform our cities once more, from primarily 'suburban' to more 'urban'. The sprawled nature and large area of Australian cities means that it is not desirable or affordable for governments to continue accommodating the projected population growth in new greenfield areas on the fringes. In some cities there are also geographic boundaries that prevent the city from sprawling much further, such as the mountains and national parks that surround Sydney. This means governments at all levels need to focus on growing our cities up, rather than out.

This need to densify is both a response to the scale of population growth projected for our cities, and a number of global trends, such as rapid technological transformation, climate change, the changing nature and location of work, and shifting structures of national and global economies. These trends will have a significant impact on the structure and operation of our cities.

Australia's total population is growing in number due to international migration coupled with a steady birth rate and a decreasing death rate (as people are living longer). **Figure 2** shows how these three factors have contributed to the annual change in population over the past three decades. The chart demonstrates the role births (shown in red) have played alongside net overseas migration (shown in grey) in growing the population. In the past 10 years the total number of births is of the same scale as the number of people migrating from overseas.

Internal migration (movement between states, cities, and regions) is also contributing significantly to population growth in our cities. People are increasingly moving between cities, or from regions into larger centres and cities, to access jobs and services. There are also increasing trends towards more urban living, with increased demand for areas within cities that are close to jobs, entertainment, culture, open space, and other amenities.

Box 2 summarises how births, deaths, net overseas migration and internal migration contribute to population growth in our largest cities.

Figure 2: Annual change and average 10-year change in the national population

Note: The ABS updated its methodology for Net Overseas Migration from September 2006 onwards.
Source: Australian Bureau of Statistics (2014, 2018).[8]

Box 2: Contributors to urban population growth

The growth of Australian cities has four key components:[9]

■ **Fertility:** Australia's birth rate has remained relatively steady since the 1980s, at around 1.7 to 1.8 births per woman.

■ **Life expectancy:** People are living longer (between 80.4 and 84.5 years) as quality of life and healthcare has improved.

■ **Net overseas migration:** New migrants are generally young and prefer to settle in cities. In 2016, 28–39% of the population of Sydney, Melbourne, Brisbane, Perth, and Adelaide were born overseas,* and around 84% of migrants arriving in 2015–16 were aged under 40 years.

■ **Internal migration:** People are increasingly moving between cities, and from rural and regional areas into cities, to gain access to jobs, services, and urban lifestyles.

Note this includes temporary migrants, such as international students and other temporary visa holders.

Population growth in our cities is linked to the urbanisation of Australia's economy. The focus of the Australian economy is shifting away from manufacturing and primary resources towards more knowledge-intensive and service sectors. In 2016–17, professional services industries were the largest contributors to the Gross Domestic Product (GDP) of Sydney, Melbourne, and Brisbane, while Perth's GDP was driven by the financial and insurance sectors. In Adelaide,

healthcare was the largest contributor to GDP over the same period.[10] The shifting structure of the Australian economy has geographical implications, as the majority of Australia's wealth and economic activity is moving into cities. Within cities, economic activity is agglomerating in centres as rising industries require proximity and access to each other, and to skills, capital, and ideas. **Figure 3** provides an example of how this is occurring in Brisbane.

Figure 3: Location of jobs in knowledge-intensive industries in Brisbane, 2016 (by place of work)
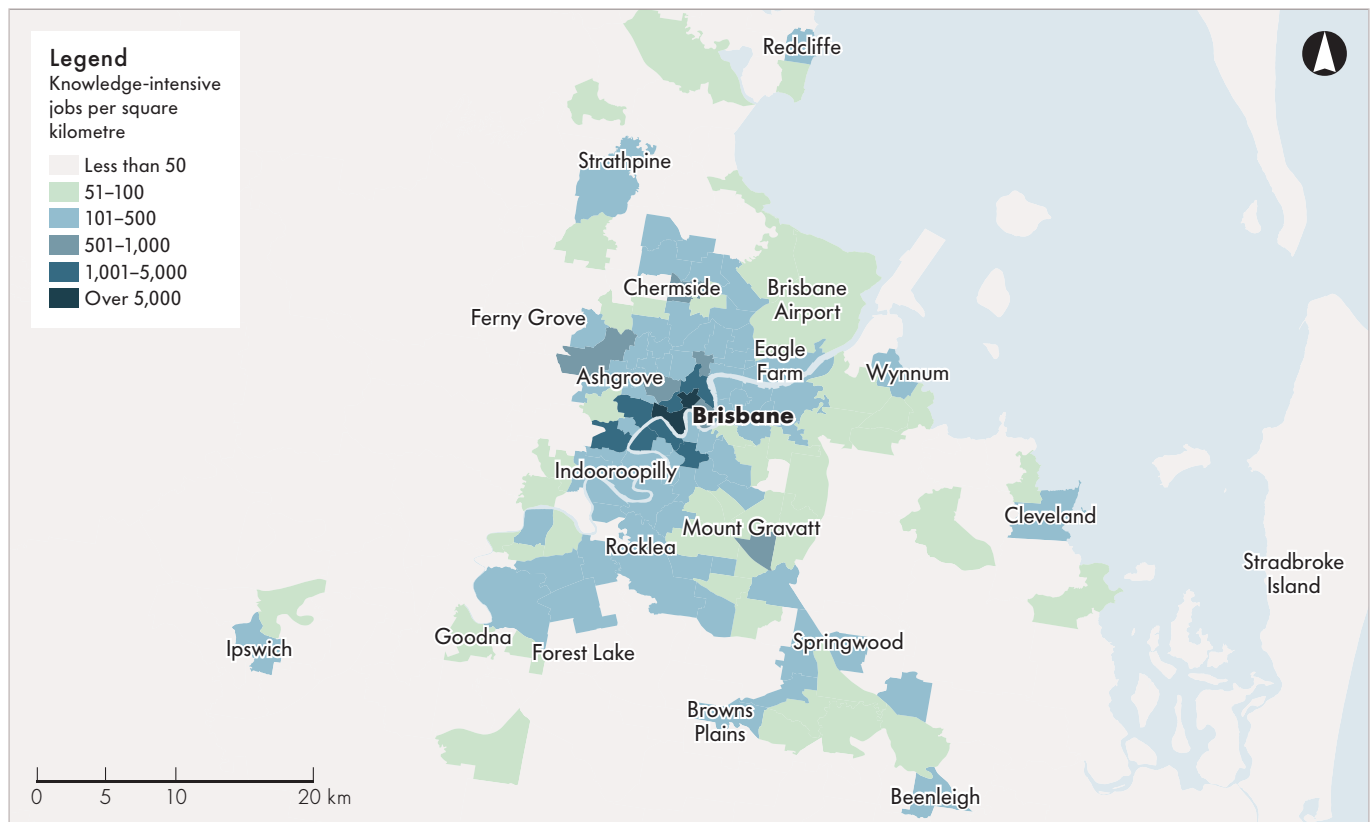
Note: Areas shown are Statistical Area 2 (SA2s). SA2s are geographic regions created by the Australian Bureau of Statistics, which represent a large suburb or a collection of small suburbs. Knowledge-intensive industries are: 'Information Media and Telecommunications', 'Financial and Insurance Services', 'Rental Hiring and Real Estate Services', 'Professional Scientific and Technical Services', 'Administrative and Support Services', 'Public Administration and Safety'.

Source: Australian Bureau of Statistics (2016).[11]

Within cities, there is also increased demand for housing in areas that are close or well connected to services and job opportunities. In recent decades, densification of residential development in the inner areas of our cities has increased. **Figure 4** shows this recent shift towards higher-density living (attached or semi-detached dwellings, as opposed to separate houses) around key jobs centres in Melbourne and Sydney between 2011 and 2016. Densification in Melbourne has been focused in the inner city, while in Sydney densification has occurred around other centres, such as Parramatta, as well as the CBD. **Figure 5** shows that there has been a corresponding increase overall in the delivery of attached or semi-detached dwellings in these two cities as a proportion of all approved dwellings.

Figure 4: Change in location and density of attached or semi-detached dwellings in Sydney and Melbourne, 2011 to 2016

Sydney 2011
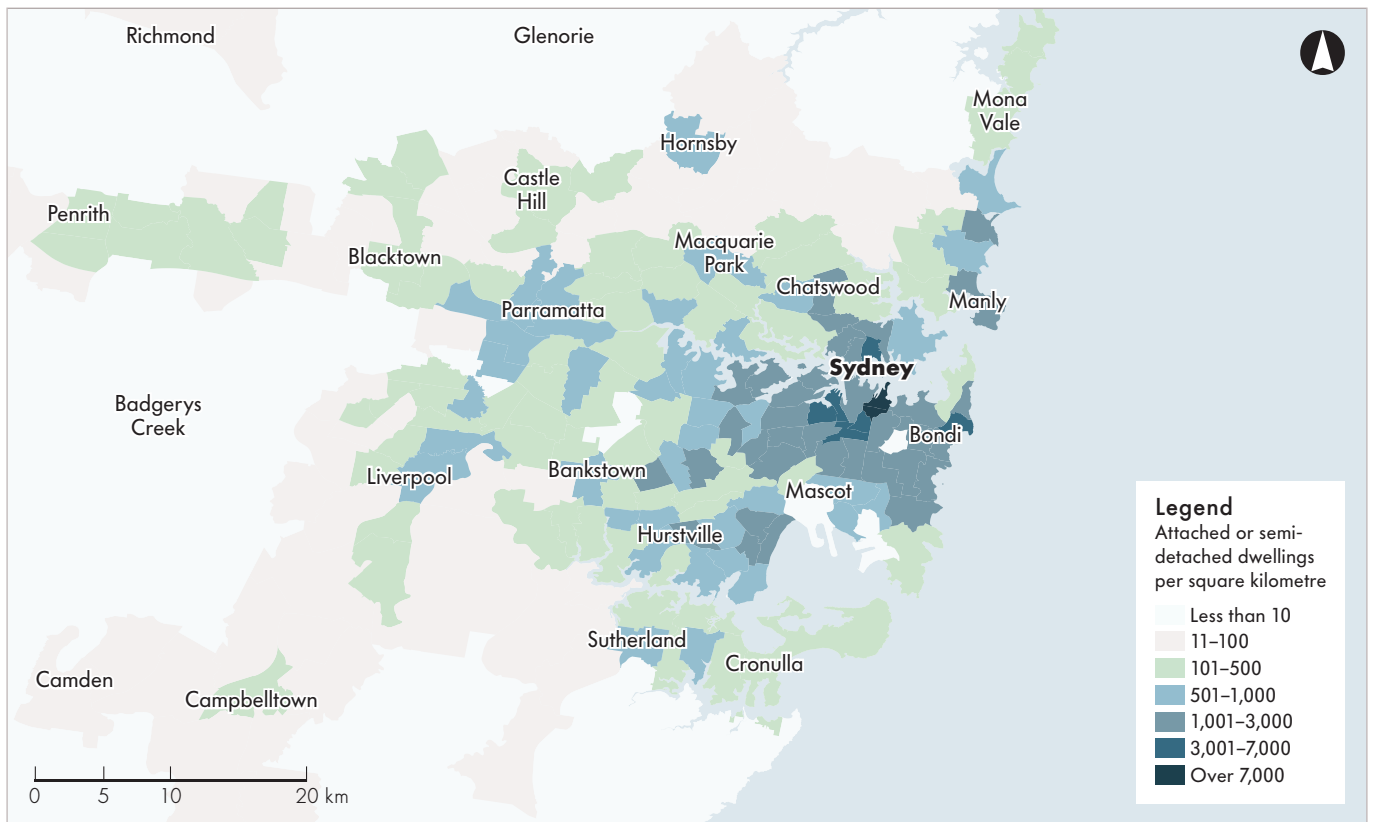
Sydney 2016
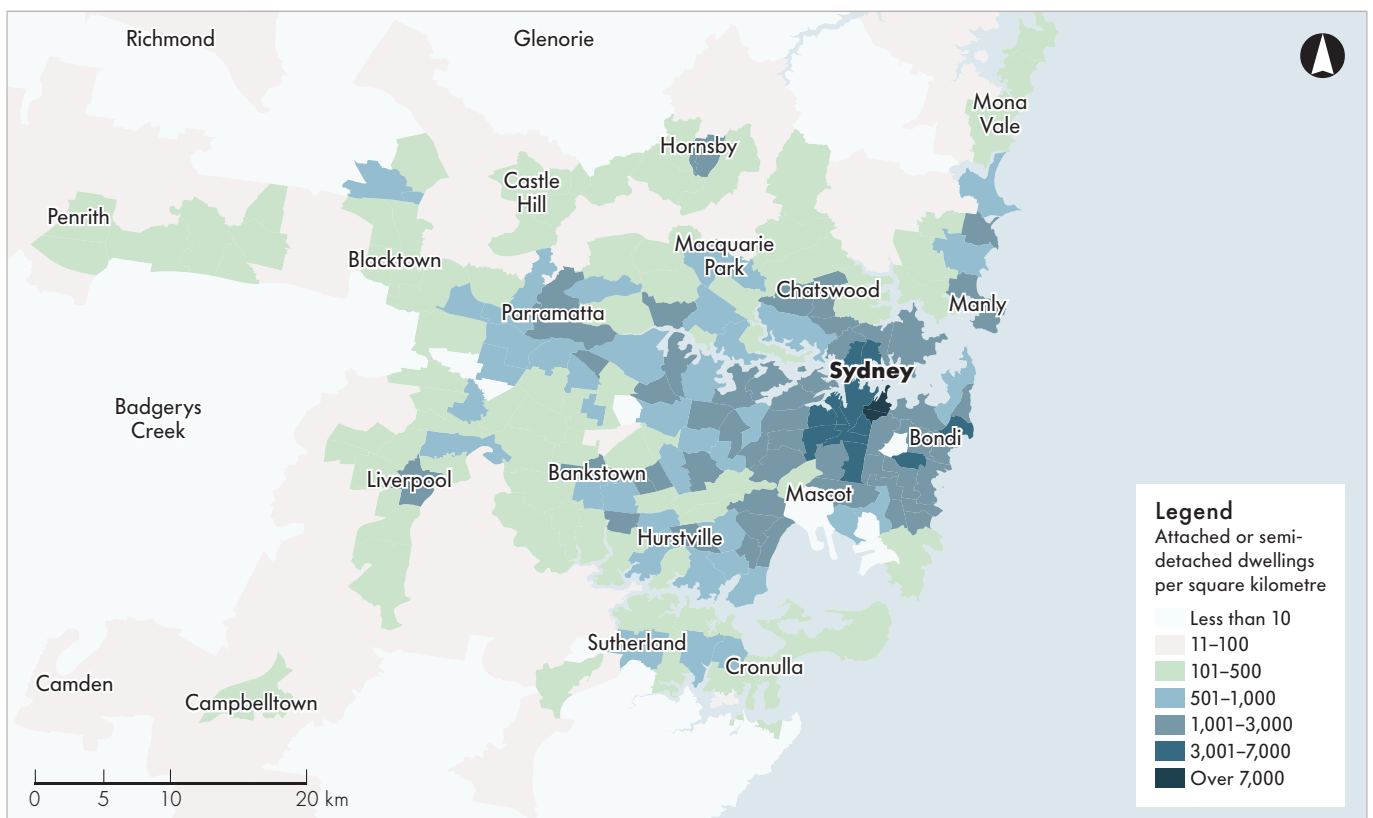
Melbourne 2011
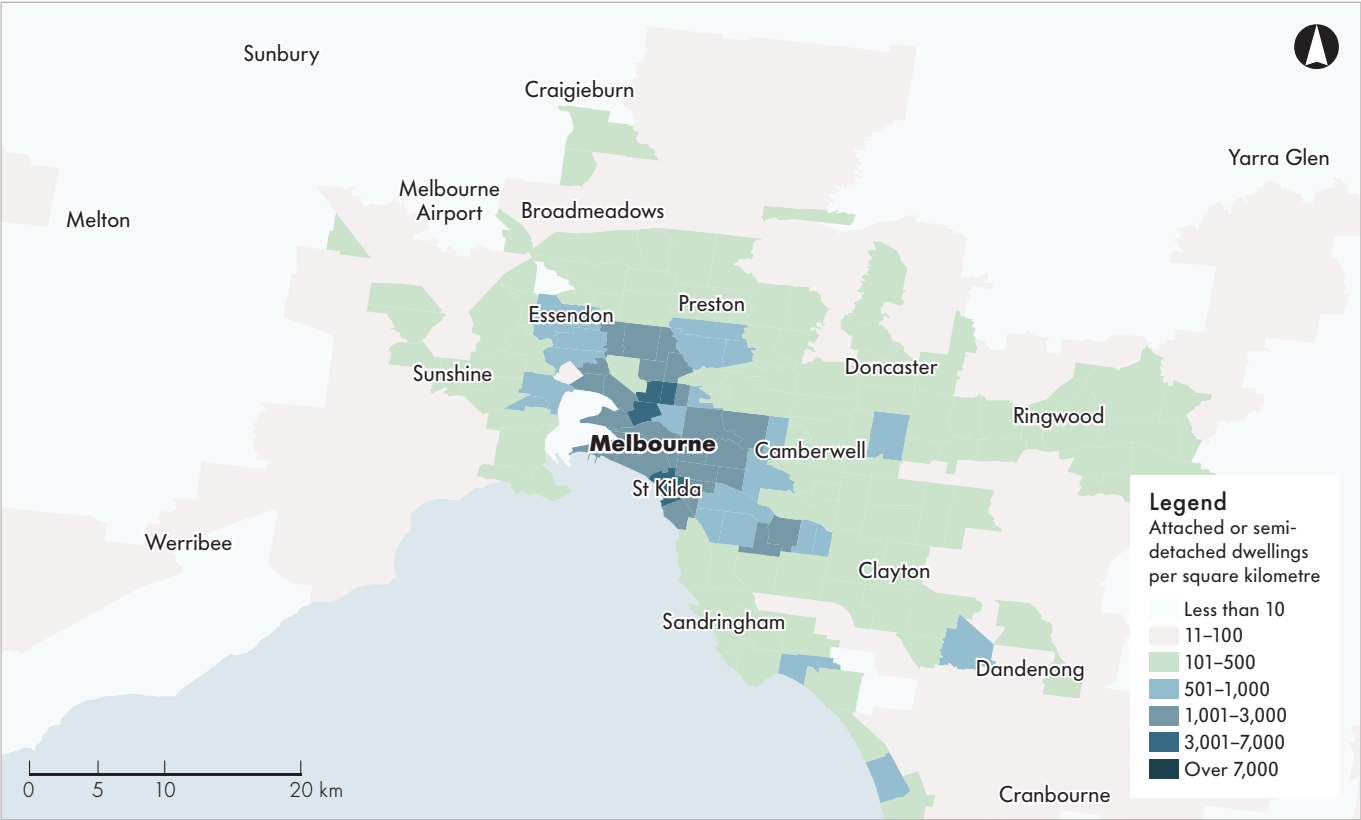
Melbourne 2016
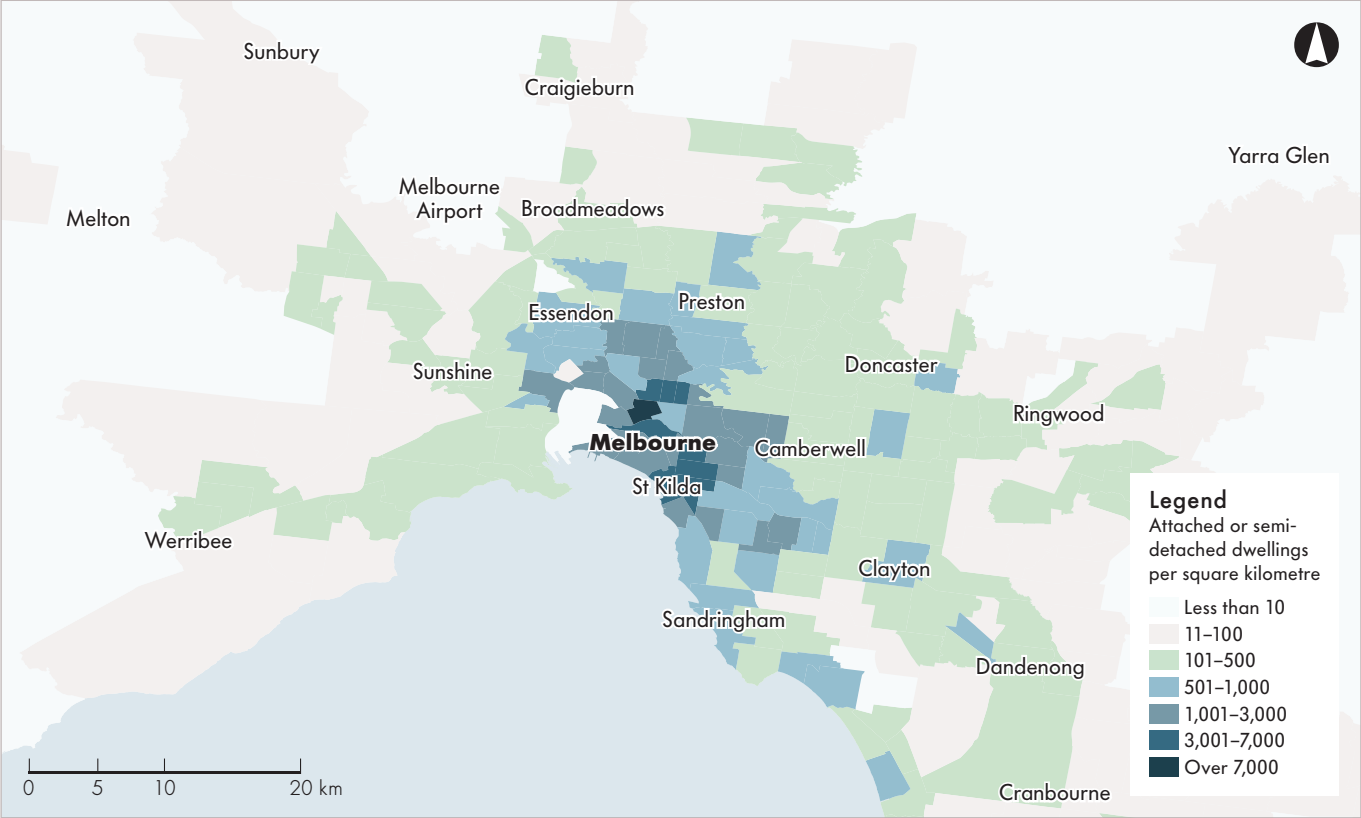
Source: Australian Bureau of Statistics (2011, 2016).[12]

Figure 5: Approved dwellings in Australia's five largest cities, 2001–02 to 2017–18
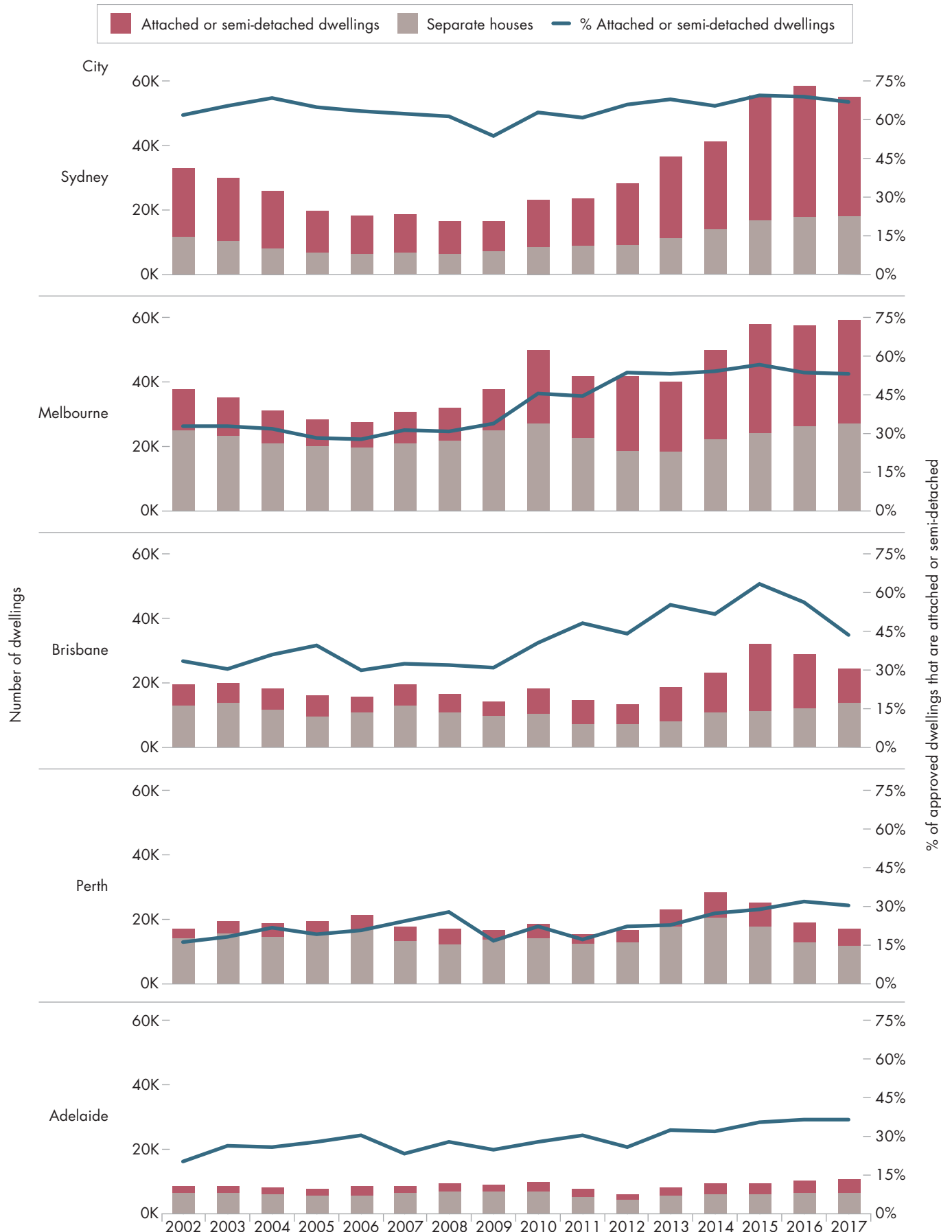
Note: City boundaries are based on the Australian Bureau of Statistics Greater Capital City Statistical Areas.
Source: Australian Bureau of Statistics (2018).[13]

Different types of development have different infrastructure and planning needs

Neighbourhoods and suburbs vary substantially in their history, demographic profile, character, and needs of local residents and workers. This diversity creates interesting and unique places to live, work, and visit, but also leads to different approaches to planning and delivering supporting infrastructure in these places.

Development in Australian cities can vary from large-scale, master-planned greenfield estates on the edges of cities and renewal of former industrial lands, to smaller-scale redevelopment of individual blocks or houses in established suburbs. Greenfield sites generally have limited levels of existing infrastructure, whereas infill areas have varying levels of infrastructure to support the existing community that may require upgrades or new assets to support additional people. These different infrastructure requirements impact the cost to governments and industry when delivering new housing in different areas across our cities.

Table 1 defines broad categories of development types across Australian cities, and their planning and infrastructure requirements. These categories sit along a spectrum and individual projects may be a mix of different categories.

Meeting the housing needs of a growing population will require a significant shift across all Australian cities towards delivering infill development. Governments are already recognising this task, as **Table 2** shows, with each city setting goals to increase the proportion of new housing delivered in established areas over coming decades (with the exception of Brisbane). *Plan Melbourne* explicitly states the need to 'avoid the temptation to sprawl' as the city grows.[14] While this shift towards infill has already begun (see **Figure 6**), achieving this infill task will take time and coordinated planning. The key challenge for governments is to sequence the delivery of new or upgraded infrastructure alongside increased growth. This means making sure schools, hospitals, recreational facilities, and public transport services can support new people, without compromising the liveability of new or existing communities.

Table 1: Broad categorisation of development types in our largest cities

	Infill			Greenfield
	Small-scale development	**Transit-oriented development**	**Brownfield precincts**	
Definition	Incremental densification of established areas over time through small-scale projects.ª	Development focused around a key transport node.	Regeneration of large pieces of former industrial land, including public sites.	Creation of housing for new communities through master-planned land releases.
Scale	Development happens on a relatively small scale, e.g. individual lots or small parcels of lots.	Can vary from individual transport nodes to larger corridors.	Generally large-scale precincts.	Land release occurs on a large scale, which is then subdivided into smaller lots.
Location within city	Established areas, generally inner or middle suburbs.	Established areas along transport corridors.	Established areas, generally inner or middle suburbs.	Rural or semi-rural areas on the fringe.
Existing land use	Residential or mixed use, at varying densities.	Residential or mixed use, at varying densities.	Limited existing use. Former industrial or other uses, or surplus government land.	Undeveloped, or low-density residential or agricultural.
Existing community	Established existing community.	Established existing community.	Potential existing community.	Limited existing community.
Level of ownership fragmentation	High.	Varies.	Low.	Varies.
Level of land remediation / repair required	Low.	Low.	Can be high.	Can be high.
Existing infrastructure provision	Local and regional infrastructure.	Local and regional infrastructure.	Limited existing infrastructure.	No or limited existing infrastructure.
Infrastructure requirements	Can experience a high time lag between requirements and provision, compounded by incremental impacts.	Usually well served by transport, however other sectors can be overloaded.	Infrastructure quality often unclear and may require augmentation.	Can experience a high time lag between requirements and provision, compounded with housing delivery outstripping infrastructure.
Common issues	Accumulated growth can place pressure on existing infrastructure. Fragmented ownership and coordination can deliver poor outcomes.	Rapid growth can place pressure on other existing infrastructure.	Government investment is often required to remediate land and deliver infrastructure to make development viable.	Development starts from scratch and significant government investment is required to deliver infrastructure to make development viable.

a.   *Can range from additions (such as granny flats) to redevelopments (such as duplexes, terraces or apartments).*
Source: Arup (2017).[15]

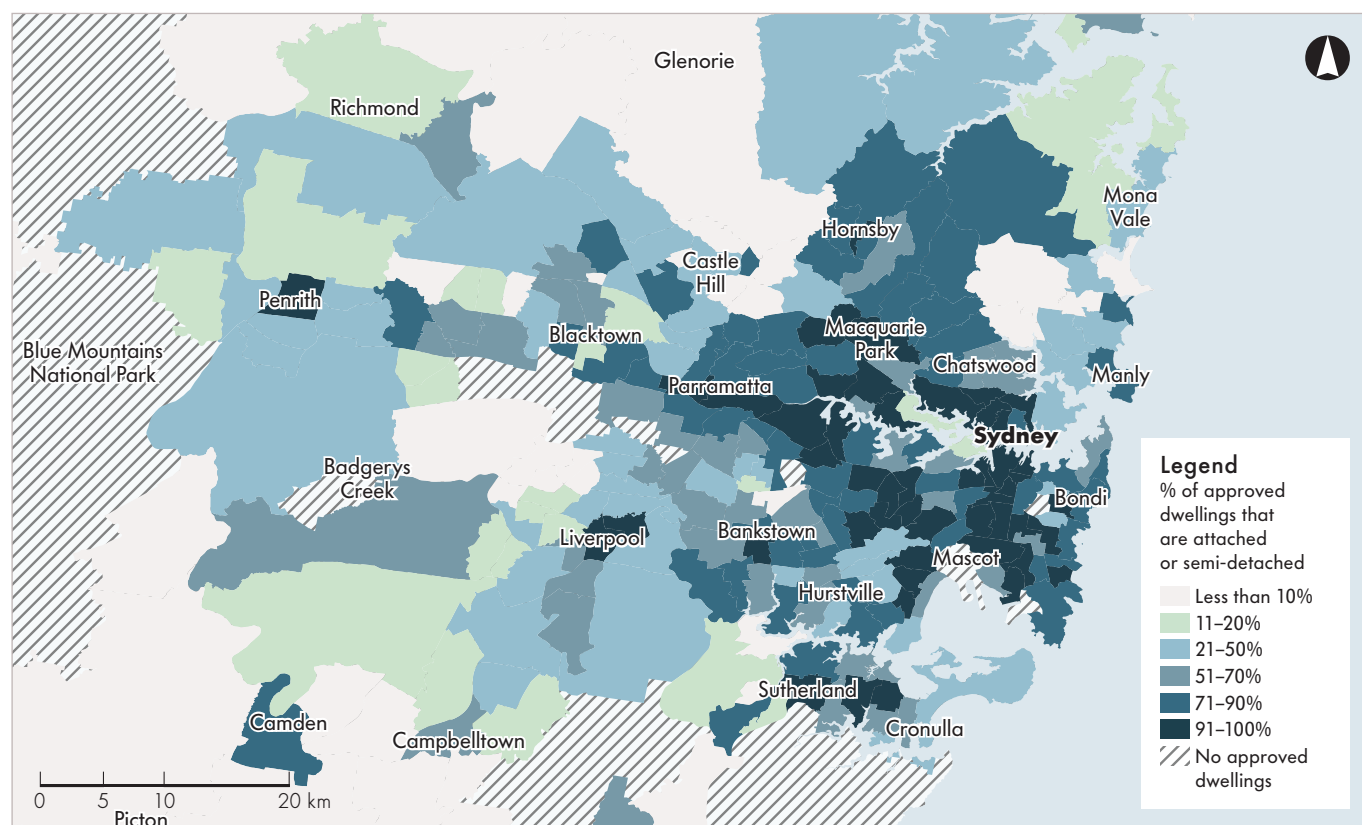*Table 2: Accommodating projected population increases in Australia's five largest cities*

Location	Projected population increase	Approximate current infill / greenfield split	Projected new dwellings required	Published target infill / greenfield split
Sydney	1,739,900 (2016–2036) *86,995 people per year*	78 / 22	725,000 (2016–2036) *36,250 dwellings per year*	No published target
Melbourne	3,400,000 (2015–2051) *94,444 people per year*	70 / 30	1,600,000 (2015–2051) *44,444 dwellings per year*	70 / 30
Brisbane	1,886,600 (2016–2041) *75,464 people per year*	65 / 35	750,000 (2016–2041) *30,000 dwellings per year*	60 / 40
Perth	1,500,000 (2018–2050) *46,875 people per year*	30 / 70	800,000 (2018–2050) *25,000 dwellings per year*	47 / 53
Adelaide	545,000 (2017–2045) *19,464 people per year*	76 / 24	248,000 (2017–2045) *8,857 dwellings per year*	85 / 15

Note: *The Brisbane figures cover the South East Queensland region as defined by the Queensland Government.*

Source: *New South Wales Department of Planning and Environment (2016), New South Wales Department of Planning and Environment (2018), Greater Sydney Commission (2018), Victorian Department of Environment, Land, Water and Planning (2017), Queensland Department of State Development, Manufacturing, Infrastructure and Planning (2017), Western Australian Department of Planning, Lands and Heritage (2018), Western Australian Planning Commission (2017), Tasmanian Department of Planning, Transport and Infrastructure (2017).[16]*

Figure 6: Proportion of approved dwellings that are attached or semi-detached in Australia's five largest cities, 2016–2018

Sydney

Melbourne

Legend
% of approved dwellings that are attached or semi-detached

- Less than 10%
- 11–20%
- 21–50%
- 51–70%
- 71–90%
- 91–100%
- No approved dwellings

Brisbane

Legend
% of approved dwellings that are attached or semi-detached

- Less than 10%
- 11–20%
- 21–50%
- 51–70%
- 71–90%
- 91–100%
- No approved dwellings

Perth

Legend
% of approved dwellings that are attached or semi-detached

- Less than 10%
- 11–20%
- 21–50%
- 51–70%
- 71–90%
- 91–100%
- No approved dwellings

Adelaide

Legend
% of approved dwellings that are attached or semi-detached

- Less than 10%
- 11–20%
- 21–50%
- 51–70%
- 71–90%
- 91–100%
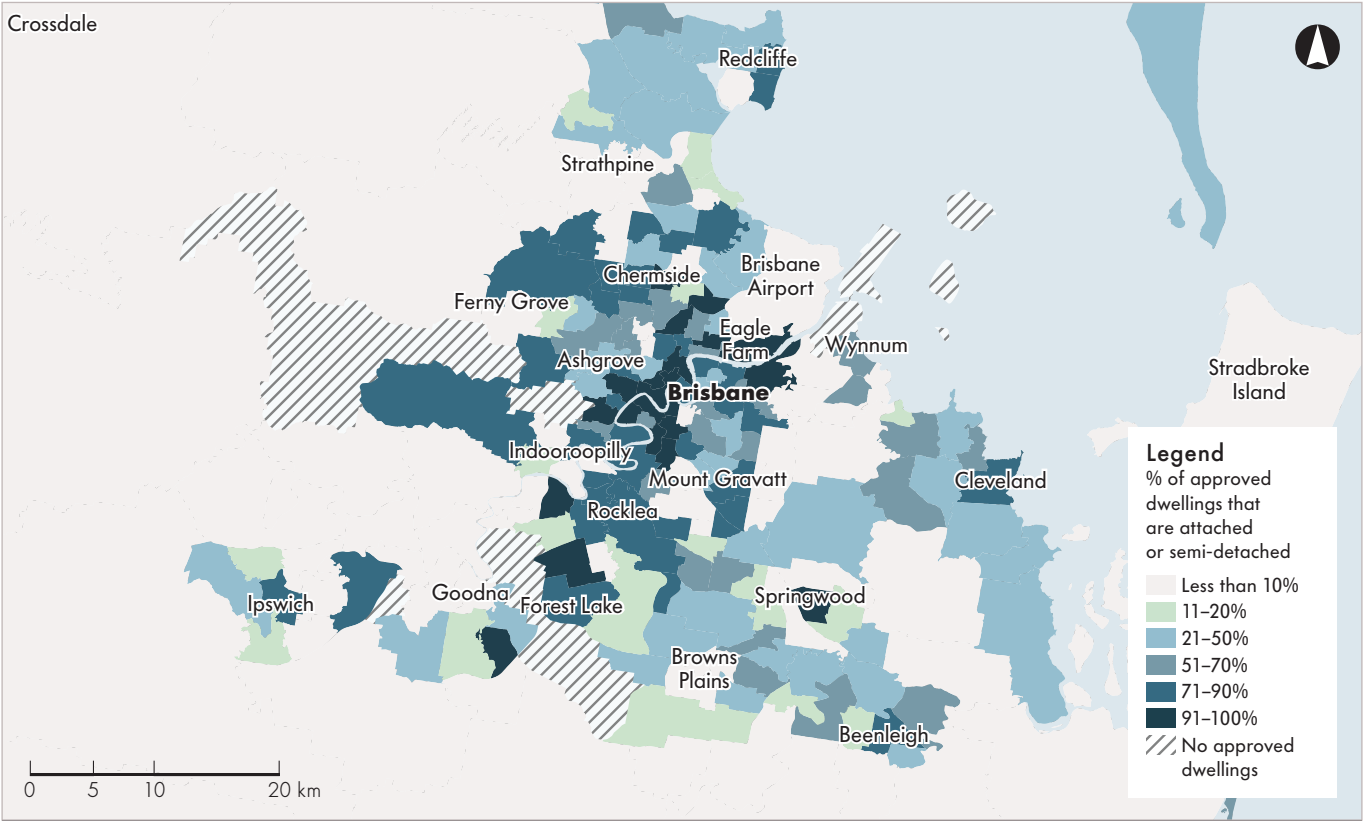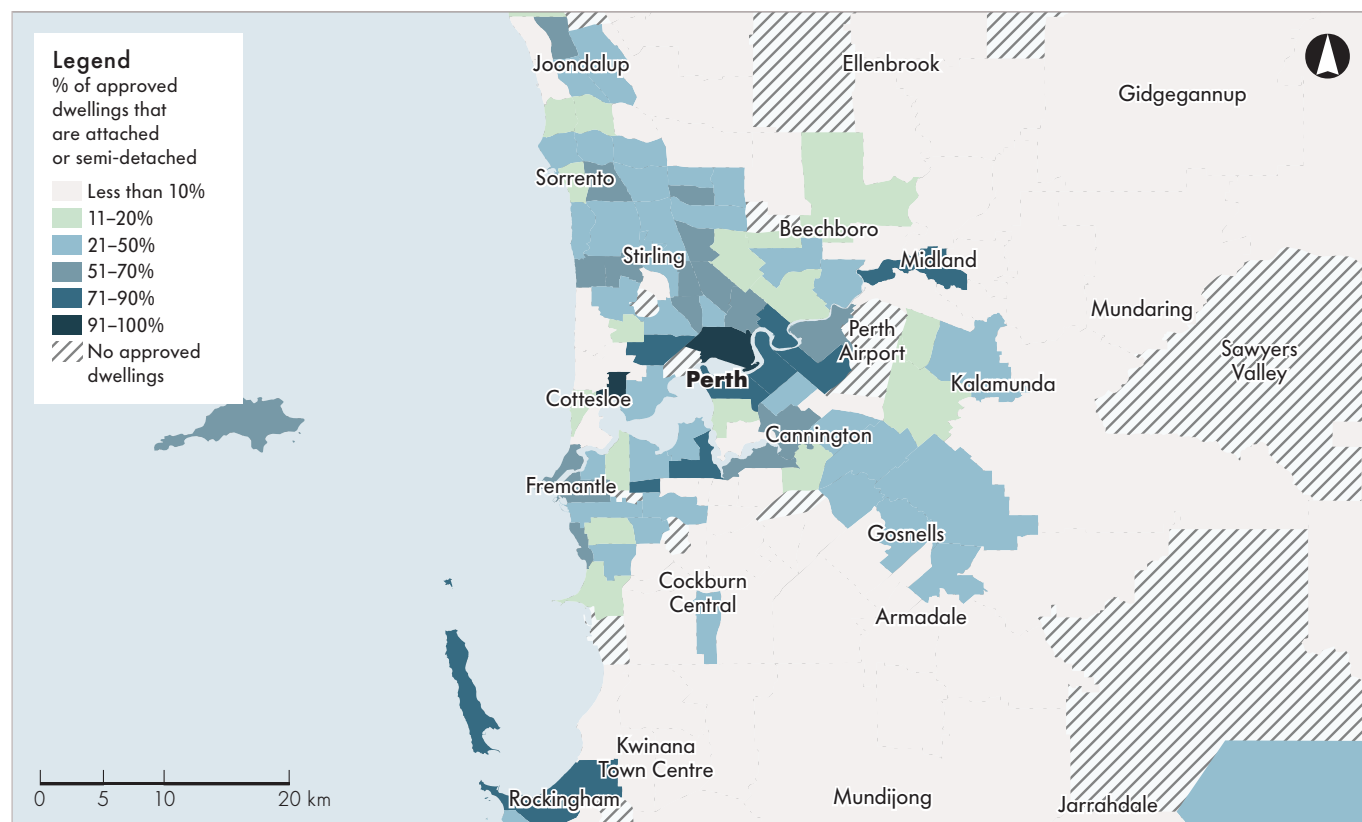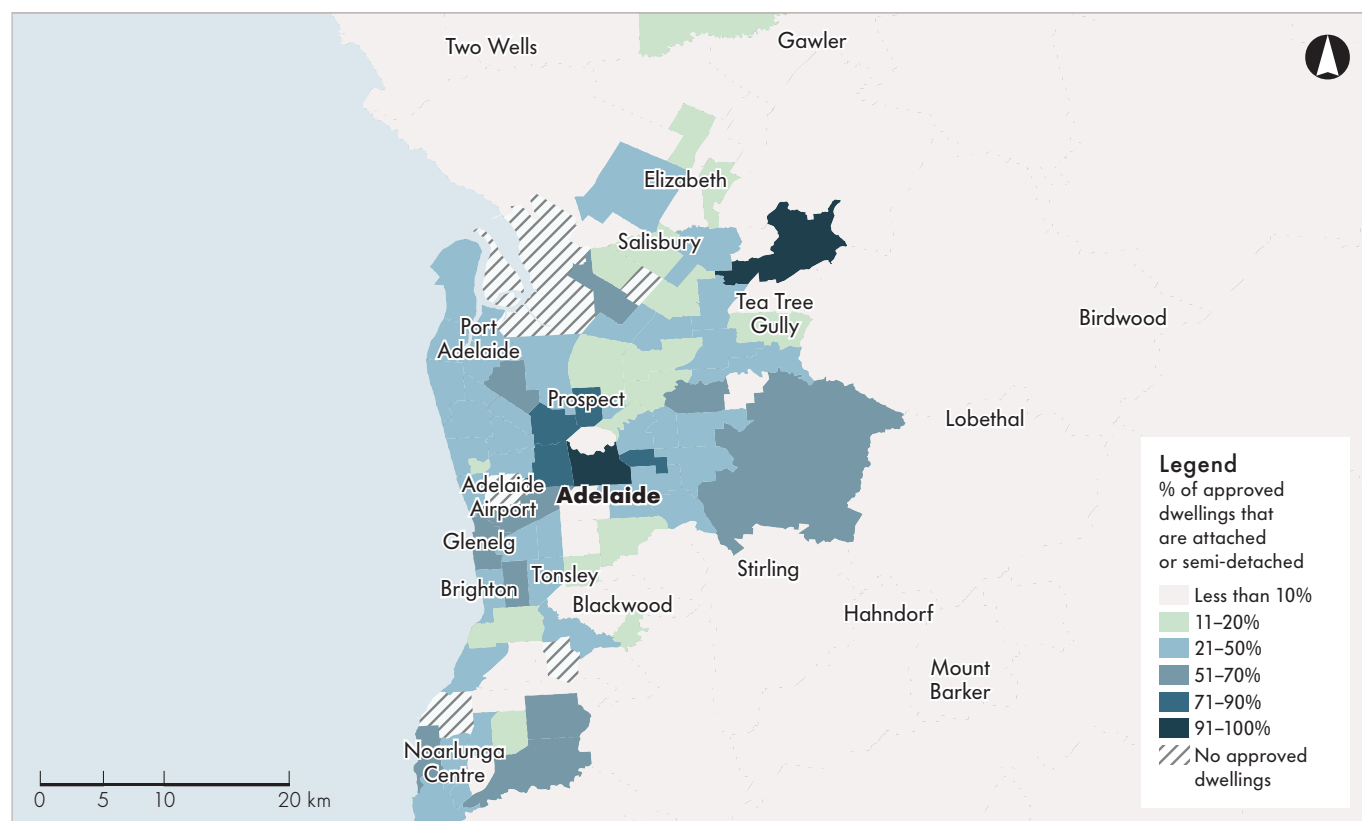- No approved dwellings

Note: Some SA2s cover geographically large areas, and mainland SA2s can include islands – such as Rottnest Island in Perth, which is part of Fremantle SA2. This is why those islands are not shown as 'No approved dwellings'.

Source: Australian Bureau of Statistics (2018).[17]

Our urban governance, planning, and funding mechanisms are complex

Australian cities are governed by three levels of government

The Australian Government is relatively removed from the day-to-day operation of cities but has a strong interest in their success. This is for a number of reasons, including the significant contribution they make to the national economy, and fact that our cities are where the majority of Australians choose to live and work. Australia's economic productivity is a key area of responsibility for federal government. As Australia's cities grow and attract more economic activity (including through sectoral shifts towards knowledge-intensive and service industries), their planning, function and governance becomes increasingly important to national success. The Australian Government therefore has an increasing interest in supporting and shaping the growth of our cities. This is evident in a recent focus on cities at a federal ministerial and policy level, including a House of Representatives Standing Committee on Infrastructure, Transport and Cities' inquiry into the Australian Government's role in the development of cities.[18]

The Australian Government has a number of levers at its disposal to influence the development of cities, such as levying taxes, implementing policy and regulation reform, international migration policy, and the distribution of funding, including the allocation of a significant infrastructure budget. For successive Australian Governments over the 20th Century, city-building investment programs were a key focus (including the delivery of key infrastructure such as sewerage to new town centres), as was funding support for major infrastructure projects. In the 21st Century, Australian Governments have increased their focus on the national importance of our cities and their strategic growth, implementing policies aimed at improving their economic performance and investing in 'city-shaping' infrastructure. This includes approaches that borrow from international experience, such as the City Deal model.

State and territory governments have a more direct role in the planning and operation of our cities. State and territory governments are responsible for the planning system, including long-term metropolitan planning and the approval and delivery of major infrastructure and development. They are also responsible for the delivery of essential services including health, education, transport, and other social services, and regulation in other areas, such as urban water. State and territory governments are also significant data custodians, including data on the rates of death and births.

Local governments are responsible for delivering and managing change at a local level. This includes zoning and development approvals, and local infrastructure and services, such as waste collection, libraries, street design, and green and public space provision and maintenance.

Specific roles can vary across jurisdictions. For example, larger councils may play a more strategic role in some metropolitan areas, while state governments may lead in areas where there are greater numbers of smaller local governments. Each city has its own model for coordination between and within state and local governments. These include state planning commissions (such as the Greater Sydney Commission, the Western Australian Planning Commission, and the State Planning Commission in South Australia) and state delivery authorities (such as the Victorian Planning Authority).

Land use planning frameworks differ across state and local governments

Planning legislation varies according to state and local government boundaries, and different planning frameworks govern each of Australia's largest cities. At the same time, the culture and institutions that overlay planning legislation play a significant role in translating codes and laws into real change to places where people live and work. The skills and knowledge of the professionals and agencies that apply these planning frameworks are critical to delivering beneficial outcomes.

Each of Australia's five largest cities has a current metropolitan (or regional) planning strategy that provides a long-term land use vision for the city (see **Table 3**). These strategies identify macro-level changes to the structure and operation of the city required to accommodate the long-term aspirations of the city. Infrastructure strategies are often developed separately to land use strategies, and generally focus disproportionally on transport infrastructure. Detailed, land use linked infrastructure strategies covering both social and economic infrastructure remain uncommon – however, the recent strategies released by Infrastructure Victoria and Infrastructure NSW have provided best practice documents.

Many of these strategies include targets for growth, such as housing and jobs. The processes and governance arrangements for delivering against such targets vary across the cities. They range from establishing development authority bodies, through to updating planning legislation, or tasking local governments with delivering against housing targets in their areas.

Table 3: Metropolitan land use and infrastructure governance and strategies for Australia's five largest cities

	Number of local government areas (LGAs) / sub-metropolitan structures	Lead strategic planning authority	Metropolitan land use strategy	Metropolitan infrastructure strategy	Local government land use strategies	Local government infrastructure strategies
Sydney	■ 33 LGAs ■ 5 districts	■ Greater Sydney Commission ■ Department of Planning and Environment (NSW)	■ Greater Sydney Region Plan (2018)	■ Future Transport Strategy 2056 (2018) ■ State Infrastructure Strategy 2018–2038 (2018)	Legislative: ■ Local Environment Plans Strategic: ■ Greater Sydney District Plans ■ Local Strategic Plans (under development)	■ Development Contribution Plans
Melbourne	■ 32 LGAs ■ 6 metropolitan regions	■ Department of Environment, Land, Water and Planning (Vic) ■ Victorian Planning Authority	■ Plan Melbourne 2017–2050 (2017)	■ Victorian Infrastructure Plan (2017)	Legislative & Strategic: ■ Municipal Strategic Statement and Planning Schemes	■ Infrastructure Contributions Plans (for growth areas and key development sites)
Brisbane	■ 12 South East Queensland LGAs	■ Department of State Development, Manufacturing, Infrastructure and Planning (Qld) ■ Brisbane City Council	■ South East Queensland Regional Plan (Shaping SEQ) (2017)	■ State Infrastructure Plan (2018) ■ Connecting Brisbane (2017)	Legislative: ■ Local Planning Schemes, including Brisbane City Plan (2014)	■ Local Government Infrastructure Plans
Perth	■ 33 LGAs ■ 4 sub-regions	■ Department of Planning, Lands and Heritage (WA) ■ Western Australian Planning Commission	■ Perth and Peel @3.5 million (2018) including sub-regional planning and infrastructure frameworks / structure plans		Legislative: ■ Region Schemes Strategic: ■ Local Planning Strategies	■ District / Local Structure Plans / Activity Centre Plans ■ 10-year Strategic Community Plans
Adelaide	■ 27 LGAs ■ 7 administrative regions	■ Department of Planning, Transport and Infrastructure (SA)	■ 30-Year Plan for Greater Adelaide (2017)	■ Strategic Infrastructure Plan for South Australia (currently undergoing update)	Strategic: ■ Greater Metropolitan Adelaide Plans ■ Local Development Plans	■ 10-year Infrastructure and Asset Management Plans

Source: Arup (2017).[19]

Responsibility for infrastructure sits across all levels of government

'Infrastructure' refers to the networks and services people need to live their everyday lives. This includes both economic infrastructure (such as transport, water, energy, and telecommunications) and social infrastructure (such as schools, hospitals, parks, and other community facilities).

The ownership and responsibility for delivering, operating, and maintaining different types of infrastructure in Australian cities is held at different levels of government and by the private sector (see **Table 4**). These roles can vary and overlap across jurisdictions. For example funding for the upgrade of a section of the National Highway could include joint funding by the Australian Government and state and territory governments, and complementary road upgrades by state, territory, and local governments, with the relevant project delivered jointly by each level of government.

Within levels of government, responsibility for infrastructure and services is generally allocated according to sector-based ministerial portfolios and government departments and agencies – for example transport, health, and education.

Governments use a variety of mechanisms to fund and finance infrastructure

Governments use different approaches to fund both the upfront capital and ongoing operational and maintenance cost of infrastructure. Funding mechanisms vary based on planning systems, types of development, and policy settings involved. **Box 3** outlines the difference between the funding and financing of infrastructure.

> ### Box 3: Defining infrastructure funding and financing
>
> It is important to note the difference between 'funding' and 'financing' for infrastructure.
>
> **Funding** refers to how we pay for infrastructure over time. As the 2016 *Australian Infrastructure Plan* states, providing sufficient funding for infrastructure is a challenge for Australia's governments. However, there is no shortfall in **financing**, which is the capital, in the form of debt and equity, used to pay for the upfront costs of infrastructure construction.[20]

Table 4: Broad responsibility for different types of infrastructure at each level of government

Local	State	Federal
■ Local roads ■ Local services (including waste management) ■ Community amenities (including community centres, childcare, local libraries, recreational facilities, and parks) ■ Active transport (including cycle paths, walking trails) [b]	■ Major roads and motorways [a] ■ Public transport (including bus, rail, light rail, tram, ferry and taxi) [ab] ■ Water [ab] ■ Electricity [a] ■ Gas [a] ■ Primary, secondary and technical education [a] ■ Health (including aged care) [a] ■ Emergency services (including fire, ambulance, and police) ■ Justice ■ Ports [a] ■ Cultural infrastructure [b] ■ Social housing	■ National highways ■ National rail (including freight) ■ Airports [a] ■ Telecommunications ■ National electricity (such as Snowy Hydro) ■ Tertiary education

a.   *Can be delivered by the private sector.*

b.   *Can also be delivered by other levels of government.*

Infrastructure funding is a complex and contentious area of public policy but the funding mechanisms available to government fall broadly into two categories: users and taxpayers.

Users pay for infrastructure based on use or derived benefits, whereas taxpayers pay regardless of any actual use or usage level. There are sound economic, environmental, and social reasons why some infrastructure should be subsidised by taxpayers, but governments also need to balance these considerations with fairness and equity.

Different users and beneficiaries, such as land owners, property owners, property developers, and future residents, derive benefits from infrastructure assets in varying amounts and at different points in time.

Figure 7 maps the spectrum of funding mechanisms available to government by application and transaction type.

Figure 7: Spectrum of funding regimes by application and transaction type
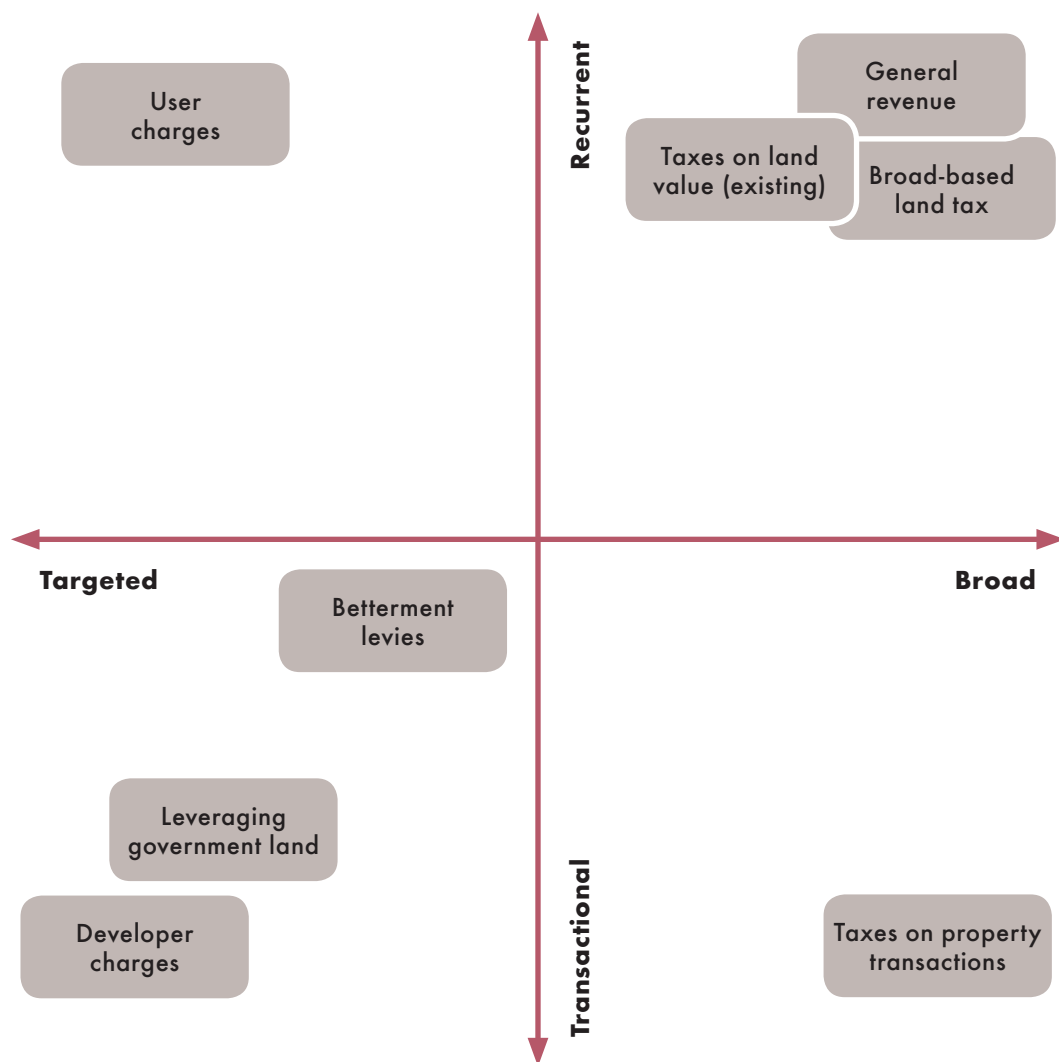
Developer contributions are a common source of funding for the capital costs of infrastructure, particularly at the local government level. Mandatory developer contributions are typically designed to recover from developers the cost of delivering new or upgraded infrastructure to support new developments, and fund different types of infrastructure depending on the jurisdiction.[21] Developer contribution rates also tend to differ between infill and greenfield developments, with generally higher rates in a greenfield context as a larger range of new infrastructure is required to establish these areas. Because developer contributions are collected over time, governments need additional mechanisms to pay for the upfront costs of infrastructure.

The ongoing operational costs of infrastructure are an important consideration for government and can make up a significant portion of infrastructure budgets. Operational expenditure is usually funded through direct user charges and general government revenue from rates and taxes. The long-term operational costs of future infrastructure is often not known or understood and therefore can be under-budgeted or not well planned at the time of capital investment. Where this occurs, maintenance shortfalls often develop.

These issues can become entrenched where responsibility for delivering and operating certain types of infrastructure sits with one level of government, while funding may be provided by other levels of government through grants and programs. **Box 4** explains how the 'vertical fiscal imbalance' between the different levels of government contributes to such issues.

Box 4: The 'vertical fiscal imbalance'

Australia's federated governance structure creates a 'vertical fiscal imbalance'. This refers to the dynamic in which the Australian Government's revenue-raising capacity exceeds its direct spending responsibilities, while in contrast, states and territories do not have the capacity to raise sufficient own-source revenue to meet their direct spending responsibilities.[22]

The economic benefits from infrastructure, such as improved productivity, flow to the federal government in the form of increased income and other taxes, which places it in a position to provide financial support to state governments, particularly for investment in nationally significant infrastructure programs. State governments can seek additional funding from the federal government to deliver major projects, for example Melbourne Metro project in Victoria or the METRONET project in Perth. This dynamic is also at play at the local level, as local governments rely on the funding support of commonwealth, state and territory governments to fulfil their responsibilities.

Challenges with the current approach to planning cities

At a glance

- **Infrastructure Australia has reviewed infrastructure sequencing practices in our five largest cities.** We reviewed legislative and policy frameworks and conducted interviews with representatives from state and local government, and industry.

- **Our research identified six common challenges when delivering infrastructure alongside development in these five cities.** Together the findings outline how existing governance, planning, funding, and delivery processes need to evolve to keep pace with growth, and preserve and enhance liveability.

This chapter presents Infrastructure Australia's findings from research into the planning, funding, and governance models in Australia's five largest cities. We selected Sydney, Melbourne, Brisbane, Perth, and Adelaide for this research because 80% of population growth in Australia in the next 30 years is projected to occur in these five cities.

In addition to a review of the legislative and policy planning frameworks in each city, at both state and local government levels, Infrastructure Australia conducted interviews and meetings with representatives of local government, state government, and industry in each city. Interviews gave additional insight into the way planning processes translate into practice, delivering on the planning and infrastructure strategies and visions for each city.

The six key findings drawn from this research apply broadly across the five cities and form the basis for recommendations made in **Chapter 3**.

Finding 1: Infrastructure delivery is struggling to keep pace with rapid population growth and change

Planning for population growth occurs in a fragmented way at the national level

While the Australian Government does not have the same level of direct responsibility for the planning and operation of our cities as state and local governments, its influence over the shape of our cities is still significant. The responsibilities of the Australian Government in cities are not spatially focused but their outcomes have spatial implications. For example, decisions on where to locate airport infrastructure within a city, investment in a state road or rail project, or change to a national building code will have local impacts for communities in cities.

In the absence of an overarching national population policy, the Australian Government indirectly influences population policy through a range of existing policy settings, including health, welfare, and migration.

The Australian Government has a clear and direct role in migration policy. National migration settings determine parameters for the number of people settling in Australia from overseas, their skills, and the type of visa arrangements available to them. The majority of Australia's new migrants over the past decade have settled in urban areas, where they can be close to a greater number of jobs and services, and established migrant communities. However, migration policies are not currently well integrated with state and local planning, and with broader federal government policies and investment decisions. In particular, internal migration flows (people moving between states and regions) are not well understood, but have a significant impact on the spatial structure of our cities and regions.

The current Australian Government's Smart Cities Plan and City Deals, and the work of previous governments, recognise the important role Australian cities play in maintaining Australia's economic productivity. However, there is a lack of policy connectedness at the national level to link the sustainable growth of our cities with other Commonwealth policy areas, such as taxation and infrastructure investment.

This means the Australian Government influences the planning, function and governance of our cities without having a systematic approach to guide this influence. This issue was raised by the Productivity Commission, in its 2018 Productivity Review:

> *Cities have been regarded by the Australian Government occasionally as a matter of national interest and subject to forms of targeted intervention (largely via funding) since 1991 (under the Building Better Cities Program). Yet it has quietly and with comparatively limited analytical attention continuously influenced urban development for decades through its funding contributions to land transport infrastructure; aviation and airport regulation; interstate rail freight; public housing development; and migration policies (which have affected population growth).[23]*

In most cities experiencing high growth, housing development leads infrastructure delivery

At the metropolitan level, state and local governments have responded to increased population growth and increased housing affordability challenges over the past decade by establishing policies that support increased housing supply. This includes state and territory governments introducing housing targets, rezoning areas for higher-density residential development, streamlining development approval processes, extending urban boundaries, and introducing incentives for developers and local governments to deliver more housing.

Increased residential development over a short period of time can place significant pressure on existing infrastructure assets, including social infrastructure such as schools, hospitals, and parks. Overcrowding, congestion, and unhappy communities then act as triggers for governments to plan and deliver new or upgraded infrastructure. Responding to these issues as they arise, rather than proactively preventing them, creates a 'lag' between population growth and the delivery of the infrastructure needed to support it. This can negatively impact on community support for growth. Examples of infrastructure delivery lagging behind need can be seen in Sydney and Brisbane, where a number of inner city public schools have experienced record enrolments due to growth in the number of families choosing to live in inner city areas. Schools have responded by installing demountable classrooms on playground space to accommodate student numbers, while waiting for permanent buildings to be planned, funded and built.[24]

At the same time, many of our largest cities are already 'playing catch up' in delivering major infrastructure to support past decades of growth, let alone provide for future decades. This lag is compounded by the long lead times required to plan, procure, fund, and deliver major infrastructure projects.

Infrastructure is not delivered overnight. Large-scale transport projects can take 10 to 20 years to plan, fund, and deliver. For example, a new rail line to Sydney's north-western suburbs was first announced by the New South Wales Government in 1998 but the Sydney Metro North West project is not expected to be operational until 2019.[25] These extended delivery timelines can be due to a number of reasons, beyond the time it takes to design and build major infrastructure projects, including amendments to project scopes or changes in government at both political and bureaucratic levels. In addition, large infrastructure assets, as they are designed and built today, are relatively specialised in terms of their use, and often have a long asset life. This means that once a train line, hospital, or school is built, there is limited flexibility to put that land or asset to another use, which locks in long-term land uses in our cities. However, the demographics of suburbs change over time, and therefore so do the services residents need. This makes it challenging for governments to spatially plan their infrastructure networks and services over the long term and anticipate these changes.

Incremental change poses particular challenges

Small-scale infill development (for example, a three-storey apartment building) differs from other types of development in existing areas, such as transit-oriented development and brownfield precincts, due to the incremental nature of growth. These differences add to the complications encountered when more broadly delivering infill as opposed to greenfield development, including:

- addressing the needs and concerns of existing local residents

- potential higher costs of delivering supporting infrastructure compared to greenfield development, due to high land costs, the need (in some cases) to place infrastructure in tunnels or elevated structures, and the need to retrofit existing infrastructure networks that may be ageing, particularly in inner cities

- the limitations of working around existing infrastructure and creating safe, workable construction sites in potentially small spaces

- the need to relocate and/or upgrade a broad range of infrastructure types, owned or operated by non-government entities that may have their own asset management priorities

- economic and social costs associated with disruption of existing areas.

These complications are often compounded by planning and governance challenges. In our largest cities, the structure of statutory and strategic planning processes can mean there is a lack of connection between the strategic vision for a city and the practical tools used to implement this vision on the ground. Targets for growth or delivery are often handed down to local governments without sufficient consultation or consideration of the council's capacity to deliver them.[26] This can mean there are instances where housing is delivered in areas without the infrastructure capacity to sustain it, but equally there are instances of infrastructure being delivered (for example train lines or schools) with significant capacity, without appropriate land use planning to support development around it.

The approval authority for small-scale development in existing areas is local government. A lack of coordination between local and state governments can make it difficult to identify the 'tipping point' or threshold to invest in new or upgraded state-delivered economic and social infrastructure. This can make it difficult for governments to recognise the cumulative impact of development in a neighbourhood and can result in decisions that place pressure on existing infrastructure assets and services. For example, bus services in a growing area may become overcrowded before governments identify and fix the issue by delivering extra services or improving routes. As the infill task in our cities increases, this understanding of development impacts becomes even more critical.

Existing infrastructure assets in established areas may also be ageing, as is the case with much of the inner-city water infrastructure in Sydney and Melbourne, which adds to the cost and complexity of upgrades. In addition, delivering one piece of infrastructure can require upgrades to others. For example, it is often expected that major transport projects that disturb utility assets will pay for and deliver upgrades to those assets as part of the project. This adds to budgets and timeframes for delivering major projects, which delays infrastructure delivery and limits government's capacity to invest.

Adelaide's growth rate is slower than the 'big four'

Australia's fifth-largest city, Adelaide, has not grown at the same pace as Sydney, Melbourne, Brisbane, and Perth in the last decade. The South Australian Government has recently called on the Australian Government to help boost Adelaide's population, and it plans to introduce policies to increase international student enrolment and encourage skilled workers to take jobs in regional South Australia.[27]

While the slower rate of population growth in Adelaide has meant there is not the same lag in infrastructure delivery, it is facing similar challenges to other cities with an increasing urban infill task and ageing infrastructure assets. Adelaide's infill target of 85% is the highest out of the five cities. To meet this target, governments will need to address the challenges around the planning and governance frameworks and funding mechanisms required to sequence infrastructure and growth, particularly in inner areas of the city.

Finding 2: Australia's three-tiered governance structure can make it challenging to consistently deliver liveable places

There are different priorities and responsibilities between levels of government

A common challenge across Australia's five largest cities is that complex governance structures often stand in the way of delivering liveable and productive communities. Responsibility for planning, funding, and delivering infrastructure in our cities is spread, in different ways, across all three tiers of government, which can lead to fragmented decision-making and prioritisation for investment. Ultimately, this can create uncertainty for other levels of government, industry, and communities. The development of Green Square in Sydney illustrates the challenge of aligning priorities across different levels of government (see **Box 5**).

Political will is critical to delivering long-term planning and providing certainty on infrastructure delivery. Aligning and maintaining political support for growth or particular infrastructure projects over the long term can be difficult when different levels of government operate on relatively short and varied electoral cycles.

Box 5: Green Square case study

Green Square is a brownfield urban renewal precinct in inner Sydney. It was first identified for redevelopment in 1996 and is expected to be completed by 2030. The site covers an area of approximately 2.84 km² and is expected to accommodate 61,000 residents and 21,000 jobs by its completion, making it one of the densest neighbourhoods in Australia.

The governance of Green Square's land use and infrastructure development is split between the local government (the City of Sydney) and the New South Wales Government. The City of Sydney is primarily responsible for land use development and the provision of local infrastructure, such as community facilities, local roads, stormwater infrastructure, and parks. The New South Wales Government is responsible for providing major roads, public transport, and social education and health infrastructure.

As the Green Square community has grown, local infrastructure has been placed under increasing pressure. Community infrastructure requirements, such as green and recreation spaces, and upgrades to the public realm, such as footpaths, street trees, and street furniture, have increased as the area has become denser. The capacity of the existing water infrastructure network has also been an issue. Green Square sits on a floodplain and the area has experienced intermittent flooding during the process of redevelopment.[28] The City of Sydney has delivered or is in the process of delivering a number of projects to upgrade the area's community infrastructure, including a new library, an aquatic and recreation centre, a community and cultural precinct, several parks and a new two-kilometre-long stormwater drain.[29]

Alongside pressures on critical community infrastructure, the primary and secondary schools supporting the area are already at capacity. There has been a spike in the number of school-aged children living in the area. Of Sydney's Local Government Areas (LGAs), the City of Sydney is expected to experience one of the highest projected rises in school-aged residents, increasing by 41% over the next 10 years.[30] The development of Green Square is a key contributor to this rise, with an increasing number of families choosing to live in apartments in the area. The City of Sydney identified the need for one new primary school and one new high school to service the Green Square community by 2016, and an additional four new primary schools by 2031.[31] The NSW Government has commenced planning and design work on three new schools supporting the Green Square area: a new primary school in Green Square, the redevelopment of Alexandria Park Community School to cater for 1,000 primary school students and 1,200 secondary school students, and the delivery of a new high school in Surry Hills by 2020.[32]

Transport infrastructure within and surrounding Green Square is also under pressure and there is significant congestion on roads, buses, and trains at peak times.[33] The development of Green Square was initially catalysed by the Airport Rail Link's Green Square Station on the precinct's western boundary, as well as the demolition of the Zetland Incinerator and the Royal South Sydney Hospital. For the first 11 years of operation, a station usage fee was charged at the four Airport Link stations, including Green Square. In 2011, the NSW Government and Airport Link Company agreed to remove the fee from fares travelling to and from Green Square and Mascot stations. Despite development of the area being linked to the expansion of public transport, demand has quickly outstripped supply. Infrastructure Australia has listed a public transport enhancement between Green Square and the Sydney CBD as a High Priority Initiative on the *Infrastructure Priority List*, with a medium-term timeframe of 5–10 years.[34] The NSW Government and City of Sydney, however, have not yet agreed on a solution to provide additional capacity.

The City of Sydney has reserved land for a potential future light rail corridor to address transport congestion and connect Green Square to the CBD. The NSW Government explored establishing a new station as part of the Sydney Metro project (which is under planning near Botany Road) to the west of the Green Square precinct and adjacent to the Government's Waterloo urban renewal project. The NSW Government has not identified a mass transit solution within the Green Square precinct as a priority for delivery in the short term. Rather, it has identified a potential 'mass transit link' initiative connecting these two centres for investigation over the next 10 years, and an additional 'mass transit / train link' to the south-east for investigation within the next 10–20 years.[35] In the interim, the Government has added additional trips to key bus routes that travel through the area[36] and is investing in technological improvements on the T8 Airport Line, which will enable eight additional services to run every hour.[37]

The development of Green Square demonstrates that infrastructure priorities can differ between state and local governments when planning for growing population in our cities, and that this is made more complex by different funding and delivery capacities and responsibilities. This misalignment can lead to a lag between the delivery of new housing and necessary supporting infrastructure, placing undue pressure on existing assets and networks.

There is a disconnect between capacity and responsibility, particularly at a local level

Local governments play a key role in identifying and providing the infrastructure and services that make liveable, cohesive communities. They implement the bulk of planning policies and approval processes at the local scale, and deliver services such as libraries and waste removal. However, many local governments in our largest cities are not equipped with the necessary resources to effectively deliver on their responsibilities. This limitation is closely linked to the funding mechanisms available to local governments to raise revenue, which is discussed further in **Finding 5**.

In high-growth cities, scarce local government resources are often deployed to manage one-off development proposals instead of strategic planning. This is partly due to high levels of local government fragmentation in our large cities. Sydney, Melbourne, Perth, and Adelaide are each made up of around 30 Local Government Areas.

Fragmented governance arrangements can translate into disjointed planning outcomes across local governments and a lack of coordination in delivering supporting infrastructure in areas that straddle jurisdictional boundaries. The Organisation for Economic Cooperation and Development (OECD) has found the degree of fragmentation in a city's governance structure directly impacts the productivity of that city's economy. In metropolitan areas with similar sized populations, those with twice the number of local governments are associated with around 6% lower productivity.[38] This could be partly because larger governing entities with sufficient scale can employ a wider range of skilled staff, enabling them to undertake more efficient infrastructure delivery and strategic planning.

In Australia, as councils have become larger, generally through enforced amalgamation processes (as seen in Queensland, Victoria, and more recently New South Wales), they have been able to better advocate to both state and federal governments and deliver on local needs. Brisbane has the most consolidated governance structure of the five cities, with Brisbane City Council covering around half of the metropolitan area and playing a key role in the strategic planning for the city as a whole.[39]

Finding 3: Sector-led infrastructure planning can lead to uncoordinated outcomes for communities

Sector-based governance structures can lead to siloed decision-making

Collaboration and coordination is often limited across sector-based agencies, and between infrastructure and planning departments. This can result in uncoordinated delivery of infrastructure and growth in particular areas of our cities.

The need for integration between metropolitan land-use and transport planning is well recognised by governments. However, the degree of integration varies, and integration of other types of infrastructure is not always included in such plans. At the state level, delivery agencies generally focus on major infrastructure projects and ongoing maintenance rather than integrated place outcomes. This means that, although state governments are producing metropolitan plans, there are challenges in implementing these visions on the ground in local communities. Because the planning, funding and delivery of infrastructure assets occurs within sectors, the inter-relationship between different types of

Image credit: City of Sydney

economic and social infrastructure assets and their impact on land use is not always considered, and agencies may have priorities for investment in different locations across cities. Poor communication between agencies is a key challenge, and can mean that agencies may change assumptions or plans without communicating these changes to other affected agencies. This can lead to unintended consequences. For example, a new train line may increase transport capacity, and thereby support additional housing – however, finite capacity for new enrolments in local schools might act as a constraint on the ability of new residents to receive appropriate services. Such cross-sectoral impacts require communication between agencies to weigh up the varying outcomes for residents and inform coordinated planning.

The scale and structure of government departments and agencies, while well placed to deliver outcomes for sectors, can make it difficult to collaborate and coordinate across different sectors when planning for specific places within our cities. Cabinet processes, in which sectoral portfolios compete for funding, can also make it difficult to achieve cross-sectoral, place-based outcomes.

Like any large organisation, state governments face the challenge of breaking down cultural separations that can prevent collaboration to achieve strategic outcomes. The size of state government departments can also make it difficult for individuals to know who to speak to in other agencies. Given the volume of government programs and initiatives, it can also be challenging for departments to stay across the mandate of the entire government. Cabinet and its sub-committees, such as infrastructure committees, can be good forums for high-level collaboration, but planning and infrastructure proposals are usually well progressed by the time they reach cabinet, so there is limited scope, and sometimes appetite, at that stage to amend plans to incorporate place-based strategic goals.

Siloes can also exist in local government between planning, works, and corporate divisions, which can create poor outcomes for communities at the local level. For example, a new greenfield development may be left without any street trees because their planting is not coordinated with the delivery of utility services, which may be delivered individually and need to be distanced from trees.

There are many different drivers for infrastructure and planning decision-making in government

Planning for growth and delivering liveable places are not the only issues governments need to consider in day-to-day operations. Safety concerns, environmental standards, and service levels may take priority in resource allocation and decision-making.

Departments and agencies, particularly in social policy portfolios, are required to meet service-based performance indicators. For example, departments may focus on improving National Assessment Program – Literacy and Numeracy (NAPLAN) results, decreasing hospital waiting times, or decreasing travel times on roads. Governments are understandably held to account for delivering critical services for communities. However, these structures and incentives means there are limited opportunities or requirements for different portfolios to collaborate and coordinate the planning and delivery of particular services, or assess the land use implications of different infrastructure portfolios and works programs on a particular place. This can create governance 'gaps', where strategy and priorities do not align between levels of government and can lead to poor outcomes for communities. For example, Australian cities currently face governance gaps in addressing complex issues such as resilience, or ensuring space is available for local health services, such as maternal health, when health infrastructure (the physical assets) is planned and delivered at the state level.

Governments are beginning to explore 'shared utilisation' of infrastructure – for example, opening up school playgrounds for community use out of school hours or creating agreements for inner-city green space to be used by nearby schools. However, the broader benefits of collaboration across sectors in Australian cities, such as where delivery of one asset creates a saving in another sector, are still under-recognised. For example, while the health benefits of active transport are well recognised, there is a limited evidence base for calculating the benefits for the health sector from investment in active transport infrastructure.

Finding 4: Communities are increasingly disappointed by their experience of growth

Communities associate growth with congestion, reduced access to services, and poor-quality density

The communities that make up Australia's largest cities have a central role to play in planning for growth, as they will ultimately live with the decisions for how places grow, and can contribute valuable local knowledge about their areas that may not be captured by statistics or metrics. While governments increasingly understand and embrace the fact that cities are ultimately for people, and that genuine community engagement is fundamental to the success of urban planning and change, communities remain concerned about the potential impacts of population growth on their city.

There are three main reasons for this:

1. **Poor infrastructure alignment:** As discussed in **Finding 1**, the traditional model of housing development leading infrastructure creates a lag in service delivery. This model is not sustainable as the pace of population growth in our largest cities increases. Insufficient infrastructure has been cited by communities (and by extension, local governments) as a reason to reject density in their area, as it can contribute to increased congestion on local roads, competition for space at local parks, and pressure on class sizes in schools.[40]

2. **Difficulty in reconciling density with local character:** Local character is important to communities. It is what makes their area distinct and is often the reason they choose to live there. While our cities will need to deliver increased proportions of higher-density housing, it is critical that the local outcomes, such as high-quality design and integration with existing character and built form, are prioritised.

3. **Development does not match community expectations or understanding of best practice:** Density that is poorly designed, uses poor-quality materials, and is not well integrated with the local landscape and community is not desirable. Unfortunately, there are many examples of this kind of density over recent decades in Australia's largest cities. As a result, community expectations for the product that is to be delivered through higher density is diminished and cynicism is growing.

Communicating the scale and pace of change set to occur in our largest cities to local communities is a challenge for governments. People fear change and the unknown, and it can be difficult to connect the lines or shading on a strategic plan with what development will feel like on the ground, let alone the broader costs and benefits of such change.

Informing rather than engaging communities

Community engagement often aims to 'inform' local communities about projects or developments that have already been planned and designed. This approach leaves little room for frank, two-way discussion of the needs of the community. The impacts, trade-offs, and broader context for change risk being overlooked, as can the opportunity for contributions from those who know the area best. The focus on micro-scale impacts also naturally attracts vocal community representatives, making it harder to hear from and engage with a broad cross-section of the community, including the time-poor, young, and vulnerable people in our cities.

In many instances, the focus of information can be on project delivery and the short-term impacts and disruption associated with construction. Long-term operational impacts of major projects, including changes to the nature of the way people interact with or travel through a community, can be misunderstood.

The secondary impacts of project delivery, such as the potential for secondary development, or the potential limitations of alternative solutions, are rarely well understood. For example, a new rail connection may be announced, garnering support from local residents, however associated changes to land use, such as increasing housing density around new station precincts are delayed, and may be subsequently resisted by residents. Meanwhile, the broader costs and benefits, or trade-offs, of not undertaking major infrastructure investments, or the impacts of business-as-usual, are not well communicated, and therefore the potential negative impacts of inaction are overlooked.

Costs increase while trust decreases

Research completed by the University of Melbourne's Next Generation Engagement Project has found that over the past decade around $20 billion in infrastructure projects have been delayed, cancelled, or 'mothballed' due to community opposition.[41] There are costs to communities too, including negative mental health effects such as stress, and delays in or loss of key services and local amenity. Outcomes for subsequent or delayed projects are also more likely to be ad hoc and the infrastructure delivered less efficiently, with elements such as good design compromised to ensure projects are delivered at the lowest cost.

There is evidence of an erosion of trust in governments' ability (and desire) to make decisions in the best interest of local communities and, more broadly, in government institutions, media, and the private sector.[42] Trust lost between communities and governments is not easy to rebuild, which creates longer-term challenges for government the next time it is planning to develop an area or deliver a new infrastructure project.

Finding 5: Our infrastructure funding mechanisms have not kept pace with growth

There are limitations to the current mechanisms for funding local and state infrastructure

Governments in all cities use a mix of funding sources and mechanisms to fund state and local infrastructure. There are a number of challenges with the current funding mechanisms available to governments, including a lack of consistency and coherency across mechanisms, the complexity of mechanisms and requirements, and a lack of transparency and accountability in their application.

Developer contribution regimes are a key funding mechanism used to fund infrastructure in our cities. They are typically designed to recover the capital cost of delivering new or upgraded infrastructure for new developments, but have limited links to the whole-of-life costs for service provision and varying levels of effectiveness across different development scenarios. Caps to mandatory development contributions were established in some states to stimulate housing growth, but have resulted in contribution schemes regularly falling short of covering the necessary costs to deliver and maintain infrastructure to areas. This leaves other funding sources, such as general revenue from rates and taxes, to provide for infrastructure deficits. However, uncapping the contributions has led to concerns about the rising cost of construction and its impact on housing affordability.

In addition to funding shortfalls, there are also issues with the timing and availability of payments. Governments often cannot afford to pay for the upfront cost of infrastructure because they have to wait for revenue to be collected over time. This creates delays to the delivery of contributions-funded infrastructure, sometimes past the point when communities need it. When there is a lag, or governments prioritise infrastructure delivery in a different area that may legitimately have a greater need, local communities do not see the direct correlation between development and infrastructure provision.

Developers often prefer to provide infrastructure 'in-kind', rather than as a cash contribution. They argue that they can often provide the same infrastructure at a lower cost and gain efficiencies by coordinating its delivery with their own works program. Some governments have introduced in-kind contributions arrangements and there are many examples where this has worked well. However, such arrangements can also raise issues for governments regarding the quality of construction and ongoing maintenance costs for these assets.

The application, transparency, and accountability frameworks for developer contributions can be inconsistent. Industry has called for increased transparency on the 'pooling' of developer contributions revenue, as it is often not required to be regularly or transparently reported by local governments in some jurisdictions. Lack of consistency and certainty for industry are key areas of concern with current developer contribution regimes. Setting charges publicly and in advance provides developers with greater certainty about the costs associated with progressing a development.[43]

Local council rates are also a common source of funding for local infrastructure. However, some states, notably New South Wales and Victoria, which have the largest amount of forecast growth, have systems of 'rate-pegging' or 'rate-capping' that limit the ability of councils to set their own property rates and constrain councils when providing the infrastructure needed to support development in our cities.

Poor planning and sequencing of housing and infrastructure can increase delivery costs

Delivering supporting infrastructure is expensive and challenging given the context of fiscal constraints within government. However, poor planning can make infrastructure more expensive than it needs to be in the long term. Limited integration of land use and infrastructure planning can mean that designated 'growth' areas, whether they be in infill or greenfield contexts, are not always prioritised and sequenced for development according to their supporting infrastructure capacity, or government plans to upgrade or invest in new assets. Rather, development is left to market forces, which could include factors such as existing land ownership, financial capacity of proposed developers, and other factors associated with the availability of privately provided skills and resources. As a result, the timing of growth occurs with limited connection to infrastructure planning and delivery.

Infrastructure Australia's 2017 report *Corridor Protection: Planning and investing for the long term* showed the importance of forward planning of infrastructure needs to reduce delivery costs and optimise infrastructure outcomes. The protection and early acquisition of just seven corridors identified on the *Infrastructure Priority List* could save Australian taxpayers close to $11 billion (real, discounted 2016 prices) in land purchase and construction costs.[44] This is because if an area is built out, future governments may have to adopt a less direct route or construct the project using more expensive methods, such as a tunnelling, which can potentially add billions of dollars to the project cost. *Corridor Protection* looked specifically at transport infrastructure but the same principle also applies to planning for utilities, social infrastructure, and green infrastructure, especially in established areas where the cost of land is already high.

Ongoing operational and maintenance costs of infrastructure are significant and need to be better incorporated into planning

The cost of operating and maintaining infrastructure can be many multiples of the capital cost to build it. Many of the major state infrastructure assets in our cities, such as roads, public transport, schools and hospitals, are ageing and need significant upgrades to be 'fit-for-purpose'. User fees and charges are applied to some infrastructure assets (notably toll roads and public transport), but this revenue only partially subsidises operating and capital expenditure. The balance is funded through general government revenue.

Enhancing existing assets through better approaches to maintenance and implementing technological upgrades can be more cost effective than building new infrastructure. However, governments need to ensure this is properly costed and factored into decision-making processes. Problems can arise when the responsibility for delivering and maintaining infrastructure is split between two different parties. For example, a developer may deliver a park to make a new development attractive for future communities, but decisions regarding design and materials may not factor in the ongoing maintenance costs, which are passed on to local government.

Finding 6: Governments and industry lack a shared understanding of the capacity of different infrastructure networks

A shared understanding of projected growth and capacity across infrastructure networks is critical to planning our cities

Increased congestion and demand on our economic and social infrastructure is one of the main reasons communities resist development and growth in their local areas. While infrastructure capacity assessments are theoretically reviewed during development approval processes, this does not always translate to adequate infrastructure delivery on the ground.

The use of consistent population and employment projections, or ideally forecasts, within and across levels of government, is critical to the future of our cities. These projections have significant implications for planning and infrastructure decision-making, including business case assessment for infrastructure investment. Most state governments now use consistent population and demographic forecasts across different agencies. Some examples include the Western Australian Government's *WA Tomorrow,* and accompanying *PlanWA* interactive mapping tool, the New South Wales Government's *Common Planning Assumptions* program, and the Victorian Government's annual *Victoria in Future* report.[45] These official projections are publicly available and used to establish clear and consistent baseline and growth projections across government.

Further work is overdue to ensure emerging demographic trends are incorporated into forecasts and projections. For instance, many governments have identified an increasing propensity for families to reside in apartments, leading to unexpected impacts on social infrastructure, particularly schools and parks.

In addition to consistent and representative population assumptions, information about available and potential capacity across the range of infrastructure assets and networks for a particular place or community is necessary to plan for growth. In our largest cities, this information is often fragmented because different data is held by different agencies, or within private entities when infrastructure is privately owned or operated, as is common with utilities. Data may be commercially sensitive and therefore not readily shared with government or released publicly, and agencies may also be reluctant to share data with other parts of government for reasons of confidentiality, privacy or security.

As noted in the 2015 *Australian Infrastructure Audit*, there is little understanding and debate across Australia as to what constitutes an acceptable level of service provided by infrastructure and, in turn, how improvements in infrastructure service levels are paid for.[46] Government resources are constrained and there are competing demands for funding. Without a standardised evidence base on infrastructure capacity and service levels, governments cannot adequately monitor and plan for the most efficient provision of adequate infrastructure to growing areas, and, as discussed in **Finding 5**, transparently allocate the costs of providing infrastructure.

The incremental nature of infill development can make it harder for governments to assess demand

As the pace of population growth increases, it will become more important to access up-to-date data on infrastructure demand and delivery. As discussed in **Finding 1**, governments often do not have a good understanding of the cumulative impact of development on infrastructure, particularly in infill areas.

Problems can arise when governments assume existing assets can meet demand without adequate assessment of current and future capacity. The cumulative impact of infill development makes it challenging for governments to determine current capacity and the 'tipping point' when it should upgrade, reconfigure, or add new infrastructure to the network. Governments are therefore often responding to, rather than anticipating, demands and playing 'catch up' in these areas.

Recommendations for more integrated planning and delivery

At a glance

- **A more strategic approach to planning for growth in our cities is required at all levels of government.** The Australian Government should establish a process to better plan for our future population, while state and local governments should focus the weight of decision-making on the strategic level.

- **Improving collaboration between levels of government is critical to the success of our cities.** State and local governments should work in partnership to establish governance arrangements focused on ensuring that strategic plans deliver meaningful local outcomes.

- **We need to better assess the full range of infrastructure required to make places liveable before they grow.** 'Place-based' approaches to infrastructure planning and delivery provide governments with a cross-sectorial view of the needs of a community and identify options to address them.

- **Communities should be better informed and involved in the strategic decision-making for the growth of their area.** By shifting the focus of engagement to the earlier strategic planning stage, governments can enable a more inclusive conversation about the future of a place and ensure the community's priorities are reflected in broad visions for an area.

- **We need to review our infrastructure funding mechanisms to ensure existing and future infrastructure can be delivered and operated in the right place, at the right time.** A review will improve transparency and accountability, assess the effectiveness of existing charges, and consider the potential application of alternative approaches.

- **We need to optimise the use of our existing infrastructure and better coordinate and use data to improve infrastructure investment decision-making.** A shared understanding of current and future infrastructure capacity will help governments make the best use of existing infrastructure and improve planning and investment decisions.

The findings presented in **Chapter 2** provide a snapshot of the challenges faced by Australia's five largest cities in delivering the right balance of development and infrastructure to accommodate population growth.

This chapter draws on those findings to make recommendations to different levels of government and industry. The recommendations are a call to action to ensure the right planning, governance, funding, and delivery frameworks are in place to make our cities liveable into the future.
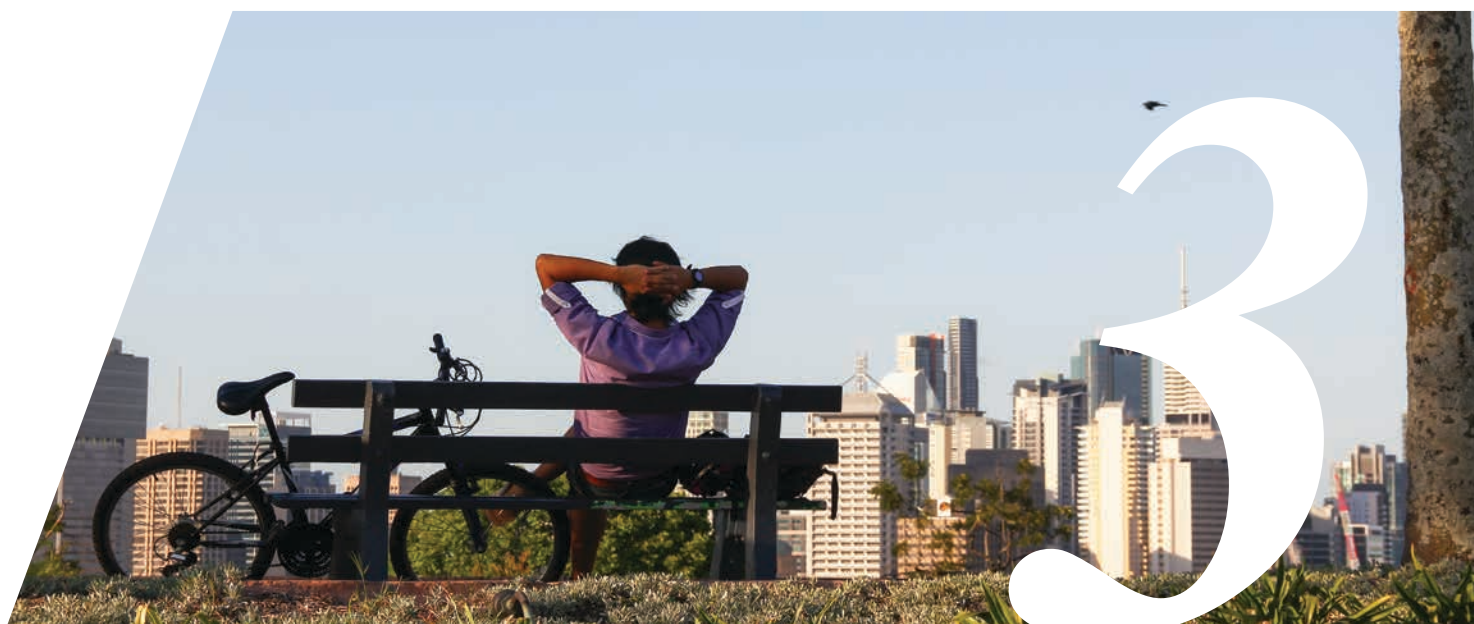
A more strategic approach to planning for our growing population is required at the national level

Finding 1 shows that decisions made by the Australian Government have a spatial impact in Australian cities, from migration policies through to investment in specific infrastructure projects. A lack of coordinated consideration of these spatial impacts at the national level can deliver ad hoc outcomes for communities at a local level.

Australia requires a more strategic, collaborative, and transparent approach at a national level to plan for population change and develop liveable cities. The Australian Government should develop a vision for the nation's future, in which all levels of government collaborate to identify expectations for liveability and service levels across different types of places, and develop metrics against which progress can be measured. This vision should incorporate inputs across policy sectors and consider major shifts in our demographic trends, in our economy and skills, and in infrastructure provision. The vision should underpin policy and investment decisions at all levels of government, and the Australian Government should work with state and local governments to achieve strategic aims in local places.

As part of a more strategic approach to managing population growth, Australia's governments should also move from developing population projections (extrapolations of historical trends) to delivering population forecasts (based on assumed future events). As part of this process, the assumptions that underpin national population forecasts should be informed by the drivers of demographic change, such as our ageing population, and its impact on place. Forecasts should then be translated to the local level by state and local governments (taking into account internal migration trends) to ensure consistency in assumptions, strategy, and investment between levels of government and geographic areas. This approach should aim to steer population debates towards a mature national conversation to identify a balanced long-term population pathway for Australia. It should include an open discussion of the implications of growth for infrastructure's capacity to support productive and liveable cities and regions.

This recommendation builds on the 2016 *Australian Infrastructure Plan* recommendation to introduce a National Population Policy. In its 2016 response to the Plan, the Australian Government did not support the Plan's call for a national population policy, indicating that its five-yearly *Intergenerational Report* already examines demographic trends across the population.[47] However, there is a need for more proactive, national leadership to create a vision for Australia's future that includes meaningful input from other levels of government and broader policy areas. This process should be distinct from, but align with, other Australian Government processes, such as the *Intergenerational Report* and the recent *Shaping a Nation* report.[48]

Recommendation 1

The Australian Government should establish a process to better strategically plan for Australia's future population. It should partner with state, territory, and local governments to develop:

■ A whole-of-government vision for the future liveability of the nation. This should underpin policy and investment decisions at all levels of government, and spatial planning by state, territory, and local governments.

■ An evidence base to better understand the demographic drivers of change in our population and their spatial impact.

■ Forecasts for population growth at a national level, which are translated to account for spatial impacts at the local level. These should include inputs from core policy areas including births, deaths, immigration and other demographic factors (such as ageing), skills and jobs, and infrastructure provision, and should be tested against a number of different scenarios.

Decision-making weight in our planning systems should focus on the strategic level

Finding 1 shows that our cities are currently struggling to accommodate population growth at a local level and housing development tends to lead infrastructure delivery. Governments lack a coordinated approach to growth and can be overly focused on delivering against housing targets rather than delivering places that have the appropriate infrastructure to make them liveable.

This lack of coordination is due to a number of factors, including the complexity of planning systems in which strategic-level planning is often not translated into relevant and appropriate actions for governments or the private sector. Planning outcomes are then driven primarily by local level development assessments or statutory planning, rather than being driven by a broader strategic vision for an area. **Box 6** outlines the difference between strategic and statutory planning.

Box 6: The relationship between strategic planning and statutory planning

Strategic planning provides a long-term vision for a place – at the regional, metropolitan or national scale – telling the story of how it will grow over time. It defines broad social, economic, and spatial directions and opportunities, including high-level targets and actions for change.

Statutory planning translates the strategic vision and targets into spatial outcomes, generally at the local scale, through processes such as land use zoning, development controls, and development assessments.[49]

Our cities require greater focus on strategic planning, at both the metropolitan and local levels. This will help Australian planning systems to be more proactive, rather than reactive, in accommodating population growth. This means shifting the decision-making 'weight' of the planning system, which for many states sits at the development assessment stage, towards the earlier, broader, strategic planning stage.[50] **Figure 8** represents this dynamic as 'inverting the triangle'.

The South Australian, New South Wales, and Western Australian governments have adopted this approach to varying degrees as a key part of their recent planning system reforms.[51] Mechanisms to support the implementation of this approach can vary, and its implications vary accordingly. For example, governments could establish criteria for development assessments that include a strategic focus, or provide additional resources to local governments to increase their strategic planning capacity.

Figure 8: Changing the focus of planning efforts

Current planning effort

Strategic planning

Development assessments

Planning effort goal

Strategic planning

Development assessments
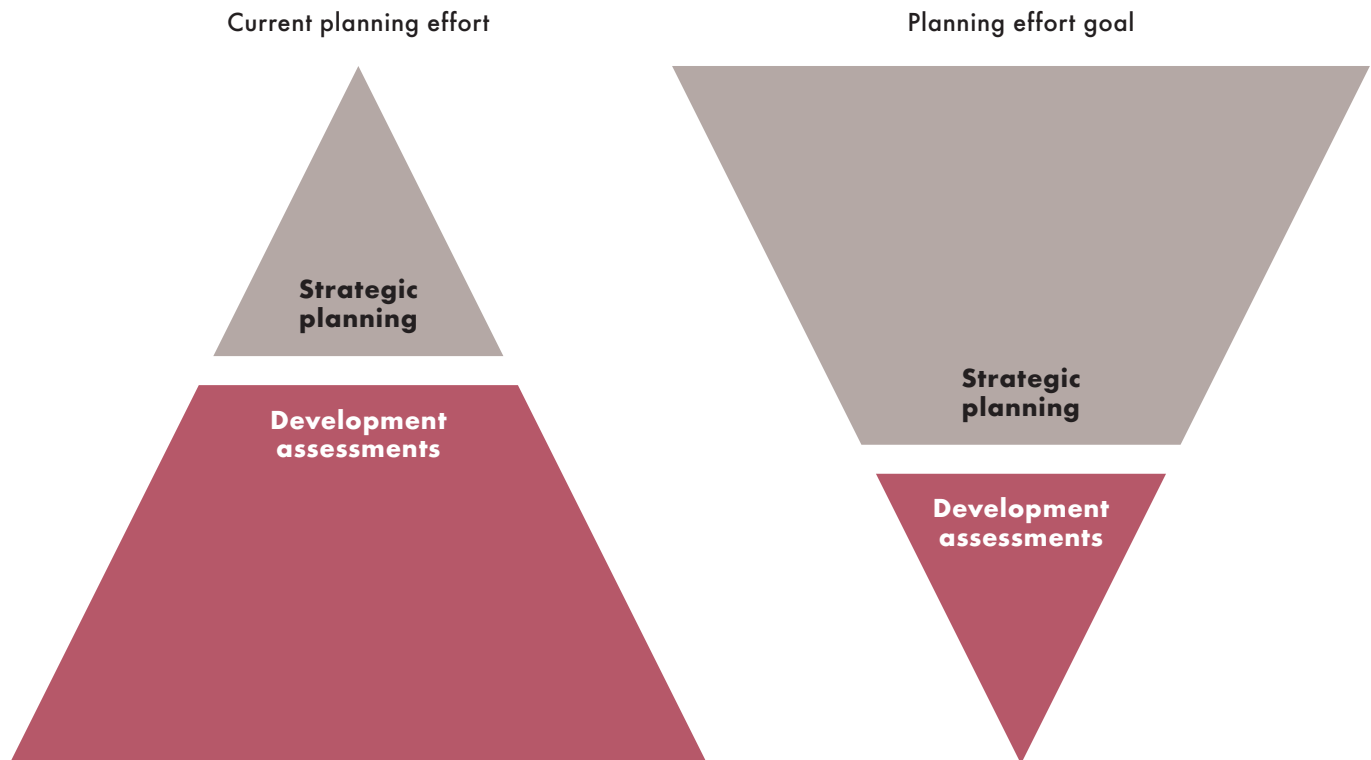
Source: Western Australian Government (2018).[52]

The Productivity Commission supported this concept in its 2011 report that benchmarked the performance of planning, zoning, and development assessment processes in Australia. It identified key elements of a strategically-focused planning system, including:[53]

- strategic plans that go beyond the aspirational to make broad decisions about locations for future growth, infrastructure and services, and the timing for delivery

- strategic plans that integrate across levels of government, and across departments and agencies, to enable consistent decision-making

- a consistent hierarchy of plans at different scales that relate to one another.

This approach requires close collaboration between state and local governments, so that strategic, metropolitan goals can be translated into tangible outcomes in the neighbourhoods across our cities. Strategic alignment will take considerable time and sustained commitment at all levels of government, as the administrative process of updating and aligning plans and statutory instruments will require meaningful community engagement and cross-sectoral collaboration (see **Recommendations 5 and 6**). To develop successful strategies, local government must be empowered to collaborate in this process and provide local perspectives and knowledge. This will ultimately encourage greater 'buy in' from local governments and their communities to the strategy and its implementation, and better outcomes for people in these places.

The purpose of such a shift is not to take decision-making power away from the local level, but rather to empower local decision-making to occur within a framework in which growth is appropriately distributed within a broader metropolitan context and well-supported by the infrastructure and services it requires to be successful. This means proactively prioritising areas for growth where capacity exists to support it, and better sequencing delivery of new or upgraded infrastructure alongside new housing.

Recommendation 2

Planning systems should focus the weight of decision-making on strategic level planning. State and local governments should work in partnership to:

- Develop local strategic plans that translate metropolitan strategies into tangible outcomes at the 'place' level.

- Ensure local strategic plans consider local infrastructure planning and sequencing requirements.

- Amend local planning controls and development assessment processes to reflect strategic plans.

Improving the interface between state and local governments is critical to implementing strategic plans

Finding 2 points to the limitations of current strategic plans when there is a disconnect between governments' *capacity* and *responsibility* to implement them. Challenges arise when strategic plans are not accompanied by defined accountability, authority, and funding roles. This can lead to a lack of currency or legacy for strategic visions in the long term. This is particularly true when targets, such as housing delivery, are developed at the state level and handed down to local governments, but are not enforced or accompanied by adequate support (be it institutional, governance, or funding) to achieve them. At the same time, responsibility for delivering different types of infrastructure sits across levels of government, and responsibility for delivering outcomes is therefore shared.

To achieve a shifted focus towards strategic planning, state and local governments should review, and if necessary establish new, governance arrangements. This process should have two key goals:

1. To create a legacy of collaboration and coordination across government that is adequately resourced to achieve consistency between the intentions of strategic plans and decision-making for places.

2. To ensure the significance of appropriate planning is placed on the same level as project delivery within government. The status currently given to 'project delivery' (infrastructure or otherwise) is disproportionate to the attention paid to ensuring the project is the most effective, or value-for-money, option to address a challenge or opportunity. Specific acknowledgement should be given to the importance of collaboration and coordination in achieving outcomes such as liveability and productivity in our cities.

Governance arrangements should define accountability, collaboration opportunities and flows of information to achieve strategic plans. They also need to allocate appropriate decision-making authority and resourcing capacity. In particular, this means supporting and empowering local governments to translate metropolitan visions into both local strategic plans and local planning controls to achieve the broader targets set in metropolitan plans.

Governance arrangements will be different for each city and should be tailored to meet the unique size, geography, existing governance structures, and economy of individual cities. This may require a combination of both 'soft' power changes, such as formalising collaboration across and within governments, and 'hard' power changes, such as the establishment of new bodies or changes to formal reporting arrangements. It is important to note that there is no perfect governance arrangement, and that goodwill and trust across government will be required to make new arrangements work in practice.

Australia's cities are already developing arrangements aimed at achieving more integrated decision-making and implementation. The South East Queensland (SEQ) Council of Mayors is the largest regional government advocacy organisation in Australia and brings together the 10 mayors of the SEQ Councils.[54] In Melbourne, the Office of Suburban Development manages six Metropolitan Partnerships that provide a mechanism through which local government priorities can be communicated to the state government.[55] In Sydney, the Greater Sydney Commission is assisting local governments across Sydney to translate the goals and visions from its recent metropolitan strategic plan and district plans into new 'local strategic statements' and updated Local Environment Plans.[56] In Perth, the Western Australian Planning Commission is an independent body with state-wide responsibility for urban, rural, and regional integrated strategic and statutory land use planning, land development, and infrastructure coordination.[57] The success of these models should be actively monitored by relevant governments and stakeholders and the models evolved if necessary as these cities grow and change.

Recommendation 3

Governance arrangements with appropriate funding, resourcing, and accountability arrangements are essential to ensuring that strategic metropolitan plans are translated into tangible local outcomes. State and local governments should work in partnership to:

- Clearly define roles and responsibilities to strengthen accountability for delivering the local strategic plans.

- Ensure local governments are adequately resourced and empowered to plan and deliver local strategic plans.

Incentivising greater collaboration between levels of government

Finding 2 shows that Australia's complex governance arrangements can result in different and, at times, competing priorities and responsibilities across levels of government when it comes to planning for our largest cities. There are also limited incentives for different levels of government to work together to achieve common goals and better outcomes for communities.

In the past, the Australian Government has used incentive programs to encourage reform at the state and territory level, leveraging its unique funding position within Australia's federation to drive nationally significant change. As recommended in our *Future Cities* paper, the Australian Government should establish a consistent hierarchy of incentive funding to drive nationally significant benefits for our largest cities, at project, place, and reform levels.[58]

At the project level, this means making project funding (through National Partnership or project agreements) contingent on particular liveability outcomes.

At the place level, the Australian Government's City Deals are in their early stages and are a promising model for achieving place-based outcomes. Bringing federal, state, and local governments together to drive better outcomes from investment, City Deals align policy and investment priorities across different levels of government in particular areas. While 'governance, city planning and regulation' is one of the six priorities for the Deals, lasting planning and governance reform should play an even greater part of the Deals as they evolve. International examples of the 'city deal' approach, such as those in the UK (see Manchester)[59] and France (see Grand Lyon),[60] have focused on this crucial element of reform. These international examples include funding and institutional support for:

- formal cooperation between levels of government

- reforms to financial arrangements between levels of government (for example, 'earn back' mechanisms to provide ongoing financial assistance, and changes to local levies to address funding gaps)

- reform to governance structures (for example, the establishment of metropolitan-level governance, and delivery structures and representation)

- reforms to planning legislation to enable the delivery of city deal outcomes, and maintained for the long term.

At the reform level, incentive frameworks could provide governments with the impetus to embark on difficult but necessary reform processes, such as legislative planning reform, regulatory or policy reform (for example, as per **Recommendation 2**, a shift towards strategic-level planning), or the establishment of metropolitan governance arrangements or institutions. Infrastructure Australia's recent Reform Series paper, *Making Reform Happen: Using incentives to drive a new era of infrastructure reform*, makes the case for establishing a renewed reform incentive framework for national infrastructure.[61]

Recommendation 4

Enhancing existing incentive mechanisms that promote improved governance and better collaboration between all levels of government will help to achieve liveable outcomes in our largest cities. The Australian Government should work with state and local governments to:

- Establish a consistent hierarchy of incentive funding to drive nationally significant benefits for our largest cities, at the project, place, and reform levels.

- Continue to prioritise long-term metropolitan governance reform through City Deals to ensure progress on inter-governmental collaboration is institutionalised and ongoing.

- Prioritise governance reforms such as reforms to funding arrangements between levels of government, new or dedicated governance structures, and reforms to planning legislation.

Fully assessing and delivering the range of infrastructure required to support population growth

Finding 3 shows that infrastructure planning and decision-making at all levels of government is often separated by sectors. While this sectoral focus is necessary for achieving high-quality service delivery, particularly for sectors such as transport, health, and education, it often means that place-based outcomes are not considered during the planning, funding, or delivery of infrastructure in our cities. A sector-based approach to infrastructure and land use planning may lead to siloed planning for cities. This has limitations in a fast-growth context, where collaboration, shared outcomes, and shared resources are required to ensure places remain liveable and affordable.

Our cities require a greater focus on the holistic needs of communities and places, rather than on the services provided by individual sectors. This is particularly true in precincts where growth is occurring rapidly. Governments should therefore develop 'place-based' planning frameworks to ensure that the full range of infrastructure communities require, across sectors, is considered when planning for growth. **Box 7** defines a place-based approach to infrastructure planning and delivery.

Box 7: A 'place-based' approach to infrastructure planning and delivery

In a high-growth context, the stakes for government to deliver efficient and productive outcomes under financial and time pressures are much higher, and a more integrated approach is required to meet the needs of both existing and future communities. A 'place-based' approach aims to reconnect infrastructure decision-making with the needs of a community at a local level. It takes a cross-sectoral view of the interrelated infrastructure and amenity needs of a place, and identifies how and when these should be delivered.

Place-based thinking should also feed into decision-making and funding commitments relating to population growth and infrastructure investment, to ensure that the required amenity for growing cities is not only planned, but also funded and delivered at the right time, to the benefit of the community. Government strategies, budgets, and KPIs should all align to translate collaboration and commitments into 'on-the-ground' delivery. This is a difficult task, as it challenges the well-established structures and decision-making frameworks embedded within our governmental processes. For example, under this approach agencies could be required to commit to infrastructure spending over the forward estimates, reducing flexibility for discretion in their budget spending in the future.

State governments are already beginning to trial a number of approaches to support place-based planning, although we note many of these are in their infancy. These range from inter-agency strategic and financial commitments to soft power collaborative models.

For example, the New South Wales Government has established a 'Growth Infrastructure Compact' model under the Greater Sydney Commission. This approach aims to consider the total needs for a place (the first pilot area focuses on the Greater Parramatta and Olympic Peninsula area) as it grows over coming decades, by defining an infrastructure baseline and growth scenarios. It brings together the necessary local and state government agencies to develop a shared 'compact', including agency budgetary commitments, to prioritise, sequence, and deliver the necessary infrastructure and services for the area to support its growth.[62] In addition, the New South Wales Government supported Infrastructure NSW's recommendation that the Greater Sydney Commission lead the preparation of a place-based strategic business case for the pilot growth infrastructure compact in the Greater Parramatta and Olympic Peninsula area.[63] This new approach could assist governments to better plan for and more efficiently sequence the delivery of a range of infrastructure in rapidly growing areas.

A strategic 'place-based' business case takes a cross-sectoral approach to understand the benefits and costs of different development options for a place. Infrastructure Australia believes strategic 'place-based' business cases should be based on the principles of program business cases, which seek to capture the synergies and interdependencies between projects. This will allow increased rigour in ensuring strategic priorities are identified, total costs and changes in productivity are understood, interrelated benefits are assessed, and project components are delivered in sequence. Individual projects should also be assessed as final business cases to ensure that, in a fiscally constrained environment, government investment represents value for money for taxpayers and communities.

The METRONET project in Perth, led by the Western Australian Government, is also trialling new approaches to integrating planning for land use and infrastructure as it delivers major transport projects across the city.[64] These approaches consider the broader infrastructure and land use needs of areas that will grow as a result of the transport investment. The METRONET project is currently under planning, and subsequently the outcomes of this process are not available for assessment, however the intention is encouraging.

Less formal, but equally transformative processes are also being implemented, such as the Greater Sydney Commission's Collaboration Areas. This approach brings a wide range of stakeholders together to determine a collaborative response for centres where growth is projected to occur. A Place Strategy is developed over a 12-month period, with contribution from local industry, state and local governments, and the community to define shared priorities and objectives for the area.[65]

Recommendation 5

In areas of high growth, governments should identify and assess the full range of economic and social infrastructure required at a 'place' level. State governments should work with local governments and industry to:

- Establish adequately resourced governance arrangements that bring together a range of stakeholders who have an interest in the successful development of the place. For example, state agencies, local governments, land owners and developers, and business and community representatives.

- Align the objectives of stakeholders with state and local infrastructure strategies and commit agency budgets to ensure delivery and implementation.

- Improve coordination across sectors, through adopting approaches, such as the development of strategic 'place-based' business cases, to ensure that infrastructure is delivered to meet the demands of growth.

- Continue to evaluate individual projects as final business cases.

Increasing the quality of community engagement

A crucial element of effectively accommodating growth in our cities will be collaborating with existing communities on the scale of change to come, and frankly discussing the costs and benefits of different approaches to growth. **Finding 4** points to examples of communities across Australian cities where recent growth has not been people-oriented – instead it has been rapid and not well planned, development quality has been poor, the community has not been adequately engaged, and growth has not been supported by infrastructure and amenity. This can, understandably, create fear about further growth, and community resistance towards both development and major infrastructure projects. This can subsequently lead to delays in and increases to the costs of accommodating growth.

Governments need to re-establish trust with communities. This is not a simple task. It requires a shift in the way governments undertake engagement with communities, towards a more collaborative and inclusive approach. The aim of community engagement should be for governments to work with the community, establish clear expectations, and then deliver against them. Infrastructure Australia's *Infrastructure Decision-making Principles* highlights the need for meaningful engagement with the community and stakeholders at each stage of an infrastructure project, from problem identification and option development to project delivery.[66]

There also needs to be a shift to focus community engagement at the earlier, strategic planning stage. This is to ensure the community's priorities are reflected in broad visions for an area, and to enable wider conversations about the future of a place that will inform more local change further down the track. This means working with the community to tell a story about a place and contextualising the need for growth and its potential benefits. This builds on the recommendation made in *Future Cities*, calling for governments to improve the quality of community engagement at the strategic planning stage, to include diverse voices when engaging, and to begin engagement processes early.

Governments should use clear evidence and justification, including capacity assessments and scenario modelling, to demonstrate to the community why growth is coming, how growth could be accommodated, and what the trade-offs are for different approaches to accommodating growth in local areas and at the metropolitan level. For example, inner-city neighbourhoods will most likely see higher-density development, as land is scarce, but will experience higher levels of services such as improved access mass transit and proximity to major employment centres. In outer suburbs, growth may be delivered at a lower density but service levels may be correspondingly lower, such as lower levels of access to mass transit.

Models for collaborative engagement could include structures such as citizen juries and panels that statistically represent community demographics and allow community members to directly input into decision-making processes.

State and local governments are beginning to develop more sophisticated community engagement models that better reflect the community's vision for a place and honestly discuss community expectations and the reality of trade-offs as areas grow (see **Box 8**). Others are working to better embed engagement into existing government processes. For example, the Victorian Government's Office of Suburban Development has created six Metropolitan Partnerships across greater Melbourne that bring together community and local government representation, feeding these voices into state government decision-making as an ongoing process of engagement, rather than as a one-off process related to a particular project or plan.

However, improving community engagement practices in isolation is not enough to re-establish trust in governments. Governments also need to demonstrate how community feedback is reflected in final plans and demonstrate outcomes on the ground (so-called 'walking the talk'). This will help to restore faith that governments are listening to and incorporating the views of their communities, and delivering good examples of growth (such as good-quality design, and appropriate sequencing of infrastructure) that demonstrate real benefits at the local level.

Recommendation 6

Improving the quality, demonstrated outcomes, and longevity of community engagement is critical to the successful growth of our largest cities. All governments should work in partnership with industry to:

- Focus the weight of community engagement at the strategic level to enable the community to contribute to 'telling the story' of an area, beyond individual projects.

- Ensure a range of perspectives that reflect community demographics are considered.

- Use collaborative engagement models to co-create strategic goals.

- Design engagement processes that allow frank, honest, and forthright community conversation on expectations and trade-offs, with a commitment to tangible actions, transparent reporting, and accountability.

Box 8: Plan Your Brisbane case study

Brisbane City Council (the City) conducted the *Plan Your Brisbane* community engagement process in 2017. The City developed this process in response to the identification of housing targets in the 2017 *Shaping SEQ* regional plan for South East Queensland that exceeded the current *Brisbane City Plan*, developed in 2014. It aimed to 'ask everyday residents what they love about Brisbane, what they want for Brisbane's future, and what trade-offs and priorities we need to think about in planning for our city'.

Three phases of engagement were developed. The first identified broad themes and what residents prioritise, the second explored those themes in more detail, and the third informed the community of the results, presenting a charter of principles to guide Brisbane's future. The City received responses to the engagement from a significant 20% of the city's residents, across a broad range of ages (from school children to 80-year-olds), and representing each of the city's postcodes. The tools used to engage the community went beyond traditional consultation mechanisms, and included an online game that allowed respondents to explore the trade-offs involved in housing 1,000 residents in an area, with levers to change density and infrastructure levels. Other tools included online and telephone surveys, the creation of an intergenerational forum and youth advisory council, school library activities, stakeholder workshops, and competitions. Awareness was raised using television and online ads, and postcards sent to residences.

Brisbane's Future Blueprint (2018) outlines the eight principles developed following this engagement process to guide future decisions about Brisbane's growth and aims to reflect the community's priorities. One principle in particular, 'Protect the Brisbane backyard and our unique character', directly reflects the community's desire to restrict densification to particular areas. It states that townhouses and apartments will only be allowed on 'appropriately zoned land, such as medium density residential areas'. Car parking requirements will also be increased in suburban areas. The Blueprint also embeds ongoing engagement, reflecting the community's desire to continue being consulted on change, including an annual Intergenerational Planning Forum and a Character Design Forum to protect Queensland housing design in Brisbane.[67]

Reviewing the current mechanisms for funding infrastructure

The current mechanisms used by state and local governments to fund infrastructure are a legacy of change over time. These mechanisms fund different things at different times, in different places, and can be overlapping or leave funding gaps. There is no coherent 'suite' of mechanisms that work together to ensure infrastructure costs are covered. In addition, the mechanisms of today are not fit for purpose in high-growth scenarios, where timeframes for planning and delivery, and the cost of land and construction, are more complex and expensive for governments.

Finding 5 outlines the challenges experienced with developer contribution regimes across the five cities. It is difficult to design and implement a contributions regime that appropriately and fairly contributes to the cost of required infrastructure. When infrastructure charges are set too high, or have an unintended cumulative impact over time, they can discourage investment in housing, which can reduce supply and contribute to a lack of housing affordability.[68] This is a challenge not only for local governments, but also state governments and the development industry.

Addressing funding challenges for local and state infrastructure projects and creating a fairer balance between those who directly benefit and the broader taxpayers is a contentious area of public policy. There are no easy answers or 'one size fits all' solutions. However, governments should work with industry to review current funding mechanisms and make recommendations for reform. We need to improve the effectiveness, timeliness, and transparency of infrastructure funding and increase certainty for governments, the development industry, and the community.

Governments and developers will always have different views on what a good developer contribution scheme entails. However, more work needs to be done to reduce the complexity of these schemes and to ensure mechanisms work effectively in both infill and greenfield contexts to deliver infrastructure when it is needed.

We need approaches that help to provide timely infrastructure, particularly for infill development when growth is incremental and contributions need to be pooled over time. For example, the New South Wales Government has recently implemented a Low Cost Loans Initiative that allows councils to borrow money, at a subsidised cost, for infrastructure that supports new housing supply – such as roads, sports fields, community centres, drainage, playgrounds, or land acquisition.[69]

Improving the transparency and accountability of funding schemes is important (for example, ensuring reporting frameworks are developed and followed). This will give industry and the community confidence that the growth they are witnessing in their communities is accompanied with a commensurate increase in infrastructure capacity and services. Improving access to data and addressing cost issues (which is discussed further in **Recommendation 9**) also provide opportunities to increase transparency.

Issues with existing funding mechanisms highlight the need to consider alternative, more innovative approaches. The benefits, costs, and applicability of different value capture mechanisms were examined in Infrastructure Australia's 2016 paper, *Capturing Value: Advice on making value capture work in Australia*. The paper found that, while each value capture mechanism comes with risks and rewards, broadening the land tax system while removing inefficient charges, such as stamp duties, could provide a fairer, more efficient way of capturing land value uplift and using land more productively.[70]

By broadening the land tax base, governments could also unlock a more reliable stream of funding that fairly reflects the productive value of land and better captures a share of benefits derived from infrastructure investment. If structured to pass on revenue to local government, this approach could also help to address some inadequacies in local government revenue, such as rate constraints.

As discussed in **Chapter 2**, local council rates are a major source of funding for local government infrastructure. However, systems such as 'rate-pegging' and 'rate-capping' constrain the capacity of local government to fund infrastructure needs over their preferred timelines. These systems are currently in place in the two states expected to accommodate the highest levels of growth: New South Wales and Victoria.

A review of best-practice infrastructure funding mechanisms and policies should identify the full range of mechanisms for infrastructure funding and consider potential alternative approaches, such value capture and infrastructure levies. A review would need to be sufficiently independent that it is supported by all parties and adopted across governments.

Recommendation 7

Governments should undertake an independent review of local and state infrastructure funding mechanisms and policies. State governments should work with local governments and industry to:

- Assess the effectiveness of the full range of mechanisms available, including local government rates and taxes, developer contributions and user charges, to address long-term structural funding shortfalls for asset delivery and maintenance.

- Ensure policies facilitate the timely delivery of infrastructure, increase transparency, and provide governments, industry, and the community with as much certainty as possible of the cost of infrastructure and how it is paid for.

- Consider alternative and innovative funding mechanisms, such as a broad-based land tax and targeted levies, to promote equitable and efficient outcomes.

Ensuring the benefits of existing infrastructure are maximised

New infrastructure is expensive to fund, operate, and maintain. As **Finding 5** highlights, the cost of operating and maintaining infrastructure over its lifetime can be many multiples of the initial capital cost to build it. In the context of a growing population, sequencing challenges, and fiscal constraints, maximising the use of existing assets may in some situations be preferable to building new infrastructure. Our growing cities will always need new build infrastructure to accommodate population growth, but governments should make sure they have the plans and frameworks in place to extract the most value from existing assets before investing in new assets.

This approach includes upgrading or enhancing existing infrastructure assets, and ensuring strategic planning processes prioritise growth in areas that have the economic and social infrastructure capacity to support it – for example, by increasing housing densities around major public transport nodes. Given the high costs of delivering physical infrastructure, ensuring existing assets deliver their maximum benefits can be a low-cost solution that can deliver high value. Enhancing the capacity of existing assets also generally takes less time and is less disruptive to communities in established areas than constructing new infrastructure.

When managing existing assets, governments should focus on clearing maintenance backlogs, implementing upgrades and enhancements where appropriate, and developing shared-use and demand management strategies to improve utilisation. When governments are able to collaborate to achieve city-wide objectives, the benefits are significant. For example, in 2018 the New South Wales Government launched the Share our Space program that allowed communities to access school playgrounds and ovals during the school holidays. Participating schools received a grant to help upgrade their facilities for community and school use. School infrastructure is an under-utilised asset that is only in use 40 weeks of the year. This program made better use of an existing asset while delivering a good outcome for the community by making more green infrastructure and open space available. The New South Wales Department of Education and the City of Sydney have now signed an agreement to permanently share particular inner-city green spaces and sporting facilities between new (and redeveloped) schools and the community.[71] This approach makes better use of an existing asset, or shares the cost of delivering a new one, and makes more space available to both students and local communities.

Governments should develop rigorous strategies for asset utilisation and management, and incorporate regular monitoring of capacity and use into planning. It is important to note that problems can arise when governments assume existing assets can meet demand without adequately assessing existing capacity. This is particularly common around infill development, which has the additional complexity of incremental growth.

Asset utilisation and management strategies should be supported by appropriate governance arrangements to ensure they are implemented. Governments should always consider better use of assets during both strategic planning and in the options assessment of business cases for proposed new capital projects. For example, the Queensland Government has established an Infrastructure Innovation Taskforce focused on embedding better-use principles, such as 'sweating' assets and improving collaboration across sectors, into state government decision-making, service delivery, and procurement.[72] The Infrastructure Australia Assessment Framework (which provides information about how initiatives and projects are assessed for inclusion in the *Infrastructure Priority List*) requires project proponents to consider a range of non-capital options (such as optimisation, policy and regulatory reform, or governance reform) when developing business cases for investment.[73] Key to this is a robust understanding of existing infrastructure capacity and constraints, in the context of service level expectations, which is discussed further in **Recommendation 9**.

Recommendation 8

Making better use of existing infrastructure assets and networks will deliver improved outcomes for both communities and governments. Planners and asset owners should:

■ Embed better-use principles in infrastructure decision-making, including consideration of non-capital options, such as optimisation, policy and regulatory reform, and governance reform, when developing solutions to upgrade infrastructure capacity.

■ Prioritise the planning, funding, and delivery of maintenance to address backlogs.

■ Use technological enhancements (such as smart motorways) and policy interventions (such as variable pricing) to improve user experience and reduce costs.

■ Promote shared-use arrangements, such as opening up spaces like school playgrounds out of hours to increase community access to green space.

A more coordinated and consistent approach to data to improve decision-making

Having a common understanding of current and future infrastructure capacity, as well as the levels of service experienced by the community, is a crucial first step to determine the most efficient patterns of development in our growing cities.

Finding 6 identifies a number of challenges with existing data and tools used to collect this information, including the lack of transparent, standardised evidence bases for determining the capacity of public and private infrastructure networks. Assessing the cumulative impact of growth on infrastructure in established areas is a challenge, with a need for regular updates to improve decision-making. Federal, state, and local governments should work together with private infrastructure owners to develop a common understanding of infrastructure capacity at both a metropolitan and place level. Governments should work across agencies, and with the private sector, to ensure the right confidentiality and security measures are in place to usefully store and share this data. This should facilitate better decision-making for short- and long-term planning and infrastructure investment.

Additionally, establishing a common understanding of the nature of established infrastructure facilities will avoid costly impacts of disruption or rectification during major project delivery, such as has characterised the delivery of major infrastructure in established urban areas, including numerous recent light rail projects.

Improving the transparency and frequency of reporting is critical to enabling governments and the private sector to manage their assets and refine their plans. Open information and data has the potential to improve transparency of government decisions regarding development and infrastructure charging regimes, and improve community trust in the planning and development of their city. The Australian Government's National Cities Performance Framework brings together data on the performance of Australia's 21 largest cities. This framework provides a model for governments to further develop their capacity to use data to monitor performance, assess capacity, and improve infrastructure investment decision-making in our largest cities.[74] In Perth, the Western Australian Planning Commission has developed a public, detailed mapping tool (PlanWA) that provides access to planning data across Western Australia. The interactive tool links to the latest spatial land use and planning information (such as zoning controls and infrastructure services) for parcels of land to both inform government decision-making across sectors and to help the community understand future development planned for their area.[75]

Infrastructure Australia supports contestability for ownership and operation of infrastructure assets and networks, in cases where governments can demonstrate improved service levels for users and achieve savings for taxpayers. However, it is important that contracts with private and corporatised operators include requirements to provide regular, detailed performance and capacity data so that governments can adequately plan for the future.

Recommendation 9

Our largest cities require a more coordinated, transparent and standardised understanding of current and future infrastructure capacity to help governments optimise infrastructure use and make better investment decisions. All levels of government should work with industry to further develop evidence bases that:

- Use new and existing data sources to provide more integrated and timely information on asset and network quality, capacity, and use.

- Inform cross-sectoral government planning and decision-making.

- Improve infrastructure optimisation, the transparency of infrastructure funding mechanisms, and reduce the cost of delivering and maintaining infrastructure.

Conclusion

Australia's cities are facing a future of growth and change. Over the next 30 years, the population is set to grow by an additional 10 million people, and our largest cities – Sydney, Melbourne, Brisbane, Perth, and Adelaide – will be the setting for most of this growth.

Population growth provides many potential benefits. It is a chance to increase the diversity of our communities, strengthen the depth and capacity of our labour market, and grow the size of our economy. But it also presents governments, industry, and the community with a complex set of challenges.

To support growth we will need to rapidly increase the delivery of higher-density housing, and upgrade the capacity of infrastructure networks. Crucially, as our cities grow, we need to protect and enhance their liveability and unique character. Our cities are inherently about the people who inhabit them and it is critical that they remain liveable places to reside and work.

Infrastructure sequencing – the timely and coordinated delivery of additional housing alongside new or upgraded infrastructure – will be critical to overcoming these challenges and ensuring Australia capitalises on the opportunities of growth.

Sequencing processes have historically delivered mixed outcomes. There are many examples where housing has been provided without the corresponding investment in infrastructure, or communities have witnessed the delivery of poor-quality development that bears little reference to local surroundings. As a result, communities are understandably apprehensive about what future growth will bring.

This paper provides government and industry with a reform checklist of the planning, governance, funding, and delivery frameworks required to deliver best-practice sequencing, including the following:

- **A new national process for managing population growth.** Australia requires a more strategic, collaborative, and transparent approach to planning for population growth. Through this process, the Australian Government would lead development of a common vision and evidence base, in partnership with state, territory, and local governments, industry, and the community, to better strategically plan for our future population.

- **Incentivising greater collaboration between levels of government.** There are limited incentives for different levels of government to work together to achieve common goals and better outcomes for communities. The Australian Government should use its existing incentive mechanisms to promote improved governance and better collaboration across the Federation.

- **A focus on place-based rather than sector-based outcomes.** Our cities need a greater focus on the holistic needs of communities and places, rather than on the services provided by individual sectors. Governments should develop place-based planning and governance frameworks to ensure that the full range of infrastructure communities require, across sectors, is considered when planning for growth.
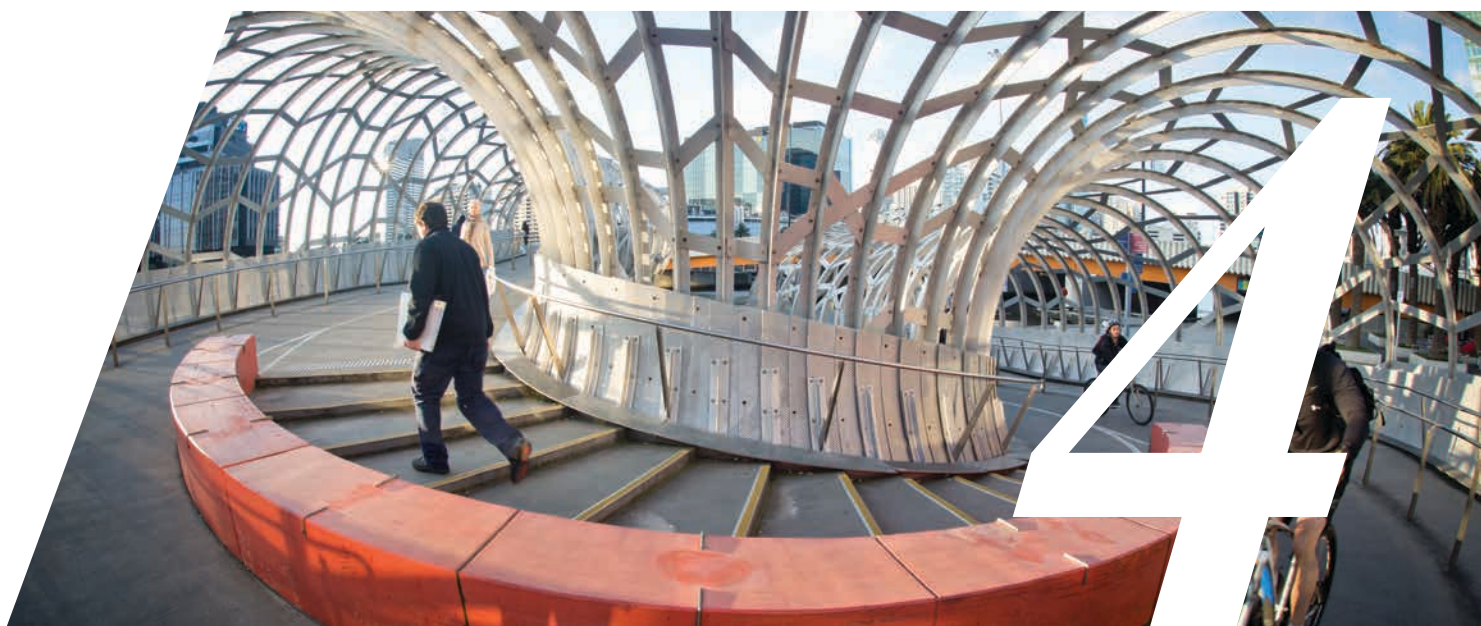
- **Repositioning planning and engagement frameworks at the strategic rather than project level.** Strategic planning provides a long-term vision for a place and tells the story of how it will grow over time. By refocusing planning and community engagement at this strategic stage, governments will be able to include the community in setting a city's long term agenda, and drive outcomes that align with a broader vision, rather than only local considerations.

- **A root and branch review of funding for local infrastructure.** The current mechanisms used by state and local governments to fund infrastructure are a legacy of disparate and changing approaches over time. An independent review of infrastructure funding mechanisms and policies would identify the full range of mechanisms for infrastructure funding and consider potential alternative approaches, such value capture and infrastructure levies.

- **Enhance the tool and data sets used to understand the current and future capacity of infrastructure networks and make better use of existing assets.** Having a common understanding of current and future infrastructure capacity and levels of service across governments and industry is a crucial first step to determine the most efficient patterns of development in our growing cities.

It is possible to grow our cities and retain their liveability and unique character. To achieve this we need to modernise the way we plan and sequence infrastructure and housing in our cities. This paper provides governments with an overview of the key steps required to ensure that our cities remain liveable now and into the future.

Appendix:
Matching recommendations to governments and industry

Table 5 presents the paper's nine recommendations and indicates who should lead the delivery of reform.

Table 5: Recommendations for government and industry

Recommendations	Australian Government	State governments	Local governments	Industry
Recommendation 1 **The Australian Government should establish a process to better strategically plan for Australia's future population.** It should partner with state, territory, and local governments to develop: ■ A whole-of-government vision for the future liveability of the nation. This should underpin policy and investment decisions at all levels of government, and spatial planning by state, territory, and local governments. ■ An evidence base to better understand the demographic drivers of change in our population and their spatial impact. ■ Forecasts for population growth at a national level, which are translated to account for spatial impacts at the local level. These should include inputs from core policy areas including births, deaths, immigration and other demographic factors (such as ageing), skills and jobs, and infrastructure provision, and should be tested against a number of different scenarios.	●			
Recommendation 2 **Planning systems should focus the weight of decision-making on strategic level planning.** State and local governments should work in partnership to: ■ Develop local strategic plans that translate metropolitan strategies into tangible outcomes at the 'place' level. ■ Ensure local strategic plans consider local infrastructure planning and sequencing requirements. ■ Amend local planning controls and development assessment processes to reflect strategic plans.		●	●	

Recommendations	Australian Government	State governments	Local governments	Industry
Recommendation 3 **Governance arrangements with appropriate funding, resourcing, and accountability arrangements are essential to ensuring that strategic metropolitan plans are translated into tangible local outcomes.** State and local governments should work in partnership to: ■ Clearly define roles and responsibilities to strengthen accountability for delivering the local strategic plans. ■ Ensure local governments are adequately resourced and empowered to plan and deliver local strategic plans.		●	●	
Recommendation 4 **Enhancing existing incentive mechanisms that promote improved governance and better collaboration will help to achieve liveable outcomes in our largest cities.** The Australian Government should work with state and local governments to: ■ Establish a consistent hierarchy of incentive funding to drive nationally significant benefits for our largest cities, at the project, place, and reform levels. ■ Continue to prioritise long-term metropolitan governance reform through City Deals to ensure progress on inter-governmental collaboration is institutionalised and ongoing. ■ Prioritise governance reforms such as reforms to funding arrangements between levels of government, new or dedicated governance structures, and reforms to planning legislation.	●	●	●	

Recommendations	Australian Government	State governments	Local governments	Industry
Recommendation 5 **In areas of high growth, governments should identify and assess the full range of economic and social infrastructure required at a 'place' level.** State governments should work with local governments and industry to: ■ Establish adequately resourced governance arrangements that bring together a range of stakeholders who have an interest in the successful development of the place. For example, state agencies, local governments, land owners and developers, and business and community representatives. ■ Align the objectives of stakeholders with state and local infrastructure strategies and commit agency budgets to ensure delivery and implementation. ■ Improve coordination across sectors, through adopting approaches, such as the development of strategic 'place-based' business cases, to ensure that infrastructure is delivered to meet the demands of growth. ■ Continue to evaluate individual projects as final business cases.		●	●	●
Recommendation 6 **Improving the quality, demonstrated outcomes, and longevity of community engagement is critical to the successful growth of our largest cities.** All governments should work in partnership with industry to: ■ Focus the weight of community engagement at the strategic level to enable the community to contribute to 'telling the story' of an area, beyond individual projects. ■ Ensure a range of perspectives that reflect community demographics are considered. ■ Use collaborative engagement models to co-create strategic goals. ■ Design engagement processes that allow frank, honest, and forthright community conversation on expectations and trade-offs, with a commitment to tangible actions, transparent reporting, and accountability.	●	●	●	●
Recommendation 7 **Governments should undertake an independent review of local and state infrastructure funding mechanisms and policies.** State governments should work with local governments and industry to: ■ Assess the effectiveness of the full range of mechanisms available, including local government rates and taxes, developer contributions and user charges, to address long-term structural funding shortfalls for asset delivery and maintenance. ■ Ensure policies facilitate the timely delivery of infrastructure, increase transparency, and provide governments, industry, and the community with as much certainty as possible of the cost of infrastructure and how it is paid for. ■ Consider alternative and innovative funding mechanisms, such as a broad-based land tax and targeted levies, to promote equitable and efficient outcomes.		●	●	●

Recommendations	Australian Government	State governments	Local governments	Industry
Recommendation 8 **Making better use of existing infrastructure assets and networks will deliver improved outcomes for both communities and governments.** Planners and asset owners should: ■ Embed better-use principles in infrastructure decision-making, including consideration of non-capital options, such as optimisation, policy and regulatory reform, and governance reform, when developing solutions to upgrade infrastructure capacity. ■ Prioritise the planning, funding, and delivery of maintenance to address backlogs. ■ Use technological enhancements (such as smart motorways) and policy interventions (such as variable pricing) to improve user experience and reduce costs. ■ Promote shared-use arrangements, such as opening up spaces like school playgrounds out of hours to increase community access to green space.		●	●	●
Recommendation 9 **Our largest cities require a more coordinated, transparent and standardised understanding of current and future infrastructure capacity to help governments optimise infrastructure use and make better investment decisions.** All levels of government should work with industry to further develop evidence bases that: ■ Use new and existing data sources to provide more integrated and timely information on asset and network quality, capacity, and use. ■ Inform cross-sectoral government planning and decision-making. ■ Improve infrastructure optimisation, the transparency of infrastructure funding mechanisms, and reduce the cost of delivering and maintaining infrastructure.	●	●	●	●

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